TAUB CENTER
for Social Policy Studies in Israel

THE HERBERT M. SINGER ANNUAL REPORT SERIES

STATE OF THE NATION REPORT

SOCIETY, ECONOMY & POLICY IN ISRAEL

2024

EDITOR: AVI WEISS

The Herbert M. Singer Annual Report Series

State of the Nation Report

Society, Economy & Policy in Israel 2024

Avi Weiss, Editor

Taub Center for Social Policy Studies in Israel

Jerusalem, December 2024

Taub Center for Social Policy Studies in Israel

The Taub Center for Social Policy Studies in Israel was established in 1982 under the leadership and vision of Herbert M. Singer, Henry Taub, and the American Jewish Joint Distribution Committee. The Center is funded by a permanent endowment created by the Henry and Marilyn Taub Foundation, the Herbert M. and Nell Singer Foundation, Jane and John Colman, the Kolker-Saxon-Hallock Family Foundation, the Milton A. and Roslyn Z. Wolf Family Foundation, and the American Jewish Joint Distribution Committee. In addition, generous support is also received each year from individual donors, foundations and Jewish federations.

The Taub Center is an independent, nonpartisan, socioeconomic research institute based in Jerusalem that conducts high-quality, impartial research on socioeconomic conditions in Israel. The Center presents a broad social and macroeconomic perspective to leading policy makers and the wider public in the area of public policy. The Center's professional staff and its interdisciplinary policy program staff, which includes prominent researchers from academia and leading experts in the areas of policy, conduct research and develop evidence-based policy options in the socioeconomic areas on the country's public agenda. The Center presents long-term strategic analyses and policy options to policy makers and the public through direct communications, an active program of publications, conferences, and other activities in Israel and abroad.

The Taub Center publications represent the views of their authors only, and they alone are responsible for the contents. Nothing stated in them creates an obligation on the part of the Center, its Board of Directors, its employees, other affiliated persons, or those who support its activities.

ISBN: 978-965-93148-2-9

Center address: 15 Ha'ari Street, Jerusalem, Israel
Tel: +972 2 567 1818
Email: info@taubcenter.org.il
Website: www.taubcenter.org.il

Printed at Printiv, Jerusalem

Board of Directors

Chair: Col. (Ret.) Miri Eisin

Dennis W. Carlton (Vice Chair, Governance and Administration), John Davison (Vice Chair, Budget and Finance), Michael P. Lustig (Planning and Resource Development), Helen Abeles, Jim Angell, Penny Blumenstein, David Colman, Martha Freedman, Anat Gafni, Alan H. Gill, Ellen M. Heller, Annie Sandler, Michael S. Saxon, Ariel Zwang

General Assembly

Chair: Jim Angell

Helen Abeles, Penny Blumenstein, Col. (Ret.) Miri Eisin, Zvi Feine, Amir Halevy, Ellen M. Heller, Steve Lieberman, Stanley Rabin, Michael S. Saxon, Mark Sisisky, Steven Taub, Ariel Zwang

International Advisory Council

Henry Aaron (Brookings Institution), David Autor (MIT), Mario Blejer (Banco Hipotecario), Aaron Ciechanover (Technion), Stuart Eizenstat (Covington & Burling), Han Entzinger (Erasmus University), Adam Gamoran (William T. Grant Foundation), Edward Glaeser (Harvard University), Eric Hanushek (Stanford University), James J. Heckman (University of Chicago), Peter S. Heller (Williams College), Robert E. Litan (Korein Tillery), Burton A. Weisbrod (Northwestern University)

Center Staff

President: Avi Weiss

Director General: Nir Kaidar

Vice President of Strategic Partnerships: Michal Ben-Dov

Chief Financial, Human Resources and Marketing Officer: Mira Golan

Research Director: Alex Weinreb

Rachel Arazi (Guest Researcher), Dudu Barazani (Maintenance), Benjamin Bental (Principal Researcher; Chair, Economics Policy Program), Shavit Ben-Porat (Researcher), Carmel Blank (Senior Researcher, Early Childhood), Nachum Blass (Principal Researcher; Chair, Education Policy Program), Haim Bleikh (Researcher), Nadav Davidovitch (Principal Researcher; Chair, Health Policy Program), Michael Debowy (Researcher), Hedva Elmackias (Deputy Director of Finance and Marketing Operations), Gil S. Epstein (Principal Researcher; Chair, Labor Market Policy Program), Deena Friedman (Deputy Director of Strategic Partnerships), John Gal (Principal Researcher; Chair, Welfare Policy Program), Ofir Gonen (Research Assistant and Big Data), Ayelet Kamay (Publications Director), Natan Lev (Research Assistant), Hen Levi (Social Media Manager), Chen Mashiach (Spokeswoman), Yael Navon (Senior Researcher), Ori Oberman (Research Assistant), Jonathan Plotkin (Research Assistant), Ella Rosenkovitch (Government Relations and Impact Follow-up Manager), Noga Rosin (Coordinator of Projects, Operations, Human Capital and Marketing), Maya Sadeh (Senior Researcher; Head, Research and Policy Initiative for Environment and Health), Laura Schreiber (Senior Publications Manager), Labib Shami (Senior Researcher), Yossi Shavit (Principal Researcher; Chair, Taub Center Initiative on Early Childhood Development and Inequality), Dana Shay (Researcher), Kyrill Shraberman (Researcher), Sarit Silverman (Senior Researcher), Or Siman-Tov (Researcher), Adi Tarabeih (Research Assistant), Dani Wainstein (Strategic Partnerships Coordinator), Yael Yavin (Research Assistant)

Past Directors: Israel Katz (z"l), Yaakov Kop (z"l), Dan Ben-David

Policy Program Fellows

Demography

Alex Weinreb (Chair), Karen Amit, John Anson, Avraham Ebenstein, Zvi Eisenbach, Dov Friendlander, Anastasia Gorodezeisky, Ahmad Hleilhel, Eliahu Ben Moshe, Barbara Okun, Ari Paltiel, Sergio Della Pergola, Liat Raz, Uzi Rebhun, Ameed Saabneh, Jona Schellekens

Economics

Benjamin Bental (Chair), Yarom Ariav, Gilad Brand, Adi Brender, David Brodet, Doron Cohen, Naomi Feldman, Reuben Gronau, Jack Habib, Moshe Mandelbaum, Dan Peled, Assaf Sarid, Haim Shani, Eytan Sheshinski, Shmuel Slavin, Avia Spivak, Michel Strawczynski, Shlomo Yitzhaki, Ben Zion Zilberfarb

Education

Nachum Blass (Chair), Shlomit Amichai, Shlomo Beck, Rami Benbenishty, Carmel Blank, Shlomi Cohen, Yigal Douchin, Yariv Feniger, Isaac Friedman, Eli Eisenberg, Meir Kraus, Orit Levin, Ariel Levy, David Maagan, Zmira Mevarech, Fadia Nasser-Abu Alhija, Yael Navon, Yoel Rapp, Rita Sever, Yossi Shavit, Edna Shimoni, Rami Suleimani, Eran Tamir, Yulie Tamir, Yuval Vurgan, Zvi Yanai, Noam Zussman

Health

Nadav Davidovitch (Chair), Dorit Adler, Anat Arbel-Shamir, Alexander Aviram, Uri Aviram, Ran Balicer, Shlomo Barnoon, Yitzhak Berlowitz, Nakhle Beshara, Bishara Bisharat, Orna Blondheim, Adi Brender, Shay Brill, David Chinitz, Keren Dopelt, Tal Dovev, Asher Elhayany, Miri Endeweld, Leon Epstein, Ronni Gamzu, Yigal Ginat, Dan Greenberg, Itamar Grotto, Eitan Hai-Am, Jonathan Halevy, Eran Halperin, Michael Hartal, Avi Israeli, Orit Jacobson, Avigdor Kaplan, Galit Kaufman, Rachel Kaye, Muhammad Khatib, Shira Kislev, Maya Leventer-Roberts, Baruch Levi, Jacob Menczel, Shlomo Mor-Yosef, Roi Ben Moshe, Adi Niv-Yagoda, Gabi Ben Nun, Meir Oren, Baruch Ovadia, Eran Politzer, Sigal Regev-Rosenberg, Bruce Rosen, Yehudit Shamion, Shani Paluch Shimon, Amir Shmueli, Haim Silber, Varda Soskolne, Yohanan Stessman, Aviad Tur-Sinai, Leah Vefner, Salman Zarka, Dan Zeltzer

Labor Market

Gil S. Epstein (Chair), Einav Aharoni-Yonas, Hagai Atkas, Rani Dudai, Mark Feldman, Daniel Gottlieb, Nitsa Kasir (Kaliner), Yaakov Loupo, Miki Malul, Guy Mundlak, Dalia Narkiss, Tali Regev, Dmitri Romanov, Moshe Semyonov, Ofer Setty, Sigal Shelach, Arie Syvan, Yossi Tamir, Aviad Tur-Sinai

Welfare

John Gal (Chair), Michal Almog-Bar, Avishai Benish, Orly Benjamin, Allan Borowski, Nissim Cohen, Israel Doron, Rana Eseed, Zvi Feine, Daniel Gottlieb, Anat Herbst-Debby, Roni Holler, Nitsa Kasir (Kaliner), Chana Katz, Michal Koreh, Michal Krumer-Nevo, Lihi Lahat, David Levi-Faur, Ibrahim Mahajne, Miki Malul, Ronen Mandelkern, Baruch Ovadia, Nadav Perez-Vaisvidovsky, Tehila Refaeli, Yekutiel Sabah, Talia Meital Schwartz-Tayri, Shmulik Sheintuch, Sigal Shelach, Edna Shimoni, Roni Strier, Yossi Tamir, Noam Tarshish, Aviad Tur-Sinai, Idit Weiss-Gal, Uri Yanay, Amos Zehavi

A Message from the Board Chair

As the Chair of the Board of the Taub Center for Social Policy Studies in Israel, I am proud to present the ***State of the Nation Report 2024***. This report is released during one of the most challenging periods in our country's history. The security and geopolitical landscape is constantly evolving, posing a significant challenge to the State of Israel. At the same time, there is a growing need to improve and strengthen social services and the economic system in Israel.

The Taub Center continues its important research activities in these times as well. The studies it publishes address issues related both to the war and its impact on society and the economy, as well as matters that occupy all of us in everyday life. I am proud to see how the Center's research is effecting change and positively influencing social policy in Israel.

After the war, the social and economic challenges facing Israel will intensify, and it will be necessary to find new balances within Israeli society across various arenas. The research and public initiatives of the Taub Center serve as important tools for achieving these balances and for strengthening every facet of Israeli society.

Let us all pray for better times ahead.

Miri Eisin

Chair, Taub Center Board of Directors

A Message from the Director General

In recent years, security and governance issues have increasingly dominated public discourse in Israel. Alongside this, the need to strengthen the country's social systems has grown, especially in the wake of the war. For example, there is a need to ensure the mental health of citizens, to rehabilitate and improve the condition of communities in both the South and the North, to support reserve soldiers and their families, and to work towards the integration of all segments of the population in Israel into the labor force.

The ***State of the Nation Report 2024*** by the Taub Center plays a key role in understanding Israel's social and economic systems. The report reviews the state of these systems over the past year and casts a special spotlight on how they have coped during the war.

At the time of writing these lines, 59 Israelis remain hostages in Gaza. Over 100,000 soldiers are guarding the country's borders, tens of thousands of residents are still evacuated from their homes, and many require physical and mental rehabilitation. Normalcy in Israel will not return until a remedy is found for everyone. In light of the situation, we have revised our work plans and will be placing special emphasis on applied research in areas related to the war and on how social systems are dealing with the varieties of challenges they face. In the coming year, we will continue to conduct high-quality, independent, and autonomous research with the aim of providing policy makers with the tools needed to improve social services in Israel, both in emergencies and in normal times.

I would like to thank the Center staff for their contributions to the publication of the book; the researchers for the interesting reviews they wrote; Ayelet and Laura for producing a high-quality product; Chen and Hedva for their efforts in distributing the research; and Professor Avi Weiss, who successfully oversaw the entire process.

Nir Kaidar

Director General, Taub Center

Contents

Health

Environment & Health

Editor's Introduction

For this, my tenth time, I am honored to be bringing you the Taub Center for Social Policy Studies in Israel's foremost publication, the 2024 version of our Herbert M. Singer annual ***State of the Nation Report***.

As I write this, Israel is still engaged in a long and grueling war, a war that began after the horrific terror invasion into Israel on Simchat Torah, October 7, 2023. The war widened to include not only Hamas, but also Hezbollah in Lebanon, Iran, Houthis in Yemen, and militia in Iraq. For a year, settlements in the North and other parts of the country were bombed every day. Ironically, despite the atrocities committed by Hamas, a significant part of the world expressed support for the terror organization and condemned Israel. Antisemitism around the world has soared to heights not seen since the days of Nazi rule and World War II, and it is infiltrating university campuses across the globe.

This has changed drastically in recent months as Israeli initiatives against the Hezbollah altered the reality, and led to a cessation of most hostilities in the north. Nevertheless, tens of thousands of Israelis evacuated from their homes in the North and the Gaza border area have yet to return to their homes, and it is still uncertain how many will choose to do so. Many hostages, alive and dead, are still being held in appalling conditions in Gaza. Over 800 soldiers have paid with their lives and many more have suffered physical and mental wounds.

A natural result of all this is that almost all the chapters in this year's book include, in addition to the usual overview of the fields they cover, analysis and discussions of the effects and implications of the war. The book once again contains an overview in each of the areas we research — macroeconomic policy, labor markets, demography, health, the environment and health, welfare, education, and early childhood. The book also contains thirteen executive summaries of papers we published throughout the year, some of which expressly deal with the effects of the current war.

The first two overview chapters cover the interrelated fields of macroeconomics and labor markets. The chapter on macroeconomics, authored by ***Prof. Benjamin Bental and Dr. Labib Shami***, reviews the severe challenges Israel's economy has faced since the onset of the war. Despite going into the war with a strong and robust economy, the immediate need for funding and the sharp rise in the perceived risk level in the eyes of investors significantly increased Israel's debt and the interest rate on Israel's debt. To avoid a dangerous downward spiral while financing dramatically increased defense expenditures, the government needs to make substantial efficiency improvements. For example, training programs for weaker populations, allocations of resources towards growth enhancing infrastructures, and investments in high-tech are essential to return the economy to the growth trajectory it was on prior to the war.

The labor market overview, penned by ***Michael Debowy, Prof. Gil Epstein, and Prof. Avi Weiss***, describes developments in this area since the start of the war, including slightly lower employment rates and a reduction in work hours among employees, but an upward trend in real wages. In the chapter, the authors zoom in on workers from evacuated localities, comparing them with workers in the same district who were not evacuated, and to all workers in the country. They conclude that while the economy and labor market have thus far withstood the intense pressures of wartime circumstances, signs of strain are beginning to emerge. Meeting these ongoing and emerging challenges will require prudent policy.

Four executive summaries follow, all dealing with the Israeli labor market. The first, of a paper by ***Michael Debowy, Prof. Gil Epstein, and Prof. Avi Weiss***, deals with Israelis' decisions regarding parenthood and marriage and the influence of their surrounding environment. The researchers find that the higher the percentage of married couples in a person's geographical or cultural environment, the higher the likelihood of that person being married. The same holds true for the number of children in a family. However, there are differences in the relative importance of local and national cultural norms for different population groups. In particular, Arab individuals are more aligned with their local neighbors than Jewish individuals.

The second executive summary is of an article by ***Michael Debowy, Prof. Gil Epstein, Prof. Benjamin Bental, Prof. Avi Weiss, and Prof. Alex Weinreb***. This paper examined the expected effects of artificial intelligence on the Israeli labor market. The researchers first estimated the relative share of tasks that

AI can perform out of all tasks for each occupation. They then combined these measures with the frequency of occupations in different population groups (such as economic sectors or demographic sectors), thereby providing a picture of the exposure intensity of workers in each group relative to the average exposure of all workers in the economy. Next, they considered the implications of this exposure, asking which workers are likely to benefit from the new technology, and who is at risk? To this end, they used a complementarity index to assess whether AI can serve as a complementary factor of production or a substitute factor of production to human labor in each occupation. The combination of these two measures allows for a more sophisticated mapping of the ways in which AI will affect employment across different occupations.

The third executive summary in this section, of a paper written by ***Michael Debowy, Prof. Gil Epstein, and Prof. Avi Weiss,*** measures the elasticity of labor market supply, looking both at the effect of a change in wages on the level of employment and on the number of hours worked. In addition, it estimates the effect of parenthood on these labor market measures. As expected, there are both gender and population group differences, with some surprising results.

The final executive summary in this section is of a paper written by ***Haim Bleikh***, that looks at the issue of presenteeism — coming to work when one is ill — in the Israeli labor market. The paper measures the incidence of presenteeism and its causes, and discusses the health and economic costs of this practice. The author documented the prevalence among workers aged 25–64 by socio-demographic (gender, sector, religion, and education level), health and employment characteristics, and by the workplace environment and industry. Among the findings it was found that it is more common among female employees than among males, and that there is a particularly high level of presenteeism among workers in the education sector.

An overview of the welfare system, written by ***Prof. John Gal and Shavit Ben-Porat***, combines a discussion of the increased needs that resulted from the war with the existing shortcomings of the welfare system prior to the war. The initial focus after October 7 was on the need to assist direct victims of the massacre and those of the families of the murdered and abducted. At the same time, the welfare system needed to address the needs of hundreds of thousands of evacuees from the South and the North. While this was being done, it was necessary to continue to treat the population that receive welfare assistance on a regular basis. The paper shows that most of the efforts of the past year

addressed the fallout from the war. Though understandable, that has meant that insufficient steps were taken this past year to address the underlying welfare problems in the country.

The first of two executive summaries in the welfare section is of a paper that deals with welfare and education investments made by local authorities in Israel. The paper, written by ***Prof. John Gal and Adi Tarabeih***, highlights the budgetary disparities between authorities belonging to different socioeconomic clusters and points to the factors contributing to these disparities. The study shows that local authorities belonging to the lowest socioeconomic clusters (1–2) allocate a much larger share of their total budget to these areas compared to stronger authorities (clusters 9–10). This indicates that the greater and more severe the social problems and the more limited the resources, the higher the share in the local authority's overall budget. The study's findings indicate that even in authorities from lower clusters, the average rate of local authority participation to welfare services is higher than required by the matching funding method.

The second executive summary, of a paper by ***Prof. John Gal, Shavit Ben-Porat, and Yael Ovadia***, looks at the performance of the welfare system in Israel in the first half year of the October 7 War. The study reveals that the welfare system was unprepared to handle the complex challenges posed by the war and the scale of the needs of the affected populations, largely due to years of underfunding, significant shortages of social workers, and the unequal distribution of financial resources among different localities. However, the study found that the Ministry of Welfare and Social Affairs and local social services departments responded quickly to the war and made adjustments that enabled staff to address some of the challenges they faced.

We move next to an overview of education, starting with early childhood and then moving to the education system.

Dana Shay, Dr. Yael Navon, Dr. Carmel Blank, and Prof. Yossi Shavit report the results of two rounds of surveys they carried out among parents of young children, aimed at evaluating the effects of the war on children aged 0–6 and on their parents. The chapter in this book follows two papers published earlier this year in which some of the results were presented. The surveys show behavioral regression among a large portion of the children caused by exposure to war-related stress, which can have long-term negative effects on the children. They demonstrate that the children's emotional states were affected by the parents'

emotional state. Finally, the authors find higher levels of depression, stress and anxiety among evacuated families and families in which at least one of the parents was called up on reserve duty.

This is followed by an executive summary of a paper carried out by Taub Center researchers ***Dr. Yael Navon, Prof. Yossi Shavit, and Dr. Sarit Silverman*** in collaboration with ***Dr. Pinchas Akiva, Dr. Guy Amit, Irena Grishovitz and Dr. Yair Sadka*** of KI Institute — the Israeli Institute for Applied Research in Computational Health. This study examined the links between the socioeconomic background of children and their developmental indicators. The research is based on data from the Ministry of Health's Tipat Halav clinics, approximately 70% of children born between 2014 and 2022. The study shows a positive correlation between a mother's education and early childhood language development, a finding that helps explain disparities in language skills between children from different socioeconomic backgrounds. More worrying, it shows that these disparities widen with age and have been increasing in recent years.

Turning to school-aged children, the overview chapter by ***Nachum Blass*** looks at the effects on the education system of the three cataclysms that has hammered Israeli society in recent year — the Covid-19 pandemic, the proposed judicial reforms, and the October 7th massacre and the ensuing war. The major part of the chapter deals with three issues: the education budget, manpower, and educational attainments. With respect to the budget, he shows the lack of stability in recent years due to these events. The manpower section focuses on the much-ignored phenomenon of teacher absences. Finally, the paper looks at changes in relative grades both on national exams and on international ones.

The first executive summary in the education section is of a paper that looks at expenditure per student in Israeli high-schools. In this paper, ***Nachum Blass and Haim Bleikh*** examine funding in the Hebrew State, State-religious, and Arab State education systems. The researchers focused on the years 2014–2022 and found significant differences in per-student funding across the various education sectors, however, the primary source of these differences can be traced to explicit formulas used by the Ministry of Education when allocating funds to high schools. After accounting for the main factors influencing per-student funding, the researchers show that the gaps between the sectors narrowed considerably, and have been falling.

Next is an executive summary of a study examining Bagrut (matriculation) exam accommodations, in which ***Dr. Sarit Silverman, Prof. Alex Weinreb, and Nachum Blass*** show that there has been a disproportionate rise in the rates of accommodations granted to students with learning disabilities in higher SES areas. The rise in accommodation rates also explains a large part of the much-lauded increase in high-school matriculation rates and matriculation scores. These disparities in accommodation rates may increase educational inequality between students from poorer and wealthier backgrounds. The authors identify flaws and weaknesses in the current accommodation system and propose two steps that could potentially reduce the need for most of the accommodations currently provided.

In his overview in the demography field, ***Prof. Alex Weinreb*** asks how attitudes to both the attempted judicial reforms and the war affect fertility, and migration to other countries, in particular among Israel's most able and mobile young adults. He shows that popular concerns and discourse about these topics tend to gloss over, or even miss, pertinent factors. In addition, he looks at variation in growth patterns across approximately 1,200 localities in Israel over the 2014–2022 period. He shows some divergent patterns of growth across and within regions, as well as compositional shifts within Israel's unique demographic fabric.

An executive summary of a paper authored by ***Prof. Alex Weinreb, Prof. Avi Weiss, Dr. Labib Shami, and Nir Kaidar*** looks at homicide rates in Israel, with a sharp focus on the unprecedented rise in the Arab population. Among Jews, from 2011 to 2022, there was a consistent decline in the homicide rate, amounting to a cumulative decrease of approximately 60%. However, among Arabs, both the number and rate of homicides have been steadily increasing since 2016. As a result, whereas until 2015 the ratio of homicide rates between Arabs and Jews in Israel stood at 4:1, it reached 14:1 in 2024.

The overview chapter on health, authored by ***Prof. Nadav Davidovitch and Natan Lev***, presents the state of Israel's healthcare system and discusses of the effects of the war on the population's physical and mental health, and on the healthcare system itself. The authors also survey the ongoing challenges facing the healthcare system, including manpower shortages in some medical fields, shortages in key medical equipment, disparities in access to medical services, and increases in risky behavior in the population.

An executive summary of a paper by ***Nir Kaidar, Prof. Nadav Davidovitch, and Prof. Avi Weiss*** is concerned with the struggling long-term care insurance system in Israel. The researchers highlight the existing shortcomings in long-term care insurance, and propose several policy alternatives that could improve long-term care services and benefit the elderly who rely on them.

Next is an executive summary of a paper written to mark 30 years since the enactment of the National Health Insurance Law. ***Prof. Gabi Bin Nun, Nir Kaidar, Ofir Gonen, Natan Lev, and Prof. Nadav Davidovitch*** explore the tension within the law between the social principles on which it is based — justice, equality, and mutual assistance — and the aspiration to foster managed competition among the health funds as a means to enhance system efficiency and improve the quality of services provided to insured individuals. The authors review the law's positions regarding managed competition and the major legislative changes made in this area over the years. Finally, they present several policy alternatives aimed at enabling the healthcare system to continue delivering the right to healthcare in an efficient and equitable manner.

In the final overview, ***Dr. Maya Sadeh and Or Siman-Tov*** examine the health and economic implications of two serious environmental issues: the solid waste crisis and the felling of trees to make way for purposes of construction and infrastructure. The researchers present alarming data on the high levels of waste being sent to landfills — including the increase in methane emissions resulting from it — on waste fires and the associated health and economic burdens, and on the widespread felling of trees for the purpose of expanding the housing supply without consideration of alternative solutions, despite the critical importance of trees in reducing temperature and mitigating heat loads in an era of climate change.

The final executive summary is of a paper by ***Dr. Maya Sadeh, Prof. Itamar Grotto, Prof. Nadav Davidovitch and Prof. Alex Weinreb***. This study examined the health and economic impacts of magnesium deficiency in desalinated water, a deficiency that increases the incidence of Type 2 diabetes and ischemic stroke. The study shows that reintroducing magnesium into desalinated water will save the healthcare system hundreds of millions of shekels.

* * *

This is the place to once again thank the dedicated Taub Center employees. A special thanks to all those who have been instrumental in publishing and disseminating this book. First and foremost, as always, to Ayelet Kamay and Laura Schreiber, who put in countless hours to ensure that we continue to produce top quality publications. To Nir Kaidar, Prof. Alex Weinreb and Prof. Gil Epstein for their comments on the studies presented. To Chen Mashiach for her work on disseminating the book to decision makers and to the press. And especially, to all the incredible researchers at the Center who continue to supply top quality, interesting and important research papers. Finally, special thanks to the new board chair, Miri Eisen, and to our outgoing chair, Jim Angell, to the Taub Center board and general assembly members and to all our supporters who make this all possible.

It has been over a year since the events of October 7, and we are still in the midst of a difficult time for all Israelis and for Jews worldwide. We must continue to pray for the return of all the hostages who are in Hamas tunnels in Gaza and support the government's efforts to bring about a successful end to the war.

May the information presented in this book help us all build a better Israeli society.

Yours,

Professor Avi Weiss

President, Taub Center for Social Policy Studies in Israel
Department of Economics, Bar-Ilan University

MACRO-ECONOMIC TRENDS

Israel's Economy 2024: A Nation at War

Benjamin Bental and Labib Shami

Since October 7, 2023, Israel has been at war. In its early stages, the war's cost (military expenditures and reconstruction efforts) was estimated at approximately NIS 250 billion (about 13% of GDP), based on the assumption that it would conclude during 2024 without significant escalation in the North or an open confrontation with Iran. Additional costs have yet to be systematically assessed but are likely to reach another NIS 100 billion (about 5% of GDP). This chapter largely addresses the immediate effects of the war, while also considering long-term trends that have characterized the Israeli economy for some time, unrelated to the conflict.

GDP and its components

Figure 1 examines the growth rate of quarterly GDP and its components, calculated annually relative to the same period in 2019 and compared to long-term trends.[1] The graphs begin in the first quarter of 2020, allowing for tracking the components' development since then and comparing the economic crisis caused by the Covid-19 pandemic to that of the current war. The substantial shock of the second quarter of 2020 due to Covid-19 reduced GDP by 8% compared to the same period in 2019. However, thanks to the remarkable recovery of the Israeli economy, by the third quarter of 2023 (prior to the outbreak of the war),

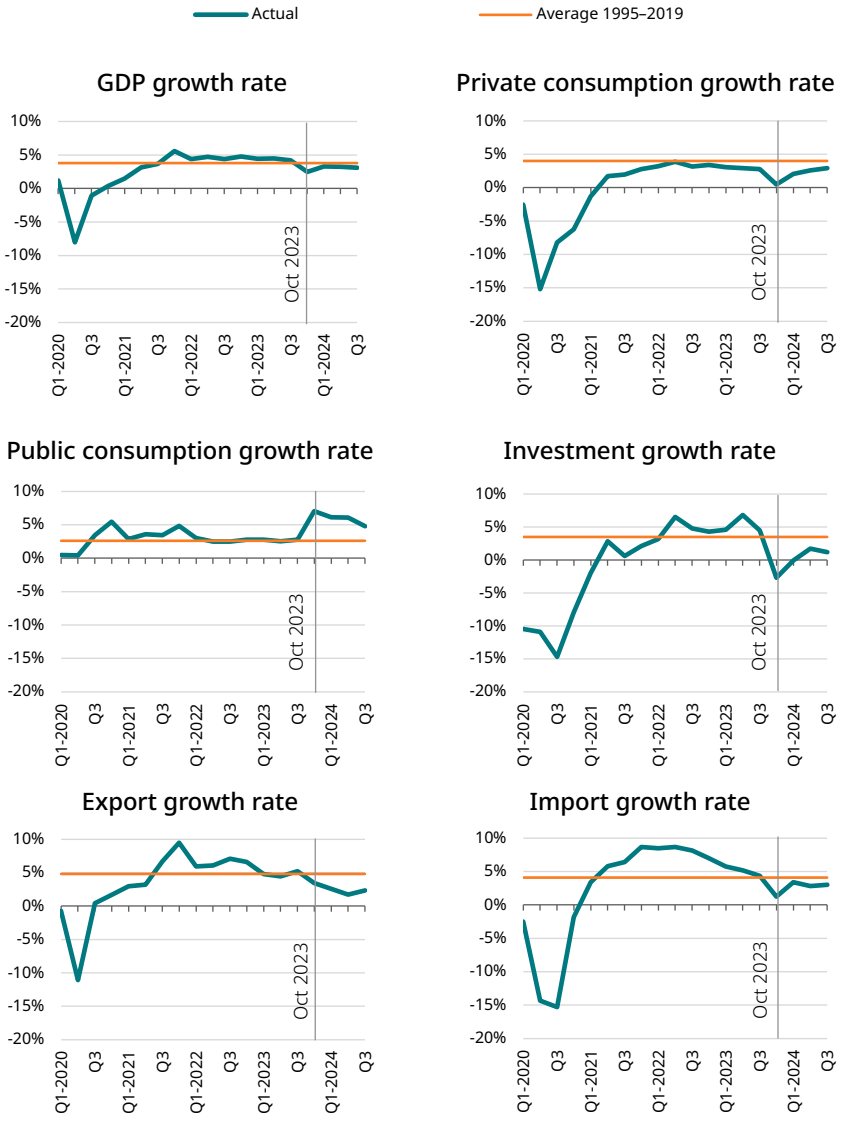
* Prof. Benjamin Bental, Principal Researcher and Chair, Economics Policy Program, Taub Center for Social Policy Studies in Israel; Professor Emeritus, Haifa University. Dr. Labib Shami, Senior Researcher, Taub Center; Department of Economics, Western Galilee Academic College and Haifa University.

1 The yearly rate of growth, ***g***, of variable ***x*** in a given quarter, ***i***, ***t*** years after the corresponding quarter of 2019 (year "0"), is calculated as follows: $g(i,t) = (x(i,t)/x(i,0))^{1/t} - 1$.

GDP reflected an average annual growth rate of 4.4% compared to the same period in 2019. This rate exceeded the long-term trend of a 4% average annual increase, underscoring the economy's robust state on the eve of the war. Despite the GDP decline in the last quarter of 2023, the partial recovery at the beginning of 2024 brought the average growth rate compared to 2019 to 3.3%.

In contrast to GDP, the growth rate of private consumption since the Covid-19 crisis has consistently been below the long-term trend (except in the second quarter of 2022). While this was expected during the pandemic due to strict restrictions on the population, the declining trend in private consumption growth that began in the second half of 2022 — likely due to interest rate hikes — resulted in private consumption in the last quarter of 2023 nearly equaling its level in the corresponding quarter of 2019, despite population growth. Public consumption returned to its long-term trend and remained there even with the government change at the end of 2022, but it has naturally deviated significantly upward since the outbreak of the war. In contrast, investments in the economy, which also recovered impressively from the pandemic, were lower in the last quarter of 2023 than in the corresponding quarter of 2019. Exports and imports, which had quickly recovered from the Covid-19 crisis, resumed their growth trends but were disrupted by the war.

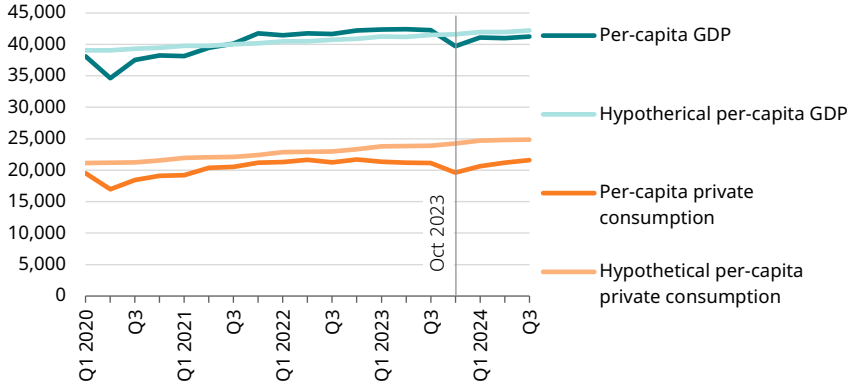
Figure 1. Annual growth rate of quarterly GDP and its components compared to 2019



Source: Benjamin Bental and Labib Shami, Taub Center | Data: CBS

Figure 2 presents the levels of GDP per capita and private consumption per capita compared to a hypothetical trajectory that would have materialized had the growth rates of GDP and private consumption remained at their long-term trends (1995–2019). In doing so, it complements Figure 1. The figure once again highlights the significant contribution of the rapid economic growth following the Covid-19 crisis to the state of the economy at the start of the war. By 2022, GDP per capita exceeded the hypothetical level, but during the war, it approached that benchmark. In contrast, private consumption per capita was 15% below its hypothetical level, indicating a substantial decline in living standards.

Figure 2. GDP per capita and private consumption per capita
NIS, 2015 prices



Source: Benjamin Bental and Labib Shami, Taub Center | Source: CBS

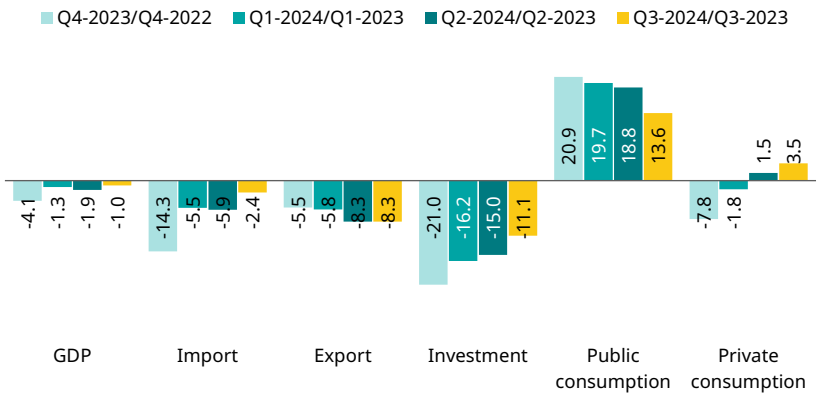
Figure 3 focuses on the short-term effects of the crisis precipitated by the war. The figure shows the growth rate (annualized) of GDP and its components during the last quarter of 2023 and the first three quarters of 2024, compared to the respective periods in the previous year. In the last quarter of 2023, GDP contracted at an annual rate of 4.1% compared to the same quarter in the previous year — a sharp decline, but significantly smaller than the 8% drop observed in the second quarter of 2020 relative to 2019. In the first three quarters of 2024, the rate of GDP decline moderated significantly (as also

shown in Figure 2). The figure also highlights the main factor that mitigated the contraction in the economy: the significant increase in public consumption (initially, more than 20%). Given that the share of investment in GDP is very similar to that of public consumption (approximately 20%), the rise in public consumption offset and even exceeded the decline in investment. It is worth noting that the drop in investment was primarily due to a reduction in construction investments, stemming from a severe labor shortage in the construction sector caused by the embargo on the entry of Palestinian workers into Israel.

With regard to foreign trade, in the last quarter of 2023, the decline in imports was greater than the decline in exports. However, this trend partially reversed in the first two quarters of 2024. Since the share of exports in GDP is very close to that of imports, these changes had little impact on Israel's current account surplus. Figure 3 also depicts the rapid (and perhaps surprising) recovery of private consumption, which is also visible in Figure 2. Private consumption fell sharply by 7.8% in the last quarter of 2023 but rose by 3.5% in the third quarter of 2024, compared to the same periods in the previous year.

Figure 3. Changes in GDP and its components during the months of war

Percent

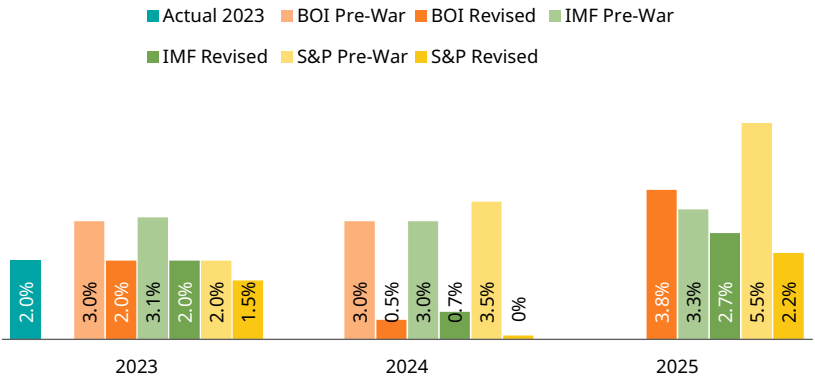


Source: Benjamin Bental and Labib Shami, Taub Center | Source: CBS

Figure 4 summarizes the projections of the Bank of Israel, the International Monetary Fund (IMF), and the credit rating agency S&P for GDP growth in Israel for 2024 and 2025, as they were before the outbreak of the war and after their updates in October and November of 2024. It also reports the gap between growth forecasts for 2023 made prior to the war and actual growth that year.

For 2024, there is a significant similarity in the forecasts by the three institutions, both in those made before the war and in those updated afterward. It is noteworthy that before the war, annual growth for 2024 was anticipated to be between 3% and 3.5%, but as the war progressed, the forecasts dropped to a range of 0% to 0.7%. These forecasts imply negative per capita growth, indicating a decline in living standards in Israel. Regarding the expected growth for 2025, the Bank of Israel continues to present a more optimistic forecast than S&P.[1]

Figure 4. Projections of GDP growth



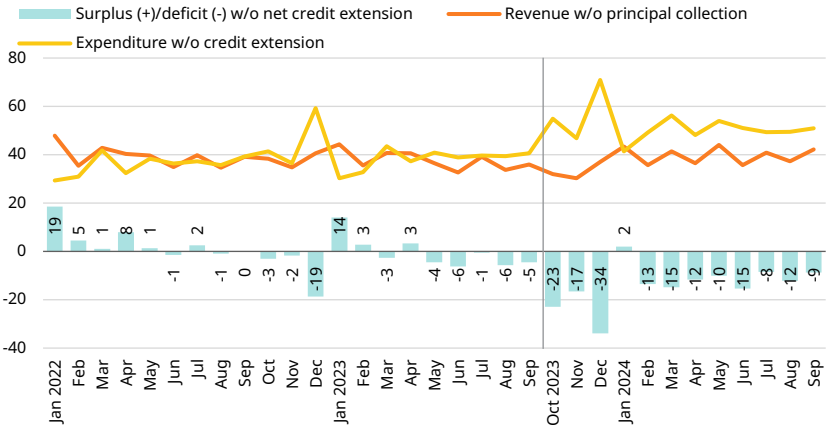
Source: Benjamin Bental and Labib Shami, Taub Center | Data: Bank of Israel; IMF; S&P

1 In Figure 4, as well as in Figures 7 and 8, the Bank of Israel's forecasts made before the war and their updates during the war are taken from the macroeconomic forecast of the Research Department for July 2023, November 2023, and October 2024. The S&P assessments are from April 2023, October 2023, April 2024, and November 2024. The IMF's assessments are from October 2023 and October 2024.

Government expenses, revenues, and the deficit

Figure 5, which looks at government expenditures and revenues and includes data for 2022 (during the Bennett-Lapid government, known as the ***Government of Change***), illustrates the dramatic increase in expenditures that began in the last quarter of 2023 compared to previous periods. Government revenues had already been declining before the outbreak of the war, reaching a low point at the end of 2023. However, by 2024, revenues had nearly returned to the levels observed in 2022. After significant deficits in the last months of 2023, the deficit stabilized in the first nine months of 2024 at an average monthly level of approximately NIS 10 billion, amounting to 8.4% of GDP for this period of time.

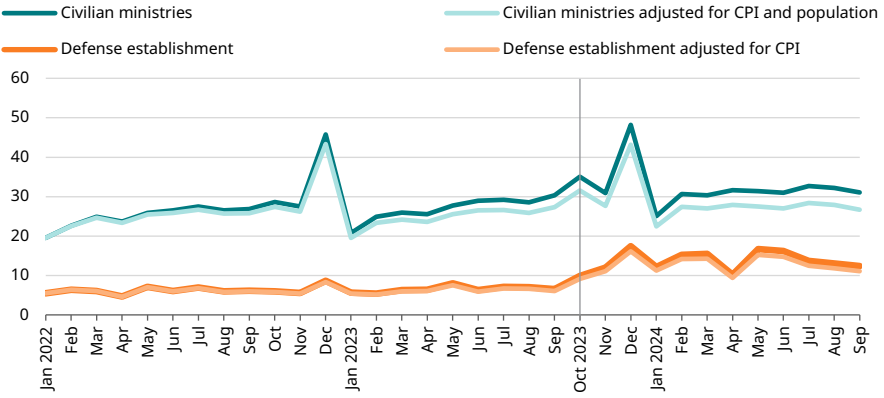
Figure 5. Government expenditures, revenues, and the deficit
NIS billions



Source: Benjamin Bental and Labib Shami, Taub Center | Data: Ministry of Finance, Accountant General Division

Figure 6 distinguishes between civilian and defense uses in government expenditures. Civilian expenditures are adjusted for increases in the Consumer Price Index (CPI) and population size, while defense expenditures are adjusted only for inflation.[2] Without adjustment, there was an increase in civilian expenditures in 2023–2024 compared to 2022 (with an additional NIS 5–NIS 6 billion per month since the start of the war). However, the adjustments reveal that prior to the war, the inflation-adjusted civilian expenditures in 2023 were very similar to those in 2022. Due to the significant civilian needs during the first months of the war, even after adjustments, civilian expenditures remained higher than in the same period the previous year. Nevertheless, despite the increasing civilian needs, monthly civilian expenditures stabilized in the latter part of 2024 and essentially reverted to their pre-war levels. In contrast, monthly defense expenditures, which averaged about NIS 7 billion in both 2022 and 2023 before the war, doubled during the war months.

Figure 6. Government expenditures for civilian and defense needs
NIS billions

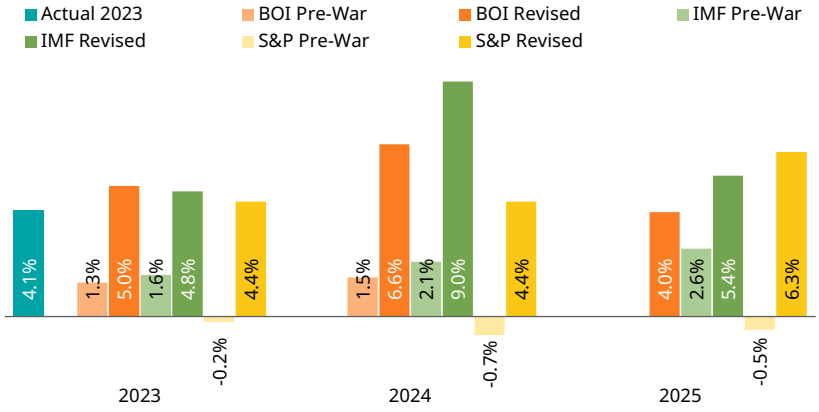


Source: Benjamin Bental and Labib Shami, Taub Center | Data: Ministry of Finance, Accountant General Division

2 The adjustment of civilian expenditures to population size was made relative to the beginning of 2022 and reflects the assumption that most of the government's civilian expenditures are considered ***individual expenditures***. In contrast, security is regarded as a public good, and therefore, expenditures related to this area are not adjusted for population size.

Figure 7 reports on deficit projections relative to GDP from the Bank of Israel, the IMF, and the credit rating agency S&P. Before the war, both the Bank of Israel and the IMF projected a deficit of less than 2% of GDP for 2023, and S&P even forecasted a small budget surplus. Following the war's outbreak, estimates were revised to approximately 5%. The year ended with an actual deficit of 4.1% of GDP. For 2024, the Bank of Israel adjusted its deficit forecast from 1.5% to 6.6% of GDP (aligning with the Ministry of Finance's estimates), while S&P adhered to the initial Ministry of Finance projection of a 4.4% deficit. Even before the escalation of hostilities in the North, the IMF, like many economists in Israel, anticipated that the deficit would reach 8% of GDP and recently updated its forecast to 9%. The deficit is expected to remain significantly higher than pre-war levels in 2025 as well.

Figure 7. Deficit forecasts



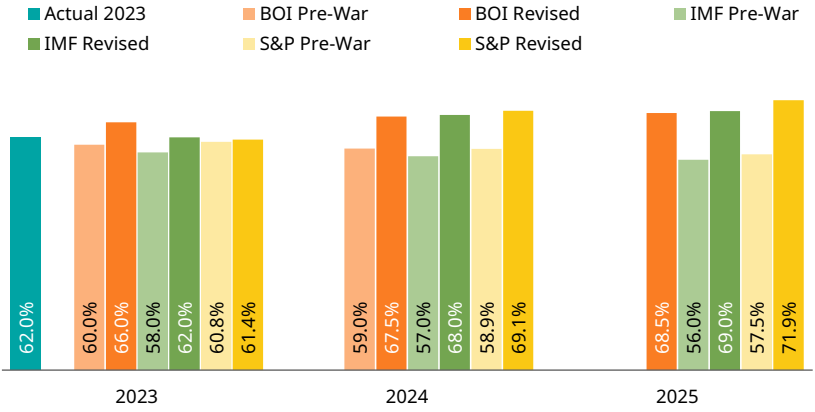
Source: Benjamin Bental and Labib Shami, Taub Center | Data: Bank of Israel; IMF; S&P

The deficit, of course, reflects the gap between government expenditures and revenues. This gap is financed by borrowing from both domestic and international sources. Interest and principal payments burden the state budget and reduce resources available for other uses. Interest rates reflect the perceived risk of the state's ability to meet its obligations. This risk is influenced by geopolitical circumstances and fiscal management. Specifically, just as banks assess the risk of private households based on their repayment capabilities,

the market and rating agencies similarly evaluate national debt. Consequently, as debt increases relative to GDP, so does the associated risk.[3]

Figure 8 outlines the projections by the Bank of Israel, the IMF, and S&P regarding the development of Israel's debt-to-GDP ratio. Consistent with the pre-war growth and deficit forecasts, the debt-to-GDP ratio, which stood at 60.5% at the end of 2022, was expected to continue declining. The IMF even projected it would fall below 60% by 2023. However, the war's impact on the deficit and GDP growth reversed this trend, bringing the ratio to 62% by the end of 2023. Forecasters now predict that this ratio will approach or exceed 70% in 2024–2025.

Figure 8. Debt-to-GDP ratio forecasts



Source: Benjamin Bental and Labib Shami, Taub Center | Data: Bank of Israel; IMF; S&P

An increasing debt-to-GDP ratio signals higher risk and, by itself, can lead to rising interest rates. The concern is a spiraling cycle where increasing debt feeds into higher interest rates, which in turn amplify the debt burden. As a result, in 2024, the growing debt-to-GDP ratio and geopolitical risks led rating

3 The Maastricht Agreements, which form the foundation of the Eurozone, set benchmarks of a 3% GDP ceiling for deficits and a 60% ceiling for the debt-to-GDP ratio. These values were set arbitrarily but have since become reference points for all high-income economies.

agencies such as S&P, Moody's, and Fitch to downgrade Israel's credit rating. These decisions reflect an increased perception of risk, as seen in Israel's credit default swap (CDS) premiums. The CDS premium, which represents the cost of insuring against default, spiked sharply due to the war, with additional surges following specific threats (e.g., the Iranian missile attack in April 2024 and other escalations later in the year).[4] Figure 9 illustrates the dramatic increase in Israel's risk premium due to the war, as well as the spikes in the premium following each significant threat. Examples include the Iranian missile attack on the night of April 13–14, 2024, the prolonged threat in August 2024, the missile attack on October 1, 2024, and Israel's counterattack on October 26, 2024.[5]

The growing risk to Israel's economy may exacerbate the debt burden, measured by the ratio of interest payments to GDP. In 2023, this burden was 2.4%, with an average interest rate on the debt of 4%.[6] At this rate, a 10-percentage-point increase in the debt-to-GDP ratio would raise the debt burden to approximately 2.8% and increase annual interest payments by about NIS 8 billion. If the average interest rate were to rise by 0.5 percentage points (to 4.5%), the debt burden would increase to 3.5%, raising interest payments by approximately NIS 15 billion annually.[7]

4 The risk premium is related to the probability that the borrower will default on their debt. Under simplifying assumptions, the probability P of the borrower failing to meet their obligations within one year, as implied in an insurance contract with a risk premium S (measured as a percentage), where the insurer compensates the creditor at a rate R of the debt in such an event, is given by $P = \frac{S}{1-R}$. Accordingly, the probability that such an event will occur within a time period of T years is: $P(T) = 1 - Exp\left(-\frac{S}{1-R} \cdot T\right)$.

Assuming (as is commonly accepted) that R = 0.4, in the case of Israel P = 0.026, and P(5) = 0.12.

5 At the end of 2022, Israel's CDS (credit default swap) stood at 0.4 percentage points. Due to the political instability, it rose to 0.6 percentage points during 2023, even before the war.

6 The average interest rate has remained nearly unchanged since 2020. See Ministry of Finance, 2023.

7 For comparison, according to data from the IMF, Mexico's interest expenditures amounted to 15% of total government expenditures, which were 22% of GDP. See the IMF website: Interest paid on public debt, percent of GDP. This translates to a debt burden of 3.3%. The debt-to-GDP ratio was 59%, meaning the average interest rate on Mexico's debt was 5.36%.

Figure 9. Risk premium on Israel's five-year government debt

In percentage points

Source: Benjamin Bental and Labib Shami, Taub Center | Data: World Government Bonds

SPOTLIGHT

Marginal Cost of Debt Issuance

The State of Israel's debt issuance relies on three main channels: tradable domestic borrowing, non-tradable domestic borrowing, and external borrowing.[8] The primary channel is tradable domestic borrowing, conducted throughout the year via regular auctions and swap auctions.[9] This type of borrowing is itself divided into three key streams: shekel-denominated bonds, CPI-linked bonds, and variable-rate bonds.

With the outbreak of the war, there was a steep increase in total government debt issuance in the fourth quarter of 2023.[10]

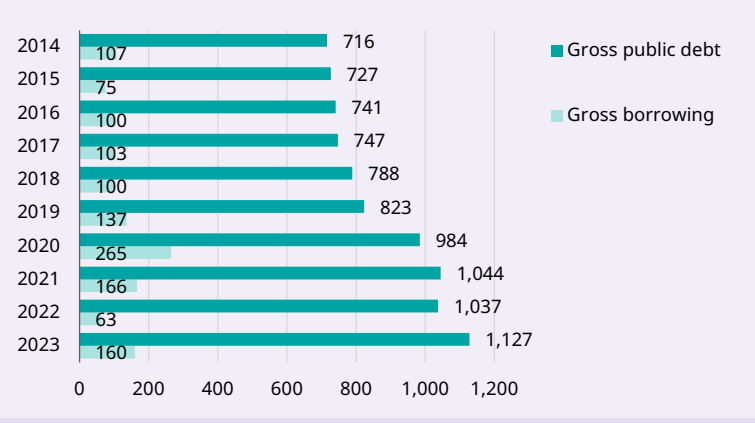
8 Bond purchasers effectively provide a loan to the state, and the state commits to repaying the loan at a predetermined maturity date, along with interest (also referred to as a coupon) paid at pre-specified intervals and rates.

9 Swap Auctions were introduced in late 2007 and involve the exchange of tradable short-term bonds (typically maturing in less than a year) that are not regularly issued, for other tradable long-term bonds that are also not regularly issued as part of the bond mix. Swap auctions are conducted under a Cash Neutral framework, where the monetary value of the exchanged bonds is identical, resulting in debt recycling without utilizing government reserves. However, the coupon rates on the bonds exchanged are not necessarily the same.

10 In 2023, non-tradable domestic borrowing totaled approximately NIS 5 billion, accounting for only 3% of total debt issuance, compared to around NIS 12 billion in 2022 (19% of total debt issuance). In the external borrowing channel, issuance in 2023 amounted to approximately NIS 40 billion, constituting 25% of total debt issuance, compared to only 14% in 2022.

As shown in Figure 10, total debt issuance in 2023 amounted to approximately NIS 160 billion gross (an increase of about 54% compared to 2022), of which approximately NIS 81 billion were issued after the war began.

Figure 10. New debt issuances and total debt stock
NIS millions

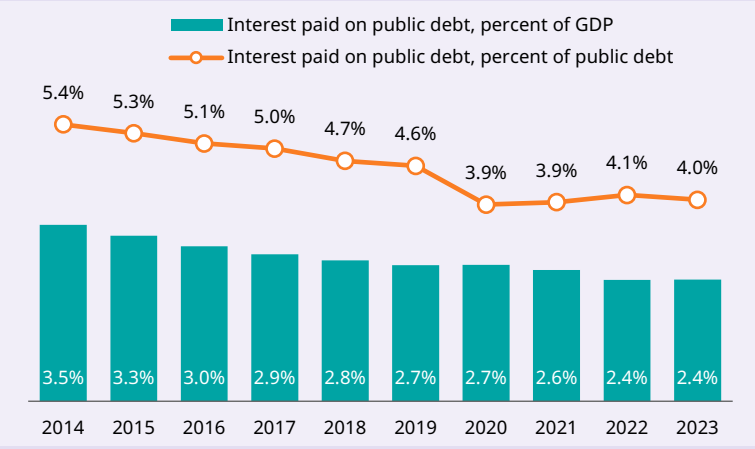


Source: Benjamin Bental and Labib Shami, Taub Center | Data: Ministry of Finance, Accountant General Division

Figure 11 tracks the ratio of interest expenditures to GDP (the debt burden) and the average interest rate on the total government debt stock. Despite the increase in the debt stock, the debt burden has shown a significant downward trend in recent years. This trend is primarily due to rapid GDP growth, as well as historically low interest rates, particularly during the Covid-19 crisis. This explains the stability of the debt burden in 2020 and the decline in the average interest rate on the debt during the same year, despite the significant increase in the debt

stock and the drop in GDP. Since the Covid-19 crisis, including in 2023, the average interest rate has remained around 4%, despite a nearly 40% increase in total government debt during this period.

Figure 11. Debt burden and average interest rate



Source: Benjamin Bental and Labib Shami, Taub Center | Data: Ministry of Finance, Accountant General Division

Unlike the calculations of the debt burden and the average interest rate based on the debt stock, the calculation below examines the additional cost of nominal interest (excluding inflation adjustments) on new debt issued in each year from 2020 to mid-2024. This annual addition consists of two components: the nominal interest on new debt issued in the year in question and the interest rate differentials involved in swap auctions, in which existing debt (at a given interest rate) is replaced with the exact same amount of new debt but for a longer term and at a different interest rate

(usually higher, though not always). Since comprehensive data on bond issuance in the external channel is unavailable, the calculations below focus exclusively on the tradable domestic borrowing channel.[11] The results of the calculations are shown in Table 1.

Table 1. The additional cost of nominal interest and its rate as a share of tradable domestic debt

NIS billions

	2020	2021	2022	2023	H1-2024
Issuance of new debt in the local tradable market	165	119	42	116	125
Additional interest expenses on the new debt without swap auctions	795	526	365	1,437	1,965
Additional interest expenses on swap auctions	369	-74	-17	-60	-10
Total additional interest expenses	1,164	452	348	1,377	1,955
Interest expense rate on the new debt in the local tradable market for the issuance year	0.70%	0.40%	0.80%	1.20%	1.60%

Source: Benjamin Bental and Labib Shami, Taub Center | Data: Ministry of Finance, Accountant General Division

As can be seen, the nominal interest rate on new debt issued in 2023 increased by 0.4 percentage points compared to 2022 (a 50% rise), and in the first half of 2024, it rose by 0.8 percentage points (double the rate in 2022). This change could reverse the downward trend in the ratio of interest expenses to the total government debt and place additional strain on the government budget in the coming years.

11 The data on domestic government debt was sourced from the government database Data Gov.

This discussion focused on the cash flow aspect, where nominal interest expenses are reflected across all government bonds. In contrast, the market interest rate is determined through free market trading and reflects investors' assessments of the debt's risk level. To track this aspect, the following discussion focuses on the average yield to maturity for non-indexed government bonds issued for 5- and 10-year terms, within the tradable domestic borrowing channel, excluding swap auctions. The results are compared to the weekly average yield on non-indexed government bonds for 5- and 10-year terms based on market trading data. As shown in Table 2, the yield to maturity on 10-year government bonds issued in 2023 and the first half of 2024 is higher than the yield on their market counterparts, in contrast to 2020–2022, when 10-year government bonds yielded lower returns than the market. For 5-year bonds, the data shows mixed trends, but there is a notable similarity between the yields in the market and those of government-issued bonds in all years.

Table 2. Yield to maturity and market yield for non-indexed government bonds for five and ten years

	2020	2021	2022	2023	H1-2024
Yield on 5-year non-linked government bonds, market	0.34%	0.43%	2.31%	3.82%	4.26%
Yield on 5-year non-linked government bonds, issuance data for the same year	0.38%	0.44%	2.00%	3.97%	4.17%
Yield on 10-year non-linked government bonds, market	0.77%	1.06%	2.61%	3.87%	4.54%
Yield on 10-year non-linked government bonds, issuance data for the same year	0.56%	0.74%	2.51%	4.19%	4.73%

Source: Benjamin Bental and Labib Shami, Taub Center | Data: Ministry of Finance, Accountant General Division

SPOTLIGHT
Security Expenditures

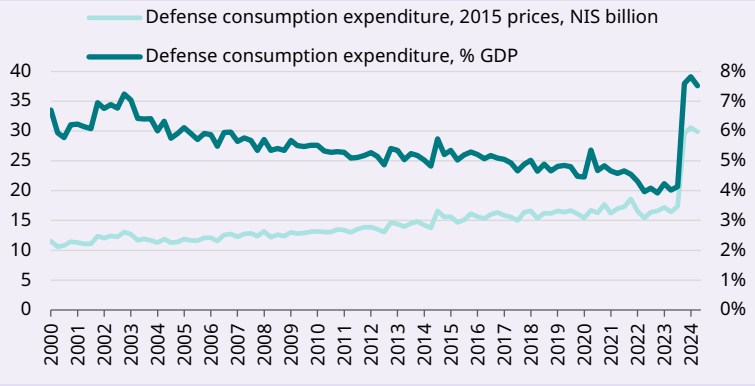
Security expenditures are a central component of Israel's defense strategy, both in the short and long term. Figure 12 illustrates the evolution of defense consumption expenditure in Israel since the beginning of the century, presented both in fixed shekels and as a percentage of GDP. It is evident that the growth rate of defense spending has been more moderate than that of GDP (approximately 1.9% versus 3.6% per year). Specifically, the share of defense consumption expenditure in GDP declined significantly, from around 7.5% during the Second Intifada to close to 4% of GDP on the eve of the October 7 war. The war caused a surge in defense spending, raising it to 8% of GDP. There is broad agreement that restocking supplies and restoring readiness after the war will require increased defense spending in the short term. However, the appropriate size of Israel's defense budget following the active combat and replenishment period remains unclear. Some experts, such as the Fitch rating agency, predict that the defense budget will stabilize at around 5.5% of GDP. Others argue for a much larger budget at the expense of civilian expenditures (Shavit, 2024).

The theoretical literature on defense budgets and their relationship to GDP does not provide a definitive quantitative answer. Qualitatively, defense spending is viewed as a form of insurance. For example, a study by Eckstein and Tsiddon

(2004) explored the macroeconomic consequences of security risks during the Second Intifada. They examined the impact of increased risk (represented by the heightened likelihood of death for a ***representative consumer***) on welfare and GDP, as well as the benefits of reducing this risk. Since funding for risk reduction involves taxation, which reduces private consumption and physical capital investment, the optimal level of defense spending balances these costs against the benefits of risk mitigation. A similar approach views defense spending through the lens of classic insurance models, treating it as a means to reduce both the probability of threats materializing (deterrence) and the potential damage if threats do occur (protection).[12] Just as households decide how much to allocate to insurance to mitigate risks, states must determine how much to divert from civilian to military uses to enhance security and improve welfare in the face of threats (Ihori & McGuire, 2010; Panagariya & Shibata, 2000). Intuitively, these models link the optimal level of expenditure for risk reduction (security) to national income or GDP, based on the widely understood principle that insuring higher-value assets entails higher costs. The strength of this relationship depends on assumptions about the security production function, particularly the extent to which the marginal returns on security investments diminish in reducing risks.

12 In their classic article, Ehrlich & Becker (1972) coined the terms ***self-protection***, which corresponds to reducing the probability of a threat, and ***self-insurance***, which corresponds to reducing potential damage.

Figure 12. Defense consumption expenditure



Source: Benjamin Bental and Labib Shami, Taub Center | Data: CBS

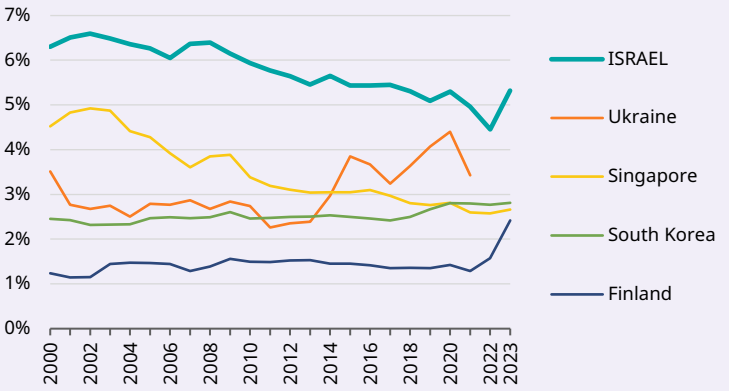
Figure 13 compares the share of defense spending in GDP among several countries facing potential (e.g., Finland, South Korea, Singapore) or actual (e.g., Ukraine) threats.[13] For example, Finland's defense expenditures remained relatively stable as a percentage of GDP until Russia's invasion of Ukraine in 2022, which significantly increased Finland's risk level. Similarly, Ukraine's defense spending rose sharply after the annexation of Crimea in 2014, jumping to 26% of GDP following the full-scale Russian invasion in February 2022 and reaching 37% in 2023.[14] Singapore's defense policy closely mirrors Israel's, albeit at a different scale, with a consistent decrease in the defense

13 For comparison, the figure also reports data on Israel. The data come from a different source than that of Figure 7 but are very similar.

14 These data were omitted from the figure to avoid distorting the scale.

spending share of GDP due to rapid economic growth.[15] In South Korea, defense spending has moderately increased in recent years, possibly as a response to the militarization efforts of its northern neighbor.[16]

Figure 13. Defense spending in selected countries
As a percent of GDP



Source: Benjamin Bental and Labib Shami, Taub Center | Data: SIPRI

15 In both Israel and Singapore, defense expenditures tripled between 2000 and 2023 (in real terms).

16 For a discussion on defense expenditures in the European Union in light of the United States' demand to increase spending to 2% of GDP, see Cepparulo & Pasimeni (2024).

The impact of defense spending on productivity and economic growth is ambiguous.[17] Empirical studies, as well as theoretical considerations, highlight both positive and negative aspects. On the one hand, defense spending diverts resources from other uses, particularly investments in growth-enhancing programs (such as education) and infrastructure. On the other hand, enhancing security and building confidence in a state's ability to defend itself can encourage domestic and foreign investment, while also preventing brain drain. Furthermore, some technologies developed for defense purposes yield significant external benefits (e.g., technological expertise gained by veterans of Israel's military technology units), and some defense products are sold internationally.[18]

17 Saeed (2023) found a negative relationship between defense expenditures and economic growth. In a meta-analysis conducted by Alptekin & Levine (2012), it was found that in developed countries, there is a weak positive relationship between defense expenditures and growth, which is hypothesized to result from the external effects of defense-related R&D.

18 It is important to note that labor productivity in the aerospace industry (defense-related high-tech) stands at approximately NIS 300,000 per year, about half that in the civilian high-tech sector. See ***Innovation Policy and Challenges in the High-Tech Sector***, Aaron Institute for Economic Policy, in collaboration with Startup Nation Central (forthcoming).

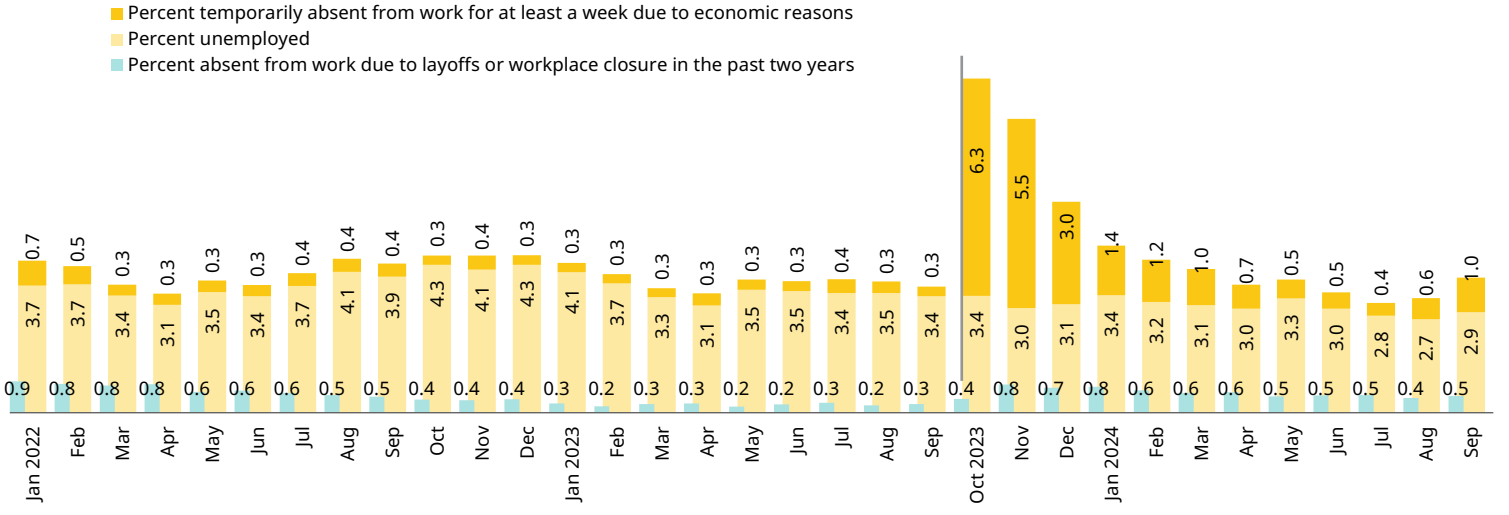
Labor market

The following figures illustrate the immediate impact of the war on Israel's labor market and the subsequent recovery, reflecting trends consistent with GDP development (as shown in Figure 3). Figure 14 examines unemployment rates based on both the ***narrow*** and ***broad*** definitions. The narrow definition includes individuals who are not employed but are actively seeking work. The broad definition adds those still affiliated with their workplace but not currently working (e.g., due to temporary shutdowns or furloughs). The figure also reports data on individuals who have stopped seeking employment altogether.[19] A notable observation is that the war had no impact on the narrow unemployment rate, which remained at or below 3% during the war months. There was a slight increase in the proportion of individuals who stopped searching for work, but this subsided over time without returning fully to pre-war levels. The most significant effect of the war is seen in the category of those temporarily absent from work for economic reasons, mainly due to shutdowns or furloughs. Before the war, this rate stood at about 0.3%, but it spiked to 6.3% in October 2023. The rapid return to nearly normal activity levels is reflected in a swift decline in the rate of economic absences, which approached pre-war levels by September.

19 The first two rates are calculated relative to the population of employed individuals plus those who are unemployed but actively seeking work. The rate of those who have given up looking for work is calculated relative to the population aged 15 and older.

Figure 14. Rates of inactivity in the labor market

Percent

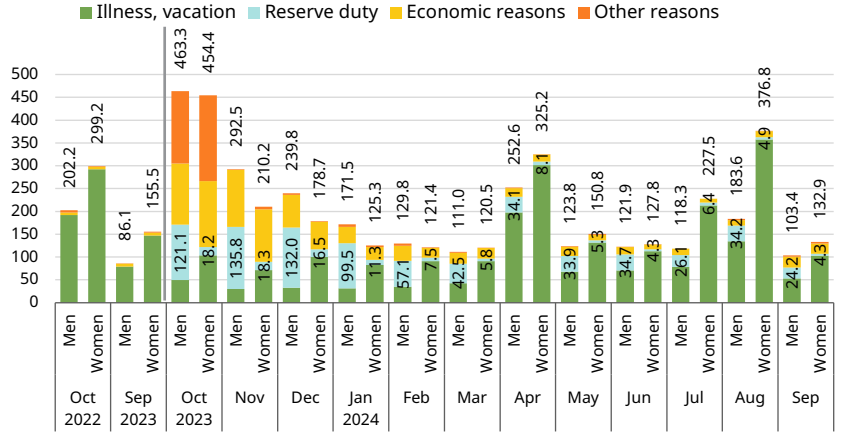


Source: Benjamin Bental and Labib Shami, Taub Center | Data: CBS

In addition to economic reasons, employees may be temporarily absent due to illness, vacation, military reserve duty, or other causes (Figure 15). While such absentees remain formally employed, their absence reduces productivity in their civilian workplaces.[20] Under normal conditions, illness and vacation are the primary causes of absences. The first months of the war drastically changed this dynamic. The sharp increase in absences due to economic reasons, highlighted in Figure 14, was compounded by a dramatic rise in the number of reservists and other absences. The latter category mainly includes parents (both men and women) who stayed home with their children due to the school closures in central Israel. By November 2023, with the reopening of the education system, this category of absences effectively disappeared. Similarly, the number of reservists (primarily men) decreased to about one-third of their peak during the early months of the war.[21] The reduction in absences due to these factors contributed to the gradual increase in actual workforce participation, which, in turn, bolstered economic output.

Figure 15. Temporary absences from work

Thousands



Source: Benjamin Bental and Labib Shami, Taub Center | Data: CBS

20 The output of reservists is attributed to the public sector and is reflected in defense expenditures. Typically, the contribution measured through the public sector is lower than what these individuals would contribute in their civilian activities.

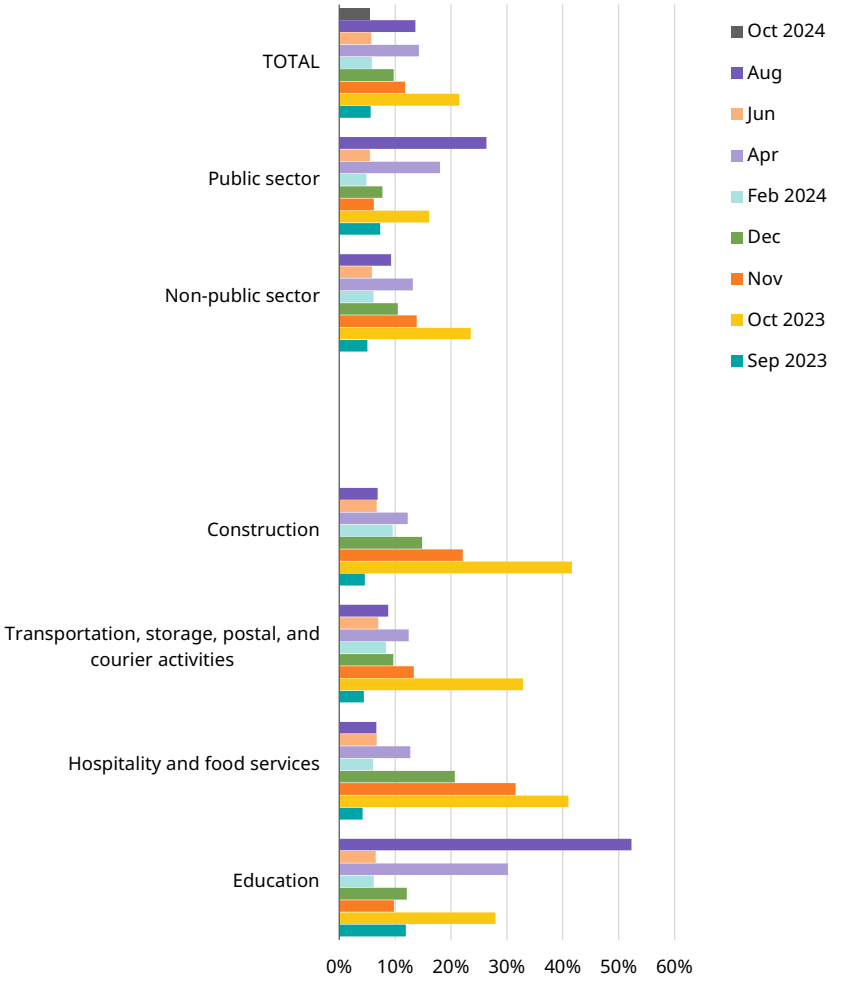
21 The data in Figure 14 include only employed reservists. In particular, most reservists who are students are not included.

Figure 16 highlights the rate of temporary absences from work across different sectors, comparing averages nationwide, in the public sector, and in the non-public sector, as well as specific industries that experienced particularly high initial absence rates.[22] During the initial stages of the war, absence rates in the public sector were lower than in the non-public sector, and the return to normalcy was faster in the public sector. This is also evident when comparing the education sector to industries such as construction and transportation. In education, the return to regular activity in November and December facilitated a swift resumption of work. Conversely, in the construction sector, where the share of Arab workers is particularly high, nearly 42% of employees were absent at the outbreak of the war. However, a relatively quick recovery followed, bringing absence rates back to pre-war levels.[23] A similar trend is seen in transportation, warehousing, postal, and courier activities. The hospitality and food services sector, deeply impacted by the tourism crisis, experienced a slower recovery. Nonetheless, seasonal variations in absence rates across sectors appear much more significant than the effects of the war itself. For example, the high absence rates of education sector workers during the summer months reflect the standard school vacation schedule.

22 The figure pertains to workers with Israeli citizenship only.

23 The data do not include foreign workers, including Palestinians from Judea and Samaria and Gaza Strip. The absence of the latter (at least 100,000 workers) causes significant delays in housing and infrastructure construction.

Figure 16. Absence rates in selected industry sectors and selected months



Source: Benjamin Bental and Labib Shami, Taub Center | Data: CBS

The high-tech sector

The high-tech sector holds a central and unique position in Israel's economy relative to international benchmarks. In 2023, high tech employed 11.6% of Israel's salaried workforce (aged 25 and over), contributing approximately one-fifth of the national GDP and accounting for 53% of Israel's exports.[24] Between 2018 and 2023, the sector was responsible for about 40% of GDP growth, driven by increased employment (up from 8.7% in 2018) and high productivity levels (Innovation Authority, 2024a). Moreover, in 2020, the high-tech sector contributed roughly 24% of Israel's total tax revenues. By 2021, due to its high wages, employees in the sector, representing about 11% of the labor force, accounted for approximately 36% of all income tax revenues from wages (Innovation Authority, 2024b).

Employment and wages

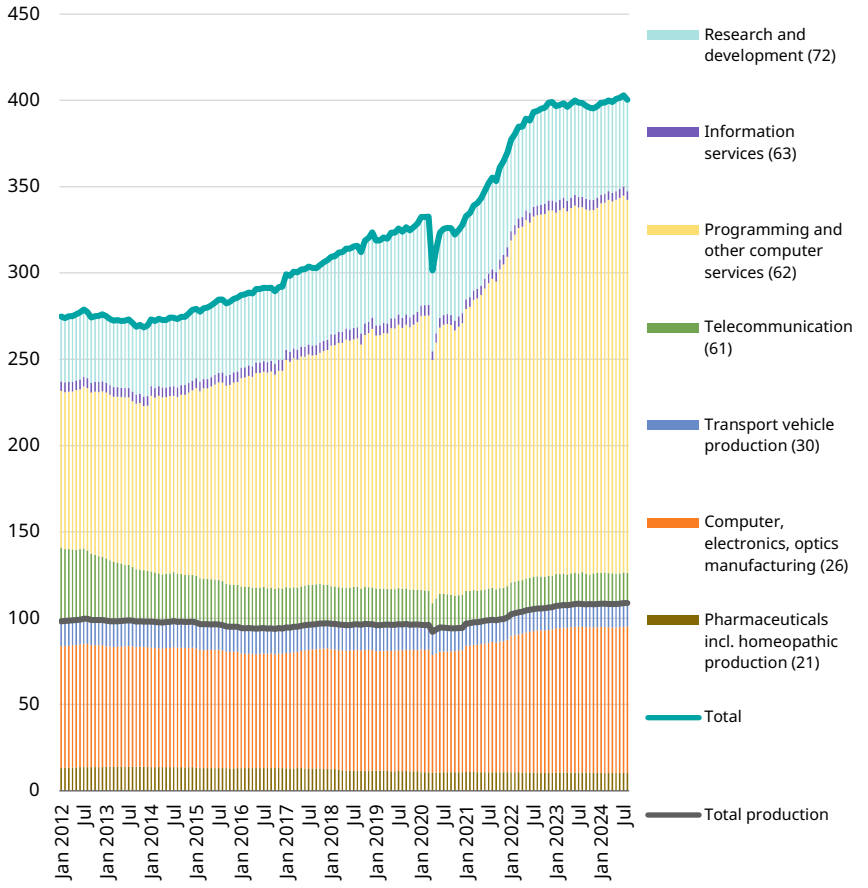
The high-tech sector is typically divided into manufacturing and services. According to the National Insurance Institute, high-tech manufacturing includes the production of pharmaceuticals (ISIC 21), computers (ISIC 26), and transportation equipment (ISIC 30). High-tech services include telecommunication (ISIC 61), programming (ISIC 62), information (ISIC 63), and research and development (ISIC 72).[25] Figure 17 is based on National Insurance Institute data and presents trends in employment within the high-tech sector over nearly a decade and a half. The figure reveals that employment growth in the sector began as early as the mid-previous decade and is almost entirely attributable to the programming and computer consultancy subsector. The acceleration in programming jobs in 2021 and their subsequent stabilization is tied to investment dynamics within the high-tech industry (see below). Employment levels in other subsectors have remained stable or even declined, especially in telecommunications. Notably, the sharp drop in employment

24 For comparison, between 2017 and 2021, the share of high-tech workers (out of the population aged 15 and older) was 4.9% in Finland and 4.1% in the United States, compared to 9.2% in Israel. Their contribution to GDP was 6.6% and 8.7%, respectively, compared to 16.2% in Israel. See ***Innovation Policies and Hi-Tech Industry Challenges***, Aaron Institute, 2024 (unpublished).

25 This classification is not necessarily accepted by all professionals in the field. In particular, many do not include the telecommunications sector as part of high-tech services.

during the first Covid-19 lockdown primarily affected telecommunications and programming services. The modest decline in late 2023, following the war's outbreak, also impacted telecommunications.

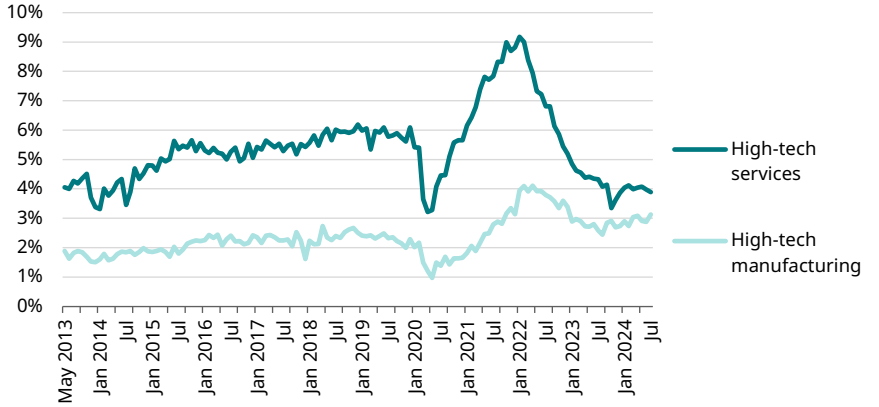
Figure 17. Salaried jobs in the high-tech sector
Thousands



Source: Benjamin Bental and Labib Shami, Taub Center | Data: CBS

Figure 18 shows the proportion of vacant positions in the high-tech sector, divided into manufacturing and service subsectors. Alongside the increase in high-tech employment, the percentage of vacant positions also grew, particularly in high-tech services. The dramatic rise in vacancies in 2021 mirrors the surge in employment within the sector, especially in services. In other words, employment in high tech could have increased by an additional 10% if qualified workers were available to fill the open positions.

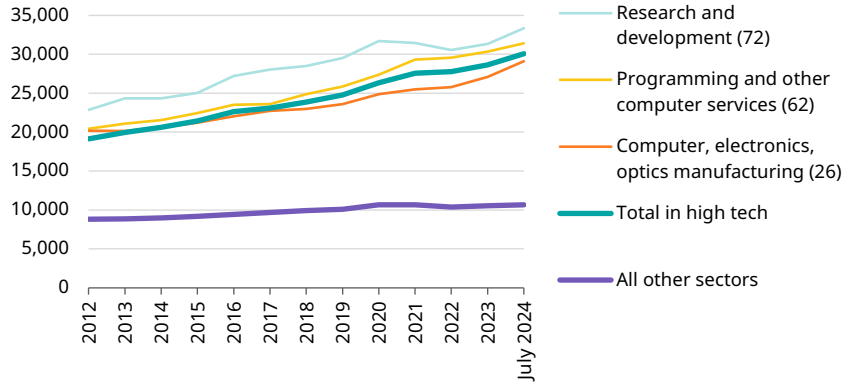
Figure 18. Vacancy rates in high-tech manufacturing and services



Source: Benjamin Bental and Labib Shami, Taub Center | Data: CBS

Figure 19 reports on the evolution of wages for three main groups of workers in the high-tech sector, as well as the average wages in the sector compared to other industries. Wage trends reflect employment growth and the excess demand for high-tech workers. In 2012, the average wage in high-tech was double that of other industries. By mid-2024, it was nearly tripled. Wage growth in research, programming, and computer manufacturing has followed similar patterns, with programming seeing the most significant acceleration. In 2012, average wages in programming were comparable to those in computer manufacturing, but by 2024, they had approached the level of wages in research services.

Figure 19. Wages in high tech and other industries
NIS per month, 2022 prices



Source: Benjamin Bental and Labib Shami, Taub Center | Data: CBS

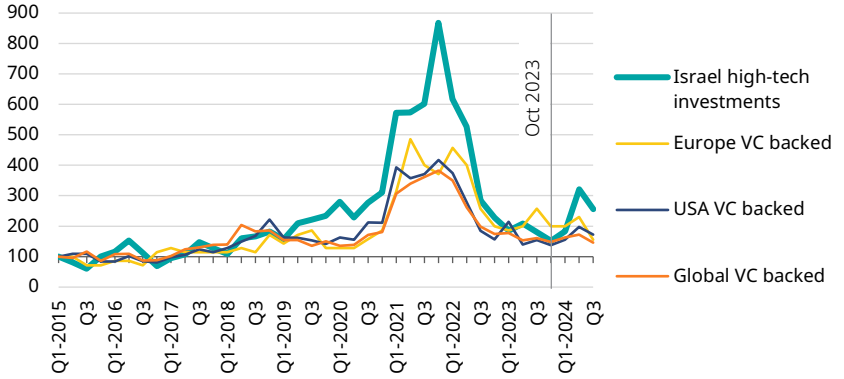
Investments

Figure 20 tracks the development of quarterly investments in high tech in Israel, the United States, Europe, and globally, relative to their levels in the first quarter of 2015. During the Covid-19 crisis, low interest rates and limited alternative investment opportunities prompted investors worldwide to turn to high tech. Between 2020 and 2022, global high-tech investments doubled compared to 2018–2019 levels. In Israel, high-tech investment quadrupled from pre-Covid-19 levels, reaching over $8 billion in the fourth quarter of 2021. By 2023–2024, global investment levels had nearly returned to their pre-Covid-19 levels. A similar trend was observed in Israel, albeit with some fluctuations. The first half of 2024 featured several exceptional investments, the most notable being $965 million in Wiz during the second quarter.[26] Despite ongoing uncertainty due to the war, high-tech investments in the third quarter of 2024 reached nearly $2.5 billion, comparable to 2019 levels. In any case, even if the prolonged war impacts investments in the sector in Israel, the substantial sums injected into it during the Covid-19 years ensure its continued activity for several years to come.

26 Even without this investment, high-tech investment in the second half of 2024 was 19% higher than in the second half of 2023. See Israeli Tech Review, Q2-2024.

Figure 20. High-tech investment trends in Israel and globally

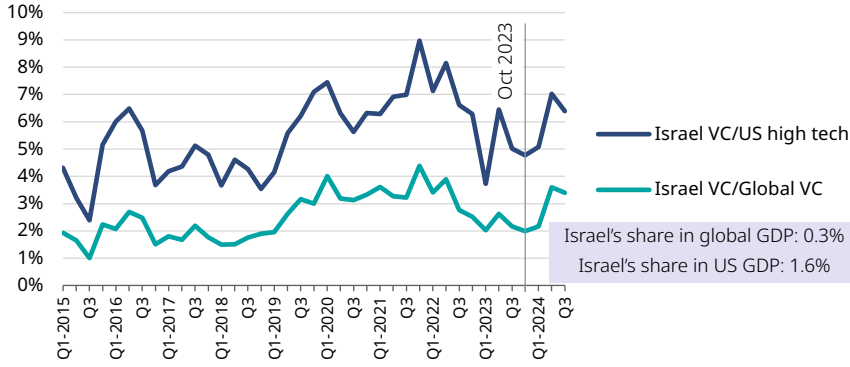
Q1-2015 = 100



Source: Benjamin Bental and Labib Shami, Taub Center | Data: Dealroom.co; Ernst & Young; IVC

Figure 21 reflects not only the extraordinary rise in high-tech investments in Israel during the Covid-19 crisis but also Israel's disproportionately large share of global high-tech investments. While Israel's GDP constitutes approximately 0.3% of global GDP and 1.6% of US GDP, investments in Israeli high tech between 2019 and 2024 constituted 2%–4% of global high-tech investments and 4%–8% of US investments.

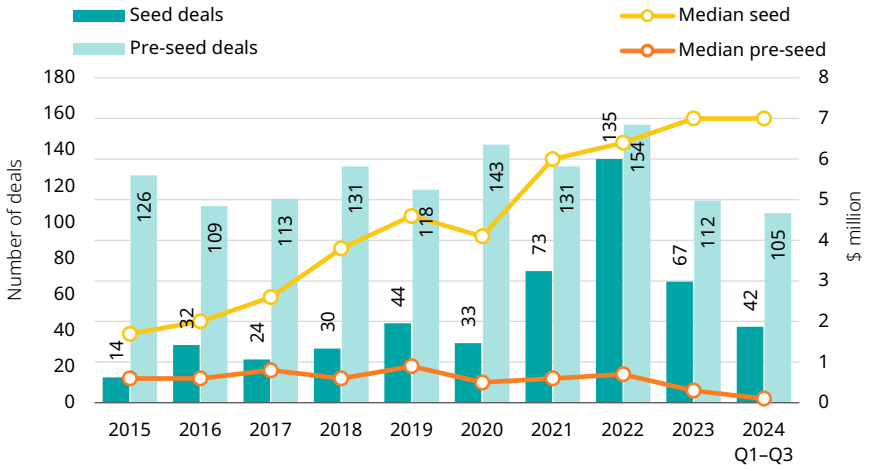
Figure 21. High-tech investments in Israel relative to the US and globally



Source: Benjamin Bental and Labib Shami, Taub Center | Data: Dealroom.co; Ernst & Young; IVC

Large investments are directed toward established companies with proven products. However, initial investments in companies that are just beginning their journey serve as an indicator of investors' expectations regarding future success prospects. Figure 22 outlines investment data for companies at the idea creation stage (pre-seed) and the initial stage (seed), which involves early development of an idea toward creating a commercially valuable product. The data show a significant increase in the number of seed-stage investments during the Covid-19 period, coinciding with the overall rise in high-tech investments in Israel. The decline in the number of investments in 2023 and 2024 appears to reflect a return to pre-Covid-19 levels. At the same time, the median investment amount for these organizations rose significantly. In the pre-seed stage, the situation is less clear-cut. There is a sharper decline in the number of transactions and a noticeable reduction in the median investment. Since these stages represent the very early development of an idea or product, it is difficult to predict the implications of this change for the future development of mature companies in Israel.

Figure 22. Transactions and investments in pre-seed and seed stages



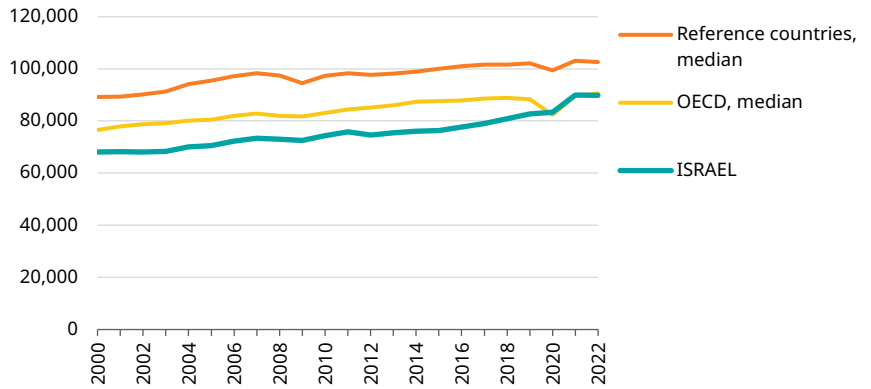
Source: Benjamin Bental and Labib Shami, Taub Center | Data: IVC

Labor productivity

Aggregate data

Figure 23 displays GDP per worker (measured in constant 2015 US dollars) for Israel, the OECD median (excluding Israel), and a group of reference countries.[27] The figure highlights the rapid narrowing of the productivity gap between Israel and the OECD median that began in the mid-2010s, culminating in the gap's closure. Similarly, the gap between Israel and the reference countries has also shrunk. In the mid-2010s, Israel's GDP per worker stood at about 75% of the reference country average, whereas by 2022, it had approached 90%.

Figure 23. GDP per worker in Israel and in other countries
PPP dollars, 2015 prices



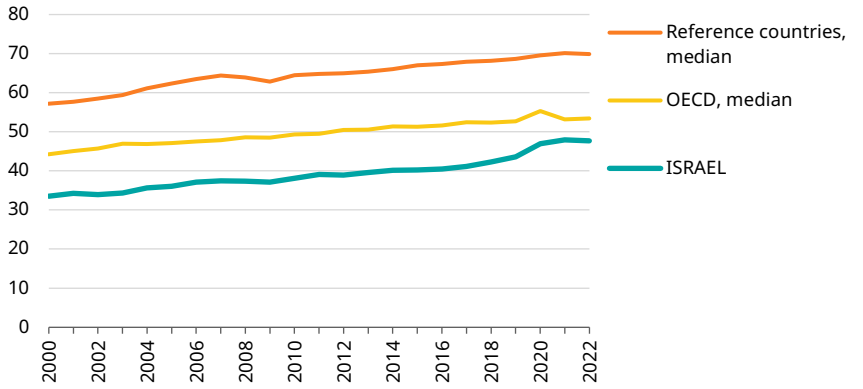
Note: Reference countries are Austria, Belgium, Denmark, Finland, the Netherlands, and Sweden.

Source: Benjamin Bental and Labib Shami, Taub Center | Data: OECD

27 These countries are Austria, Belgium, Finland, the Netherlands, and Sweden. They are characterized by a population size similar to that of Israel and economies that rely on skilled labor rather than natural resources. They are also used by the Bank of Israel as reference countries. See Bank of Israel, 2023.

When comparing GDP per hour worked, the results are less favorable. Figure 24 shows that despite improvements since the mid-2010s, productivity gaps remain. In the early 2000s, an hour worked in Israel produced about 75% of the median output per hour worked in the OECD. By 2022, this had increased to approximately 90%. Relative to the reference countries, Israeli productivity per hour was about 60% in the mid-2010s but improved by nearly 10 percentage points by the early 2020s.

Figure 24. GDP per work hour in Israel and in other countries
USD, 2015 prices



Note: Reference countries are Austria, Belgium, Denmark, Finland, the Netherlands, and Sweden.

Source: Benjamin Bental and Labib Shami, Taub Center | Data: OECD

The disparity between productivity per worker and productivity per work hour can be explained by the relatively high number of annual work hours in Israel compared to OECD countries and the reference group. Specifically, the average Israeli employee works about 15% more hours annually than their counterpart in the median OECD country and 25%–30% more than those in the reference group. In other words, if the average Israeli worked the same number of hours as their peers in the reference countries, labor productivity per hour in Israel would have needed to increase by about 30% to maintain the same GDP per worker. Alternatively, without any change in productivity per hour, Israel's GDP per worker would have fallen by about 30%.

Industry sector data

Figure 25 examines the evolution of value added per hour worked across major economic sectors in Israel, presented in current US dollars.[28] The aggregate data for all industries once again highlights the improvement in labor productivity in Israel since the mid-2010s. During this period, value added per hour worked in Israel converged to the OECD median but remained at approximately 70% of the reference countries' level. The productivity gaps relative to reference countries are particularly evident in industries such as manufacturing, construction, wholesale trade, and financial services. Smaller but still significant gaps are seen in professional services, public services, and arts and entertainment. The standout exception is the information and communication sector, where productivity growth in Israel's high-tech industry during the mid-2010s brought value added per hour worked in line with that of reference countries. The figure also allows for comparisons of value added per worker across sectors. Real estate is a notable outlier in all OECD countries, including Israel, where the high value added reflects elevated property prices rather than sector-specific productivity.

28 In single-digit classification according to the ISIC system. Figure 25 is based on national accounts derived from the production side, as opposed to Figures 23 and 24, which are based on the expenditure side. Accordingly, there is a slight difference in Israel's relative position in the various calculations.

Figure 25. Value added per hour worked in key industry sectors, Israel and other countries

USD, 2015 prices

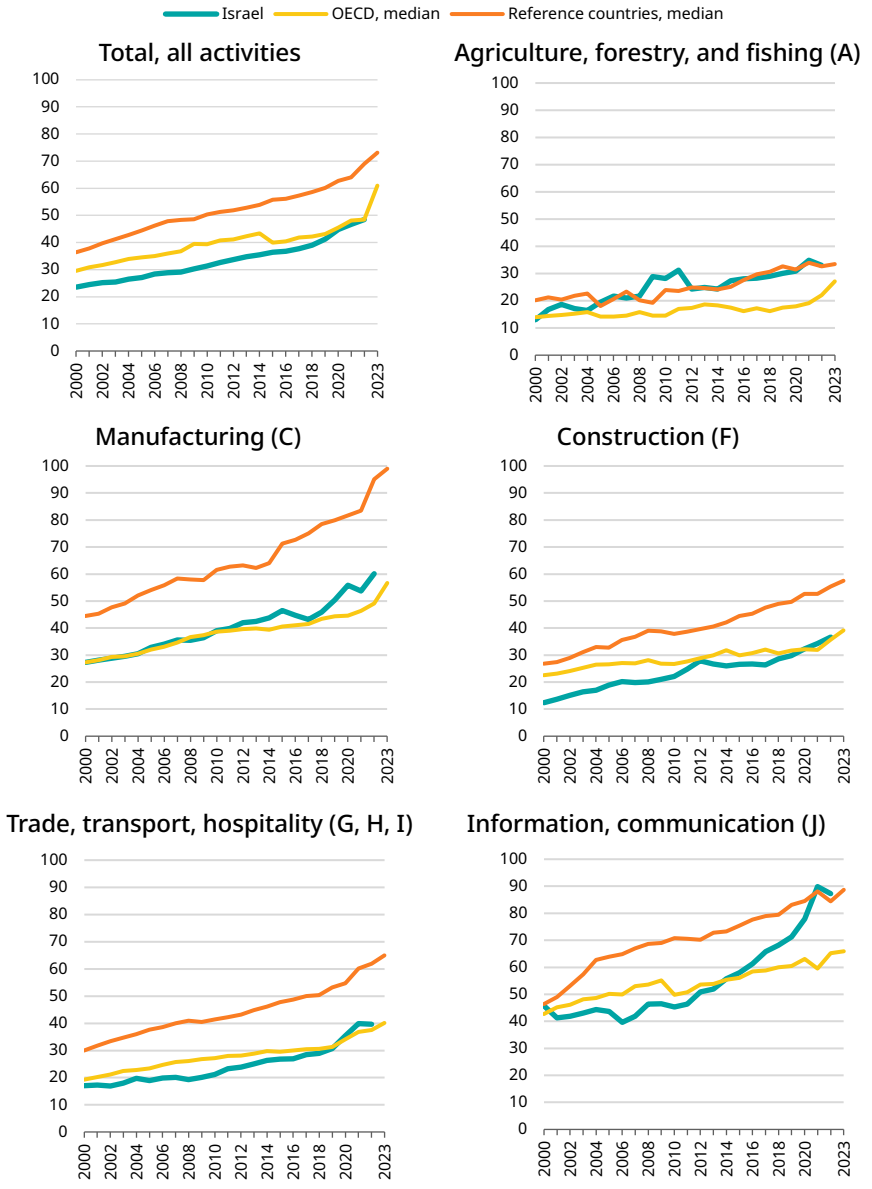
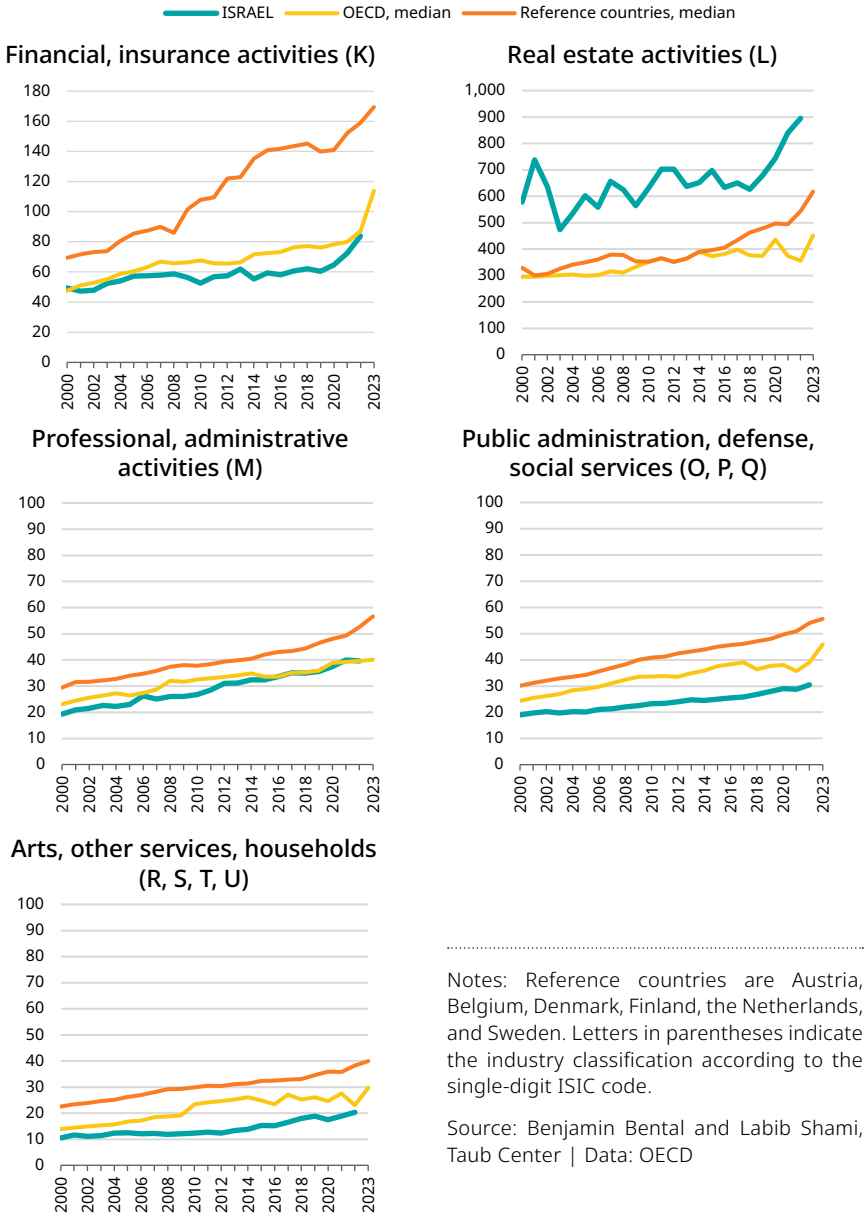


Figure 25 (continued). Value added per work hour in key industry sectors, Israel and other countries

USD, 2015 prices



Notes: Reference countries are Austria, Belgium, Denmark, Finland, the Netherlands, and Sweden. Letters in parentheses indicate the industry classification according to the single-digit ISIC code.

Source: Benjamin Bental and Labib Shami, Taub Center | Data: OECD

Summary

The war that has been ongoing in Israel since October 7, 2023, posed severe challenges to Israeli society and the country's economy. Thanks to responsible fiscal policies and reform measures implemented by Israeli governments since the severe crisis of 2002–2003, the economy was robust on the eve of the war, creating a ***fiscal buffer*** that allowed for financing heavy expenditures through capital raised in domestic and international markets. Nevertheless, the immediate need for funding and the sharp rise in the perceived risk level of Israel's economy in the eyes of investors have increased the interest rate on the debt. This creates a dangerous cycle: rising interest rates increase the debt, and higher debt further raises interest rates. To avoid a spiral that could get out of control while financing dramatically increased defense expenditures, the government must adopt appropriate fiscal policies. Significant convergence measures and substantial efficiency improvements are required to support a declining debt-to-GDP ratio. More importantly, policy measures and reforms similar to those enacted in the 2003 budget are needed to support economic growth. Training programs should be developed for populations with low labor productivity, particularly Haredi men, Arab men, and Arab women, and employment rates among Arab women and Haredi men must be significantly increased. Resources must be allocated toward the development of physical infrastructure in transportation and digitization, which offer very high returns. It is essential to ensure that the high-tech sector, Israel's growth engine, receives support, particularly for early-stage ventures, which are currently affected by the economy's high-risk level. All these measures will return the economy to the growth trajectory it was on prior to the war, increase the confidence of citizens and foreign investors in Israel's economy, and gradually reduce the debt-to-GDP ratio to pre-war levels. Only in this way can the State of Israel ensure the welfare of its citizens and instill in them the belief that, just as it successfully handled the Covid-19 crisis, it will also successfully navigate this crisis and future crises yet to come.

References

English

Alptekin, A., & Levine, P. (2012). Military expenditure and economic growth: A meta-analysis. ***European Journal of Political Economy, 28***(4), 636–650.

Cepparulo, A., & Pasimeni, P. (2024). ***Defence spending in the European Union***. Discussion Paper 199. European Commission.

Eckstein, Z., & Tsiddon, D. (2004). Macroeconomic consequences of terror: Theory and the case of Israel. ***Journal of Monetary Economics, 51***(5), 971–1002.

Ehrlich, I., & Becker, G. S. (1972). Market insurance, self-insurance and self-protection. ***Journal of Political Economy, 80***(4), 623–648.

Ihori, T., & McGuire, M. C. (2010). National self-insurance and self-protection against adversity: Bureaucratic management of security and moral hazard. ***Economics of Governance, 11***(2),103–122.

Israel Innovation Authority (2024a). ***The state of high-tech***. Israel Innovation Authority.

Israel Innovation Authority (2024b). ***High-tech contribution to state revenues from individuals and companies***. Israel Innovation Authority.

Panagariya, A., & Shibata, H. (2000). Defense and welfare under rivalry. ***International Economic Review, 41***(4), 951–969.

Saeed, L. (2023). The impact of military expenditures on economic growth: A new instrumental variables approach. ***Defense and Peace Economics***, 1–16.

Hebrew

Bank of Israel (2023). ***Recommended strategic action for the government.*** Bank of Israel.

Ministry of Finance (2023). ***Annual report 2023***. Ministry of Finance, Accountant General Division.

Shavit, A. (2024). ***Existential war: From disaster to victory to resurrection***. Yediot Books.

LABOR MARKETS

The Labor Market in Israel in 2024 in the Shadow of War

Michael Debowy, Gil S. Epstein, and Avi Weiss

Introduction

With the outbreak of the war, the Israeli economy, including the labor market, experienced a monumental shock. Tens of thousands of employees lost their jobs due to evacuations, large-scale reserve mobilization, and other war-related consequences. Prior to the war, the Israeli labor market was tight (Debowy et al., 2023). While unemployment initially surged in the early days of the war, it quickly stabilized at a slightly higher rate than before the conflict. During the war, the average weekly working hours for Israeli employees declined, but monthly wages in most sectors returned to an upward trend. However, the current equilibrium may be fragile, as future stability hinges on strategic developments and government policies. Additionally, evacuees and reservists continue to face short- and long-term risks to their employment.

In this chapter, we review the labor market's state a year into the conflict and examine the realized and potential impacts of the war on Israel's labor market and the employment of workers. We begin by presenting aggregate unemployment and wage data, examining trends relative to previous years and to other countries. We then analyze employment trends by economic sector, delve into the decline in working hours, and focus on employment differences across demographic and geographic lines. Following this, we discuss additional labor-market-related issues, particularly regarding evacuated workers and reservists. Finally, we discuss the impact of current trends and offer forecasts for the future of Israel's labor market.

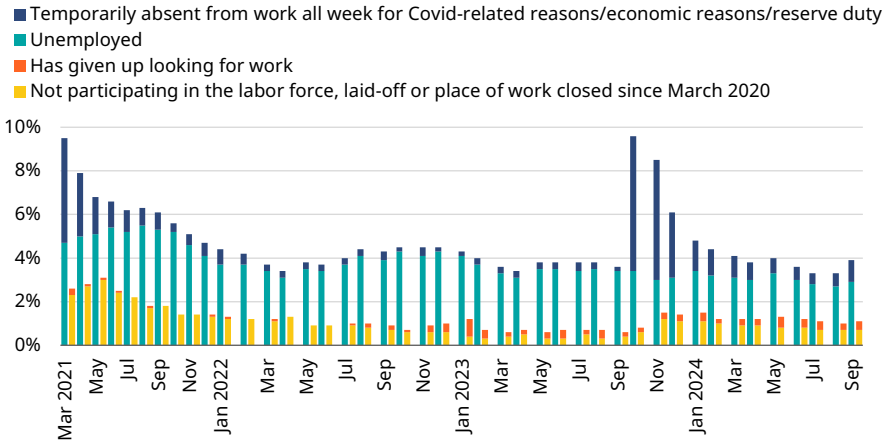
* Michael Debowy, Researcher, Taub Center for Social Policy Studies in Israel; doctoral student, Department of Economics, Ben-Gurion University of the Negev. Prof. Gil S. Epstein, Principal Researcher and Chair, Labor Market Policy Program, Taub Center; Department of Economics, Bar-Ilan University. Prof. Avi Weiss, President, Taub Center; Department of Economics, Bar-Ilan University.

Unemployment, employment, and wages

Figure 1 presents unemployment and its components since the end of the Covid-19 pandemic in the spring of 2021. During the pandemic, the definition of unemployment was expanded to include furloughed workers and those absent due to Covid-related reasons. This categorization was maintained post-pandemic to encompass employees absent due to economic reasons or exits from the labor force resulting from layoffs or business closures in recent years. At the onset of the war, the definition was updated again to include temporary absences due to military service within the broad unemployment measure.

Between January and September 2023, the narrow unemployment rate averaged 3.5%. Rates in the other components of the broad measure were negligible — each averaging under 0.5 percentage points. With the outbreak of the war, the broad unemployment rate surged nearly 6 percentage points, reaching 9.6% in October 2023, a level not seen since March 2021. Temporary absences remained high in the war's early stages due to extensive reserve mobilization (reservists accounted for more than half of men absent temporarily in December), but dropped significantly by the beginning of the year. However, the share of non-participants who had either given up on job searches or stopped working due to layoffs or business closures increased compared to the previous year, and from January to September 2024, it averaged 1.2% (compared to 0.7% during the same period last year). At the same time, the narrow unemployment rate decreased, averaging about 3% during those months (approximately half a percentage point lower than the same period last year).

Figure 1. Unemployment rate

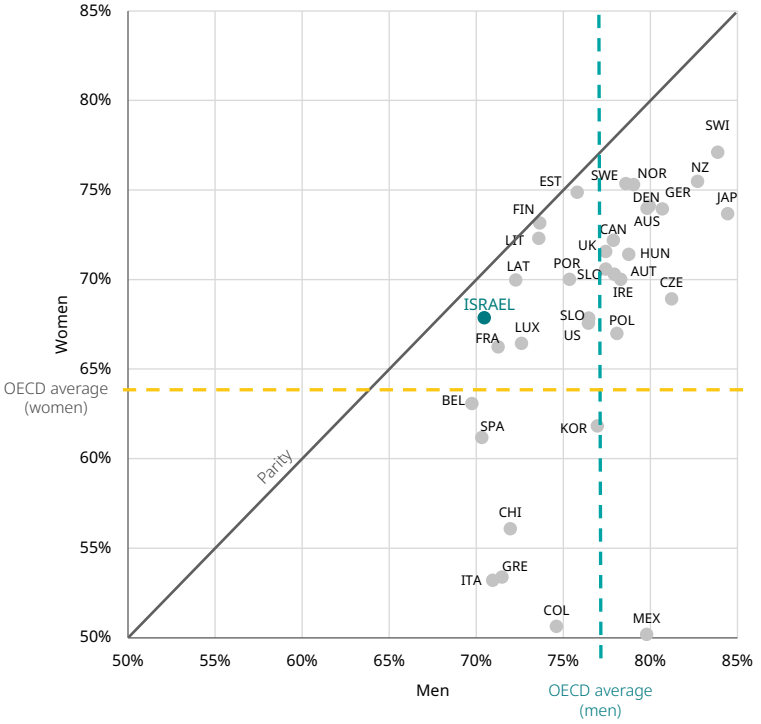


Note: The rates shown are relative to two different populations. The blue bars represent the rate among the labor force, while the yellow and orange bars represent the rate among the non-labor-force population.

Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

Israel's low unemployment rate does not necessarily translate to high employment in international terms (Figure 2). The employment rate of 15–64-year-olds in Israel is similar to the average in high-income countries. This is the result of several factors, including demographic differences (a particularly high portion of young people work at lower than average rates) and sectoral and geographic disparities (discussed later). Israel stands out positively in female employment within working age groups but negatively in male employment, partly due to sectoral disparities. As a result, the gender employment gap for workers ages 15–64 in Israel is one-fifth of the OECD average — slightly less than three percentage points.

Figure 2. Employment rate among 15–64-year-olds in selected OECD countries, Q1-2024



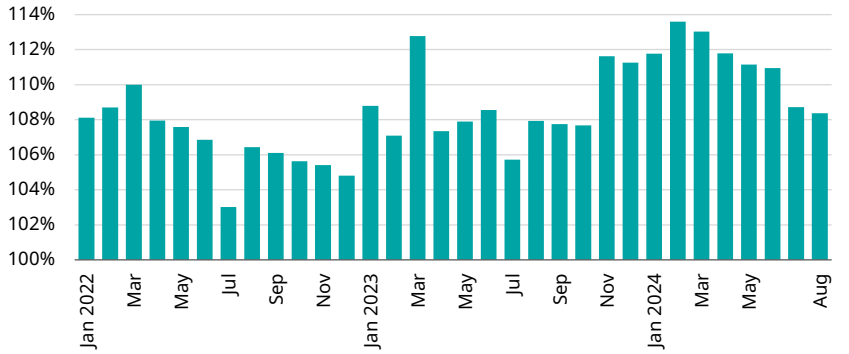
Note: The dotted lines represent the average employment rates for men and women in the OECD.

Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: OECD

Unlike unemployment rates, which have not substantially decreased over the past year, real wages have risen significantly, reversing the previous trend. Figure 3 shows the average monthly wage of employees over the last three years (in constant prices) compared to 2019. Overall, in January–August 2024, the average monthly wage was approximately 3% higher than in the corresponding period of the previous year, and about 11% higher than in the corresponding period in 2019 in real terms — following zero annual growth in the previous two-year periods (2022–2023 and 2021–2022).

Figure 3. Average monthly wage for employees, relative to the same month in 2019

In constant prices

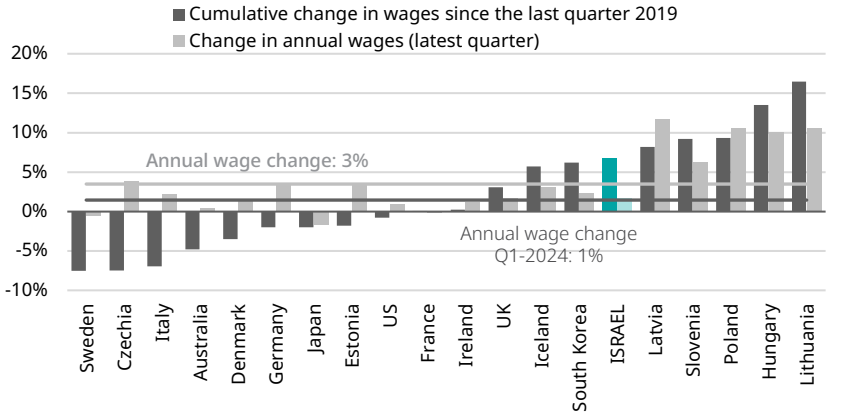


Note: Includes employees temporarily absent from their work place.

Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

The wage gains in Israel over the past year, while encouraging compared to previous years, are not exceptional when viewed against other high-income countries. Figure 4 illustrates changes in real hourly wages across OECD countries in recent years, with two bars per country. The first bar shows cumulative change from Q4-2019 to the end of 2023 or early 2024, and the second represents the annual change to the end of 2023 or early 2024 from the same period in the previous year. It appears that, in the past year, wage growth in Israel was about half of the OECD average, though the cumulative increase since the start of the Covid-19 crisis was nearly five times the average. This finding suggests that while Israel stood out with exceptional wage increases during the Covid-19 crisis and its recovery, the moderation of wage growth in Israel over the past two years has allowed other high-income countries to narrow the gap — though only a few have surpassed Israel in this respect.

Figure 4. Percentage change in real hourly wages, selected OECD countries, 2024/2019 and 2024/2023



Notes: The horizontal lines represent average rates of change across OECD countries. In all countries except Israel, South Korea, and the United Kingdom, the sectoral composition of the labor force was held constant at the baseline level for calculating changes. The change percentages shown for the United States and Australia were adjusted for background variables. Wage data for the US, South Korea, and Japan exclude public sector employees, while wage data for Israel pertains only to salaried employees.

The latest quarter is Q3-2023 for Israel, Q4-2023 for Japan and South Korea, and Q1-2024 for all other countries. The annual wage change reflects the difference between wages in that quarter and the same quarter of the previous year.

Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: OECD

In broad terms, we can cautiously conclude that after the initial shock of the war, the Israeli labor market has stabilized amid the wartime routine. Compared to the previous year, there was a slight increase in unemployment and in the rate of non-participants who were recently laid off, gave up job searching, or had their work place closed. More encouragingly, real wages have resumed noticeable growth, albeit on a modest scale relative to other high-income countries, many of which have recently completed post-Covid-19 recovery, while Israel's recovery was completed earlier. Beyond these aggregate developments, there is substantial variation between sectors, populations, and regions within the country — on which we now elaborate.

Employment, working hours, and wages by sector

Table 1 presents the change in the number of employees across economic sectors through September 2024, compared to the same quarters in 2022 and 2023. The percentage at the end of each column represents each sector's share in total employment in the first three quarters of 2024. Naturally, the war and its associated economic uncertainty have slowed employment growth considerably. Between the first halves of 2023 and 2024, the number of jobs increased by only 33,000, compared to an increase of about 165,000 during the same periods in the previous two years. However, in practice, the number of employees in certain sectors grew by around 88,000, while others lost approximately 55,000 jobs. The sectors with the highest growth included health, welfare, and social services (34,000 additional employees) and education (22,000 additional employees), while the sectors with the most significant declines were hospitality and food services (down 19,000 employees) and information and communication (15,000, excluding high-tech employees). The number of employees in high-tech industries increased by less than 2,000, compared to about 14,000 during the corresponding periods in the previous two years.

Table 1. Percentage change in the number of employees, 2024 compared to 2022 and 2023, by economic sector

	2022			2023			Industry share 2024
	Q1	Q2	Q3	Q1	Q2	Q3	
All industry sectors	5%	5%	4%	1%	1%	1%	100%
Agriculture, forestry, fishery	-7%	3%	8%	-6%	1%	1%	1%
Electricity, gas, steam, air conditioning	-12%	18%	-1%	6%	31%	3%	0.4%
Water supply, sewage, waste management	21%	-14%	-10%	17%	-10%	-13%	0.4%
Construction	4%	11%	12%	-1%	4%	10%	5%
Wholesale/retail trade (excl. diamonds), motor vehicle repairs	11%	8%	0%	4%	-3%	2%	10%
Transportation, storage, postal, courier activities	23%	11%	6%	4%	1%	-2%	4%
Hospitality and food services	3%	0%	-11%	-14%	-7%	-10%	4%
Financial, insurance activities	9%	1%	-6%	8%	-8%	0%	3%

Table 1 (continued). Percentage change in the number of employees, 2024 compared to 2022 and 2023, by economic sector

	2022			2023			Industry share 2024
	Q1	Q2	Q3	Q1	Q2	Q3	
Real estate activities	30%	7%	-3%	6%	14%	24%	1%
Administrative, support services	10%	-1%	-3%	6%	-4%	-7%	4%
Local, public, defense administration, NII	-6%	3%	8%	-1%	2%	3%	10%
Education	10%	9%	11%	4%	4%	4%	13%
Health, social work, long-term care activities	6%	11%	12%	7%	7%	5%	12%
Art, entertainment, recreation	4%	0%	-4%	-3%	6%	4%	2%
Other services	36%	22%	4%	12%	6%	7%	3%
Household as employer	-19%	-12%	-12%	-13%	-4%	-17%	1%
Extra-territorial organizations	7%	0%	43%	-35%	-7%	-8%	0.04%
Manufacturing (excl. high-tech workers), mining, quarrying	4%	-10%	5%	8%	-3%	3%	8%
Information, communication (excl. high-tech workers)	-14%	12%	-5%	-30%	-14%	-19%	1%
Professional, scientific, technical activities (excl. high-tech workers)	-4%	6%	4%	-4%	3%	2%	7%
High-tech services (employees only)	5%	3%	1%	0%	1%	1%	7%
High-tech manufacturing (employees only)	5%	4%	3%	1%	0%	0%	2%

Note: The values in the right column represent the sector's share of total employment from January to September 2024.

Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

A more encouraging picture emerges in the area of wages. After real wages for employees stalled in the first half of 2023 — partly due to inflation — wages resumed a consistent upward trend in the second half of 2023 and the first half of 2024. Table 2 shows the change in average real wages for employees between 2024 and both 2023 and 2022, by economic sector. The last columns display the sector's share in total employee employment for January–August 2024 and the average monthly wage for salaried employees in the same period. The increase in average wages across the economy was reflected in

the overwhelming majority of economic sectors. However, in the first quarter of the year, sectors in which average wages decreased accounted for more than a third of employment. Notably, wages declined in the education sector and health, welfare, and social services sectors, where the number of employees increased significantly, as well as in local administration, public administration, defense, and national insurance sectors. However, in all these sectors, the average wage increased later in the year at a rate higher than the average in other sectors of the economy. In January–September 2024, the highest average monthly wages were recorded in high-tech services (NIS 32,800), high-tech manufacturing (NIS 29,600), and finance (NIS 23,300). The lowest average wages were recorded in hospitality and food services (NIS 6,300), other services (NIS 6,900), and arts, entertainment, and recreation (NIS 7,700). The wage disparities between sectors remained similar to those in the past two years.[1]

Table 2. Annual change in average monthly real wages, 2024 compared to 2022 and 2023, by economic sector

	2022			2023			Industry share 2024	Average monthly wage 2024, NIS
	Q1	Q2	Q3	Q1	Q2	Q3		
All industry sectors	4%	2%	3%	3%	2%	1%	100%	13,500
Agriculture, forestry, fishery	4%	4%	3%	6%	6%	3%	1%	9,200
Mining, quarrying	-22%	23%	0%	-26%	25%	5%	0.1%	30,000
Electricity, water, sewage, waste treatment	3%	4%	4%	2%	5%	1%	1%	22,700
Construction	3%	4%	4%	3%	3%	2%	5%	12,600
Wholesale/retail trade (excl. diamonds), motor vehicle repairs	1%	2%	0%	2%	3%	1%	12%	11,000
Transportation, storage, postal, courier activities	8%	6%	5%	1%	2%	3%	4%	14,400
Hospitality and food services	5%	4%	5%	5%	4%	6%	5%	6,300

1 The average Gini coefficient and coefficient of variation between similar sectors between January–May 2024 and the same period in 2022 and 2023 are identical to two decimal places.

Table 2 (continued). Annual change in average monthly real wages, 2024 relative to 2022 and 2023, by economic sector

	2022			2023			Industry share 2024	Average monthly wage 2024, NIS
	Q1	Q2	Q3	Q1	Q2	Q3		
Financial, insurance activities	-3%	2%	2%	2%	7%	-6%	3%	24,700
Real estate activities	7%	8%	7%	9%	9%	6%	1%	15,800
Administrative, support services	9%	10%	9%	6%	5%	3%	6%	8,000
Local, public, defense administration, NII	4%	-3%	0%	-2%	-4%	-3%	4%	18,200
Education	4%	-5%	8%	-1%	-7%	3%	15%	9,600
Health, social work, long-term care activities	-1%	-5%	0%	0%	-4%	0%	15%	9,100
Art, entertainment, recreation	6%	3%	4%	5%	4%	3%	2%	7,600
Other services	3%	-2%	3%	2%	-2%	3%	4%	6,600
Manufacturing (excl. high-tech workers)	0%	4%	4%	2%	5%	2%	6%	15,200
Information, communication (excl. high-tech workers)	-1%	0%	0%	3%	1%	1%	0.4%	13,400
Professional, scientific, technical activities (excl. high-tech workers)	1%	2%	0%	1%	2%	-1%	5%	14,400
High-tech services	7%	5%	2%	6%	4%	0%	7%	32,800
High-tech manufacturing	8%	11%	12%	9%	4%	8%	3%	29,600

Note: The values in the right columns represent each sector's share of employees in January–August 2024 and their average nominal wage in the same period.

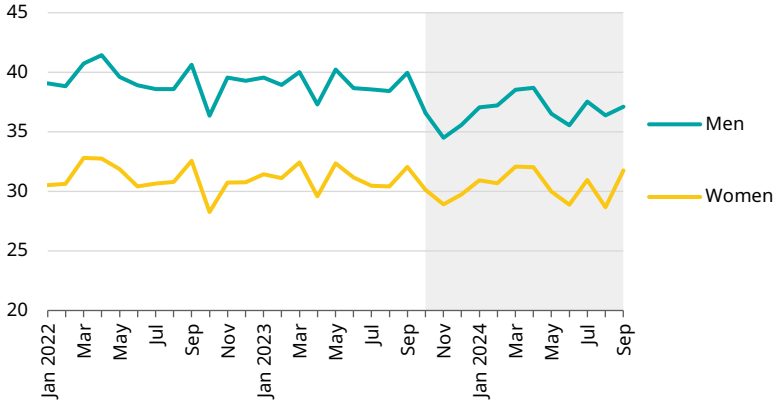
Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

Alongside the broad wage increases, the past year has seen a significant decrease in the working hours of Israeli employees compared to previous years (Figure 5). In January–July 2024, employees worked an average of 37 and 31 weekly hours (for men and women, respectively), representing a decrease of 5% and 2% (respectively) compared to the same period in 2023, and a decrease

of 7% and 1% (respectively) since 2019. In absolute terms, between October 2023 and July 2024, the average Israeli employee reduced their weekly work time by more than two hours compared to the same period in the previous year, and female employees reduced their weekly work time by half an hour. Overall, a decrease in work hours was observed across all economic sectors (see Appendix Table 1), though gendered differences are evident across sectors.

Among men, the decrease in working hours was widespread and observed across every economic sector. The sharpest declines were seen in the construction sector (two hours less per week in the first half of 2024 compared to 2023) and infrastructure sectors (between two and a half and four hours less). Among women, the decrease was more modest and was most pronounced in hospitality and food services (two and a half hours less in the first half of 2024 compared to 2023), transportation, storage, postal, and courier activities (two hours less), and information and communication (one hour less). Conversely, in agriculture, infrastructure, real estate, and arts, entertainment and recreation, there was an increase of one hour or more in the average weekly work hours of women compared to the previous year.

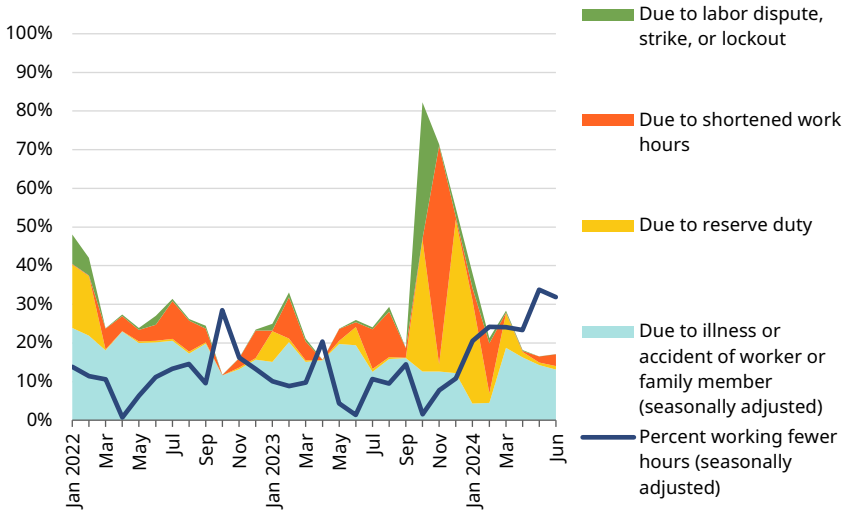
Figure 5. Weekly work hours, by gender, seasonally adjusted



Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

The reduction in working hours is accompanied by a consistent increase in the share of employees reporting that they "worked fewer hours than usual" since October 2023 — in the second quarter of 2024, over 30% of workers fell into this category. Figure 6 presents the share of workers who reported working fewer hours than usual (solid line) along with a distribution of selected reasons for reduced hours. Notably, alongside the increase in workers reporting fewer hours, since October 2023 there has been a marked rise in the three main reasons for reduced hours: reserve duty, reduced work volume, and labor disputes or strikes.

Figure 6. Percentage of respondents to the question "Did you work fewer hours than usual last week?" and distribution of main reasons for affirmative responses, 2022–2024



Note: The blue line represents the percentage of respondents who answered affirmatively to the question "Did you work fewer hours than usual last week?" The colored areas indicate the distribution of main reasons cited among those who responded affirmatively. Some primary reasons are rare in routine times, so their share is negligible at many points on the axis.

Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

This decrease in working hours is also driven by longer-term factors. Reduced working hours in Israel, in the long run, mirror the average trend in other high-income countries (see Appendix Figure 1), though the war likely plays a significant role in this trend. The timing of the decline, its concentration among male workers (who are mobilized for reserve duty at higher rates than women, as will be discussed), and survey respondents' reports on the reasons for reduced hours leave little room for doubt on this issue. Only time will tell if this is a temporary shock or if the ongoing conflict will lead to a sustained relative reduction in working hours.[2] However, it is noteworthy that the decrease in working hours has not been accompanied by a decline in monthly employee wages in most sectors. Rather, real wages have risen across most sectors, suggesting that reduced hours may not necessarily have negative consequences; on the contrary, the war may have shown both employees and employers that productivity can be maintained even with reduced work hours.[3] This theory aligns with survey findings showing that flexibility in work hours is a primary method by which employers attract employees (Gams, 2024).[4]

In conclusion, the past year has been characterized by a broad slowdown in labor force growth and a widespread reduction in working hours, alongside wage fluctuations across different sectors. Most of the employment growth has been concentrated in ***publicly-oriented*** sectors like education and health (where wages decreased), while the tourism sector lost about 10% of its workforce relative to the same period last year. High-tech sectors, which in previous years had stood out for significant growth in both employment and wages, have seen a substantial slowdown, consistent with a slowdown in economic growth and capital recruitment over the past two years.

2 There is also a possibility that the reduced number of hours will remain steady for an extended period after the initial drop at the start of the war, and in a few years, it may align with the long-term trend of reduced working hours. If this occurs, it would mean that the war has accelerated a deeper process of reducing working hours.

3 Employee wages are determined by both their productivity and their bargaining power. There is also a theoretical possibility that average bargaining power has increased to such an extent that wage growth could occur even alongside declining productivity. However, this scenario is unlikely given the macroeconomic situation and the overall picture of the labor market.

4 A CofaceBDI survey conducted among 120 human resource managers from companies employing a combined 180,000 employees found that 69% of employers expanded options for flexible working hours, and 8% actually shortened the work week to improve their employees' work-life balance (see Gams, 2024).

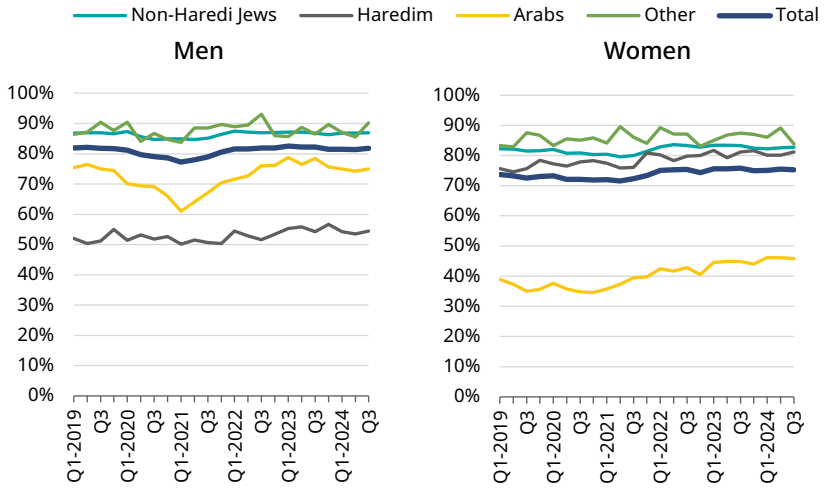
Employment by demographic and geographic breakdown

Figure 7 displays employment rates for men and women aged 25–64 from different groups in Israeli society over recent years. Employment rates for Arab and Haredi (ultra-Orthodox Jewish) men rose impressively during 2023 but have since reversed since the war began (the reversal for Arab men began in the second half of 2023, before the war). In the third quarter of 2024, employment rates among Arabs and Haredim were 75% and 54%, respectively, compared to 87% among non-Haredi Jewish men. Meanwhile, the average weekly hours of Jewish men decreased (Appendix Figure 2), with non-Haredi and Haredi men working an average of 7% and 5% fewer hours, respectively, in the first half of 2024 than in the same periods over the past two years. Conversely, Arab men's working hours remained stable, averaging 39 hours per week in the first half of 2024, compared to 38 hours for non-Haredi Jews and 32 hours for Haredi workers.

Among Jewish women, the high employment levels of the past two years have been maintained. In the third quarter of 2024, the employment rate for non-Haredi Jewish women stood at 83%, and for Haredi women, it was 81%. The situation for Arab women is especially encouraging. Unlike men in this sector, Arab women have seen a consistent rise in employment, reaching 46% this year — the highest rate for the third consecutive year. The average weekly working hours for Arab female employees rose by 4% compared to the previous two years, with an average of 31 hours in the first half of 2024, compared to 33 hours for non-Haredi Jewish women and 26 hours for Haredi women (see Appendix Figure 2).

Overall, during the war, the upward trend in women's employment across all sectors continued with minimal disruption, while employment among Haredi and Arab men declined. Although many sector-specific findings are promising, the decrease in employment for Arabs and Haredim is concerning given the well-known challenges these groups face in the labor market. This decline is compounded by heightened sectoral tensions due to the war, particularly regarding Arab citizens of Israel and the issue of equal burden-sharing.

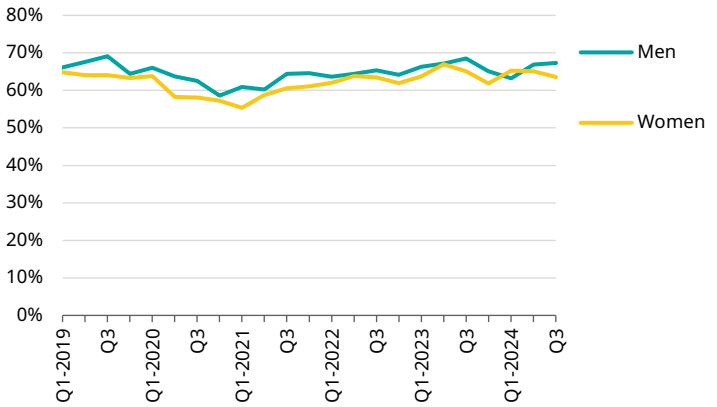
Figure 7. Employment rate, ages 25–64, by gender and sector



Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

The employment of both young and older adults has also been affected by the war, though aggregate data have remained stable. Figure 8 shows the employment rates of men and women aged 20–24. It can be seen that the employment rates for these young adults — historically a few percentage points lower than those of the older population and significantly impacted by the Covid-19 crisis — returned to their late-2019 levels by the end of 2021 and have since remained fairly stable, with a slight upward trend. Additionally, there is no gender gap in employment rates among young adults, supporting the view that the gap observed in older age groups is due to the responsibilities of motherhood and child-rearing. Unlike the younger population, the 67–74 age group has shown a slow and measured recovery from the Covid-19 crisis (see Appendix Figure 3), with employment in this age group only returning to its 2019 level in the course of 2023.

Figure 8. Employment rates, ages 20–24, by gender

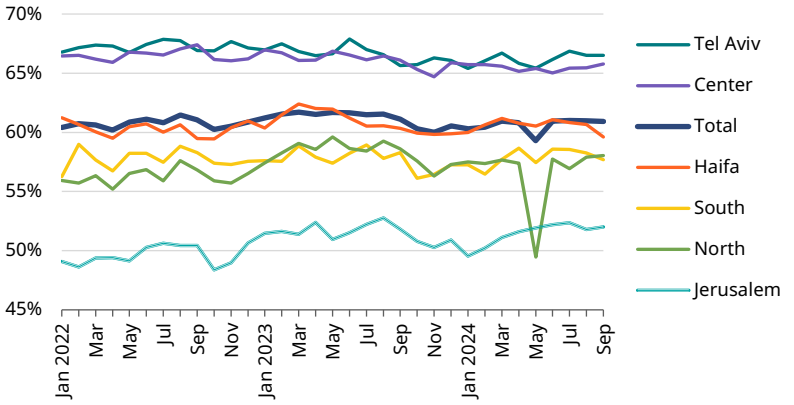


Note: Individuals serving in military or national service, as well as employees temporarily absent from work due to reserve duty, are considered employed.

Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

From a geographic perspective (Figure 9), employment gaps between the periphery and central regions continued to narrow last year. However, the war that broke out in October 2023 temporarily reversed this trend, impacting employment in the Southern and Northern Districts (and even in the Jerusalem District) more than in the Central and Tel Aviv Districts. Since March, however, employment rates in the Jerusalem and Southern Districts have increased, and the gap between these areas and the Center has narrowed, reaching its lowest level since 2019. In contrast, employment in the Northern District — still subject to frequent and intense missile and drone attacks — continues to struggle, and the gap between it and the central regions has yet to close.

Figure 9. Employment rates, ages 15 and over, by district



Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

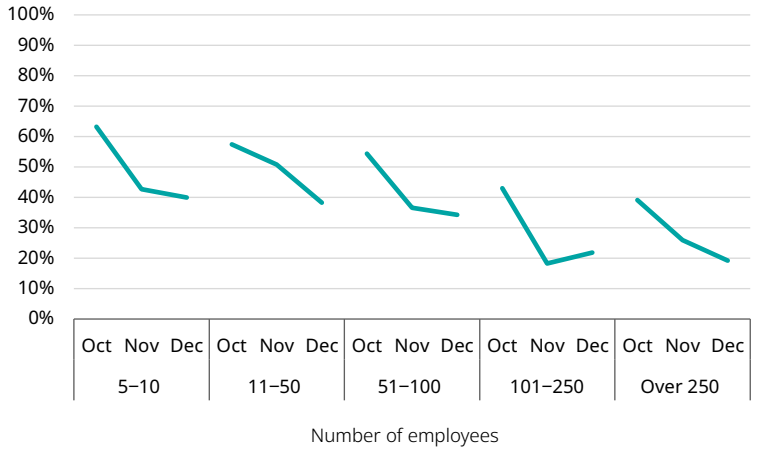
It is clear that aggregate employment data at the district level provides only a partial picture of the war's geographic effects, as entire regions were evacuated and numerous businesses ceased operations, independent of the war's impact on the national economy (see the chapter by Bental and Shami in this volume). Overall, the war has numerous targeted effects on various aspects of the labor market that are not reflected in the aggregate data typically collected, both geographically and beyond. We will now detail several issues related to this.

Additional issues pertaining to the war and the labor market

The outbreak and continuation of the war have left their mark on the Israeli labor market, including the topics covered above. We now focus on more specific impacts of the war on labor market issues, such as work absence due to the upheaval from the war and reserve duty, and employment characteristics of evacuated residents from the South and North.

According to a survey conducted by the CBS (2023) on business conditions during the early months of the current war, over half of employers reported that less than 60% of their employees were actively working in October, and over a third reported this for December. This disruption was particularly severe among small and medium-sized businesses (up to 100 employees), while larger firms experienced relatively less impact (Figure 10).

Figure 10. Percentage of employers reporting up to 60% of employees are actively working, October–December 2023, by number of employees



Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

Employees serving in military reserve duty

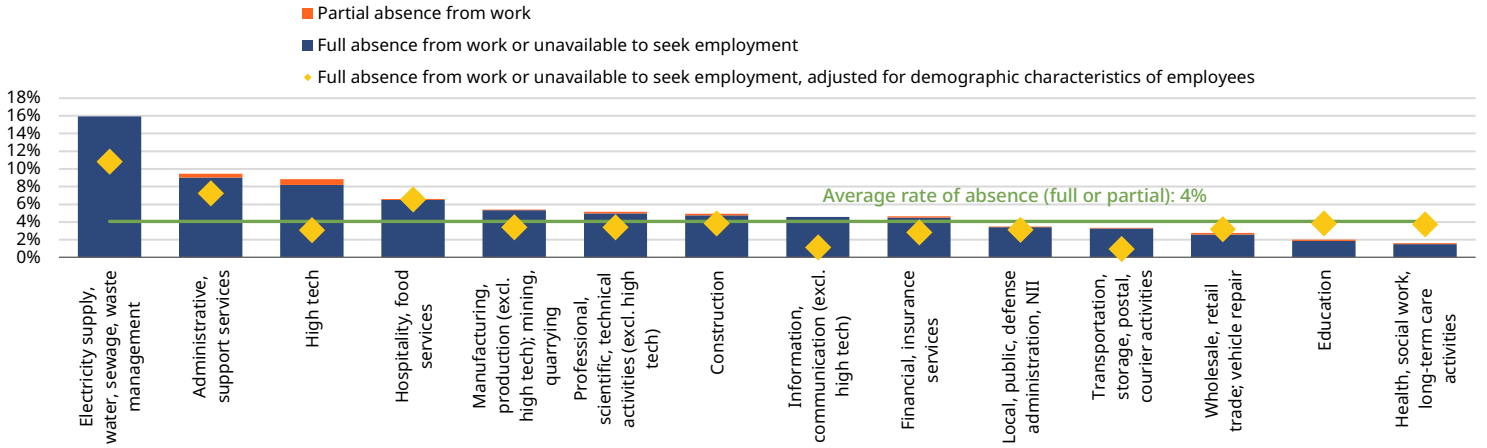
Employee absences are partly due to the large-scale mobilization of employees for prolonged reserve duty since the beginning of the war. The peak of work absences due to reserve duty was in December 2023, affecting 3.4% of employees (approximately 150,000 workers). Although the share of reservists from the labor force decreased significantly in 2024, it remains substantial. For example, in June, about 1% of employees (39,000 people) were absent for the entire week due to reserve duty.

Figure 11 shows the rate of labor market absences due to reserve duty in the last quarter of 2023, at the start of the war, broken down by economic sector. The highest rate was observed in the infrastructure sector, where nearly one in six employees was absent due to reserve duty. In the management and support and high-tech sectors, about 10% of employees were called to reserve duty. Notably, there was a phenomenon of partial work absences due to reserve duty, in which mobilized employees continued to work alongside their military service. This was most prominent in the high-tech sector, where nearly 1% of employees (7% of those mobilized in the sector) continued to work — in some capacity, though not fully — while serving in the reserves.

Differences in reserve duty rates across sectors stem from worker demographics. Certain sectors have a higher proportion of young workers or non-Haredi Jewish men, who make up the majority of the reserve duty population.[5] The yellow diamonds in each column of Figure 11 show the adjusted absence rate after accounting for age, gender, and worker sector demographics. As shown, high recruitment rates in infrastructure sectors are partially explained by these demographics, though even after adjustment, recruitment in these sectors remains the highest. Additionally, the high recruitment rate in high tech is largely explained by the over-representation of non-Haredi Jewish men and young workers in the sector; adjusted for demographics, the recruitment rate is slightly below average. Similar trends were observed in transportation and logistics, information and communication (excluding high tech), and, to a lesser extent, in finance and traditional industry sectors. In contrast, the rate of reserve duty absences in the agriculture sector (not shown in the figure) is higher than expected given the demographics of its workers. Meanwhile, the low recruitment rates in the education and health, welfare, and social services sectors are mostly explained by the low proportion of non-Haredi Jewish men among employees in these sectors.

5 Appendix Table 2 presents demographic variables alongside the adjusted absence rate based on them for the sectors shown in Figure 11.

Figure 11. Share of workforce absent due to reserve duty, among those under age 50, October–December 2023, by economic sector

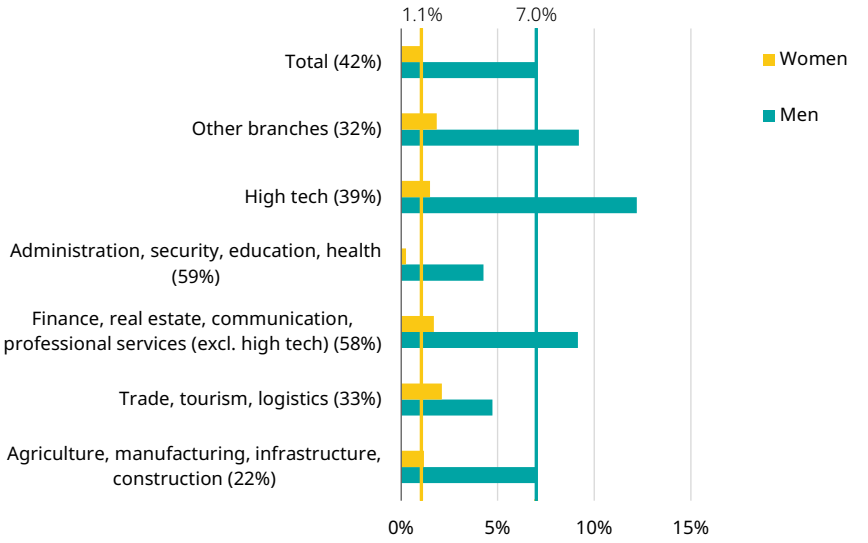


Notes: The horizontal line represents the overall rate of absence (full or partial) in the work force. The columns show the percentage of workers absent or unavailable for job searching due to reserve duty in October–December 2023. This rate is calculated as follows: (number of workers absent due to reserve duty + relevant job seekers unavailable for job searching due to reserve duty) / (number of workers in the sector + relevant job seekers). ***Relevant job seekers*** are individuals seeking employment who worked within the last two years, with their most recent place of employment in the relevant sector. Due to high employment rates, this is a small group of individuals, and their exclusion from the calculation does not significantly alter the estimated rate. Data for local administration, public administration, defense, and National Insurance sector exclude employees in the subcategories military and defense activities (8422) and public order and security (8423).

Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

In examining the demographics of employees serving in reserve duty, it is also important to consider the mobilization of female employees. In the current war, an unprecedented number of 60,000 women were called to reserve duty, making up 20% of all reservists (Gil-Ad, 2024). Figure 12 shows the mobilization rates for women and men in each sector group, with the percentage of women in the overall work force of each sector group noted in parentheses next to the sector name. As expected, the rate of women mobilized for reserve duty was lower than that of men in every sector group, though it is interesting to compare mobilization rates within sectors for each gender separately.

Figure 12. Share of work force absent due to reserve duty, among those under age 50, October–December 2023, by gender and economic sector



Notes: The vertical lines represent the overall rate of absence (full and partial) for men and women in the work force. The number in parentheses next to each sector group represents the percentage of women in the total work force in that sector during the specified period. Sectors are grouped due to the limited sample of women serving in reserve duty who responded to the CBS Labor Force Survey. Men's data are grouped similarly for comparison, though data for men were sufficient to allow for breakdowns by specific sector.

Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

The figure reveals that the highest recruitment rate for women, approximately 2%, was observed in the finance, real estate, communications, and professional services sectors (where men's recruitment rates were also higher than average), as well as in trade, tourism, and logistics sectors (where men's recruitment rates were relatively lower). Together, these sectors employed around 23% of all women in the work force during the specified period. In contrast, the highest recruitment rate for men, 12%, was observed in high-tech sectors, where women's recruitment rates were around the gender average. Recruitment rates were lowest in public sectors like administration, defense, education, and health, for both men and women.

Due to data limitations, it was not possible to determine if the sectoral distribution among reservists changed after the initial mass recruitment or remained consistent throughout the year. If the sectoral distribution of reservists remains consistent, many sectors will continue to experience significant work force shortages. For example, based on June 2024 reserve duty data (39,000 reservists) and utilizing end-2023 data for their sectoral distribution, more than 6,000 workers in infrastructure were absent due to reserve duty (out of approximately 35,000 total workers in the sector), along with almost 2,000 employees in information and communications (excluding high tech, out of around 74,000), 3,700 in management and support services (out of 142,000), over 2,700 in the already struggling hospitality and food services sector (out of around 169,000), and nearly 4,000 in high tech (out of about 400,000). Beyond the lost productivity (and the compensation cost shouldered by the public treasury), reservists miss out on promotion and skill development opportunities, posing a significant challenge given the cumulative duration of their reserve duty.

Employment of residents from evacuated areas

Data limitations make it difficult to track the employment of evacuated residents after relocation. However, we can learn about this worker population from their employment characteristics before the war, which differ somewhat from those of their neighbors and differ greatly from those of the general population. Figure 13 presents monthly income from work for salaried and self-employed individuals in the Southern and Northern Districts compared to other districts in 2022, alongside the share of self-employed individuals in each group of

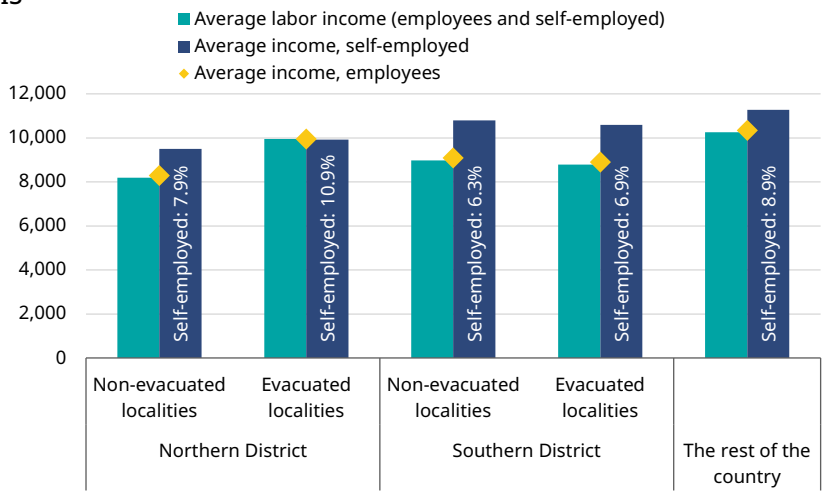
localities.[6] In general, in 2022, both salaried and self-employed income was lower in the Southern and Northern Districts than in other districts. In the North, there was notable income disparity between residents of localities due to be evacuated during the war and those of non-evacuated localities: the income of the former group was similar to that of residents of other districts and about 20% higher than that of the latter group, mainly due to higher salaries among employees. Notably, the share of self-employed individuals in evacuated Northern Communities was significantly higher, suggesting greater vulnerability during evacuation, as they lost not only their jobs but also their businesses.[7] In the Southern District, no significant income differences were observed between evacuated and non-evacuated communities.

6 The communities fully or partially evacuated at the beginning of the war include Avivim, Even Menachem, Avshalom, Adamit, Ohad, Ofakim, Or HaNer, Urim, Ivim, Elon, Erez, Ashkelon, Be'eri, Beit HaGdi, Beit Hillel, Bnei Netzarim, Betzet, Baram, Gevulot, Givim, Gevaram, Goren, Gornot HaGalil, Dovev, Dorot, Dishon, Dan, Dafna, Dekel, Zimrat, Zikim, Zar'it, Holit, Hanita, Yevul, Yad Mordechai, Yakhini, Ya'ara, Yiftach, Yir'on, Yesha, Yated, Kissufim, Kfar Giladi, Kfar Yuval, Kfar Maimon, Kfar Aza, Kerem Shalom, Carmia, Liman, Mivtahim, Mavki'im, Magen, Metula, Malkia, Manara, Ma'ayan Baruch, Mefalsim, Metzuba, Margaliot, Misgav Am, Mattat, Naveh, Nachal Oz, Netu'a, Nir Yitzhak, Nir Oz, Nir Am, Nirim, Netiv HaAsara, Netivot, Sa'sa, Sufa, Sa'ad, Ein HaBesor, Ein HaShlosha, Alumim, Ammi'oz, Aramsha, Pri Gan, Tze'elim, Tzohar, Kiryat Shmona, Rosh HaNikra, Rajar, Ramot Naftali, Re'im, Sha'ar Yashuv, Shavei Darom, Sde Nitzan, Sde Avraham, Sderot, Shuva, Shomera, Shokeda, Shlomi, Shlomit, Snir, Shetula, Talmey Eliyahu, Talmey Yosef, and Tekuma.

7 The damage caused by the war to businesses in evacuated communities has compounded ongoing challenges from previous disruptions, such as the Covid-19 pandemic and crime issues, making it increasingly difficult for these businesses to qualify for state compensation. This is because the government's compensation framework focuses on businesses directly impacted by the war and is based on their income from the previous year (Lukash, 2024; Sadeh, 2024).

Figure 13. Average monthly wage for salaried employees and income for the self-employed, by locality and district of residence, 2022

NIS



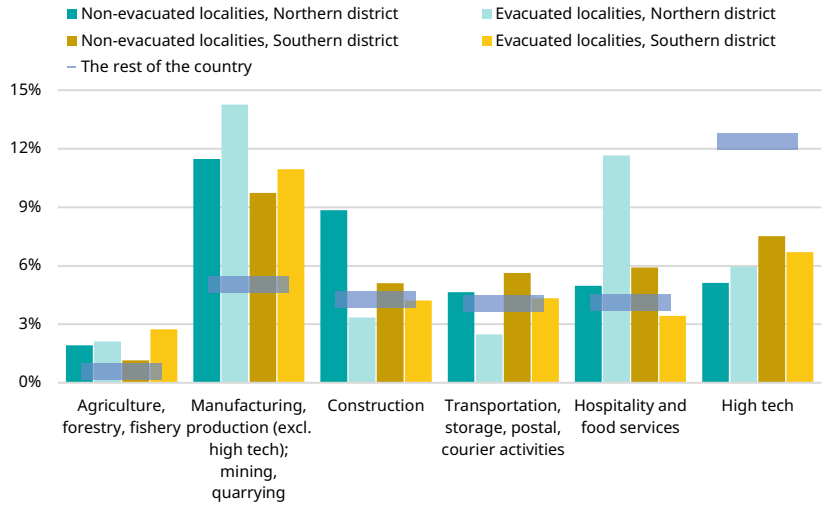
Note: For smaller localities, including some evacuated ones, wage and income data are available only at the regional council level. Therefore, some regional councils are divided so that wage levels are apportioned between evacuated and non-evacuated groups within the district, based on the relative population share of evacuated localities within the council. This approach assumes no significant wage or income differences between evacuated and non-evacuated localities within the same councils and that the relative share of workers in these localities matches their population share.

Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

Wage differences are partly related to variations in the occupational fields of residents in different communities. Figure 14 presents the employment sectors of workers in the year preceding the outbreak of the war, using a classification similar to that in Figure 13. It is evident that residents of the Southern and Northern Districts were employed in agriculture and industry at higher rates than in other districts across the country, while their involvement in high tech was relatively low. Additionally, specific sectoral differences were observed within the districts themselves, between frontline communities that were evacuated and other localities. For example, in the Northern District, the tourism sector employed about 12% of workers residing in evacuated communities, compared to 5% of workers in non-evacuated communities, and 4% in other districts.

Similarly, about 14% of workers in evacuated communities in the South were employed in traditional manufacturing industries — compared to 11% in the rest of the Southern District and only 5% in other districts nationwide. Furthermore, both in the South and the North, the share of construction and logistics workers in evacuated communities was lower than in the rest of the district, while the share of agricultural workers was slightly higher (though still minimal). Interestingly, these wage and occupational differences do not align with significant variations in the formal education levels of workers, especially between evacuated and non-evacuated communities within the same districts (see Appendix Figure 4).[8]

Figure 14. Average share of workers in selected employment sectors, by locality and residential district, Q4-2022 to Q3-2023



Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

8 Although the evacuated communities are, on average, similar in educational composition to the non-evacuated communities, there may be significant educational disparities within the group of evacuated communities, effectively comprising different sub-populations with entirely different educational profiles. See, for example, the analysis by the Ministry of Labor, which distinguishes between Sderot and other evacuees in the South and between Kiryat Shmona and other evacuees in the North (Ministry of Labor, 2024).

Insights into the post-war employment of evacuees can be drawn from a survey conducted by the Ministry of Labor in March–April 2024 among 1,550 evacuees from the South and North. The survey found that about 60% of evacuated salaried employees continued working after evacuation, most at their previous work places. Additionally, around half of the self-employed continued working with clients from evacuated areas, and approximately 60% employed workers from evacuated localities. When asked about potential employment support, about half of evacuated salaried employees expressed interest in training programs or professional development, while a majority of self-employed evacuees from the South (60%) and a sizable share from the North (40%) indicated an interest in financial assistance or returning to their prior businesses (Ministry of Labor, 2024).

Initially, the government's response to evacuee employment focused on compensating employers for employees' wages lost due to evacuation. Subsequently, targeted measures were introduced to promote employment continuity in severely impacted areas and sectors. Between November and June, the government provided a Return to Work Incentive Grant of NIS 3,000 monthly for evacuee residents who continued working at their previous jobs and those employed in evacuated areas. Additionally, between November and March, an Incentive Grant of NIS 3,000–NIS 8,000 per month was given to workers in the agriculture and construction sectors during the war (only one of these grants could be received per individual). The end of these grants sparked concerns that many workers might leave their jobs (Lior, 2024). Beyond the grants, which concluded mid-year, no direct employment assistance was provided by government agencies for evacuees interested in career changes (just under half of surveyed evacuated salaried workers, according to the Ministry of Labor survey).

In this gap, various civilian initiatives emerged to assist evacuees in finding new employment, including Face Forward, Hand in Hand for Evacuees, and 710 West. These initiatives offer counseling, professional guidance, and networking between self-employed individuals and clients or job seekers and employers (Hauzman, 2024; Shtotland, 2023). These initiatives continue to support evacuated workers, with the number of evacuees seeking a change in their employment (accounting for just under half of salaried employees as of March–April) potentially increasing following the conclusion of grants and the ongoing conflict. Ideally, strategic changes would allow evacuees to return

to their homes and previous employment. However, without such changes, it is essential for government agencies to develop policies to optimize the work force of evacuees and prevent underemployment in a population already severely impacted by the war.

Summary

The upheaval caused by the events of October 7, 2023, and the subsequent war has profoundly affected the Israeli labor market, causing a drop in active employment and an almost total cessation of economic activity in targeted regions. By 2024, the labor market stabilized amid the new reality, albeit with slightly lower employment rates than the previous year and a significant reduction in work hours among employees. Employment growth was concentrated in public-oriented sectors such as health, education, public administration, and defense, while there was a dramatic slowdown in employee recruitment in high tech, and the tourism sector shrank considerably. Alongside these changes, real wages for employees resumed an upward trend, though the extent of the rise was not uniform across economic sectors.

The evacuated population from the affected areas, comprising approximately 143,000 people (Shahar & Lerer, 2024), includes tens of thousands of salaried employees, self-employed individuals, and job seekers whose employment has been disrupted. Most evacuated salaried employees have expressed interest in assistance such as professional training or career change, and a high percentage of self-employed evacuees have indicated a need for economic support. The government has not provided these types of assistance, offering only return-to-work and incentive grants for employment in evacuated areas through the summer of 2024. In this context, various civilian initiatives have stepped in to provide alternative assistance to evacuated workers. Concurrently, the share of workers absent due to reserve duty, which reached a peak of 3.4% in December 2023, has since declined but remained relatively high, at about 1% in June 2024. These mobilized workers reduce the work force across multiple sectors, impacting output in ways not fully captured by total employment figures. Reservists miss out on career advancement opportunities and professional growth, potentially threatening their long-term earning potential given the cumulative reserve duty demands.

Looking to the future of Israel's labor market, various organizations have developed aggregate forecasts. According to the October 2024 forecast of the Bank of Israel, the broad unemployment rate is expected to drop slightly, averaging 3.5% in 2024 and 3.2% in 2025, assuming the direct economic effects of the war conclude in early 2025 and the government makes the necessary fiscal adjustments to prevent a deficit increase by year-end (Bank of Israel, 2024). The consensus forecast of the Ministry of Finance's Chief Economists Division, based on similar assumptions, anticipates a slightly higher annual unemployment rate of 3.8% in 2024, along with modest wage increases (Ministry of Finance, 2024). Both forecasts suggest that maintaining the current labor market situation — absent positive or negative developments on the war front — will require responsible budgeting.

Ideally, Israel's government would make the required fiscal adjustments without adversely impacting net worker income or cutting high-quality employment programs like education, including higher education, and professional training. Policy makers should aim to minimize the impact on these areas and address the challenges faced by evacuated workers and reservists, whether through security and diplomatic improvements or economic and employment-oriented solutions.

Israel is in the midst of one of the most challenging periods in its history, with no clear end in sight. While the economy and labor market have thus far withstood the intense pressures of wartime circumstances, signs of strain are beginning to emerge. Meeting these ongoing challenges will require prudent and strategic policy, marshaling resources, and optimizing systems while minimizing work force impacts, especially for those directly affected by the war.

References

English

Bank of Israel (July 2024). *Research Department staff forecast, October 2024*. Bank of Israel, Research Department.

Debowy, M., Epstein, G. S., & Weiss, A. (2021). The Israeli labor market in the wake of Covid-19: An overview. In A. Weiss (Ed.), ***State of the nation: Society, economy and policy 2021*** (pp. 57–88). Taub Center for Social Policy Studies in Israel.

Debowy, M., Epstein, G. S., & Weiss, A. (2023). Israel's tight labor market: January to September 2023. In A. Weiss (Ed.), ***State of the nation: Society, economy & policy 2023*** (pp. 125–157). Taub Center for Social Policy Studies in Israel.

Israel Innovation Authority (2024). *The state of hi-tech 2023*. Israel Innovation Authority.

Shachar, T. & Lerer, M. (2024, July 3). ***Updated data on evacuees from Northern and Southern Districts***. Knesset Research and Information Center.

Hebrew

CBS (2023, December 26). *Struggles of business during Operation Swords of Iron: Data from a flash survey, December 2023*. Central Bureau of Statistics.

Gamss, N. (2024, September 5). "Candidates would come with five contracts in hand and ask for higher salaries — but things have changed." ***TheMarker***.

Gil-Ad, H. (2024, August 12). 60,000 women are serving in reserve duty: "The IDF can't answer our needs like they do for men." ***Ynet***.

Hauzman, O. (2024, May 11). "The goal is to find work for 710 people:" The women evacuees who help their fellow men to return to the work circle. ***Ynet***.

Lior, G. (2024, July 9). Evacuee grants that flowed to work have stopped: "Many have said they will not come to work." ***Ynet***.

Lukatch, I. (2024, June 5). Business owners in the North have difficulties getting government aid: "Everything is stuck because of bureaucracy." ***Ynet***.

Ministry of Finance (July 2024). *Consensus macro-economic forecasts, Second round 2024*. Ministry of Finance, Chief Economists Division.

Ministry of Labor (July 2024). *Israel's labor market 2023*. Ministry of Labor, Strategy and Policy Planning Division.

Sadeh, S. (2024, January 31). Business owners in the North are collapsing: "My husband gives everything to the State in reserve duty — and what do we get?" ***Maariv***.

Shtotland, I. (2023, November 10). Employment entrepreneurs for evacuees: "They have no homes, at least they should have a routine." ***Walla***.

Appendix

Appendix Table 1. Percent change in weekly work hours for employees, 2024 versus 2022 and 2023, by economic sector

	2022			2023			Industry share 2024
	Q1	Q2	Q3	Q1	Q2	Q3	
All industry sectors	-3%	-6%	-1%	-3%	-4%	0%	100%
Agriculture, forestry, fishery	-4%	4%	4%	-3%	1%	3%	1%
Manufacturing, mining, quarrying	-2%	-8%	0%	-2%	-4%	-2%	9%
Electricity, gas, steam, air conditioning	0%	-12%	2%	-1%	-15%	6%	0.4%
Water supply, sewage, waste management	-7%	-8%	7%	-6%	-1%	1%	0.4%
Construction	-7%	-8%	-2%	-7%	-3%	-1%	5%
Wholesale/retail trade (excl. diamonds), motor vehicle repairs	0%	-6%	1%	0%	-3%	0%	10%
Transportation, storage, postal, courier activities	-7%	-8%	-6%	-8%	-4%	-4%	4%
Hospitality and food services	0%	-9%	-9%	-5%	-8%	-7%	4%
Information, communication	-4%	-9%	-1%	-4%	-6%	-1%	7%
Financial, insurance activities	-1%	-6%	2%	-1%	-4%	2%	3%
Real estate activities	-2%	1%	-4%	-5%	-7%	-3%	1%
Professional, scientific, technical activities	-5%	-10%	-3%	-5%	-7%	-2%	8%
Administrative, support services	-3%	-10%	-4%	-6%	-6%	3%	4%
Local, public defense administration, NII	-1%	-3%	-1%	-1%	-2%	-1%	10%
Education	-2%	-1%	6%	-2%	0%	11%	13%
Health, social work, long-term care activities	2%	-3%	1%	-2%	-1%	2%	12%
Art, entertainment, recreation	-3%	-6%	-1%	-5%	-3%	5%	2%
Other services	-3%	-4%	2%	-4%	0%	0%	3%
Household as employer	-2%	-5%	6%	-1%	-2%	8%	1%
Extra-territorial organizations	-20%	6%	-5%	-15%	4%	-4%	0.04%

Notes: The values in the right column represent the percentage of employees in the industry out of the total employed in the economy from January to September 2024.

Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

Appendix Table 2. Absence from the labor market due to reserve duty and selected demographic characteristics among those aged 50 and under, October–December 2023, by economic sector

Sector	Absence due to reserve duty (excl. partial absence)	Percent of employees aged 25–40	Percent of employees who are non-Haredi Jewish men	Adjusted absence rate
Electricity supply, water, sewage, waste management	15.9%	63%	59%	10.8%
Agriculture, forestry, fishery	6.5%	37%	36%	7.6%
Administrative, support services	9.0%	58%	38%	7.2%
Hospitality and food services	6.5%	43%	38%	6.6%
Other services	3.8%	50%	18%	5.6%
Construction	4.8%	54%	35%	3.8%
Education	1.9%	54%	12%	3.8%
Health, social work, long-term care activities	1.5%	52%	12%	3.7%
Professional, scientific, technical activities	5.0%	61%	33%	3.4%
Manufacturing (excl. high tech), mining, quarrying	5.3%	51%	46%	3.4%
Art, entertainment, recreation	5.7%	51%	49%	3.4%
Wholesale/retail trade (excl. diamonds), motor vehicle repair	2.6%	44%	33%	3.2%
Local, public, defense administration, NII. excl. sub-industry 8422 (army and defense activities) and sub-industry 8423 (maintaining public order and safety)	3.4%	53%	31%	3.1%
High tech	8.2%	62%	60%	3.1%
Financial, insurance activities	4.5%	56%	39%	2.8%
Real estate activities	7.5%	66%	54%	2.7%
Sector unknown	3.7%	54%	36%	2.6%

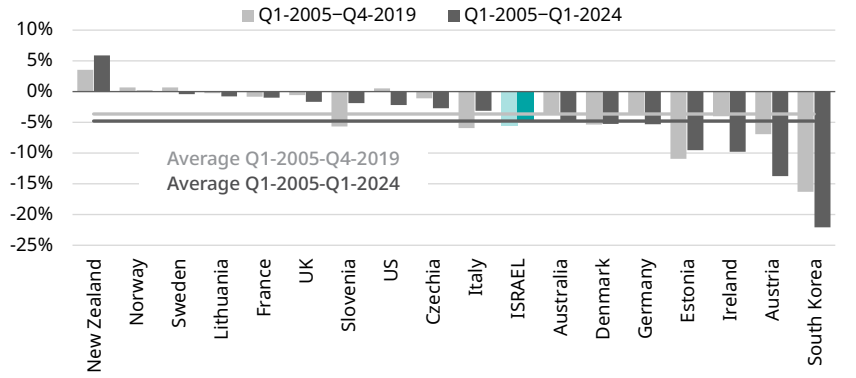
Appendix Table 2 (continued). Absence from the labor market due to reserve duty and selected demographic characteristics among those ages 50 and under, October–December 2023, by economic sector

Sector	Absence due to reserve duty (excl. partial absence)	Percent of employees aged 25–40	Percent of employees who are non-Haredi Jewish men	Adjusted absence rate
Local, public, defense administration, NII	1.4%	24%	52%	2.2%
Information, communication (excl. high tech)	4.6%	59%	50%	1.1%

Notes: The data in the table refer to individuals aged 50 and under during the specified period only. The absence rate is as defined in the note under Figure 11 in the body of the chapter, including partial absence. The adjusted absence rate for each sector is the sum of the sector-specific "residual" (the rate not explained by the two demographic variables) and the all sector average; it can roughly be interpreted as the expected absence rate if all sectors were identical in terms of the demographic variables examined.

Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

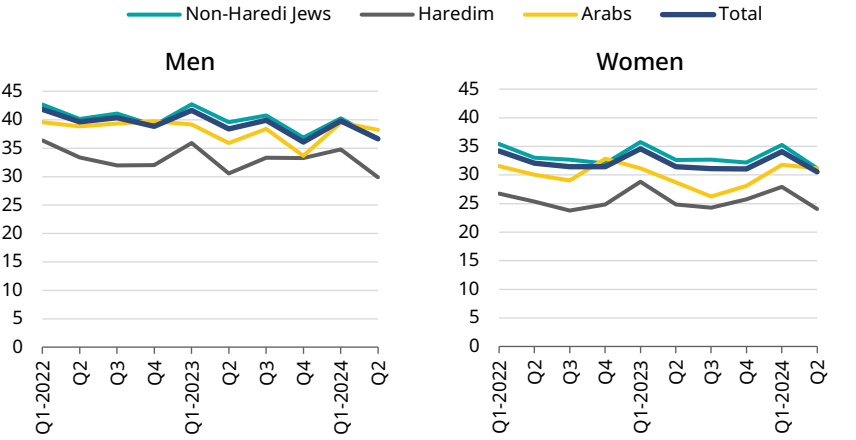
Appendix Figure 1. Rate of change in the average number of work hours, seasonally adjusted, selected OECD countries, 2005/2019 and 2005/2024



Notes: The average working hours per employee is defined as the total working hours divided by the total number of employees in all countries, except for Belgium (average working hours for salaried employees), South Korea (general average working hours per employee), New Zealand (total paid hours divided by total full-time jobs), and the United States (average weekly working hours generally divided by the average weekly wage for salaried employees).

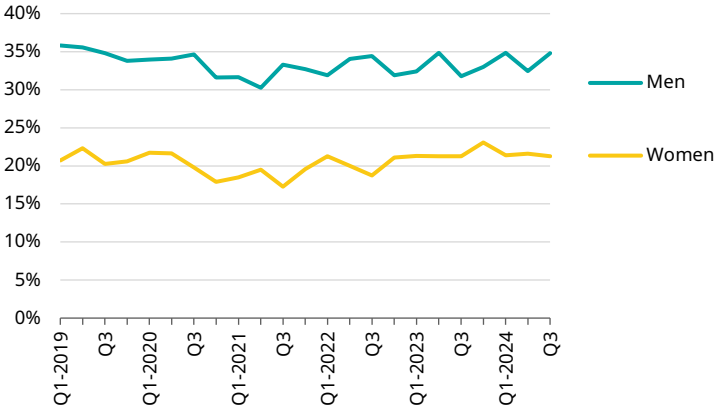
Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: OECD

Appendix Figure 2. Actual weekly work hours, ages 25–66, by gender and sector



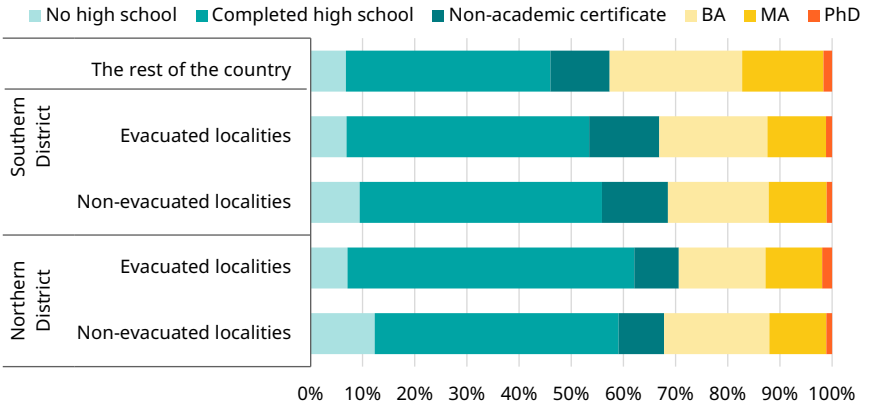
Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

Appendix Figure 3. Employment rates, ages 67–74, by gender



Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

Appendix Figure 4. Worker education, by locality and residential district, Q4-2022 to Q3-2023



Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

Executive Summary

Spatial Norms, Sociocultural Norms, and Family Structure in Israel

Michael Debowy, Gil S. Epstein, and Avi Weiss

This study examines the relationship between Israelis' decisions regarding parenthood and marriage and the influence of their surrounding environment. It also provides a tool for improving demographic forecasts at the national and local levels, as well as for more precise and tailored urban planning based on the future family structure in various local authorities.

The researchers focused on two social environments that may affect individuals in the country: the geographical district, which roughly represents a person's neighbors and those physically close to them; and national-religious groupings, which represent those culturally similar. To conduct the study, the researchers used data from the Central Bureau of Statistics' Household Expenditure Survey and Income Surveys for 2018–2020.

* Michael Debowy, Researcher, Taub Center for Social Policy Studies in Israel; doctoral student, Department of Economics, Ben-Gurion University of the Negev. Prof. Gil S. Epstein, Principal Researcher and Chair, Labor Market Policy Program, Taub Center; Department of Economics, Bar-Ilan University. Prof. Avi Weiss, President, Taub Center; Department of Economics, Bar-Ilan University. This research was published in April 2024 and is available on the Taub Center website.

The results of the study indicate that the higher the percentage of married couples in a person's geographical or cultural environment, the higher the likelihood of that person being married. An increase of one percentage point in the marriage rate in either environment correlates with a 0.5 and 0.4 percentage point increase in the individual's likelihood of being married, respectively. The cultural environment has about 25% more influence than the geographical environment.

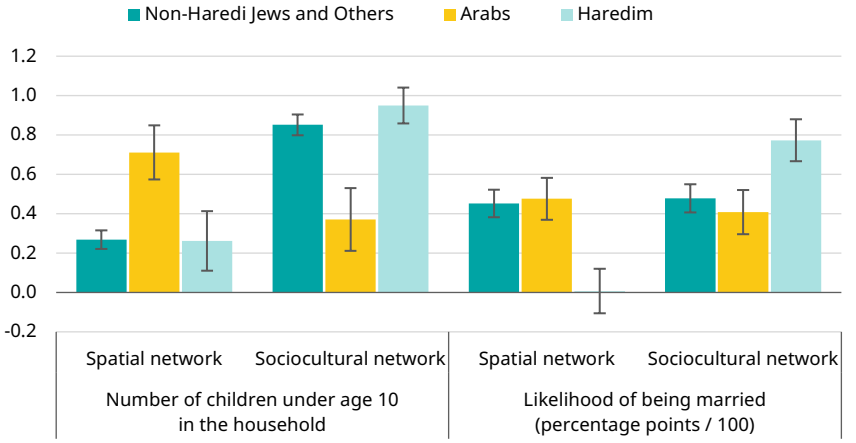
Environmental norms also affect the number of children in a family. Each additional child in the average family in the cultural and geographical environments is correlated with an increase of 0.90 and 0.25 children, respectively, in the individual's family. In this case, the cultural environment has a far greater influence — about three and a half times more than the geographical environment.

Differences between populations

The researchers found that there are differences in the relative importance of local and national cultural norms for different population groups. In particular, Arab individuals are more aligned with their local neighbors than Jewish individuals.

Regarding fertility, the findings show that Arabs are more sensitive to the geographical environment and less to the cultural environment than Jews and others. Additionally, on average, non-Haredi Jews and others are less sensitive to the cultural environment than Haredim (ultra-Orthodox Jews). Interestingly, the family size of individuals belonging to the Haredi or Arab sectors — often perceived as more isolated, even in mixed towns — is just as correlated with the family size of their neighbors as the family size of non-Haredi Jews is with theirs. As for marriage, among non-Haredi Jews, the correlation with the geographical environment is similar to that with the cultural environment, whereas among Haredim, there is no correlation at all with the geographical environment.

Average marginal effects of spatial and sociocultural networks, by population group



Note: The values are the estimates for the average marginal effect based on the detailed estimates, and they represent the effect of the spatial and sociocultural networks on marriage and parenting, given the background variables. The height of each column represents the point estimate while the vertical line intersecting the column's head represents the 95% confidence interval.

Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

Education and employment

The study also examined the contribution of other variables, such as education and employment, to the likelihood of marriage and the prediction of family size. The researchers found that after controlling for normative influences (cultural and geographical environments), education remains a predictor of marriage but loses some importance in predicting the number of children. On the other hand, employment significantly predicts both parenthood and marriage when considering normative influences. In other words, higher education leads to a higher likelihood of marriage but not necessarily more children.

The researchers emphasized that the study's results represent correlations, not causality. However, if the results reflect the effects of the environment on individual behavior, they have important implications for local and national authorities in preparing for demographic forecasts. This is particularly relevant to adapting urban planning to the future family structure in different cultural groups within the population.

Executive Summary

Artificial Intelligence and the Israeli Labor Market

Michael Debowy, Gil S. Epstein, Benjamin Bental, Avi Weiss, and Alex Weinreb

This research examined the level of exposure to artificial intelligence (AI) in the Israeli labor market and its characteristics. The researchers utilized several indicators to assess the expected impact of AI on the labor market in Israel. The exposure characteristics identified in this study allow for estimating and predicting which professions in Israel will be more or less affected by AI and, accordingly, which populations are likely to ***benefit*** from it and which may be ***at risk***.

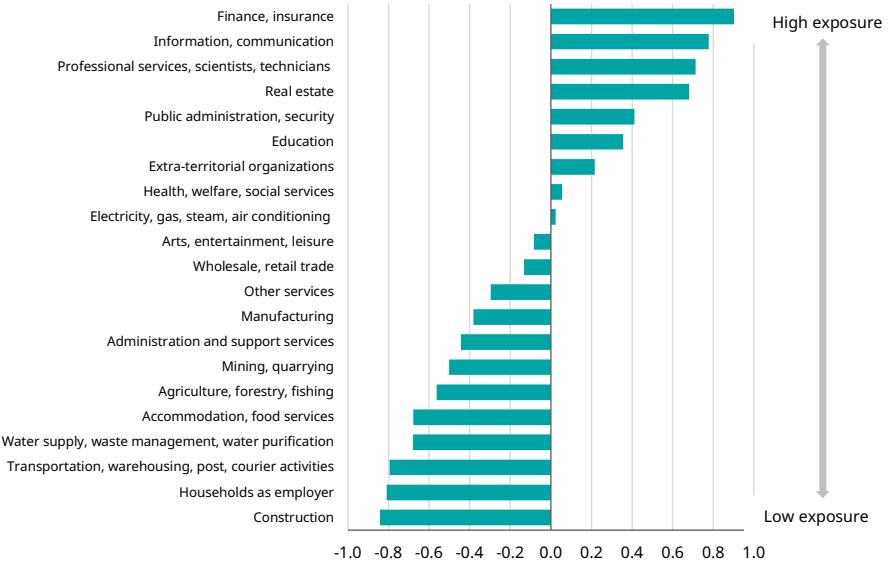
* Michael Debowy, Researcher, Taub Center for Social Policy Studies in Israel; doctoral student, Department of Economics, Ben-Gurion University. Prof. Gil S. Epstein, Principal Researcher and Chair, Labor Market Policy Program, Taub Center; Department of Economics, Bar-Ilan University. Prof. Benjamin Bental, Principal Researcher and Chair, Economics Policy Program, Taub Center; Professor Emeritus, Haifa University. Prof. Avi Weiss, President, Taub Center; Department of Economics, Bar-Ilan University. Prof. Alex Weinreb, Researcher Director and Chair, Demography Area, Taub Center. This research was published in May 2024 and is available in full on the Taub Center website.

AI exposure indicators

In order to estimate the percentage of people exposed to AI within a particular industry or population group, various indicators were developed to evaluate the technology's impact on specific occupations. The first exposure score was assigned based on the relative share of tasks that AI aims to perform out of all tasks for a given occupation. The indicator assigned to each occupation reflects its exposure level relative to the average exposure of all occupations in the economy. Combining these indicators with the frequency of occupations in different population groups (such as economic sectors or demographic sectors) provides a picture of the exposure intensity of workers in each group relative to the average exposure of all workers in the economy.

- *Exposure by economic sector*: Prominent high-tech sectors (finance and insurance, information and communication, professional, scientific, and technical services), as well as the real estate sector, show significantly higher than average AI exposure levels. Over 90% of workers in these sectors are in occupations with higher-than-average exposure. In contrast, exposure to AI in construction, transportation, food services, and agriculture sectors is significantly lower than the average.
- *Exposure by workers' education level*: Unsurprisingly, the study found that as education levels increase, so does the prevalence of occupations exposed to AI. Notably, workers with an academic degree are much more exposed to AI than average, while those who did not complete high school have significantly lower levels of exposure than the population average.
- *Exposure by other characteristics*: Additional breakdowns examined include exposure by residential area (higher exposure in Tel Aviv, Petah Tikva, and Ramat Gan), by workplace characteristics (particularly high exposure among people who usually work from home), by age (highest exposure among workers aged 27–51), and over time (with a significant increase in exposure between 2019 and 2021). Analyzing by sector and gender revealed that men have lower exposure rates than women, and Arab sector workers have the lowest exposure rates. These patterns hold even after controlling for background variables.

Exposure to artificial intelligence by economic sector, 2018–2023



Source: Debowy et al., Taub Center | Data: CBS

Complementarity and AI exposure

Beyond the issue of exposure to AI itself, it is crucial to examine the implications of this exposure: which workers are likely to benefit from the new technology, and who is at risk? To this end, Taub Center researchers used a ***complementarity index*** to assess whether AI can serve as a ***complementary factor*** of production to human labor in each occupation. This means AI could enhance and improve workers' tasks in that occupation and boost their productivity — or it could pose a risk of ***replacement*** (i.e., serving as a replacement production factor).

The research shows that AI is expected to benefit workers in high-tech sectors, such as software developers. In contrast, in the finance and insurance sector, which is also characterized by high exposure levels, the majority of workers are expected to be adversely affected. AI will likely replace many agents and analysts in this sector, as well as some accountants and legal professionals.

In the education sector, most workers exposed to AI are expected to benefit from it, as the development of relevant and updated tools will aid teachers with tasks such as lesson planning and grading assignments, with only a negligible percentage likely to be adversely affected.

Workers at higher educational levels who are exposed to AI are expected to benefit from it, while less-educated workers exposed to it are more likely to be adversely affected. Surprisingly, people working mainly from home, who are highly exposed to AI, are evenly split between occupations likely to benefit and those at risk of being replaced. In contrast, in occupations with high exposure where people typically do not work from home, a larger proportion is expected to benefit from AI than to be adversely affected.

In a breakdown by sector and gender, although exposure levels are lower among Haredi (ultra-Orthodox Jewish) men and Arab women relative to non-Haredi Jewish workers, the ratio of workers in occupations expected to benefit from AI to those likely to be adversely affected is highest among these groups. This ratio is also higher among Arab workers and Haredi women compared to the non-Haredi Jewish population.

Overall, the research found that approximately 30% of workers in Israel (about 1.3 million people) are in a state of high positive exposure to AI — meaning it is expected to improve and enhance their work. For about 23% of workers (around 1 million people), AI is expected to pose a risk to their jobs. For the remaining workers, the exposure is low, making the issue of replacement less significant.

Executive Summary

Do Israelis Work More or Less? The Elasticity of Employment in the Labor Market

Michael Debowy, Gil S. Epstein, and Avi Weiss

Do Israelis work more or less than workers in other countries? Which populations in Israel work more and which less? How does raising children affect employment and working hours? This research examined employment elasticity in Israel among different population groups from 2014 to 2019 and identified several key findings.

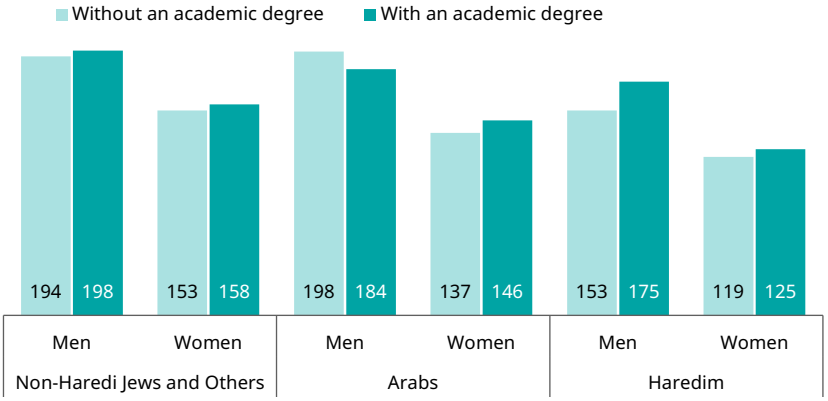
Working hours

- Israeli workers worked an average of 173 hours per month, earning an average hourly net wage of NIS 56.
- In the bottom decile of hourly wage distribution, workers work about 5% less than the national average, while in the top decile, they work about 10% less. Workers in the middle deciles (2–9) tend to work slightly more hours than the national average (1%–3%).

* Michael Debowy, Researcher, Taub Center for Social Policy Studies in Israel; doctoral student, Department of Economics, Ben-Gurion University of the Negev. Prof. Gil S. Epstein, Principal Researcher and Chair, Labor Market Policy Program, Taub Center; Department of Economics, Bar-Ilan University. Prof. Avi Weiss, President, Taub Center; Department of Economics, Bar-Ilan University. This research was published in July 2024 and is available on the Taub Center website.

- Non-Haredi Jewish women worked an average of 156 hours per month, while Arab and Haredi women worked only 140 and 120 hours, respectively.
- Non-Haredi Jewish and Arab men worked an average of 196 hours per month, compared to Haredi men, who worked an average of 153 hours.
- Workers with academic degrees tend to work marginally more hours than those without degrees (about 1% on average). However, among the most vulnerable population groups, the difference is greater. Haredi men with an academic degree work 14% more hours than their non-degree counterparts, and among Arab women, the difference is about 7%.
- The only group where those with an academic degree tend to work fewer hours, on average, is Arab men; degree holders in this group work 7% fewer hours than those without a degree,while their employment rates and average wages are higher.

Average monthly work hours, by sector, gender, and education, 2014–2019



Source: Michael Debowy, Gil Epstein, and Avi Weiss, Taub Center | Data: CBS

In an analysis by occupation, it appears that there are professions where people tend to work more hours than the average, whether the salary is above the average (e.g., managers) or below it (e.g., plant and machine operators). Conversely, there are professions where people tend to work fewer hours, regardless of whether the salary is higher (e.g., professionals) or lower (e.g., sales and service workers).

Employment elasticity and working hours relative to wages

On average, a 1% increase in real wages is expected to raise men's employment by 0.25 percentage points, women's employment by 0.31 percentage points, working hours for employed men by 0.45 percentage points, and working hours for employed women by 0.56 percentage points.

- Among Arabs, employment and working hour elasticity are lower than among Jews. A 1% wage increase will raise Arab men's employment by 0.09 percentage points (compared to 0.16 percentage points among non-Haredi Jews) and their working hours by 0.31% (compared to 0.43% among non-Haredi Jews). For Arab women, employment will increase by 0.14 percentage points (compared to 0.22 percentage points among non-Haredi Jewish women), and their working hours will increase by 0.39% (compared to 0.53%).
- Among Haredi men and women, employment elasticity is slightly lower than among non-Haredi Jewish men and women, with no significant difference between men and women within this sector.

Parenthood and employment

In addition to wage effects, the study examined how the presence of children in the home affects the employment and working hours of men and women. It found that parenting constraints hinder mothers' integration into the labor market, both in terms of employment and working hours.

- In the general population, only women's employment is sensitive to the number of children at home, with each additional child reducing the likelihood of the mother being employed by 3 percentage points. The employment probability of non-Haredi Jewish women decreases by 0.06

percentage points with each additional child, double that of Arab women, while for Haredi women the presence of children does not seem to affect their employment rates.

- The working hours of women from all sectors decrease with each additional child at home, with a greater reduction among Arab women. A non-Haredi Jewish mother of three children is expected to work 39% fewer hours than a similar woman without children, a Haredi woman or man about 27% fewer hours, and an Arab woman approximately 75% fewer hours.
- Unlike women, non-Haredi men (Jews, Arabs, and others) are more likely to be employed with an increase in the number of children. Among Haredi men, however, the effect is the opposite — their employment probability decreases as the number of children at home increases. Additionally, working Haredi men are expected to reduce their working hours with each additional child, similar to Haredi women.

These findings on the impact of the number of children on mothers' employment and working hours resonate with the argument for expanding subsidies for early childhood education and care frameworks. Some of the costs of such measures could be offset by increased maternal employment and higher tax revenues, potentially resulting in a significant positive return.

Executive Summary

Working While Sick: Presenteeism in Israel

Haim Bleikh

This study examined the phenomenon of presenteeism — an employee's presence at their workplace while ill — in the Israeli labor market. The research presents the extent of the phenomenon and the factors influencing it, such as gender, workplace relationships, and employment characteristics, and points to its health and economic consequences. The study's author, Haim Bleikh, found that in Israel, rates of presenteeism are quite high.

Health and economic costs of presenteeism

Studies show that the phenomenon of presenteeism entails both health and economic costs. On the health side, employees who come to work while sick may infect others — colleagues, clients, and the like — thereby increasing the risk of disease transmission in workplaces and even beyond. In addition, in certain health conditions, attending work while ill can lead to a deterioration in an individual's health and, consequently, to an increase in subsequent absences.

* Haim Bleikh, Researcher, Taub Center for Social Policy Studies in Israel. This research was published in December 2024 and is available on the Taub Center website.

On the economic side, both absenteeism and presenteeism incur economic costs due to a decline in employee productivity. However, while the costs associated with absenteeism can be relatively easily estimated because of their documentation, the costs arising from presenteeism — such as decreased output, professional errors, and safety violations — are harder to quantify. Nevertheless, despite the difficulty in measuring the losses caused by presenteeism, there is research evidence that its costs are higher than those resulting from absenteeism.

Main findings

The study examined the phenomenon of presenteeism among employees aged 25–64, relying on data from the Israeli Central Bureau of Statistics Social Survey. Among other things, it found that:

- 61% of employees reported that they worked while sick at least once during the year. This rate is significantly higher than in European Union countries, where the average rate of presenteeism stood at only 42%, but slightly lower than in the United States, where two out of every three employees reported working while sick.

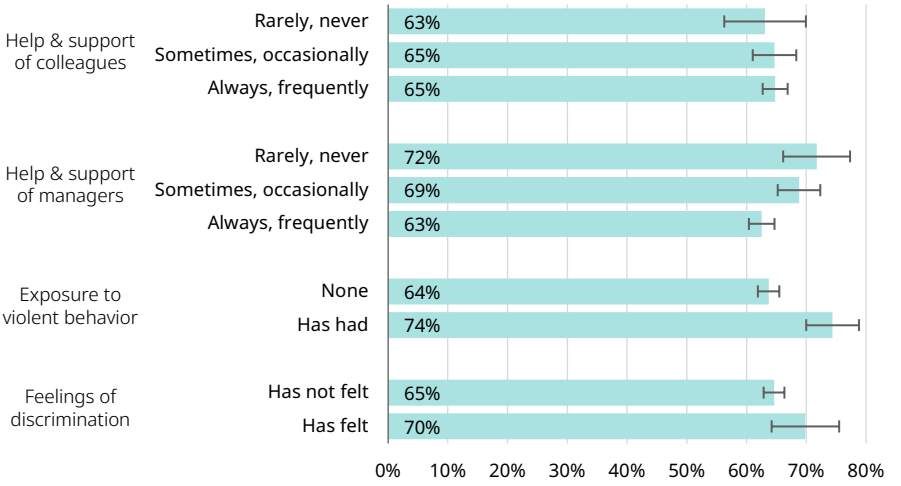
- Presenteeism is more common among women than among men. It is possible that part of the gender gap is explained by the fact that women tend to use more sick days and child illness days, which contributes to an increase in absences and may encourage presenteeism. Moreover, there are health conditions unique to women, such as symptoms related to the menstrual cycle (mood changes, menstrual pain), or pregnancy, which can contribute to presenteeism.

- In a breakdown by economic sectors, it was found that the phenomenon is more prevalent among employees in hospitality and food services, local government, public administration and security, and in the education sector, where presenteeism rates are at least 70%. In contrast, among employees in the transportation and postal services sector, presenteeism rates are the lowest — 57%. The high rate of presenteeism in the education sector, which is the largest sector (employing about 15% of the salaried workers in the economy), is significant due to the interpersonal interaction between educational staff and students. It is possible that in this sector, employees

are more likely to come to work while ill due to the difficulty in finding short-notice substitutes and due to the fear of harming students' academic achievements.

- Organizational culture and workplace relationships: The more support and assistance provided by managers, the lower the rates of presenteeism. It can be assumed that managers who maintain a close relationship with their employees are more likely to advise them not to come to work if they do not feel well, thereby helping to reduce presenteeism among workers. This finding underscores the importance of the ***spirit of leadership*** in organizational culture with regard to employee health. In contrast, exposure to violent behavior in the workplace, such as bullying and harassment, or a sense of unfairness, can cause mental stress, anxiety, and deterioration in an individual's general health, and these in turn may contribute to presenteeism. Employees who feel that they are being treated unfairly may feel compelled to come to work even when ill, out of concern for their status and position.
- The work–family conflict is found to be a factor that increases presenteeism, and this effect is particularly pronounced among women.

Expected presenteeism rates among employees aged 25–64, by workplace relationships



Notes: The sample includes salaried employees who were sick at some point during the year and does not include employees who worked from home. The expected rates are based on the multivariate analysis. The horizontal lines at the end of the bars represent the 95% confidence intervals.

Source: Haim Bleikh, Taub Center | Data: CBS, Social Survey 2016

WELFARE

The Welfare System and the Challenges of War

John Gal and Shavit Ben-Porat

Introduction

Over the past year, Israel's welfare and social security systems have operated against the backdrop of war, following the devastating events of October 7, 2023. At the center of these efforts was the need to address the severe repercussions of the massacre and the war for those directly affected, as well as for individuals whose relatives were abducted or harmed. At the same time, the system needed to provide assistance to a broader population that was evacuated from their homes or lost their livelihoods as a result of the conflict. The scale of the challenge faced by the Ministry of Welfare and Social Affairs, the National Insurance Institute (NII), and the Ministry of Defense, is evident in the sheer number of individuals affected. By mid-November 2024, 1,785 individuals, including soldiers, Israeli civilians, and foreign nationals residing in Israel, had been killed as a result of the massacre and war. During this time, 22,047 people sustained injuries. In the initial months of the war, approximately 143,000 residents of the Gaza border region and Northern border communities were displaced. Of these, 80,000 were relocated to hotels, while others were absorbed into host communities. Estimates suggest that an additional 120,000 evacuated on their own initiative. Over the following months, many returned to their homes near the Gaza border and the North, yet approximately 75,500 evacuees remained in hotels or in host communities, most of them from the North. From the localities evacuated, 32,000 individuals were already regular clients of the social services departments prior to the war.

* Prof. John Gal, Principal Researcher and Chair, Welfare Policy Program, Taub Center; Paul Baerwald School of Social Work and Social Welfare, The Hebrew University of Jerusalem. Shavit Ben-Porat, Researcher, Taub Center for Social Policy Studies in Israel. We wish to thank Yael Ovadia for her assistance in the preparation of this chapter.

We estimate that at least 17,750 of these individuals were also evacuated from their homes (Gal et al., 2024). In addition, 93 abducted Israelis who were subsequently freed were provided with assistance by the social services.[1] During the first six months of the war, the costs of addressing the needs of these populations amounted to a total of NIS 9.5 billion. Most of the funds were directed toward financing evacuees' stays in hotels or their independent community accommodations and providing unemployment benefits and compensation under the Victims of Hostilities Law (Gal et al., 2024).

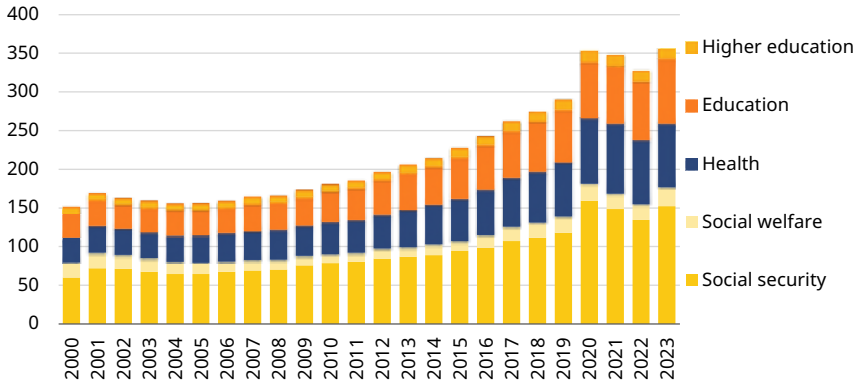
Alongside the response for those directly impacted by the massacre and the war, ongoing support for the welfare and social security needs of regular service users was maintained. This includes residents of localities that absorbed large groups of evacuees from the Gaza border and the North. Additionally, the policy development processes addressing longstanding social issues, such as poverty and disability, continued throughout 2024. This chapter examines these developments. It begins with an overview of social expenditure, proceeds to discuss the war's impact on affected populations, and concludes with an analysis of welfare-related issues that have seen significant progress over the past year.

Social expenditure in Israel

Following two years of reduced social expenditure, which peaked during the Covid-19 pandemic response, 2023 saw an increase in social spending. That year, approximately NIS 355 billion was allocated to social issues from the total state budget of NIS 564 billion. Relative to 2022, this represents an increase of NIS 41.5 billion in nominal terms and approximately NIS 28.3 billion in real terms (adjusted for 2023 prices). As shown in Figure 1, the majority of the increase in social expenditure — encompassing allocations for social security, health, education, social welfare, and higher education — was directed toward social security and education. Later in this chapter, we relate to how the rise in social security expenditure was closely tied to the war and its consequences.

1 Data were taken from the Report on Knowledge and Information of the Israel National Digital Agency, November 14, 2024.

Figure 1. Social expenditure in Israel
NIS billions, 2023 prices



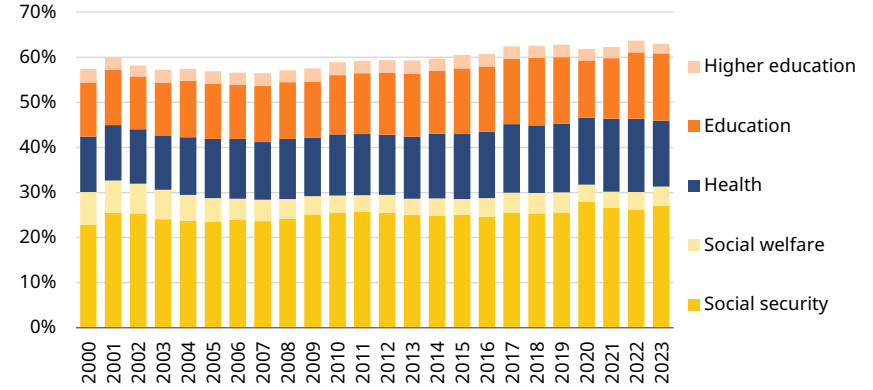
Note: Social expenditure includes allocations for the Ministry of Education, the Ministry of Health, and budget expenditure for higher education; expenditures on social security, which comprise National Insurance Institute benefits (e.g., reserve duty allowances); Ministry of Defense programs for rehabilitation and bereaved families; Tax Authority work grants for employment; allocations for Holocaust Survivors' Rights Authority; and expenditures on social welfare, including allocations from the Ministry of Welfare and Social Affairs, Ministry of Housing and Construction, Ministry of Immigration and Absorption, Ministry for Social Equality, Ministry for the Development of the Periphery, the Negev, and the Galilee, and employment programs under the Ministry of Economy.

Source: John Gal and Shavit Ben-Porat, Taub Center | Data: Ministry of Finance; NII

In 2023, social expenditure accounted for approximately 63% of total government spending, marking a slight decline from the previous year's 63.7%. Defense spending made up about 16% of the total, while other civilian expenditures constituted 21%. This compares to 13.8% and 22.5%, respectively, in 2022 (Figure 2).[2]

2 Defense expenditures include the following items: the Ministry of Defense (net of the Rehabilitation and Families Department), civilian emergency expenditures (Home Front Command and the National Emergency Management Authority), the Coordinator of Government Activities in the Territories (COGAT), various security-related expenditures, the Atomic Energy Commission, and the Discharged Soldiers Law.

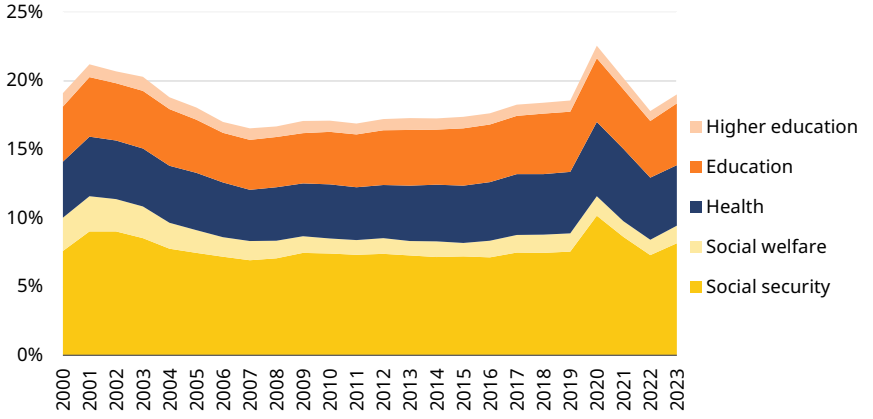
Figure 2. Social expenditure by category, as a share of total government expenditure



Source: John Gal and Shavit Ben-Porat, Taub Center | Data: Ministry of Finance; NII

When examined as a share of GDP (Figure 3), social expenditure in 2023 rose to approximately 19%, reflecting a return to pre-Covid-19 levels. Social security spending alone accounted for about 8% of GDP during the year.

Figure 3. Social expenditure by category, as a share of GDP

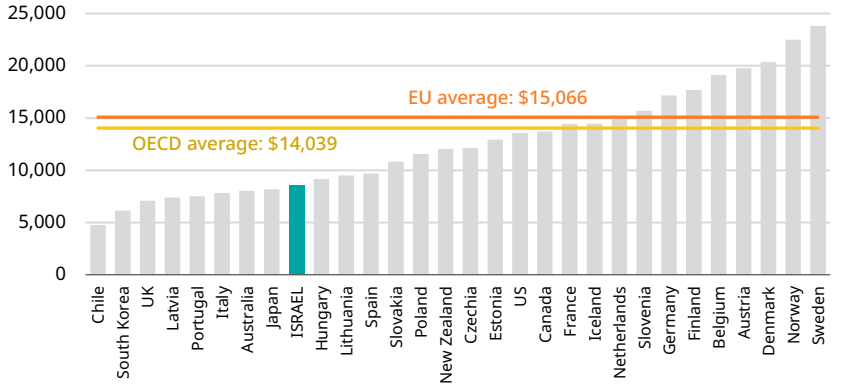


Source: John Gal and Shavit Ben-Porat, Taub Center | Data: Ministry of Finance; NII

One component of social expenditure is public spending on higher education, which totaled approximately NIS 12 billion in the 2023 budget, which is about 0.7% of GDP. Figure 4 compares public spending per student internationally. In 2020, this expenditure in Israel was $8,526 (PPP-adjusted), significantly below the OECD average of $14,039. This figure places Israel behind most comparable countries, including welfare states considered to be generous like Sweden, Norway, and Denmark, as well as conservative welfare states such as France and Germany. Even liberal welfare systems, such as that of the United States, invest more per student than Israel.

Figure 4. Public spending on higher education per student in OECD countries, 2020

USD, PPP-adjusted



Note: The figure represents spending on higher education for academic degree students. In the US, it includes post-secondary education (programs lasting two years or more).

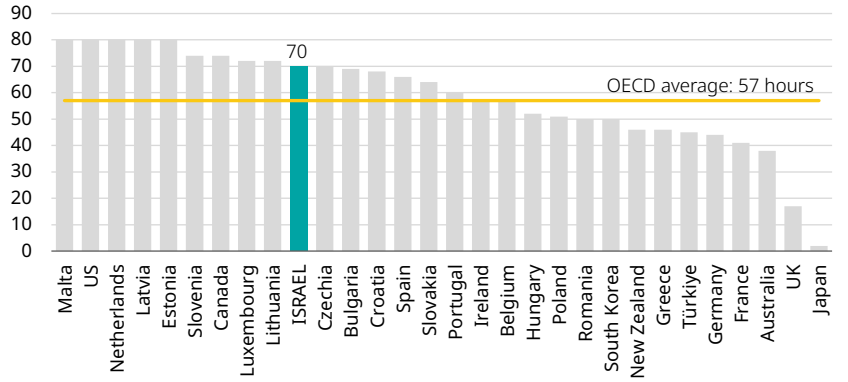
Source: John Gal and Shavit Ben-Porat, Taub Center | Data: OECD

Poverty, inequality, and a National Authority for the War Against Poverty

While comprehensive data on the war's broader impact on poverty and inequality are not yet available, existing statistics for 2024 provide a snapshot of the situation prior to the conflict. The 2023 Report on the Dimensions of Poverty and Income Inequality recently published by the National Insurance Institute reveals that between 2020 and 2023, the poverty rate remained stable at 20.7% of individuals in Israel. Among older adults, there was no change in the poverty rate, following a decline in 2022, likely due to an increase in income supplements for those whose primary income source is National Insurance benefits. The largest increase in the poverty rate was recorded among families headed by self-employed individuals. It appears that the assistance provided to these families was insufficient to compensate for the significant decline in their incomes. However, overall data indicate that, after increases in the previous two years, there was a reduction in the depth of poverty (the gap between the average income of those with income below the poverty line and the poverty line). Improvements were also observed in the effectiveness of NII allowances in addressing poverty, particularly due to the increase in disability benefits and the grants and relief measures provided at the beginning of the war. It should be noted, however, that the contribution of Israeli policy to poverty reduction remains especially low compared to OECD countries (Kasir [Kaliner] et al., 2024).

The high poverty rate in Israel highlights both the limitations of current policies and the challenges of escaping poverty. Comparative data from the OECD underscore some of these difficulties. For example, one measure examines the weekly work hours required by families earning an hourly minimum wage to achieve an income above the poverty threshold. This calculation assumes a two-child family with one working adult while the other is unemployed, factoring in eligibility for minimum income benefits (in — Israel income support) and family allowances (in Israel — child allowances and study grants). In Israel, 70 hours of work per week are needed, compared to an OECD average of 57 hours. This implies that a full-time job (approximately 40 hours per week) is insufficient for an Israeli household to rise above the poverty line.

Figure 5. Weekly work hours required to rise above the poverty line in OECD countries, 2022

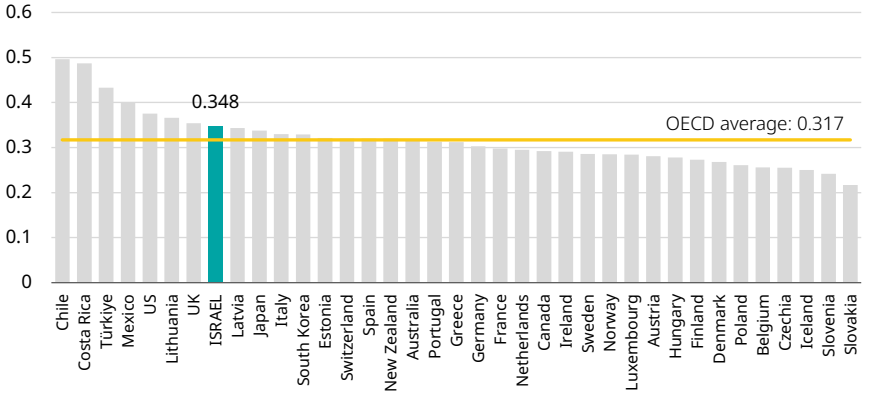


Note: For a family of two parents and two children aged 4 and 6.

Source: John Gal and Shavit Ben-Porat, Taub Center | Data: OECD

In parallel with the persistent poverty issue, inequality levels in Israel also remain high. Based on administrative data from the National Insurance Institute, the Gini coefficient for disposable income in Israel stood at 0.369 in 2023 — a slight decline relative to previous years. Despite this decrease, inequality has remained relatively stable over the past five years, suggesting that income disparities across population groups are not diminishing significantly. Figure 6 presents an international comparison of the Gini coefficient, calculated based on Household Expenditure Survey data for 2021 across various countries. It shows that income inequality in Israel is relatively high compared to most OECD countries, particularly in comparison to other welfare states (with the exception of the United States and the United Kingdom).

Figure 6. Gini coefficient of inequality for disposable income in OECD countries, 2021



Source: John Gal and Shavit Ben-Porat, Taub Center | Data: OECD

Evidence of the severity of inequality in Israel and the challenges faced by the welfare state is further demonstrated in a recent Tax Authority study of the top 1% of earners in Israel (Raz-Dror & Cohen, 2024). The combined annual income of this group amounts to NIS 100 billion, with an average yearly income of NIS 4 million. Comparisons with other countries show that the share of income held by Israel's top 1% is larger than in most welfare states and resembles levels in the US and Bulgaria. Researchers note that the effective tax rate paid by the top 1% is only 26%, a result of the substantial share of capital income in their total earnings, estimated at approximately two-thirds. The authors of the study summarize their analysis as follows: "In terms of the progressivity of its tax system for high-income earners, Israel is much closer to the Americas — tax systems characterized by high inequality and very low progressivity" (Raz-Dror & Cohen, 2024, p. 22).

The National Authority for the War Against Poverty

Efforts to establish a National Authority for the War Against Poverty gained momentum over the past year. The idea, first proposed by the Committee for the War Against Poverty (the Elalouf Committee) in the mid-2010s, has long been supported by civil society and academia (e.g., Krumer-Nevo, 2022). Despite this backing, the authority has yet to be formally established. Over the years, various private member bills have been submitted to the Knesset advocating for a government body to oversee anti-poverty measures across ministries and to advance research and policy in this area. In January 2023, a bill submitted by MK Naama Lazimi, with support from both opposition and coalition members, proposed that the authority sit within the Ministry of Welfare and Social Affairs.[3] The authority's primary functions would include developing a multi-year national strategy and annual plans for poverty reduction, establishing a national center for information and research, coordinating inter-ministerial and local government efforts, and advising the government on anti-poverty strategies. Additionally, the authority would oversee a council responsible for setting policy and monitoring the implementation of these plans.

One central issue of deliberations on the bill within the Knesset Labor and Welfare Committee concerned the status of the National Food Security Council, established by law in 2011 under the Ministry of Welfare and Social Affairs. The proposed legislation calls for dissolving the council and replacing it with a food security committee under the new authority. This has drawn sharp criticism from members of the council and its academic advisory board.

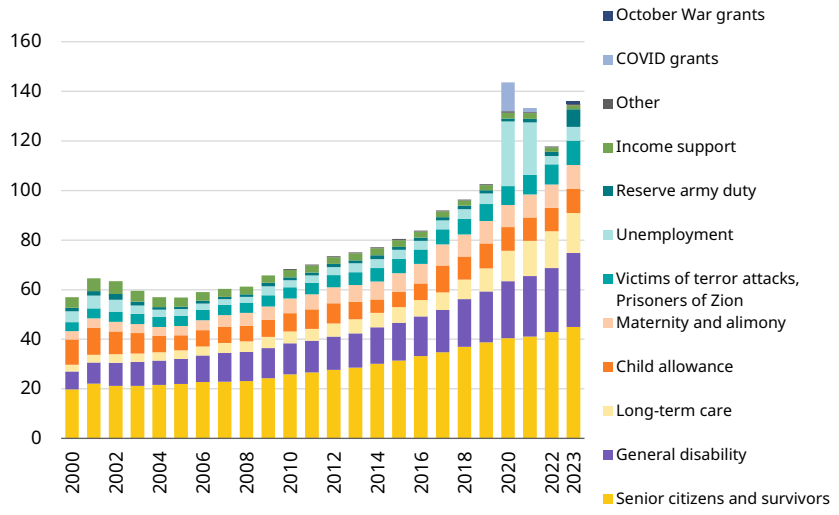
The bill passed its preliminary reading and was referred to the Knesset Labor and Welfare Committee for preparation for a first reading. In June 2024, it was approved in the first reading without opposition or abstentions. If implemented, the National Authority for the War Against Poverty will become the first government body explicitly dedicated to addressing poverty in Israel.

3 See the Knesset website, National Authority for the War Against Poverty Bill, 2023.

Social security

After the Covid-19 pandemic, National Insurance Institute expenditure on benefits returned to its pre-crisis trajectory in 2022. However, 2023 saw a significant increase in spending, reaching approximately NIS 136 billion. This unusual growth was driven in part by wartime needs, including allowances for victims of hostilities, unemployment benefits, reserve duty stipends, and grants for displaced persons. Concurrently, spending on general disability benefits also saw a substantial rise. Figure 7 illustrates that expenditures on all National Insurance benefits increased in 2023, with one exception: income support. Spending in this category has steadily declined over the past decade, except during the pandemic. In 2023, income support expenditures stood at approximately NIS 1.65 billion, with the number of recipients remaining stable at around 60,800, compared to 80,700 in 2021.

Figure 7. National Insurance Institute benefit expenditures
NIS billions



Source: John Gal and Shavit Ben-Porat, Taub Center | Data: NII

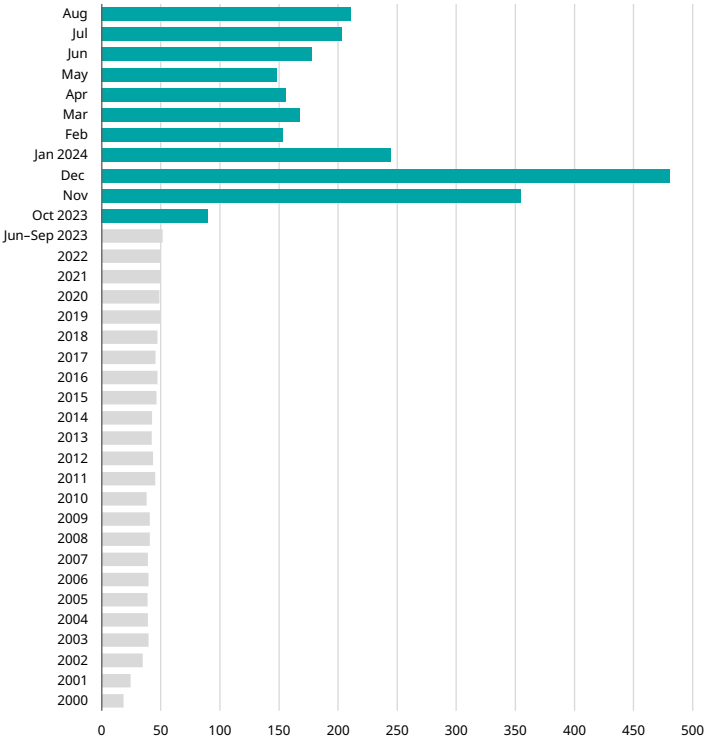
Victims of hostilities

One major factor behind the rise in social security expenditures in 2023 was the sharp increase in spending under the Victims of Hostilities Compensation Law. Enacted in 1970, this law provides for the treatment of individuals harmed in terrorist attacks. It ensures benefits and services for bereaved families, orphans, and those suffering physical or psychological injuries, offering nearly identical rights to those granted to soldiers injured or killed in the line of duty and their families (Yanay, 2024). Until last year, the number of recipients under this law was relatively small, averaging about 5,000 annually over the past decade. Following the October 7 massacre and subsequent conflict, the law was leveraged to provide financial aid and services to those affected. Amendments to the law and its regulations were introduced to expand eligibility and increase benefit uptake in response to the new circumstances. For example, the law was expanded to include abducted civilians and their families. Several groups of victims from the massacre and the war received automatic recognition under the law without the need to submit a formal application: individuals who were hospitalized for their injuries, fatalities, survivors of the Nova and Psyduck parties, and residents of communities where there was an immediate existential threat, such as those infiltrated by terrorists. Additionally, the claims process for recognition as a victim of hostilities was streamlined for those affected from October 7, 2023, onwards. Today, it is sufficient to present medical documents or a report from a counselor at a resilience center and complete a shortened questionnaire. As a result of these measures, the number of recipients of assistance under this law increased dramatically. More than 70,000 victims of hostilities have been identified, including individuals affected by the October 7 attacks, victims of terrorist attacks and rocket barrages in the North and South, abductees who have returned from captivity along with their families, and the families of abductees still held by Hamas. Figure 8 shows the significant increase in National Insurance expenditures resulting from these changes and the dramatic expansion of those eligible for assistance under the law. By the end of 2023, the monthly expenditure on compensation for victims of hostilities had risen to approximately NIS 480 million, nearly ten times the average monthly expenditure in 2022 (in 2023 prices). This expenditure included grants and initial payments provided by the National Insurance Institute without requiring supporting documentation, as part of the streamlined process for recognizing victims of hostilities. These payments included two medical care compensation

payments, adjusted according to family composition and age (the first ranging from NIS 2,883 to NIS 5,977, and the second from NIS 3,460 to NIS 8,972). Additionally, a one-time grant of NIS 3,500 and an advance payment of NIS 1,500 against medical care compensation were provided. Those recognized as victims of hostilities who sustained physical or emotional impairments may submit applications for disability recognition to receive a fixed monthly allowance. As of September 2024, the number of recognized victims of hostilities stood at 16,545.

Figure 8. Average monthly expenditure on compensation to hostile action casualties

NIS millions, 2023 prices



Note: The figure shows the average monthly expenditure for every year, except in the final columns that relate to specific months after October 2023.

Source: John Gal and Shavit Ben-Porat, Taub Center | Data: NII

Unemployment insurance

The war also impacted the number of individuals receiving unemployment benefits. During the conflict, particularly in the early months, unemployment benefits served as a safety net for those who were laid off or placed on unpaid furlough. To make this program more accessible, the minimum furlough period required to qualify for unemployment benefits was reduced from 30 days to 14 days, and the employment qualification period was shortened from 12 months to 6 months. Additionally, eligibility for unemployment benefits was extended to evacuees under certain conditions, and the benefit period for repeat claimants was extended until the end of December 2023.[4] It was further established that professionals such as lecturers, artists, and tour guides whose workplaces ceased operations due to the war could qualify for unemployment benefits.[5] As shown in Figure 9, the number of unemployment benefit recipients decreased significantly following the Covid-19 pandemic. Between January and September 2023, the average number of recipients was approximately 82,000 per month. However, with the onset of the war, this number surged two-and-a-half-fold, reaching approximately 206,000 by November 2023.

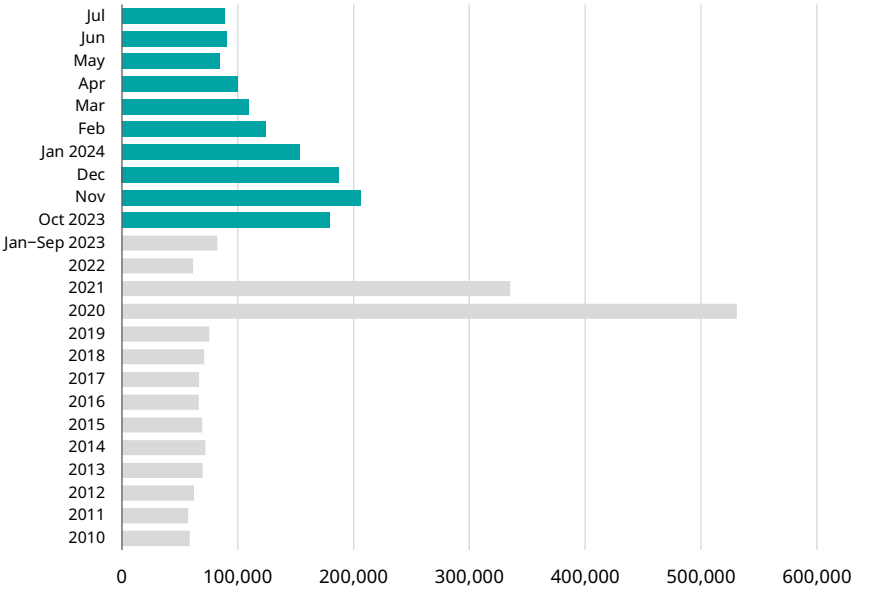
Subsequently, as the labor market gradually returned to full activity, the number of recipients began to decline. By June, the figure had nearly returned to pre-war levels. The increase in the number of unemployment benefit recipients led to a rise in National Insurance expenditures, adding approximately NIS 2 billion to costs during the first six months of the war.[6]

4 Residents of evacuated communities who are not working and have exhausted their eligibility for unemployment benefits may be entitled to an unemployment grant equal to the unemployment benefits they previously received. See the National Insurance Institute website, Grants to Evacuees Who Are Not Working (Unemployment Benefit Substitute).

5 See the NII website, Counselors, Lecturers, Teachers, Artists, and Tour Guides.

6 Relative to the average expenditure in the previous year.

Figure 9. Number of recipients of unemployment benefit



Note: The figure shows the average monthly number of those receiving unemployment benefits in each year, except in the final columns that relate to specific months after October 2023.

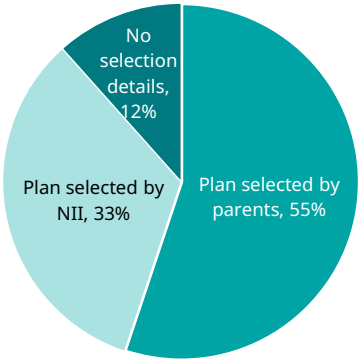
Source: John Gal and Shavit Ben-Porat, Taub Center | Data: NII

Savings for Every Child

The Savings for Every Child program is intended to ensure that every child in Israel has access to a sum of money to assist them at the beginning of adulthood. As part of this program, the National Insurance Institute deposits NIS 57 per month (as of 2024) for each child from birth until they reach the age of 18 or 21. Parents may also choose to add an additional NIS 57 from the child allowance, thereby doubling the monthly savings amount. Parents can choose where the child's savings will be managed from a range of options, including bank savings plans or provident funds (Rafaeli & Benish, 2022). The list of provident funds includes dozens of plans with varying levels of risk, managed by investment firms or insurance companies. In July 2024, two significant changes were made to the program's operation. The first change

is that the default option for depositing savings for children whose parents did not choose an investment track will now be a provident fund with a high-risk profile, expected to yield higher long-term returns.[7] The second change allows savings managed in a bank account to be transferred to a provident fund, an option not previously available. A report recently published by the National Insurance Institute on the Savings for Every Child program indicates that in 2023, approximately 21% of the plans were managed in banks, while the remainder were managed in provident funds. The data also show that at least 33% of the plans were assigned to an investment track by default, as parents did not actively select one (Figure 10).[8]

Figure 10. Distribution of Savings for Every Child plans by agent or individual responsible for savings track selection



Note: Data are accurate to the end of 2022.

Source: John Gal and Shavit Ben-Porat, Taub Center | Data: NII

The changes to the Savings for Every Child program are expected to particularly impact disadvantaged populations. An analysis of program data for 2018–2019 revealed significant disparities across population groups regarding both participation in selecting an investment track and the choice of track itself.

7 Over the years, several changes have been made to the default option, including deposits into provident funds for some children. Following the change, the default is a deposit into a high-risk provident fund for all children.

8 See the NII website, NII Report on the Savings for Every Child Program.

The analysis found that as parental income quintile increases, the likelihood of parents actively choosing an investment track also rises. Additionally, parents in the highest income quintile were 37 times more likely to choose a high-risk investment track compared to parents in the next to lowest (fourth quintile) and lowest quintile (Gottlieb, 2022). Therefore, the change designating a high-risk investment track — with potentially higher returns over the long term — as the default for plans where parents do not actively choose a track could help reduce inequality in the future.

However, the changes made to the program did not address the option of contributing an additional amount from the child allowance. As noted, parents may double the monthly savings by depositing an equivalent amount from the allowance they receive for their child. Data from May 2019 indicate disparities in this regard as well: only 22% of parents in the lowest income quintile made the additional contribution, compared to 65% of parents in the highest quintile (Gottlieb, 2022). The lack of attention to this issue undermines one of the program's primary goals, that of reducing inequality.

Work grant

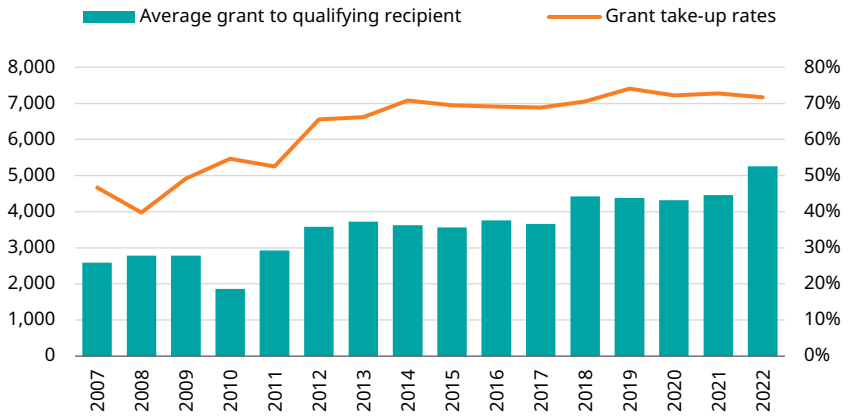
The work grant program aims to support low-income workers and encourage labor force participation. Initially launched as a pilot in 2008, it was expanded to the general population in 2012. Participation in the program requires an active application to receive the grant. In recent years, the number of eligible recipients has remained relatively stable. In 2020, approximately 325,000 individuals claimed the work grant. Similarly, the take-up rate has remained consistent, with about 72% of potential recipients utilizing the program (Figure 11). To increase the number of eligible recipients and improve take-up rates, various steps have been taken in recent years. These include expanding eligibility criteria, increasing benefits for specific population groups, simplifying the application process — including enabling online applications rather than through post offices — launching extensive media campaigns, and disseminating information in multiple languages. Despite these efforts, there has been no significant increase in the number of recipients or take-up rates. However, the annual expenditure on the program has grown. While expenditures remained steady at around NIS 1.4 billion from 2018, they rose to NIS 1.65 billion in 2022[9]

9 This figure is not final and is expected to increase somewhat.

following a decision to increase the grant amount. The average grant increased from approximately NIS 4,460 to NIS 5,260. This expenditure represents about 0.09% of GDP and 0.34% of total government spending.

This year brought an additional change to the grant program. The Assistance for Parents with Children Under Age Three Law, which came into effect in March 2024 (see details in the next section), stipulates that low-income parents with children under the age of three will be eligible for a supplement to the work grant starting in the 2024 tax year. In addition, due to the war, the deadline for submitting grant applications was extended.

Figure 11. Work grant: Average amount paid and take-up rates
NIS, annual average



Note: The grant amounts paid for the tax year. Data for 2022 are not final.

Source: John Gal and Shavit Ben-Porat, Taub Center | Data: Ministry of Finance, Tax Authority

Assistance for Parents of Children Under Age Three Law

In March 2024, the Assistance for Parents with Children Under Age Three Law came into effect. This law grants parents additional tax credit points and, as noted, provides working parents with low incomes an added benefit through the work grant starting in the 2024 tax year.

Tax credit points are allocated based on the child's age. For each child born during the tax year, one tax credit point is added per parent. For children who turn one or two during the tax year, two tax credit points are added per parent. For children who turn three during the tax year, one tax credit point is added per parent. Each tax credit point is worth NIS 2,904 annually (NIS 242 per month). This means that a household in which each parent is entitled to two additional tax credit points can receive up to NIS 11,616 annually, and even more in some cases where there are multiple children under age three. However, to benefit from the additional tax credit points, a parent's monthly income must exceed a certain threshold (the tax threshold). Table 1 presents examples of parents eligible for the additional benefit under the law. For example, prior to the Assistance Law, a married woman with two children aged two and five was entitled to 7.75 tax credit points, and her monthly income threshold for beginning to pay income tax was approximately NIS 13,800. With the implementation of the law, the income threshold for fully utilizing the additional tax credit points increased to approximately NIS 16,200 (the income threshold for paying taxes). For a married man with children of the same ages, the income threshold was about NIS 13,200 before the law and increased to approximately NIS 15,600 after the law. This threshold exceeds the average monthly wage for salaried employees (NIS 13,920 as of June 2024). In another example representing the lower income threshold (above which income tax is owed), parents of a single three-year-old child receive one additional tax credit point (per parent). The income threshold for beginning to benefit from this addition is NIS 10,775 for women and NIS 10,170 for men. To fully utilize the additional benefit, their monthly income would need to reach NIS 11,985 and NIS 11,380, respectively.

According to data from the 2022 Household Expenditure Survey, the median gross income from work for mothers of children under age five was NIS 8,240, while for fathers it was NIS 12,648. Based on the examples above, only a father of a three-year-old child with median income would benefit from the additional

monthly income due to the tax credit point, while in other cases, the additional points would not make a difference.

Table 1. Examples of parents eligible for additional benefits under the law

	Tax credits before the benefit	Tax credits after the benefit	Income limit before the benefit NIS	Income limit after the benefit NIS	Monthly addition for those over the income limit NIS	Monthly addition by median labor income NIS
Married woman with 2 children between ages 2 and 5	7.75	9.75	13,800	16,198	484	0
Married man with 2 children between ages 2 and 5	7.25	9.25	13,198	15,600	484	0
Married woman with 1 child age 3	5.25	6.25	10,775	11,985	242	0
Married man with 1 child age 3	4.75	5.75	10,170	11,380	242	242

Notes: The income threshold in this table represents the monthly income level above which income tax begins to be paid, considering only tax credit points related to family status and gender. Credit points for additional factors, such as immigrant status, completion of higher education, or tax benefits for living in periphery areas, are not included. According to the CBS Household Income Survey for 2022, the median income from work for mothers with children aged 0–4 was NIS 8,240, and for fathers, NIS 12,648.

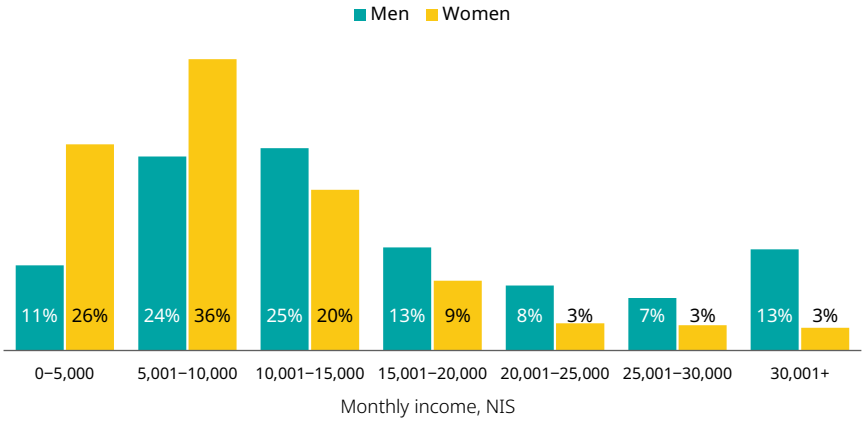
Source: John Gal and Shavit Ben-Porat, Taub Center | Data: Tax Authority Simulator

An analysis of the distribution of labor income for parents of young children in 2022 (Figure 12) shows that most mothers — about 62% — earned less than NIS 10,000. For women in this income range, the additional tax credit points are irrelevant, as a woman would need to earn more than NIS 10,775 to begin benefiting from the tax reduction and NIS 11,985 to fully utilize the benefit. Among fathers, about 35% earned less than NIS 10,000, meaning that a significant portion of them also would not benefit from the additional points. It should be noted that the average wage in the economy has risen since then,[10] so it is likely that in 2024, the percentage of parents earning less than

10 According to CBS data for the first quarter of 2024, the average wage in the economy for salaried positions increased by approximately 12% since 2022. The income figures presented in the table refer to 2022 data, as these are the most up-to-date figures available.

NIS 10,000 was lower than in 2022. Additionally, the examples presented do not account for tax credit points granted for other parameters (e.g., additional children, immigrant status, academic graduation, etc.) that increase the income threshold for benefiting from the additional points.

Figure 12. Income from work among parents of children up to age 5, 2022



Source: John Gal and Shavit Ben-Porat, Taub Center | Data: CBS, Household Expenditure Survey 2022

As noted previously, the law also includes an addition to the work grant for low-income parents. The supplemental amount increases gradually within lower income brackets and decreases gradually within higher income brackets. The maximum monthly supplement for eligible parents is NIS 470 per child under age three.

The law also raised the income ceiling for eligibility for the work grant for parents of children under age three. For instance, in the 2023 tax year, the income ceiling for a parent with one or two children to qualify for the work grant was NIS 6,850. Starting in the 2024 tax year, for a parent with two children, one of whom is under age three, the ceiling increased to NIS 8,255. For a parent with two children under age three, it rose to NIS 9,531. This means that more families with children under age three will now be eligible for the work grant. However, because the

work grant requires an active application, some eligible individuals may not take advantage of the benefit (in 2022, the take-up rate for the work grant was 72%).

According to data from the Israel Tax Authority, the additional tax credit points are expected to result in a revenue loss of NIS 1.3 billion annually beginning in 2024. The supplemental work grant is projected to increase government expenditure on the program by approximately NIS 850 million annually starting in 2025.[11]

Food vouchers

During the Covid-19 pandemic, a program was launched to address the economic consequences of the crisis among low-income families by distributing rechargeable food vouchers. This program was first implemented by the Ministry of Interior in 2021. Eligibility was primarily based on municipal tax (arnona) discounts granted due to low income. Under the program, 322,420 families received food vouchers worth an average of approximately NIS 2,180 per family, for a total value of about NIS 703 million. The actual redemption of the vouchers totaled NIS 684 million, representing a 97% take-up rate. A study conducted by the Taub Center (Gal et al., 2023) examined the gap between the percentage of families receiving assistance and the poverty rate among families in each locality. On average nationwide, the percentage of families receiving assistance was lower than the percentage of families living below the poverty line (a negative gap). The study also found that in some Haredi localities, the gap was either zero or positive. Even in Haredi localities with a negative gap, the disparity was smaller than the national average. In contrast, most Bedouin localities had a negative gap, often larger than the national average. Moreover, Bedouin localities recorded the largest negative gaps between the percentage of families receiving vouchers and the percentage of families living in poverty.

Following the publication of these findings and other critiques of the program's eligibility criteria, petitions were submitted to the High Court of Justice by the Movement for Quality Government and Hiddush — Freedom of Religion for Israel — demanding a review of the program's framework before it was renewed. In mid-2023, the Minister of Interior announced new eligibility criteria

11 See the Tax Authority website, Approved for second and third readings: Additional tax credit points and work grant for parents of children under the age of three.

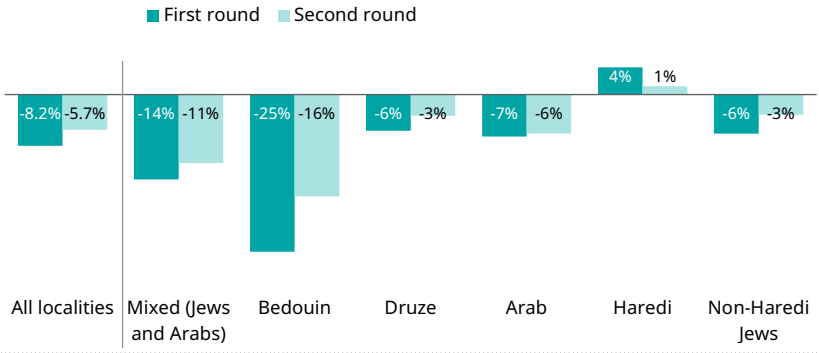
for the program's second round, budgeted at approximately NIS 400 million, to be distributed in two phases: by the end of 2023 and during 2024. Under the new criteria, automatic eligibility was granted not only to those receiving at least a 70% municipal tax discount for low income but also to senior citizens receiving income supplements alongside old-age benefits (i.e., individuals whose primary income is from benefits), individuals receiving income support or alimony payments from the National Insurance Institute, and Holocaust survivors receiving financial assistance. Additionally, low-income individuals not automatically eligible could apply for food vouchers. Eligibility amounts were determined based on the number of household members and capped at NIS 2,400 per family (Ministry of Interior, 2023).

An analysis conducted by the Taub Center using data from the Ministry of Interior and Eshel by Colel Chabad on the second round of voucher distribution and poverty data by locality from the National Insurance Institute produced the results presented in Figure 13. The findings indicate that the average gap between the percentage of families eligible for food vouchers and the percentage of families living in poverty decreased between the two rounds, from 8.2% to 5.7%. However, the changes in the gap across different groups of localities were not uniform. In Arab localities the gap narrowed the least, while in Bedouin localities it decreased significantly, although these localities still had the largest gap. In Haredi localities — the only ones with a positive gap in the first round — the gap narrowed, but it remained the only positive one (the share of entitled families was greater than the share of families in poverty).

In response to a High Court petition regarding the program's framework, the State reported that an inter-ministerial committee of director generals was established to examine the principles for determining eligibility criteria, the identity of the ministry responsible for implementing the program, and the methods of its execution. The committee recommended that of the NIS 300 million allocated for 2024, NIS 90 million should be directed toward strengthening the Ministry of Welfare and Social Affairs' Food Security Initiative, with one-third of this amount allocated specifically to bolster the initiative in Arab communities. The remaining NIS 210 million will be distributed according to the criteria established in 2023, subject to two adjustments: recipients of income support will receive full-value vouchers like other eligible groups, instead of half-value vouchers as previously stipulated; and the restriction limiting eligibility to two children for recipients of income support and alimony

payments will be removed. The committee further recommended that by 2025, all food security assistance initiatives should be consolidated under the Ministry of Welfare and Social Affairs.

Figure 13. The gap between the share of families eligible for food vouchers and the share of families living in poverty in the locality (adjusted)



Notes: The percentage of eligible families was calculated based on Ministry of Interior data regarding eligible families relative to the number of families in the locality, according to 2022 census data. The percentage of poor families was calculated based on the 2022 Poverty Report by the National Insurance Institute. The analysis did not include families from localities for which data on the number of families or poverty rates were unavailable (including many families from the Bedouin diaspora). In the first round, 14,572 families out of 347,883 eligible families were excluded from the analysis, and in the second round, 20,246 families out of 423,250 eligible families were excluded.

Source: John Gal and Shavit Ben-Porat, Taub Center | Data: NII

In light of the Taub Center's research findings, it is evident that significant revisions to the food voucher program are still required in order to ensure that it effectively targets the most vulnerable families. Alternatively, given doubts about the program's contribution to addressing food insecurity, consideration should be given to canceling the program entirely and reallocating its resources to the Ministry of Welfare and Social Affairs' Food Security Initiative, which specifically focuses on populations experiencing food insecurity. At the same time, efforts should be made to guarantee every family in Israel the basic right to live in dignity through all means available to the welfare system, particularly via the income support program.

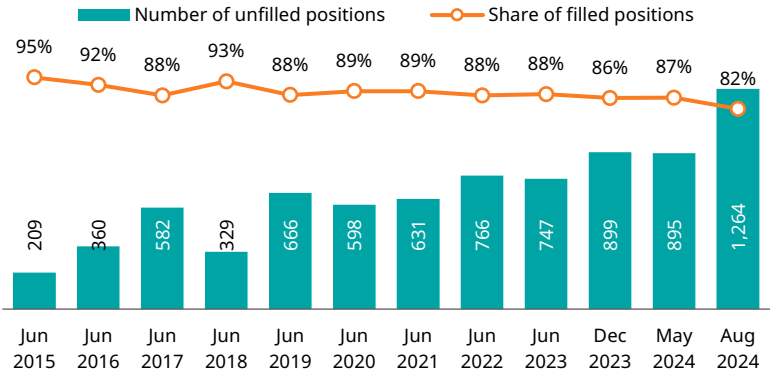
Ministry of Welfare and Social Affairs

In the weeks and months following October 7, 2023, the Ministry of Welfare and Social Affairs was required to address complex and unexpected situations, necessitating changes in work patterns for the ministry, its regional offices, and the social services departments in local authorities. According to a Taub Center study on the functioning of the welfare system during the first six months of the war (Gal et al., 2024), the ministry's new tasks included assisting victims of the massacre and their families, providing support to civilians harmed during the war, caring for children who were abducted and subsequently released, and offering aid to evacuees from communities near the Gaza border and the North. To assist evacuees, the ministry had to reinforce social services departments in both host communities receiving evacuees and evacuated communities, whose departments were expected to continue providing services to their dispersed populations throughout the country. At the same time, ministry teams and social services departments were required to maintain regular services for their permanent target populations and for welfare institutions under the ministry's responsibility.

To address these demands, the Ministry of Welfare and Social Affairs received budgetary supplements. At the start of the war, the ministry was allocated an additional NIS 247 million for the 2023 budget. In 2024, the welfare budget was increased by approximately NIS 178.5 million. An analysis of how the additional funds were used up to February 2024 shows that they were directed toward several key purposes: evacuating facilities and welfare populations; hiring additional staff and reinforcing workers in out-of-home care settings; assisting families following the closure of day programs; and establishing alternative day frameworks in hotels.

In response to the new needs created by the war, additional social worker positions were added to social services departments in local authorities. However, as shown in Figure 14, even during this period, the Ministry of Welfare and Social Affairs struggled to fill these positions. For example, in June 2023, there were 747 unfilled positions, with a staffing rate of 88%. By August 2024, the number of unfilled positions had increased to 1,264, and the staffing rate had fallen to 82%. The increase in unfilled positions primarily reflects the additional positions created in response to the significant rise in needs during the war. The difficulty in staffing social worker positions remains one of the major challenges currently facing the ministry.

Figure 14. Social work positions and staffing rates in social services departments



Note: The figure shows only positions funded by the Ministry of Welfare and Social Affairs, excluding those positions fully funded by the local authority.

Source: John Gal and Shavit Ben-Porat, Taub Center | Data: Ministry of Welfare and Social Affairs

Alongside the new responsibilities that emerged for the Ministry of Welfare and Social Affairs due to the war, especially as it continued, issues that had long preoccupied the ministry before the war returned to its agenda. Two of these are discussed here: care for individuals with disabilities and the process of decentralizing welfare authority.

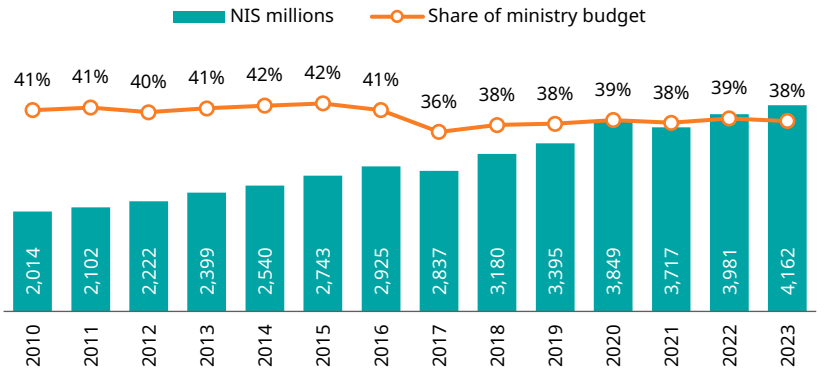
Individuals with disabilities

In 2017, the Ministry of Welfare and Social Affairs established the Disabilities Administration to consolidate various activities related to individuals with disabilities under one roof. Today, it is a central component of the ministry's operations. As shown in Figure 15, the budget allocated for services for individuals with disabilities has steadily increased over the years and consistently represents approximately 40% of the ministry's total expenditures. The primary target population of the Disabilities Administration includes adults with disabilities (excluding individuals with mental disabilities, who are under the care of the Ministry of Health), as well as infants and children up to age

six with developmental delays. According to the administration's data, in 2023, it served approximately 174,000 individuals with disabilities and their families (Ministry of Welfare and Social Affairs, 2024). The war that began on October 7 necessitated the evacuation of individuals with disabilities from communities near the Gaza border and the North, as well as residents of institutions located in areas near combat zones. Additionally, the administration had to respond to the needs of individuals with disabilities across the country who required assistance during the war (Gal et al., 2024).

Beyond addressing the war's effects and providing a variety of services to its target populations, a central focus of the administration's work has been the promotion of the Welfare Services for People with Disabilities Law, enacted in mid-2022 and taking effect in January 2024. The law is intended to ensure the rights of individuals with disabilities to live independent, autonomous, and active lives in society and in their communities. It also aims to establish mechanisms for community-based care and to guarantee their autonomy through a system of personal budgets (Gal et al., 2022). Since the law's adoption, the Disabilities Administration has been actively developing regulations and operational procedures to facilitate its implementation.

Figure 15. Budget of the Disabilities Administration and its share of the ministry's total budget



Note: From 2010 until 2019, the figure relates to the budget of the Rehabilitation Division and the Division for People with Intellectual and Development Disabilities, and from 2020, it relates to the budget of the Disabilities Administration.

Source: John Gal and Shavit Ben-Porat, Taub Center | Data: Ministry of Finance

Recently, two reports were published regarding the Ministry of Welfare and Social Affairs' treatment of individuals with disabilities, shedding light on the challenges facing the Disabilities Administration. The first report, by the UN Committee on the Rights of Persons with Disabilities (United Nations, 2023), was based on a report submitted to the committee by the Israeli government. This UN report addressed a wide range of issues, including the lack of adequate legislation on the rights of persons with disabilities, barriers to accessibility in various areas, violations of their rights in public spaces, and the absence of material assistance for asylum seekers with disabilities. The report explicitly emphasized the need for the Ministry of Welfare and Social Affairs to expedite the transition from institutional care for individuals with disabilities to community-based living arrangements that promote their autonomy. These were also the recommendations of the Dotan Committee, which examined the management and operation of institutions for individuals with disabilities under the ministry's purview. The committee's conclusions were adopted by the Minister of Welfare and Social Affairs (Holler, 2023).

The second report, focusing directly on the activities and performance of the Disabilities Administration, was published this year by the State Ombudsman (State Ombudsman, 2024). The report pointed to deficiencies in the systems managed by the administration, particularly in integrating young graduates of special education programs into the community, as well as in housing and employment services for individuals with disabilities. According to the report, the take-up rates of rights across these systems were notably low. For instance, only 57% of eligible young adults who graduated from special education programs accessed the services offered by the Disabilities Administration. Examination of autonomy and social integration among individuals with disabilities under the administration's care showed minimal progress. In the housing sector, the Ombudsman found that despite the ministry's commitment to promoting community-based living for individuals with disabilities, the percentage of those living in community residences remains low. Moreover, between 2016 and 2022, the number of individuals with disabilities living in institutional facilities outside the community increased. Contributing factors included a lack of suitable housing options in various regions, attitudes among professionals directly working with individuals with disabilities, and limitations in resources and time available to these professionals.

In employment, the Ombudsman's findings revealed that despite the ministry's stated preference for open-market employment over sheltered employment, most individuals with disabilities (70%) remain employed in sheltered settings, with only 30% working in open-market employment frameworks. Furthermore, the transition rate from sheltered employment to open-market employment has been minimal in recent years, standing at just 8%. Finally, the Ombudsman addressed oversight issues regarding housing and employment frameworks under the ministry's responsibility. The review found that due to insufficient staffing and a lack of oversight tools, the frequency of visits to supervised facilities was very low — once every 1.5 years for housing facilities and once every 3.5 years for employment facilities. The implementation of the Welfare Services for People with Disabilities Law is expected to help address these challenges and advance accessibility, integration, and independence for individuals with disabilities in Israel. It is hoped that this promise will indeed be realized.

Decentralization of responsibilities in the area of welfare

In 2022, a planned process to decentralize welfare authority to local authorities began. This initiative is part of a broader effort that followed a government decision in November 2021 to transfer powers in various areas to local governments,[12] based on recommendations from an inter-ministerial committee established to examine the issue (Prime Minister's Office and Ministry of Interior, 2022). Israel remains one of the most centralized democracies, and while decentralization processes have taken place in recent decades, they remain limited and cautious (Ivanyna & Shah, 2014; Yuval, 2015). However, in recent years, particularly during the Covid-19 pandemic and in response to the aftermath of the October 7 massacre and subsequent war, the importance of local authorities in addressing residents' needs has become increasingly evident.

The role of local authorities in shaping and implementing social policy has been a central topic in welfare state research in recent years (Hindy, 2024; Kazepov et al., 2022). This discourse highlights both the advantages and complexities of a localized approach to social policy in various welfare states. In Israel, too,

12 Government Resolution No 675 from November 21, 2021, Decentralization of authority to local governments and reduction of excessive regulation.

there has been a growing trend of increased involvement by local authorities in designing welfare policies, often initiated by the localities themselves. This is particularly evident in localities with high self-generated revenues or those supported by philanthropic foundations willing to fund innovative welfare programs. Social workers are frequently the drivers of these changes (Gal, forthcoming).

The tension between localization and centralization has been a longstanding issue for the Ministry of Welfare and Social Affairs, which seems to be gradually moving away from the high level of centralization that has historically characterized the welfare sector. In recent years, the ministry has promoted several formal initiatives to decentralize authority to its regional offices and social services departments in local authorities. This was particularly evident in efforts to assist evacuees during the war, in both host and evacuated localities.

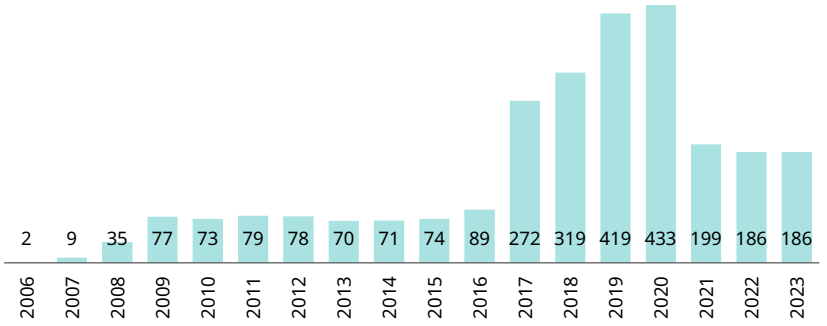
Following the government decision on decentralization to local authorities, the Ministry of Welfare and Social Affairs identified it as one of its central goals and began transferring authority in several areas, including defining the roles of social workers in social services departments (in positions funded by the ministry). Another significant step to advance decentralization has been in the area of services for senior citizens. This initiative, which began in 2022 and expanded in 2023, aims to allow greater flexibility in planning and managing budgets allocated for senior citizen services at the local level. Although no pilot program was conducted, nor was a systematic evaluation of the initiative's success undertaken after its first year, the ministry considers it an achievement. The 2023 Freedom of Information report states: "The decentralization process we led [...] improved efficiency and equity in the local authority's ability to provide professional, tailored, and flexible services, as they are the ones directly engaging with senior citizens and are best positioned to understand and address their needs firsthand" (Ministry of Welfare and Social Affairs, 2024, p. 265).

Ministry for Social Equality

The Ministry for Social Equality and the Advancement of Women was established to promote social equality in Israel. It began as a unit focused on senior citizens within the Prime Minister's Office in 2006. Over the years, new areas of activity were added, and existing responsibilities were reshaped. A significant change occurred in 2015 when several key functions were transferred to the ministry from the Prime Minister's Office, including the Authority for the Economic Development of the Minority Sector, the Authority for the Advancement of Women, and the Israel National Digital Agency. In addition, a youth division was established. In the past two years, further significant changes have been made: new areas of activity were added, others were transferred to different ministries, some returned to the ministry's jurisdiction, and in some cases, they were transferred again. Currently, the ministry oversees the Division for Senior Citizens, the Authority for the Economic Development of the Minority Sector, the Authority for the Advancement of Women, the Division for the Promotion of the LGBTQ+ Population, and the Division for Heritage and Projects.

In terms of resources, the ministry's budget is relatively small compared to other social ministries, amounting to approximately NIS 186 million in 2023 (Figure 16). The fluctuations in the budget shown in the figure reflect the changes in the ministry's areas of activity over the years. These frequent changes and instability in its scope of responsibility undermine the ministry's ability to achieve its social goals and meaningfully advance the populations under its care. Moreover, the ministry's areas of responsibility significantly overlap with those of other ministries, particularly the Ministry of Welfare and Social Affairs. These factors raise critical questions about the necessity and justification for the existence of such a ministry.

Figure 16. Budget of the Ministry for Social Equality
NIS millions, 2023 prices



Source: John Gal and Shavit Ben-Porat, Taub Center | Data: Ministry of Finance

Conclusion

Over the past year, responding to the victims of the October 7, 2023 massacre and the subsequent war has been at the forefront of Israel's welfare and social security systems. This effort spanned numerous areas of activity and required extensive resources, as well as widespread preparation at both local and national levels. Alongside addressing the consequences of the war, Israel's welfare systems have continued to grapple with longstanding unresolved issues of the welfare state: social challenges such as disability, poverty, and inequality; shortcomings in programs like Savings for Every Child, food vouchers, and the work grant; the centralization of policy making; and the lack of resources required for the proper functioning of the welfare system. As demonstrated throughout this chapter, steps have been taken to address some of these challenges. However, the path to achieving significant improvement in Israel's welfare system remains long.

References

English

Gal, J., Madhala, S., & Oberman, O. (2022). Israel's social welfare system after the Covid-19 crisis: An overview. In A. Weiss (Ed.), ***State of the nation report: Society, economy & policy in Israel 2022*** (pp. 165–195). Taub Center for Social Policy Studies in Israel.

Gal, J., Oberman, O., & Kaidar, N. (2023). ***Nutrition insecurity in Israel: Are food vouchers the solution?*** Taub Center for Social Policy Studies in Israel. (English Executive Summary)

Holler, R. (2023). Spotlight: The Report of the Commission for the Examination and Structuring of the Management and Operation of Residential Facilities for People with Disabilities. In A. Weiss (Ed.), ***State of the nation report: Society, economy & policy in Israel 2023*** (pp. 188–194). Taub Center for Social Policy Studies in Israel.

Hebrew

Gal, J. (forthcoming). Welfare policy in local authorities in Israel. In Y. Levy & R. Ben Arieh (Eds.), ***Local authorities: Between state, the community, and the economy***. The Open University.

Gal, J., Ben-Porat, S., & Ovadia, Y. (2024). ***Welfare during the war and after: The welfare system in Israel during the October 7th war and policy proposals***. Taub Center for Social Policy Studies in Israel.

Gottlieb, D. (2022). Savings for Every Child Program: Chances and risks. ***Social Security 116***, 49–70.

Hindy, T. (2024). ***Decentralization of responsibilities in welfare: Global research survey***. Joint-Elka and the Ministry of Welfare and Social Affairs.

Ivanyna, M., & Shah, A. (2014). How close is your government to its people? Worldwide indicators on localization and decentralization. ***Economics, 8***, 1–61.

Kasir (Kaliner), N., Pines, R., & Flam, N. (2024). ***Report on the dimensions of poverty and income inequality — 2023***. National Insurance Institute.

Kazepov, Y., Barberis, E., Cucca, R., & Mocca, E. (2022). Introduction to the handbook on urban social policies: International perspectives on multilevel governance and local welfare. In Y. Kazepov, E. Barberis, R. Cucca & E. Mocca (Eds.), ***Handbook on urban social policies: International perspectives on multilevel governance and local welfare*** (pp. 2–22). Edward Elgar.

Krumer-Nevo, M. (2022). The challenge of poverty. In J. Gal and S. Madhala (Eds.), ***The right to good welfare*** (pp. 132–173). The Hebrew University of Jerusalem. Menomadin Foundation.

Ministry of Welfare and Social Affairs (2024). *Report on Freedom of Information 2023*. Ministry of Welfare and Social Affairs.

Pinto, O., & Gottlieb, D. (2019). *Saving for Every Child Program: Implications for inequality and policy alternatives*. Research papers. National Insurance Institute.

Prime Minister's Office and the Ministry of the Interior (2022). *Decentralization of authority to local government: Outcome of the inter-ministerial committee pursuant to Government Resolution 675.*

Raz-Dror, O. & Cohen, O. (2024). *The 1%: 2013–2021*. Israel Tax Authority, Planning and Economics Division.

Refaeli, T. & Benish, A. (2022). Savings for Every Child Program: Status report and a look towards the future. ***Social Security, 116***, 5–25.

State Ombudsman (2024). Ministry of Welfare and its treatment of adults with disabilities. In ***State Ombudsman Report — July 2024***. The State Ombudsman of Israel.

United Nations (2023, October 9). *Concluding observations on the initial report of Israel*. United Nations, Committee on the Rights of People with Disabilities.

Yanay, U. (2024). Iron Swords War: Challenges in aiding and treating victims of war and their families. In M. Bar-Almog, M. Eisenstadt, and J. Gal (Eds.), ***National Welfare Plan: Welfare in the wake of war***. The Hebrew University of Jerusalem, Menomadin Foundation.

Yuval, A. (2015). Political economy and centralization and decentralization. In I. Beeri and Razin, E. (Eds.), ***Local democracy in Israel: Decentralization, localism, participation and local politics*** (pp. 168–187). The Hebrew University of Jerusalem, Floersheimer Studies, The Institute of Urban and Regional Studies.

Executive Summary

Who Provides Welfare and Education Services? Local Spending on Welfare and Education in Israel

John Gal and Adi Tarabeih

Ahead of the local elections held in February 2024, the Taub Center published a study analyzing investments made by local authorities in Israel in two key areas of their residents' lives: welfare and education. Local authorities play a central role in developing the welfare and education infrastructure in their communities and in funding the services provided within them, especially since the events of October 7, which significantly increased the demand for these services. This study highlights the budgetary disparities between authorities belonging to different socioeconomic clusters and points to the factors contributing to these disparities.

* Prof. John Gal, Principal Researcher and Chair, Welfare Policy Program, Taub Center; Paul Baerwald School of Social Work and Social Welfare, The Hebrew University of Jerusalem. Adi Tarabeih, Research Assistant, Taub Center for Social Policy Studies in Israel. This research was published in February 2024 and is available on the Taub Center website.

Welfare and education in local authority activities in Israel

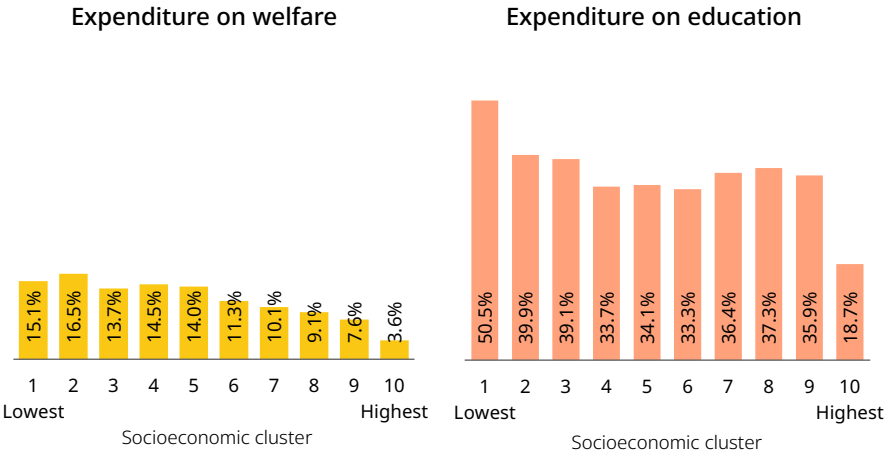
In 2021, local authorities spent approximately NIS 36 billion on education and welfare services. The study's findings show that between 2015 and 2021, there was a slight increase in the share of the local authority budget allocated to these areas: the welfare budget grew from about 12% to about 13%, and the education budget increased from 35% to 37%. The study also reveals that although this increase occurred across all local authorities, the growth was more pronounced in weaker authorities.

Expenditure on welfare and education is not uniform across local authorities. The study shows that local authorities belonging to the lowest socioeconomic clusters (1–2) allocate a much larger share of their total budget to these areas compared to stronger authorities (Clusters 9–10) — about 15%–16% compared to around 4%–8%, respectively. This indicates that the greater and more severe the social problems and the more limited the resources, the higher the share of the welfare budget in the local authority's overall budget.

The trend is similar in the education sector. In authorities from Clusters 1 and 2, nearly half of the budget is dedicated to education, while in authorities from Clusters 9 and 10, the expenditure ranges from approximately 19% to 36% of the budget. These disparities may reflect not only social realities but also demographic ones, such as the proportion of children in the community and the need to provide them with educational services.

Welfare and education services provided by local authorities in Israel are partly funded by the central government and partly by the authorities themselves. In the field of welfare, the government determines the budget allocated to each authority and conditions the funding on the authority's self-contribution based on the matching-funding method. Usually, the required participation rate by local authorities is 25%, and authorities can augment the budget dedicated to social issues from their own revenues and sources.

Expenditure rate on welfare and education out of total local authority expenditure, by socioeconomic cluster, 2021

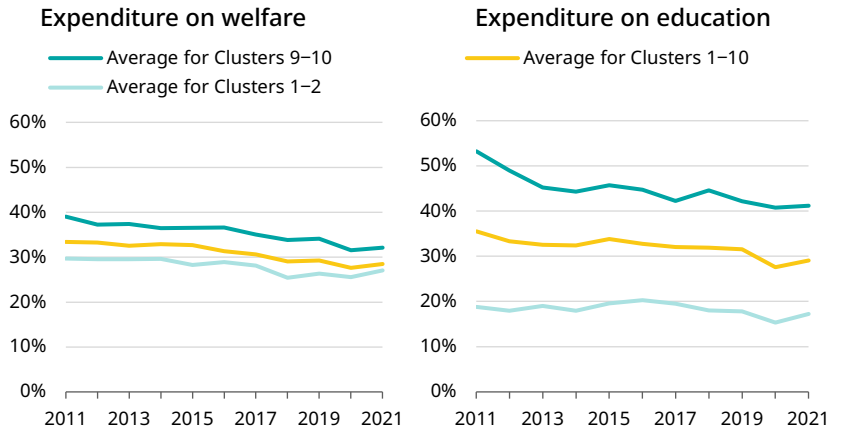


Source: John Gal and Adi Tarabeih, Taub Center | Data: CBS

The study's findings indicate that even in authorities from lower clusters, which face the most severe social challenges but have more limited resources, as well as in authorities from higher clusters, the average rate of local authority participation in the funding of welfare services is higher than required by the matching-funding method. However, stronger authorities contribute an even larger share beyond the required amount compared to weaker authorities.

In contrast to the welfare sector, state participation in education funding is not conditional on the local authority's contribution. As a result, authorities increase their education expenditures based on their priorities and budgetary constraints. In this sector, the disparities in local authority participation levels among different authorities are even greater.

The rate of expenditure on welfare and education from local authority independent revenue sources out of all local authority expenditure



Source: John Gal and Adi Tarabeih, Taub Center | Data: CBS

An analysis by population groups shows that local authorities' participation in funding education services is particularly high in Jewish authorities (excluding Haredi authorities), amounting to more than one-third of the total expenditure on education. In contrast, in Arab authorities, and especially Bedouin authorities, the expenditure is much lower — about 16% and 15%, respectively. In the welfare sector, a similar trend is observed: in Jewish and Haredi authorities, the local authority participation rate stands at approximately 30% and 33%, respectively, while in Arab and Bedouin authorities, the average expenditure is around 27% and 23%, respectively.

Expenditure on target populations of social services

The Taub Center researchers examined the portion of local authorities' independent revenues allocated to welfare and found that authorities from lower clusters dedicate about one-fifth of their revenues to this purpose, compared to a rate ranging from 1% to 3.5% in higher-cluster authorities. Nevertheless, the average annual expenditure per service recipient in weaker authorities is much lower than in stronger authorities: approximately NIS 4,600–NIS 6,700 in authorities from Clusters 1 and 2, compared to around NIS 10,000–NIS 11,000 in authorities from Clusters 9 and 10.

Executive Summary

Welfare System Performance During the War and Policy Proposals

John Gal, Shavit Ben-Porat, and Yael Ovadia

With the approach of the one-year anniversary of the October 7 War, the Taub Center published a study examining the performance of the welfare system during the war. The study reveals that the welfare system was unprepared to handle the complex challenges posed by the war and the scale of the needs of the affected populations, largely due to years of underfunding, significant shortages of social workers, and the unequal distribution of financial resources among different localities. Nevertheless, the study found that the Ministry of Welfare and Social Affairs and local social services departments responded quickly to the war and made adjustments that enabled staff to address some of the challenges they faced.

Even before the outbreak of the war, the welfare system was grappling with a severe ***welfare deficit*** — a significant gap between the needs of those reliant on its services and its capacity to provide adequate solutions. This gap severely hindered the system's ability to address the difficulties precipitated by the war:

* Prof. John Gal, Principal Researcher and Chair, Welfare Policy Program, Taub Center for Social Policy Studies in Israel; School of Social Work and Social Welfare, the Hebrew University of Jerusalem. Shavit Ben-Porat, Researcher, Taub Center. Yael Ovadia, Research Assistant, Taub Center. This research was published in September 2024 and is available on the Taub Center website (in Hebrew).

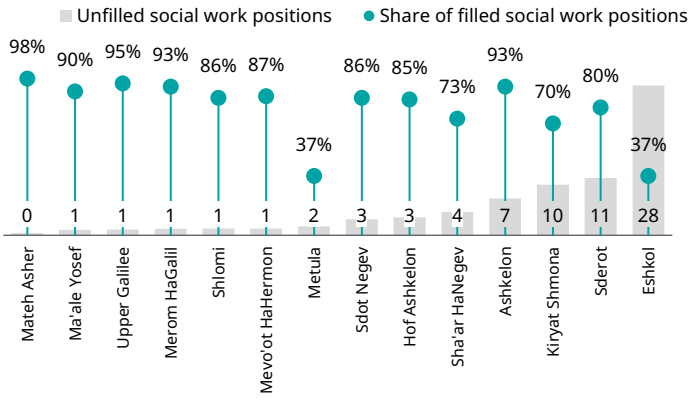
- The welfare system was quickly burdened with tens of thousands of new clients, including people who experienced the attack firsthand, those whose relatives were killed or kidnapped, and many residents evacuated from their homes in the South and North, all in addition to over a million regular service users.
- Despite the impressive efforts of social workers and the Ministry of Welfare and Social Affairs staff, the lack of funding and trained personnel meant that the assistance provided to victims during the first six months of the war was only partial. Professionals often had to rely on volunteers, civil society organizations, and philanthropic funds.
- During this period, the government allocated NIS 9.5 billion to welfare and social security issues to help address the war's damages and growing needs.

Ongoing operations in social service departments

Prior to the war, there were 747 unfilled social worker positions in local social service departments. Although additional positions were approved after the war began, staffing them was challenging, and the number of unfilled positions rose to around 900.

- During the war, 41% of social service departments in localities that took in evacuees reported staffing shortages.
- In Metula and the Eshkol Regional Council, only 37% of social worker positions were filled, and in Kiryat Shmona and the Sha'ar HaNegev Regional Council, more than a quarter of the positions were unstaffed.
- In the early weeks of the war, one of the most difficult tasks for social workers in the Ministry of Welfare and Social Affairs was delivering information, often heartbreaking news, to the families of victims and those killed in the massacre of October 7. Despite the lack of prior training and preparedness for such a complex situation, the system established to handle this task managed to do so successfully.
- Social workers struggled to balance caring for evacuees and war victims with continuing to serve their regular clients.

Number of unfilled social worker positions and share of filled positions in evacuated local authorities, May 2024



Note: Social work positions financed by the Ministry of Welfare and Social Affairs, not including positions that are fully financed by the local authority.

Source: John Gal, Shavit Ben-Porat, and Yael Ovadia, Taub Center | Data: CBS; Ministry of Welfare and Social Affairs

Care for evacuees

The study describes a chaotic situation in hotels during the early days of the war, with a lack of information, severe staffing shortages, lack of coordination among various government agencies, and the absence of an overarching coordinating body. The prolonged stay in hotels created serious social problems, among them cases of sexual assaults.

- The Ministry of Welfare and Social Affairs reported 75 cases of sexual assault in the evacuee hotels, 93% of which involved minors.
- A major issue in providing care for evacuees in hotels was the lack of information about their needs. The high turnover of caregivers, many of whom were volunteers, and the absence of a coordinating body made it difficult to track the care provided. Attempts to implement technological tools for reporting on evacuees' needs and care were unsuccessful.

- The Ministry of Welfare and Social Affairs cared for orphans of the massacre and children who were released from captivity in Gaza. Despite significant resources invested in intensive professional care, many of these children still struggled to reintegrate into their families and communities after months of treatment. Additionally, half of them abandoned the crucial mental health care they needed.
- The new challenges created by the war led social workers at all levels — from the central office to regional offices and local social service departments — to develop a variety of creative approaches to assist evacuees in hotels and within the community.
- The welfare systems, led by the Ministry of Welfare and Social Affairs, made significant efforts to address the war's impact: ensuring the safe evacuation of victims, creating mechanisms to secure victims' income and compensate them for their losses, investing resources in children returned to their families after being held hostage in Gaza and their families, establishing administrative frameworks, recruiting social workers, and developing plans to deal with the complex situation of the evacuees.

The study presented a number of policy recommendations to address current and future welfare system challenges

Recommendations for future emergency situations

1. Establishing a pool of volunteer social workers who can be mobilized immediately during emergencies.
2. Implementing a secure, efficient, and user-friendly digital system for collecting data on clients to support social workers in emergencies.
3. Creating a comprehensive evacuee care procedure that clearly defines a coordinating body and integrates all levels of the system — from local authorities to regional offices and the national headquarters. The plan should specify roles and responsibilities for emergency situations, including clearly defined authorities, communication channels, and workflows with other agencies.

Current and long-term proposals

1. Increasing the welfare budget: Expand the budget of the Ministry of Welfare and Social Affairs and strengthen welfare infrastructures to ensure adequate services for the entire population.
2. Improving working conditions for social workers: Recruit additional staff for the welfare system, improve working conditions and salaries for social workers, and ensure they have the necessary support to handle complex and stressful situations.
3. Equalizing social services funding: Reevaluate the current funding model to ensure a more equitable distribution of resources among local authorities, gradually reducing the matching-fund requirement (self-contribution by local authorities) for those directly affected by the war and in disadvantaged areas.
4. Unifying the welfare system: Consolidate all welfare systems under a single Ministry for Social Welfare, which can coordinate and manage all activities efficiently and make optimal use of allocated budgets.

EARLY CHILDHOOD

Young Children and Their Parents During the War

Dana Shay, Yael Navon, Carmel Blank, and Yossi Shavit

Introduction

The events of October 7 and the ensuing war left the State of Israel deeply wounded, and their impact extended to children as well. At first glance, one might assume that young children are unable to fully comprehend the situation and are therefore unaffected by the events. However, research demonstrates that exposure to wartime events in early childhood negatively impacts children's well-being and overall development (Sadeh et al., 2008; Torche & Shwed, 2015). Early childhood is a period of rapid development during which children are particularly sensitive to environmental influences. Consequently, disruptions caused by exposure to emergencies and stress, especially under conditions of family instability, can lead to long-term adverse effects (Bailey et al., 2001; Phillips & Shonkoff, 2000). This chapter focuses on examining the emotional, behavioral, and developmental status of Israeli

* Dana Shay, Researcher, Taub Center for Social Policy Studies in Israel; doctoral student, Department of Sociology and Anthropology, Tel Aviv University. Dr. Yael Navon, Senior Researcher, Taub Center. Dr. Carmel Blank, Senior Researcher, Taub Center; Behavioral Sciences Department, Ruppin Academic Center. Prof. Yossi Shavit, Head, Taub Center Initiative on Early Childhood Development and Inequality; Professor Emeritus, Department of Sociology and Anthropology, Tel Aviv University. This study was conducted under the auspices of the Taub Center Initiative on Early Childhood Development and Inequality, which is generously supported by the Beracha Foundation, the Bernard van Leer Foundation, Yad Hanadiv, and the Shashua Family Foundation.

This chapter is part of a joint research project with KI — the Israeli Institute for Applied Research in Computational Health. We wish to thank Dr. Yair Sedaka of the KI Institute for his comments and advice in the process of this work. Portions of this chapter were published in February 2024 and September 2024. See Blank et al., 2024; Shay et al., 2024.

children in early childhood during the war. It also explores the emotional well-being and functioning of their parents, as well as the factors that may explain both the children's and the parents' conditions.

Literature review

Prolonged exposure to combat events constitutes a significant stressor and has widespread negative effects on children's well-being as well as their physical and mental health (Catani, 2018; Greene et al., 2018; Torche & Shwed, 2015). One of the primary consequences is a substantial increase in levels of psychological distress among populations exposed to such events (Besser et al., 2009; Bleich et al., 2003; Dar & Deb, 2022). As will be discussed later, high levels of parental stress can lead to impaired parenting patterns and adverse outcomes for young children (Imran et al., 2021).

Stress and distress among parents and their impact on family life

High levels of stress resulting from challenging circumstances can lead to negative outcomes such as depression (Yang et al., 2015), anxiety (Daviu et al., 2019), obesity (Tomiyama, 2019), and more. Prolonged stress may develop into distress. Among parents, elevated stress levels can adversely affect parenting patterns and the family environment. Studies show that parents experiencing high levels of stress or parental distress exhibit less warmth and more rigidity toward their children (Eltanamly et al., 2021; McRae et al., 2021), demonstrate less emotional presence during interactions with their children (Cohen & Shulman, 2019), struggle to provide necessary support (Spinelli et al., 2020), and report higher incidences of yelling and domestic violence (Imran et al., 2021).

As a result, high stress levels exact a heavy toll on young children. This is particularly true for children in early childhood, a period of rapid brain development that is especially sensitive to environmental stressors (Boyce, 2014; Lupien et al., 2009; Shavit et al., 2018). Research in the field of environmental epigenetics shows that children whose parents experience extreme stress levels may suffer negative physical, behavioral, and cognitive outcomes (Bowers & Yehuda, 2016; Lappé & Jeffries Hein, 2021). High parental stress or distress has been linked to various issues in children, including

emotional difficulties and hyperactivity (Romero et al., 2020; Sanner & Neece, 2018), sleep disturbances (Martin et al., 2019), and obesity (Jang et al., 2019). Thus, high levels of parental stress or distress have extensive adverse effects on their young children.

Exposure to wartime events and their impact on children

As noted, exposure to wartime events is a significant stressor. It is therefore unsurprising that research reveals a range of negative outcomes among children growing up during periods of war. For example, studies have shown that exposure to wartime events, which involves heightened stress, leads to low birth weight. This phenomenon was observed in Israel during the Second Lebanon War (Torche & Shwed, 2015), in Spain during the 1980s and 1990s at the height of Basque terrorist activity (Quintana-Domeque & Ródenas-Serrano, 2017), and in 53 developing countries engaged in armed conflicts (Le & Nguyen, 2020). A study conducted in Israel found that increased exposure of mothers and children aged one to three to stressful events, such as wars and terrorist attacks, is associated with decreased emotional availability of mothers to their children. It also revealed that the less emotionally available a mother is, or the higher her stress levels, the more likely she is to report behavioral problems in her child (Cohen & Shulman, 2019). In Israel, Lebanon, and the United States, exposure to terrorism and wartime events has been linked to heightened anxiety, dependent behavior, and sleep problems among young children (Finklestein, 2016; Klein et al., 2009; Zahr, 1996). Furthermore, a negative correlation has been found between children's exposure to wartime events and their academic achievements (Husain et al., 2008; Joshi & O'Donnell, 2003).

In addition to the direct negative effects of war on parents and children, daily routines are often disrupted by the closure of early childhood education and care frameworks. The importance of these frameworks to parents — allowing them to maintain both their daily work routines and their children's general well-being — has been demonstrated in numerous studies (e.g., Blanden et al., 2021; Buchanan et al., 2022). When the education system is shut down, parents tend to report higher levels of distress and an increase in negative interactions with their children (Blank & Shchory, 2024). Moreover, the closure

of educational frameworks may result in heightened difficulties for children, manifested in tantrums, fear, anxiety, crying, and dependency (Blank & Shchory, 2024; Egan et al., 2021).

Young children during the October 2023 War: A status report

The war that began over a year ago is clearly not a short-term event but, rather, a prolonged crisis with far-reaching implications for the State of Israel and its residents, including young children and their healthy development. The war has impacted the lives of children who have been affected by direct physical harm to themselves or their immediate families. However, its developmental repercussions extend to a much broader population of young children. These effects stem from environmental factors that generate high levels of stress among children and parents, thereby undermining the positive stimuli essential for proper development during this critical period of life. We address some of these factors and the changes observed in the months since the war began.

During the attack on October 7, 2023, and the ensuing war, dozens of children lost their parents. By the end of February 2024, the National Insurance Institute had recognized over 7,000 children under the age of seven as victims of hostile acts (Israel National Council for the Child, 2023).[1] Beyond such extreme events, most Israeli children have been exposed to alerts, civil defense sirens, and the sounds of explosions throughout the war months (Taub Center, 2023). Residents of towns near the borders were evacuated, but in some conflict zones, residents — including children — remained and were exposed to frequent alerts, civil defense sirens, and explosions.

At the start of the war, residents of communities near the Gaza border and northern conflict zones were evacuated. In February, the IDF and the Ministry of Defense announced that it was safe to return to most Gaza border communities. However, due to the ongoing conflict and extensive destruction in some communities, many families have not returned to their homes,

1 During routine times, the recognition process requires applying through the Ministry of Defense. However, since October 7, the need to apply has been canceled, and recognition of those hospitalized due to an attack or terrorist incident is carried out proactively by the National Insurance Institute (National Insurance Institute, 2024).

even in areas deemed safe. Tensions along the Northern border escalated throughout the war, and 43 Northern communities within 0–3.5 kilometers of the border remained evacuated for many months under government orders. These communities comprise approximately 67,000 residents, including nearly 5,000 children under the age of six.

In total, more than 13,000 children aged 0–6 are registered in the population registry as residents of communities evacuated since October 7: 62% of these children are registered in Gaza border communities and 38% (about 5,000 children) are from evacuated Northern communities.

The war has also required extensive mobilization of reservists. By January 2024, approximately 300,000 reservists had been called up, about 120,000 of whom are parents.[2] About 12% of those mobilized are parents of children under the age of nine. As a result, the impact on families has been significant, with many children having to adapt to the absence of a parent due to military service.

Thus, beyond the macro-level effects of the war on Israeli society, welfare, and economy, the ongoing conflict profoundly disrupts the lives of a great number of families, including those with young children. Hundreds of children have been orphaned, thousands have been physically or emotionally injured, displaced from their homes, or subjected to constant threat. Additionally, tens of thousands of children must adjust to a reality in which one parent is serving in the military, reducing their physical presence at home and often causing significant changes in daily routines. Beyond the direct physical and psychological harm, broader populations are affected by prolonged stress, including environmental tensions from alerts, civil defense sirens, and explosions. This situation underscores the need for special attention to children and focused rehabilitation efforts to address the war's impact on their development and well-being.

2 See the IDF Spokesperson's website.

Findings from the Taub Center's Longitudinal Survey

To examine the status of young children in Israel and their parents during the war, the Taub Center's Initiative on Early Childhood Development and Inequality conducted an online survey among parents of children aged 0–6. The survey was conducted in two waves: the first wave, in January 2024, included 1,199 Jewish parents (either the mother or the father); the second wave, in July 2024, included 804 Jewish respondents who had participated in the first wave (approximately 67% of the initial respondents) and 151 Arab parents.[3] Altogether, 1,350 parents of young children responded to the survey. The survey relied on self-reported data from parents about their own condition and that of their young children during the war. Its purpose was to assess the emotional, behavioral, and developmental status of young children during this period, as well as the emotional state of their parents, and to examine various factors that might explain the findings. This document presents preliminary results from the second wave of the survey and compares them to the results from the first wave, highlighting changes in the condition of children and their parents between January and July 2024. The review focuses on two phenomena unique to the war: the military service of one of the child's parents and the displacement of families (evacuation). For findings from the first wave of the survey, see Blank et al. (2024).

The data were collected via an online survey conducted by the New Wave Research company using the iPanel platform. The sample included an oversampling of parents from Gaza border communities and northern conflict zones (as defined by Home Front Command). In the first wave, 117 parents from these communities were included. From other regions of the country, parents were sampled based on quotas reflecting the distribution of education levels and religiosity in the general population, as captured in surveys by Israel's Central Bureau of Statistics. It is important to note that the sample does not reflect the Haredi (ultra-Orthodox Jewish) population, as participation rates of this group in online panels are very low.

3 In the first wave of the survey, due to methodological challenges, data were not collected from the Arab population in Israel, which limits our ability to generalize these findings to all population groups in the country. In the second wave of the survey, conducted in July 2024, data were collected from parents of young children in the Arab population as well. In January 2025, a third wave of data collection is planned with this sample, including parents from the Arab population.

In the first wave, participants were asked about their exposure to war-related events, such as evacuation from their place of residence, one parent's military reserve duty since the war began, physical or emotional injury to a family member, or the loss of a close relative or friend.

The study assessed children's emotional and behavioral difficulties using multiple measures, repeated in both survey waves. ***Emotional and behavioral challenges*** were measured using the Strengths and Difficulties Questionnaire (SDQ), a validated and reliable tool commonly used in research on children (Goodman, 1997; Goodman et al., 2000). The SDQ comprises 25 items designed to evaluate children aged two and older across five subscales (each containing five items):

1. ***Emotional symptoms*** (e.g., worries or sadness)
2. ***Behavioral problems*** (e.g., anger or arguments)
3. ***Hyperactivity and attention difficulties*** (e.g., restlessness or distractions)
4. ***Peer problems*** (e.g., loneliness or bullying)
5. ***Prosocial behavior*** (e.g., helping a friend in distress).

Each item is rated on a scale of 0 to 2, with 0 meaning "not true," 1 meaning "somewhat true," and 2 meaning "certainly true." Scores for each subscale range from 0 to 10, based on the sum of responses to the relevant items. For this report, the analysis focuses on an aggregate measure of children's difficulties derived from the first four subscales, with scores ranging from 0 to 40, where higher scores indicate more severe difficulties.

In addition to this general measure, the survey also assessed changes in specific difficulties during the war through direct questions about ***emotional and behavioral regression*** in children, such as increased bedwetting, fear of sudden noises, tantrums, or difficulty falling asleep. In the first wave, parents were asked whether these behaviors had become more or less frequent since the war began three months earlier. The second wave repeated these questions, asking parents to compare current behaviors to those three months prior. This index allows for examining changes in children's behavior relative to the period preceding the war and identifying whether their emotional state has worsened or improved. Responses were coded on a 1-to-5 scale, with higher scores indicating a greater increase in negative behaviors and more severe regression.

To understand the war's impact on children's daily lives, the first wave of the survey also asked parents ***how long their children's educational frameworks had been closed***. As noted, the cessation of educational activities can significantly disrupt children's lives, as these frameworks often provide stability, a routine, and emotional support.

Recognizing the direct influence of parents' emotional state on their children's well-being, the survey also examined ***parental emotional health*** during the war. In the first wave, parents' emotional state was measured using the Depression, Anxiety, and Stress Scale (DASS), a validated self-report tool (Norton, 2007). This scale comprises 21 items divided into three subscales: depression, anxiety, and stress, with each subscale assessed via seven items. Parents were asked about their emotional state during the month preceding the survey, with responses scored from 0 ("never") to 3 ("always"). The total score for each sub-index is calculated as the sum of the seven statements, multiplied by 2, resulting in an overall range from 0 to 42. The combined total range for all three sub-indices together is from 0 to 126.

To minimize respondent burden, the second wave used a shortened version of the DASS, selecting the three items with the highest factor loadings for each subscale. In the shortened version, scores for each subscale ranged from 0 to 18 (calculated as the sum of three items multiplied by 2), with a total range of 0 to 54 for all three subscales combined. A correlation of $r = 0.68$ was found between the total scores of the DASS-21 scale in the first wave and the scores of the shortened DASS scale in the second wave. This finding indicates a moderate-to-strong relationship, supporting the use of the shortened scale for comparisons between the two waves while maintaining some similarity to the original structure. Therefore, in instances in the current study where the DASS-21 index was compared across the two waves, the comparison is based on the use of the shortened index, meaning reliance on a total of nine items for both waves.

In addition, parents were asked to compare their current state to their condition before October 7, evaluating whether their ***functioning in various aspects of daily life*** had improved or deteriorated. This measure used a 1-to-5 scale, with 1 indicating "much worse," 5 indicating "much better," and 3 a self-evaluation of "no change" in functioning. The aspects of functioning that respondents were asked to rate included: functioning at work or academic performance, level of patience with children, ability to concentrate, and peace of mind. This index

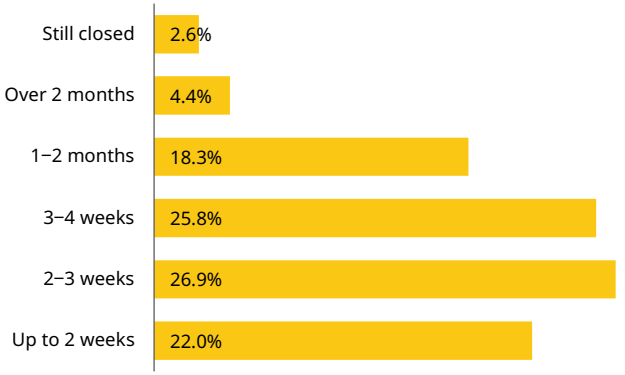
is designed to assess, based on parents' self-evaluation, whether their daily functioning improved or deteriorated as a result of the war.

The survey also collected ***socio-demographic information about families***, including parental education, the family's economic status before and after the outbreak of the war, place of residence, family size, marital status.

The prolonged closure of educational frameworks intensifies difficulties among children

Beyond exposure to civil defense sirens, alerts, and the sounds of explosions, the daily routines of many families with young children were disrupted due to the extended closure of educational frameworks. On Sunday, October 8, 2023, the education system ceased operations due to the outbreak of war, security concerns, and restrictions imposed on the population. Physical attendance in educational institutions began to gradually resume during that month, depending on the security zones and the guidelines issued by the Home Front Command for each area (Weisblau, 2023). Figure 1 illustrates the duration of closures of educational frameworks for children aged 0–6 since the start of the war, as reported by parents in January 2024. The data shows that for the vast majority of families (approximately 75%), educational frameworks were closed for up to one month: 22% of families reported closures of up to two weeks, about 27% reported closures of two to three weeks, and approximately 26% reported closures of three to four weeks. One-quarter of families reported more prolonged closures: 18% noted closures lasting one to two months, and about 7% reported closures of over two months or that the framework was still closed at the time of the survey. As noted, the prolonged closure of educational frameworks can present significant challenges for families with young children (Blank & Shchory, 2024). When these frameworks are closed for extended periods, parents are forced to find alternative childcare solutions or are unable to continue working, which may place additional burdens on them and further disrupt daily life. Long-term closures make it particularly difficult for parents to balance work and childcare, especially for those who lack alternative care frameworks, family support, or other assistance.

Figure 1. Duration of educational framework closures at the start of the war, January 2024



Note: Based on parents' reports in the survey.

Source: Shay, Navon, Blank, and Shavit, Taub Center | Data: Longitudinal Survey of the Taub Center Initiative on Early Childhood

A stable routine provides children with security and structure, which also benefits their parents. Studies indicate that the closure of early childhood educational frameworks is linked to various behavioral problems in children and to behavioral regression (e.g., Blank & Shchory, 2024). The findings in Figure 2 illustrate the relationship between the duration of educational framework closures at the start of the war and the average level of difficulties experienced by children, as reported by their parents using the SDQ questionnaire in the first wave of the survey.[4] Overall, the data reveal a trend of increasing average difficulty levels in children as the duration of educational closures lengthens. The most significant difficulties were observed among children whose educational frameworks were closed for periods ranging from three weeks to two months.

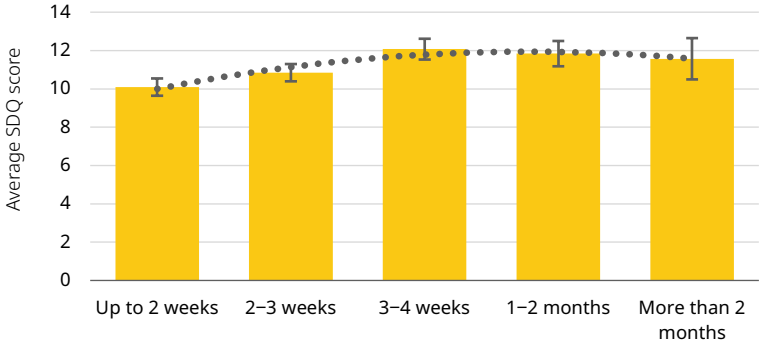
4 The dashed line in Figures 2 and 3 represents the second-degree polynomial trend, which describes the relationship between the variables. This line illustrates the changes in the data in a quadratic manner, enabling the identification of complex trends such as accelerating or decelerating rates of change. In this figure, as well as in the following ones, the vertical lines at the tops of the bars represent 95% confidence intervals for each group. These lines provide a measure of how much the group's mean might deviate from the true population mean. Non-overlapping lines indicate a clear and statistically significant difference between the groups.

However, for children whose frameworks remained closed for more than two months, a slight change in trend is noticeable, showing a moderate decline in average difficulties. This change may indicate an adaptive process among children to the new circumstances they encountered.

Nonetheless, the statistically significant positive correlation ($p \leq 0.05$) between the duration of educational framework closures and children's emotional and behavioral difficulties highlights the challenges posed by disrupted routines and the absence of stability, security, and the educational and social support provided by such frameworks, particularly during emergencies.

Similar findings were observed when examining the relationship between the duration of educational closures and children's emotional and behavioral regression. Parents were asked whether, since the start of the war, there were changes in the frequency of behaviors such as startling at sudden noises, difficulty separating, trouble falling asleep or staying asleep, restlessness, hypervigilance, impatience, or unprovoked tantrums. The findings in Figure 3 are quite similar to those in Figure 2, showing a clear and significant trend ($p \leq 0.01$) of worsening emotional and behavioral regression as the duration of educational closures increases. These findings suggest that prolonged closures of educational frameworks not only contribute to general difficulties in children (SDQ measure) but also result in significant regression in their behavior and ability to cope with daily situations.

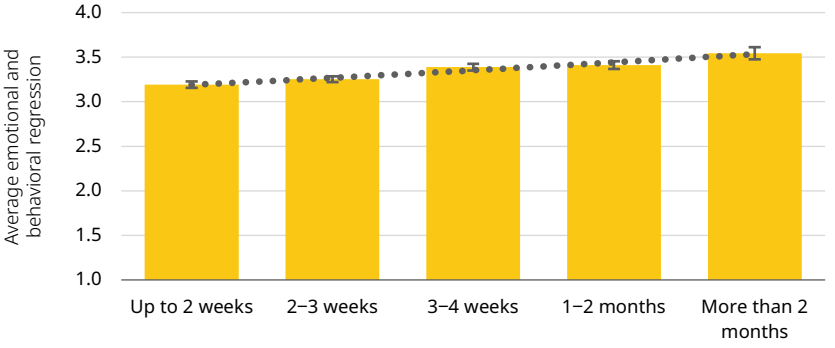
Figure 2. Average SDQ score for children's difficulties and problematic behaviors by duration of educational framework closures at the start of the war, January 2024



Notes: Based on parents' reports in the survey. The I-bars represent 95% confidence intervals.

Source: Shay, Navon, Blank, and Shavit, Taub Center | Data: Longitudinal Survey of the Taub Center Initiative on Early Childhood

Figure 3. Average emotional and behavioral regression in children, by duration of educational framework closures at the start of the war, January 2024



Notes: Based on parents' reports in the survey. The I-bars represent 95% confidence intervals.

Source: Shay, Navon, Blank, and Shavit, Taub Center | Data: Longitudinal Survey of the Taub Center Initiative on Early Childhood

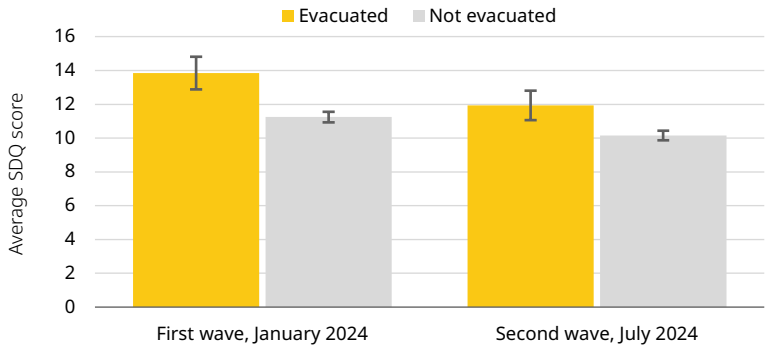
Children evacuated from their homes continue to experience greater emotional and behavioral difficulties, even over time

As a result of the war, many families in the Gaza border area and along the Northern border were forced to leave their homes and relocate to temporary accommodations. This evacuation process introduced new experiences of instability and insecurity, placing families in unfamiliar environments. These changes disrupted daily routines and exposed children to stress and emotional challenges they had not previously encountered (Rabinowitz, 2024). Figure 4 illustrates the relationship between evacuation from home due to the war and the SDQ scores for children's emotional and behavioral difficulties, as measured in January 2024 and July 2024. The data in the figure pertain to children whose parents participated in both survey waves (N = 804). As shown, ***children evacuated from their homes due to the war experienced higher levels of emotional and behavioral difficulties than did children who were not evacuated***, both in January and July 2024.[5] However, a significant decrease in SDQ scores was observed between the two data collection waves, suggesting that over time, some degree of recovery may have occurred, and the children's emotional and behavioral difficulties lessened. Despite this improvement, the differences in SDQ scores between the evacuated and non-evacuated groups remained statistically significant. In other words, while there was some improvement in the children's emotional state, the findings indicate a persistent association between evacuation and a deterioration in children's emotional and behavioral conditions over time. This insight highlights the importance of rehabilitation and emotional support programs to help children cope with the long-term effects of evacuation.[6]

5 As noted, the survey is based on parents' self-reports regarding their own situation and that of their children. Self-reported data means that the information relies on the parents' personal assessments of their condition and that of their children. Such assessments may be influenced by their mental state, which could bias the way they report, potentially leading to an overestimation or underestimation of the extent of the psychological and physical impacts.

6 We also examined the differences between evacuees who had returned to their homes by July 2024 and those who had not yet returned. It was found that children who were still displaced as of July 2024 experienced, on average, more difficulties than those who had been evacuated at the start of the war but returned to their homes between January and July 2024. However, it should be noted that the difference between the two groups was not statistically significant, likely due to the small number of cases of returnees in the sample (22 cases).

Figure 4. Average SDQ score for children's emotional and behavioral difficulties by evacuation from home due to the war, January and July 2024



Notes: Based on parents' reports in the survey. The I-bars represent 95% confidence intervals.

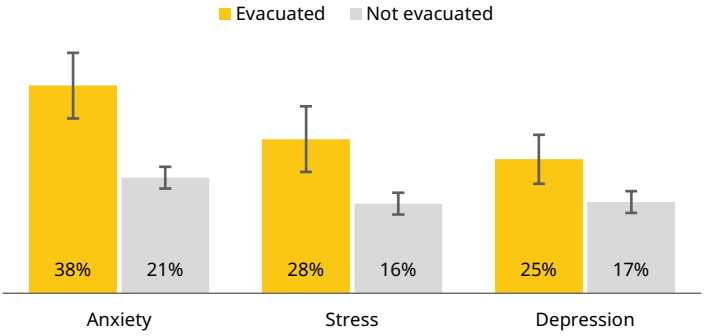
Source: Shay, Navon, Blank, and Shavit, Taub Center | Data: Longitudinal Survey of the Taub Center Initiative on Early Childhood

Parents evacuated from their homes experience more severe symptoms of depression, anxiety, and stress

The findings in Figure 5 present the DASS-21 index for symptoms of depression, anxiety, and stress among parents of young children in January 2024, focusing on the highest severity levels of these symptoms (severe or very severe). As noted, the DASS-21 scale consists of 21 items measuring depression, anxiety, and stress, with defined thresholds indicating normal and severe ranges for each condition. Severity levels are categorized as normal, mild, moderate, severe, and very severe. These thresholds help distinguish between levels of severity and identify particularly severe cases. Among parents evacuated from their homes due to the war, 38% reported severe or very severe ***anxiety*** levels, compared to 21% of parents who were not evacuated. Similarly, 28% of evacuated parents reported severe or very severe ***stress*** levels, compared to 16% among non-evacuated parents. Furthermore, 25% of evacuated parents reported severe or very severe ***depression*** levels, compared to 17% of non-evacuated parents. These findings underscore the significant impact

of evacuation on the mental well-being of parents and reveal that evacuated parents experience more severe emotional symptoms than those who were not displaced from their homes.

Figure 5. Distribution of severe or very severe symptoms of depression, anxiety, and stress (DASS-21) among parents of young children by evacuation from home due to the war, January 2024



Notes: Based on parents' reports in the survey. The I-bars represent 95% confidence intervals.

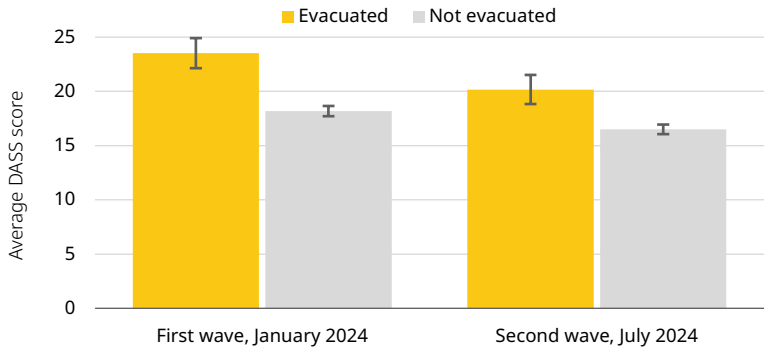
Source: Shay, Navon, Blank, and Shavit, Taub Center | Data: Longitudinal Survey of the Taub Center Initiative on Early Childhood

The findings in Figure 6 present the average score on the shortened DASS scale, which measures symptoms of depression, anxiety, and stress combined among parents of young children, as recorded in January 2024 and July 2024, by whether or not they were evacuated from their homes due to the war.[7] The figure includes only parents who participated in both survey waves, allowing us to examine changes in their condition over time. The results indicate that both

7 As noted, in the second wave of the survey, to avoid burdening respondents with an overly long questionnaire, we used a shortened version of the DASS questionnaire. From the seven items measuring each type of difficulty (depression, anxiety, and stress), three items with the highest factor loadings in a factor analysis were selected. Therefore, in Figure 7, we compare the DASS index between the two waves of the survey using the shortened index for both waves.

in January and in July, parents who were evacuated reported a higher average level of depression, anxiety, and stress symptoms than did parents who were not evacuated. The average difference between the groups is statistically significant ($p \leq 0.01$). Similar to the results shown for the SDQ index (Figure 4), a comparison between the January 2024 and July 2024 measurements reveals a significant decline in the overall DASS scores for both evacuated and non-evacuated parents. This trend suggests some reduction in stress levels among parents of young children over time. However, even after this decline, stress levels among evacuated parents remained significantly higher than those of non-evacuated parents. These findings highlight the relationship between evacuation and parents' stress levels over time. Despite the significant reduction in stress levels between the first and second survey waves, the gap between evacuated and non-evacuated parents remained statistically significant.[8]

Figure 6. Average DASS score for symptoms of depression, anxiety, and stress among parents of young children by evacuation from home due to the war, January and July 2024



Notes: Based on parents' reports in the survey. The I-bars represent 95% confidence intervals.

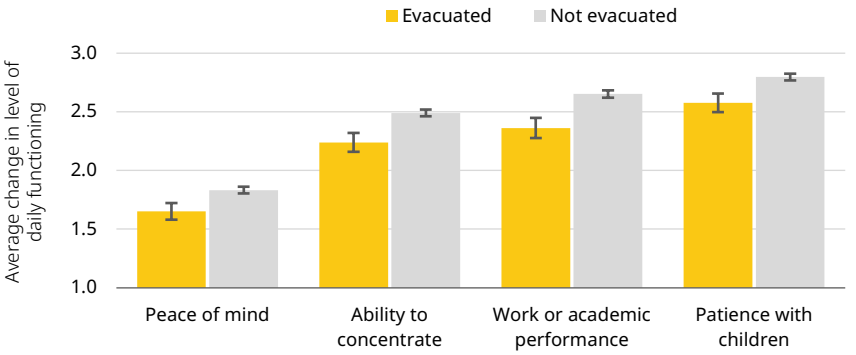
Source: Shay, Navon, Blank, and Shavit, Taub Center | Data: Longitudinal Survey of the Taub Center Initiative on Early Childhood

8 We also examined the differences between evacuees who had returned to their homes by July 2024 and those who had not yet returned. It was found that parents who were still displaced as of July 2024 experienced, on average, more symptoms of depression, anxiety, and stress than did evacuees who returned to their homes between January and July 2024. However, it should be noted that the difference between the two groups was not statistically significant, likely due to the small number of returnees in the sample (22 cases).

Parents evacuated from their homes reported a decline in daily functioning

Evacuation from one's home, especially if prolonged, can impact parents' daily functioning. Survey participants were asked to compare their condition before October 7, 2023, to their condition at the time of the survey and to evaluate whether their functioning in various areas had improved or deteriorated. The areas examined included patience with children, work or academic performance, ability to concentrate, and peace of mind. Responses were rated on a scale from 1 ("much worse") to 5 ("much better"), with 3 indicating "no change" in functioning. Figure 7 shows that parents evacuated from their homes reported significantly greater declines in daily functioning across all areas than did parents who were not evacuated. In all four areas, the average functioning level of evacuated parents was statistically significantly lower ($p \leq 0.05$) than that of non-evacuated parents. The decline in functioning demonstrates that evacuation not only affects parents' mental well-being but also their ability to handle daily demands, including the challenges of parenting.[9]

Figure 7. Average change in daily functioning of parents of young children by evacuation from home due to the war, January 2024



Notes: Response scale ranges from 1 ("much worse") to 5 ("much better"), with 3 indicating "no change." Based on parents' reports in the survey. The I-bars represent 95% confidence intervals.

Source: Shay, Navon, Blank, and Shavit, Taub Center | Data: Longitudinal Survey of the Taub Center for Initiative on Early Childhood

9 This figure is presented only for measurements conducted during the first wave, in January 2024. Due to space constraints, these questions were not repeated in the second wave.

SPOTLIGHT

Evacuated Children and Their Families: Educational Frameworks for Evacuees from Kibbutz Be'eri

Yaara Shilo, Yulie Khromchenko, and Yan Serdtse

On the morning of October 8, 2023, as the news of the disaster and the prospect of mass evacuations unfolded, we immediately understood the need to act urgently. We drove to the Dead Sea to help establish a safe space for children and families evacuated from Kibbutz Be'eri. Upon arriving at the David Hotel, we were greeted by a noisy and crowded lobby. Children and parents, tired and confused, sat amidst piles of personal belongings.

We saw frightened children — some clinging to their parents, others quietly crying. The atmosphere was one of uncertainty. Kind-hearted volunteers tried to cheer the children with pancakes, ice cream, and chocolate, creating small moments of joy but also contributing to restlessness and hyperactivity. For some children, the loud music from the sound systems was overwhelming

and disturbing. From our past experience at Early Starters[10] in setting up safe spaces for children — such as during the war in Ukraine — we knew that location and atmosphere were critical factors. We began gathering the children from the lobby into a quiet and organized space tailored to their emotional needs. The children had arrived at different times — some immediately after evacuation, others later, depending on their families' circumstances. As the space stabilized, the children began to open up. They started playing, forming connections, and finding moments of genuine calm. The parents, still in shock from the traumatic events and the evacuation, found the space we created to be a source of calm, support, and comfort. It became not only a safe haven but also a shared space where children and parents could process their difficult experiences together and create a new routine amid the chaos.

One moment stands out: a young boy who had refrained from speaking for two days suddenly began playing with other children. It was a touching moment that demonstrated how children start to heal through play and the structured routines we established for them. Later, we set up additional spaces in other hotels in the area, and the experience we gained made the process smoother. We recruited a professional staff and volunteers, with the key recruitment criterion being stability.

10 ***Early Starters International*** is a humanitarian organization specializing in aiding young children in crisis areas. With years of experience working with children in emergency situations, the organization focuses on developing unique trauma-focused programs for parents and children, training staff, and collaborating with local and international partners. Since the events of October 7, 2023, the organization has established 17 safe spaces in Israel for children affected by the conflict, helping them cope with trauma and return to normal lives.

The team had to commit to staying for an extended period to provide children and their parents with the sense of security they so desperately needed. The feedback from families was deeply moving and reinforced our understanding that what we created was exactly what the children and parents needed: a safe space with familiar faces, professional staff, and just the right level of stimulation.

Principles for creating a safe space for early childhood

The creation of child-friendly spaces is a widely recognized humanitarian approach to supporting young children during crises. These spaces provide children with emotional and social support essential for their healthy development. The creation of safe spaces is guided by several core principles:

1. ***Safe physical space:*** A stable and accessible area that children can return to, day after day, providing them with a routine and sense of security. This stable environment allows children to choose from a variety of activities, fostering a sense of competence and control in their lives (Grotberg, 1995; Lahad, 1999).
2. ***Adaptation for early childhood:*** The space includes designated areas for various activities — construction, art, reading, imaginative play, and rest — designed to suit young children's needs and encourage cognitive, motor, and social development. A thoughtfully designed environment enables children to feel safe and free to explore the world around them.
3. ***Presence of a significant adult:*** A trauma-aware adult with a consistent presence provides emotional security and support during challenging situations (Bowlby, 1979). Establishing a positive relationship with this adult helps children develop emotional regulation skills and cope with anxiety.

4. ***Sense of belonging:*** The space offers children opportunities to form meaningful social connections within a supportive group. This collective experience helps children navigate the crisis together and fosters emotional resilience.

* Dr. Yaara Shilo is the Founding Director of the undergraduate program for daycare center directors, head of the "Girsah De'Yankuta" unit at Efrata College of Education, and an expert in early childhood care in emergency situations. She is an active volunteer in the safe spaces run by the Early Starters organization.

Yulie Khromchenco oversees the activities of Early Starters International in Eastern Europe, where she is responsible for developing and implementing innovative programs to promote the development of young children. In addition, as Director of Content and Training, she leads the development of educational materials and trains professionals in the field.

Dr. Yan Serdtse is a clinical child psychologist specializing in educational psychology at Sha'ar Hanegev, a researcher and lecturer at The Hebrew University of Jerusalem and the Sapir Academic College. He is the Founding Director of Early Starters International Center for Innovation, Research and Development.

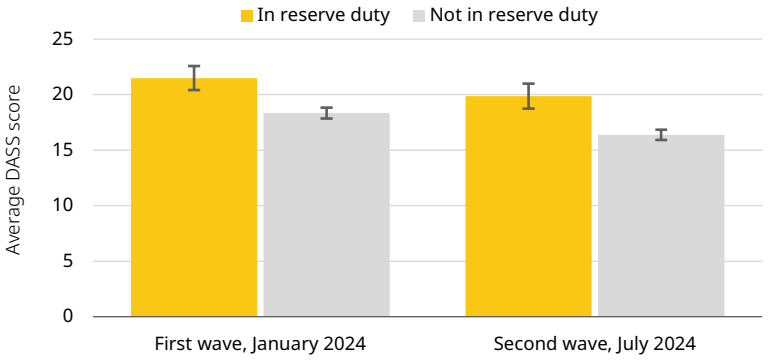
Parents whose spouses served in reserve duty during the war reported higher levels of depression, anxiety, and stress

The reserve duty of a spouse can be a significant source of stress for parents, particularly during war. Understanding how this affects parents' well-being is essential for tailoring the support needed by them and their families. The findings in Figure 8 present the overall stress levels of parents of young children (based on the DASS scale), categorized by whether the respondent's spouse was called for reserve duty during the war. Parents were asked if their spouse had been mobilized for reserve duty since the start of the war. The data includes only those respondents who participated in both waves of the survey (N = 804). In the first survey wave (January 2024), parents whose spouses served in reserve duty

at any point since the war began reported higher average levels of depression, anxiety, and stress symptoms than did parents whose spouses were not mobilized (a statistically significant difference at $p \leq 0.01$). Six months later (July 2024), the results were similar: parents whose spouses served in reserve duty reported higher average levels of these symptoms than parents whose spouses were not mobilized, with the difference again statistically significant ($p \leq 0.01$).

At first glance, there appears to be a slight decline in general psychological distress among parents between the two survey waves. To test whether this decline was statistically significant, separate t-tests were conducted for parents whose spouses served in reserve duty and for those whose spouses did not serve. For parents whose spouses were not in reserve duty during the war, a significant reduction in DASS scores was observed between the first and second survey waves (an average difference of 1.88 points on the scale, $p \leq 0.01$). This finding indicates a notable improvement in the mental health of these parents over time. In contrast, for parents whose spouses were mobilized for reserve duty at any point since the start of the war, no significant reduction in DASS scores was observed between the two waves (an average difference of 1.78 points on the scale, $p > 0.05$). This result may point to a persistent negative impact of reserve duty on the well-being of the parent remaining at home, even after the duty has ended. These findings underscore the ongoing need for emotional support for parents in such situations, emphasizing the prolonged challenges posed by a spouse's reserve service.

Figure 8. Average DASS score for symptoms of depression, anxiety, and stress among parents of young children by spousal reserve duty, January and July 2024



Notes: Based on parents' reports in the survey. The I-bars represent 95% confidence intervals.

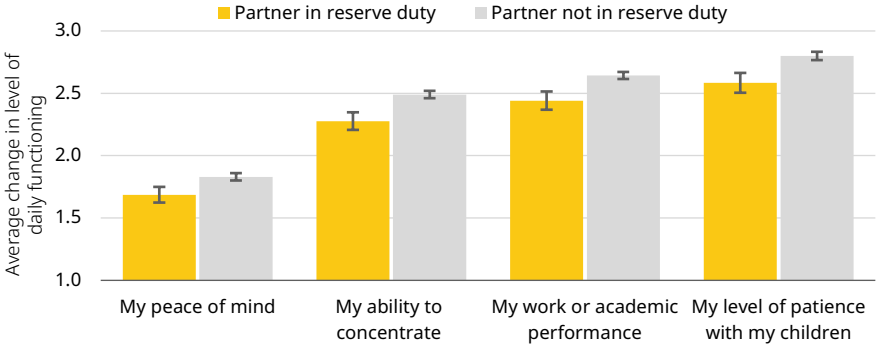
Source: Shay, Navon, Blank, and Shavit, Taub Center | Data: Longitudinal Survey of the Taub Center Initiative on Early Childhood

Reserve duty of one parent is associated with reduced functioning of the parent at home

To assess the impact of one parent's reserve duty on the functioning of the spouse who remained at home, the first wave of the survey included four indicators: patience with children, work or academic performance, ability to concentrate, and peace of mind. Responses were rated on a scale from 1 ("much worse") to 5 ("much better"), with 3 indicating "no change" in functioning. The findings in Figure 9 show that parents whose spouse served in reserve duty reported decreased functioning across all measured indicators relative to parents whose spouse was not mobilized. The most significant declines were observed in work or academic performance, patience with children, and the ability to concentrate. The differences between the two groups were statistically significant ($p \leq 0.05$). A significant difference was also found in the level of peace of mind, with parents whose spouses served in reserve duty reporting lower levels of peace of mind ($p \leq 0.05$). These findings suggest a negative correlation between one parent's reserve duty and the functioning of the parent remaining at home, with deterioration observed across all measured indicators. A decline in areas such as patience with children and

concentration points to a potential reduction in the quality of life for the parent and a diminished ability to manage daily life effectively. This deterioration may also affect family dynamics. Moreover, reduced patience and difficulty coping with children may contribute to behavioral problems and higher stress levels among the children.

Figure 9. Average reduction in daily functioning of parents of young children by spousal reserve duty, January 2024



Notes: Response scale ranges from 1 ("much worse") to 5 ("much better"), with 3 indicating "no change." Based on parents' reports in the survey. The I-bars represent 95% confidence intervals.

Source: Shay, Navon, Blank, and Shavit, Taub Center | Data: Longitudinal Survey of the Taub Center Initiative on Early Childhood

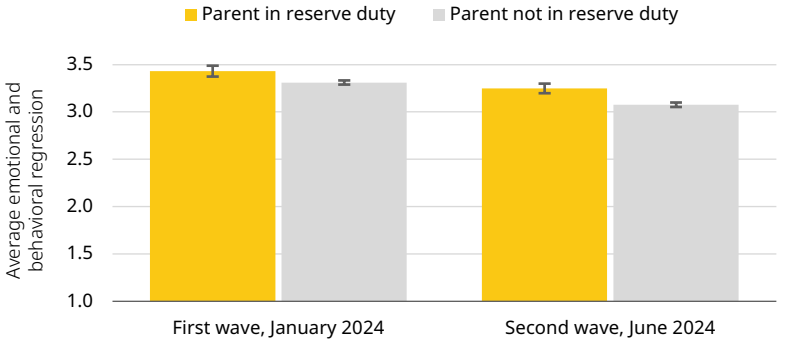
Parental reserve duty is associated with emotional and behavioral regression in children

Given the association between one parent's reserve military service and the psychological distress of the other parent, it is crucial to examine whether reserve service also affects the emotional state of children. Parental stress resulting from military service may influence the behavior and emotions of their children. Therefore, we examined the relationship between one parent's reserve service and the extent of children's emotional and behavioral regression, as measured in both survey waves. As previously noted, children's emotional and behavioral regression includes phenomena such as being startled by sudden noises, tantrums, or difficulty falling asleep.

Figure 10 shows that ***children with one parent called up for reserve duty during the war experienced, on average, more severe emotional and behavioral regression than did children whose parents did not serve in the reserves***. This difference was statistically significant in both survey waves, in January and July 2024 (p = 0.01). Between January and July, a decline in emotional and behavioral regression was observed among all children. However, while the decline among children of non-serving parents was statistically significant, no significant improvement was found among children of reserve-serving parents.

It is important to note that we lack data on the parents' reserve service status at the time of completing the questionnaire. That is, we do not know whether the service was still ongoing or had already ended at that time. It is reasonable to assume that in January 2024, a larger proportion of parents were still serving in the reserves, while by July 2024, many had already completed their service. The fact that no significant improvement was observed in the regression index of children of reserve-serving parents, even though many parents had probably returned to their families by July, underscores the persistent challenges faced by these children. This finding suggests that even after a parent returns home, the recovery process may be slow.

Figure 10. Average emotional and behavioral regression in young children by parental reserve duty, January and July 2024



Notes: Based on parents' reports in the survey. The I-bars represent 95% confidence intervals.

Source: Shay, Navon, Blank, and Shavit, Taub Center | Data: Longitudinal Survey of the Taub Center Initiative on Early Childhood

The average emotional and behavioral regression of children evacuated from their homes is more severe

To examine the relationship between family evacuation, parental reserve duty, and the emotional state of young children during the war, we conducted three linear regressions (OLS) presented in Table 1. These regressions predict the degree of children's emotional and behavioral regression as measured in January 2024. In the first regression model (Model 1), we controlled for family evacuation from home due to the war, one parent's reserve duty, and various family background variables, including family income level, parental education level, gender of the responding parent, gender and age of the children, parents' marital status (divorced/married), and changes in parental daily functioning (a value lower than 3 indicates greater emotional or behavior regression relative to 3 months prior and a higher value indicates an improvement). The results indicate that evacuation from home has a positive and statistically significant relationship with the degree of children's emotional and behavioral regression ($b = 0.12$, $p \leq 0.05$). In other words, ***young children evacuated from their homes due to the war experienced more severe average emotional and behavioral regression than children who were not evacuated***, even when controlling for the independent variables listed above. Additionally, the findings show that improvement in parental functioning is significantly associated with an improvement in the child's degree of regression.

Table 1. OLS Linear Regression Model predicting emotional and behavioral regression in young children, January 2024

	Model 1	Model 2	Model 3
Evacuated from home	**0.12***	**0.13***	**0.08***
	(0.04)	(0.04)	(0.04)
One parent in reserve duty	0.03	0.21*	0.16
	(0.03)	(0.09)	(0.09)
Family income	-0.02	-0.01	-0.00
	(0.01)	(0.01)	(0.01)
Parents' education level	**0.03***	**0.03***	**0.04***
	(0.01)	(0.01)	(0.01)
Gender of survey respondent (woman = 1)	0.02	0.03	-0.02
	(0.03)	(0.03)	(0.03)
Gender of child (girl = 1)	0.00	0.00	0.00
	(0.03)	(0.03)	(0.03)
Child's age	**0.05***	**0.05***	**0.05***
	(0.01)	(0.01)	(0.01)
Parent status divorced/separated/single (married = 1)	0.05	0.05	0.05
	(0.05)	(0.05)	(0.05)
Change in parental functioning	**-0.24***	**-0.24***	**-0.14***
	(0.02)	(0.02)	(0.02)
One parent in reserve duty * family income		**-0.06***	-0.05
		(0.03)	(0.03)
Parental distress (DASS-21)			**0.01***
			(0.00)
Constant	3.62*	3.63*	3.11
	(0.09)	(0.08)	(0.10)
Number of observations	1,133	1,133	1,133
R^2	0.15	0.16	0.22

Note: Standard deviation appears in parentheses.

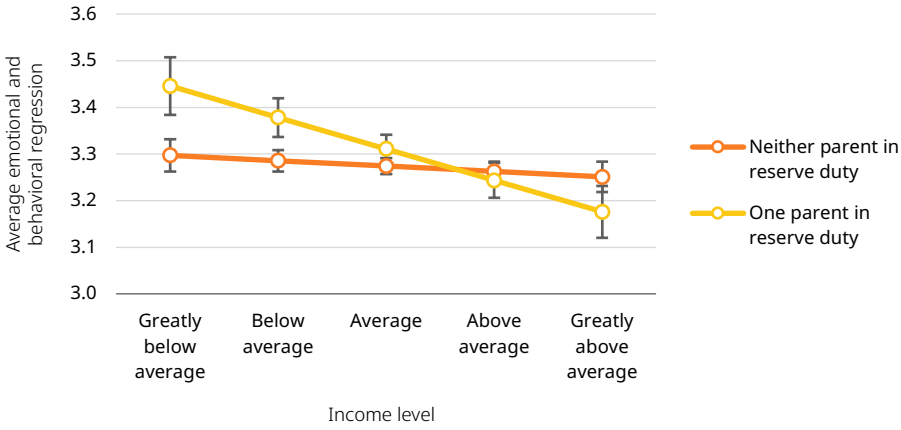
Significance level: *p ≤ 0.05.

Source: Shay, Navon, Blank, and Shavit, Taub Center | Data: Longitudinal Survey of the Taub Center Initiative on Early Childhood

Emotional and behavioral regression is more severe among children of reservists in low-income families

In the second regression model presented in Table 1, we added an interaction variable between family income level and one parent's reserve duty. This interaction indicates that the relationship between reserve duty and children's emotional and behavioral regression varies according to family income level ($b = -0.06$, $p \leq 0.05$). Figure 11 illustrates the relationships between children's emotional and behavioral regression and family income level, distinguishing between children whose parents served in reserve duty and those whose parents did not. The relationships are based on estimates from Model 2 in the table. The figure shows that emotional regression among children of reservists decreases as family income increases. Among children whose parents did not serve in reserve duty, there is no statistically significant relationship between family income level and the degree of their emotional regression. In low-income families, children of reservists exhibit an increase in relatively severe emotional regression than did children whose parents did not serve. In contrast, for children in families with average or above-average income, the difference in emotional and behavioral regression between those whose parents served in reserve duty and those whose parents did not, is not statistically significant. These findings suggest that ***reserve duty of one parent disproportionately affects the emotional state of children in low-income families***. This emphasizes the importance of providing support to families with a reservist parent, particularly in low socio-economic strata. It is likely that such families have fewer resources to cope with the effects of the war, potentially exacerbating the emotional and behavioral challenges faced by their children.

Figure 11. Relationship between parental reserve duty and children's emotional and behavioral regression by family income level, January 2024



Notes: Based on parents' reports in the survey. The I-bars represent 95% confidence intervals.

Source: Shay, Navon, Blank, and Shavit, Taub Center | Data: Longitudinal Survey of the Taub Center Initiative on Early Childhood

Parental psychological distress as a mediating factor between evacuation and children's emotional regression

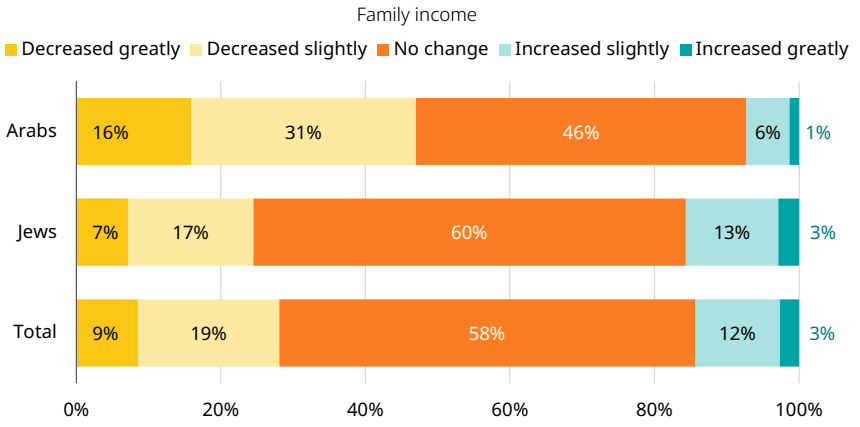
In the third regression model presented in Table 1, we included the DASS-21 index, which measures symptoms of depression, anxiety, and stress in the responding parent. As shown, controlling for this variable reduces the coefficient for evacuation from home to some extent and greatly reduces (to the point of non-significance) the coefficient for one parent's reserve duty. In contrast, a significant positive relationship is observed between parental psychological distress (as measured by the DASS-21 index) and children's emotional difficulties ($b = 0.10$, $p \leq 0.01$). In other words, ***children's emotional difficulties increase as the level of parental psychological distress rises***. Thus, it appears that parental distress serves as a mediating factor explaining the relationship between evacuation or reserve duty and children's emotional

regression. These two factors (evacuation and reserve duty) contribute to worsening the parents' psychological state, which, in turn, exacerbates the children's emotional difficulties. It is also noteworthy that the coefficient for changes in parental functioning remains significant in Model 3, although controlling for parental psychological distress nearly halves its value. This suggests that different aspects of parental challenges — both functional and psychological — together contribute to children's difficulties. Including parental psychological distress as a variable in the model increases the R^2 from 0.15 in Model 1 to 0.22 in Model 3, representing a 47% improvement in the model's explanatory power. This indicates that parental psychological distress accounts for a substantial portion of the variance in children's emotional and behavioral regression, beyond the other variables in the model. These findings highlight the need for interventions that help parents cope with their psychological distress, thereby laying the foundation for improving the emotional well-being of their children.

Arab parents experienced greater economic decline due to the war than did Jewish parents

To provide a broader perspective on the war's impact on families with young children in Israel, we examined their economic status. The findings clearly show that the effects of the war are not limited to evacuation or reserve duty but also include significant economic hardships. In the survey conducted in July 2024, respondents were asked about changes in their family income since January 2024. The data in Figure 12 reveals that many families experienced a notable decline in income. Among the entire sample, 9% of families reported a significant decrease in income, while 19% reported a slight decrease. However, the economic impact was more severe among Arab families than among Jewish families. Among the 804 Jewish families surveyed, 7% reported a significant decrease in income, and 17% reported a slight decrease, bringing the total proportion of Jewish families reporting any income decline to 24%. In contrast, among the 151 Arab families surveyed, 16% reported a significant decrease in income, and 31% reported a slight decrease, with the total proportion of Arab families reporting any income decline reaching 47%. The disparities between these groups highlight the unique vulnerability of Arab families during the war. These findings suggest that the economic impacts on Arab families were significantly more severe, extending beyond the direct effects of the security situation in the country.

Figure 12. Changes in family income since January 2024, by sector



Note: Based on parents' reports in the survey.

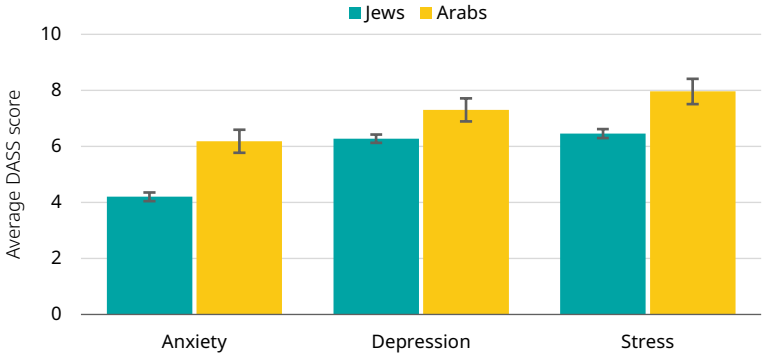
Source: Shay, Navon, Blank, and Shavit, Taub Center | Data: Longitudinal Survey of the Taub Center Initiative on Early Childhood

Levels of psychological distress of Arab parents was higher than among Jewish parents

The survey also examined the mental health of parents of young children during the war, comparing Jewish and Arab parents. As shown in Figure 13, Arab parents reported higher average levels of depression, anxiety, and stress symptoms (based on the DASS index) than did Jewish parents. These differences were statistically significant ($p \leq 0.01$). These findings align with research conducted by Clalit Health Services, which observed a significant increase in the consumption of antidepressants, anti-anxiety medications, sleeping pills, and narcotic pain medication during the first six months of the war. Among the Arab population, the consumption of pain medication quadrupled, compared to a three-fold increase in the general population (Knowledge and Information Center, 2024). However, additional factors, such as the ongoing rise in homicide rates within the Arab population (Weiner et al., 2024) and fluctuations in employment rates (Debowy et al., 2023), may have also contributed to the complex mental health situation of Arab parents, beyond the war itself.

The Arab population in Israel already faces greater economic and social challenges, including higher levels of violence and a lower sense of personal security. Thus, it is important to avoid attributing the high levels of psychological distress observed among Arab parents solely to the war. Nevertheless, the elevated levels of depression, anxiety, and stress reported by parents of young children in the Arab community underscore the need to tailor mental health support to the unique needs of this population.

Figure 13. Average DASS score for symptoms of depression, anxiety, and stress among parents of young children by sector, July 2024



Notes: Based on parents' reports in the survey. The I-bars represent 95% confidence intervals.

Source: Shay, Navon, Blank, and Shavit, Taub Center | Data: Longitudinal Survey of the Taub Center Initiative on Early Childhood

Summary and conclusions

The events of October 7, 2023, and the subsequent war have had far-reaching effects on Israeli society, including on young children. As part of a survey conducted by the Taub Center Initiative on Early Childhood Development and Inequality, the impact of the war on young children and their parents was examined. The survey explored the emotional, behavioral, and developmental state of young children, as well as the emotional state of their parents. It investigated the effects of evacuation from home, the closure of educational frameworks, and the reserve duty service of one parent.

Key findings

1. ***Impact of educational framework closures on children.*** Survey findings indicate that most children's educational frameworks were closed for up to one month. The longer these frameworks remained closed, the greater the increase in children's difficulties and problematic behaviors. Steps should be considered to ensure the continuity of educational frameworks during emergencies or to provide alternative educational programs to minimize emotional harm to children.

2. ***Impact of evacuation on children and parents.*** Children and parents evacuated from their homes due to the war experienced greater difficulties than did those who were not evacuated, and these difficulties persisted for more than six months after the war began. Most of the evacuated families, especially those from the North, continue to face uncertainty, which may exact an even greater toll on them and their children as the displacement period continues to lengthen. It is essential to maintain emotional support systems at all evacuation centers, including parental guidance programs, and to extend such support to displaced families dispersed across various communities rather than being part of unified, evacuated communities. Additionally, support systems and early childhood educators in local authorities receiving displaced families should be equipped to continue providing a supportive environment.

3. ***Impact of spousal reserve duty.*** Parents whose spouse served in reserve duty during the war faced greater emotional difficulties, and their children exhibited higher levels of distress, even after some parents had returned home from service. These findings highlight the critical importance of support systems — both institutional and community-based — for families of reservists. Psychological support and continuous follow-up for these families should be made available, especially at the local government level, which often maintains closer ties with residents than national-level agencies like the Ministry of Defense.
4. ***The Arab population in Israel.*** Arab parents faced particularly severe challenges during the war. The survey findings reveal higher levels of depression, anxiety, and stress symptoms among Arab parents than among Jewish parents, as well as greater economic harm during the first half of 2024. Tailored support programs should be considered for this population, focusing on economic assistance and psychological counseling services, to address their unique difficulties and ensure equitable access to support.

The findings of this research clearly demonstrate the significant impact of the events of October 7, 2023, and the subsequent war on young children and their parents. These results underscore the need for a comprehensive and sensitive response to these effects, with a focus on psychological, educational, and social support to mitigate the negative consequences and assist the most vulnerable populations.

It is important to note that the current study did not have baseline data on the emotional and behavioral state of children and parents before the war began. Such data are crucial for a robust comparison between the pre-war and current states. Given this limitation and its implications, we recommend systematically and regularly collecting data from a representative sample of children and parents, including information on their emotional and social well-being. Such datasets would enable more accurate comparisons during emergencies and better assessments of the long-term effects of crises.

References

English

Bailey, D. B. Jr., Bruer, J. T., Symons, F. J., & Lichtman J. W. (Eds.) (2001). ***Critical thinking about critical periods***. Paul H. Brookes.

Besser, A., Neria, Y., & Haynes, M. (2009). Adult attachment, perceived stress, and PTSD among civilians exposed to ongoing terrorist attacks in Southern Israel. ***Personality and Individual Differences, 47***(8), 851–857.

Blanden, J., Crawford, C., Fumagalli, L., & Rabe, B. (2021). ***School closures and children's emotional and behavioural difficulties***. Institute for Social and Economic Research.

Blank, C., & Shchory, S. I. (2024). Home or away? The relation between open or closed educational frameworks, parental distress, and child difficulties in the context of armed conflict. ***Early Child Development and Care, 194***(5–6), 796–809.

Bleich, A., Gelkopf, M., & Solomon, Z. (2003). Exposure to terrorism, stress-related mental health symptoms, and coping behaviors among a nationally representative sample in Israel. ***JAMA, 290***(5), 612–620.

Bowers, M. E., & Yehuda, R. (2016). Intergenerational transmission of stress in humans. ***Neuropsychopharmacology, 41***(1), 232–244.

Bowlby, J. (1979). ***The making and breaking of affectional bonds***. Tavistock.

Boyce, W. T. (2014). The lifelong effects of early childhood adversity and toxic stress. ***Pediatric Dentistry, 36***(2), 102–108.

Buchanan, D., Hargreaves, E., & Quick, L. (2022). Schools closed during the pandemic: Revelations about the well-being of "lower-attaining" primary-school children. ***Education 3-13, 51***(7), 1077–1090.

Catani, C. (2018). Mental health of children living in war zones: A risk and protection perspective. ***World Psychiatry, 17***(1), 104–105.

Cohen, E., & Shulman, C. (2019). Mothers and toddlers exposed to political violence: Severity of exposure, emotional availability, parenting stress, and toddlers' behavior problems. ***Journal of Child & Adolescent Trauma, 12***(1), 131–140.

Dar, A. A., & Deb, S. (2022). Prevalence of trauma among young adults exposed to stressful events of armed conflicts in South Asia: Experiences from Kashmir. ***Psychological Trauma: Theory, Research, Practice, and Policy, 14***(4), 633–641.

Daviu, N., Bruchas, M. R., Moghaddam, B., Sandi, C., & Beyeler, A. (2019). Neurobiological links between stress and anxiety. ***Neurobiology of Stress, 11***, 100191.

Debowy, M., Epstein, G. S., & Weiss, A. (2023). Israel's tight labor market: January to September 2023. In A. Weiss (Ed.), ***State of the nation report: Society, economy & policy in Israel 2023*** (pp. 125–157). Taub Center for Social Policy Studies in Israel.

Egan, S. M., Pope, J., Moloney, M., Hoyne, C., & Beatty, C. (2021). Missing early education and care during the pandemic: The socio-emotional impact of the COVID-19 crisis on young children. ***Early Childhood Education Journal, 49***(5), 925–934.

Eltanamly, H., Leijten, P., Jak, S., & Overbeek, G. (2021). Parenting in times of war: A meta-analysis and qualitative synthesis of war exposure, parenting, and child adjustment. ***Trauma, Violence, & Abuse, 22***(1), 147–160.

Finklestein, M. (2016). Risk and resilience factors in families under ongoing terror along the life cycle. ***Contemporary Family Therapy, 38***(2), 129–139.

Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A research note. ***Journal of Child Psychology and Psychiatry, 38***(5), 581–586.

Goodman, R., Ford, T., Simmons, H., Gatward, R., & Meltzer, H. (2000). Using the Strengths and Difficulties Questionnaire (SDQ) to screen for child psychiatric disorders in a community sample. ***The British Journal of Psychiatry, 177***(6), 534–539.

Greene, T., Itzhaky, L., Bronstein, I., & Solomon, Z. (2018). Psychopathology, risk, and resilience under exposure to continuous traumatic stress: A systematic review of studies among adults living in southern Israel. ***Traumatology, 24***(2), 83–103.

Grotberg, E. H. (1995). ***A guide to promoting resilience in children: Strengthening the human spirit. Early childhood development: Practice and reflections*** (Vol. 8). Bernard van Leer Foundation.

Husain, S. A., Allwood, M. A., & Bell, D. J. (2008). The relationship between PTSD symptoms and attention problems in children exposed to the Bosnian war. ***Journal of Emotional and Behavioral Disorders, 16***(1), 52–62.

Imran, N., Sharif, M. I., Iqtadar, S., Javed, A., & Azeem, M. W. (2021). Parental stress and parenting during COVID-19 pandemic in Pakistan. ***World Social Psychiatry, 3***(1), 30–35.

Jang, M., Owen, B., & Lauver, D. R. (2019). Different types of parental stress and childhood obesity: A systematic review of observational studies. ***Obesity Reviews, 20***(12), 1740–1758.

Joshi, P. T., & O'Donnell, D. A. (2003). Consequences of child exposure to war and terrorism. ***Clinical Child and Family Psychology Review, 6***(4), 275–292.

Klein, T. P., Devoe, E. R., Miranda-Julian, C., & Linas, K. (2009). Young children's responses to September 11th: The New York City experience. ***Infant Mental Health Journal, 30***(1), 1–22.

Lappé, M., & Jeffries Hein, R. (2021). You are what your mother endured: Intergenerational epigenetics, early caregiving, and the temporal embedding of adversity. ***Medical Anthropology Quarterly, 35***(4), 458–475.

Le, K., & Nguyen, M. (2020). Armed conflict and birth weight. ***Economics & Human Biology, 39***, 100921.

Lupien, S. J., McEwen, B. S., Gunnar, M. R., & Heim, C. (2009). Effects of stress throughout the lifespan on the brain, behaviour and cognition. ***Nature Reviews Neuroscience, 10***(6), 434–445

Martin, C. A., Papadopoulos, N., Chellew, T., Rinehart, N. J., & Sciberras, E. (2019). Associations between parenting stress, parent mental health and child sleep problems for children with ADHD and ASD: Systematic review. ***Research in Developmental Disabilities, 93***, 103463.

McRae, C. S., Overall, N. C., Henderson, A. M., Low, R. S., & Chang, V. T. (2021). Parents' distress and poor parenting during a COVID-19 lockdown: The buffering effects of partner support and cooperative coparenting. ***Developmental Psychology, 57***(10), 1623–1632.

NII (2024). ***Updates and information in relation to the war***. National Insurance Institute.

Norton, P. J. (2007). Depression Anxiety and Stress Scales (DASS-21): Psychometric analysis across four racial groups. ***Anxiety, Stress, and Coping, 20***(3), 253–265.

Phillips, D. A., & Shonkoff, J. P. (Eds.). (2000). ***From neurons to neighborhoods: The science of early childhood development***. National Academies Press.

Quintana-Domeque, C., & Ródenas-Serrano, P. (2017). The hidden costs of terrorism: The effects on health at birth. ***Journal of Health Economics, 56***, 47–60.

Romero, E., López-Romero, L., Domínguez-Álvarez, B., Villar, P., & Gómez-Fraguela, J. A. (2020). Testing the effects of COVID-19 confinement in Spanish children: The role of parents' distress, emotional problems and specific parenting. ***International Journal of Environmental Research and Public Health, 17***(19), 6975.

Sadeh, A., Hen-Gal, S., & Tikotzky, L. (2008). Young children's reactions to war-related stress: A survey and assessment of an innovative intervention. ***Pediatrics, 121***(1), 46–53.

Sanner, C. M., & Neece, C. L. (2018). Parental distress and child behavior problems: Parenting behaviors as mediators. ***Journal of Child and Family Studies, 27***(2), 591–601.

Shavit, Y., Friedman, I., Gal, J., & Vaknin, D. (2018). ***Emerging early childhood inequality: On the relationship between poverty, stress, sensory stimulation, and child development and achievements***. Taub Center for Social Policy Studies in Israel.

Spinelli, M., Lionetti, F., Pastore, M., & Fasolo, M. (2020). Parents' stress and children's psychological problems in families facing the COVID-19 outbreak in Italy. ***Frontiers in Psychology, 11***, 1713.

Taub Center (2023). The October 7, 2023 War and its impact on Israel's society and economy. In A. Weiss (Ed.), ***State of the nation report: Society, economy & policy in Israel 2023*** (pp. 21–72). Taub Center for Social Policy Studies in Israel.

Tomiyama, A. J. (2019). Stress and obesity. ***Annual Review of Psychology, 70***(1), 703–718.

Torche, F., & Shwed, U. (2015). The hidden costs of war: Exposure to armed conflict and birth outcomes. ***Sociological Science, 2***, 558–581.

Weinreb, A., Weiss, A., Shami, L., & Kaidar, N. (2024). ***Homicide rates in Israel: Recent trends and a crossnational comparison***. Taub Center for Social Policy Studies in Israel.

Yang, L., Zhao, Y., Wang, Y., Liu, L., Zhang, X., Li, B., & Cui, R. (2015). The effects of psychological stress on depression. ***Current Neuropharmacology, 13***(4), 494–504.

Zahr, L. K. (1996). Effects of war on the behavior of Lebanese preschool children: Influence of home environment and family functioning. ***American Journal of Orthopsychiatry, 66***(3), 401–408.

Hebrew

Blank, C., Shay, D., Navon, Y., Silverman, S., & Shavit, Y. (2024). *Emotional and behavioral difficulties among young children and their parents: A status report during the war*. Taub Center for Social Policy Studies in Israel.

IDF Spokesperson, RAdm. Daniel Hagari (2024). *Enlistment of reservists*. Taken August 25, 2024.

Lahad, M. (1999). ***Model of coping and resiliency BASIC-PH and its use for individuals, in groups, and organizations***. The Community Stress Prevention Center, Kiryat Shmona.

National Council for the Child (2023). Children in the Iron Swords War**.** In ***Children in Israel 2023***.

Rabinowitz, M. (2024). ***The status of children and youth evacuees***. Knesset, Research and Information Center.

Research and Information Center (2024, September 16). ***Spotlight — the status of mental healthcare in light of the war***. Information Spotlight No. 9. Knowledge and Information Center for Emergency Homefront Support.

Shay, D., Blank, C., Navon, Y., & Shavit, Y. (2024). *The impact of the Israel-Gaza War on young children and their parents*. Taub Center for Social Policy Studies in Israel.

Weisblau, E. (2023). ***Education system activities in the Iron Swords War — a status report***. Knesset, Research and Information Center.

Executive Summary

Widening Socioeconomic Inequalities in Early Childhood Language Milestone Attainment in Israel, 2016–2022

Pini Akiva, Guy Amit, Irena Girshovitz, Yael Navon, Yair Sadaka, Yossi Shavit, and Sarit Silverman

This study examined the links between the socioeconomic background of children and their developmental indicators. The research is based on data from the Ministry of Health's Tipat Halav clinics for approximately 70% of children born between 2014 and 2022. The study results show a positive correlation between

* Dr. Pini Akiva, CEO, KI — The Israeli Institute for Applied Research in Computational Health. Dr. Guy Amit, Senior Researcher, KI. Irena Girshovitz, Researcher, KI; doctoral student, Tel Aviv University. Dr. Yael Navon, Senior Researcher, Taub Center for Social Policy Studies in Israel. Dr. Yair Sadaka, Head, Negev Child Development Center, Ministry of Health, Be'er Sheva; Researcher, KI; Lecturer, Ben-Gurion University of the Negev. Prof. Yossi Shavit, Head, Taub Center Initiative on Early Childhood Development and Inequality; Professor Emeritus, Tel Aviv University. Dr. Sarit Silverman, Senior Researcher, Taub Center.

This is a joint study by the Taub Center Initiative on Early Childhood Development and Inequality and KI — the Israeli Institute for Applied Research in Computational Health. The study was generously supported by the Beracha Foundation, the Bernard van Leer Foundation, and Yad Hanadiv. This research was published in June 2024 and is available in full on the Taub Center website.

a mother's education and early childhood language development, creating disparities in language skills between children from different socioeconomic backgrounds. Additionally, it was found that these disparities widen with age and have been increasing in recent years.

The study is also based on findings from a comprehensive literature review published by the Taub Center, examining the impact of socioeconomic gaps on various areas of early childhood development.[1] The review findings indicate that disparities in language skills based on socioeconomic background emerge as early as the second year of life. These disparities lead to different developmental paths in language skills, which subsequently affect school achievements and life outcomes.

Developmental milestones are used to measure children's basic abilities to ensure that they are developing at the expected pace for their age. The study found that the rate of children experiencing delays in achieving language milestones increases inversely with the mother's education level (categorized as academic, post-secondary non-academic, secondary, or primary). In other words, the higher the mother's education level, the greater the percentage of children who achieve language milestones on time. Furthermore, the gaps in achieving milestones increase with the child's age (disparities by maternal education level are more pronounced among children aged 2–3 years compared to those aged 0–1 and 1–2). The data also show an upward trend over time (from 2016 to 2022) in the proportion of children experiencing delays in achieving language milestones. In other words, each passing year sees an increase in the percentage of children with delays in language development, and this trend holds across all age groups.

The increase in delays over time is sharper and more pronounced among children of mothers with primary and secondary education than in children of mothers with post-secondary and academic education. This finding indicates a potential widening of socioeconomic disparities in Israel.

1 The literature review was written by Dr. Sarit Silverman, Senior Researcher, Taub Center, through the Taub Center Initiative on Early Childhood Development and Inequality and is available on the Taub Center website. The activities of the Initiative are generously supported by the Beracha Foundation, the Bernard van Leer Foundation, and Yad Hanadiv.

Since the implementation of the National Health Insurance Law in 1995, the operation and responsibility for Tipat Halav clinics have been divided among several entities. This fragmented situation has hindered necessary advancements and improvements within the system, leaving its future uncertain. The literature review and findings of the current study emphasize the importance of the Tipat Halav system, which provides free preventive care for children from birth to age six. According to the researchers, these clinics are at the forefront of protecting the health of Israel's young population. Moreover, the data collected at these clinics allow for tracking trends in this area, promoting research, and advancing evidence-based policy making. Based on the findings of this research and the literature review, the researchers present several policy measures to strengthen early childhood services and reduce disparities among children from different socioeconomic backgrounds:

1. ***Streamlining the operation of Tipat Halav clinics***: Assigning the operation of this system to a single entity responsible for all aspects would ensure regular updates to budgets and staffing standards in line with population growth rates, as well as the adoption of new approaches and changes based on evolving research.
2. ***Integrating developmental monitoring services***: Currently, Tipat Halav clinics operate separately from the other professional services provided at child development clinics. Integrating these two systems would ensure continuity of care and increase the likelihood that children identified with language milestone delays receive the necessary diagnostic evaluation and appropriate treatment.
3. ***Improving access to quality early childhood education and care facilities***: Quality early childhood education fosters linguistic, cognitive, and socio-emotional development during the most formative years. Ensuring access to quality education and care for every child, regardless of their family's socioeconomic status, would help provide all children in Israel with a more equal starting point, benefiting both children and society as a whole.

EDUCATION

The Education System in Israel 2020–2024: A Conservative System in a Dynamic Reality

Nachum Blass

This year, the chapter focuses on three main topics: the state budget, teaching personnel, and academic achievements. However, before delving into these issues, it is impossible not to address — insofar as the available data allow — the tangible outcomes and potential future impacts of the three tectonic upheavals that have shaken, and continue to shake, Israeli society and the education system since 2020: the Covid-19 pandemic, the judicial reform plans and the social and political turmoil they have sparked, and the October 7 massacre and the ensuing war. Naturally, the full impact of these events — the most severe of which has yet to end — is not yet fully understood. Nonetheless, it is impossible to write a chapter summarizing recent developments in Israel's education system without a preliminary examination of their immediate and future effects.

While the Covid-19 pandemic impacted the entire education system to varying degrees, the change in government alongside the attempts to implement a judicial reform were reflected in the education system primarily through efforts to increase funding for Haredi educational institutions and an intensification of polarizing public discourse. Though this discourse largely took place among adults, it inevitably trickled into schools. The war, in contrast, has had a direct impact on all students in the education system — whether through displacement from their homes, the mobilization of family members for reserve duty,[1]

* Nachum Blass, Principal Researcher and Chair, Education Policy Program, Taub Center for Social Policy Studies in Israel. This chapter was written with the assistance of Dr. Sarit Silverman and Jonathan Plotkin. The sections dealing with teacher absenteeism and turnover were written with Dr. David Maagan from the Central Bureau of Statistics.

1 The Arab and Haredi populations are less relevant in terms of reserve duty, and their share among those evacuated is lower relative to the rest of the population.

or the fear and chaos triggered by air-raid sirens and the scramble to reach protected spaces. A publication by the National Knowledge and Information Center for Emergency Homefront Support outlined the following:

> When examining the population of children and youth in detail, many were exposed to life-threatening situations and distressing online content. To date, approximately 19,900 children and youth have been recognized by the National Insurance Institute as victims of hostilities due to the war, and about 300,000 are children of reserve soldiers who were called to duty. Several studies have found that many children are experiencing significant distress and anxiety in light of the war events — 76% of children aged 2–12 suffer from high levels of emotional distress, and nearly 54% suffer from anxiety. Among parents, 27% reported high levels of depression and anxiety.[2]

With the outbreak of the war, nearly 300,000 soldiers — many of them parents, siblings, or more distant relatives of students — were called up for reserve duty.[3] Added to this are approximately 330,000 people who were evacuated from their homes or left voluntarily at the start of the war due to security concerns.[4] Recent data from the Ministry of Education indicates that since the war began, nearly 38,000 students from all educational levels have experienced displacement from their homes, about one-third from northern communities and two-thirds from communities in the south.[5] Table 1 presents the numbers by education level and district of residence.

2 National Knowledge and Information Center for Emergency Homefront Support, September 16, 2024.

3 See IDF Spokesman website.

4 According to an initial estimate of the Israel Democracy Institute from October 19, 2023.

5 Data supplied to the Taub Center under the Freedom of Information Law.

Table 1. Number of students evacuated since the start of the war, by education level and area of residence

	North	South
Preschools	1,932	5,204
Primary school (grades 1–6)	5,287	10,692
Middle school (grades 7–9)	2,719	4,911
High school (grades 10–12)	2,669	4,227
Total	**12,607**	**25,034**

Source: Nachum Blass, Taub Center | Data: Ministry of Education, Freedom of Information Law

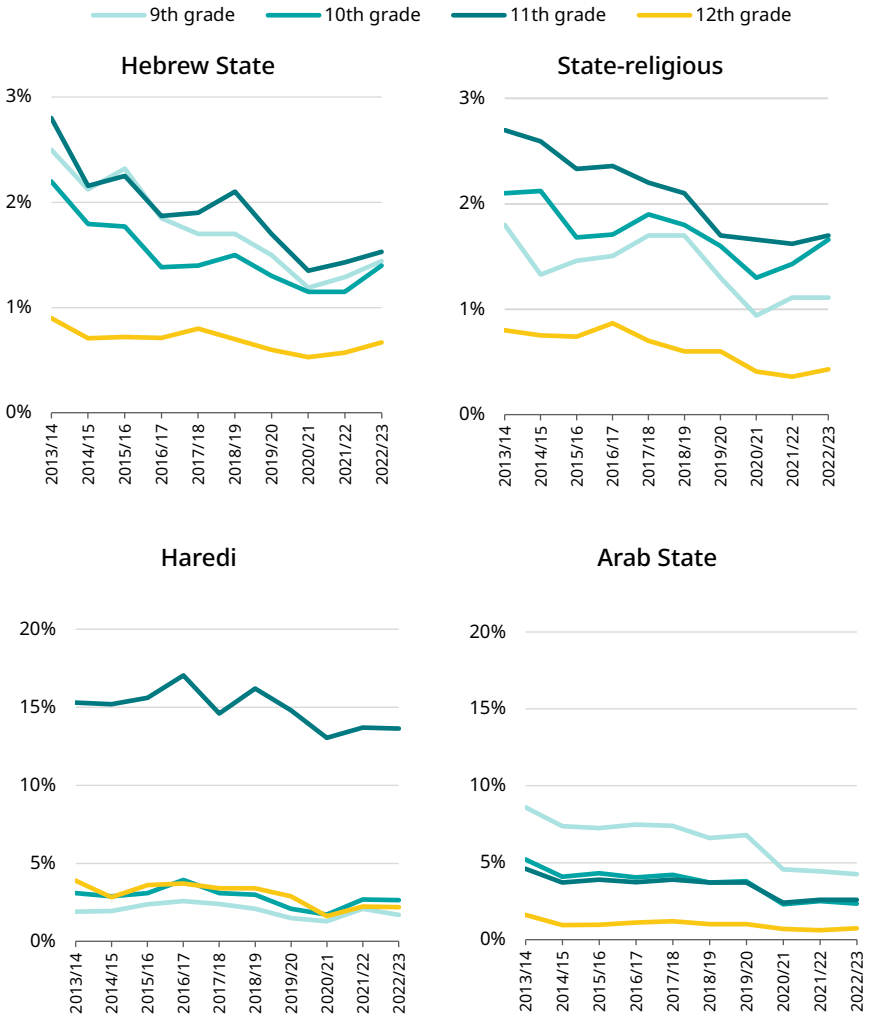
In the immediate term, it can be said with a high degree of certainty that a situation in which tens of thousands of children spend an extended period away from their homes, and hundreds of thousands have a parent or close family member in reserve duty, will have some impact — one way or another — on their ability to learn and develop in a healthy manner.[6] It is also important to remember that even students who are not directly exposed to the war are affected by it to some extent. Consequently, an increase in dropout rates, a decline in academic achievements, and a rise in incidents of physical and other forms of violence are expected outcomes.

The long-term effects of the war (and, as we will see later, the impacts of the Covid-19 period as well) are more difficult to assess, partly because the Ministry of Education publishes data on academic and educational achievements on official platforms only up to 2022. The effects of the war on academic performance cannot yet be evaluated as the results of the Meitzav (Growth and Effectiveness Measures for Schools) tests have not yet been published, and the latest Bagrut (matriculation) exam results that have been released pertain to exams taken before the war. Therefore, for now, what can be done is to consider sporadic data published by various organizations that may serve as indicators of emerging trends within the education system due to the war.

6 For the impact of on young children of reserve duty of a parent and evacuation from home, see the chapter on early childhood in this volume.

For instance, according to Central Bureau of Statistics (CBS) data on student dropout rates, the positive trend of a consistent decline in dropout rates has halted, and, in some groups, even reversed since 2020. An earlier Taub Center publication examined dropout trends in high school education (Yanay et al., 2019). Since that publication, numerous global events, foremost among them the Covid-19 pandemic, have caused instability in the education system and may certainly have impacted dropout rates. Figure 1 presents dropout rates in high school education by grade level and population group. Over the last decade, dropout rates have generally declined across all groups and grade levels. Notably, the most significant decrease occurred during the years most heavily influenced by Covid-19 — the 2020 academic year and the transition to 2021. However, in the subsequent two years (2022–2023), a slight increase in dropout rates was measured, though they did not return to pre-Covid-19 levels. In Hebrew education, dropout rates peak in 11th grade, while in Arab education, they are highest in 9th grade. Trends in the State-religious and State (secular) education systems are relatively similar, with most dropping out occurred between 9th and 11th grade, whereas in Haredi education, dropout rates are particularly high in 11th grade due to the transition to advanced yeshivot.

Figure 1. Dropout rate in high school from the 2013/2014 to 2022/2023 school years, by grade level and education sector



Source: Nachum Blass, Taub Center | Data: Ministry of Education, A Wide Perspective website

In a discussion held by the Knesset Education Committee in February 2024, a deputy director-general from the Ministry of Education reported that following the government's decision to evacuate residents of the Gaza border communities and Northern border residents at the start of the war, approximately 48,000 students in the education system were evacuated from their homes — about 31,300 from Southern communities and about 16,700 from Northern communities. Regarding dropout rates, it was stated in the same discussion that 15,502 high school students were among those evacuated, and attendance was recorded in the Ministry's systems for 91% of them. The remaining 9% are unreported, but the Ministry has information about them: about 1,200 did not regularly attend educational frameworks but were located and reintegrated into an educational framework, while another 815 still do not attend educational frameworks regularly (Elmakies, 2024).

As things currently stand, the three most severe outcomes of the three crises — especially the judicial reform and the war — are as follows:

1. ***The widening gaps between the four subsystems that make up the Israeli education system:*** Hebrew State education, State-religious education, Arab State education, and Haredi education. These gaps, which already posed challenges to creating a shared Israeli ethos, are now evident in every discussion and interaction, both private and public. Counting skullcaps at demonstrations, tallying fallen IDF soldiers according to their ideological affiliations, and disregarding objective needs when examining budgets allocated to different groups — all these are only partial expressions of a new reality. The larger danger lies in the far-reaching disintegration of the most basic shared ethos — that of Israel as a Jewish and democratic state.
2. ***The intensification of violent and intolerant discourse and behavior toward others' opinions and actions:*** These phenomena are increasingly prevalent among students, between students and their teachers, in the teachers' lounges, and between teaching staff and parents. This raises serious concerns about the future character of Israeli society. Open discourse in educational spaces is a critical component in shaping values of tolerance, listening, and mutual respect. Respectful discussion in the educational environment is essential for developing social skills and ensuring a democratic, open, and inclusive society in the future.

3. ***A routine defined by a lack of routine:*** The education system is supposed to be a source of stability and support for students, but, in recent years, it has become evident that the system cannot always be relied upon to function properly. Instability and unreliability have become the norm. This raises profound questions about the future, particularly regarding students' attitudes toward institutional systems as they grow up. What kind of citizens are we educating if they learn that the system cannot be trusted? Will they understand the importance of living within and adhering to systems and regulations, or will they conclude that these systems are unreliable and therefore not worth obeying?

One of the most important tasks of the education system will be to rediscover and reinforce the bonds that unify Israeli society and instill in all students the values of solidarity, tolerance, critical thinking, and identification with the fundamental values of the State of Israel as expressed in the State Education Law and the Declaration of Independence.

We now proceed to discuss the Ministry of Education's budget, which has also been influenced by the fluctuations occurring in the country. Following that, we expand on the issue of teaching personnel. Finally, we examine the changes in students' achievements in Israel and compare them to those in other countries.

Budget

Between 2019 and 2024, significant changes and disruptions occurred in the state budget. In 2020, there was no approved budget, and in other years, frequent changes were introduced — some necessitated by Covid-19, some due to the massive increase in funding for the Haredi and religious sectors following the change in government, and others due to wartime needs.

As we have described in the past (Blass & Cogan, 2014), when discussing the budget of any government ministry, it is necessary to address three forms of the budget:

1. The ***original budget***: The budget approved by the Knesset at the beginning of the year.
2. The ***approved budget, including amendments***: The budget that incorporates all changes made to the original budget during the year and approved by the Knesset Finance Committee.
3. The ***actual executed budget***.

For each of these, there are effectively two types of budgets: the net budget and, alongside it, the gross budget, which includes contributions from additional sources such as parent payments. Here, we focus solely on the net budget.

According to the data presented in Table 2, over the past five years, there has been an increase of more than 37% in the original education budget, 32% in the amended budget, and 34% in the executed budget.

Table 2. The regular budget, 2019–2024

NIS billions

Year	Original budget	Approved budget	Executed budget
2019	60.5	64.1	60.9
2020	63.7	66.6	64.0
2021	67.3	71.8	66.4
2022	67.8	74.6	70.6
2023	79.5	84.9	81.5
2024	82.9		

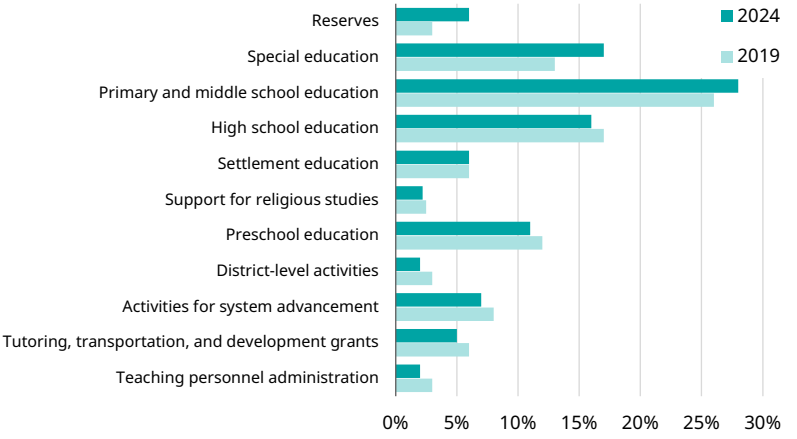
Source: Nachum Blass, Taub Center | Data: Ministry of Education

As can be seen in Table 2, the Ministry of Education's original budget is always lower than the amended budget, and the executed budget is almost always higher than the original budget (except in 2021, when it was lower than the original by NIS 900 million). However, the executed budget is significantly lower than the amended budget. This is because the Ministry of Education almost never manages to fully implement changes introduced to the budget during the year, especially towards its end. This raises the question: does the Ministry of Education intentionally build its budget with an initial shortfall, or is this indicative of its inability to fully utilize the budget allocated to it?

Changes in the Ministry of Education budget by budget areas

Analyzing internal changes in the Ministry of Education's budget as reflected in the allocation between areas reveals significant shifts in priorities and policy. As shown in Figure 2, among the areas that recorded a notable increase in their share of the budget are special education and primary and middle school education. Conversely, there has been a significant decline in other areas, such as the teaching personnel administration and district-level activities. Another substantial change is the increase in the reserves budget, which includes government coalition funds.

Figure 2. The original budget by area as a percent of the Ministry of Education budget, 2019 and 2024



Source: Nachum Blass, Taub Center | Source: Ministry of Finance, Accountant General Division

Table 3 examines whether the decline in the relative share of certain areas, such as the teaching personnel administration, results from a reduction in the budget allocated to them or from the significant growth in the ministry's overall budget and the budgets allocated to other areas. The data show that, in nominal terms, the budgets of nearly all areas increased, though with considerable variation in the rate of growth. While areas such as reserves, special education, and primary education saw substantial increases, other areas experienced only moderate growth, and, in some cases, even a decline, such as occurred in the teaching personnel administration.

Table 3. The original budget by area and percent change, 2019 and 2024

Area	2019 NIS	2024 NIS	Percent change: 2019 to 2024
Reserves	1,963,487	4,848,480	147%
Special education	7,889,882	13,882,639	76%
Primary and middle school education	15,871,614	23,174,660	46%
High school education	10,100,791	13,311,138	32%
Settlement education	3,673,020	4,648,710	27%
Support for religious studies	1,490,675	1,863,628	25%
Preschool education	7,194,180	8,792,392	22%
District-level activities	1,730,668	1,990,024	15%
Activities for system advancement	4,890,305	5,622,983	15%
Tutoring, transportation, and development grants	3,663,573	4,194,076	14%
Teaching personnel administration	1,988,180	1,743,055	-12%

Source: Nachum Blass, Taub Center | Data: Ministry of Finance, Accountant General Division

Budget changes: Selected areas

Special education

Special education is the area that experienced the largest budget increase between 2019 and 2024, with its share of the Ministry of Education's budget rising significantly from 13% to 17%. The main factors behind this increase, as we noted last year (Blass, 2023), were:

- The continuous growth in the number of students eligible for special education services.
- An increase in the proportion of high-cost students with special needs among all special education students.
- The implementation of the special education reform, which expanded the range of services provided to these students, including increased budgets for inclusion and integration in schools and a broader definition of students eligible for individual integration packages, resulting in a substantial increase in their numbers.

Such extreme changes over a relatively short period point to the Ministry of Education's inability to control budgets allocated to special education. This collapse was particularly evident in 2022, with a gap of over 10% between the original budget and the executed budget. This situation led to the appointment of a public committee chaired by Amos Shapira to examine the causes of the crisis in special education and propose solutions. While the committee has not yet concluded its work, it has already presented preliminary insights, as expressed by the committee chair during a meeting with the Ministry of Education's management and later in a session of the Knesset Education Committee. According to these insights, the primary cause of the crisis is actually the state of general education, which drives parents of children with special needs to prefer separate frameworks over regular ones and to seek out every path to secure diagnoses that, in their view, provide their children with educational and budgetary advantages. To address this, the committee chair recommended a reduction in the average number of students per class in preschools, primary schools, and middle schools to 19. According to him, this can be achieved without increasing the number of teachers or their employment costs, provided the number of teaching hours allocated to each class is reduced. The same conclusion was reached in an earlier Taub Center study (Blass et al., 2023b).

Primary and middle school education

The area of primary and middle school education is the largest within the Ministry of Education's budget and is divided into four segments: primary schools and middle schools in the Official education system receive the majority of the budget, about 85% of the total, the Independent education system receives about 8%, Ma'ayan HaChinuch HaTorani about 4%, and Recognized but Unofficial schools along with Exempt institutions together receive about 3%.

Two main trends can be identified in this area. First, a consistent growth trend between 2019 and 2024; second, significant gaps between the original budget and the actual execution budget, with execution exceeding the original plan in most years. For example, in 2022, the executed budget was about NIS3.66 billion higher than the original budget. 2023 marks an important milestone with a sharp increase in the budget. The original budget for that year was approximately NIS 24.4 billion — an increase of about 46% compared to the previous year. Although the original budget for 2024 is slightly lower than that in 2023, it remains significantly higher than the budgets of preceding years. The data indicate a clear trend of increasing investment in primary and middle school education at an annual rate of about 5%, reflected — especially in primary education — by an increase in the number of hours per student and a reduction in the number of students per class. The exceptional increase in 2023 can be attributed to the signing of the new salary agreement with the Teachers' Union.

Table 4. Primary and middle school budgets

NIS thousands

Year	Original budget	Approved budget	Executed budget	Change in original budget	Change in amended budget	Change in executed budget
2019	15,871,614	17,310,406	17,156,855			
2020	—	—	18,103,233			
2021	17,492,798	18,647,196	18,237,983			1%
2022	16,713,133	20,668,715	20,369,155	-4%	11%	12%
2023	24,459,411	25,403,842	25,099,694	46%	23%	23%
2024	23,174,660			-5%	—	—

Source: Nachum Blass, Taub Center | Data: Ministry of Finance, Budget Key

Reserves

The reserves budget area is designed to provide flexibility in budget management and to address unforeseen events. Reserves are divided into three main types: a reserve for price increases, intended to fund price hikes; a fiscal reserve, meant to serve as an available budgetary source for emerging needs during the year without compromising adherence to fiscal rules (deficit targets and expenditure limits); and other reserves (Bar, 2024).

In the years reviewed, there was a sharp increase in the reserves section of the Ministry of Education's budget, from approximately NIS 1.96 billion to NIS 4.85 billion — a rise of 147% (see Table 3 previously). One of the most notable differences between the amended budget and the original budget is the complete depletion of reserve items and the increase in other items in the amended budget.

However, alongside the sharp increase in this section, there was also a dramatic change in the internal allocation between the reserve for price increases and the fiscal reserve. Between 2019 and 2024, the relative share of the fiscal reserve in the reserves budget rose by 115%, from 11% to 24%, while the share of the reserve for price increases dropped by 15%, from 89% to 76% of the reserve budget. The main source of this increase stems from the growth in the budget earmarked for the government Coalition Agreement (included in the fiscal reserve). In the 2023 and 2024 budgets, this item constituted approximately 85% of the fiscal reserve. These changes reflect a clear trend of diverting resources toward fulfilling political agreements (Dori, 2024).

An example of the manipulation of the reserves budget to suit political considerations can be seen in the government's decision regarding the budget cuts for 2024. It was decided to reduce the reserve budget intended for the wage agreement with secondary schools, while preserving the reserves budget allocated for the inclusion of Haredi teachers in the New Horizon Agreement.

Are Hebrew State and Arab State education discriminated against in budgetary terms?

One of the sensitive issues at the heart of public debate about Israel's education system addresses the question: Are education budgets distributed equitably and with transparency across the different parts of the system (Hebrew State education, State-religious education, Haredi education, and Arab State education), and has the inequality in funding between these segments expanded or narrowed? The prevailing opinion, primarily based on data about average expenditure per student and average class size published by the Ministry of Education and the CBS, is that the system overtly and covertly prioritizes State-religious education over other parts of the system. Indeed, the data seem to support this view (Dattel, 2024). However, a more thorough analysis of the data reveals a much more complex picture.

Taub Center researchers have published several studies on per-student expenditure across different educational stages.[7] Their findings show that while students in State-religious education indeed benefit from higher budgets than their peers in other parts of the education system, these disparities are primarily explained by transparent funding formulas based on rules that generally have a clear and demonstrable connection to educational needs. These funding rules have remained largely unchanged over the years. Therefore, the current differences in allocation between sectors and supervisory frameworks do not stem from arbitrary decisions influenced by external considerations recently made but rather from decisions shaped over many years by a combination of political, educational, and ideological considerations. These decisions are reflected in primary legislation (such as the State Education Law or the Compulsory Education Law), secondary legislation (various regulations), director-general circulars, or funding formulas, which typically involve minimal disagreement. The remaining disparities are only partially attributable to unique funding packages (such as prayer hours for State-religious education or five-year plans for the Arab sector). Furthermore, the funding gaps between the different parts of the system are steadily narrowing.

7 For information on per-student expenditure in primary education, see Blass and Bleikh, 2018; 2020 (an additional study is forthcoming). For expenditure in high schools, see Blass and Bleikh, 2024. The topic of per-student expenditure in middle schools is in advanced stages of research.

Education manpower

As in previous years, the issue of teacher shortages has arisen again this year, and, as in previous years, it remains difficult to identify such a shortage or even a trend suggesting its emergence (though localized shortages may exist in certain communities or for teachers of specific subjects). To substantiate this claim, we reiterate that even in the 2023/2024 school year, the growth rate in the number of teachers — both overall (3.3%) and across various sectors of the education system — was greater than the growth rate in the number of students (1.5%).[8] While the number of new teachers in 2023/2024 was lower than in 2022/2023 (12,411 compared to 14,890), the number of new teachers who joined in 2023/2024 still significantly exceeded the number of teachers who left that year (10,143).[9] This will be further discussed in the section on teacher turnover.

Regarding the quality of teachers and their suitability for the subjects they teach, we have no data indicating a decline in quality. First, it is important to note that suitability or unsuitability for teaching a subject depends largely on its definition. In Israel, the CBS defines a teacher as suitable to teach a given subject if they have a bachelor's degree from a recognized institution of higher education in Israel or abroad (for those with a degree recognized from abroad), a bachelor's degree in education from academic colleges of education, or a teaching license. For suitability to teach mathematics, for instance, a teacher must hold a degree, teaching certificate, or teaching license in one of the following fields: mathematics, statistics, computer science, physical sciences, or engineering. It is worth noting that many years of experience teaching a particular subject or participating in professional development courses for that subject are not sufficient for a teacher to be considered suitable. Even under the CBS's strict criteria, the data from the Statistical Abstract of Israel 2023 show a significant improvement over the past decade in this area, particularly in mathematics and English (as a second language) (Table 5).

8 Although the growth rate of full-time positions in 2023/2024 was negligible, this is fully explained by the reduction in the rate of full-time positions in Haredi education. This indicates an increase in the number of Haredi teachers working part-time.

9 The CBS reports teacher departures only after three years have passed since they no longer appear in the Ministry of Education's records.

Table 5. Suitability rates for teaching Hebrew (language arts), mathematics, and English (as a second language), 2012/2013 and 2022/2023

	2012/2013			2022/2023		
	Primary school	Middle school	High school	Primary school	Middle school	High school
Hebrew (language arts) — total	23.3%	64.5%	62.8%	25.6%	60.2%	63.8%
Mathematics — total	28.3%	63.1%	62.6%	38.4%	73.8%	77.3%
English (as a second language) — total	56.1%	65.0%	59.0%	69.6%	76.4%	71.6%

Source: Nachum Blass, Taub Center | Data: CBS, 2023a, Table 4.48

Although suitability rates for these subjects are far from 100%, this is also the case in many other advanced education systems. In Australia, for example, 39% of principals in major urban areas and 42%–66% in more remote areas reported difficulties in placing properly trained teachers in classrooms (Du Plessis, 2013). It seems that this is a global phenomenon.

Over the past decade, the share of teachers without an academic degree in primary education — both Hebrew and Arab — has significantly declined, while the share of teachers with advanced academic degrees has risen, reaching nearly 30% (CBS, 2023a, Table 4.34). A similar trend is observed in high school education (Table 4.35). Furthermore, the percentage of teachers participating in professional development programs has increased from an average of about 65% in 2008–2013 to an average of 80% in 2018–2021.[10] In other words, the data indicate a general trend of increasing educational attainment among teachers in the education system.

There are also frequent reports about difficulties in recruiting high-quality principals, though the data do not always support such popular beliefs. The data in the CBS Statistical Abstract (Table 4.39) point to several phenomena, some supporting the claim of difficulty in recruiting principals and others

10 CBS, 2023a, Table 4.47. Although we do not have data on the relationship between the quantity of professional development programs and educational outcomes, this does reflect the motivation of the teachers.

contradicting it. First, the proportion of new principals in recent years is higher than in the years included in the table. Particularly notable is the increase in the share of principals with a master's degree or higher, rising from less than 70% in 2009 to over 80% in 2022. Second, the proportion of younger principals has significantly declined. This may suggest a reluctance among younger candidates to take on principal roles, though it could also reflect stricter admission criteria for such positions. Looking across education levels, the proportion of principals with very low seniority has increased in primary education but declined in high school education — possibly indicating greater difficulty in recruiting principals for primary schools compared to high schools.

Teacher absenteeism[11]

The issue of teacher absenteeism is not new and has been discussed in detail in the State Ombudsman Report (2019) as well as in earlier publications (Rosenblatt & Shirom, 2007). Data from the Statistical Abstract 2023 on the total number of teacher absence hours, the average number of absence hours per teacher, and the percentage of absence hours out of total teaching hours reveal several important findings that merit close attention and an in-depth analysis.

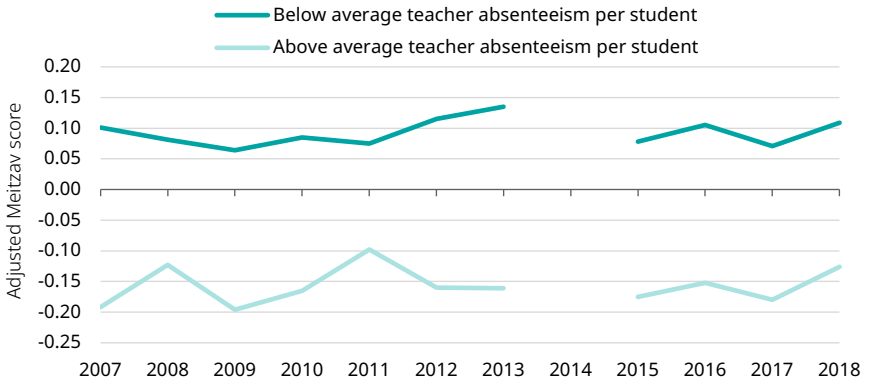
The most notable finding is that in the past two years, the absentee rate for female teachers has doubled compared to the average rate over the previous nine years. On average, absences increased from about 5 million hours annually during the 2012/2013–2020/2021 school years to about 11 million hours annually in the 2021/2022 and 2022/2023 school years. This trend holds across all categories in the relevant CBS data table (CBS, 2023a, Table 4.44), with minimal variance among groups. It should be noted that as of the 2021/2022 school year, the table includes absentee hours for teachers in high school education, which were not previously counted and contributed approximately 2.4 million hours annually to the total over the past two years. While this change explains part of the increase in absentee hours, it does not account for all of it. For the remaining discrepancy, two immediate explanations exist: improvements in reporting processes or the effects of Covid-19 and the associated isolation policies, which persisted even as the pandemic waned. Given the magnitude of the change, the first explanation seems more plausible.

11 This section, which addresses absences, substitute teaching, and teacher turnover, was written in collaboration with Dr. David Maagan from the CBS, based on CBS data.

If this interpretation is correct, then even when accounting for the addition of high school teacher absences in the past two years, the absentee rate in earlier years was likely significantly higher than reported. Two additional trends stand out: absenteeism rates are lower among male teachers (likely because women are more often the ones to stay home when children or other family members are sick), and they are lower in high school education.

Teacher absences can have significant educational and economic consequences. An in-depth analysis of the issue is beyond the scope of this chapter. However, a preliminary examination of the relationship between teacher absenteeism and academic achievements shows that in schools where teacher absence rates are above average, student achievements are lower than in schools where teacher absence rates are below average. As shown in Figures 3 and 4, this holds true for both primary and high school education. This is not surprising, as academic success depends on a stable learning environment and a close, productive relationship between students and their teachers, which is built on familiarity between them.

Figure 3. Academic achievements on the 5th grade Meitzav exams, by teacher absenteeism (hours) per student

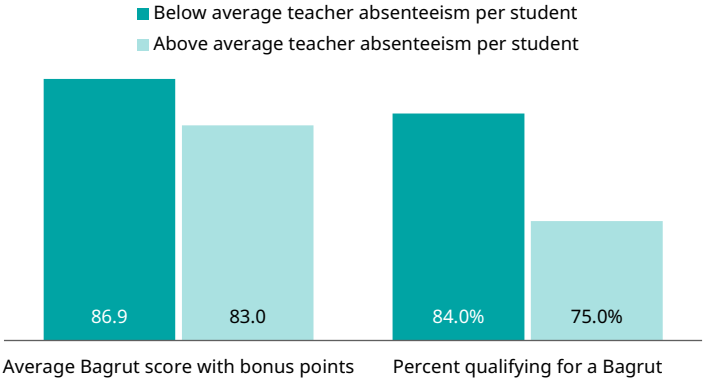


Note: The overall (adjusted) score in the Meitzav exams, expressed in terms of standard deviations, represents the relative position of a school compared to all schools participating in the Meitzav exams in the same year. A positive value indicates a relative position above the average, while a negative value indicates a relative position below the average.

Source: Nachum Blass, Taub Center and David Maagan, CBS | Data: CBS (special data analysis)

Examining the relationship between the average hours of teacher absences per student and achievements in Bagrut exams shows a similar picture.[12] From Figure 4, it can be seen that in the 2021/2022 school year, in schools where the number of absenteeism hours was below average, the average Bagrut score (including bonus points) was 86.9, compared to an average score of 83.0 in schools where the number of absenteeism hours was above average. Similarly, the Bagrut qualification rates were 84% and 75%, respectively.

Figure 4. Bagrut achievements, by teacher absenteeism (hours) per student, 2021/2022 school year



Source: Nachum Blass, Taub Center and David Maagan, CBS | Data: CBS (special data analysis)

Table 6 presents findings from a regression model examining the relationship between the average Bagrut score and teacher absence hours at the school level, across a sample of 83 schools. The findings show that the average score in Hebrew State schools is 6.7 points higher than in Arab schools, while no difference is observed between State-religious schools and Arab schools. Additionally, schools in periphery districts (Northern and Southern Districts) score on average 7.3 points lower than do schools in the Central District. Furthermore, every decile increase in the socioeconomic index of the school's students adds 4.0 points to the average score.

12 Data on teacher absenteeism in high schools are based on a survey of a sample of high schools conducted by the CBS in the 2021/2022 school year.

Finally, the average number of absence hours per student has a significant negative correlation with the school average Bagrut score, with each additional hour of absence reducing the average Bagrut score by 0.22 points. The findings of the model, based on the adjusted coefficient, indicate that the largest contribution to the explained variance in achievements is associated with the socioeconomic index of the school's student population.

Table 6. Regression model: Results of the estimate of explanatory variables for the average Bagrut scores at the school level

	Coefficient	Significance	Adjusted coefficient
Regression slope	68.871	<.0001	—
Hebrew State education	6.714	0.002	0.320
State-religious education	0.609	0.819	0.028
Socioeconomic index of the school students (deciles)	3.972	<.0001	0.685
Periphery	-7.337	<.0001	-0.346
Teacher absenteeism, average per student (hours)	-0.223	0.054	-0.153
Number of schools (N)	83		
R^2	0.582		

Note: The Socioeconomic Index of school students was developed by the CBS and is designed to characterize the composition of students in terms of parental education, parental income, number of siblings, and the mother's marital status. The index was developed using a factor analysis method.

Source: Nachum Blass, Taub Center and David Maagan, CBS | Data: CBS (special data analysis)

As noted, teacher absenteeism has a significant impact on the budget as well. According to CBS data (2023a, Table 4.44), about 10.6 million hours of absences were recorded in the 2022/2023 school year. Data on teacher absenteeism are closely tied to the issue of substitute teaching. If every hour of absence requires a substitute, and the cost of one substitute hour is approximately NIS 150, the annual cost amounts to about NIS 1.6 billion. This is an enormous sum, and its educational benefit is questionable.[13]

13 In practice, for some of the absence hours, a substitute teacher from the school steps into the classroom, while in other cases, the class is simply sent home or given a break. Nevertheless, the cost of these absence hours remains very high.

The issue of teacher absenteeism also provides an important insight into the claim of a teacher shortage in the education system. Assuming the 11.5 million hours of absences recorded in 2022/2023 were all classroom teaching hours, and assuming a full-time teaching position comprises 25 weekly classroom hours (an average of 26 in primary education and 24 in high school education, totaling 875 hours per year), this translates to approximately 13,000 full-time positions or about 15,000 teachers. Even if we assume that only 50% of the absence hours require a substitute teacher and that only about 50% of the substitutes are certified teachers, this still reflects thousands of teachers available and interested in working either full-time or part-time. Moreover, the very willingness of these teachers to be available on short notice indicates their desire to teach. The logical conclusion is that the system likely does not make efficient use of the pool of teachers available to it. In any case, this weakens the claim that there is a teacher shortage in the education system.

Teacher mobility within the system

Each year, the CBS examines teacher mobility rates, which reflect leaving the education system or transferring from one school to another. A teacher is defined as having left the system if they do not appear in the Ministry of Education's teacher records for three years following their last recorded appearance. CBS data allow an analysis of teacher departures from educational institutions and transfers between schools since 1990 (CBS, 2023a, Table 4.52). Several interesting findings emerge from this analysis:

1. ***Stability in departure rates:*** The rate of teachers leaving the education system has not changed significantly over the years, ranging between 3.9% and 4.7% without a clear trend. However, transfer rates between schools have consistently and significantly decreased, from 9.5% in 1990 to 5.8% in 2019. This suggests an improvement in schools' retention power, with staff becoming more stable.
2. ***Differences by educational level:*** Departure rates among high school teachers were the highest, but they decreased over the years and, by 2019, were roughly equivalent to those in primary and middle schools. In contrast, transfer rates between schools were the lowest among high school teachers at both the beginning and the end of the period.

3. ***Sector differences:*** Departure and transfer rates in Arab and Haredi education are much lower than in Hebrew State and State-religious education. This likely reflects the greater importance of income stability in these sectors, which are weaker socioeconomically.
4. ***Age and seniority factors:*** Younger teachers tend to leave more frequently than older teachers (except, of course, near retirement age). This is a well-known phenomenon of early-stage dropout, often due to disappointment with the job or its various aspects, a lack of suitability, or an unwillingness or inability to persevere. Thus, teachers with low seniority in teaching have the highest departure rates.
5. ***Educational attainment trends:*** In 1990, teachers with higher education levels had higher departure and transfer rates. By 2019, this trend had reversed, with departure rates becoming higher among those without an academic degree and those with only a bachelor's degree.
6. ***Socioeconomic differences:*** In all years, departure and transfer rates were higher in communities with higher socioeconomic rankings. However, this trend has smoothed out in recent years (except for the departure rates in the 2019/2020 school year).

Teacher turnover in the education system

Discussions about teacher shortages and turnover typically focus on the systemic level. The primary question asked is how many teachers are missing across the education system. An alternative approach is to delve deeper, asking how many teachers are lacking in a particular district, locality, subject, sector, or supervisory authority. Similarly, discussions about teacher turnover are usually framed in the same way.

In this section, we focus on the school level. The difference between the two approaches can be illustrated with the following example. Suppose there are two schools, each with 100 teachers. In a given year, 50 teachers transfer from one school to the other, and 50 teachers transfer in the opposite direction. Overall, no teachers are missing, and there appears to be no systemic problem. However, the principal, teaching staff, students, and parents at each school face the implications of a 50% turnover rate, with various consequences — some positive and others negative.

On the positive side, turnover can bring fresh perspectives, introduce new ideas, and sometimes even improve teaching quality by recruiting more skilled teachers.[14] However, this often comes at the expense of other schools whose situation may worsen. Generally, the higher the turnover rate, the greater the negative impact, which often outweighs the benefits. Turnover consumes valuable management time, involves challenges in adjusting to a new work environment, and, most importantly, disrupts the sense of stability and continuity for students, who must adjust to many new teachers. If most new staff members are young and inexperienced, more training is required, the likelihood of them leaving within a year is higher, and more teachers are needed since new teachers often work part-time. Additionally, instability and lack of continuity can hinder long-term initiatives and even impact the overall quality of the teaching staff.

Therefore, it is crucial to address several basic questions:

1. What are the turnover rates for teachers at the school level?
2. Are turnover rates similar across all schools? If not, what characterizes schools with particularly high or low turnover rates?
3. Are turnover rates consistent over time? If not, can differences between periods be explained?
4. What distinguishes schools that have improved in teacher quality and overall conditions from those where teacher quality has declined and conditions have worsened?
5. Do turnover rates affect student performance?

The final three questions will be addressed in a separate study. In this chapter, we focus solely on teacher turnover rates and their distribution by various characteristics.

14 In this context, the educational reform in Washington DC is frequently mentioned. As part of this reform, teachers who were evaluated as under-performing were removed from the system. The result was an improvement in student achievements. However, critics of the reform argued that this outcome was only possible because teacher salaries were significantly increased and there was a large pool of qualified teachers in the area. According to these critics, since these two conditions cannot always be replicated, it is unrealistic to expect similar results in every location where such a policy is implemented.

At the school level, each year, a significant number of teachers leave, either permanently or temporarily, and the following year, they are replaced by others. Turnover rates vary across schools but are almost always higher than the rate of teachers permanently leaving the system. Who are the teachers leaving a particular school, and who are the teachers joining the following year?

The departing teachers include:

- Teachers retiring at the age specified in labor agreements
- Teachers taking early retirement
- Teachers leaving the country
- Teachers transferring to a different school due to relocation or other reasons
- Teachers taking a sabbatical year
- Teachers on unpaid leave
- Teachers taking extended maternity leave
- Teachers leaving the school for other reasons

In the first three categories, approximately 4%–6% of all teachers in the system leave each year (see CBS, 2023b, Table Z). The fourth category primarily includes teachers relocating due to a change in residence. According to CBS data on migration between localities (CBS, 2023a, Table 2.26), about 3% of the country's population moves between localities each year. Since internal migration within localities is higher than migration between localities, it can be assumed that 6%–8% of the total population changes residence (both within and between localities).[15] It is likely that this rate is even higher among teachers due to their age and greater mobility, often tied to the relocation of their spouses. Other reasons, such as dissatisfaction with their current school or seeking advancement through a move to another school, also contribute. Even if not all teachers who change residence change their workplace, it is reasonable to estimate that 5% of teachers do so for relocation or the reasons mentioned above. The fifth category refers to teachers taking a sabbatical. Since teachers are entitled to a sabbatical every six years, 16% of teachers are eligible each year. Even if not all of them utilize their sabbatical, it is reasonable to assume

15 See Yogev Sharvit's blog, the Municipal Index, Mobility patterns within localities and outside of them, February 11, 2021.

that at least 10% do. For the last three categories, we do not have precise estimates, but it is likely that they account for another 5%. Summing these, a rough estimate suggests that about 20%–25% of teachers leave each school each year, with a similar proportion of new or returning teachers joining the school annually (Ingersoll & Tran, 2023).

The incoming teachers are essentially a mirror image of those leaving:

- New teachers (from teacher training institutions and those transitioning from other professions)
- Teachers returning from extended retirement
- Immigrant teachers
- Teachers transferring from other schools due to relocation or other reasons
- Teachers returning from sabbatical
- Teachers returning from unpaid leave
- Teachers returning from extended maternity leave

As noted, the rate of teachers joining schools is slightly higher than the rate of teachers leaving. The reason for this is that the total number of teachers increases each year at a faster pace than the number of students and classes.

How did we examine this?

Based on CBS data, we identified departing teachers at each school in a given year and teachers joining the school the following year. This analysis was conducted with breakdowns by sector and supervisory authority for the school years 2010/2011, 2015/2016, 2018/2019, and the past two years. We grouped schools from which teachers left into four categories based on the proportion of departing teachers: up to 15%, 15%–25%, 25%–35%, and 35% or more. We then examined the proportions of teachers joining these schools according to the same categorization.

For the most recent year, we analyzed the distribution of schools within these four categories based on additional criteria, such as socioeconomic cluster, Nurture Index,[16] school size, and various teacher characteristics, including education level, seniority, and absence rates.

Following this, for the most recent year, we performed a similar categorization but excluded schools with fewer than 100 students and Recognized Unofficial schools. The former were excluded due to the small number of schools of this size, the small number of teachers in these schools, and the significant influence of each departure and arrival on turnover rates. Both groups were excluded due to data quality concerns regarding teachers and the state's lower commitment to staffing teaching positions at these schools.

Turnover rates over time

As shown in Table 7, during the years examined, the annual rate of departing teachers ranged between 18% and 22%, while the rate of new teacher arrivals relative to the number of teachers who taught at the school the previous year ranged between 18% and 28%. The proportion of new teachers out of the teaching staff ranges from 19% to 27% across the period. It appears that the scale of the phenomenon — particularly regarding the number of new teachers — is not consistent over time, and the gaps between the rates of incoming and outgoing teachers also vary from year to year. However, in most cases, the share of new teachers exceeds the share of departing teachers. In this sense, 2021 stands out as an exception; it is likely that the Covid-19 pandemic caused many teachers to leave the system. What may be surprising is not only the differences in the rates of incoming and outgoing teachers across years but also the variability in the gaps between these rates. In any case, even in the year with the lowest departure rates, close to 20% of teachers left the system — and likely more if considering only official primary education (excluding Haredi and private schools) in schools with six or more classes.

16 The school Nurture Index is a socioeconomic index of the school population and is an indicator of the socioeconomic status of the students and their families.

Table 7. Departing and incoming teachers, selected years

Departure year	Year joined	Number of schools	Total number of teachers in departure year	Total number of teachers in joining year	Number leaving in departure year	Number joining in joining year
2010	2011	2,653	71,712	76,143	15,934 (22%)	20,365 (27%)
2015	2016	2,955	83,962	85,365	17,631 (21%)	19,034 (22%)
2019	2019	2,883	91,817	93,453	16,224 (18%)	17,860 (19%)
2021	2022	3,037	103,596	99,930	22,244 (21%)	18,578 (19%)
2022	2023	2,933	106,438	112,392	21,393 (20%)	27,347 (24%)

Note: Values in parentheses represent the share of outgoing and incoming teachers during the year of departure and arrival, respectively.

Source: Nachum Blass, Taub Center and David Maagan, CBS | Data: CBS (special data analysis)

We move now to a more detailed examination of the rates of departing teachers in 2022 compared to the rates of incoming teachers in 2023. We first analyze this for the system as a whole (Table 8a) and then specifically for Official schools with six or more classes (Table 8b).

Table 8a. Outgoing and incoming teachers out of the overall teacher population in the system, 2022 and 2023

Departure rate	Number of schools in 2022	Number of teachers in 2022	Number of teachers in 2023	Number who left in 2022	Number who joined in 2023
1%–15%	1,002	40,118	43,660	3,584	7,126
				(9%)	(16%)
15%–25%	1,064	39,033	41,117	7,712	9,796
				(20%)	(24%)
25%–35%	795	24,816	25,761	7,239	8,184
				(29%)	(32%)
35+%	471	11,897	12,187	5,067	5,357
				(43%)	(44%)
Total	3,332	115,864	122,725	23,602	30,463
				(20%)	(25%)

Table 8b. Outgoing and incoming teachers out of the overall teacher population in the Official education system in schools with 6 classes or more, 2022 and 2023

Departure rate	Number of schools in 2022	Number of teachers in 2022	Number of teachers in 2023	Number who left in 2022	Number who joined in 2023
1%–15%	875	31,304	33,023	2,829	4,548
				(9%)	(14%)
15%–25%	695	26,235	27,320	5,086	6,171
				(19%)	(23%)
25%–35%	567	19,970	20,767	5,290	6,087
				(26%)	(29%)
35+%	346	11,093	11,387	3,826	4,120
				(34%)	(36%)
Total	2,160	77,110	80,101	14,807	17,798
				(19%)	(22%)

Note: Values in parentheses represent the share of outgoing and incoming teachers during the year of departure and arrival, respectively.

Source: Nachum Blass, Taub Center and David Maagan, CBS | Data: CBS (special data analysis)

A preliminary analysis of the data yields several conclusions:

1. The turnover rate for teachers is significantly higher than their dropout rate. While the dropout rate ranges between 4% and 5%, in 2023, 25% of teachers joined schools where they had not taught the previous year (22% in Official education schools with six or more classes), and the rate of teachers who left their schools but did not leave the education system was 20% (19% in Official education schools with six or more classes).
2. Distribution of schools by turnover rates: Schools where the turnover rate is below 15% comprise 40% of all institutions, while schools with turnover rates exceeding 35% make up 16%. It is likely that these schools experience a particularly acute sense of teacher shortages.

When analyzing turnover rates by sector and supervisory authority (Table 9), the following findings emerged:

1. Sector differences in turnover rates: In Hebrew State, State-religious, and Haredi education, the percentage of schools with turnover rates above 35% was 17%, while in Arab education, it was only 4.5%. Conversely, the percentage of schools with turnover rates below 15% was 12% in Hebrew State and State-religious education, 58% in Arab education, and 45% in Haredi education. This may suggest that teachers in Arab education are more concerned about losing their jobs, that internal migration rates in this sector are low, and that extended maternity leaves and sabbaticals are less common. Similar trends are observed in the Haredi sector.
2. Growth in the system: Generally, the rates of new teacher arrivals exceed the rates of teacher departures, contributing to the continuous growth of the system.

Table 9. Outgoing and incoming teachers out of the overall teacher population, by sector and supervisory authority, 2022 and 2023

Supervisory authority	Departure rate	Number of schools in 2022	Number of teachers in 2022	Number of teachers in 2023	Number who left in 2022	Number who joined in 2023
Hebrew State	1%–15%	158	4,832	5,340	534 (11%)	1,042 (20%)
	15%–25%	506	18,434	19,409	3,712 (20%)	4,6872 (24%)
	25%–35%	401	13,215	13,602	3,869 (29%)	4,256 (31%)
	35+%	217	6,028	6,015	2,515 (42%)	2,502 (42%)
	Total	1,282	42,509	44,366	10,630 (25%)	12,487 (28%)
State-religious	1%–15%	61	1,928	2,114	198 (10%)	384 (18%)
	15%–25%	172	6,266	6,801	1,275 (20%)	1,810 (27%)
	25%–35%	199	6,194	6,545	1,820 (29%)	2,171 (33%)
	35+%	91	2,598	2,664	1,062 (41%)	1,128 (42%)
	Total	523	16,986	18,124	4,355 (26%)	5,493 (30%)
Haredi	1%–15%	348	18,473	20,569	1,567 (8%)	3,663 (18%)
	15%–25%	183	7,756	8,122	1,504 (19%)	1,870 (23%)
	25%–35%	118	3,447	3,698	994 (29%)	1,245 (34%)
	35+%	129	2,640	2,907	1,213 (46%)	1,480 (51%)
	Total	778	32,316	35,296	5,278 (16%)	8,258 (23%)

Table 9 (continued). Outgoing and incoming teachers out of the overall teacher population, by sector and supervisory authority, 2022 and 2023

Supervisory authority	Departure rate	Number of schools in 2022	Number of teachers in 2022	Number of teachers in 2023	Number who left in 2022	Number who joined in 2023
State Arab	1%–15%	435	14,885	15,637	1,285 (9%)	2,037 (13%)
	15%–25%	203	6,577	6,785	1,221 (19%)	1,429 (21%)
	25%–35%	77	1,960	1,916	556 (28%)	512 (27%)
	35+%	34	631	601	277 (44%)	247 (41%)
	Total	749	24,053	24,939	3,339 (14%)	4,225 (17%)
Grand total		3,332	115,864	122,725	23,602 (20%)	30,463 (25%)

Note: Values in parentheses represent the share of outgoing and incoming teachers during the year of departure and arrival, respectively.

Source: Nachum Blass, Taub Center and David Maagan, CBS | Data: CBS (special data analysis)

It appears that the prominence of discussions about teacher shortages is significantly influenced by the fact that issues like teacher absenteeism, mobility, and turnover are more noticeable in well-established areas and schools that are closer to media attention.

Table 10 presents findings from a regression model examining the relationship between teacher turnover rates at the school level and characteristics of teachers and students at the school, including the percentage of teacher absence hours out of their total annual working hours, across a sample of 2,016 schools. The regression analysis reveals several key findings. Teacher turnover rates in Hebrew State and State-religious schools are higher than those in Arab State schools. Larger schools, those in higher socioeconomic brackets, and those with a higher percentage of teacher absence hours have significantly higher turnover rates. Schools in periphery regions have lower turnover rates

than those in central areas. Turnover rates are significantly lower in schools with higher average class hours, higher average teaching seniority, a higher percentage of certified teachers with academic degrees, a greater number of full-time positions, and a higher student-to-teacher ratio. The findings of the model, based on the adjusted coefficient, indicate that the largest contribution to the explained variance in achievements is associated with the educational sector of the school.

Table 10. Regression model: Results of the estimate of explanatory variables for teacher turnover rates at the school level

	Coefficient	Significance	Adjusted coefficient
Regression slope	0.470	<.0001	
Hebrew State education	0.071	<.0001	0.339
State-religious	0.079	<.0001	0.317
School size (number of students)	0.000	0.004	0.176
Socioeconomic index of the school students (deciles)	0.007	0.001	0.110
Absenteeism rate (hours)	0.002	<.0001	0.098
Locality socioeconomic cluster	0.002	0.068	0.053
Periphery	-0.015	0.000	-0.070
Average classroom hours	-0.000	0.001	-0.111
Average teacher seniority	-0.003	<.0001	-0.111
Share of qualified teachers with academic degree	-0.180	<.0001	-0.112
FTE positions in the school	-0.002	<.0001	-0.239
Average number of students per teacher	-0.009	<.0001	-0.315
Number of schools (N)	2,016		
R^2	0.405		

Note: The Socioeconomic Index of school students was developed by the CBS and is designed to characterize the composition of students in terms of parental education, parental income, number of siblings, and the mother's marital status. The index was developed using a factor analysis method.

Source: Nachum Blass, Taub Center and David Maagan, CBS | Data: CBS (special data analysis)

Academic achievements

Academic achievements are one of the metrics used to evaluate the performance of the education system. While they do not fully reflect the overall skills and abilities of students, they are a commonly accepted tool for assessing the level of knowledge and skills acquired within the education system. Achievement tests enable comparisons of student success across different educational institutions, between countries, and even over time, providing valuable insights for improving educational policy. In this section, we review the results of tests conducted in 4th and 8th grades, the Bagrut exams, and international assessments.

4th and 8th grade achievements

The body responsible for measuring academic achievements in Israel is the National Authority for Measurement and Evaluation in Education (RAMA). For many years since its establishment, RAMA conducted this work primarily through the Meitzav exams. These reports allowed for monitoring of the education system's progress in terms of student abilities in language arts (Hebrew in the Hebrew education system; Arabic in the Arab education system), English (as a second language), mathematics, and science, as well as evaluating the educational climate in schools. In 2018/2019, for various reasons — primarily widespread public criticism — the Ministry of Education discontinued the Meitzav exams, leaving the education system without a central, official tool for tracking student achievements across education levels, population groups, and taught material. Only recently, in 2021/2022 did the Ministry of Education resume conducting a national literacy test for 4th graders, repeating the test in 4th and 8th grades in 2022/2023. Consequently, for longitudinal comparisons, only the 4th grade test results are available, and for comparisons across sectors, supervisory authorities, and socioeconomic levels, results from three tests are available. These are supplemented by international assessments.

The results of the 2022/2023 4th grade literacy test, conducted a year after the Covid-19 pandemic subsided, indicate significant improvement compared to 2021/22. According to the report:

> A broad and significant increase is evident in the achievements of 4th grade students in their native language in 2022/2023 across all groups in Israeli society. In one-third of Hebrew-speaking schools (37%) and two-thirds of Arabic-speaking schools (67%), there was a substantial improvement in average scores compared to the previous year. [...] The proportion of students classified at the highest performance level rose to 59% among Hebrew speakers (+16%), 40% among students in Haredi-supervised schools (+8%), and 12% among Arabic speakers (+9%).[17]

The test results also highlight significant achievement gaps between Jewish and Arab students and between schools from weaker socioeconomic backgrounds and those from stronger ones, though this is not new. The results reflect the changes in the education system between December 2021 and January 2023, and are indeed encouraging. However, as the saying goes, one swallow doesn't make a summer. Unfortunately, it is not possible to determine whether the 2022/2023 results return 4th grade students to the pre-Covid-19 level, as the tests are not comparable. Therefore, the 2023/2024 test must be awaited to assess whether the improvement trend continues. For 8th grade students, who took the test for the first time, no progress can be assessed as there is no prior comparison point. However, the results similarly indicate significant gaps between Hebrew-speaking and Arabic-speaking students.

Bagrut exam achievements

Did Covid-19 have a negative effect on students' achievements in the Bagrut exams? According to data from the CBS Statistical Abstract (2023a, Table 4.19) and the Ministry of Education's Transparency in Education website, the answer is no. The Statistical Abstract data for 2020–2021, the Covid-19 years, are comparable to or slightly exceed the data from 2019, the year before Covid-19. According to the Transparency in Education data, there was a moderate increase in Bagrut qualification rates between 2013/2014 and 2018/2019. Surprisingly, this upward trend continued during the Covid-19 years, 2019/2020 and 2020/2021. The most recent data, from 2021/2022, show that the qualification rate remained at 76%, which is 6% higher than the rate before the Covid-19 crisis in 2018/2019.

17 See the RAMA website, Language literacy among 4th and 8th grade students: A status report — 2022/2023.

Two explanations can be proposed for this phenomenon: one more optimistic, the other less so. The optimistic explanation suggests that the maintenance of achievements is due to the significantly increased efficiency of learning in smaller classes — even if this reduced the number of teaching hours — and possibly the effectiveness of remote learning. The less optimistic and probably more plausible explanation is that the standards were lowered to account for the loss of school days.

An important and interesting data point — perhaps supporting the optimistic explanation — is that examination participation rates slightly increased in Hebrew education and remained unchanged in Arab education. It is also noteworthy that the participation rate among all students in Arab education is significantly higher than in Hebrew education. Moreover, the growth rate in Bagrut qualification in Arab education is higher than in Hebrew education. In 2021, Arab students' qualification rate even surpassed that of their Jewish counterparts. However, Hebrew education maintained its advantage in the qualification rate for certificates meeting university admission requirements (61.6% compared to 50.2%).

Achievements on international exams

Recently, the results of three international assessments were published: the PIRLS test for 4th grade students, the TIMSS test for 8th grade students, and the PISA test for 15-year-olds (RAMA, 2023a, 2023b, 2024). International assessments hold great importance; they offer insights into various aspects of the functioning of education systems in different countries. However, it is important to emphasize what they do not reveal — namely, any connection between these tests and a country's future economic growth (see Blass et al., 2023a). Drawing conclusions from their results about the quality of a country's education system is even more challenging. Such judgments depend on how the goals of the education system are defined, which are largely subject to ideological interpretation. Another difficulty in this context is that the impacts of education systems are long-term and cannot be adequately assessed at a single point in time.

In general, the results of these tests are inconsistent. In the PIRLS and TIMSS assessments, there was a sharp decline in average scores compared to previous years, while the PISA test showed stability in student performance.

In the PIRLS test for native language reading conducted in 2021, the average score of Israeli students dropped by about 20 points (to a level comparable to 2001), compared to an average decline of just 8 points across the countries surveyed. In the TIMSS test for mathematics and science (2023), the decline among Israeli students was even more pronounced — 32 points, compared to an average drop of 11.5 points in the other countries surveyed. By contrast, the PISA test (2022) presents a different picture. This discrepancy may stem from the fact that PIRLS and TIMSS focus on earlier-stage skills, which were more severely affected by disruptions caused by Covid-19, whereas PISA evaluates broader skills that may be less sensitive to such disruptions. It is reasonable to assume that the Covid-19 pandemic also influenced performance on the 2023 TIMSS test. However, this raises the question of why the decline in Israel was so dramatic compared to other countries. As RAMA researchers noted: "It is important to remember that the study does not allow for causal conclusions regarding changes in performance. [...] As the data presented here indicate, the downward trend observed in Israel is exceptional compared to other countries, making it difficult to attribute it solely to the effects of the pandemic" (RAMA, 2023c).

In the PISA test, which assesses literacy in mathematics, science, and reading, Israel was among the few countries where top-performing students achieved higher scores than in the previous assessment in 2018. In addition, the decline in performance among students from disadvantaged socioeconomic backgrounds was among the lowest. This, naturally, improved Israel's relative ranking among the assessed countries (RAMA, 2023b). These results were achieved despite the fact that 75% of Israeli students reported prolonged absences from school compared to an OECD average of 60%, and despite Israeli students reporting lower confidence in their ability to learn remotely and less availability of their teachers compared to the OECD average.

It remains unclear why the achievements of younger Israeli students were more affected by the pandemic compared to their peers in other countries, while older Israeli students managed to maintain relatively high performance levels compared to their OECD counterparts. RAMA's reports also failed to provide an explanation for this phenomenon.

Summary

We began this chapter with a brief discussion of the effects of the war on the education system. We have done our best to point to possible directions for future developments, fully aware that, in general — and especially in Israel — making predictions is a task with limited success.

In the section on the education budget, we showed that the past five years have been marked by extreme instability due to Covid-19, the social and political upheaval surrounding the judicial reform, and the ongoing war, which, at the time of writing, has not yet concluded. These events resulted in the absence of a state budget in 2020 and the need for budget adjustments in 2023 and 2024.

In the main section of this review, which focuses on teaching staff, we revisited the question of whether there is a teacher shortage and a decline in their quality. This time, beyond the usual examination of teacher numbers and training, we focused on issues that are less commonly discussed but are, in our view, closely related to the perception of a teacher shortage — workplace absenteeism, substitute teaching, and turnover. We highlighted the growing and significant scale of teacher absenteeism, the resulting increased need for substitute teachers, and the high rates of teacher turnover, which are particularly pronounced in schools serving more affluent populations.

Finally, in the section on achievements, we briefly reviewed the data from the national achievement tests for 4th and 8th grades. Regarding the 4th grade results, the findings indicate improvement, though it would be prudent to await further assessments, as the most recent data reflect only a two-year period. The data for 8th grade are not comparable, as the tests have only been administered once. In the international assessments, Israeli students' performance in the PIRLS and TIMSS tests was significantly lower than that of their peers in other participating countries. However, in contrast, in the PISA test, the performance of Israeli students remained stable while students in other countries showed sharp declines. We have not found a satisfactory explanation for this disparity.

References

English

Blass, N. (2023). Light and shadow in the Israeli education system. In A. Weiss (Ed.), ***State of the nation report: Society, economy & policy in Israel 2023*** (pp. 247–282). Taub Center for Social Policy Studies in Israel.

Blass, N., & Cogan, Y. (2014). *The Ministry of Education budget 2000–2014: Trends and issues*. Taub Center for Social Policy Studies in Israel.

Blass, N., & Bleikh, H. (2018). The determinants of school budgets: Per class and per student. In A. Weiss (Ed.), ***State of the nation report: Society, economy & policy in Israel 2023*** (pp. 179–209). Taub Center for Social Policy Studies in Israel.

Blass, N., & Bleikh, H. (2024). *Expenditure per student in high schools in Israel*. Taub Center for Social Policy Studies in Israel.

Blass, N. & Bleikh, H. (2020). Expenditure per class and per student in the primary school education system. In A. Weiss (Ed.), ***State of the nation report: Society, economy and policy in Israel 2020*** (pp. 427–463). Taub Center for Social Policy Studies in Israel.

Blass, N., Debowy, M., & Weinreb, A. (2023a). *International exam scores and economic growth*. Taub Center for Social Policy Studies in Israel.

Blass, N., Bental, B., & Debowy, M. (2023b). *The substitutability between class size and instructional hours and its impact on academic achievement*. Taub Center for Social Policy Studies in Israel.

CBS (2023a). *Statistical abstract of Israel 2023 — No. 74*. Central Bureau of Statistics.

Du Plessis, A. (2013). ***Understanding the out-of-field teaching experience***. PhD Thesis, School of Education, The University of Queensland.

Ingersoll, R. M., & Tran, H. (2023). Teacher shortages and turnover in rural schools in the US: An organizational analysis. ***Educational Administration Quarterly, 59***(2), 396–431.

Rosenblatt, Z., & Shirom, A. (2007). Teacher absenteeism in Israel: Individual and organizational background factors. ***Megamot, 45***(2), 301–329. (English abstract)

Yanay, G., Fuchs, H., & Blass, N. (2019). Trends in the high school dropout phenomenon. In A. Weiss (Ed.), ***State of the nation report: Society, economy and policy in Israel 2019*** (pp. 285–311). Taub Center for Social Policy Studies in Israel.

Hebrew

Bar, I. (2024). *The State budget reserves for 2016–2024*. Knesset, Research and Information Center.

CBS (2023b). *Teachers in the education system, 2022/2023*. Central Bureau of Statistics.

Dattel, L. (2024, September 1). The central tool of government to divide the people: The education budget. ***TheMarker***.

Dori, O. (2024, July 7). Coalition money hasn't been touched. Wide ranging cuts in education and welfare. ***Globes***.

Elmakies, Y. (2024, February 5). Dropout rate revealed: Hundreds of high school evacuees do not go to school. ***Mekor Rishon***.

RAMA (2023a). *PIRLS 2021: Reading literacy among 4th grade students*. RAMA: National Authority for Measurement and Evaluation in Education.

RAMA (2023b). *PISA 2022: Literacy in mathematics, sciences, and reading — an assessment of 15-year-old students*. RAMA: National Authority for Measurement and Evaluation in Education.

RAMA (2023c). *TIMSS 2023: An assessment of knowledge and skills in mathematics and sciences — the status of 8th grade students*. RAMA: National Authority for Measurement and Evaluation in Education.

RAMA (2024). *TIMSS 2023: A sharp and exceptional drop in the achievements of 8th grade students in mathematics and sciences*. RAMA: National Authority for Measurement and Evaluation in Education.

State Ombudsman (2019). Absence of teachers and substitutes in their place. In ***State Ombudsman: Annual report 69b*** (pp. 1077–1124). The State Ombudsman of Israel.

Executive Summary

Expenditure per Student in High Schools in Israel

Nachum Blass and Haim Bleikh

This study examined funding for high school students in Israel's public education system, comparing funding between the Hebrew State, State-religious, and Arab State education systems. The research focused on budgets allocated solely by the Ministry of Education, excluding funds provided by local authorities, parents, and non-profit organizations. This article is the third in a series published by the Taub Center that analyzes classroom and per-student funding and describes developments in inequality within the funding system.

Taub Center researchers focused on the years 2014–2022 and found significant differences in per-student funding across the various education sectors. According to the researchers, the primary source of these differences can be traced to explicit formulas used by the Ministry of Education when allocating funds to high schools. After accounting for the main factors influencing per-student funding, it was found that the gaps between the sectors narrowed considerably.

The study highlights a substantial socioeconomic disparity in the composition of students between the Jewish and Arab sectors as of 2022: 69% of students in Hebrew State education and 65% in State-religious education belonged to the two highest (most affluent) quintiles, compared to only 8% in Arab public

* Nachum Blass, Principal Researcher and Chair, Education Policy Program, Taub Center. Haim Bleikh, Researcher, Taub Center for Social Policy Studies in Israel. This research was published in April 2024 and is available on the Taub Center website.

education. In contrast, in the Arab State education system, 81% of students belonged to the two lowest (poorest) quintiles, compared to 18% in Hebrew State schools and 20% in State-religious schools.

During the time of the study (2014–2022), there was an improvement in the socioeconomic composition of students in Hebrew schools, but little change in the Arab sector. The most significant improvement was recorded in State-religious education, where the proportion of students in the two highest quintiles increased from 52% to 65%.

Teacher characteristics

The study shows a slight decrease in teacher tenure in the Hebrew education system and a significant increase in teacher tenure in the Arab education system. Additionally, there was an increase in the proportion of teachers with a master's degree across all sectors and school supervisory authorities, especially in Arab education. These changes, of course, have an impact on funding: in the Arab sector, the increase in teacher tenure and educational level contributed to increased funding, while in the Hebrew sector, particularly in Hebrew State education, the decline in tenure slightly offset the increased expenditure due to higher educational qualifications.

Per-student expenditure

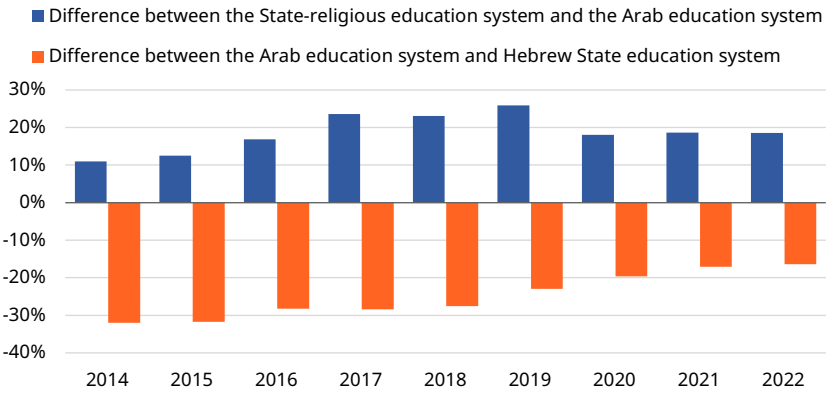
During the period examined, per-student funding was highest in State-religious education and lowest in the Arab State education system. However, the largest increase in per-student funding occurred in the Arab State sector, which saw a 73% rise, compared to a 51% increase in State-religious education, and a 41% increase in Hebrew State education. An analysis of per-student funding changes according to the Ministry of Education's Nurture Index shows an approximate 50% increase across all quintiles during these years.

The gap in per-student funding between the weakest and strongest quintiles, reflecting the affirmative action policy in the high school system, increased from 15% in favor of the weakest quintile in 2014 to 21% in 2019, before dropping again to 17% in 2022.

Despite gaps in per-student expenditure across the various sectors, the differences are consistently narrowing. Between 2014 and 2022, the gap between Arab State and Hebrew State education in average per-student expenditure decreased by half, from 32% to 16% in favor of Hebrew State education. The gap between Arab State and Hebrew State-religious education also shrank, from 39% to 29% in favor of State-religious education. Within the Hebrew education system, the data revealed a mixed trend: the gap in average per-student expenditure between State-religious and Hebrew State education widened from 11% in 2014 to 26% in 2019 in favor of State-religious education but narrowed to 19% by 2022. In 2022, the annual budget per student in State-religious education stood at NIS 44,000, compared to NIS 37,000 in Hebrew State education and NIS 31,000 in Arab State education.

Disparities in per student expenditure in high school, by sector and supervisory authority

Relative to Hebrew State education



Source: Nachum Blass and Haim Bleikh, Taub Center | Data: Ministry of Education

Factors influencing per-student funding variability

The researchers found that factors reflecting differences in class types (regular or small classes due to affirmative action policies) and study tracks (academic or technological) contribute most to explaining the variability in per-student funding. This contribution has been increasing over the years. Conversely, the impact of sector and school supervisory authority is much smaller and has been declining over time, with the Nurture Index and Periphery Index having only a minor cumulative effect.

In light of these findings, the researchers raise the question of whether the current funding criteria are nationally appropriate and equitable from an ethical perspective. They suggest reconsidering the criteria and increasing the differential and periphery components of high school funding to better reflect the differences in students' socioeconomic backgrounds.

Executive Summary

Do Bagrut Exam Accommodations Level the Playing Field or Magnify the Achievement Gap?

Sarit Silverman, Alex Weinreb, and Nachum Blass

The percentage of students receiving accommodations in Israel's Bagrut (matriculation) exams due to learning disabilities has consistently increased over the last decade. This study examines how the rising rates of accommodations granted to students with learning disabilities and the disparities in accommodation rates between schools from different socioeconomic backgrounds impact overall school performance. The researchers identify flaws and weaknesses in the current accommodation system and propose two steps that could potentially reduce the need for most of the accommodations currently provided.

The proportion of Israeli students receiving accommodations does not reflect the international estimate of the prevalence of learning disabilities, which stands at approximately 15%. Moreover, over the last decade, the proportion of students receiving accommodations in Israel has increased from 35% in 2011

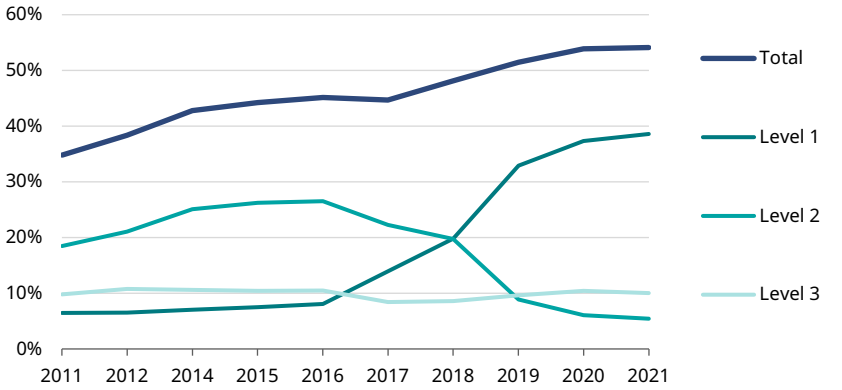
* Dr. Sarit Silverman, Senior Researcher, Taub Center for Social Policy Studies in Israel; Prof. Alex Weinreb, Research Director and Chair, Demography Area, Taub Center; Nachum Blass, Principal Researcher and Chair, Education Policy Program, Taub Center. This research was published in May 2024 and is available on the Taub Center website.

to 54% in 2021. The data suggest that factors other than the actual prevalence of learning disabilities influence the number of students receiving accommodations in Israel's Bagrut exams.

Accommodations provided in Israel's Bagrut exams vary based on the student's difficulties and the authorizing agency. They are divided into three levels. Level 1 accommodations relate only to exam conditions, such as an extension to exam time. Level 2 accommodations affect exam conditions, delivery methods, and response options — such as reading the exam aloud or using a computer to write responses. Level 3 accommodations relate to the exam content itself, like modified exams.

Unlike Level 2 and Level 3 accommodations, which require expensive professional assessments and approval from district committees, most Level 1 accommodations do not require an assessment. This follows a 2015 policy change of the Ministry of Education which allows school committees to decide on these accommodations without ministry approval. This policy shift led to a sharp rise in the percentage of students receiving Level 1 accommodations, from 8% in 2016 to almost 40% in 2021. Indeed, most of the increase in accommodations over the last decade can be attributed to the rise in Level 1 accommodations.

Bagrut exam accommodation trends, by accommodation level



Note: Data were not available for 2013.

Source: Sarit Silverman, Alex Weinreb, and Nachum Blass, Taub Center | Data: CBS

Between 2011 and 2021, the rate of Level 3 accommodations remained stable, and the rate of Level 2 accommodations declined. At the start of this period, there were gaps in accommodation rates between schools from different socioeconomic backgrounds, but these gaps narrowed over the decade.

While the rise in Level 1 accommodations, which are mostly provided by school committees at no cost, occurred across all socioeconomic groups, there was a particularly large increase in schools serving more affluent populations. Thus, the ***free*** accommodations are given at higher rates in schools located in well-off communities, putting their students at an unfair advantage over their peers from less privileged backgrounds. Similar trends are observed when comparisons are made based on mother's education level: the higher the mother's education level, the higher the rate of school-level accommodations.

Increases in Bagrut and Bagrut with Honors qualification rates

Taub Center researchers examined the connection between accommodation rates and school performance and found differences between school-level accommodations (Level 1) and district-level accommodations (Levels 2 and 3). The higher the rate of school-level accommodations, the higher the average school score in mathematics and English Bagrut exams. In contrast, for district accommodations, the opposite is true — the higher the rate of district accommodations, the lower the average school score.

The study also found that the rise in school-level accommodations explains the entire increase in Bagrut qualification rates between 2016 and 2020, nearly 40% of the increase in qualification for Bagrut with Honors, and most of the increases in mathematics and English Bagrut scores. In other words, most of the improvement in achievements is a direct result of the rise in school-level accommodations.

These findings can be explained by the fact that district accommodations require an assessment and more reliably reflect the actual number of students with learning disabilities, and, therefore, correlate with lower school performance. In contrast, the sharp rise in school-level accommodations, particularly in schools serving affluent populations, may suggest that these schools frequently use school-level accommodations as a way to improve average school scores rather than due to a genuine need to assist students with learning disabilities.

The researchers propose two practical steps to address the situation: transitioning to computerized exams, where most accommodations would be available to all students, and removing time limits in exams. These two changes alone could significantly improve the current Bagrut system, increase the number of students able to reach their educational potential, and reduce educational disparities.

DEMOGRAPHY

Demography Overview, 2024: Diverging Fertility, Shifting Migration, and Shrinking Yishuvim

Alex Weinreb

Introduction

As noted in other chapters in this volume, two key series of events have disrupted Israel in the last two years: the profound political and social tensions accompanying the attempted judicial reform between January and October 2023; and the ongoing war with Hamas and Hizbullah since October 2023. While Israel's demography did not figure prominently in either of these events, its rapid demographic growth serves as a backdrop to both. Israel's ***de jure*** population, that is, the population that officially lives within the Green Line and in Israeli ***yishuvim***[1] in Judea/Samaria, now exceeds 10 million people: around 9.99 million citizens and permanent residents — up from 9.84 million at the end of 2023 — in addition to more than 200,000 labor migrants.[2] Maintaining high-quality healthcare, welfare, and education in a context of rapid demographic growth is challenging at the best of times. Doing so alongside the new and emergent problems of the war is even more so.

* Prof. Alex Weinreb, Research Director and Chair, Demography Area, Taub Center for Social Policy Studies in Israel.

1 By ***yishuvim***, we refer to all cities, towns, and smaller types of settlements, including ***moshavim*** and ***kibbutzim***.

2 Israel's actual de facto population is likely somewhat less than its official ***de jure*** count because at any given time, tens of thousands of Israelis are overseas. Some are traveling. Others are working overseas but are still officially resident in Israel.

The events of the last two years have also triggered at least two narrowly-focused and related demographic questions. How will attitudes to both the judicial reform and the war affect fertility and migration to other countries, in particular among Israel's most able and mobile young adults.[3] The first half of this chapter will provide initial answers to these two questions based on an analysis of the most recent trends in Israel's fertility and migration, and on careful framing of the empirical contexts within which these questions need to be addressed. Popular concerns and discourse about these topics tend to gloss over, or even miss, pertinent factors.

The second half of the chapter will address another topic of relevance to Israel's post-war and long-term development: variation in growth patterns across approximately 1,200 yishuvim in Israel over the 2013–2022 period. This, too, points to some important patterns, not least of which are divergent patterns of growth across and within regions, as well as compositional shifts within Israel's unique demographic fabric.

Trends in fertility and migration

Fertility

Over the last few years, we have documented reductions in fertility rates in Israel. Israel's period Total Fertility Rate (TFR), a measure of how many children a woman will have assuming current age-specific fertility rates, fell from around 3.10 in the 2015–2018 period to 2.84 in 2023. Across this period, falls have been sharper among Israeli Christians, Muslims, and Druze than among Israeli Jews.

Because fertility rates in the first nine months of 2024 reflect fertility decisions made in 2023, it is reasonable to question how Israel's fertility in 2024 was affected by the two very different types of upheavals that the country experienced in 2023: the intense sociopolitical divisions of the first three quarters of the year, which would have affected births until around May 2024; and the wars in Gaza and the North, ongoing since October 7, 2023, which would have affected births since June 2024. Since each of these also likely propelled fertility in quite different ways, we address them separately.

3 Note that this year's overview chapter, unlike its predecessors, does not address mortality, the third core mechanism of demographic change.

The likely direction of change

The sociopolitical divisions that split Israeli society during the first nine months of 2023 likely drove fertility in different directions for different groups. On the one hand, it is not difficult to imagine how some opponents of the proposed judicial reform, alienated by the legislative direction and its anticipated impact on Israeli society, would delay plans to have a child. That would push down fertility rates in this subpopulation in the early part of 2024. On the other hand, support for the government's plan was greater in subpopulations that both valorize high fertility and actually have a higher-than-average number of children. In these populations, it would be reasonable to expect the events of the first nine months of 2023 to lead to a moderate rise in fertility, stemming from some combination of ideational and material factors: pronatalist exuberance rooted in seeing longstanding agendas being enacted; and increased grants to families associated with ***yeshivot***.

The fertility effects of the war, beginning with October 7 attacks, are more complicated. Not surprisingly, these effects are often framed in relation to ***baby booms*** or least ***baby bumps*** that often follow war. Most famous are the pronounced and lengthy booms following World War II, among Allied powers in particular.

In fact, evaluating whether a baby boom (or bump) has occurred and, if so, what is driving it, is somewhat problematic in practice. One reason is related to the underlying biology of conception. Imagine a couple who, swept along by a wave of post-war relief and excitement, decide to have a child, so stop contracepting. The underlying stochastics of fertility as a biological process that involves the relative timing of ovulation and unprotected sex means that average time to conception for a non-contracepting couple is 3 to 4 months. Furthermore, not every conception results in a viable pregnancy, and not every pregnancy in a live birth. Together, these factors mean that any postwar baby boom has to be quite significant and persistent to be visible in aggregate statistics. The effects of more frequent unprotected sex on actual fertility will play out over months, with only an initial signal in the birth data exactly nine months after the end of the war.

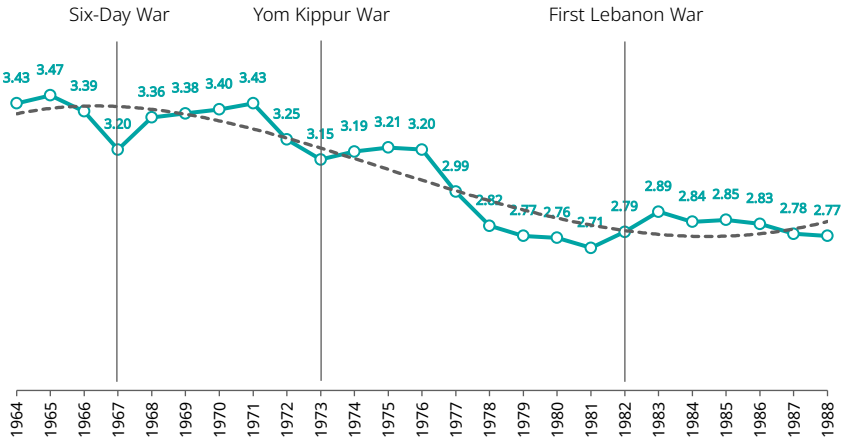
Another reason that identifying a postwar baby boom is difficult is related to the interpretation of short- and medium-term fertility trends. War tends to separate couples. This naturally reduces the frequency of sex and, therefore, subsequent fertility rates (assuming unchanged rates of contraception). If the end of war brings about more frequent sex, then a supposed baby boom may be little more than a return to normal. Or, if fertility rates are temporarily higher than they were in the pre-war period, those higher rates may simply reflect couples ***catching up*** with their original but delayed fertility plans. It is not a true boom, therefore, because it does not reflect an increase in the motivation to have more children or even an increase in the net number of children born over a span of years. It is simply a shift in timing that can be seen as compensation for lost fertility during the war.

Looking at Israel's post-war fertility in other conflicts is instructive in this regard. It provides a mixed picture about how much of a real baby boom there was. Figure 1 graphs the fertility trends of Jewish women in Israel over the 25-year period from 1964–1988, during which Israel fought three major wars.[4] We fit a line to these data to represent the secular trend in fertility.

There are two notable phenomena in the data. First, in both the Six-Day and Yom Kippur Wars, fertility was actually lowest in the year of the war. Since the 1967 war was fought in June, that suggests that conceptions fell in the previous year, or in the early months of 1967, perhaps reflecting the growing tensions in the region. Likewise, the 1973 war was fought in October, which means that reduced fertility in that year was the result of fewer conceptions in 1972 or the early part of 1973. In the aftermath of both wars, however, there was an immediate positive impact on fertility, with fertility rising in 1968 and 1974 back to the trendline, then climbing above the trendline for an additional two years. In light of the comments above, 1968 and 1974 should not be characterized as baby booms or bumps. They are simply a return to the trend. However, fertility in 1970, 1971, 1975 and 1976 ***can*** be considered post-war baby booms, albeit mild ones.

4 We ignore the War of Attrition since its protracted nature would likely lead to different fertility effects.

Figure 1. Israeli Jewish women's total fertility rate, 1964–1988



Source: Alex Weinreb, Taub Center | Data: CBS

Fertility trends in the aftermath of the First Lebanon War are a little different. Fertility began to climb in 1982, reflecting conceptions in 1981, when there was no sign of war. This is not a classic type of post-war baby boom. At most, the war merely augmented and perhaps helped sustain an existing upward trend.

Let's apply all these factors to Israel in 2024. The sociopolitical tensions of the first nine months of 2023 should have resulted in a mild increase in fertility in the higher-fertility, right-leaning sectors of Israel's Jewish population, and further reductions in Israel's lower fertility, more politically left and center sectors, with both of these effects being felt in the ***first*** half of 2024 (reflecting conceptions up to September, 2023). The total effect of these shifts should, at the very least, have stalled the ongoing reduction in Jewish women's fertility since that was based on reduction across all levels of religiosity (CBS, 2023).

Fertility rates should then have changed from the middle of 2024, reflecting the impact of the War, and in particular the fact that many of the 300,000 young Israelis in long military reserve duty in the early months of the war are in long-term relationships, including marriage. Their separation from partners certainly reduced the frequency of sex. It also may have shifted their motivation,

causing some to delay having a child.[5] We should therefore see a reduction in fertility beginning around June 2024 and lasting until the end of large-scale reserve duty — clearly, this separation mechanism would not affect fertility in Israel's large Haredi (ultra-Orthodox) minority. Of course, a given couple could revisit a decision made early in the war to delay fertility as the war lengthened. But any partial recovery in fertility rates that this caused would only be seen in the final quarter of 2024, at the earliest. More likely it would become part of a potentially compensating rise in Jewish women's fertility in 2025.

The final factor that we need to take into account is the fertility of Israel's large non-Jewish population, representing 31% of women in their peak reproductive ages (25–34).[6] Of these, only women in the Druze and Other subpopulations should have been affected by the separation associated with reserve military duty. In contrast, the fertility of Muslim and Christian women should have continued on their pre-2023 decline.

5 The war could also potentially cause other young couples to speed up their fertility plans. This would be consistent with the anecdotal evidence of more frequent marriages among soldiers during the early months of the war. We will be able to see whether this occurred with the CBS releases 2023 data on marriage by age in the 2025 Statistical Abstract of Israel. However, even if there is evidence of this type of effect among the youngest and childless couples, Israeli Jewish women's median age at fertility is in their early 30s and most of their fertility is at higher ***parities***, that is, second or third births. I assume that the overall reduction in fertility among this notable majority in the first months of the war will have substantially outweighed any pronatalist tendency among war-inspired newlyweds.

6 21% are Muslim, 2% Christian, 2% Druze and the remaining 5% have no religious classification (mostly ***Other***).

Fertility trends thus far

Official estimates of 2024 fertility rates will not be published before September, 2025. Here we present an alternative TFR (TFR_a) for each of Israel's four major religions, and for the 5% of Israeli women categorized by the state as having no religious affiliation. This is a monthly statistic estimated by dividing the number of births to women of a given religion in any given month (based on data released through the Central Bureau of Statistics Statistical Monthly) by the number of women at peak reproductive ages (28–32) within that religion in that same month.[7,8]

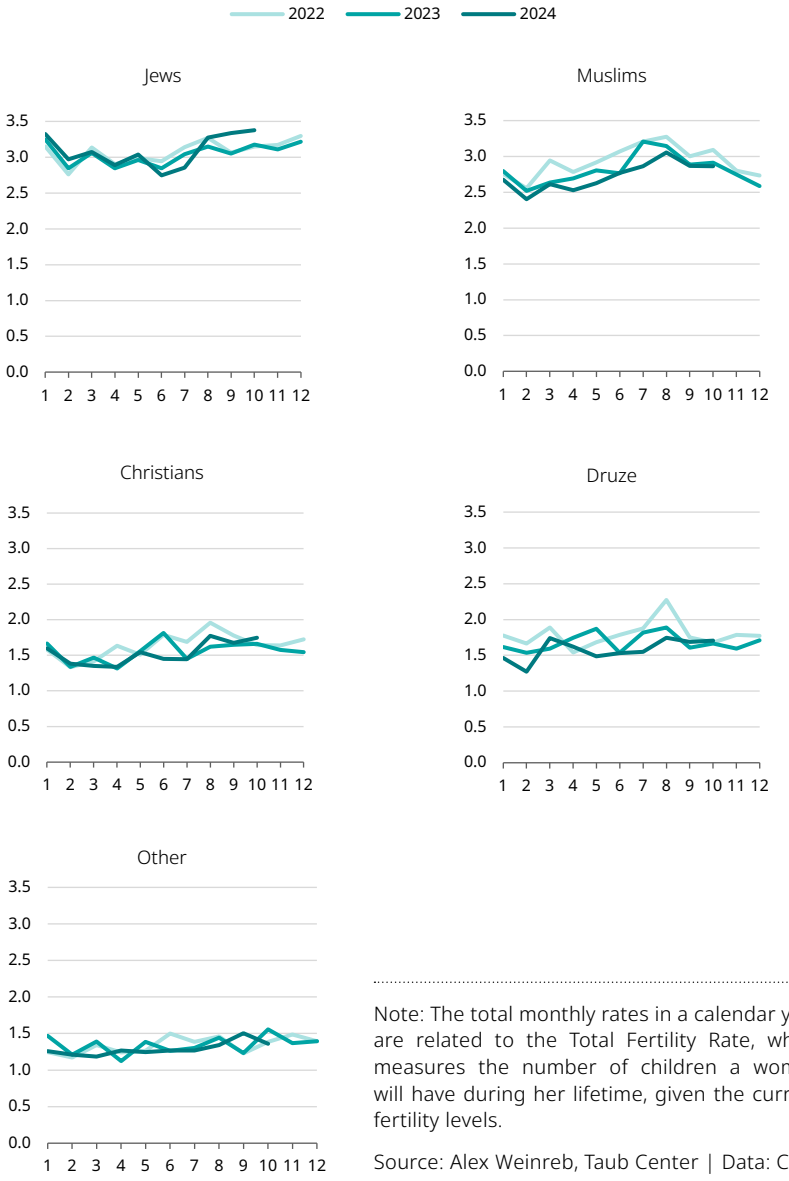
Figure 2 shows trends in the TFR_a by religion up to October, 2024. In January and February, 2024, Jewish women's fertility was marginally (3%) higher than the 2022 and 2023 totals. As expected, it then fell notably in June 2024 and remained below its seasonal level in July — this reflects the largest waves of reserve duty in October and November, 2023. Jewish women's fertility rate then climbed sharply in August and remained above 2022–2023 levels until the last available data in October, 2024. In fact, fertility levels were 9.3% and 6.3% higher in September and October, 2024, than in the equivalent months in 2023.

Over the same period, Muslim women's fertility has continued to fall: with the exception of June, it was lower in every month of 2024 than in the preceding years. Christian and Druze women's fertility was also generally lower, though neither the latter nor fertility of Other women showed any sign of the sharp decline in fertility in June that can be seen among Jewish women. Nor was there any sign of rising fertility in later months.

7 This number of women is estimated in a cohort component projection model that progresses in one-month intervals from Israel's June 30, 2022, baseline ***de jure*** population to September 2024, and backward projects to January 2022. The projection assumes that one-twelfth of women age into the next single year of age in each month, and that survival rates are 99.9% in any given month. Net migration rates are set to zero for Muslim, Druze, and Christian women because there is very little in- or out-migration in this population. Net migration rates are set to zero for Jewish and Other women since we assume that the addition of incoming women immigrants to the denominator in these ages is offset by the absence of many younger Israeli women who remain ***de jure*** residents. The magnitude of that informal out-migration is described in the following section.

8 One of the key advantages of this TFR_a measure over the General Fertility Rate (GFR) is it is more sensitive to fluctuations in age structure within the 15–49 age group, the standard reference group for the GFR. Another is that the sum of monthly TFR_a across a calendar year approximates the standard Total Fertility Rate (TFR), allowing for easy comparison.

Figure 2. Total Fertility Rates (TFR) by religion, 2022–2024



Note: The total monthly rates in a calendar year are related to the Total Fertility Rate, which measures the number of children a woman will have during her lifetime, given the current fertility levels.

Source: Alex Weinreb, Taub Center | Data: CBS

To see how these monthly rates play out over a calendar year, we infer TFR levels in 2024 in each of these subpopulations relative to 2022 and 2023 TFR, based on the assumption that the ratio of TFR(2024):TFR(2022) is identical to the ratio of GFR(2024):GFR(2022). In an attempt to identify the impact of the war, we also estimate the total (***hypothetical***) fertility rate by clusters of months: births in January–May reflect conceptions before the war, births in June–July the first shock of the war, including the maximum mobilization of reservists, and births in August–October reflect the beginning of the period of adjustment.

Table 1. Total Fertility Rate, by period, subpopulation, and religion

		By subpopulation		By religion				
	Total	**Jews/ Others**	**Arabs**	**Jews**	**Muslims**	**Christians**	**Druze**	**Other**
2022	**2.89**	**2.91**	**2.72**	**3.03**	**2.91**	**1.68**	**1.85**	**1.26**
2023	**2.84**	**2.88**	**2.61**	**3.00**	**2.79**	**1.59**	**1.74**	**1.26**
2024								
Jan–May	2.90	2.99	2.51	3.10	2.68	1.62	1.64	1.24
Jun–July	2.66	2.69	2.42	2.79	2.61	1.40	1.56	1.11
Aug–Oct	2.98	3.07	2.63	3.19	2.73	1.62	1.67	1.30
Jan–Oct	**2.82**	**2.95**	**2.51**	**3.07**	**2.68**	**1.57**	**1.63**	**1.23**

Source: Alex Weinreb, Taub Center | Data: Data for 2022 are published by the CBS; data for 2023 are inferred from the General Fertility Rate (author's calculations); data for 2024 are anticipated annual estimates based on the proportion of annual TFR in 2022 and 2023 occurring during ten months of the year

Table 1 presents these estimates for Israel as a whole, by sector, and by religion. They suggest that fertility in Israel took a new direction in the ***first five months*** of 2024, and instead of continuing to decline, it returned to its 2022 level and even slightly surpassed it. Looking at these trends by subpopulation and religion shows that this new direction at the national level is driven by Jewish women's divergent fertility path. Over the January–May period, even as fertility in all other religious groups continued its downward path — to 2.68, 1.62, 1.64, and 1.24 children among Muslim, Christian, Druze, and Other (religiously unclassified) women, respectively — Jewish women's fertility rate climbed back to 3.10.

Birth data in June–July suggest that the war had a substantial effect on fertility in every subpopulation except Muslims. There was a particularly strong reduction in the Jewish, Christian, and Other populations, with the annualized TFR falling by 10.0%, 13.7%, and 10.8%, respectively, relative to the rates in the first five months of the year. If these rates were generalized to the whole year, Jewish, Christian, and Other women would each end up with 2.79, 1.4, and 1.1 children, respectively, much lower than the 2023 levels.

As noted above, however, fertility rose from August. This happened in all populations, but the largest rise by far was among Jewish women. The annualized TFR of Jewish women based on fertility between August and October is 3.19 children per woman. That is 0.4 children higher than a rate based on fertility in June–July, and 5% higher than fertility during the same months in 2022.

These patterns once again point to the special characteristics of fertility in Israel in international perspective. They also confirm that Jews are now Israel's outstanding high fertility population. Even though their higher birth rates fell during the early months of the war, I anticipate that their fertility in 2024, together with the very low fertility among Other women, will be around 0.4 children higher than that of Arab women. And measured by religion, Jewish women's fertility will also be around 0.4 children higher than that of Muslim women.

I emphasize, again, that these estimates are based on birth data during the first ten months of 2024 alone. In terms of timing of conception, five of those ten months predate the war. As more data become available, we will track how much the war influenced these patterns. Even if the reduction in Jewish women's fertility is sustained over the remaining months of 2024 and into 2025, it says nothing about variability in fertility across levels of religiosity: that is the most important predictor of fertility in Israel's Jewish population. In fact, irrespective of trends in mean fertility of Jewish women over the second half of 2024, I expect the fertility gaps between Israel's Haredi and non-Haredi population, already large, to widen further in 2024. That is what happens when young couples in one subpopulation remain at home leading a more-or-less normal life, while their counterparts in other subpopulations are separated for extended periods of time.

Unfortunately, data allowing us to track fertility and see whether things play out in this way will not be available until the second half of 2025, at the earliest. However, if I am right, it will serve as a useful example of how basic differences between Israel's Haredi and non-Haredi populations in the burden of individual obligations to the state can have demographic consequences. The obvious effect is through the increased exposure of young non-Haredim to death and of their families to the risk of losing a loved one, with all the horror that entails. The less obvious one, which we are pointing to here, is through fertility. ***Ceteris paribus***, separated couples during war have fewer children than non-separated couples. That, rather than any anticipated baby boom or baby bump, may be the more important fertility story to emerge from the ongoing war.

Migration

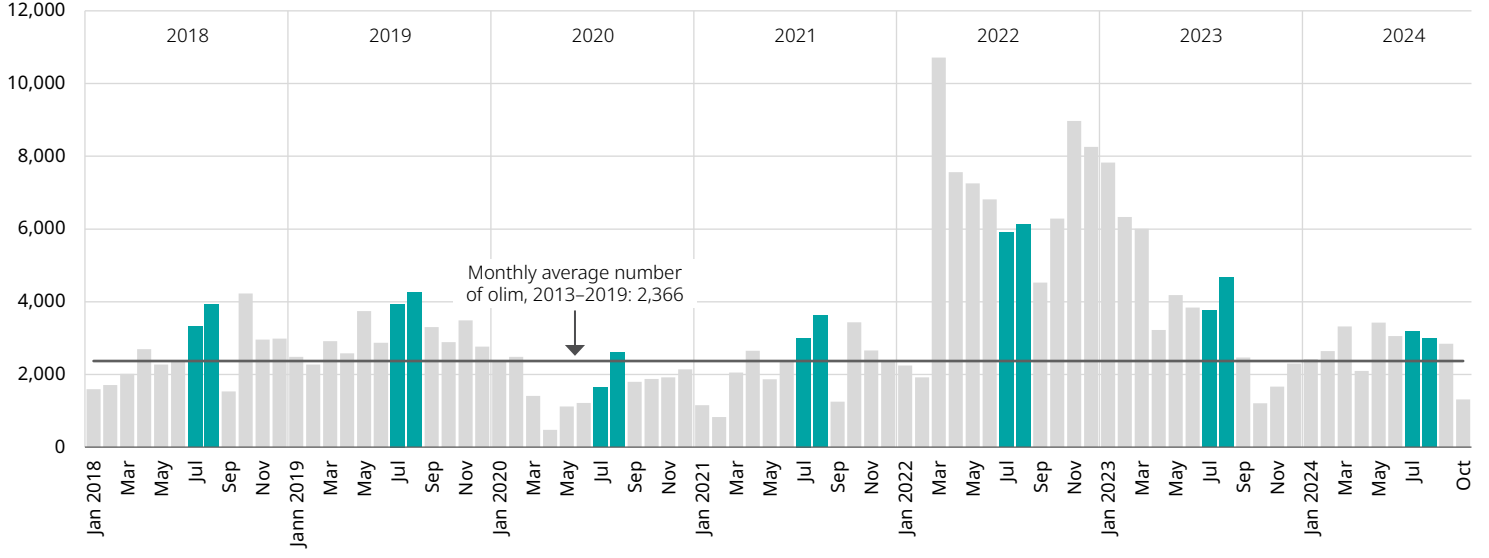
Israel's population is affected by two distinct types of migration: ***aliya*** and net in- and out-migration of Israelis. Separate statistics are collected on each of these.

Aliya

In formal terms, Israel has experienced substantial aliya over the last few years, and aliya levels remained relatively high in the first nine months of 2024, despite the ongoing war. This can be seen in Figure 3, which shows monthly aliya trends from January 2018 to October 2024. The horizontal grey line, intended as a reference for normal pre-Covid patterns, is the average monthly number of (those making aliya) from January 2013 to December 2019.

Two distinct periods of deviation from the 2013–2019 norms can be seen in these trends. The major one is from March 2022 until August 2023: Israel experienced much higher aliya during this period due to the Russia-Ukraine war. The minor one is from March 2020 until March 2021 when aliya was driven lower by Covid-related restrictions on travel.

Figure 3. Number of olim, by month, 2018–2024



Notes: Olim includes anyone taking up residence with the Law of Return, including those who entered on a new immigrant visa, those who converted their visa from a tourist visa, or from an entry permit under the Law of Entry, and immigrating citizens, that is, people born outside Israel to Israeli citizens who move back to Israel.

Source: Alex Weinreb, Taub Center | Data: CBS Statistical Abstracts Monthly

In contrast to these two periods, and despite minor reductions in aliya in October and November of 2023, the ongoing war has ***not*** pushed aliya levels below their pre-Covid average. On the contrary, the short-term effect has arguably been the opposite: 23,150 olim moved to Israel in the January–August 2024 period. That was higher than the number of olim in the equivalent period in any year in the 2012–2021 period other than 2019 (25,048).[9] Of course, these aliya trends have not reached the very high levels that some predicted in light of rising antisemitism in many parts of the world — equivalent predictions were also not realized during the Covid-19 pandemic. In addition, fewer olim arrived in August than in July, which is unusual, and may signal a forthcoming reduction. Finally, the numbers were also down in October, though that may be due to the timing of the High Holidays, which all fell in October (the Holidays slow both Israeli bureaucracy and Jewish migration). In summary, recent signs of a slowdown in aliya are difficult to interpret, but one thing is clear: Israel sustained higher-than-average numbers of olim during the first year of war. That is an accomplishment.

It is also noteworthy that this continued high level of aliya is not just an artifact of the ongoing wave of migration from Russia and Ukraine. On the contrary, aliya from countries that were not part of the USSR was 23.2% higher in the January–October, 2024, period than in the same period in 2023. There were also marked increases in the number of olim from the US (29.7%), Canada (32.8%), and from European countries that were not part of the USSR (63.2% increase). Aliya from France, historically the major sending country in Western Europe, increased by 92.2%.

Framing Israelis' international migration

The more heated contemporary debate about migration in Israel is about the out-migration of Israelis, especially prime working-age Israelis who earn the most and pay a disproportionate share of income tax: as of 2018, the top two deciles of the income distribution paid 90% of all personal income tax (OECD 2020). Since the height of the protests about the proposed judicial reform, there have been numerous press reports about increased interest in migration, especially among Israel's academic, medical, and tech elites

9 Including 2019, the mean number of olim in the January–August period was 17,241, with a range from 10,943 in 2012 to 20,255 in 2017.

(Dor, 2023; Gamss, 2024; Shtarckman & Linder, 2024; Weinreb, 2024), as well as movement of capital abroad, including for the purchase of property (Volinsky, 2024). There are also more reports of Israeli doctoral students and postdoctoral fellows choosing to extend stays abroad or simply deciding to forego returning altogether.[10] Needless to say, given the global skill shortages in these sectors, Israel's skilled workforce would qualify for the various ***skilled visa*** schemes that all high-income countries now offer.

These reports provide important indicators of ***interest*** in migration and hedging bets on Israel's financial future. However, they are not sufficient for establishing a shift in actual migration patterns. To properly evaluate the extent to which this talk about migration is associated with ***actual*** migration, we would need individual-level data on representative samples of migrants and non-migrants, including their specific ages, educational, and employment profiles. To evaluate whether this type of migration has become more common since January 2023, relative to the preceding years, we would need access to these types of data over a series of years. Unfortunately, no such data are publicly available. This means that questions about the frequency of migration, or recent shifts in the frequency relative to a few years ago, cannot be answered directly, at least not optimally.

Difficulties in measuring migration further complicate this issue. One of these is administrative. A person is only considered to have formally migrated out of Israel if they declare so to authorities (e.g., tell National Insurance that they are no longer residents of Israel), or if they leave the country and do not reenter for at least 275 days (recently changed from a full calendar year). By the latter count, someone could have left Israel in March 2024, but, barring a formal declaration, they will only be registered as having moved out of Israel if they did not return to the country, even for a visit, before January 2025. That creates a substantial delay in tracking shifts in the timing of migration. It also leads to some mismeasurement when, for example, Israelis spend a year traveling after their military service, or academics or graduate students spend more than a year at a foreign university.

10 Private communication with an executive at ScienceAbroad, the organization of Israeli scientists abroad.

Yet even if such data on Israeli out-migrants existed, and we successfully identified an increase in the number of skilled people leaving Israel, that is only one side of the migration equation. A full accounting of either migration or human capital flows — the latter takes into account the educational characteristics or skill levels of migrants — must address immigration as much as emigration. For example, we can lament the loss of 50 medical doctors to some other country in a given year. But if Israel gains 70 doctors from in-migration in the same year, then putting to one side questions of comparative quality and linguistic competence, Israel has profited from international migration. The same argument can be made about highly skilled tech elites and scientists. All of these people operate in a globalized labor market in which there is a considerable amount of migration. Out-migration of skilled people is, in other words, not specific to Israel; nor is the increasing frequency of migration.

SPOTLIGHT
Migration of Physicians

The field of medicine is a particularly instructive example of how the international migration system operates. Many high-income countries have relied on in-migration of medical doctors to keep their systems running, even as they always lose some portion to other countries (Adovor et al., 2021). In many of them, concerns are growing as the share of physicians considering migration, actually migrating or leaving the profession, grows, leading to calls for more collaborative planning (Kuhlman et al., 2013).

Recent trends in the UK are illustrative. Historically, around 2.1% of practicing doctors leave the UK in any given year (Brennan et al., 2023). Yet increasing disaffection with the National Health Service (NHS) is pushing that share higher. A 2022 British Medical Association survey of around 4,500 junior doctors found that 40% said they plan to leave the NHS as soon as they can find another job, with most of these heading overseas. Among all practicing doctors, around 30% are considering it, with 13% saying they are very likely to leave in the next year (Tonkin, 2024). Similar concerns and phenomena can be found in many European countries, with a substantial share of doctors reported as being close to retirement age, while others switch to private medicine, migrate, or leave the profession entirely. In Germany, an estimated 5,000–8,000 general practitioner practices are expected to close over the next three years, with one in four doctors leaving the profession (mainly through retirement) and many newly qualified

doctors moving to Denmark, Sweden, and Switzerland, where conditions and pay are superior (Stroud, 2024).

Israeli physicians' talk about migration, or actual migration, needs to be considered within this broader context. Shifts in migration discourse may reflect a real shift in commitment to working within the local healthcare system, and if acted upon, the consequences of that shift could be serious. But Israeli physicians' movement is not unique. They are part of a transnational network of highly-skilled professionals, and many of the healthcare systems they work in are under stress: from aging populations, austerity, and understaffing. Thus far, as the country with by far the highest share of foreign-trained physicians in the OECD, Israel has been a major beneficiary of that system (OECD, 2021: 231) — basically saving itself the cost of training a sufficient number of medical professionals. Israel could also continue to profit from this system given the disproportionate share of Jews in medical professions in other countries, some of whom will move to Israel. The question, therefore, is not whether Israeli physicians are leaving, or even whether higher numbers are leaving (since Israel's physician population is climbing). It is whether physicians' out-migration rates are increasing, what types of physicians are going, and to what extent they are being replaced, if at all, by physicians moving to Israel. The same general points can be made about every type of skilled employment.

A comprehensive framing of Israelis' international migration must also incorporate two other themes that appear in the social science literature on migration. Each points to a potential benefit of migration for sending countries, neither of which is reflected in contemporary anxieties about skilled Israelis leaving the country. The first of these pieces addresses ***circular migration***, which refers to cases where an individual moves to some other country for a period of time to augment skills, strengthen professional networks, or build up capital, before returning home (Zimmermann, 2014). As of 2015, around 10% of Israeli-trained doctors were outside Israel, most on temporary fellowships (Linder, 2015). That implies that even if current events trigger increased out-migration, some of those out-migrants will return to Israel, irrespective of what they say at the point of leaving. And of these, whatever their skill level when they left, most will be more skilled and better placed to contribute to the country upon their return. Some will also be more skilled than they would have been had they stayed. In other words, even if Israel misses their work and energy and tax income while they are away, it may gain more as a country in the longer term.

The second of these pieces addresses the benefits that accrue to the sending country through the increasingly dense connections to destination areas. Notably, those who do not return can provide a ***bridging*** function between networks of Israel-based entrepreneurs and overseas colleagues, researchers, venture capitalists, and so on. Israeli tech has historically benefited from these dense networks. So has Israeli academia: consider all the Israeli doctoral and post-doctoral students at leading universities in the US, whose acceptance was facilitated by Israeli faculty members who had left Israel in a blur of damning critique years earlier.

In summary, even if in Israeli political discourse, ***descent*** (ירידה) from Israel signals individual failure and societal loss — just as ***moving up*** (עלייה) to Israel is trumpeted as confirmation of our greater societal mission — and even if the movement of skilled people is a source of concern, it is important not to exaggerate the magnitude of that phenomena, its finality for any given migrant, or its impact on Israel's economy in the long-term. The skilled labor market upon which Israel is so profoundly reliant is increasingly global and transnational. Israel is part of that transnational system and has historically profited from it a lot more than it has lost to it. This is, in part, due to the fact that Jews are more likely to migrate internationally than any

other ethnic or religious group (Kramer & Tong, 2024). Without sounding pollyannaish, while it is certainly legitimate to be concerned about the potential rise in out-migration, or the losses involved in not having a sufficient number of Israelis return (Karmi, 2023), we must use the right measures of movement and avoid inferring too much from temporally specific spikes.

Indirect measures of migration trends

The delay in switching someone's status from resident to non-resident — described above in relation to someone who left Israel in March 2024 but is only coded as a migrant in January 2025 — makes it difficult to track the impact of prior political protests or war on migration. However, we get a general sense of trends in net migration patterns by comparing the number of entries and exits from Israel by Israeli citizens. The basic idea here is that a larger negative number that accumulates over time points to more exits from Israel than entries. In interpreting these trends, we just need to note one peculiarity about these statistics in Israel. ***Olim*** are counted as citizens. When they leave Israel — for vacation or permanently — they therefore appear as an exit, even though their initial entry is not listed in the same table. A comprehensive picture of migration into and out of Israel therefore needs to combine these two sources of data, as we do below.

Figure 4 presents data on net entries and exits — not including olim — beginning in January 2012 and ending in November 2024. We point to general patterns before focusing on the apparent effects of the war.

First, and not surprisingly, there are distinct seasonal movements in and out of the country. We highlight this by color-coding specific months. June and July (colored yellow) always have many more exits from the country than entries, as people leave for summer holidays. Only in 2020, the world's first summer with Covid, was this seasonal pattern broken. September (colored orange) is also usually a month of exits. In contrast, August and, increasingly, October, are the major months of higher net return to the country, in each case reflecting the exits in the prior period.

Figure 4. Israeli citizens' net movement in and out of the country, by month, 2012–2024

Thousands

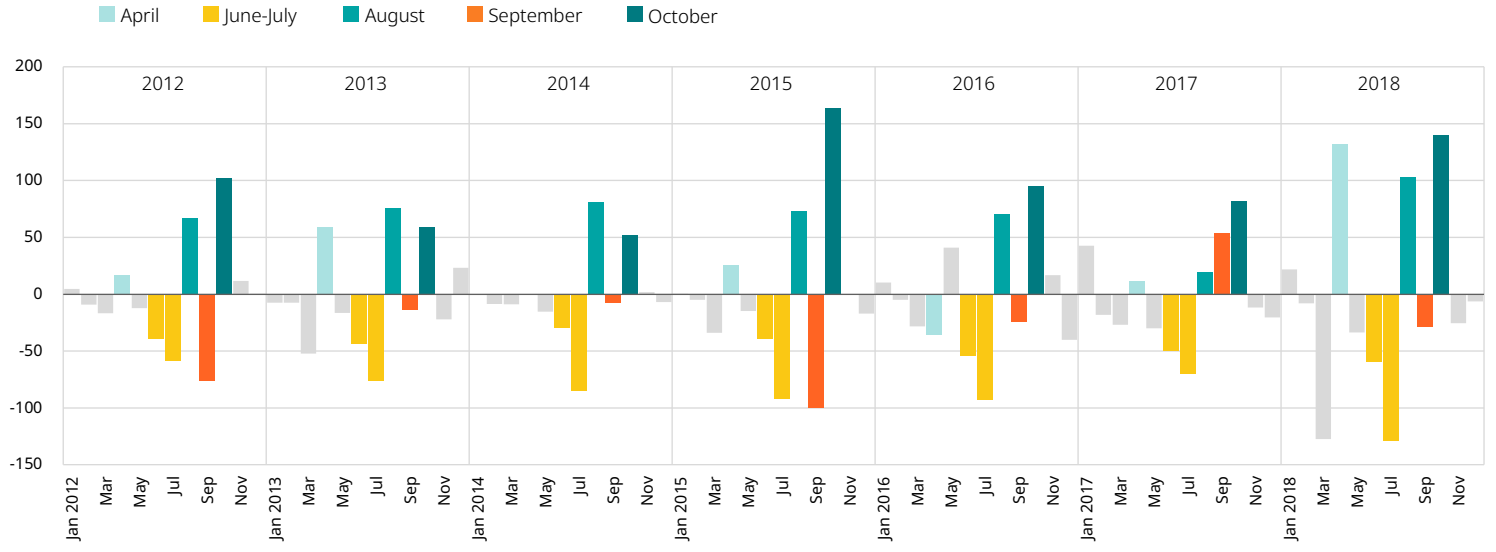
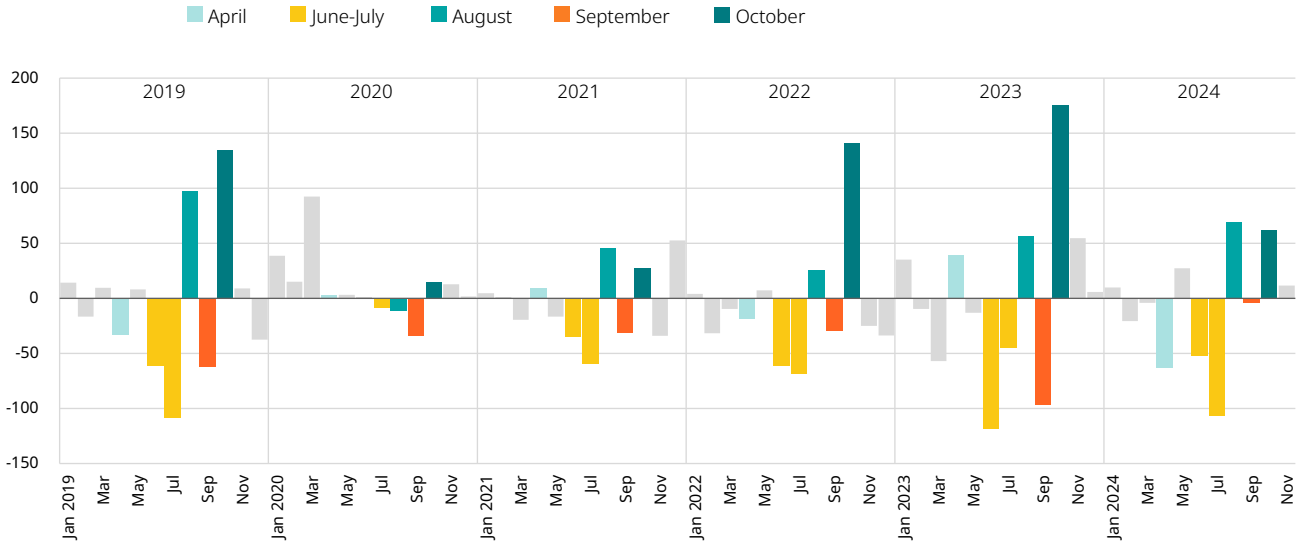


Figure 4 (continued). Israeli citizens' net movement in and out of the country, by month, 2012–2024

Thousands



Source: Alex Weinreb, Taub Center | Data: CBS

These patterns have a direct bearing on interpreting trends during the Gaza war. The number of returning Israelis in October and November of 2023 was much higher than in any other year. It did not continue into January 2024, however. In fact, the first five months of 2024 look broadly similar to prior years, putting aside 2020, where January–March brought a major influx of Israelis fleeing Covid-related fears or restrictions. Only in June and July of 2024 did the first signs of an unusual migration pattern become visible. The absolute number of net exits of Israelis reached 251,000 people. In no prior year since 2012 has that number climbed above 190,000.

If Israelis were systematically leaving the country, the sum of these net movements for any 12-month period would be negative. In fact, this is the case in all years other than 2020, when there was a mass return from January–March, and 2023, with the mass return in October and November pushed the net movement back into the positive zone. In the 2012–2019 period, exits exceeded entries by an average of 28,600 people per year. In 2021, it climbed to 54,900, and, in 2022, to 99,000. That growing number of exits in recent years relative to entries is consistent with more Israelis relocating. However, it could also be a lagged effect of the massive influx of returning Israelis during the Covid era, in particular of young Israelis who interrupted or delayed their post-army travel. Additionally, the net positive gain of Israelis in 2023 is more consistent with the idea that those Israeli who did exit were only temporarily outside the country.

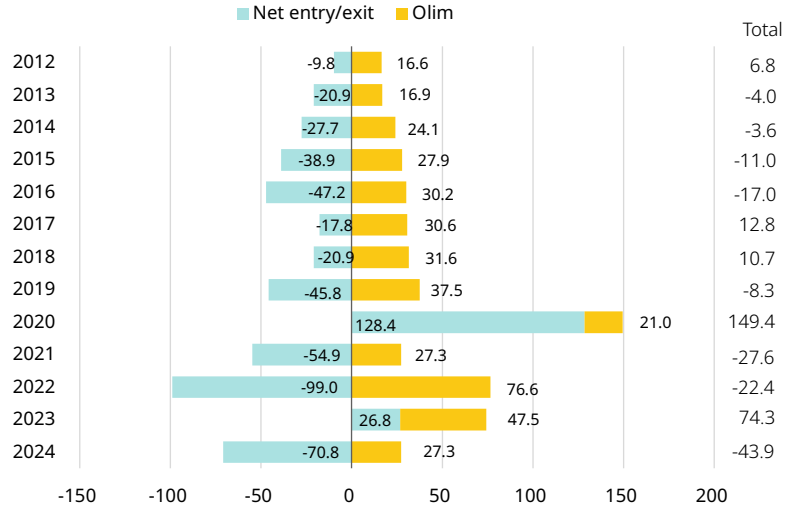
In this regard, the fact that the first five months of 2024 look broadly similar to prior years suggests that in the crudest numeric terms there was no notable increase in out-migration in those months. On the contrary, the data are more consistent with the argument that the war initially reduced out-migration. In contrast, the large number of net exits in June and July alongside relatively small net inflows of Israelis in August and October (relative to the historical norm in the pre-Covid era) provides some indications that patterns changed as the war lengthened. Or that families simply waited to move until their children completed the school year.

A final thing to note regarding these indirect measure of migration trends is the joint effect of Israelis' net entries and exits and aliya. We aggregate the monthly amounts into annual counts and graph them in Figure 5 for the 2012–2024 period (up to November in 2024). The results confirm that, alongside growing numbers of olim over this 13-year period, there were also increasing

numbers of net exits, albeit with large fluctuations, including an unexplained dip in net exits in 2017 and 2018. In fact, in general, it is the magnitude of the net entry/exit of Israelis that determines whether, in any given year, there was a net gain or loss. What is driving these movements is unclear. It is tempting to ascribe the higher net exits in 2021 and especially 2022 to the political and economic uncertainty of those years, including the repeated elections. But it is equally plausible to ascribe them, as noted above, to the large influx of Israelis in 2020, or to the exits of young Israelis who were forced to delay their original travel plans during the Covid pandemic. The high number of exits in 2024 can also be explained without recourse to the war or political factors: it could reflect compensation for the high number of net entries in 2023; or it could be caused by the exit of some of the 102,000 new Israelis who had immigrated from Russia or Ukraine in 2022 or 2023.

Finally, these rises in net exits may at least partly reflect a simpler demographic mechanism, a shift in age structure. Over the second half of the 2010s, the number of Israelis in their low- to mid-20s (peak ages for extended travel) grew very slowly, an artifact of distinctive bumps in Israel's age structure. In contrast, over the last few years, Israel's increasingly large teen cohorts have been entering that age group. For example, there were around 135,000 Israelis aged 25 in 2023, as opposed to around 126,000 in 2018 and 122,000 in 2013. Even if net exit rates remained constant, the absolute numbers leaving Israel would be 7% greater today than in 2018, and 11% greater than in 2013.

Figure 5. Annual net entry/exit of Israelis and olim
Thousands



Source: Alex Weinreb, Taub Center | Data: CBS

In summary, based on the high number of net exits in 2021 and 2022, in addition to the anticipated reduction in the number of olim from Russia and Ukraine (and the out-migration of some of these new olim from Israel), we expect net migration to Israel to become much more negative in the post-war period, as those who returned to Israel for the war, or delayed post-army trips or relocation because of it, finally make their move. This could also happen as the war lengthens. Thus far, however, the combined aliya and net movement trends seen in Figures 3 and 4 suggest that Israel has not yet experienced an unusually large loss of people, though first signs emerged in the second half of the year that may point to this pattern.

Needless to say, we long for the day when we can track migration better, including in- and out-migrants' characteristics. This is a known weakness in international statistics on migration in general, and in publicly available Israeli statistics, in particular.

Growth patterns across the country

Variation in growth across geographic regions

It is widely known that Israel has unusually high population growth rates for a high-income country. Much less known and understood is the variance in growth rates ***within*** Israel. That is the subject of this section.

SPOTLIGHT

Israel's Unique Demography

To illustrate how much Israel's population growth rates deviate from normal patterns among high-income countries, the first three columns of Table 2 show the actual population size in 1970 and 2023 in Israel and selected high-income countries, as well as the annualized growth rate across this 53-year period in each of these countries. The penultimate column then shows what each of these countries' population size would have been in 2023 had they grown at the same rate as Israel over the 53 years. The final column is a simple ratio of actual to hypothetical population size.

The results of this simple exercise speak for themselves. Even in high-growth Australia, Canada, and the US — where the population is constantly augmented by large inflows of migrants — the actual 2023 population was between 51% and 64% of what it would have been had its population grown at the same pace as Israel's. The populations of European countries in this sample are, on average, only 35% of the size they would have been.

Table 2. Population growth in Israel and selected other high-income countries: actual and hypothetical (mid-year) population levels

	Actual population (millions)		Annualized growth rate	Hypothetical (millions)	Ratio of actual to hypothetical
	1970	2023		2023	
ISRAEL	2.97	9.75	2.24%		
Australia	12.5	26.5	1.41%	41.0	0.64
Canada	21.3	39.3	1.15%	69.9	0.56
Finland	4.6	5.6	0.37%	15.1	0.37
France	52.0	66.4	0.46%	170.4	0.39
Germany	78.2	84.5	0.15%	256.3	0.33
Greece	8.8	10.2	0.29%	28.8	0.36
Hungary	10.3	9.7	-0.12%	33.9	0.29
Italy	53.8	59.5	0.19%	176.5	0.34
Russia	130.4	145.4	0.21%	427.6	0.34
South Korea	32.2	51.7	0.89%	105.7	0.49
UK	55.7	68.7	0.40%	182.5	0.38
US	205.1	343.5	0.97%	672.4	0.51

Note: Annualized growth rate calculated as In(Population 2023/Population 1970)/53.

Source: Alex Weinreb, Taub Center | Data: Israel's population data are from CBS; other countries' population data are from United Nations

The bottom line is this: in terms of population growth, and all that follows from that in relation to housing stock, the supply of basic services, and aggregate levels of private and public consumption and use of resources, Israel is unique among high-income economically diversified countries. It exists on a different demographic planet, its growth patterns placing different constraints on Israeli policy makers, but also affording them a different set of options.

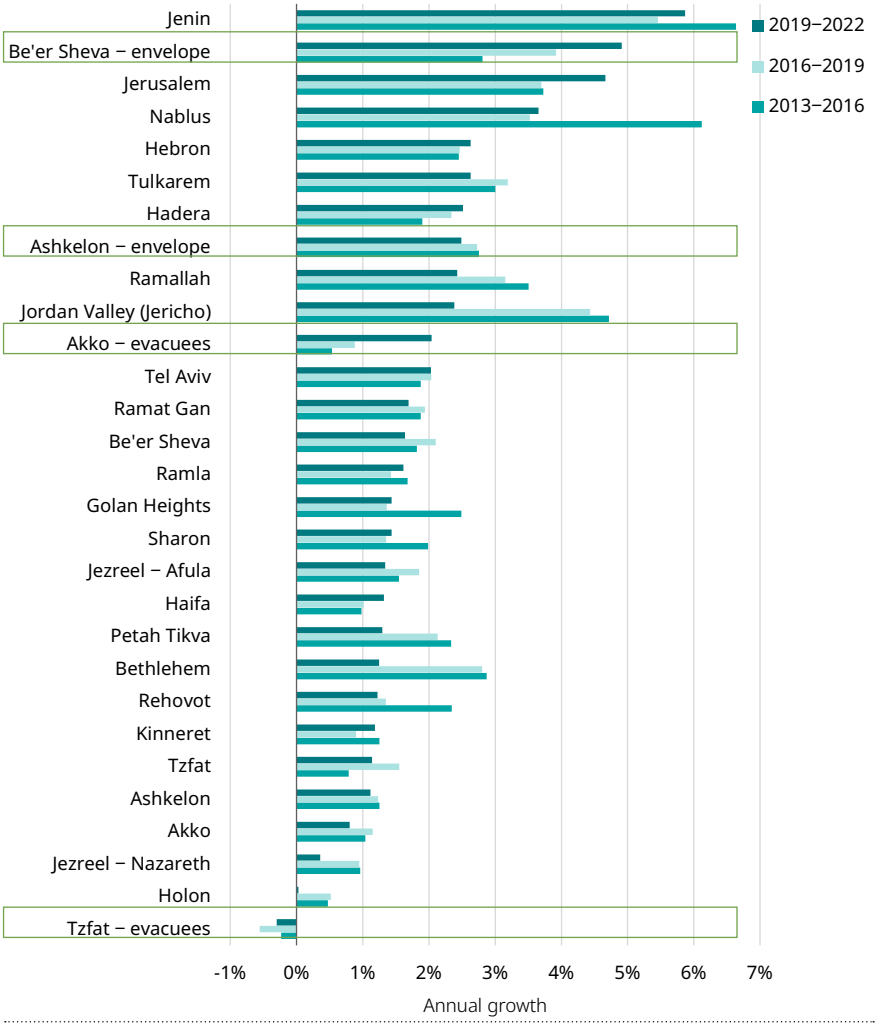
Here, we look at overall population growth rates over a nine-year period starting December 31, 2013 and ending December 31, 2022. We describe some key features of that growth, including the characteristics of yishuvim with negative growth rates, and we point to shifts in those patterns across the 2013–2022 period. A forthcoming publication will address the topic with greater details, disaggregating overall patterns by source of growth and differentiating patterns more carefully by age group. We use a special dataset that we have assembled from various publicly available tables on approximately 1,200 yishuvim — the number varies slightly across the years — published by the Central Bureau of Statistics.

An initial breakdown of annualized growth rates in three-year periods, by ***nafa*** — the administrative level below district — is shown in Figure 6.[11] The only addition that we have made to the standard list of nafot is to distinguish the yishuvim that are in the ***Gaza Envelope*** area, and the yishuvim in the North that were evacuated after October 2023. That is, we divide the Be'er Sheva and Ashkelon nafot into areas that are officially counted as Gaza border communities — based on eligibility for evacuation and associated benefits — and the remaining yishuvim in the nafa. We do the same for the Akko and Tzfat nafot in the North.

Three basic patterns can be seen.

11 By ***nafa*** we are referring to the list of administrative areas that appears in the CBS Localities files. This allows for higher resolution analysis than the standard list of nafot that appears on the CBS website. By annualized, we refer to an average growth rate within the period, accounting for compounding. The values in Figure 6 are predicted regression values after controlling for population size at the start of each period (negatively associated with growth). Weights are also used to ensure that the influence of each yishuv on the estimated nafa value is proportionate to the yishuv's total population.

Figure 6. Annualized population growth rates across 1,206 yishuvim, by three-year period, nafa and whether the yishuv is in Gaza Envelope or an evacuated northern zone



Notes: Yishuvim are sorted by 2019–2022 growth rates. Predicted values from linear regression with controls for population at the beginning of each period and population weights.

Source: Alex Weinreb, Taub Center | Data: CBS

First, with the exception of the Golan and the area of northern Akko nafa — still evacuated at the time of writing (December, 2024) — population growth in the north of the country has been much slower than in other areas. The now evacuated area in northern Tzfat nafa had a negative growth rate from 2013–2022. The remaining yishuvim in Akko and Tzfat nafot are also toward the bottom, alongside Kinneret and Jezreel-Nazareth nafot. In all of these, growth rates were below 1.2% per year in the 2019–2022 period. That is far below the annual national average growth, which was around 1.9% per year across this period.

Second, out of the ten fastest growing nafot in the 2019–2022 period, six were in Judea/Samaria (Jenin, Shechem, Hebron, Tulkarem, Ramallah, and Jordan Valley-Jericho), and two of the remaining four were in the Gaza Envelope areas of nafot Be'er Sheva and Ashkelon. Population in these two Otef areas in the South grew at an annual rate of 4.9% and 2.5% across this period, much higher than the average in the other yishuvim within the same nafot (1.6% and 1.1%, respectively).

Third, across the 2013–2022 period, Jerusalem remained the fastest growing nafa with a large urban core: around 3.7% per year between 2013 and 2019, and 4.6% from then until the end of 2022. Growth in Tel Aviv and Ramat Gan remained relatively stable in the 1.7%–2.0% per year range across the entire nine-year period. But growth rates in other areas in the Center — Rehovot, Petah Tikva, and the Sharon — fell.

Variation across subpopulations

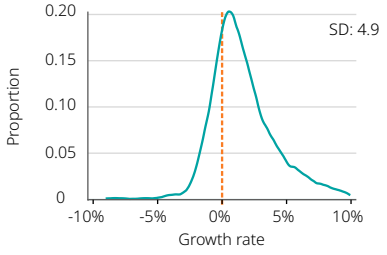
To understand patterns of growth within Israel more fully, attention must also be paid to variation around the averages that are shown in Figure 6 and, in the Israeli context, to differential growth patterns across Israel's diverse ethno-religious groups.

Figure 7 does both of these things. It presents density plots of annualized yishuv growth patterns (2019–2022), by group, where each of the 1,200 yishuvim is assigned to one of six groups based on the dominant residential population: non-Haredi Jewish, Haredi, non-Bedouin Arab, Bedouin, Druze or Christian, and mixed. The density plots show the distribution of growth rates across yishuvim within each of these groups. The standard deviation (SD) of each distribution appears to the right of each of the graphs. Three discrete patterns of growth can be seen.

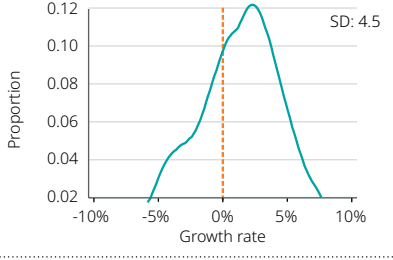
Figure 7. Variation in growth patterns, 2019–2022, by subpopulation

1. Positive, high variance, including negative growth

Non-Haredi Jews, N=1,050, Mean growth: 2.21%

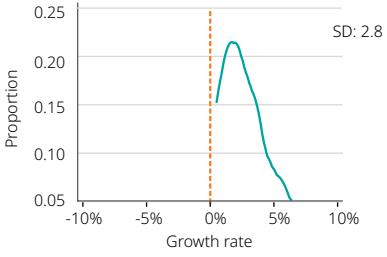


Mixed, N=28, Mean growth: 1.47%

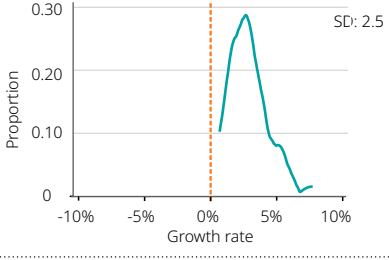


2. Positive, medium variance, zero negative growth

Haredim, N=13, Mean growth: 2.32%

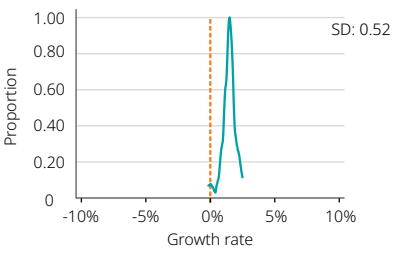


Bedouin, N=36, Mean growth: 3.31%

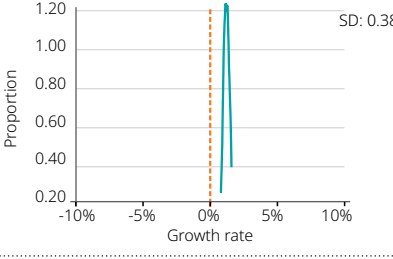


3. Positive, low variance, zero negative growth

Muslim non-Bedouin, N=64, Mean growth: 1.38%



Druze and Christian, N=23, Mean growth: 1.1%



Source: Alex Weinreb, Taub Center | Data: CBS

The first pattern is positive mean growth with high variance, where a portion of yishuvim have negative growth. Jewish and mixed yishuvim have these growth patterns. In 22.3% of the 1,050 Jewish (non-Haredi) yishuvim in our sample, the overall population fell between 2019 and 2022, despite a mean annualized growth rate of 2.2% in this sector. Across the 28 mixed yishuvim, 32.1% experienced a reduction in population over the same period, despite a mean annualized growth rate of 1.5%.

The second distinctive pattern is positive mean growth with medium level of variance across all yishuvim, with no yishuv losing population. This pattern characterizes Israel's 13 Haredi and 36 Bedouin yishuvim. They experienced 2.3% and 3.3% annualized growth rates across the 2019–2022 period, respectively, and not a single yishuv in these categories lost population.

The third pattern is positive growth with low variance, also with no yishuv shrinking in population. This is the pattern found in the Israel's 64 predominantly Muslim (non-Bedouin) yishuvim and 23 Druze and Christian yishuvim. It is noteworthy that mean growth rates in these two are much lower than in any of the other groups, and the variation in growth across yishuvim is tiny. The SD of growth rates across majority Muslim non-Bedouin, Druze, and Christian yishuvim is around one-tenth of the SD in Jewish and mixed yishuvim.[12]

Distinguishing these patterns is important. First and foremost, they signal the substantial differences between the Jewish and Arab populations in terms of mobility. By definition, high variance reflects wide variation in underlying behavior including, in this case, leaving or joining a yishuv. Here it looks like there are far fewer constraints on Jews doing either of these things — or perhaps fewer constraints in terms of possible destination. In either case, growth across Jewish yishuvim looks a lot more like growth in other high-income societies, where towns and cities have long gone through cycles of waxing and waning, unlike the patterns in Arab society, where there are no localities that experienced negative growth at all. As is well known, many contemporary developed societies are now experiencing depopulation outside major urban areas,

12 The same pattern can be seen when we use the coefficient of variation (CV, also known as the relative standard deviation, RSD), instead of the SD. The CV is estimated by dividing the standard deviation by the mean. It is considered a better measure than the standard deviation for comparing variance across samples of very different sizes. We do not use it here since it is a less known measure that, in this instance, does not provide a substantively different result.

driven by a combination of low fertility and out-migration to urban areas or abroad as people leave periphery areas (Dax & Fischer, 2017; Johnson & Lichter, 2019). Given Israel's high rates of growth at the national level, it will surprise many to see that this type of rich-world depopulation can also be observed in a relatively high percentage of Israeli yishuvim. That said, it is equally important to note that, thus far, not a single yishuv with negative growth can be found in yishuvim dominated by Israel's non-Jewish minorities. This implies that Israeli Arabs, whether Muslim, Druze, or Christian, are either more rooted in their yishuvim, more trapped in them, or they are affected by some combination of these two factors.

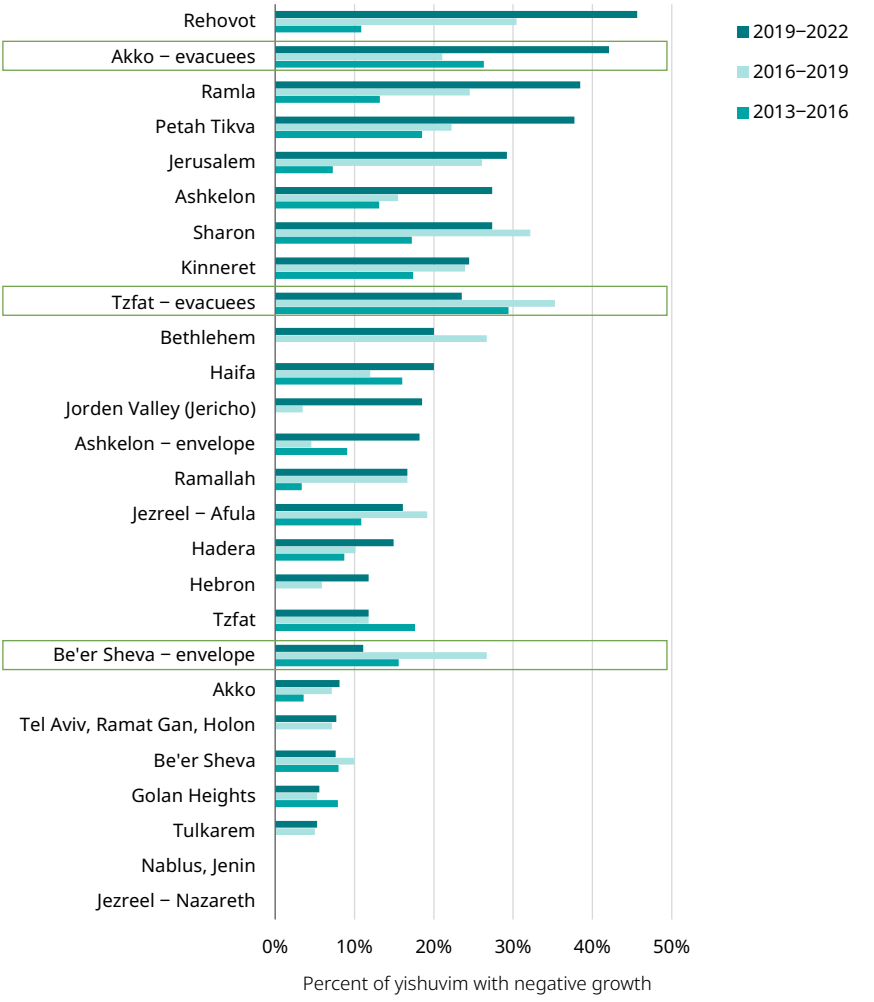
Second, Figure 7 helps us understand drivers of growth in Israel's larger yishuvim and cities. For example, Israel's non-Haredi Jewish and Other population grew at an annualized rate of around 1.85% between 2019 and 2022. But the non-Haredi Jewish yishuvim in which this population lives grew at a rate of 2.21%. The mismatch between these two rates implies that some of the growth in Jewish yishuvim is coming in the form of migration from yishuvim associated with other subpopulations. Part of this is certainly Haredi. Growth rates within Haredi yishuvim were only 2.8%, much lower than the estimated growth rate for the Haredi population as a whole (around 3.5% per year). Other growth is from the mainstream Muslim yishuvim, including Bedouin. Bental and Shami (2023) recently documented increases in the movement of Israeli Arabs into Israel's mixed yishuvim. But it is equally likely that Israeli Arabs are moving to ***Jewish*** cities, too. Finally, a small part may come from majority Druze and Christian yishuvim. Their population growth rates were 1.38% over this period, which is slightly above the observed growth within these population's own yishuvim.

Negative growth

The share of yishuvim experiencing negative growth has been steadily growing over the last decade. In the 2013–2016 period, 10.5% of Israeli yishuvim experienced negative growth. This jumped to 16.9% in the 2016–2019 period, and 19.9% in the 2019–2022 period.

Figure 8 shows that negative growth across time and space. It presents the percent of yishuvim with a negative population growth rate within each nafa, by three-year period. As in Figure 6, we also distinguish the clusters of yishuvim which are in the Gaza Envelope or an evacuated northern zone within a given nafa.

Figure 8. Share of yishuvim with a negative population growth rate, by three-year period, nafa and whether the yishuv is in Gaza Envelope or an evacuated northern zone



Note: Yishuvim are sorted by their growth rates in 2019–2022.

Source: Alex Weinreb, Taub Center | Data: CBS

The most important finding in this figure is the vary sharp increase in percent of yishuvim experiencing negative growth in the center of the country. Almost half (46%) of the 46 yishuvim in Rehovot nafa lost population in 2019–2022, relative to 11% in 2013–2016. There were also substantial increases in the share of yishuvim experiencing negative growth in Ramle and Petah Tikva nafot, with each of them exceeding 35% by the final period. The share in Jerusalem and Ashkelon nafot exceeded 25%.

At the opposite end of the scale, only in the Jezreel-Nazareth and Shechem-Jenin nafot — with 16 and 14 yishuvim, respectively, were there none that experienced negative growth. And among areas with a consistently low share of yishuvim experiencing negative growth there are both peripheral nafot like Golan and Be'er Sheva and areas in Israel's socioeconomic core: the cluster of yishuvim that make up Tel Aviv, Ramat Gan, and Holon sub-nafot (תת-נפה).

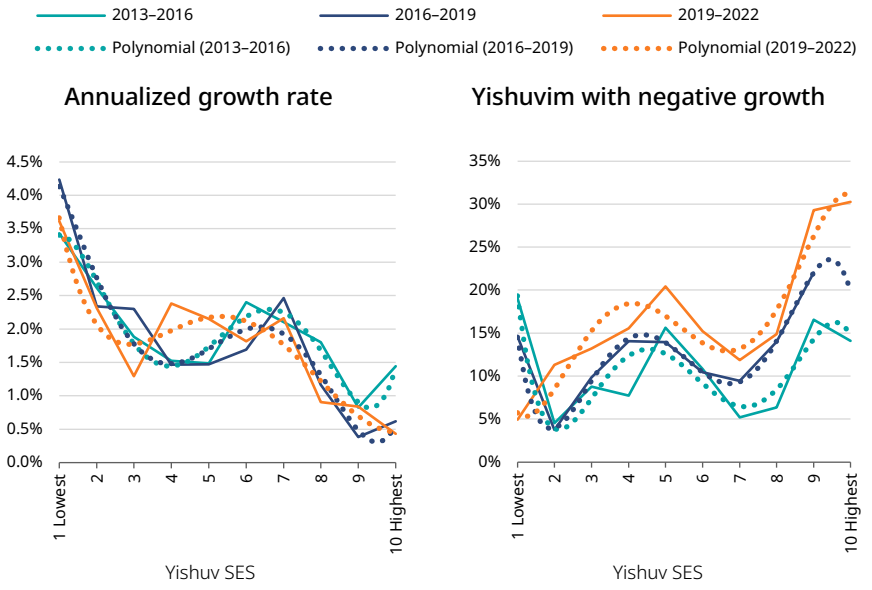
Figure 9 also highlights substantial differences within some of the peripheral nafot — where we have disaggregated those into evacuated and non-evacuated areas. Most notably, while the evacuated yishuvim in the northern section of Akko nafa have consistently been among the worst performing in terms of population loss — more than 40% of the 18 yishuvim in this cluster had negative growth in the 2019–2022 period — yishuvim in the southern section have consistently been among the best performers, with just 8.1% of them losing population in the same period. A similar difference, albeit smaller in magnitude, can be seen in the Tzfat nafa: around 30% of the 17 evacuated yishuvim experienced population loss over the 2013–2022 period, compared to around 12% of the 51 non-evacuated yishuvim. These are important findings since they point to problems that predate the current war. Any serious rebuilding plan in the post-war period needs to also take into account some of the longer-term causes of negative growth in these border zones.

Variation in growth and negative growth by SES

Not surprisingly, variation in growth within Israel is associated with SES. We show this in Figure 9. The left-hand graph looks at the overall growth rate and is the product of three linear regressions, one per three-year period. The right-hand graph is focused on the probability of a yishuv experiencing negative growth and is the product of three logit models, again with discrete models for each three-year period. The graphed lines are the predicted values from

those models net of controls for population at the beginning of each period, nafa, and dominant subpopulation (as graphed in Figure 7). Each also uses population weights to allow for easier generalizability back to the population.[13]

Figure 9. Annualized growth rates and percent of yishuvim with negative growth, by yishuv SES



Notes: Values in the left-hand panel were estimate in a linear regression with controls for population at the beginning of each period, nafa, dominant subpopulation, and population weights. Values in the right-hand panel were estimated in a logit model using the same explanatory variables and nafa fixed effects.

Source: Alex Weinreb, Taub Center | Data: CBS

The general trends in the population growth models are very similar across the three time periods, and they have a distinct bimodal peak. Growth is highest in yishuvim at the lowest levels of SES, lowest in yishuvim with a score of 9 or 10.

13 The models are estimated using fixed effects at the level of nafa and the same analytic weights as described in footnote 7 to account for population size. The values graphed in Figure 9 are the product of the linear and quadratic effect of yishuv-specific SES. Full model results can be seen in Appendix Table 1.

Between these two extremes, growth is relatively low in yishuvim with below average SES. It then peaks again in yishuvim with an SES score of 6 or 7 in the 2013–2019 period and 5 in the 2019–2022 period.

The general trends in negative growth also point to distinct non-linear patterns. Across all three periods, the SES levels with the highest probability of being a negatively growing population are around SES levels 1, 4–5, and 9, with substantial dips between these peaks. Yet the same panel also points to more substantial change over time than in the growth model to the left. This is most notable among the wealthier yishuvim. The percentage of wealthiest yishuvim with a negative growth rate doubles over a seven-year period, reaching around 30% of all yishuvim with SES of 9 or 10.

Growth by age

A final focus in this small survey of variance in growth rates within Israel looks at distinct age-specific patterns of growth between 2015 and 2022, with yishuvim assigned to categories based on the dominant subpopulation, as in Figure 7. These are presented as annualized rates in Table 3.

Table 3. Annualized population growth (%) by selected age groups, 2015–2022

	N	All ages	0–9	25–34	45–59	70+
Non-Haredi Jewish	1,023	2.12	1.55	0.53	2.66	6.11
Haredi	13	3.23	1.98	0.51	5.17	5.79
Mixed	20	1.58	1.33	1.10	1.45	3.62
Muslim non-Bedouin	64	1.55	-0.22	4.26	3.47	4.87
Bedouin	35	3.99	3.53	6.61	6.90	5.57
Druze	16	1.37	-0.62	2.62	3.97	4.96
Christian	7	0.96	-0.52	2.90	2.00	4.65
Total	1,178	2.05	1.40	1.25	2.69	5.54

Notes: The mean growth is weighted by yishuv age-specific population size on December 31, 2015.

Source: Alex Weinreb, Taub Center | Data: CBS

In the population as a whole, the fastest-growing age group is the elderly, defined here as aged 70-plus. Their population grew by around 6% per year in Jewish yishuvim, including Haredi yishuvim, and by almost 5% per year in Arab yishuvim, with little variation across sectors.

In all other age groups, but especially below age 45, there is much greater variation across subpopulations. Among 25–34-year-olds, for example, there is an enormous difference in mean grown rates between Jewish-dominated yishuvim (including Haredi) and those in the Arab sector, irrespective of religion or whether it is Bedouin. The former grew by a mere 0.5% per year between 2015 and 2022. This reflects a cyclical dip in Israel's Jewish population's age structure. It echoes smaller cohorts aged roughly 30 years older (Weinreb, 2020). In contrast, the population of 25–34-year-olds in yishuvim associated with Muslim non-Bedouin, Bedouin, Druze, and Arab Christian majorities grew by 4.3%, 6.6%, 2.6%, and 2.9% per year, respectively. The first two, in particular, are very rapid growth rates — they imply population doubling time of 16.1 and 10.5 years. In other research, we have connected the ongoing rise in murder rates in Israel's Arab population to this rapid growth (Weinreb, 2021).

There are also very substantial differences in growth patterns among 0 to 9-year-olds. Jewish-majority yishuvim continued to grow at 1.6% (non-Haredi) and 2.0% (Haredi) per year across the seven-year period. Meanwhile, two distinct patterns emerged within Arab-majority yishuvim. Across non-Bedouin yishuvim with Arab majorities, the total number of children aged 0 to 9 in 2022 was smaller than the number in 2015. This younger population shrank annually by 0.2%, 0.6%, and 0.5% in Muslim (non-Bedouin), Druze, and Christian-majority yishuvim, respectively. In contrast, it continued to grow at 3.5% per year in Bedouin yishuvim. In terms of children's population, Bedouin yishuvim were the fastest growing group of yishuvim in this period.

These differences in age-specific growth rates have important implications for policy making. For example, they point to the importance of scaling up old-age support across the population as a whole, increasing access to training programs for young adults, investing in housing for the large younger cohorts, but of being much more selective about where new schools and classrooms should be built.

In summary, our analysis confirms that despite Israel's high population growth rates, there is considerable variation in patterns of growth across yishuvim. In fact, a substantial and rising share of Israeli yishuvim — all Jewish or mixed Jewish and Arab — were experiencing population loss in the decade that preceded the Gaza War. Some of the worst affected areas of the country in terms of population loss have also been the most damaged by the war.

A forthcoming publication will shed more light on these trends by focusing on the demographic components of these differences, and of negative growth featured in Figures 8 and 9. That is, how much is due to an excess of deaths over births, and how much to net out-migration.

Conclusions

The past year has been a very difficult one for the State of Israel. But those difficulties have occurred against a backdrop of constant and ongoing demographic change. Here we have documented some of them: the increasing divergence in fertility patterns, with Jews becoming Israel's dominant high-fertility population while also experiencing an initial war-related reduction followed by an apparent war-related resurgence; higher rates of aliya alongside initial signs of rising out-migration; and increasing variation in population growth rates across yishuvim, leading to waning populations in 20% of Israel's yishuvim across the 2019–2022 period, and to distinct age-specific growth patterns across Israel's diverse subpopulations.

Needless to say, each of these changes — and the divisions that they reflect — will also accompany Israel as it confronts the postwar period.

References

English

Adovor, E., Czaika, M., Docquier, F., & Moullan, Y. (2021). Medical brain drain: How many, where and why? ***Journal of Health Economics 76***:102409.

Bental, B., & Shami, L. (2023). ***Migration patterns in mixed cities in Israel: Socioeconomic perspectives***. Taub Center for Social Policy Studies in Israel.

Brennan, N., Langdon, N., Bryce, M., Burns, L., Humphries, N., Knapton, A., & Gale, T. (2023). Drivers and barriers of international migration of doctors to and from the United Kingdom: A scoping review. ***Human Resources for Health 21***:11.

CBS (2023). ***Fertility of Jewish and Other women in Israel, by level of religiosity 1979–2021***. Central Bureau of Statistics.

Dax, T., & Fischer, M. (2017). An alternative policy approach to rural development in regions facing population decline. ***European Planning Studies, 26***(2), 297–315.

Johnson, K. M., & Lichter, D. T. (2019). Rural depopulation: Growth and decline processes over the past century. ***Rural Sociology, 84***(1), 3–27.

Kramer, S., & Tong, Y. (2024). ***The religious composition of the world's migrants***. Pew Research Center.

Kuhlmann, E., Batenburg, R., Groenewegen, P. P., & Larsen, C. (2013). Bringing a European perspective to the health human resources debate: A scoping study. ***Health Policy 110***(1):6–13.

OECD (2020). ***OECD economic surveys: Israel 2020***. OECD.

OECD (2021). ***Health at a glance 2021: OECD indicators***. OECD.

Stroud, O. (2024). Germany's health crisis: Why Europe's biggest economy is fending off a chronic doctor shortage. ***Euronews***.

Tonkin, T. (2024, April 12). ***A third of doctors consider leaving UK***. The British Medical Association.

Volinsky, J. (2024, September 22). Not only rich Israelis are sending money overseas. ***Haaretz***.

Weinreb, A. (2021). ***Youth bulge, violent crime, and shortages in the Israeli Arab marriage market***. Taub Center for Social Policy Studies in Israel.

Zimmermann, K. F. 2014. ***Circular migration***. IZA World of Labor.

Hebrew

Dor, K. (2023, August 1). Senior doctors have left the country: Emergency meeting taking place in the Histadrut. ***Kan — Israel Broadcasting Authority***.

Gamss, N. (2024, July 24). A genius model. I don't need to kill myself for a normal standard of living. ***TheMarker***.

Karmi, R. (2023, June 8). If we don't bring the Israeli scientists back, the economy will falter, Prof. Rivka Carmi. ***Globes***.

Linder, R. (2015, August 3). Israeli doctors abroad: They go for research, and stay for the money. ***TheMarker***.

Shtarkman, R., & Linder, R. (2024, August 9). It is happening now below the radar, and we need to shout: The great exodus of the doctors to abroad. ***TheMarker***.

Weinreb, G. (2024, February 8). More scientists want to leave: The worrying findings of a survey of researchers. ***Globes***.

Appendix

Appendix Table 1. Regression estimates of three-year yishuv population growth, by selected covariates

	(1) Growth 2013–2016	(2) Growth 2016–2019	(3) Growth 2019–2022
Population at the period's beginning	-2.17e-06***	-3.04e-06**	-4.79e-06***
	(1.14e-05)	(0.0148)	(0.0001)
Socioeconomic cluster (SES)	-0.278**	-0.938***	-1.357***
	(0.0289)	(0.00244)	(0.0001)
Socioeconomic cluster (SES) squared	0.000836	0.0984	0.0920
	(0.992)	(0.606)	(0.402)
Dominant population, *Reference group: Non-Haredi Jews*			
Haredi Jews	0.805*	-0.680	-2.980***
	(0.0769)	(0.537)	(3.08e-06)
Mixed	-0.457*	-0.594	-0.924**
	(0.0968)	(0.404)	(0.0243)
Arabs (non-Bedouin)	-0.676**	-1.932***	-3.171***
	(0.0211)	(0.00740)	(-0.0001)
Bedouin	0.816	-0.399	-2.029***
	(0.106)	(0.749)	(0.00392)
Druze	-0.722	-1.380	-2.482***
	(0.102)	(0.209)	(0.000126)
Christians	-0.532	-1.207	-2.175**
	(0.439)	(0.486)	(0.0357)
Nafa, *Reference group: Jerusalem*			
Tzfat	-3.305***	-2.950**	-3.931***
	(1.05e-10)	(0.0218)	(2.27e-07)
Kinneret	-2.401***	-2.750**	-2.978***
	(6.48e-06)	(0.0395)	(0.000157)
Jezreel – Afula	-2.127***	-1.538	-2.517***
	(7.51e-07)	(0.152)	(5.13e-05)
Akko	-2.376***	-1.926**	-2.316***

Appendix Table 1 (continued). Regression estimates of three-year yishuv population growth, by selected covariates

	(1) Growth 2013–2016	(2) Growth 2016–2019	(3) Growth 2019–2022
	(4.57e-10)	(0.0441)	(2.76e-05)
Jezreel – Nazareth	-2.401***	-1.854	-2.340***
	(9.45e-07)	(0.128)	(0.000994)
Golan Heights	-0.962	-2.104	-2.400**
	(0.195)	(0.252)	(0.0264)
Haifa	-2.401***	-1.979**	-2.082***
	-(0.001)	(0.0312)	-(0.001)
Hadera	-1.569***	-0.445	-0.747
	(5.32e-05)	(0.646)	(0.181)
Sharon	-1.530***	-1.688*	-1.980***
	(3.36e-05)	(0.0657)	(0.000211)
Petah Tikva	-1.162***	-0.745	-1.866***
	(0.000981)	(0.396)	(0.000260)
Ramla	-1.737***	-1.655	-1.837***
	(1.63e-05)	(0.107)	(0.00191)
Rehovot	-1.210***	-1.685*	-2.233***
	(0.000620)	(0.0555)	(1.42e-05)
Tel Aviv	-1.571***	-1.333	-0.734
	(4.08e-06)	(0.285)	(0.141)
Ramat Gan	-2.142***	-1.497	-1.598***
	(4.53e-08)	(0.125)	(0.00474)
Holon	-3.198***	-2.911***	-4.085***
	-(0.001)	(0.00206)	-(0.001)
Ashkelon	-2.085***	-2.081**	-3.009***
	(1.46e-09)	(0.0153)	(2.53e-09)
Be'er Sheva	-2.187***	-1.961**	-2.817***
	(2.26e-10)	(0.0226)	(2.16e-08)
Jenin	3.005	1.989	1.663
	(0.288)	(0.763)	(0.654)
Shechem	2.211*	-0.798	-1.470

Appendix Table 1 (continued). Regression estimates of three-year yishuv population growth, by selected covariates

	(1) Growth 2013–2016	(2) Growth 2016–2019	(3) Growth 2019–2022
	(0.0775)	(0.787)	(0.387)
Tulkarem	-0.633	0.0304	-1.178
	(0.316)	(0.984)	(0.188)
Ramallah	-0.860*	-1.413	-2.280***
	(0.0797)	(0.245)	(0.00116)
Jordan Valley (Jericho)	0.703	0.475	-2.322
	(0.652)	(0.899)	(0.278)
Bethlehem	-1.368***	-1.423	-2.997***
	(0.00896)	(0.274)	(7.79e-05)
Hebron	-1.473	-1.669	-2.366
	(0.194)	(0.551)	(0.147)
Constant	4.154***	4.249***	5.340***
	(0.0001)	(3.18e-07)	(0.0001)
Number of yishuvim	1,152	1,148	1,150
R^2	0.206	0.052	0.186

Notes: Growth is measured from January 1 of the opening year until December 31 of the third year. pval is in parentheses.

Significance levels: *p < 0.10; **p < 0.05; ***p < 0.01.

Source: Alex Weinreb, Taub Center | Data: CBS

Executive Summary

Homicide Rates in Israel: Recent Trends and a Crossnational Comparison

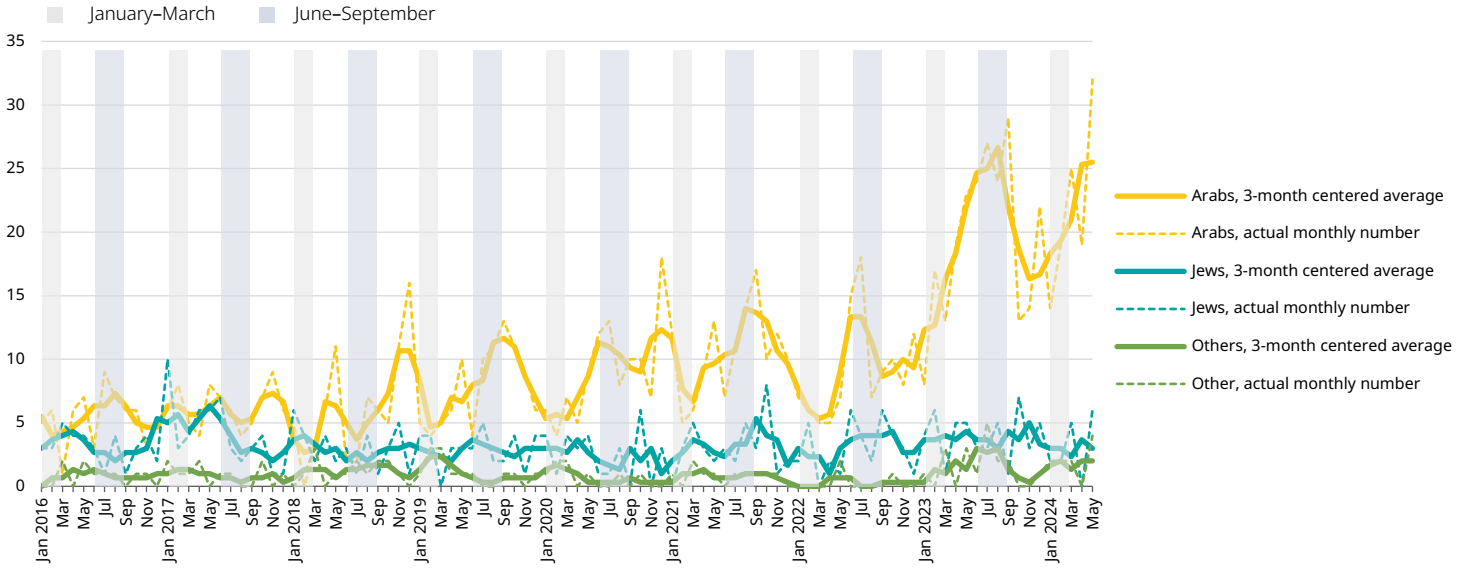
Alex Weinreb, Avi Weiss, Labib Shami, and Nir Kaidar

This study examined homicide cases in Israel (those not resulting from terrorist incidents) by population groups and relative to international data. The findings reveal an unprecedented rise in homicides within the Arab population in Israel. In 2023, there were 233 recorded cases, compared to 109 cases in 2022. In the Jewish population, there was also an increase, with 66 homicide cases reported in 2023 compared to 38 in the previous year. Internationally, the brutal situation within the Arab population places it among the countries with the highest homicide rates among high-income countries.

According to updated data published by the researchers, in May 2024, the number of homicides in the Arab population reached an all-time high. The overall homicide rate between 2022 and 2024 increased by 2.8 times, with 32 people murdered in the Arab community in May 2024 alone.

* Prof. Alex Weinreb, Research Director and Chair, Demography Area, Taub Center for Social Policy Studies in Israel. Prof. Avi Weiss, President, Taub Center; Department of Economics, Bar-Ilan University. Dr. Labib Shami, Senior Researcher, Taub Center; Department of Economics, Western Galilee Academic College and Haifa University. Nir Kaidar, Director General, Taub Center. The research was published in February 2024 and is available on the Taub Center website. For an update from May 2024, click here.

Monthly number of homicides, January 1, 2016 to May 31, 2024, by subpopulation

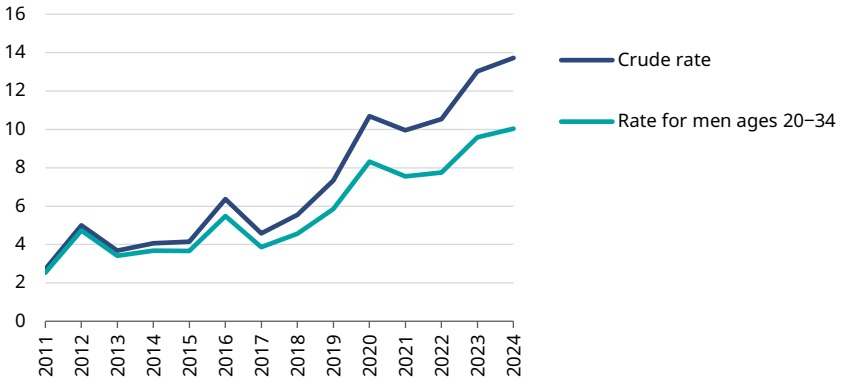


Source: Weinreb et al., Taub Center | Data: Israel Police

Disparities between Jews and Arabs

Until 2015, the ratio of homicide rates between Arabs and Jews in Israel stood at 4:1. In less than a decade, the rate among Arabs has shown an unprecedented increase, reaching a ratio of 14:1 in 2024. Among Jews, from 2011 to 2022, there was a consistent decline in the homicide rate, amounting to a cumulative decrease of approximately 60%. However, among Arabs, both the number and rate of homicides have been steadily increasing since 2016.

Ratio of Arab: Jewish homicide rates



Source: Weinreb et al., Taub Center | Data: CBS

The data indicates that Arabs in Israel face a significantly higher risk of homicide than do Jews. The researchers emphasize that steps can be taken to attempt to reverse this trend, as seen in 2022, when there was a notable reduction in homicide rates partly due to a shift in the policy on addressing violence within the Arab community that year.

HEALTH

The Healthcare System in Israel, 2024: Between Resilience and Continued Challenges

Nadav Davidovitch and Natan Lev

Introduction

Israel's healthcare system is once again stretched to its limits as it demonstrates exceptional resilience. Over a year has passed since the massacre of October 7, 2023, and every segment of the system, both in the community and in the hospitals, remains mobilized to address the impacts of the war alongside the daily challenges of routine operations.

The first part of this chapter explores trends in national healthcare expenditures and examines various challenges facing the healthcare system, such as the workforce crisis in the health professions, shortages of equipment and medical devices, healthcare services accessibility, and risk behaviors. The chapter then delves into the mental health system, which, especially in light of the war, has been receiving notable attention in decision making processes after many years of neglect.

Over the past year, alongside the intense focus on war-related issues, significant decisions have been made on a variety of topics, such as duplicate insurance coverage, changes to the incentive model for internal medicine departments in hospitals, mental health reforms, and a wage agreement with the Israel Medical Association. In assessments conducted to mark a year of war, the healthcare system has received high marks, particularly in comparison to other systems.

* Prof. Nadav Davidovitch, Principal Researcher and Chair, Health Policy Program, Taub Center for Social Policy Studies in Israel; Director, School of Public Health, Ben-Gurion University of the Negev. Natan Lev, Guest Researcher, Taub Center; doctoral student, MD-PhD program, Health Policy and Management, School of Public Health, Ben-Gurion University of the Negev.

However, it is clear — as became evident following the Covid-19 crisis — that in order to better address the challenges ahead, which have only intensified over the past year, appropriate investment in the healthcare system is required.

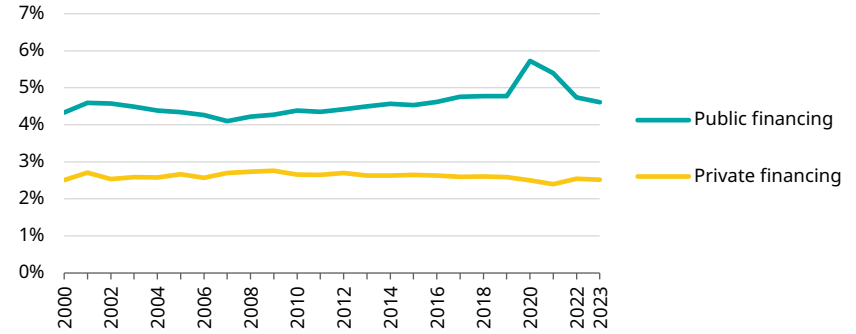
These days, we are witnessing a deep conflict between the Israel Medical Association and the Ministry of Health over the proposed reform in the Economic Arrangements Law. The main elements of the reform pertain to changes in the authority of the Scientific Council of the Israel Medical Association and the proposed changes in the management of the specialization system, against the backdrop of the ongoing human resource crisis in the healthcare system. The continued proper functioning of the healthcare system requires that any change be made through cooperation between all relevant parties with as broad an agreement as possible. In particular, the solution to the human resource crisis must reduce the workforce gaps between the center and the periphery and strengthen specialties that are currently in crisis.

Health expenditure

In 2023, national health expenditure in current prices amounted to NIS 136.3 billion, 7.2% of GDP. In constant prices, this expenditure decreased by 0.9% compared to 2022, with per capita expenditure dropping by 3%. The share of public funding as a percentage of GDP continued the downward trend that began in 2021, and stood at 4.6%, compared to 4.7% in 2022, while the share of private funding remained stable at 2.5% (Figure 1).

In 2023, 34.8% of national health expenditure was funded through private expenditures, compared to 33.9% in 2022. Public expenditure consists of funding from the state budget, which accounted for 40.6% of the national health expenditure, down from 42.3% in 2022, and the health tax, which remained steady at 23.2%. The remainder of the funding, sourced from foreign donations, constituted about 1%, similar to 2022 (CBS, 2023, 2024a). The share of national health expenditure provided by government institutions was 6%, a decrease from 8.4% in 2022. Meanwhile, the health funds and market producers provided 33.5% and 56.1%, respectively, an increase from 32.6% and 54.6% in 2022. The share of health services provided by nonprofit organizations remained approximately 4%, similar to 2022 (CBS, 2023, 2024a).

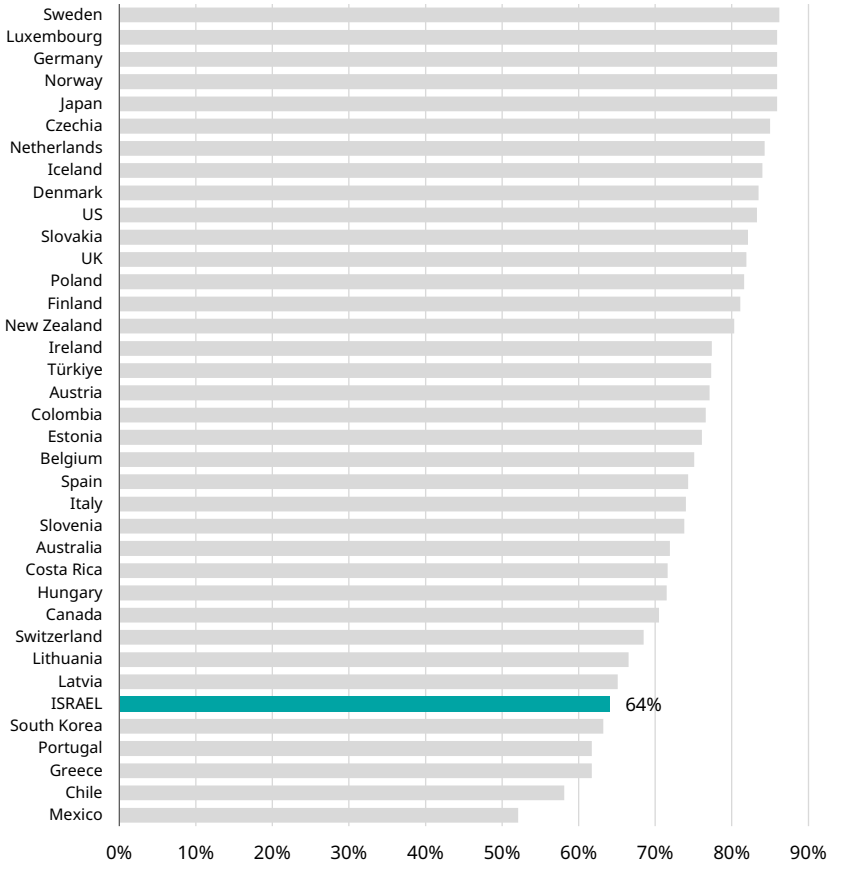
Figure 1. Public and private financing as a percentage of GDP



Source: Nadav Davidovitch and Natan Lev, Taub Center | Data: CBS

In an international comparison, Israel's current per capita health expenditure in purchasing power parity (PPP) terms was lower than in most OECD countries in 2023, standing at $3,803. It is important to note that this comparison is not age-adjusted, and when adjusted for age, a higher per capita national expenditure is obtained. As shown in Figure 2, Israel ranks relatively low among OECD countries in the share of public health expenditure (including the health tax) out of total current national expenditure. Only Mexico, Chile, Greece, Portugal, and South Korea rank lower (CBS, 2024a).

Figure 2. Public expenditure as a percentage of national health expenditure, international comparison, 2023



Source: Nadav Davidovitch and Natan Lev, Taub Center | Data: CBS; OECD

Workforce

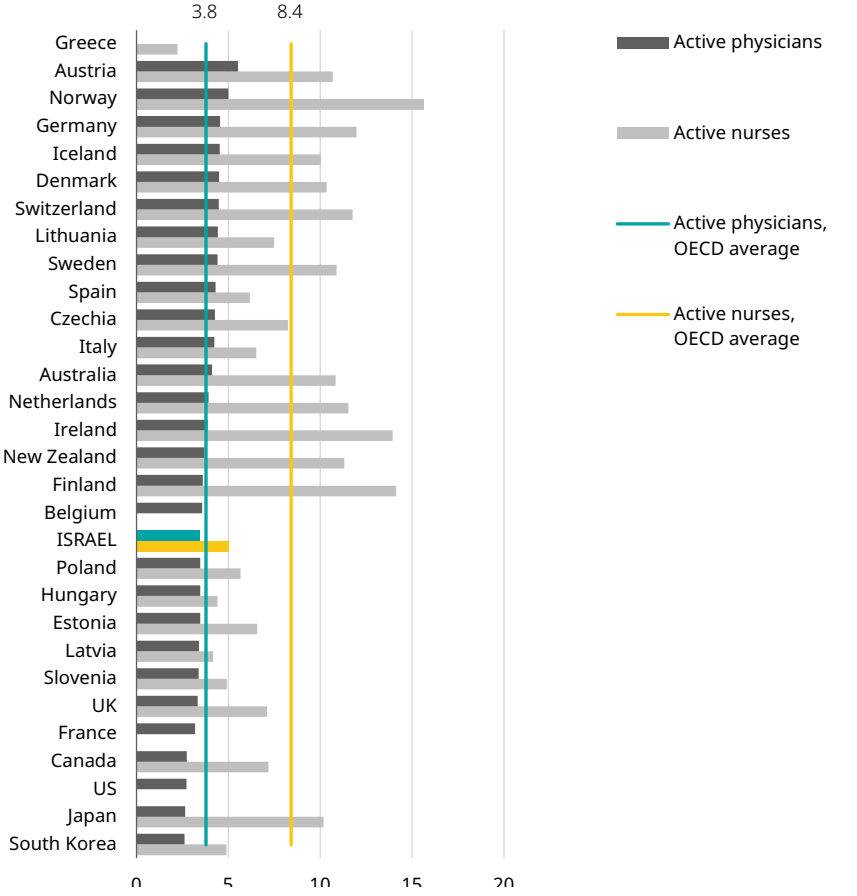
In recent years, Israel's healthcare system has been grappling with a worsening workforce crisis in the health professions, prompting several commendable actions taken to increase the number of professionals in fields such as medicine and nursing. In nursing, there has been an upward trend in the number of licensed practitioners in the public sector aged 67 or younger, from 6 per 1,000 population in 2015 to 6.6 in 2022, ending a decline that began in the late 1990s. The number of licensed medical practitioners aged 67 or younger has also been rising, from 3.26 per 1,000 population in 2017 to 3.47 in 2022 (Ministry of Health, 2023a).

Despite these increases, the number of active physicians and nurses per 1,000 population — 3.47 and 5.04, respectively (Ministry of Health, 2023a; OECD, 2024) — remains below the OECD average, as shown in Figure 3. According to Ministry of Health projections, the physician shortage is expected to worsen to the point where the number of physicians per 1,000 population will drop to 3.02 by 2035, despite the anticipated increase in the number of practitioners (State Ombudsman, 2024a).[1] Certain specialties face particularly severe workforce shortages, such as the field of mental health. Between 2020 and 2022, the average number of psychologists was just 1.4 per 1,000 population, and in 2022 there were only 0.099 psychiatrists aged 67 or younger per 1,000 population (Ministry of Health, 2023a). These workforce shortages significantly impact the healthcare system, potentially increasing public health expenditure due to the decline in care quality, which can lead to more complications and costly treatments, as well as to a greater need for disability benefits (State Ombudsman, 2024a).

1 Several factors contribute to this shortage: population growth driven by both a high fertility rate and increased life expectancy; the retirement of older physicians, with about 25% of doctors in 2021 being over the mandatory retirement age; and the impact of the Yatziv Reform. In 2022, 34% of new medical licenses were granted to graduates of medical schools disqualified by the reform (schools located in Romania, Moldova, Ukraine, Russia, Armenia, Georgia, Syria, Morocco, Azerbaijan, Cuba, Chile, and Grenada). It is important to note that most graduates from universities that will be disqualified starting in 2025 under the Yatziv Reform currently work in the periphery. In 2022, these graduates made up 51% of the medical workforce in the Negev and 63% of the medical workforce in the Galilee. The reform is expected to disproportionately harm healthcare services in periphery areas (State Ombudsman, 2024a).

In response to the workforce shortage, which is expected to worsen over the next decade, special emphasis has been placed on increasing the number of medical students in Israel. Despite the success in expanding enrollment, the number of medical graduates in Israel was only 7.24 per 1,000 population in 2022 — half the OECD average (OECD, 2024). Furthermore, the share of licenses granted to graduates trained in Israel has been declining, and in 2023 stood at 31% compared to 51% in 2005 (Ministry of Health, 2023a; State Ombudsman, 2024).

Figure 3. Active physicians and nurses per 1,000 population, 2021–2023, international comparison



Source: Nadav Davidovitch and Natan Lev, Taub Center | Data: OECD

According to the State Ombudsman July 2024 report on the clinical training of physicians, there are persistent deficiencies in Israel's medical workforce planning. Chief among these is the lack of a professional mechanism for strategic workforce planning to develop a multi-year plan tailored to population needs. There is also a lack of data on medical personnel, particularly concerning specialists in the different fields, and on future workforce needs by specialization and geographic area. Another critical gap in data concerns physicians currently abroad, whether for temporary training or permanent work. The Ministry of Health estimated that in 2022 these physicians numbered 3,700, and currently there is no official plan for their return (State Ombudsman, 2024a). This issue is especially pressing given the war's impact on medical workforce migration and the increasing phenomenon of brain drain. While the war initially saw unprecedented mobilization among healthcare professionals (Greenberg, 2023), complaints at professional conferences have emerged about an opposite trend, including the departure of ten senior psychiatrists from a field already facing severe workforce shortages (Dor, 2024a). A survey conducted in October 2024 by the Israel Medical Association among 135 senior managers in the healthcare system found that 48% reported losing between one and five doctors under their supervision in the past year. According to the survey, 60% of those leaving cited political or security reasons (Dor, 2024b). A separate survey from early 2024, involving over 300 Israeli medical trainees abroad, found that 69% did not feel confident regarding their return to Israel after completing their training (Seluk et al., 2024).

The Ministry of Health continues efforts to increase the number of medical students in Israel. Last year, training programs for foreign students in Israel were canceled, creating 130 additional slots for Israeli students. Incentives have also been provided to universities and hospitals aiming to expand student enrollment. However, other actions — such as expanding community clinical training sites, updating teaching methods, and promoting excellence programs in the periphery — have only been partially implemented. Additional measures, such as utilizing clinical training sites in the afternoon and abolishing the exclusive affiliation of hospitals with specific faculties, have not been carried out at all (State Ombudsman, 2024a). Another step to address the anticipated shortage has been the development of health professions that can support physicians and reduce workload, such as the physician associate profession.

Although this role was approved in July 2023, the training curriculum has yet to be finalized. Training is currently provided through Ministry of Health professional courses, but it will soon transition to a master's program at medical schools. While this shift aims to ensure a higher training standard, it may disadvantage current physician associates who entered the field before the new criteria were established.[2]

An additional important advancement concerning the medical workforce has been the signing of a new wage agreement for physicians, the first in 13 years. Measures included in the agreement include a 9.5% salary increase for all physicians, the option to negotiate additional raises after one year, incentives to improve medical services, and salary increases for fields designated as national priorities, such as mental health, rehabilitation, and forensic medicine — fields that were already in crisis and have experienced a worsening since the start of the war. Other measures include incentives for specialists to ensure that senior physicians are present in emergency departments at all times of the day and night. However, certain provisions in the agreement remain controversial, such as allowing psychiatry residents to perform additional shortened on-call shifts in all hospitals and in clinics — a step that aims to reduce wait times in the field but raises concerns about resident burnout and potential disruption to the recent effort to shorten on-call shift hours. Additionally, some argue that the agreed salary increase is insufficient and disproportionately benefits senior physicians, whose salaries are already relatively high.[3]

Hospital beds in general hospitals

The number of general hospital beds (excluding psychiatric hospitalization beds) per 1,000 population continues on its downward trend, which began in the 1990s. At the end of 2023, this number was 1.72 beds per 1,000 population, lower than the OECD average of 2.3 (Ministry of Health, 2024a).[4] In fact, only the number of geriatric hospitalization beds per 1,000 population has shown an upward trend in recent years. The decline in the number of general

2 See the DoctorsOnly website, A Demand to Reconsider the Admission Criteria for Physician Associate Studies, September 19, 2024.

3 See the Ministry of Health website, The Israel Medical Association, the Ministry of Health, and Clalit Sign a New Collective Agreement for Physicians.

4 The average in 2023 or the most current year with available data.

hospitalization beds per 1,000 population has occurred despite an absolute increase in the number of beds. In 2023, 69 general hospitalization beds were added, compared to 461 beds in 2022. As noted in previous reports, these figures reflect the ongoing shift in the focus of care from hospitals to the community.

As part of the hospitalization bed development plan for 2023–2028, a significant addition of rehabilitation and psychiatric hospitalization beds is planned, particularly in response to increased needs following the war. This addition is expected to reverse the prevailing trend. At the end of 2023, the number of psychiatric hospitalization beds slightly decreased, from 3,570 at the end of 2022 to 3,560, while the number of rehabilitation hospitalization beds slightly increased, from 957 at the end of 2022 to 1,001 (Ministry of Health, 2024a). The occupancy rate in general hospitalization continues to rise after the decline observed during the Covid-19 period. In 2022, it was 88.7%, the highest occupancy rate among OECD countries measured that year (OECD, 2024). Another challenge related to hospitalization beds is their unequal geographic distribution. In the Southern and Northern Districts, the number of beds per 1,000 population in 2022 was below the national average (2.56), at 2.04 and 1.96 beds per 1,000 population, respectively. In contrast, the numbers in the Tel Aviv and Haifa Districts were significantly higher than the average, at 3.42 and 3.7 beds per 1,000 population, respectively (Ministry of Health, 2024b).

Imaging devices in the healthcare system

According to the State Ombudsman report published in May 2024, Israel has 60 MRI machines, 93 CT machines, and 20 PET-CT machines. These numbers do not align with the population size or the demand for diagnostic tests. In an international comparison, the number of MRI and CT machines in Israel — 6.6 and 9.8 per million population, respectively — is lower than in the 13 OECD countries surveyed. The increasing demand for tests and the limited number of devices result in imaging machines being operated around the clock, forcing patients to endure long wait times for appointments and to undergo tests during late-night hours. The use of these machines is restricted by the Public Health Regulations 1994 (Special Medical Devices), which were designed to limit the demand for expensive tests by controlling the supply of devices. However, the approval process for operating new machines is lengthy and cumbersome,

leaving many districts unable to meet the established per capita standards. As a result, patients face unreasonably long wait times. This issue is further exacerbated by a shortage of radiologists, leading to prolonged waiting periods for test results and diagnoses. Disparities also exist among health funds, with waiting times for MRI scans being particularly long in Maccabi Healthcare Services, while Clalit Health Services offers the shortest waiting times (State Ombudsman, 2024b).

Narrowing health gaps

In response to the need for long-term planning in the healthcare system, the Ministry of Health has developed a system for forecasting population growth. This system enables the identification of anticipated needs in different regions across the country. By the end of the decade, significant population growth is expected in the southern region, particularly among youth and the very young. In contrast, in the northern region, a significant increase is projected in the relative proportion of residents aged 65 and older. In the central region, a mixed trend is observed: an increase in the young population in Jerusalem and an even greater rise in the elderly population in the Tel Aviv and Rishon LeZion areas. Given the differing healthcare needs arising from the varying age compositions of the population, it is essential to plan the distribution of healthcare infrastructure to match the future needs of each region, thereby reducing existing disparities in service distribution.

In the Jerusalem, Southern, and Judea and Samaria Districts, the number of healthcare professionals per 1,000 population is below the national average (14.5). In contrast, the Northern, Haifa, Central, and Tel Aviv Districts are above average, with Tel Aviv notably high at 18.5 per 1,000 population. Over the past decade, there has been significant growth in the healthcare workforce in the Northern and Jerusalem Districts. However, in the Southern District, where the largest gap exists, growth has been minimal (Ministry of Health, 2024b). The grant program for medical residents in periphery hospitals and medical specialties in crisis — introduced as part of the 2011 physicians' agreement and implemented during 2011–2014 and again during 2015–2019 — aimed to address this gap by attracting hundreds of medical residents to periphery regions. However, the program's effectiveness remains unclear, with insufficient data and research on its impact, and with professional stakeholders divided on its influence and the feasibility of continuing its implementation (Blank, 2024).

Several other programs aim to reduce disparities among different populations in the country. The comprehensive report of the Decade Committee for Reducing Health Disparities, which provides updated recommendations for broad systemic action as an update to the strategic plan for reducing health inequality (2017–2020), has been published and approved by the Director-General of the Ministry of Health. The committee members continue to meet in order to monitor and review the implementation of the plan. Over the past three years, the Ministry of Health has been working to promote health units within the regional clusters, with health promotion initiatives and the development of regional plans underway in seven of the clusters, addressing the unique needs of each area (Ministry of Health, 2024b). In the past two years, a systemic program to reduce disparities and inequality in Arab society has been operating. This program includes the establishment of health units in approximately 24 Arab local authorities, the creation of health-promoting infrastructure in Druze and Circassian localities, the advancement of health research in Arab society, and the development of tailored programs for the Arab community (Ministry of Health, 2024c).

The reform to eliminate duplication of healthcare insurances

In June 2024, an automatic transfer of private health insurance policy holders was implemented, from the First Shekel policy to the Supplementary Shaban (Supplementary Health Insurance) policy. This move was part of a reform aimed at preventing duplicate insurance coverage, as most policy holders in the First Shekel policy already received equivalent coverage for many medical situations through the Shaban plan. The main advantage of this reform is the prevention of double payments for similar insurance coverage. Additionally, the Supplementary Shaban policy costs approximately 30% less than the First Shekel policy.[5] However, despite these benefits, the reform is expected to increase the premiums of First Shekel policies by about 45% for those who choose to remain in them, and to raise the premium of Supplementary Shaban policies by about 2.3%. As revealed during a Knesset Health Committee discussion in May 2024, most of the price increase will affect policy holders aged 66 and older.

5 See the DoctorsOnly website, Reform in Eliminating Duplication of Insurances in Healthcare Insurance.

Opponents of the reform expressed concerns about its potential impact on the employment of surgeons, its potential to cause an increase in the number of privately operating doctors, and the unpreparedness of the health funds for this transition, particularly due to the strain caused by the war and insufficient budgets.[6] To address these concerns, it is essential to strengthen the public healthcare system alongside the implementation of the reform. Moreover, efforts must be made to provide accessible information to the public, as most people do not fully understand the implications of switching between policies.

Accessibility to healthcare services

Utilization of community healthcare services is one of the indicators of the quality of a healthcare system, reflecting, among other factors, the accessibility of services to the general population. In the 2022 report of the National Program for Quality Indicators in Community Healthcare in Israel (Ministry of Health, 2023b), performance metrics for various screening tests in the community were published. These metrics highlight the utilization of services offered to health fund members across different regions, populations, and age groups. The comparison is made to 2019, allowing for an examination of the situation before and after the Covid-19 pandemic. BMI is a critical measure for monitoring excess weight and obesity, enabling the implementation of health promotion measures and early interventions to prevent disease. An analysis of BMI screening rates from 2019 to 2022 shows a continuation of the decline that began with the onset of the pandemic. The BMI screening rate among 7-year-old children dropped from 78.9% to 66.4%, and among 14–15-year-olds, from 78.7% to 69.3%. Among adults aged 20–64, the screening rate in 2022 stood at 83.7%, a decrease of 5.5% from the rate in 2019. The screening rates rise with age and are notably higher among women.

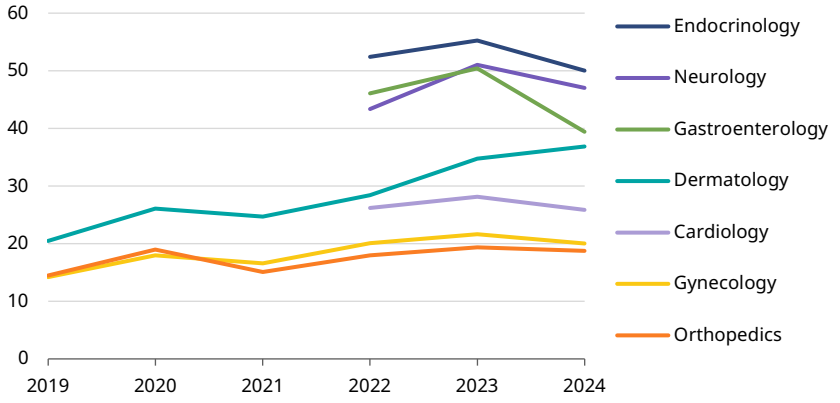
A similar downward trend was observed in smoking documentation and blood pressure measurement. Smoking documentation rates dropped from 89.3% to 79.7% among individuals aged 16–74. Blood pressure measurement rates fell from 92.5% to 87.8% among those aged 20–54, and from 80.8% to 72% among those aged 55–74. Among the latter group, documentation rates were higher for older individuals and especially among those from lower socioeconomic

6 See the DoctorsOnly website, Reforms in Health Insurance Will Increase Its Cost by 45%, May 21, 2024.

backgrounds. Among individuals aged 65 and older, there was a decline in the rate of osteoporosis treatment after hip fractures, from 32.8% to 29.7%, with higher treatment rates observed among women. Among infants, the rate of hemoglobin screening dropped from 88.5% to 83.6%. In early detection tests for breast and colorectal cancer, no improvements were observed in screening rates or in reducing disparities between populations. However, there was an increase in cervical cancer screening rates, from 52% to 55% (Ministry of Health, 2023b).

Another indicator of healthcare accessibility is waiting times for specialist consultations in the community. As shown in Figure 4, the average waiting times increased in most specialties up until 2023, with a slight decrease recorded between 2023 and 2024. A notable exception is dermatology, where waiting times continued to rise — from 34.75 days in Q1-2023 to 36.87 days in Q1-2024. As seen in Figure 4, the specialties with the longest waiting times were endocrinology and neurology (approximately 50 days), compared to orthopedics and gynecology, which had the shortest waiting times (around 20 days).

Figure 4. National average waiting times for specialist consultations in the community



Note: For endocrinology, gastroenterology, neurology, and cardiology, data were only available starting in 2022.

Source: Nadav Davidovitch and Natan Lev, Taub Center | Data: Ministry of Health

A significant step recently taken (July 2024) to improve healthcare services is the approval of the Medical Information Mobility Law, 2024. The purpose of the law is to enable the rapid transfer of medical information between different organizations within the healthcare system, subject to the patient's consent. The approval of this law is a welcome measure to enhance care continuity and treatment consistency among various providers. Additionally, this law can reduce duplicate tests and treatments, optimizing the use of system resources.

Health status snapshot

Compared to OECD countries, Israel continues to rank relatively high in major quality-of-life indicators, but there are significant disparities between population groups and geographic regions. In 2022, Israel's average life expectancy returned to pre-Covid-19 levels, reaching 82.8 years, an increase of one year compared to 2012. Life expectancy at birth has risen since 2017, standing at 84.9 years for women and 80.9 years for men in 2022, largely due to reductions in infant mortality and life-threatening injury during early childhood. Life expectancy at age 65 has also risen since 2017, reaching 22.1 years for women and 19.4 years for men in 2022. Internationally, life expectancy at birth in Israel is higher than the OECD average and the gap has increased over the years. Since 2012, life expectancy in Israel has increased by 9.5 months, compared to an average increase of 7 months in the OECD.

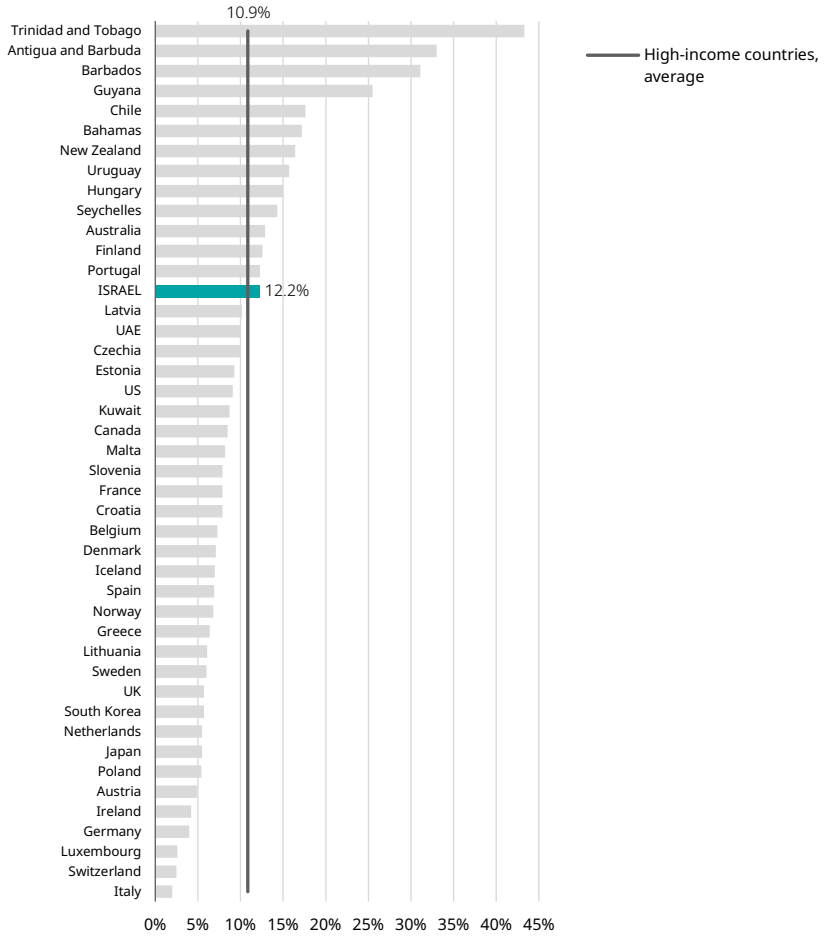
Despite Israel's strong performance in these indicators, there are notable disparities among different population groups and geographic areas. In 2022, life expectancy at birth in the Arab population was 79.8 years, compared to 83.3 years among Jews and Others. During the Covid-19 pandemic, all groups experienced a decline in life expectancy, with the Arab community suffering the most severe impact. Mortality rates per 1,000 population reflect a similar trend, with the gap between groups increasing from 0.8 in 2020 to 1.4 in 2021. By 2022, the gap had returned to pre-pandemic levels, yet a significant disparity remained: 5.6 deaths per 1,000 people in the Arab population versus 4.7 among Jews and others. Geographically, life expectancy in the southern and northern regions is below the national average across all population groups. These disparities are primarily due to differences in income levels but are also influenced by factors such as lifestyle, access to healthcare infrastructure, and awareness of healthcare services (Ministry of Health, 2024b).

Israel ranks relatively well in infant mortality rates per 1,000 live births. Over the past decade, the overall infant mortality rate in Israel has dropped significantly, by approximately 22%. In 2021, the rate in Israel was 2.8, compared to an OECD average of 3.9, and this gap has not changed since 2012. The infant mortality rate, which declined to 2.4 in 2020, stabilized in 2022 at the same rate as in 2021. In 2022, there was a stark difference between the Arab population and other populations in this measure — 5.1 compared to 2.1, respectively. This disparity is likely attributable to unique characteristics of the Arab community, such as higher rates of consanguineous marriages, lower rates of genetic testing, and limited access to maternal and child healthcare infrastructure. Geographically, the infant mortality rate is particularly high in the southern region, where the likelihood of death during the first year of life is 2.8 times higher than in the central region (Ministry of Health, 2024b).

Food insecurity is a phenomenon associated with various health problems and poses a significant challenge even in developed countries. In Israel, the prevalence of food insecurity exceeds the average. According to the FIES index Food Insecurity Experience Scale) of the Food and Agriculture Organization (FAO), between 2021 and 2023, the portion of individuals experiencing moderate or severe food insecurity in high-income countries averaged 10.9%. In Israel, this was approximately 12.2% during the same period (Figure 5).[7]

7 See the Food and Agriculture Organization of the United Nation website.

Figure 5. Share of individuals in moderate and severe food insecurity in high-income countries, international comparison, 2021–2023



Source: Nadav Davidovitch and Natan Lev, Taub Center | Data: FAO

Lifestyle and risk behaviors

The snapshot concerning lifestyle is composed of prevalent behaviors within the population and health metrics that reflect the impact of these behaviors. Known behaviors influencing health include smoking, dietary habits, and physical activity, with key indicators such as weight and chronic diseases like diabetes and heart disease serving as markers of their impact.

Excess weight and obesity, as reflected by the BMI index, are lifestyle-related risk factors for morbidity. Between 2020 and 2022, an increase in obesity prevalence among 7-year-old children was observed after a decline during 2015–2019. Among 14–15-year-olds, obesity rates have been steadily increasing since 2018. For adults aged 20–64, excess weight rates have remained stable since 2019, but obesity rates have shown a moderate increase, particularly among women from lower socioeconomic groups (Ministry of Health, 2023b).

Healthy eating habits are essential for maintaining proper weight and good health. According to the 2023 Social Survey by Israel's Central Bureau of Statistics (CBS), there is significant room for improvement in eating habits among individuals aged 20 and older. Although sugary drink consumption has decreased since 2011, 21% of the population still consume at least three glasses of sugary beverages daily. Additionally, 54% eat sweet snacks at least twice a week, and 30% consume salty snacks with the same frequency. Less than 32% eat fish or whole grain foods twice a week, and fewer than 37% consume two portions of fruit and three portions of vegetables daily. However, 62% eat legumes at least twice a week (CBS, 2024b).

Physical activity is another key factor in maintaining weight and a healthy lifestyle. According to the Social Survey, more than half of individuals aged 20 and older engage in regular physical activity, and those who are physically active report higher quality-of-life indices. Survey respondents with a healthy weight exercised more frequently than those with abnormal weight (CBS, 2024c). Establishing regular physical activity as a long-term habit is important, especially from a young age. However, a 2023 international survey on risk behaviors among Israeli youth (HBSC–WHO) found that Israeli students rank near the bottom in daily physical activity. Only 11% engage in at least one hour of daily physical activity, and 17% do not engage in any physical activity at all (Harel-Fish et al., 2023).

Smoking is another significant behavioral risk factor contributing to chronic diseases and overall health decline. Between 2019 and 2022, smoking rates among individuals aged 16–74 increased by 1.6%, especially among men from the lowest socioeconomic strata. Among women, higher smoking rates were observed in the upper-middle socioeconomic group, with the lowest rates in the lowest socioeconomic group (Ministry of Health, 2023b). Data from the 2023 Social Survey indicate that 25% of the population over age 20 smokes, while 25% are frequently exposed to passive smoking (CBS, 2024d).

Lifestyle contributes significantly to the development of chronic diseases. Diabetes, a common chronic disease, is closely linked to lifestyle and can lead to complications and comorbidities. In 2022, the prevalence of diabetes increased by 0.4% from 2021, reaching 10.2%, with rates rising with age. However, there was a significant increase in individuals with well-managed glycated hemoglobin (HbA1c) levels, from 70.8% in 2018 to 77% in 2022, alongside a substantial decline in poorly managed HbA1c levels. These rates improved with age but were notably lower in lower socioeconomic groups (Ministry of Health, 2023b).

Heart disease is another chronic condition influenced by lifestyle, with cholesterol levels serving as a critical risk indicator. Since 2018, the rate of individuals with balanced cholesterol levels among those aged 35–74 has risen by 1.3%, reaching 85.4% in 2022. Younger individuals and those in higher socioeconomic groups showed better balance rates (Ministry of Health, 2023b).

Lifestyle significantly impacts mental health, and especially habits developed at a young age. According to the 2023 risk behavior survey of Israeli youth, 57% of students reported experiencing at least two symptoms of mental health distress more than once a week during the last half of the 2022–2023 school year (pre-war), with higher rates among girls. Additionally, 30% reported daily mental health symptoms, 64% experienced physical symptoms at least weekly, 20% reported high anxiety levels, and 31% reported poor mental well-being (Harel-Fish et al., 2023).

The October 7 war had a profound effect on lifestyle and public health in Israel. A study on children's physical activity habits found a decline in those exercising at least twice a week, from 60% to 50%, and an increase in children aged 5–8 engaging in over three hours of screen time daily, from 27.2% to 35.7%.[8]

8 See the Education Faculty, Bar-Ilan University website, Research Study: A Steep Decline in the Amount of Physical Exercise Among Children in Israel.

A survey of young adults aged 18–34 found that 17% reported worsening physical health due to the war, particularly among women and individuals with pre-existing disabilities. Mental health outcomes were even more dire: 50% reported worsening mental health, 71% frequently felt stress or anxiety, and 61% experienced depression, especially among women, Arab youth, and individuals with pre-existing disabilities (Ben Simon & Konstantinov, 2024). CBS data show an 11% increase in reported insomnia after October 7, rising from 31% to 42%. A Maccabi Healthcare Services survey highlighted deterioration in self-perceived health, worsening chronic disease management, declining adherence to healthy lifestyles, weight gain, and a rise in smoking relapse rates.[9] Other studies reported significant declines in mental health, with symptoms of depression, post-traumatic stress, and fear. It is estimated that hundreds of thousands of individuals may develop varying degrees of mental health disorders as a result of the war (Director of Security of the Defense Establishment, 2024).

The healthcare system in the aftermath of the October 7, 2023, War

Since the outbreak of the war, the healthcare system has faced significant challenges in delivering healthcare services and responding to both routine needs and those that arose from the emergency situation. The situation is particularly challenging given that the system entered the war underfunded, struggling with operational difficulties, especially in critical areas such as mental health, rehabilitation, and public health. The war has also exacerbated pre-existing health disparities, with the most disproportionate impacts felt in geographic periphery areas. Despite this complexity, the healthcare system demonstrated exceptional capability in addressing emerging needs through situational learning, resource optimization, and collaboration among stakeholders, as detailed in previous publications (Taub Center, 2023).

As part of the lessons learned from the war, the Ministry of Health established an inquiry committee to evaluate the healthcare system's performance on October 7, 2023. The committee's findings highlight that professionals on the ground did their utmost to provide swift treatment to a large number of casualties —

9 See the DoctorsOnly website, Half a Year of War: A Decline in the Health Status of 30% of the Public, April 18, 2024.

far exceeding any scenario they had prepared for. However, challenges were noted in the management of medical evacuations, with a prominent lack of a coordinating and integrating authority.[10]

The war exacted a heavy toll on both the civilian population and the security forces. Within a year of its onset, 885 civilians were killed, including 53 children. More than 70,000 victims of hostilities received assistance from the National Insurance Institute, and close to 13,000 applied for permanent disability benefits, the vast majority of them for mental health reasons. The economic cost was also substantial: over NIS 370 million was paid to victims with recognized disabilities, more than NIS 250 million was allocated for rehabilitation, and over NIS 1.2 billion was spent on medical care.[11] Additionally, deterioration in the health of populations particularly affected by the war was observed. A survey conducted among Maccabi Healthcare Service members revealed that approximately 80% of the family members of hostages reported a decline in their perceived health status, with significant weight loss and increased use of antidepressants and sleeping pills.[12] Evacuees also reported health declines. Research by the Briya Fund revealed that approximately 30% of evacuated women reported poor physical health and 60% reported mental health impairments, compared to 20% and 50%, respectively, in the general population.[13]

The population living in conflict zones suffered severe consequences. A study conducted among Clalit Health Service members reported a 200% increase in the consumption of anti-anxiety medications among residents of the Gaza border area, compared to a 50% increase in the general population.[14]

10 See the DoctorsOnly website, A Lack of an All-Encompassing Picture on October 7th Harmed Treatment Management, September 3, 2024.

11 See the National Insurance Institute website, National Insurance Institute Data Marking One Year of the Iron Swords War.

12 See the DoctorsOnly website, A Decline in the Mental and Physical Health of Family Members of Hostages, February 26, 2024.

13 See the DoctorsOnly website, Since the War: A Decline in the Health of Women in Israel, September 11, 2024.

14 See the DoctorsOnly website, The Impact of the War: A Sharp Rise in Consumption of Anti-Anxiety Medications and Narcotic Pain Medication, September 9, 2024.

Among the security forces, from the outbreak of the war until October 7, 2024, 726 soldiers were killed, and 4,576 were hospitalized with combat-related injuries.[15] Additionally, approximately 15,000 soldiers were classified as stress casualties, having developed symptoms following exposure to traumatic events, with 18% of them removed from combat duty.[16] Since the start of the war, about 1,000 newly injured individuals have been admitted monthly to the Rehabilitation Department of the Ministry of Defense, most of them reservists. It is estimated that by the end of 2024, their total number will reach approximately 20,000, with about 40% exhibiting psychological symptoms.[17]

To address these widespread impacts, there is a critical need to develop the mental health infrastructure, which has suffered from neglect in recent years, and has led to long waiting times and severe workforce shortages, as noted earlier. It is estimated that over 300,000 people will require mental health treatment following the war. Without treatment, the prevalence of post-traumatic stress disorder (PTSD) is expected to reach up to 40% among first-circle victims and about 10% among vulnerable populations, such as reservists, evacuees, individuals with prior mental health conditions, and families of hostages (Ministry of Health, 2024d). In response to these projections, the 2024 budget includes an increase of NIS 1.4 billion over the next two years for mental health services. The objectives of this initiative are to address shortages of psychologists and psychiatrists in the public sector through grants of hundreds of thousands of shekels for psychiatry residents, to strengthen psychiatric hospitals, and enhance community-based mental health services, including establishing the role of community-based mental health first responders.[18] As part of this effort, the Ministry of Health launched the national program A Place for the Soul, which aims to bolster community mental health services, expand the activities of resilience centers, improve working conditions for mental health professionals, and broaden training programs, with an emphasis on rehabilitation services. As part of this program, NIS 1 billion was allocated to health funds for strengthening community services in 2024–2025,

15 See the IDF website, IDF casualties of the current war.

16 See the IDF website, Mental Health Division.

17 See the Ministry of Defense website, The Rehabilitation Division for Individuals with Mental Health Injuries and Trauma Survivors.

18 See the Ministry of Health website, Within the 2024 Budget Agreement: A National Program for Mental Health, Rehabilitation, Protection, Cybersecurity, and Forensic Medicine.

NIS 400 million for improving infrastructure in psychiatric hospitals, NIS 115 million in 2024 for bolstering resilience centers, an additional NIS 30 million for scholarships for psychology residents, and NIS 5 million for mental health emergency and rescue services (Ministry of Health, 2024d).

Another response to the need for improved mental health services, which is gaining traction both in Israel and globally, is the development of artificial intelligence-based tools. These tools aim to promote resilience, provide primary mental health support, and assist in the diagnosis and treatment of mental health issues. While these solutions have immense potential to improve mental health care and alleviate the burden on professionals, they also come with risks that require a watchful (human) eye in their development and integration into practice.

The war has also had a significant impact on public health, including a decline in vaccination rates and an increase in outbreaks of infectious diseases. A particularly concerning emergency is the outbreak of the polio virus in the Gaza Strip due to the war's impact on sanitary conditions and access to vaccinations in the area. Beyond the immediate threat to Gaza's residents, this outbreak poses a risk to Israeli citizens and necessitates strengthened regional cooperation for vaccination campaigns and clinical and epidemiological monitoring.[19] This situation underscores the importance of learning from the experiences gained during the Covid-19 pandemic as part of preparations for future pandemics. This perspective is reflected in several statements issued by the Association of Schools of Public Health in the European Region (ASPHER, 2024; Lombatti et al., 2024).

19 See DoctorsOnly website, Public Health Experts: Real Fears of a Polio Outbreak Spreading From Gaza to Israel, August 20, 2024.

Summary

The healthcare system continues to face longstanding challenges, such as budget erosion, workforce shortages, and other ongoing crises. From a macroeconomic perspective, the 2025 budget does not bring promising news. However, areas that have long been neglected, such as mental health and rehabilitation services, are now receiving considerable attention and budget increases, though still insufficient. In the technological sphere, the artificial intelligence revolution and rapid technological advancements present us with significant opportunities, alongside the challenge to integrate them wisely into routine operations and harness them to reduce disparities and achieve continuous improvement for all stakeholders in the system, with a focus on at-risk populations. Finally, rebuilding the South and North represents a tremendous challenge but also an exceptional opportunity to ***build back better***. In order to succeed in all these efforts, though, clear policies and careful monitoring of proper implementation are essential.

References

English

ASPHER (2024). *The pandemic agreement: A springboard for urgent progress or a safety net for basic commitments?* Association of Schools of Public Health in the European Region.

Ben Simon, B. & Konstantinov, V. (2024). *The effects of the Israel-Hamas War on young adults in Israel. Survey findings*. Myers-JDC-Brookdale.

CBS (2023). Media Release (2023, July 20). *In 2022, the national expenditure on health — 7.6% of GDP*. Central Bureau of Statistics.

CBS (2024a). Media Release (2024, August 20). *National expenditure on health in 2023*. Central Bureau of Statistics.

Lombatti, S., Magid, A., Davidovitch, N., Middleton, J., Sheek-Hussein, M., Lopes, H., Skhvitaridze, N., Agha, H., Lopez-Acuña, D., Martínez Olmos, J., Bauernfeind, A., Prikazsky, V., Vesela, N., Petrakova, A., Privitera, G. P., Naboulet, J. P., Leighton, L., Otok, R., & Reid, J. (2024). The COVID-19 pandemic as a public health teacher — The lessons we must learn. ***Public Health Reviews, 45***, 1607232.

Ministry of Health (2023a). *Personnel in the health professions 2022*. Ministry of Health. (English summary)

OECD (2024). *OECD health statistics 2024*. OECD.

Seluk, L., Weltsch, D., Segal, G., & Gilboa, M. (2024). *"Pull-Back" insights. Results of a survey of 297 Israeli physicians during and after fellowship on their motivations for returning home*. (Preprint).

Taub Center (2023). The October 7, 2023 War and its impact on Israel's society and economy. In A. Weiss (Ed.), ***State of the nation report: Society, economy and policy in Israel 2023*** (pp. 21–72). Taub Center for Social Policy Studies in Israel.

Hebrew

Blank, R. (2024). *The effectiveness of the grant program to encourage the work and specialization of doctors in the periphery, 2011–2019*. Knesset, Research and Information Center.

CBS (2024b). Media Release (2024, August 8). *Selected data on health and way of life, from the 2023 Social Survey: Nutrition and eating habits*. Central Bureau of Statistics.

CBS (2024c). Media Release (2024, August 22). *Selected data on physical exercise, from the 2023 Social Survey*. Central Bureau of Statistics.

CBS (2024d). Media Release (2024, September 9). *Selected data on smoking, from the 2023 Social Survey*. Central Bureau of Statistics.

CBS (2024e). Media Release (2024, October 7). *Selected data on sleep quality, from the 2023 Social Survey*. Central Bureau of Statistics.

Director of Security of the Defense Establishment (2024). *Mental health: The post-pandemic epidemic*. The 22nd Dead Sea Conference. The Israel National Institute for Health Policy Research.

Dor, K. (2024a, August 20). "Because of the political situation:" Ten senior psychiatrists have left the country. *Kan — Israel Broadcasting Authority*.

Dor, K. (2024b, October 30). Worrying statistics: How many physicians have left the country in the past year? *Kan — Israel Broadcasting Authority*.

Greenberg, N (2023). *Preliminary information on medical first responders in the Iron Swords War*. Knesset, Research and Information Center.

Harel-Fisch, Y., Ben-Meir, L., Manor, M., Tessler, R., & Walsh, S. (2023). *Adolescents in Israel: Health, emotional and social welfare and risky behavioral patterns among adolescents in Israel*. Ministry of Health, Ministry of Education, and Bar-Ilan University.

Ministry of Health (2023b). *The National Program for Quality Indicators for community physicians in Israel*. Ministry of Health.

Ministry of Health (2024a). *Hospitalization beds and other licensed units — December 2023*. Ministry of Health.

Ministry of Health (2024b). *Coping with health inequalities, 2022*. Ministry of Health.

Ministry of Health (2024c). *The system-wide health program to deal with narrowing inequalities in health in the Arab society*. Ministry of Health.

Ministry of Health (2024d). *A place in the soul — accessible and appropriate public mental healthcare (The National Program for Mental Health)*. Ministry of Health.

State Ombudsman (2024a). *Regulation of clinical training of physicians between the healthcare system and universities — follow-up report*. The State Ombudsman of Israel.

State Ombudsman (2024b). *Advanced imaging tests — follow-up report*. The State Ombudsman of Israel.

Executive Summary

Long-Term Care Insurance in Israel

Nir Kaidar, Nadav Davidovitch, and Avi Weiss

This study presents data on the long-term care system in Israel, including information on the number of individuals insured under private insurance, updated data on national long-term care expenditures in recent years, the number of elderly citizens classified as needing long-term care and eligible for both public and private long-term care benefits, and more. The researchers highlight the existing shortcomings in long-term care insurance, as evidenced by the study findings, and propose several policy alternatives that could improve long-term care services and benefit the elderly who rely on them.

The population of individuals aged 75 and older grows by approximately 9,000 people annually, and the life expectancy of elderly citizens in Israel continues to rise. The prevailing policy aims to enable the elderly to ***age in place*** — to grow old in their homes and communities. To achieve this, a comprehensive policy is needed to integrate the various entities that provide care for this population. However, in Israel, no single body is responsible for coordinating the activities of the various agencies in the field. As a result,

* Nir Kaidar, Director General, Taub Center for Social Policy Studies in Israel. Prof. Nadav Davidovitch, Principal Researcher and Chair, Health Policy Program, Taub Center; Director, School of Public Health, Ben-Gurion University of the Negev. Prof. Avi Weiss, President, Taub Center; Department of Economics, Bar-Ilan University. This research was published in April 2024 and is available on the Taub Center website.

the care provided to this population — including efforts to preserve functional capacity and prevent functional decline where possible — is fragmented among numerous agencies that operate without coordination, each with its own bureaucratic mechanisms.

Long-term care services in Israel

As of December 2023, about 346,000 elderly individuals receive long-term care benefits from the National Insurance Institute (compared to about 180,000 in 2018), with a financial value exceeding NIS 16 billion annually. The main service funded by the National Insurance Institute (NII) is home care for the elderly. In addition, around 30,000 elderly individuals are in out-of-home care settings, most of whom are treated in nursing facilities regulated and supervised by the Ministry of Health, while about 5,000 frail elderly individuals are treated in nursing care facilities under the regulation and supervision of the Ministry of Welfare and Social Affairs.

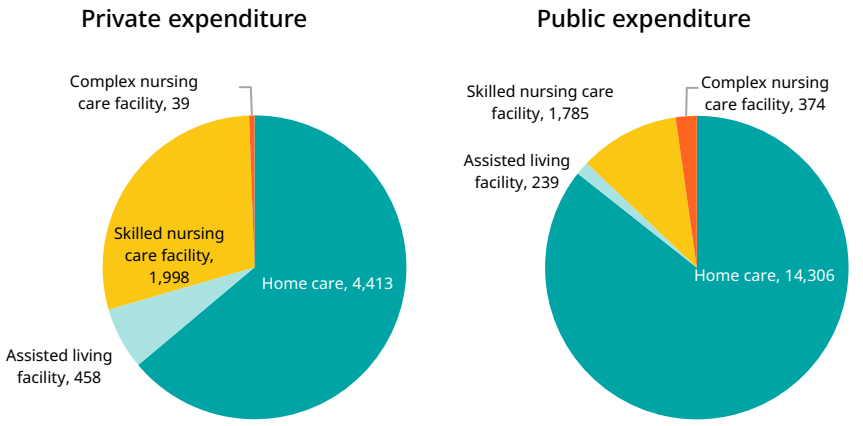
Over the past decade, the number of individuals covered by private insurance nearly doubled — from 0.5 million insured in 2012 to 0.9 million in 2022. The number of people insured under the group policies of health funds also increased, from 4.0 million in 2012 to 4.8 million in 2022. In contrast, there was a significant decrease in group policies not linked to health funds, from 0.9 million to about 0.2 million insured over the same period. Since the population grew during these years, overall coverage by private long-term care insurance dropped from 69% of the population in 2012 to 60% in 2022.

National long-term care expenditure

The researchers show that in 2022, national long-term care expenditures amounted to about NIS 23.6 billion. Most of the spending was directed toward community care services (NIS 18.7 billion), while the remainder was divided between nursing care hospitalization, assisted living facilities, and complex nursing care hospitalization. Of the national expenditure, public spending on long-term care accounted for NIS 16.7 billion (about 71%), while private spending amounted to about NIS 7 billion.

Public and private expenditure on nursing care, by type of expenditure, 2022

NIS millions, estimate



Source: Nir Kaidar, Nadav Davidovitch, and Avi Weiss, Taub Center | Data: Ministry of Welfare and Social Affairs

A comparison conducted by the researchers between national long-term care expenditures in 2018 and 2022 shows an increase of about 63%, equivalent to about NIS 9 billion. Most of the increase was in public spending on home care, about NIS 7 billion. Public funding as a share of total long-term care expenditure rose from 63% in 2018 to 71% in 2022.

The number of elderly individuals classified as needing long-term care and receiving long-term care benefits from the NII doubled between 2012 and 2022, while the number of recipients of the old-age pension (granted upon reaching retirement age) increased by only 40%. In addition to the increase in recipients of long-term care benefits from the NII, there was also a notable rise in those receiving long-term care benefits from insurance companies through health fund policies: from 2012 to 2022, the number of new private long-term care benefit recipients grew by 150%, from 7,000 to about 18,000.

Private long-term care insurance by health funds

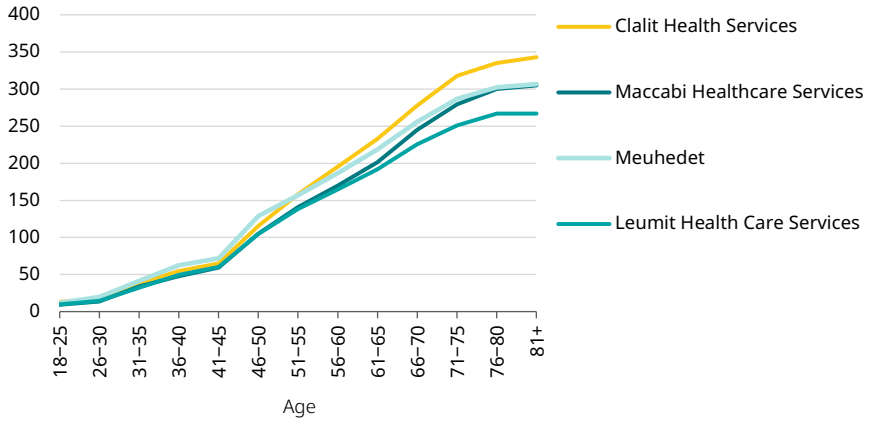
Data collected by researchers from the health funds indicate significant differences in the rates of group long-term care insurance coverage between the health funds. Maccabi Healthcare Services leads with 60% of its members insured, followed by Clalit Health Services with 52%, and the lowest rates are in Leumit Health Care Services with 38%, and Meuhedet with 35%.

The health funds' data show that the insurance coverage rate by age group is also uneven. The highest coverage rate is among those aged 25 and under (61%), while the lowest rate is among those aged 25–35 (37%).

Insurance costs

Premium payments increase significantly with age. The average monthly premium at age 30 is NIS 16, at age 50 it is NIS 114, at age 70 it is NIS 251, and at age 80 it is NIS 301. It should be noted that aside from adjustments for the Consumer Price Index, premiums are expected to rise in the coming years according to an agreement between the health funds and the Capital Market Authority.

Monthly premium, by health fund and age group, February 2024



Note: The cost of the premium is calculated using the payment for February 1, 2014. Data for Clalit Health Service members are according to expected payment for September 2024.

Source: Nir Kaidar, Nadav Davidovitch, and Avi Weiss, Taub Center | Data: Health Funds

Policy alternatives

The researchers propose several policy alternatives for private and public long-term care insurance, including:

1. ***Mandatory long-term care savings***: Every resident would be required to save a fixed monthly amount or a percentage of their salary for future long-term care health needs.
2. ***Making health funds' long-term care insurance mandatory***: Such a move would significantly increase the number of people paying monthly premiums and broaden the base of young premium payers who are unlikely to need long-term care soon.
3. ***Improving public long-term care insurance***: Since public long-term care insurance does not provide solutions for the entire population, it is suggested to increase the long-term care component in the monthly payments to the National Insurance Institute and allocate the resulting funds to efforts to prevent individual functional decline and to increase the hours of assistance provided to those in the most intensive stages of long-term care.

Executive Summary

Competition Among Health Funds: Three Decades of the National Health Insurance Law

Gabi Bin Nun, Nir Kaidar, Ofir Gonen, Natan Lev, and Nadav Davidovitch

This study reviews the development of the National Health Insurance Law over the past three decades, focusing on competition among the health funds. In particular, the paper examines how the law combines the social principles on which it is founded — justice, equality, and mutual aid — with the aspiration to allow for a degree of managed competition among the funds as a means to improve the system's efficiency and the quality of the services provided to the insured. The researchers, Prof. Gabi Bin Nun, Nir Kaider, Ofir Gonen, Natan Lev, and Prof. Nadav Davidovitch, evaluate the various aspects of managed competition among the health funds, weighing its advantages and disadvantages.

* Prof. Gabi Bin Nun, Professor Emeritus, Department of Health Policy and Management, Ben-Gurion University of the Negev. Nir Kaidar, Director General, Taub Center for Social Policy Studies in Israel. Ofir Gonen, Research Assistant, Taub Center. Natan Lev, Guest Researcher, Taub Center; doctoral student in the MD-PhD program, Department of Health Policy and Management, Ben-Gurion University of the Negev. Prof. Nadav Davidovitch, Principal Researcher and Chair, Health Policy Program, Taub Center; Head, School of Public Health, Ben-Gurion University of the Negev. This research was published in December 2024 and is available on the Taub Center website (in Hebrew).

Justice, equality, and mutual aid are the central principles underlying the National Health Insurance Law. In addition, the law also seeks to encourage managed competition (competition accompanied by strict regulation) among the health funds as a means to achieve efficiency. The drafters of the law assumed that if the law prohibited price competition (competition over the premium amount) and competition over the content of the basket of health services, while granting insured members complete freedom in choosing their fund, competition would ensue and lead to improvements in the quality of care.

However, managed competition, with the objective of improved quality of care, better health outcomes, and more equitable services, also had several negative side effects; the funds focused on competing for the insured in a manner that did not contribute to narrowing health disparities and led to increased costs without any improvement in the population's health. Below are some of the negative aspects of the competition:

- High expenditures by the funds on marketing and advertising methods.
- Duplications in the provision of community services without economic justification.
- Lack of cooperation among the funds and resistance to the mutual sale of services.
- Competition for doctors while increasing salary expenditures without improving health.

Legislative changes concerning competition among health funds

Over its thirty years of operation, the law has undergone a number of transformations. Over the years, several proposals and legislative amendments have been put forward with the aim of mitigating the negative aspects of managed competition among the health funds. The changes made pertain, among other things, to member transfers between funds (such as the number of transfers allowed per year, maintaining continuity of entitlements, and the transfer of medical information), to competition in the field of dental health, to collaborations between funds in small communities, and to advertising and

marketing. Alongside these changes, there were also several proposals and recommendations that were not implemented, such as various plans aimed at increasing competition among the funds, transferring part of the collection mechanism for health insurance premiums to the health funds, establishing a fifth health fund to be operated by a private entity, and a plan to limit competition for medical personnel. As noted, these proposals were rejected for various reasons.

Analysis of transfers between health funds

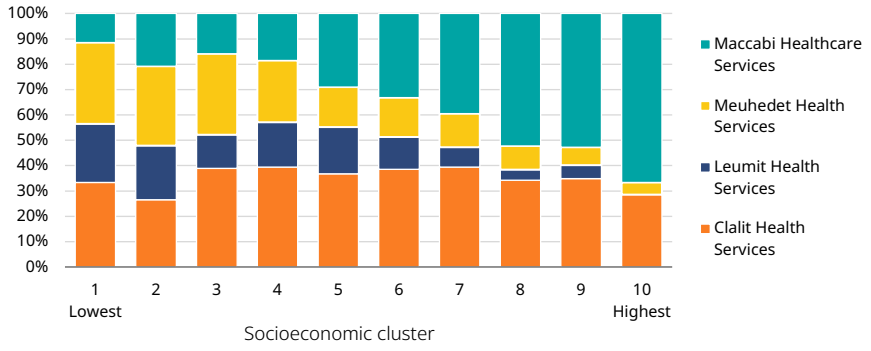
Trends in transfers between health funds have changed over the years. In the three years following the law's enactment, the transfer rate was high — exceeding 4% per year — likely due to an accumulation of insured individuals who wished to switch before the law was implemented but were denied, or because the transfer arrangements were carried out at the health funds' branches. After a legislative amendment in 1998 that moved the execution of transfers between funds to post office branches, there was a significant decline in the transfer rate, which dropped to approximately 1% per year. From the early 2000s until 2021, there was a slow trend of increasing transfer rates, and in recent years it began to decline again, until it reached about 2% in 2024.

The study presents the trends in member transfers between health funds in two ways: by showing the number of individuals leaving and joining each fund, and by presenting the net number of transfers. The data indicate that in Clalit, between 1995 and 2010 and since 2016, more insured individuals left the fund than joined it. Maccabi is the leading fund in terms of net transfers from 2015 to 2024, in Leumit more insured individuals have left the fund than joined it since 2006, and in Meuhedet the trends have varied over the years.

The researchers analyzed the characteristics of insured members who switched funds according to population group and the socioeconomic ranking of the community. The analysis shows that transfer rates in Haredi (ultra-Orthodox Jewish) and Arab communities are higher than those in non-Haredi Jewish communities or in mixed communities (Haredi and non-Haredi)). It is possible that this is because these populations are more attractive to the health funds due to larger family sizes, and therefore they focus their recruitment efforts on these groups.

Furthermore, it is evident that transfers are more characteristic of lower socioeconomic clusters, and as the socioeconomic ranking of the local authority increases, transition rates decrease. The study clearly indicates that Maccabi focuses on recruiting insured individuals from more affluent populations — the number of newly insured members increases as the socioeconomic cluster of the community is higher — while the Meuhedet health fund recruits more insured individuals from lower clusters. In Clalit, no significant differences in new enrollments were observed between the different clusters.

Distribution of health fund membership, by residential locality socioeconomic cluster, 2023



Source: Bin Nun et al., Taub Center | Data: Ministry of Health; NII

Policy alternatives

The researchers put forward several policy options with regard to competition between health funds that would prevent a situation of increased health disparities, a rise in prices, and an increase in costs without any improvement in the health of the population. Here are some of the recommendations:

Encouraging competition based on service quality. Publish performance indicators that will allow health fund members to compare the funds in areas such as waiting times, quality of care, and disparities between central and periphery regions.

Revise the capitation formula. Current weights, unchanged since 2010, no longer reflect the current health needs of the insured members, resulting in health funds having ***profitable*** members and ***loss-making*** members. Adjustments should include additional variables that more accurately predict the funds' expenditures on members, and temporary marginal rewards for member transfers.

Improving the Ministry of Health's regulation. Despite existing oversight rules, enforcement remains inadequate. Stricter enforcement could help mitigate negative competition aspects and shift focus toward service quality.

Easing transfers between health funds. While some progress has been made over the years, transferring members currently wait up to three and half months from application to execution. Reducing this waiting period to the minimum necessary would facilitate member transfers.

ENVIRONMENT & HEALTH

Between Environment and Demography: The Waste Crisis and the Loss of Open Spaces

Maya Sadeh and Or Siman-Tov

Introduction

Building on an earlier chapter in the ***State of the Nation Report 2023***, this year we take a closer look at the environmental challenges that affect both public health and the quality of life in Israel. Any discussion of environmental and health topics must take into account the main environmental and demographic trends and challenges in this field, and particularly in Israel, the two issues of rising temperatures and population growth. Both of these indicators are increasing at twice the average global rate.

This chapter addresses two main issues that reflect the most significant challenges in the fields of environment and health: the waste crisis in Israel, with a focus on the greenhouse gas methane emitted from waste landfills and from illegal waste burning, along with their environmental impacts and the associated health and economic burdens; and tree felling, where the presence of trees both within and outside urban areas is essential for combating climate change and mitigating the health consequences of rising temperatures. A brief Spotlight is also given to the topic of chemical monitoring in Israel and its contribution to reducing health risks.

* Dr. Maya Sadeh, Senior Researcher and Head, Taub Center Research and Policy Initiative for Environment and Health. Or Siman-Tov, Research Assistant and staff member, Taub Center Initiative for Environment and Health. The portion dealing with methane emissions was written with Georgii Medvinsky, Tel Aviv University. This study was conducted as part of the activities of the Taub Center Research and Policy Initiative for Environment and Health which is generously supported by Yad Hanadiv.

The waste crisis in Israel

The waste crisis is one of the most pressing environmental issues in the country. Despite growing awareness of the importance of a structured policy for waste management and treatment, as well as the potential damage that may result in the absence of such a policy, Israel still lags behind in this area compared to other high-income countries.

Landfill

Israel is characterized by particularly high per capita waste production rates. According to OECD data, in 2020, the average per capita solid waste weight stood at 691 kilograms per year, compared to an average of 534 kilograms per year in OECD countries (Ministry of Environmental Protection, 2023). Currently, most municipal solid waste (MSW) produced in Israel is sent to landfills — almost 80%, compared to an average of only about 40% in OECD countries (State Ombudsman, 2022). Estimates from the Ministry of Environmental Protection (2020b) indicate that landfill volumes amount to approximately 4.5 million tons per year.

The high landfill rates for municipal waste create pressure on landfill sites, and available land for waste disposal is steadily decreasing (State Ombudsman, 2022). This situation serves as fertile ground for criminal activity in the sector (Rinat, 2024a). To regulate waste management activities and eradicate crime and black-market activity in the field, the draft economic plan for 2025 proposed legislation to regulate the waste management sector, with consideration given to assigning its implementation to an independent regulatory authority (Ministry of Finance, 2024). One of the plan's goals is to reduce the landfill rate of municipal waste to 20% by 2050. This effectively delays by 20 years the target set in the Strategic Plan for Sustainable Waste Management for 2021–2030, which aimed to lower landfill rates to 20% by 2030 and to near-zero levels by 2050 (Ministry of Environmental Protection, 2020b).

Additionally, there is the phenomenon of illegal waste dumping — approximately 300,000 tons annually (Alon, 2024). Due to the difficulty in estimating the quantities of waste discarded at unregulated sites, the actual amounts may be even higher. All of these issues carry significant environmental, health, and economic consequences.

Methane emissions[1]

One of the most severe consequences of waste burial (both legal and illegal) is the emission of methane. Methane (CH4) is a greenhouse gas with a particularly high warming potential and is a major contributor to climate change. According to estimates, in 2020, atmospheric methane levels reached an all-time high since measurements began in the 1980s, accounting for about 20% of the increase in global temperatures.2 Methane remains in the atmosphere for a relatively short time compared to carbon dioxide (CO_2), making its impact on global warming more significant in the short term. However, even over a 100-year period, its damage is estimated to be more than 25 times that of carbon dioxide (Ayalon et al., 2023; Ministry of Environmental Protection, 2020a). In addition to its role in climate change, methane also contributes to the formation of a tropospheric ozone layer (near the Earth's surface), which is a harmful air pollutant with severe impacts on human health.

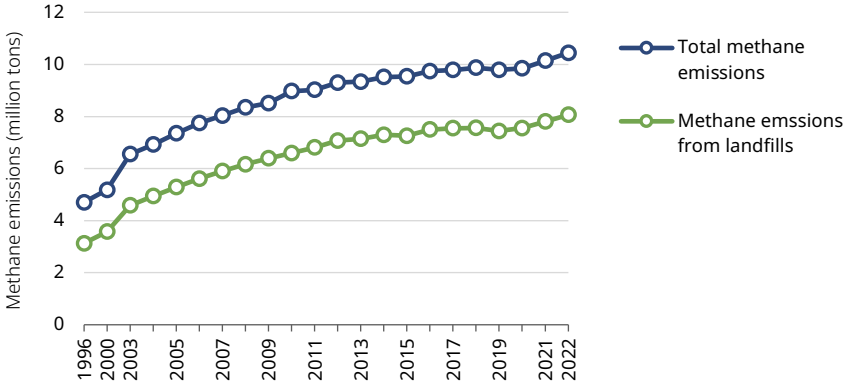
Methane accounts for approximately 13% of total greenhouse gas emissions in Israel. The primary source of emissions is the waste sector, which is responsible for about 77% of emissions, followed by livestock farming (around 15%), and wastewater treatment plants and fossil gas production (approximately 8%) (Ministry of Environmental Protection, 2024a).

Since the Industrial Revolution, methane concentrations in the atmosphere have more than doubled and continue to rise (UNEP, 2021). Israel's emissions contribute to this trend. Since 1996, there has been a significant increase in local methane emissions, likely driven by population growth and the increase in waste production. As shown in Figure 1, the rate of increase in total methane emissions closely parallels the rate of emissions from landfills.

1 This portion of the chapter was written with Georgii Medvinsky, Tel Aviv University.

2 See Greenpeace Israel website, The UN has determined that it is essential to lower methane emissions: But what is methane?

Figure 1. Methane emissions in Israel, 1996–2022



Note: Excluding methane emissions originating from the natural gas supply chain.

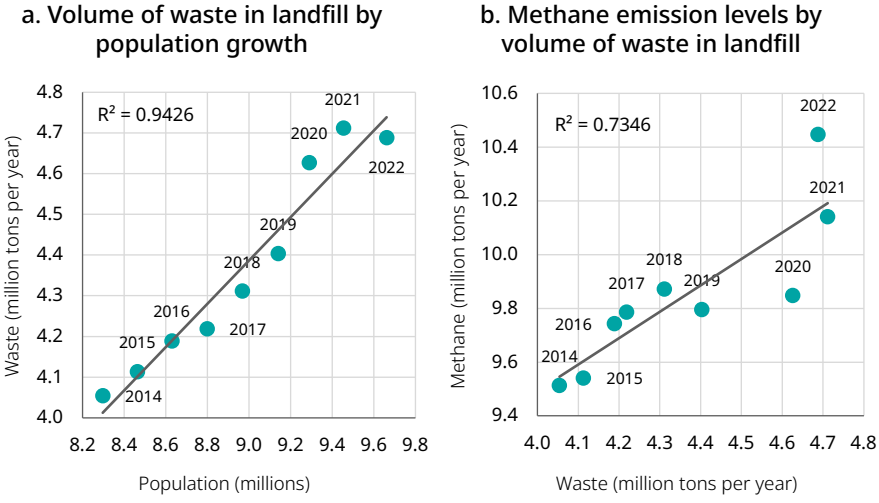
Source: Maya Sadeh, Taub Center and Georgii Medvinsky, Tel Aviv University | Data: CBS

Approximately 50% of the gases emitted from landfills consist of methane, with the remainder primarily composed of CO_2 and small amounts of other gases, including volatile organic compounds (VOCs). Landfill gases begin to be released about one to two years after waste is buried and continue to be emitted throughout the landfill's operational life and even after its closure. The volume of methane emissions depends on the quantity of waste buried, its composition, and waste management practices.

According to global scenarios, by 2030, methane emissions resulting from human activity are expected to increase by over 15% compared to 2010 levels, reaching nearly 380 million tons annually — an 8% increase compared to 2020 levels (Höglund-Isaksson et al., 2020, cited in UNEP, 2021). The largest increase, approximately 13 million tons per year, is anticipated in the waste and wastewater sectors due to the absence of advanced waste management systems (UNEP, 2021).

In Israel, methane emissions primarily result from the growing volume of municipal waste sent to landfills and wastewater treatment facilities. Figures 2a and 2b illustrate that methane emissions in Israel are increasing in a fairly linear fashion and are closely linked to the volume of waste buried, which itself is driven by population growth.

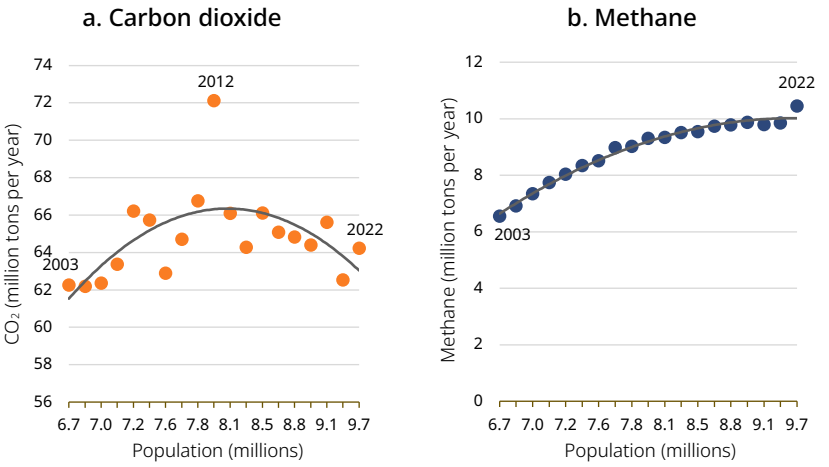
Figure 2. Volume of waste in landfill, population growth, and methane emissions, 2014–2022



Source: Maya Sadeh, Taub Center and Georgii Medvinsky, Tel Aviv University | Data: CBS

Figure 3 shows the relationship between the emissions of the two main greenhouse gases — carbon dioxide (CO_2) and methane (CH_4) — and population growth from 2003 to 2022. As shown in the figure, efforts to reduce CO_2 emissions have been successful, effectively decoupling emissions from population growth ($R^2 = 0.004$). In contrast, methane emissions have not been reduced and remain strongly correlated with population growth ($R^2 = 0.883$).

Figure 3. Greenhouse gas emissions and population growth in Israel, 2003–2022



Note: The comparison uses a GWP (Global Warming Potential) factor of 28, reflecting a 100-year time frame.

Source: Maya Sadeh, Taub Center and Georgii Medvinsky, Tel Aviv University | Data: CBS

Methane — indirect health impacts

Beyond its contribution to global temperature rise, methane participates in a chain of chemical reactions involving nitrogen dioxide and other organic air pollutants, particularly in hot and densely populated areas, leading to the formation of ground-level ozone (O_3).[3] Ground-level ozone causes a wide range of health problems related to respiratory diseases, including irritation of the respiratory system, worsening of asthma, and reduced lung function. It also increases the risk of respiratory infections such as pneumonia and bronchitis and exacerbates chronic obstructive pulmonary disease (COPD) (Donzelli & Morales Suarez-Varela, 2024). Research also points to a link between ozone exposure and cardiac events and heart diseases (Jiang et al., 2023).

3 Unlike the ozone layer located 15–35 kilometers above the Earth's surface, which protects us from harmful ultraviolet radiation, ground-level ozone (tropospheric ozone) is an air pollutant that poses significant health risks.

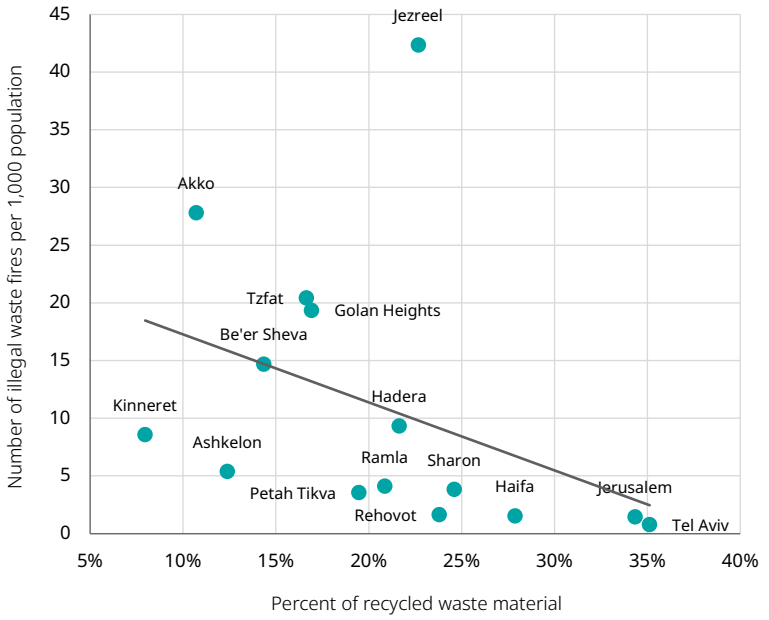
Given the critical role of methane emissions in accelerating global warming and creating ground-level ozone, it is essential to focus efforts on reducing methane emissions. According to a United Nations Environment Programme (UNEP) report, a global effort to reduce methane emissions could achieve a 45% reduction by 2030. The immediate result would be a slowdown in the rate of global warming by nearly 0.3 °C by the 2040s. In terms of health benefits, this reduction could prevent approximately 255,000 premature deaths and 775,000 asthma-related hospital visits. Additional benefits include improved labor productivity by preventing the loss of 73 billion work hours due to extreme heat and enhanced food security by preventing the loss of 26 million tons of agricultural crops worldwide (UNEP, 2021).

In addition to reducing emissions, methane derived from waste can be transformed into a source of renewable energy. Methane emissions in landfills occur during the biological decomposition of organic waste under anaerobic conditions (without oxygen). In many European countries and other parts of the world, anaerobic digestion facilities are used to treat municipal organic waste for energy production. This method captures the methane emitted from organic waste and uses it to generate electricity, thereby reducing demand for energy from depletable fossil sources (Ministry of Environmental Protection, 2020b).

Strategies to reduce landfill rates

Reducing landfill rates is typically achieved through a combination of strategies: increasing recycling and composting volumes, waste incineration, and energy recovery from waste through controlled combustion (Waste-to-Energy, WTE). In Europe, source separation of waste (recycling) is the primary mechanism for meeting waste management targets. The European Union (EU-28) has set a goal for its member states to reduce landfill rates to 10% by 2030 (Ministry of Environmental Protection, 2018). In Israel, source separation of waste is also associated with a reduction in the problem of illegal waste burning (this will be discussed later in this chapter). As shown in Figure 4, regions with higher recycling rates experience fewer illegal fires. For example, in the Akko region, where the recycling rate is slightly over 10%, there are nearly 30 fires per 1,000 residents. In contrast, in the Tel Aviv region, where recycling rates reach 35%, there are virtually no waste fires.

Figure 4. Illegal waste fires per 1,000 population, by percent of recycled waste, 2020–2021



Note: Pearson correlation coefficient: -0.25; standard deviation: 2.61.

Source: Maya Sadeh, Taub Center and Georgii Medvinsky, Tel Aviv University | Data: CBS

In the past 15 years, the use of waste-to-energy (WTE) facilities has become a prevalent practice for waste management in countries with developed economies or stringent regulations. For example, in the Netherlands, over 50% of municipal waste is converted into energy through incineration, and in Japan, the figure exceeds 70% (Ministry of Environmental Protection, 2018). This method offers significant environmental benefits, including reducing landfill rates, lowering greenhouse gas emissions, and strengthening the local energy sector.

As part of the draft economic plan, it was decided to promote the establishment of waste-to-energy facilities using incineration (Ministry of Finance, 2024). The purpose of waste incineration is to reduce its volume and weight while generating energy. The incineration process is conducted in a controlled chamber at high temperatures. Recyclable materials — such as plastic, paper and cardboard, glass, metals, and organic matter — are separated beforehand through source separation or sorting facilities, and residual waste that cannot be recycled is sent for incineration at the WTE facility. The energy produced during the recovery process is used to generate electricity or heat, and the waste is reduced to about 10% of its original volume and 20% of its weight (Ministry of Environmental Protection, 2018).

In November 2023, the Accountant General's Office in the Ministry of Finance announced the establishment of a sorting and waste treatment facility using energy recovery methods in Ramat Hovav, which will process approximately 350,000 tons of waste per year.[4] In June 2024, the Ministry of Environmental Protection announced the construction of a similar facility in Jerusalem.[5] It is worth noting that while waste-to-energy facilities are effective for waste treatment, the incineration process, even when conducted in a controlled manner, emits pollutants into the air. Therefore, this solution should be integrated with recycling and source reduction strategies, alongside educational campaigns to promote behavioral changes in consumption patterns. Furthermore, the use of WTE facilities is controversial. Opponents argue that larger quantities of waste than originally planned will be diverted to these facilities at the expense of recycling, either due to the absence of an adequate recycling system or because recycling is less economically viable compared to incineration. They also express concern that without strict oversight and enforcement, these facilities could emit pollutants that endanger the health of nearby residents (Ashkenazi, 2020). Given the high costs associated with establishing and operating these facilities (Assamoi & Lawryshyn, 2012), it is crucial to create a funding mechanism that ensures the feasibility and economic viability of such facilities in Israel (Ministry of Environmental Protection, 2018).

4 See the Ministry of Finance website, Facility to recover energy from urban waste — Ne'ot Hovav — an essential national project.

5 See the Ministry of Environmental Protection website, Oh Jerusalem: The government approved the proposal by the Ministry of Environmental Protection to advance the establishment of a waste treatment and energy recovery facility within the city of Jerusalem.

The economic plan does not address source reduction of waste or propose concrete measures, such as reimposing the tax on disposable tableware, which was introduced in November 2021 and led to a 34% reduction in their consumption during its first year (Ashkenazi & Teitelbaum, 2023). Additionally, the tax generated other benefits, including increasing state revenues, reducing waste treatment costs, and decreasing pollution. In contrast, Government Resolution 1282 from March 2022 set a target of a 12% reduction in municipal waste at the source by 2030.[6] The means for achieving this target, as stated in the resolution, include formulating a national food rescue plan and a national plan to reduce plastic waste and increase its recycling. A review of the implementation status of these plans as of July 2024 shows that the formulation of the national food rescue plan is underway, but no progress has been made in reducing plastic waste (Ministry of Environmental Protection, 2024b).

Burning waste

Trends

Burning waste generates strong or unreasonable air pollution, as defined by the Clean Air Law, 2008, and therefore constitutes a violation of the law. Nevertheless, in recent decades, waste burning has become an integral part of the environmental reality in Israel, with an estimated scope of approximately 250,000 tons per year (as of 2018), accounting for about 5% of the total waste produced.[7] This phenomenon is most prevalent in areas inhabited by disadvantaged populations and at illegal waste sites, where attempts are made to dispose of materials that cannot be recycled or for which disposal costs are high. These fires emit pollutants into the atmosphere, directly affecting the health of residents in nearby areas.

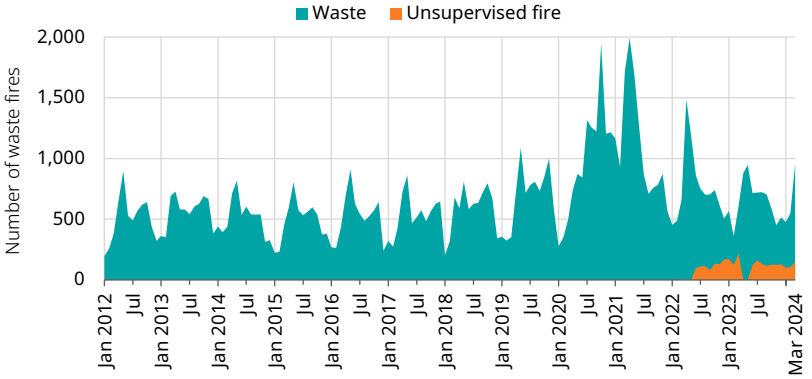
Figure 5 presents the number of waste fires between 2012 and 2024. The figure indicates a clear seasonal pattern in waste fires: during the winter months, the number of fires decreases, while in the spring — and to a significant extent, also in the fall — the number increases. The springtime increase aligns with data from the Ministry of Environmental Protection, which shows a rise of

6 See Government Resolution No. 1282 from March 14, 2022, A National Plan to Prevent and Reduce Air Pollution and Greenhouse Gas Emissions in Israel — Implementation Plan.

7 See infospot website, A Nationwide Plague: 6,166 Calls to Extinguish Waste Fires in 2018.

approximately 10% in waste transferred to landfills ahead of Passover.[8] The figure also shows that after nearly a decade of an average of 8,000 waste fires annually, there was a sharp increase in the number of fires across the country in 2020 and 2021, reaching approximately 11,200 and 13,300, respectively. The Ministry of Environmental Protection estimates that part of the increase in fires in 2020 was due to the emergency situation declared during the Covid-19 outbreak. During this period, recycling rates dropped, partly because the Ministry of Health limited the number of empty bottles that could be recycled through retail chains due to concerns about virus transmission, and a 30% increase in packaging waste was observed (Nissim, 2021). In subsequent years, there was a slight decline in the number of waste fires, but the figures remained high — approximately 11,200 fires in 2022 and 11,400 fires in 2023.

Figure 5. Waste fires in Israel



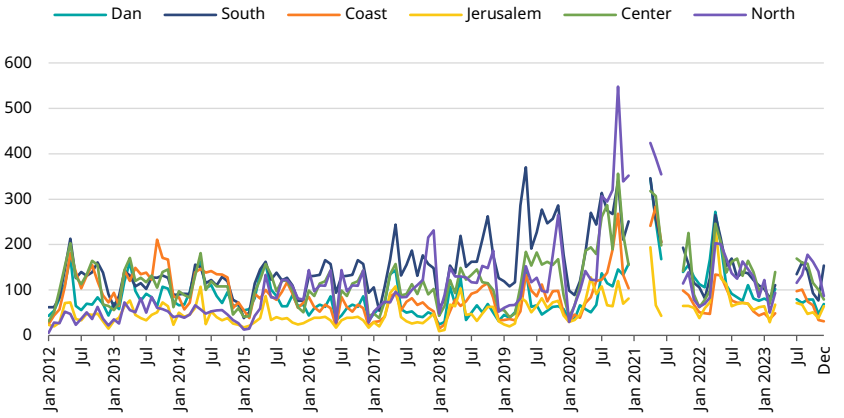
Note: From 2022 the data include unattended bonfires according to the new classification of the Fire and Rescue Authority.

Source: Maya Sadeh and Or Siman-Tov, Taub Center | Data: Fire and Rescue Authority in Israel

Figure 6 presents the number of waste fires in Israel by district. The graph clearly shows that the majority of fires are in the periphery areas, in the Northern and Southern Districts. Most illegal waste dumping also takes place in the northern and southern regions (Alon, 2024).

8 See the Ministry of Environmental Protection website.

Figure 6. Waste fires in Israel, by district



Note: For 2021 and 2023, complete data were not available, hence the breaks in the series.

Source: Maya Sadeh and Or Siman-Tov, Taub Center | Data: Fire and Rescue Authority in Israel

Another significant source of pollution from waste burning is transboundary air pollution originating in Judea and Samaria. According to the State Ombudsman report, in 2022 there were 123 unregulated waste disposal sites in Judea and Samaria where Palestinian waste was burned, 77 of which had cross-border impacts. The Ombudsman estimated that approximately 180,000 tons of mixed Palestinian waste were burned in Judea and Samaria in 2022, creating significant transboundary air pollution.

The report also noted that in the same year, hundreds of illegal fires involving electronic and electrical waste with cross-border impacts occurred in the southern Hebron Hills region. The Ombudsman emphasized that the air pollution caused by these fires is not reported in the Environmental Emissions Inventory Report (State Ombudsman, 2024).

Health effects of burning waste

Waste burning typically occurs under uncontrolled combustion conditions, releasing pollutants that pose severe health risks. Low-temperature combustion emits toxic gases into the atmosphere, such as carbon monoxide, volatile organic compounds (VOCs), and dioxins — highly toxic chemicals classified as top-tier carcinogens. Additionally, burning plastic or electronic materials releases heavy metals like lead, arsenic, cadmium, chromium, and mercury, which can significantly harm the heart and nervous system.

Exposure to these toxic substances increases the risk of developing various cancers (e.g., lung, throat, bladder), asthma, heart attacks, respiratory failure, and congenital abnormalities (Dabrowska et al., 2023). For example, in South Korea, a tire factory fire led to increased emissions of particulate matter and sulfur oxides, resulting in an 800% increase in emergency room visits for respiratory illnesses, a rise in skin diseases in areas exposed to smoke compared to non-exposed areas, and a surge in upper respiratory tract diseases (Han et al., 2024). A Canadian study observed an increase in fine particulate matter concentrations during waste burning events (Weichenthal et al., 2015). The study also found that dioxin concentrations in the air spiked 66-fold during fires, potentially causing harm to fetal development, reproductive systems, endocrine function, and an increased risk of cancer. Benzene concentrations, a confirmed human carcinogen, also rose. However, the daily averages of other pollutants, such as ozone and nitrogen dioxide, did not exceed routine levels during the fire. In a local context, a fire at a scrapyard in Haifa's Shemen Beach area in December 2024 caused benzene concentrations on Haifa's Independence Road to spike 20-fold,[9] while toxic soot particle levels increased 8-fold.[10]

Research indicates correlations and causal links between environmental pollution exposure and certain cancers, such as non-Hodgkin lymphoma (Grove & Sanchez, 2022; Rana et al., 2021). A joint study by Ben-Gurion University of the Negev and the University of Illinois found that children living near metal recycling facilities burning electronic waste in Palestinian villages in the southern Hebron Hills were 2.8 to 4 times more likely to develop lymphoma than children living in other areas (Davis & Garb, 2019). Other studies have linked exposure to air pollution, pesticides, and organochlorines to acute childhood leukemia (Infante-Rivard & Weichenthal, 2007; Jones, 2024).

9 See the American Cancer Society website.

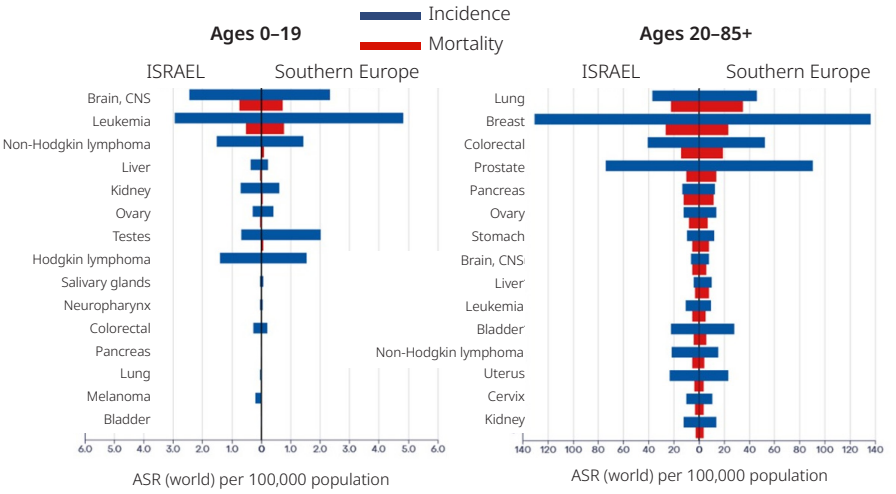
10 Green Time: Weekly Roundup, December 21, 2024.

In 2016, the organization ***Citizens for Clean Air*** was established in Israel to operate a reporting center for complaints about waste and smoke odors. Some reports also include symptoms such as difficulty breathing, eye irritation, dizziness, headaches, and nausea. These complaints are forwarded to the Ministry of Environmental Protection and other relevant authorities for action.

The environmental damage caused by waste burning extends beyond air pollution. Toxic substances released during combustion settle into and are absorbed by the soil, altering its chemical composition. This phenomenon reduces soil fertility, damages agricultural yields, disrupts local ecosystems, and harms vegetation and wildlife habitats. Additionally, toxic substances are carried by rainfall into groundwater and streams, contaminating water sources.

Figure 7 presents an international comparison of incidence and mortality rates for the 15 most common cancer types in children and adults. The figure shows that, for most cancer types, the incidence rates are similar, and in some cases, lower in Israel. However, the incidence of non-Hodgkin lymphoma is higher in Israel than in Southern European countries, both in adults and children.

Figure 7. Incidence and mortality rates of cancer per 100,000 population, Israel and Southern Europe, 2022



Note: The comparison countries have diets and climates similar to those in Israel. The data in the figure have been standardized for worldwide age patterns.

Source: Maya Sadeh and Or Siman-Tov, Taub Center | Data: Global Cancer Observatory

Given the apparent link between exposure to pollution from waste burning in Israel and the incidence of cancer, we believe that the increase in the scale of waste burning over the past decade may lead to a rise in the incidence of various types of cancer in the future. Therefore, it is crucial to monitor long-term trends in morbidity rates across different geographic regions.

The economic cost of waste burning

The economic cost of waste burning in open areas includes two main components: external costs, which represent the monetary value of health impacts caused by pollutant emissions; and lost revenue from landfill levies and value-added tax (VAT). The estimation of external costs from waste burning relies on an assessment of the volume of waste burned. A study by the Knesset Research and Information Center (Eizenkot, 2019) estimated that in 2017, approximately 60% of the uncollected waste in rural areas — around 25,000 tons — was burned. Based on this estimate, the researchers assessed the external costs of waste burning due to morbidity and mortality — namely, lost productivity and healthcare expenses — at approximately NIS 58 million (around NIS 2,300 per ton). Additionally, they calculated lost revenue from landfill levies at about NIS 30.6 million, along with several million shekels in lost VAT revenue.[11] In the previously mentioned State Ombudsman report addressing air pollution caused by the burning of Palestinian waste in Judea and Samaria, the external cost of cross-border air pollution damages to Israel was estimated at between NIS 640 million and NIS 1.06 billion (State Ombudsman, 2024).[12]

The pollution originating from Judea and Samaria illustrates the spatial dimension of the waste crisis. For example, in the Modi'in-Maccabim-Re'ut, Harish, and Shoham local authorities numerous reports are received regarding smoke odors and health symptoms caused by waste burning beyond the Green Line. As a result, residents are exposed to prolonged air pollution, which significantly harms their health and quality of life.

11 The total external cost is the sum of the external costs associated with 16 types of pollutants, including fine particulate matter (PM2.5), larger particulate matter (PM10), carbon dioxide, nitrogen oxides, ammonia, and others. The calculation is based on the methodology of the Global Burden of Disease (GBD) study, which takes into account years of life lost due to mortality and morbidity, as well as healthcare costs.

12 It is important to emphasize that these estimates pertain solely to waste burning. The overall health and economic burden of the waste crisis in Israel has not been studied, and its full health-economic cost remains unknown.

Other vulnerable populations include Arabs and Haredi (ultra-Orthodox) communities. In these sectors, waste often accumulates in public spaces due to pressure on existing waste collection systems (Rinat, 2024b). Additionally, these communities tend to have relatively low recycling rates (e.g., Mark et al., 2016), leading to untreated waste accumulation. Beyond geographic and demographic differences, residents of certain local authorities suffer more from smoke and odor nuisances compared to others due to disparities in waste management infrastructure and the lack of effective enforcement mechanisms (Eliyahu, 2021).

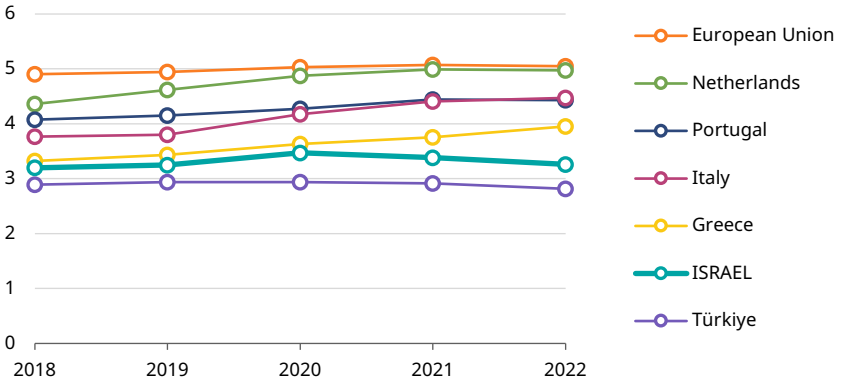
Policy measures to reduce greenhouse gas emissions and climate change preparedness

Reducing landfill rates is one of the most important policy measures for mitigating greenhouse gas emissions and preparing for climate change. According to the Ministry of Environmental Protection, achieving Israel's national greenhouse gas reduction targets requires reducing waste production, establishing recycling and waste separation facilities, and subsidizing electricity production from biogas. In addition, changes must be implemented in the electricity, transportation, and industrial sectors, along with adopting cross-sectoral measures that integrate action plans across various fields. A monitoring report by the ministry on the implementation of Government Resolution 1282 (the National Program for Prevention and Reduction of Air Pollution and Greenhouse Gas Emissions in Israel) reveals delays in implementing a significant portion of the government's planned policy measures. Out of 241 policy measures outlined, 25% have been completed, 33% are in progress, 8% have not yet begun, and 34% lack reporting (Ministry of Environmental Protection, 2024b). Although NIS 6.7 billion was allocated from the state budget for this program, only NIS 0.4 billion was approved or actually invested by the end of 2023. The delays are particularly pronounced in the waste sector, to which NIS 5.3 billion was allocated, but no funds were invested. However, delays also exist in other sectors.[13] The clear message from these delays is that Israel is not taking sufficient action to prepare for climate change and to mitigate the factors contributing to global warming.

13 For example, in the ***100 Steps to Address the Climate Crisis program***, NIS 3.5 billion was allocated for sustainable transportation, but only NIS 150 million was actually invested.

The delay in implementing government policy is reflected in Israel's score on the Environmental Policy Stringency (EPS) Index. This index, developed by the OECD, measures the extent to which environmental policy measures are implemented, focusing on emissions reduction and climate change preparedness. Scores on the index range from 0 to 6, where "0" indicates no or lenient policies, and "6" indicates stringent and rigorous policies. As shown in Figure 8, compared to other Mediterranean countries, Israel ranks the lowest in environmental policy implementation, second only to Türkiye. Notably, countries with higher scores on the EPS index demonstrate better environmental performance in practice (Nachtigall et al., 2024).

Figure 8. EPS index for environmental policy, international comparison



Note: Comparison countries are those with a similar climate to Israel.

Source: Maya Sadeh and Or Siman-Tov, Taub Center | Data: OECD

There isn't a shadow of a doubt regarding shade: Tree felling in Israel

Trees offer numerous benefits, particularly in an era of climate change. First and foremost, they play a crucial role in sequestering carbon dioxide, thereby helping to reduce greenhouse gas concentrations in the atmosphere. Additionally, in a time of rising temperatures, shading during the summer is vital for moderating heat and reducing urban heat islands (Chudnovsky et al., 2023). Research shows that trees can lower average air temperatures and reduce peak temperatures during heatwaves in urban environments (Brown et al., 2018; Schubert & Grossman-Clark, 2013). Beyond the general sense of well-being derived from cooling effects, reducing urban heat islands significantly contributes to preventing exacerbation of health conditions such as hypertension, asthma, heart disease, and respiratory illnesses. It also positively impacts the ability to engage in outdoor physical activity and improves mental health (Sadeh & Shafran-Natan, 2023). A study conducted in Tel Aviv found that urban parks with dense tree canopies can lower summer air temperatures by approximately 3.8 °C and reduce thermal comfort values by around 18 °C (Cohen et al., 2012). Moreover, shading reduces indoor temperatures and alleviates heat stress in enclosed spaces, leading to energy savings in cooling buildings (Mavrogianni et al., 2014). Trees also provide aesthetic and cultural value and have a positive impact on human health in both urban and rural settings. Exposure to green environments, particularly trees, has been linked to reduced mortality from all causes, including cardiovascular disease, as well as improved birth outcomes (e.g., lower rates of low birth weight and preterm birth), reduced depression, and decreased obesity (Donovan et al., 2013; Markevych et al., 2017; Sadeh et al., 2024; Xie et al., 2024).

Another key role of trees in urban environments is improving air quality. Studies have shown a negative correlation between urban tree cover and particulate air pollution levels (from transportation and industry). Trees not only reduce pollution by acting as a buffer but also absorb particulate matter (Grundström & Pleijel, 2014; Grylls & van Reeuwijk, 2022; Kroeger et al., 2014; Markevych et al., 2017). For example, areas with trees have been found to have lower levels of nitrogen oxides — a toxic gas with severe health implications (Grylls & van Reeuwijk, 2022). However, the physical barrier created by trees can sometimes obstruct pollutant dispersion, leading to localized areas with higher particulate air pollution levels (Grylls & van Reeuwijk, 2022; Steffens et al., 2012).

In addition to their clear environmental and health benefits, trees also affect the economic value of properties. Studies examining the impact of tree or canopy cover removal due to external events (e.g., storms or diseases) have found that property values decrease as a result. For example, a study in the Netherlands estimated that the removal of a tree within 75 meters of a property reduced its value by 1.19% (Bouwknegt & Rouwendal, 2023). Similarly, a study in Toronto investigated the effects of the Emerald Ash Borer beetle, which damages trees. The researchers found that in areas most severely affected, a 7% reduction in tree canopy cover led to a 7% drop in property values (Han et al., 2024).

Various methods exist to evaluate the economic benefits of trees. In Israel, the most common method is the i-Tree model,[14] which takes into account the tree's species (determined by experts), diameter at chest height (1.40 meters), canopy condition, and location (trees in densely populated urban areas are valued higher than those in less populated areas). Based on this model, experts estimated the damage caused by the 2006 Carmel fire — where 8,120 trees were burned in urban areas alone — at approximately $33 million (Michael et al., 2018). Critics of this method argue that it does not account for the loss of additional benefits such as pollutant absorption, shading, and building cooling, all of which involve diverse external costs, including health and other related costs (e.g., stormwater management costs).

A cost-benefit analysis conducted by the National Economic Council (Prime Minister's Office, 2022) ahead of investments in street trees for shading and urban cooling found that such investments are economically viable, even without considering indirect benefits. Using climate data from cities in the US with climates similar to Israel's, the analysis suggested adding a rule of thumb of approximately 7% to the direct benefits of trees to reflect their indirect contributions. A study by the Ministry of Agriculture evaluating the costs and benefits of various elements in public space design found that the maintenance cost of 100 square meters of trees — about four trees along a sidewalk — was NIS 1,386 per year, while they provided an annual benefit of NIS 4,212 (Ashkenazi, 2023).

14 A model providing tools for analyzing urban and rural forests and assessing their benefits, developed by the United States Forest Service.

Regulation and data from the field

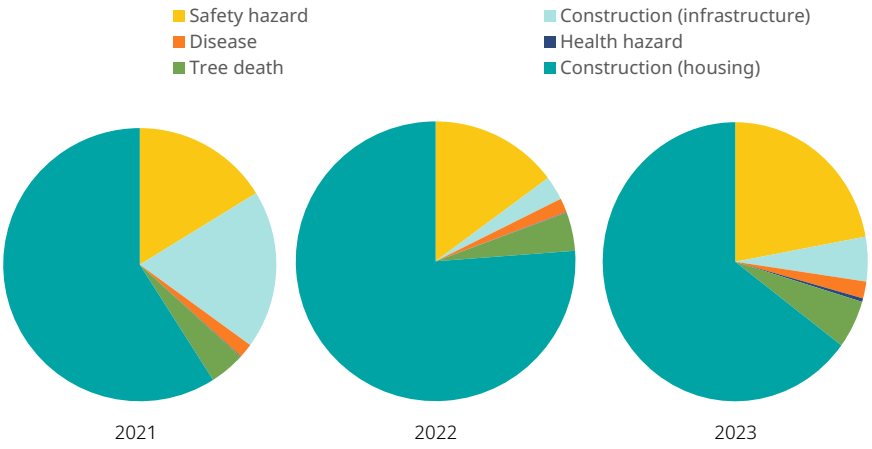
Despite all the evidence of trees' contributions to moderating local temperatures and improving air quality, as well as their proven health and cultural benefits, between 2013 and 2021, 631,147 trees were felled with permits in built-up areas in Israel. Beyond this, it is estimated that tens of thousands more trees are cut down without permits each year. As of 2022, the enforcement of the prohibition on tree felling in Israel is carried out by only two inspectors nationwide (The Center for Citizen Empowerment, 2024). Experts estimate that for every five trees cut down due to urban renewal projects in Israel, only one tree is planted in replacement.[15]

The protection of mature trees in Israel relies on two laws: the Forest Ordinance, which defines what constitutes a mature or protected tree requiring a felling or transplanting permit, and the Planning and Building Law, 1965, which outlines the involvement of forestry officers in planning and permitting stages (Ministry of Agriculture and Rural Development, 2019). Tree felling in Israel requires a permit from the local authority or regional forestry officer. Municipal forestry officers operate in 16 local authorities, and report to the forestry officer at the Ministry of Agriculture.

Most felling permit requests submitted to forestry officers are for construction and infrastructure development purposes. An analysis of felling permits issued between 2021 and 2023 shows that, on average, approximately 74% of the permits were granted for these purposes. About 16% were issued for safety hazard removal, and a similar proportion was granted due to tree disease or death (Figure 9).

15 The information was provided during a conversation with a senior official at Yad Hanadiv.

Figure 9. Tree felling by reason, 2021–2023



Note: Excluding agriculture and tree felling by the Jewish National Fund.

Source: Maya Sadeh and Or Siman-Tov, Taub Center | Data: Forestry Officer, Ministry of Agriculture

A forestry officer who receives a tree-felling permit request may approve it, deny it (i.e., designate the tree for preservation), or order the tree to be transplanted — a process with high costs (up to NIS 500,000) and relatively low success rates (about 60% for a large tree). Due to technological limitations of the computer system, the forestry officer does not provide information on the percentage of felling requests that are approved (Truan, 2019). However, the data indicate that the vast majority of requests — approximately 85% across all reasons — are approved.

Applicants whose felling requests are denied by the regional forestry officer (typically developers) have the right to appeal to the government forestry officer. Similarly, the public has the right to appeal to the government forestry officer regarding felling permits granted by the regional officer. However, the data indicate that this right is rarely exercised. A study by the Knesset Research and Information Center estimated that between 2017 and 2019, appeals were filed for only about 2% of the felling and transplanting permits issued, likely due to insufficient accessibility to the information (Truan, 2019).

Furthermore, a significant portion of appeals submitted by the public are not accepted. As shown in Table 1, of all appeals submitted by the public regarding permits issued for construction and infrastructure purposes between 2019 and 2023, an ***average of 66% were rejected, only 9% were fully accepted***, and about a quarter were partially accepted.

Table 1. Appeals submitted by the public against tree-felling permits for construction and infrastructure purposes, 2019–2023

Year	Total public appeals submitted	Rejected	Approved	Partial approval
2019	50	33	5	12
		(66%)	(10%)	(24%)
2020	59	34	7	18
		(58%)	(12%)	(30%)
2021	116	75	14	27
		(65%)	(12%)	(23%)
2022	115	80	9	26
		(70%)	(8%)	(22%)
2023	106	72	5	29
		(68%)	(5%)	(27%)
Average (%)		66%	9%	25%

Source: Maya Sadeh and Or Siman-Tov, Taub Center | Data: Forestry and Trees Division, Ministry of Agriculture

In January 2022, following an inter-ministerial discussion on urban forestation, a government resolution was made stipulating, among other things, that information on requests for tree-felling or transplanting permits concerning trees in public spaces would also be published via notices posted near the trees. Additionally, it was decided to establish an advanced digital system for managing tree-felling permits, which would compile and clearly present all issued permits to the general public. In the next phase, the system would allow stakeholders to receive push notifications regarding permits issued in a specific area.[16] Recently, the Ministry of Agriculture announced the launch of

16 Government Resolution No 1022, Shading and cooling of the urban space through street trees as part of preparations for the climate crisis, from January 23, 2022.

this system.[17] It is hoped that with the information now made accessible in a transparent and user-friendly manner, the number of appeals submitted by the public will increase, thereby saving more trees from being felled.

Tree felling for construction purposes in Israel

According to a recent OECD report, Israel is among the leading countries in the loss of open spaces for development purposes, alongside South Korea, Indonesia, and Portugal (Tesnière et al., 2024). While Israel's rapid population growth necessitates the construction of residential buildings and the expansion of infrastructure — needs that understandably may come at the expense of nature and open spaces — research indicates that despite the declared policy of the Planning Administration to prioritize densifying existing urban areas and encourage the creation of flexible urban spaces that enable long-term changes while promoting walkability, diversity, and connectivity, the prevalent planning approach favors low-density, isolated neighborhoods on undeveloped land. This approach often results in the conversion of open spaces and agricultural land for construction (Alfasi & Savaya, 2024). According to the ***State of Nature Report 2022*** (HaMaarag, 2022), between 2017 and 2020, approximately 72 square kilometers of open spaces (natural, forested, and agricultural areas) were lost to various land uses — an average of about 18 square kilometers per year. This area exceeds the size of the city of Rishon LeZion (58.7 square kilometers), with about 32 square kilometers converted into built-up areas, equivalent to the size of the city of Herzliya.

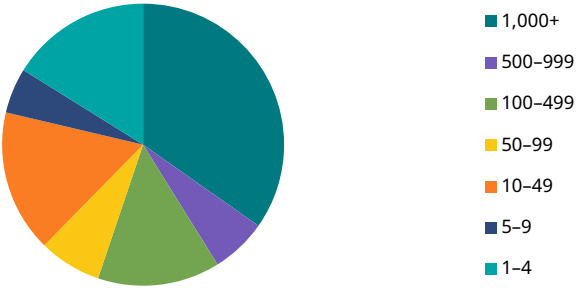
These trends are reflected in tree-felling permits. According to data from the Ministry of Agriculture, between 2021 and 2023, permits were issued for the felling of approximately 242,000 trees. Of these, around 84,000 trees (35%) were felled under large-scale permits involving 1,000 or more trees, while approximately 51,500 trees (21%) were felled under permits for 1–9 trees (Figure 10a). An examination of the large-scale permits reveals that most are issued by the Ministry of Agriculture (Figure 10b). While some of these permits are for infrastructure development — for example, a 2021 permit for felling 2,300 trees to lay a water pipeline for Mekorot and a 2023 permit for felling 5,850 trees to establish a photovoltaic facility in the Western Galilee — most

17 See the Ministry of Agriculture and Food Security website, From Today: Licensing for Tree Feeling Goes Digital!

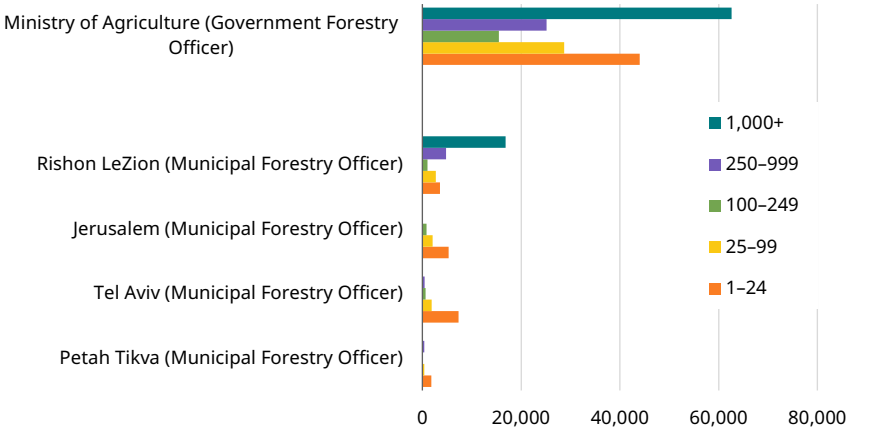
large-scale permits are issued for new construction projects. The significant number of trees felled under these large-scale permits reflects the ongoing trend of encroaching on open spaces in Israel to build new neighborhoods. However, the thousands of permits issued annually for the felling of single trees or small groups of trees in urban areas should not be overlooked, given their health, aesthetic, and cultural value.

Figure 10. Number of trees felled for construction and infrastructure purposes, 2021–2023

a. By number of trees per permit



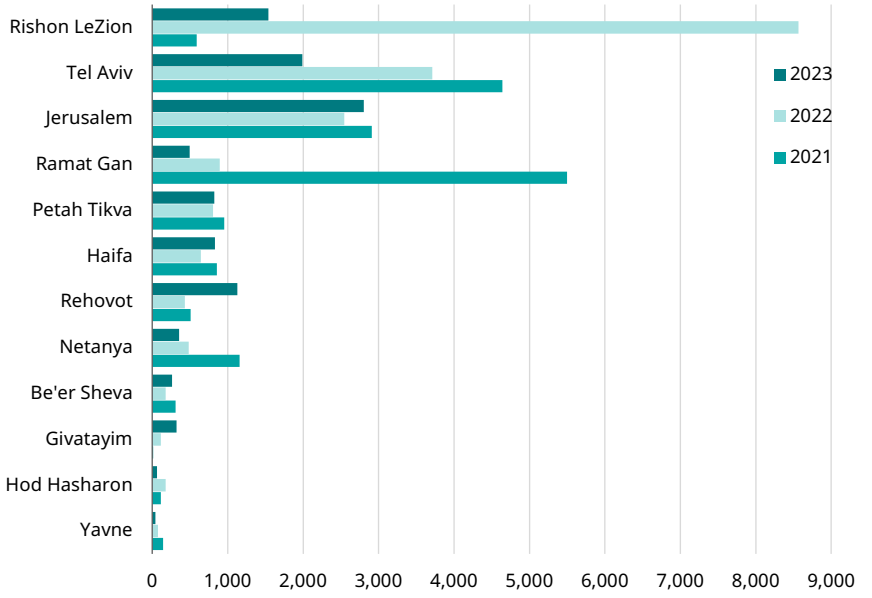
b. By licensing authority and number of trees per permit



Source: Maya Sadeh and Or Siman-Tov, Taub Center | Data: Forestry Officer, Ministry of Agriculture

Figure 11 presents tree-felling data by city in Israel. The leading cities in tree felling are Rishon LeZion (10,695), Tel Aviv (10,346), and Jerusalem (8,253). In some cities, there is significant variation between years, likely corresponding to the timelines of new neighborhood construction projects.

Figure 11. Tree felling in Israel by city, 2021–2023

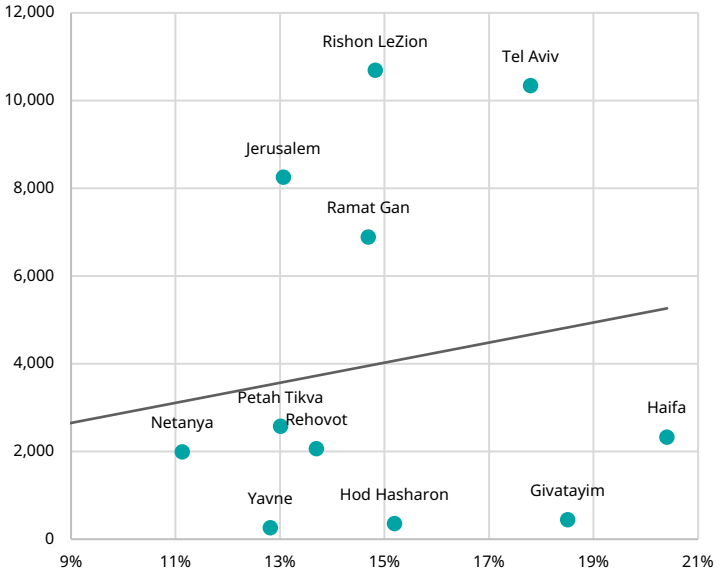


Note: Cities with a municipal forestry officer.

Source: Maya Sadeh and Or Siman-Tov, Taub Center | Data: Forestry Officer, Ministry of Agriculture

In the absence of a comprehensive mapping of the urban tree inventory, we estimated the tree inventory in each local authority based on the average tree canopy cover index for each statistical area associated with it (Figure 12). It can be observed that the cities that felled the most trees relative to their tree inventory were Rishon LeZion, Tel Aviv, and Jerusalem.

Figure 12. Average annual tree felling for purposes of construction and infrastructure by percent of tree cover, 2021–2023



Note: Cities with a municipal forestry officer.

Source: Maya Sadeh and Or Siman-Tov, Taub Center | Data: Forestry Officer, Ministry of Agriculture

Tree felling and planting policies in Israel

In the January 2022 government resolution noted previously, concerning shading and cooling urban spaces through street trees, it was decided to promote actions to significantly increase shade cover in 100 local authorities interested in participating. As part of the program, 450,000 trees are to be planted along 3 million meters of streets, with an investment of NIS 1.4 billion. The goal is to achieve 70% shade coverage on sidewalks in streets with significant walkability potential by 2040. Local authorities will receive assistance in setting local shade coverage targets for their most walkable streets and in developing a practical urban forestry plan. To advance the program, several immediate

steps were decided upon, including mapping tree shade coverage in local authorities using a dedicated digital tool to be developed by the Israel Mapping Center, formulating urban strategies in local authorities for implementing the program, increasing tree shade coverage in urban planning, new construction projects, and building permits, and preserving existing trees in new plans.

According to a September 2024 monitoring report on the implementation of this government decision, only 23% of the resolution's clauses have been implemented thus far, while 19% have been partially implemented. More than half — 58% — of the clauses, including some of the most critical ones, have not been implemented at all (The Center for Citizen Empowerment, 2024). For example, no local authority has committed to high shade coverage targets of 33%–70%. Additionally, of the goal of 100 local authorities drafting a practical plan to promote street trees by 2030, the Ministry of Environmental Protection has supported only 21 local authorities in this process. Furthermore, only 9% of these local authorities have completed a detailed tree survey, including information on the number, location, and condition of their trees.[18]

The government decision on shading and cooling urban spaces did not address the preservation of trees in private yards, despite their many benefits, including shading streets. According to estimates, about half of the trees in urban areas are on private property. Many of these trees are felled due to urban renewal projects, especially evacuation-reconstruction projects (Pinui-Binui) and Tama 38 initiatives (Nardi, 2021). While these projects are vital for earthquake preparedness, it is also important to consider the loss of mature trees and to think of alternatives at the planning stage. Experience shows that small adjustments to plans can often save trees. For example, in a project to lay a new sewage line in Carmiel, a request to fell 195 trees was submitted. However, after the forestry officer examined the site, it was determined that most of the trees could be preserved through modifications to the original plan, saving 124 trees from being felled.[19] Additionally, the experience of other countries can be utilized to develop habitats that allow trees to grow and thrive in built environments.[20]

18 See the website Israel's Digital Forest.

19 See the Ministry of Agriculture and Food Security website.

20 See, for instance, A Habitat Solutions Toolkit developed by the Forest and Trees Division of the Ministry of Agriculture.

It is worth noting that alongside the government's urban forestry initiative, several cities are advancing their own tree-planting programs using their budgets. For instance, Kfar Saba announced its project — A Tree for Every Resident by 2030 — as part of its urban climate change preparedness plan,[21] and Tel Aviv has set a target of planting 100,000 trees over the next decade.[22]

What can be done

According to the tree-felling data presented, if tree felling in Israel continues at the current pace, more than one million trees are expected to be felled by 2040, both in open spaces and urban areas. These figures highlight the urgent need for establishing policies to protect mature trees (beyond the Forest Ordinance). In particular, developers working on urban projects should be required to propose alternatives for preserving trees slated for felling, using the methods described here. Additionally, plans should be promoted to increase housing availability within cities while minimizing the conversion of open spaces for the construction of new neighborhoods. Furthermore, additional resources must be allocated to address the illegal felling of trees.

In parallel, it is important to ensure that publicly available databases include qualitative assessments of the benefits of trees in urban areas, beyond the quantitative data currently available. This should also include information or estimates regarding illegal tree felling and excessive pruning. Transparency of information in this field and its accessibility to the public — particularly information on tree felling permits that have been issued, so that the public has an opportunity to respond — is especially important given the significant impact of green and natural environments on human health and their contribution to quality of life. Moreover, it takes decades for a tree to reach a size where it fully provides its health benefits.

21 See the Kfar Saba Municipal website.

22 See the Tel Aviv Municipal website.

SPOTLIGHT

Reducing Environmental Health Risks Through Monitoring and Policy

Biomonitoring is a tool for assessing human exposure to health-hazardous chemicals. This process involves collecting and analyzing biological samples, such as blood and urine, to measure the concentrations of pollutants in the human body. The United States began implementing biomonitoring programs in the mid-1970s. Since then, more countries have joined, and these programs are now a central component of public health initiatives worldwide.

The chemicals measured in biomonitoring programs include metals such as arsenic, cadmium, chromium, lead, and mercury — substances known for their harmful effects on the cardiovascular and nervous systems, intelligence, and their potential to cause cancer (Lanphear et al., 2005; Parida & Patel, 2023). In addition to metals, organic compounds such as phthalates and bisphenol A (used in plastic production), flame retardants, pesticides, and polycyclic aromatic hydrocarbons (PAHs) are monitored, as they are known carcinogens (Blum & Ames, 1977; Mastrangelo et al., 1996; Shen et al., 2024). Other monitored chemicals include benzophenones (components of sunscreen), which have been found to be toxic to the reproductive and endocrine systems, reduce fertility, and are classified as possible human carcinogens (Mustieles et al., 2023). Beyond their health effects, these substances also impact ecosystems, leading to bans on their use in certain countries.

In Israel, biomonitoring surveys were conducted in 2011, 2015–2016, and 2019–2020. In 2020, the Ministry of Health launched a national biomonitoring program, planned to proceed in three phases: 2020–2021, 2024–2025, and 2029–2030. Internationally, Israel participates in two European biomonitoring and research consortia, HBM4EU and PARC.[23]

In the biomonitoring survey conducted from July 2020 to June 2021, samples were collected from 166 children aged 4–11 and 233 adults aged 18 and older, using a convenience sample while ensuring representation by gender, sector, geography, and community type (rural and urban). The survey measured concentrations of cotinine (a marker for tobacco smoke exposure), heavy metals such as lead, mercury, chromium, cadmium, arsenic, and nickel, as well as pesticides from the pyrethroid and organophosphate groups. Additionally, concentrations of nutritional markers such as iodine and selenium were measured. Alongside sample collection, demographic data, environmental exposure data, and the frequency of consumption of various foods were also gathered.

The impact of regulation on pesticide exposure: Insights from biomonitoring

Beyond providing information on pollutant concentrations in the body, biomonitoring allows for the evaluation of the impact of policies and regulatory measures aimed at reducing health risks. For example, exposure to the pesticides chlorpyrifos and diazinon (from the organophosphate group) has been linked to significant health risks, including reduced fetal IQ due to maternal exposure during pregnancy, shorter gestational periods, and lower birth

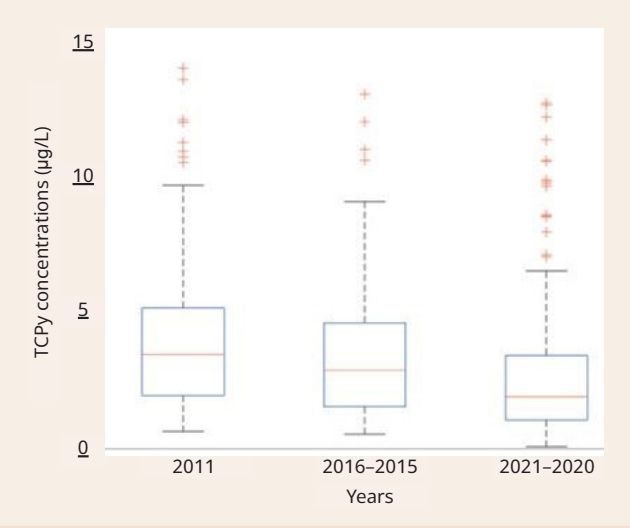
23 For more on this topic, see the website of the European Environment Agency.

weight (Barnett-Itzhaki et al., 2023). In light of these risks, and similar to regulations enacted in Europe and the United States, Israel gradually banned the use of these substances: household use was prohibited in 2007, use in private and public gardens was banned in 2009, and agricultural use of chlorpyrifos was prohibited in 2022.

The three biomonitoring surveys conducted in Israel revealed a significant decrease in pesticide concentrations in the urine of adults (Figure 13) and, in the last two surveys, also in children. This decline is attributed to the restrictions imposed on the use of these substances (Barnett-Itzhaki et al., 2023). However, the observed trends were varied: overall, there was a decrease in the mean and interquartile range of the measured substances. Among pregnant women and their infants, a significant decrease in concentrations was documented between 2012 and 2016 (Ein-Mor et al., 2018). Conversely, an unusual increase (two standard deviations above the mean) was observed among individuals who consumed fruits and vegetables in quantities above the average.

Despite the improvement, over 90% of children and adults are still exposed to chlorpyrifos. Among 6% of children and 2.2% of adults, exposure levels exceed the threshold value that raises concerns about health effects (Barnett-Itzhaki et al., 2023). However, given the observed decline following the restrictions on the use of chlorpyrifos and diazinon, it appears likely that in the next biomonitoring survey, conducted after the implementation of the agricultural ban, the downward trend in exposure to these substances will continue.

Figure 13. Concentrations of the pesticide chlorpyrifos in urine among adults in Israel



Source: Berman et al., 2023, Figure 3

Summary

This chapter delved into the worsening solid waste crisis in Israel — a crisis whose health implications are neither sufficiently studied nor quantified. Israel produces some of the highest amounts of solid waste in the developed world, with quantities increasing in tandem with population growth. Approximately 80% of the waste generated in Israel is sent to landfills (compared to an average of about 40% in OECD countries). One of the most severe consequences of landfilling is the high methane emissions it generates. Elevated concentrations of methane in the atmosphere accelerate global warming and, equally concerning, contribute to the formation of ground-level ozone — a pollutant with significant impacts on morbidity and mortality. Additionally, there is a growing phenomenon of illegal waste fires in open areas, releasing toxic substances into the air that pose serious health risks and contaminate soil and water sources.

Another topic addressed in this chapter is the felling of trees for construction and development purposes. The critical role of trees in reducing greenhouse gas concentrations in the atmosphere, moderating temperatures, and alleviating heat stress, as well as their positive impact on human health, has been demonstrated in numerous studies. Despite this, Israel is among the leading OECD countries in the loss of open spaces for the construction of new neighborhoods. Moreover, in urban renewal projects, mature trees in existing neighborhoods are often felled without offering alternative solutions. Finally, we briefly reviewed biomonitoring — a practice used to assess human exposure to health-hazardous chemicals — and its status in Israel.

To address the challenges outlined in this chapter, a range of actions can be taken. First and foremost, sustainable solutions are needed to transform waste from a nuisance into a resource — for example, utilizing methane gas emitted from landfills for energy production instead of allowing it to be released into the air where it poses a risk to public health. Efforts must also be continuously invested in reducing the amount of waste generated and minimizing the volume sent to landfills, alongside improving and strengthening waste collection and recycling infrastructure. Additionally, supervision and enforcement should be strengthened and all necessary measures to reduce waste burning and illegal

waste dumping, particularly in areas prone to environmental crime, should be taken. Investment in legislation and the implementation of environmental policy is also necessary to reduce the gap between Israel and OECD countries in the EPS index. Alongside all these efforts, in-depth research on the health impacts of the waste crisis is needed to ensure that the proposed solutions improve health and quality of life in Israel.

Regarding tree felling, it is crucial to develop a comprehensive policy for protecting mature trees. This should include addressing trees felled in urban renewal and housing expansion projects while implementing the existing policy of densifying urban spaces and minimizing the construction of new neighborhoods at the expense of open spaces.

References

English

Assamoi, B., & Lawryshyn, Y. (2012). The environmental comparison of landfilling vs. incineration of MSW accounting for waste diversion. ***Waste Management, 32***(5), 1019–1030.

Ayalon, O., Lev-On, M., Lev-On, P., & Shapira, N. (2023). ***Assessment of methane emissions from natural gas supply chain in Israel***. Samuel Neaman Institute for National Policy Research.

Blum, A., & Ames, B. N. (1977). Flame-retardant additives as possible cancer hazards: The main flame retardant in children's pajamas is a mutagen and should not be used. ***Science, 195***(4273), 17–23.

Brown, H., Proust, K., Newell, B., Spickett, J., Capon, T., & Bartholomew, L. (2018). Cool communities — urban density, trees, and health. ***International Journal of Environmental Research and Public Health, 15***(7), 5–9.

Bouwknegt, L., & Rouwendal, J. (2023). ***The effect of urban trees on house prices: Evidence from cut-down trees in Amsterdam***. Discussion Paper No. 2023-059/VIII. Tinbergen Institute.

Chudnovsky, A., Goldshtein, A., Shashua-Bar, L., Yovel, Y., & Potchter, O. (2023). Bat bio-assisted sampling (BAS) for monitoring urban heat island. ***Applied Geography, 155***.

Cohen, P., Potchter, O., & Matzarakis, A. (2012). Daily and seasonal climatic conditions of green urban open spaces in the Mediterranean climate and their impact on human comfort. ***Building and Environment, 51***, 285–295.

Dabrowska, D., Rykala, W., & Nourani, V. (2023). Causes, types and consequences of municipal waste landfill fires — literature review. ***Sustainability, 15***(7), 1–13.

Davis, J. M., & Garb, Y. (2019). A strong spatial association between e-waste burn sites and childhood lymphoma in the West Bank, Palestine. ***International Journal of Cancer, 144***(3), 470–475.

Donovan, G. H., Butry, D. T., Michael, Y. L., Prestemon, J. P., Liebhold, A. M., Gatziolis, D., & Mao, M. Y. (2013). The relationship between trees and human health: Evidence from the spread of the emerald ash borer. ***American Journal of Preventive Medicine, 44***(2), 139–145.

Donzelli, G., & Morales Suarez-Varela, M. (2024). Tropospheric ozone: A critical review of the literature on emissions, exposure, and health effects. ***Atmosphere, 15***(7), 1–14.

Ein-Mor, E., Ergaz-Shaltiel, Z., Berman, T., Göen, T., Natsheh, J., Ben-Chetrit, A., Haimov-Kochman, R., & Calderon-Margalit, R. (2018). Decreasing urinary organophosphate pesticide metabolites among pregnant women and their offspring in Jerusalem: Impact of regulatory restrictions on agricultural organophosphate pesticides use? ***International Journal of Hygiene and Environmental Health, 22***1(5), 775–781.

Grove, R., & Sanchez, O. (2022). Human exposure to environmental pollutants and associations with non-Hodgkin lymphoma: A review. ***Exposure and Health, 14***(1), 99–109.

Grundström, M., & Pleijel, H. (2014). Limited effect of urban tree vegetation on NO_2 and O_3 concentrations near a traffic route. ***Environmental Pollution, 189***(2), 73–76.

Grylls, T., & van Reeuwijk, M. (2022). How trees affect urban air quality: It depends on the source. ***Atmospheric Environment, 290***, 119275.

Hamaarag (2022). ***The State of Nature Report 2022***. Hamaarag: Israel National Ecosystem Assessment Program. (English summary)

Han, C., Jang, M., Yoon, J., Lee, B., Kim, J., Jang, H., & Benmarhnia, T. (2024). Estimating the acute health effects of smoke exposure from an urban factory fire accident: A case study of a tire factory fire in Korea. ***Environmental Health Perspectives, 132***(8), 87008.

Han, L., Heblich, S., Timmins, C., & Zylberberg, Y. (2024). ***Cool cities: The value of urban trees***. NBER Working Paper No. 32063. National Bureau of Economic Research.

Infante-Rivard, C., & Weichenthal, S. (2007). Pesticides and childhood cancer: An update of Zahm and Ward's 1998 review. ***Journal of Toxicology and Environmental Health, 10***(1–2), 81–99.

Jiang, Y., Huang, J., Li, G., Wang, W., Wang, K., Wang, J., Wei, C., Li, Y., Deng, F., Baccarelli, A. A., Guo, X., & Wu, S. (2023). Ozone pollution and hospital admissions for cardiovascular events. ***European Heart Journal, 44***(18), 1622–1632.

Jones, R. R. (2024). The complexities of PM2.5, greenspace, and childhood cancer. ***Journal of the National Cancer Institute, 116***(6), 779–81.

Kroeger, T., Escobedo, F. J., Hernandez, J. L., Varela, S., Delphin, S., Fisher, J. R. B., & Waldron, J. (2014). Reforestation as a novel abatement and compliance measure for ground-level ozone. ***PANS, 111***(40), E4204–E4213.

Lanphear, B. P., Wright, R. O., & Dietrich, K. N. (2005). Environmental neurotoxins. ***Pediatrics in Review, 26***(6), 191–198.

Markevych, I., Schoierer, J., Hartig, T., Chudnovsky, A., Hystad, P., Dzhambov, A. M., De Vries, S., Triguero-Mas, M., Brauer, M., Nieuwenhuijsen, M. J., Lupp, G., Richardson, E. A., Astell-Burt, T., Dimitrova, D., Feng, X., Sadeh, M., Standl, M., Heinrich, J., & Fuertes, E. (2017). Exploring pathways linking greenspace to health: Theoretical and methodological guidance. ***Environmental Research, 158***, 301–317.

Mastrangelo, G., Fadda, E., & Marzia, V. (1996). Polycyclic aromatic hydrocarbons and cancer in man. ***Environmental Health Perspectives, 104***(11), 1166–1170.

Mavrogianni, A., Davies, M., Taylor, J., Chalabi, Z., Biddulph, P., Oikonomou, E., Das, P., & Jones, B. (2014). The impact of occupancy patterns, occupant-controlled ventilation and shading on indoor overheating risk in domestic environments. ***Building and Environment, 78***, 193–198.

Michael, Y., Lensky, I., Brenner, S., & Tchetchik, A. (2018). Economic assessment of fire damage to urban forest in the wildland–urban interface using planet satellites constellation images. ***Remote Sensing 10***(9), 1479.

Mustieles, V., Balogh, R. K., Axelstad, M., Montazeri, P., Márquez, S., Vrijheid, M., Draskau, M. K, Taxvig, C., Peinado, F. M., Berman, T., Frederiksen, H., Fernández, M. F., Vinggaard, A. M., & Andersson, A. M. (2023). Benzophenone-3: Comprehensive review of the toxicological and human evidence with meta-analysis of human biomonitoring studies. ***Environment International, 173***.

Nachtigall, D., Lutz, L., Cardenas Rodriguez, M., Maria D'Arcangelo, F., Haščič, I., Kruse, T., & Pizarro, R. (2024). The climate actions and policies measurement framework: A database to monitor and assess countries' mitigation action. ***Environmental and Resource Economics, 87***(1), 191–217.

Parida, L., & Patel, T. N. (2023). Systemic impact of heavy metals and their role in cancer development: A review. ***Environmental Monitoring and Assessment, 195***(766).

Rana, I., Dahlberg, S., Steinmaus, C., & Zhang, L. (2021). Benzene exposure and non-Hodgkin lymphoma: A systematic review and meta-analysis of human studies. ***The Lancet Planetary Health, 5***(9), e633–e643.

Sadeh, M., Fulman, N., Agay, N., Levy, I., Ziv, A., Chudnovsky, A., Brauer, M., & Dankner, R. (2024). Residential greenness and long-term mortality among patients who underwent coronary artery bypass graft surgery. ***Epidemiology, 35***(1), 41–50.

Sadeh, M., & Shafran-Natan, R. (2023). Climate sensitivity and regulatory deficiencies: Environmental health challenges in Israel. In A. Weiss (Ed.), ***State of the nation report: Society, economy & policy 2023*** (pp 349–385). Taub Center for Social Policy Studies in Israel.

Schubert, S., & Grossman-Clarke, S. (2013). The influence of green areas and roof albedos on air temperatures during extreme heat events in Berlin, Germany. ***Meteorologische Zeitschrift, 22***(2), 131–143.

Shen, C., Zhang, K., Shi, J., Yang, J., Wang, Y., Li., Z., Dai, H., & Yang, W. (2024). Association between brominated flame retardants and risk of endocrine-related cancer: A systematic review and meta-analysis. ***Toxicology Letters, 394***, 11–12.

State Ombudsman (2022). ***Collection and burial of waste in local authorities***. State Ombudsman of Israel.

State Ombudsman (2024). ***Transboundary air pollution from waste burning in Judea and Samaria***. State Ombudsman of Israel.

Steffens, J. T., Wang, Y. J., & Zhang, K. M. (2012). Exploration of effects of a vegetation barrier on particle size distributions in a near-road environment. ***Atmospheric Environment, 50***, 120–128.

Tesnière, V., Maes, M. J. A., & Haščič, I. (2024). ***Monitoring land cover change to understand biodiversity pressures***. Environment Working Paper No. 254. OECD.

UNEP (2021). ***Global Methane Assessment: Benefits and Costs of Mitigating Methane Emissions***. UN Environment Programme.

Weichenthal, S., Van Rijswijk, D., Kulka, R., You, H., Van Ryswyk, K., Willey, J., Dugandzic, R., Sutcliffe, R., Moulton, J., Baike, M., White, L., Charland, J. P., & Jessiman, B. (2015). The impact of a landfill fire on ambient air quality in the north: A case study in Iqaluit, Canada. ***Environmental Research, 142***, 46–50.

Xie, Y., Fan, S., Luo, Y., Li, J., Zhang, Y., Hu, L., Qiu, H., Zhou, G., Heinrich, J., Zhao, T., Li, Z., Li, L., Xu, A., Ji, J. S., Zhang, Z., Zhou, Y., Lau, S. S. S., Zou, X., Dong, G., … Yang, B. (2024). Credibility of the evidence on green space and human health: An overview of meta-analyses using evidence grading approaches. ***EBioMedicine, 106***, 1–14.

Hebrew

Alfasi, N., & Savaya, Y. (2024). Between innovation, adaptability and urban neighborhood planning in Israel. ***Planning, 21***(1): 1–17.

Alon, R. (2024, April 19). Illegal garbage disposal — the phenomenon that costs us a lot. ***Ynet***.

Ashkenazi, S. (2020, August 11). The trash problem in Israel is becoming more urgent from year to year. Are incinerators the right solution? ***Globes***.

Ashkenazi, S. (2023, June 14). Instead of planting, they uproot: Where have the trees in Israel's cities gone? ***Calcalist***.

Ashkenazi, S., & Teitelbaum, S. (2023, January 8). The tax on disposable tableware reduced consumption by 34%. ***Calcalist***.

Barnett-Itzhaki, Z., Berman, T., Rorman, E., & Groisman, L. (2023). Using biomonitoring to assess the impact of regulatory changes on population exposure in Israel to organophosphate pesticides. ***Ecology and Environment, 14***(3).

Berman, T., Barnett-Itzhaki, Z., Rorman, E., & Groisman, L. (2023). ***Exposure of children and adults in Israel to organic pesticides (chlorpyrifos) and pyrethroids***. Ministry of Health.

CECI (2024). ***Urban shading and cooling with street trees: Interim report***. Citizen's Empowerment Center in Israel.

Eizenkot, M. (2019). ***An estimate of economic costs of waste fires***. Knesset, Research and Information Center.

Eliyahu, A. (2021). ***The regulation of the waste sector in Arab, Druze, and Bedouin localities — update***. Knesset, Research and Information Center.

Mark, S., Alfasi, N., & Omer, I. (2016). Environmental awareness in an ultra-Orthodox neighborhood in Ashdod. ***Ecology and Environment, 7***(2), 145–152.

Ministry of Agriculture and Rural Development (2019). ***Forestry officer work procedures***.

Ministry of Environmental Protection (2018). ***Policy paper for promoting the establishment of energy recovery facilities from municipal waste in Israel***.

Ministry of Environmental Protection (2020a). ***The Green Book: Estimates and measurements of environmental costs***.

Ministry of Environmental Protection (2020b). ***Strategic plan for sustainable waste management for 2021–2030: Transitioning to a circular economy by 205***0.

Ministry of Environment Protection (2023). *OECD report: Review of Israel's environmental performance* (abridged version, 2023).

Ministry of Environmental Protection (2024a). *Environmental emissions register: Annual report 2023*.

Ministry of Environmental Protection (2024b). *Reducing air pollution and greenhouse gases in Israel 2023*.

Ministry of Finance (2024). *Draft economic plan for 2025: Structural changes*.

Nardi, G. (2021, March 6). We will end up with no shade: The trees that are disappearing in favor of Tama 38. ***Globes***.

Nissim, N. (2021, June 28). Corona trash. ***mako***.

Prime Minister's Office (2022). *Promoting street trees in Israeli cities: Shading and cooling the urban space through street trees as climate change adaptation*. Prime Minister's Office, National Economic Council.

Rinat, Z. (2024a, September 15). Waste management in a dangerous crisis: Overloaded landfills, lack of alternatives, and criminal takeover of waste collection. ***Haaretz***.

Rinat, Z. (2024b, November 15). Nazareth residents burn accumulated waste due to municipal debt to waste removal contractors. ***Haaretz***.

Truan, I. (2019). *Regulation of tree felling in construction sites*. Knesset, Research and Information Center.

Executive Summary

The Health and Economic Burden of Desalination-Related Magnesium Deficiency

Maya Sadeh, Itamar Grotto, Nadav Davidovitch, and Alex Weinreb

This study examined the health and economic impacts of magnesium deficiency in desalinated water. The research found that this deficiency increases the excess incidence of Type 2 diabetes and ischemic stroke. Before the era of water desalination, natural water sources supplied 10%–20% of Israel's magnesium intake. However, desalinated water — which now accounts for approximately 70% of household water in Israel — contains no magnesium at all.

* Dr. Maya Sadeh, Senior Researcher and Head, Taub Center Research and Policy Initiative for Environment and Health; doctoral student, Department of Epidemiology and Preventive Medicine, Tel Aviv University. Prof. Itamar Grotto, Public Health Physician; professor of epidemiology; Steering Committee Chair, Taub Center Research and Policy Initiative for Environment and Health. Prof. Nadav Davidovitch, Principal Researcher and Chair, Health Policy Program, Taub Center; Director, School of Public Health, Ben-Gurion University of the Negev. Prof. Alex Weinreb, Research Director and Chair, Demography Area, Taub Center for Social Policy Studies in Israel. This study was conducted under the auspices of the Taub Center Research and Policy Initiative for Environment and Health which is generously supported by Yad Hanadiv. This research was published in September 2024 and is available in full on the Taub Center website.

The study shows that by reintroducing magnesium into desalinated water, it is possible to reduce illness rates and save the healthcare system hundreds of millions of shekels. The projected annual savings in direct medical expenses from preventing Type 2 diabetes and ischemic stroke through an increase in magnesium intake of 50 mg per day range between NIS 83 million to NIS 188 million in 2025 and between NIS 110 million to NIS 253 million in 2040. According to a report by the Ministry of Health, the cost of adding magnesium to water depends on the chosen technology. With the cheapest technology, the cost is expected to be NIS 37 million for supplying water to approximately 10 million people, while with a more expensive yet technically simpler technology, the cost is expected to reach NIS 270 million .

Health impacts of magnesium deficiency

Magnesium plays a critical role in ensuring the proper functioning of all body organs, including the cardiovascular system, bones, immune system, and digestive system, with some of its functions being essential to life. Magnesium is involved in regulating the electrical properties of the heart muscle and suppressing inflammatory mechanisms that prevent vascular calcification, the development of atherosclerosis, thrombosis, and myocardial infarction. It also plays a crucial role in regulating calcium and potassium, as well as insulin receptors.

Magnesium intake in Israel

The recommended daily intake of magnesium is 265–315 mg for women and 350–415 mg for men. The deficiency in magnesium intake, primarily due to a magnesium-poor diet and low-magnesium water, affects all age and population groups. The deficit ranges from a shortfall of 10 mg among Jewish women aged 18–44 to a 50%–80% deficiency among Arabs and Jews aged 65 and older. A significant deficiency was found among relatively young Jewish men and women, aged 18–34, who consumed an average of 60 mg and 68 mg less than the recommended daily amount, respectively. Among Arab men and women, the deficiency was more pronounced in older age groups, 45–65, with shortfalls of 51 mg and 53 mg below the recommended daily amount, respectively. According to the researchers, this is concerning because individuals in this age group are more prone to medical conditions like diabetes that hinder efficient

magnesium absorption. Lastly, magnesium intake is particularly low among young Arab women (96 mg below the recommended daily amount).

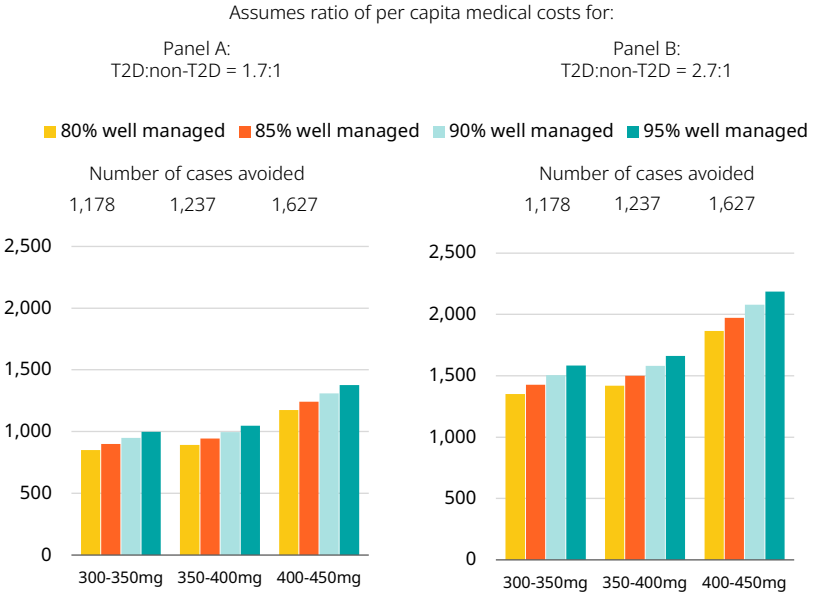
Estimating the health impacts of magnesium deficiency in Israel

The negative effects of desalination on magnesium levels have been recognized in Israel for some time. Discussions on adding magnesium to desalinated drinking water began as early as 2004. In 2013, public health regulations stipulated that the feasibility and cost of adding magnesium to drinking water should be examined to reach a concentration of 20–30 mg per liter. A professional committee established by the Ministry of Health to study the issue concluded that reducing morbidity and mortality from Type 2 diabetes, coronary heart disease, and ischemic stroke offers substantial economic benefits. The committee recommended establishing a pilot facility for adding magnesium to water.

The researchers present economic estimates showing that adding 50 mg of magnesium to a person's daily intake could prevent over 1,000 new cases of Type 2 diabetes per year and more than 100 new cases of stroke. Overall, this represents annual savings of hundreds of millions of shekels for the healthcare system. In economic terms, the estimates indicate that the amount saved by the healthcare system in 2040 from reducing cases of Type 2 diabetes and stroke, assuming an additional intake of 50 mg of magnesium per person per day, would range between NIS 111 million to NIS 254 million, depending on the cost of diabetes treatment and baseline magnesium consumption. The researchers emphasize that this refers only to the direct savings from reducing cases of diabetes and stroke. However, if the indirect costs that will also be saved are included, the amounts are expected to be at least twice as high.

Millions of shekels saved to lifetime direct medical costs by raising magnesium consumption by 50 mg for the 2019 levels of incidence

NIS millions



Note: the costs are presented by the ratio of T2D per capita medical costs to non-T2D medical costs, number of cases avoided, and percent of T2D patients managing their condition well.

Source: Sadeh, Grotto, Davidovitch, and Weinreb, Taub Center | Data: IHME, 2023; Leal et al., 2009; Weinreb et al. (forthcoming); Zhao et al., 2020

The study also found that the risk of diabetes in Israel is higher among population groups characterized by lower socioeconomic status. These groups have lower baseline magnesium intake in their diets and lower rates of dietary supplement consumption compared to groups of higher socioeconomic status. Therefore, the researchers conclude that the absence of magnesium in drinking water contributes to increasing health inequalities.

ECONOMICS

LABOR

HEALTH

WELFARE

EDUCATION

DEMOGRAPHY

EARLY CHILDHOOD

ENVIRONMENT & HEALTH

The Taub Center for Social Policy Studies in Israel is an independent, nonpartisan, socioeconomic research institute based in Jerusalem. The Center conducts high quality, impartial research on socioeconomic conditions in Israel, and develops innovative, equitable and practical options for macro public policies that advance the well being of Israelis. The Center strives to influence public policy through direct communications with policy makers and by enriching the public debate that accompanies the decision making process. It was established in 1982 under the visionary leadership of Herbert M. Singer, Henry Taub, and the American Jewish Joint Distribution Committee.

The Center is funded by a permanent endowment created by the Henry and Marilyn Taub Foundation, the Herbert M. and Nell Singer Foundation, Jane and John Colman, the Kolker-Saxon-Hallock Family Foundation, the Milton A. and Roslyn Z. Wolf Family Foundation, and the American Jewish Joint Distribution Committee. In addition, generous support is also received each year from individual donors, foundations, and Jewish federations.