

A Picture of the Nation

Israel's Society and Economy in Figures

Avi Weiss



2021

- Health
- The Labor Market
- Welfare
- Education
- Macroeconomic Trends
- Spotlight: Supply of Physicians
- Spotlight: Overeducation
- Spotlight: Early Childhood

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Taub Center for Social Policy Studies in Israel
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The research upon which most of the figures and analyses in this booklet are based can be found in the *State of the Nation Report 2020* and other Taub Center publications

Taub Center for Social Policy Studies in Israel

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DEDICATION



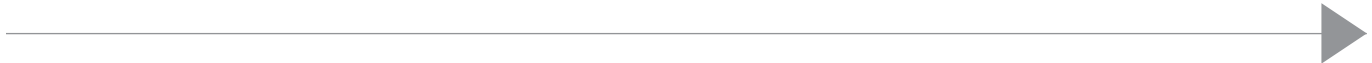
This booklet is dedicated to the memory of Prof. Dov Chernichovsky z"l.

Dov was part of the Taub Center since its inception in 1982. He served as Chair of the Health Policy Program in the Center until his untimely and unexpected passing in January 2021.

Dov was a health economist, completing his BA and MA in Hebrew University and his PhD in the City University of New York. He joined the Department of Health Systems Management at Ben-Gurion University in 1978, served as its chair from 2000–2001, and retired as a full professor. He published over 100 articles, many in leading journals, was a research associate in NBER, and served in several capacities at the World Bank. In addition, Dov served on important governmental committees such as the Netanyahu Commission (1988–1990) and was the Health System Adviser to the Knesset from 2004–2006.

More than anything else, Dov was an inspiration to everyone around him. He was a deep thinker and a gifted and devoted educator. Independent of the subject being discussed, Dov's insights contributed to every conversation, often transforming viewpoints. His sharp vision allowed him to get to the heart of matters quickly and he had an exceptional ability to explain things simply and lucidly.

Dov was deeply passionate about his work and he labored tirelessly to combat inefficiencies and inequalities in the Israeli health system. The depth of his knowledge was second to none, and his ability to pinpoint the most crucial issues facing the system was remarkable. His views and analyses were actively sought by health professionals, government agencies, and academics.





DEDICATION

Dov loved working with young researchers, teaching them patiently how to ask important questions, how to address them and how to properly carry out their research. He was soft-spoken, patient and kind, and always a pleasure to be with and to speak with. He helped educate a generation of health specialists, many of them economists. He exemplifies what is written in *Pirkei Avot*, Chapter 4, *Mishna* 5:

Rabbi Ishmael his son says: One who learns in order to teach, is given the opportunity to learn and teach. One who learns in order to do, is given the opportunity to learn, teach, observe, and do.

Dov learned in order to do, and he was given and took the opportunity to teach and to observe how his efforts and those of his students helped transform Israel's health system.

Dov, you are very much missed.

Our hearts go out to his wife, Reumah, his children, Eyal and Michal, his grandchildren, the Taub Center family, and all those who loved him. May his memory be blessed.

Avi Weiss

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FOREWORD



It is once again my honor and pleasure to present *A Picture of the Nation 2021*. Like last year, this year's edition is centered on the effects of COVID-19, which has dominated our lives for over a year.

At the time of writing all signs are pointing towards a continual improvement and return to our originally scheduled lives, but things are still fluid and could change in a heartbeat, especially in view of what is currently happening in much of Europe. In the following pages we assume the best — that we have seen our last shutdown due to COVID and that life will return to a new normal, in Israel at least. This could look much like the old normal, though hopefully it will also include some improvements triggered by the pandemic, including increased remote schooling and work.

The book this year is dedicated to Prof. Dov Chernichovsky who passed away unexpectedly early this year. Dov's passing caught us all by surprise, and while we at the Center feel the loss greatly, our hearts go out to his wife, Reumah, and his children Eyal and Michal. While there is a separate dedication page, I felt it would be remiss not to mention his absence here.

I hope that this book continues to serve as a source of information and an asset for decision makers throughout Israel and the diaspora.

Prof. Avi Weiss

President, Taub Center

Department of Economics, Bar-Ilan University

Abbreviations

| | |
|-------|--|
| CBS | Central Bureau of Statistics |
| ECEC | Early childhood education and care |
| EU | European Union |
| GDP | Gross domestic product |
| ICT | Information and communications technology |
| IEA | International Association for the Evaluation of Educational Achievement |
| IMF | International Monetary Fund |
| NII | National Insurance Institute |
| NIS | New Israeli Shekel, represented by the symbol ₪ |
| OECD | Organisation for Economic Co-operation and Development |
| PIRLS | Progress in International Reading Literacy Studies, worldwide exams conducted by the IEA (International Association for the Evaluation of Educational Achievement) |
| PISA | Programme for International Student Assessment, worldwide exams conducted by the OECD |
| PPP | Purchasing power parity |
| RAMA | Israel's National Authority for Measurement and Evaluation in Education |
| TALIS | Teaching and Learning International Survey, conducted by the OECD |

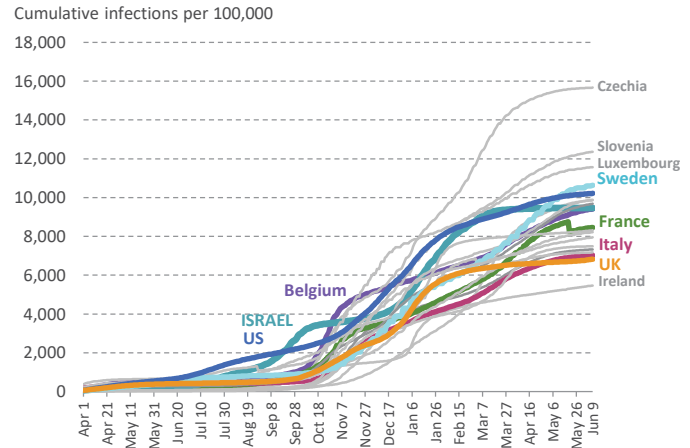
HEALTH

The immediate and most obvious effect of the pandemic in Israel was on its health. While Israel did quite well in many aspects, it did poorly in others. COVID-19 epidemiology and other social and economic effects reflected and often emphasized existing social and economic structures and inequalities. In the following pages we analyze Israel's performance and demonstrate how the pandemic manifested itself in Israel, what actually occurred, and what could have happened under different scenarios.

Israel had one of the highest levels of infection from COVID-19 in the world

Israel was one of the worst performers in the OECD in terms of COVID-19 infections per capita. In September 2020, Israel's population had the highest confirmed infection levels of any developed country. By June 9, 2021, 9.46% of Israel's population had been infected. Although this was little changed since late March — a product of the rapid vaccination campaign — it continued to surpass countries like the Netherlands, France, Italy, and the UK, whose failures to temper the spread of COVID were widely recognized in international press coverage. In terms of its cumulative pattern of infection, Israel's trajectory most closely approximated that of the US.

Cumulative confirmed infections in the 20 OECD countries with the highest rates of COVID-19 infection by June 2021



Source: Alex Weinreb, Taub Center | Data: Johns Hopkins University

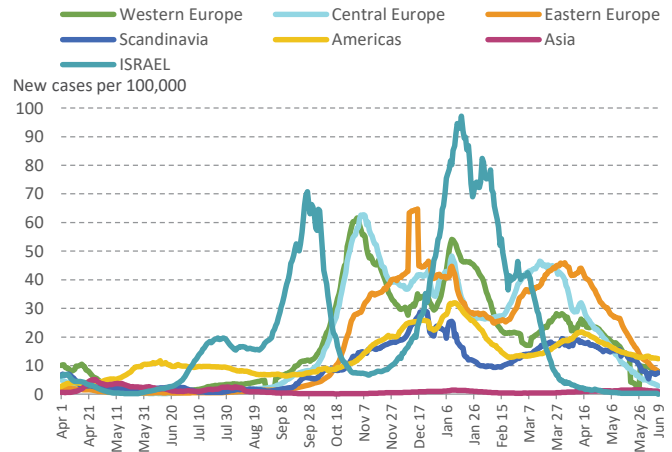
Israel peaked earlier and repeatedly

When we compare daily infection patterns in Israel to those in all other OECD countries (plus Singapore and Taiwan) — organized here into geographic regions — we see that Israel's infection pattern looked different in terms of timing.

After successfully managing the first wave in Spring 2020, Israel became the first developed country to experience a second wave, which began slowly in early July, plateaued over the summer, then shot up in September, about a month earlier than the peak in Western and Central Europe, and two months before Eastern Europe. This early second peak was the reason that Israel had the highest total infection per capita in the OECD in September.

After significant reductions in October and November, infections spiked even higher from late December into mid-February 2021, just as the vaccination campaign was heading into overdrive, possibly as a result of the British variant. Only by April did rates of new infection fall to levels experienced in OECD countries in Asia throughout the pandemic.

Seven-day average of new daily infections from COVID-19



Source: Alex Weinreb, Taub Center | Data: Johns Hopkins University

Sectoral differences in COVID-19 infection and hospitalization

COVID-19 infections per capita had a very distinct gradient across sectors. By March 3, 2021, cumulative infections ranged from a median of 5% of the population in Bedouin communities to around 24% in Haredi communities. (In these “boxplots,” the median is the horizontal line within each box, the mean is marked by the “x,” the upper and lower edges of the box cover the 25th–75th percentile, and the vertical line is a measure of reasonable variance — isolated data points beyond those are outliers.) In fact, each of the eight Haredi municipalities had an infection rate that was higher than in any other municipality in Israel.

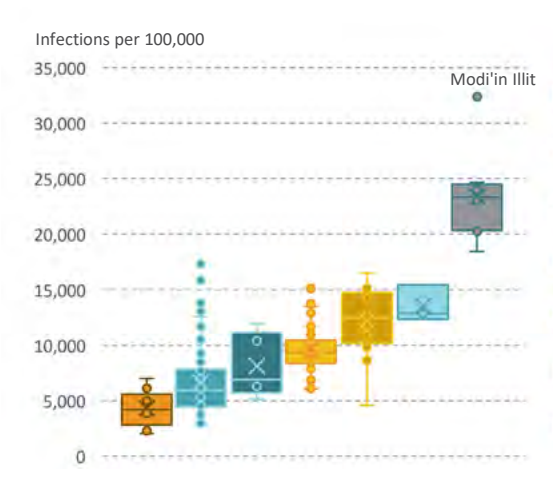
Yet hospitalizations did not follow the same gradient. Eight of the ten municipalities with the highest rates of hospitalization were in the Arab sector. Topping the list, with more than 1.1% of its population hospitalized, was Abu Gosh. Overall, hospitalization rates were lowest in non-Haredi Jewish municipalities.

The low rates of hospitalization in the Haredi population relative to their very high infection levels reflects its young age structure. Only a small percentage of the population of most Haredi towns is aged at least 65: a mere 1.0% in Modi'in Illit, 1.3% in Beitar Illit, 2.0% in El'ad — relative to the national average of 14%. Notably, in Bnei Brak, where 8.2% of the population is aged at least 65, COVID-19 hospitalization rates were much higher: 0.8% of its population was hospitalized.

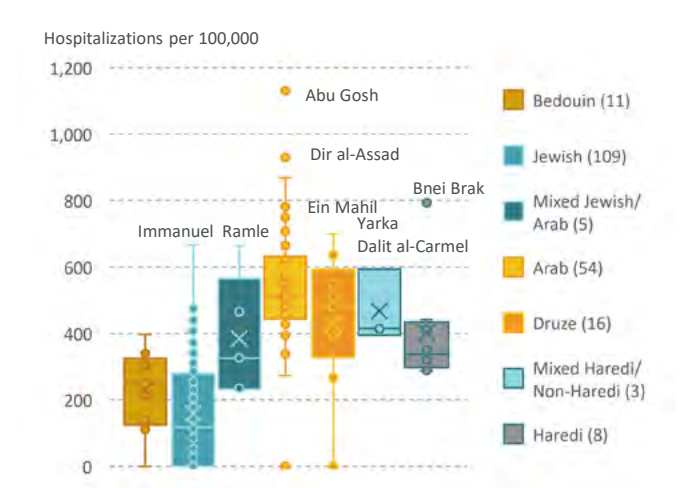
The high rates of hospitalization in Arab towns, in contrast, reflect the higher prevalence of preexisting health conditions — especially Type 2 diabetes and obesity — thought to be around three times as high in the Arab as in the Jewish sector. These high rates offset the fact that a relatively low percentage of the Arab population is elderly.

The higher rates of hospitalization in the Bedouin sector reflect both higher prevalence of preexisting conditions and also much lower levels of testing than in any other population group in Israel.

Cumulative infections per 100,000 in 205 municipalities



Cumulative hospitalizations per 100,000 in 205 municipalities



Note: Jewish municipalities have less than 25% Haredim; Arab municipalities do not include Bedouin communities; Mixed Haredi/Non-Haredi municipalities have a population of between 25% and 90% Haredim; Haredi municipalities are over 90% Haredi. The number of municipalities of each type appears in parentheses.

Source: Alex Weinreb, Taub Center | Data: CBS

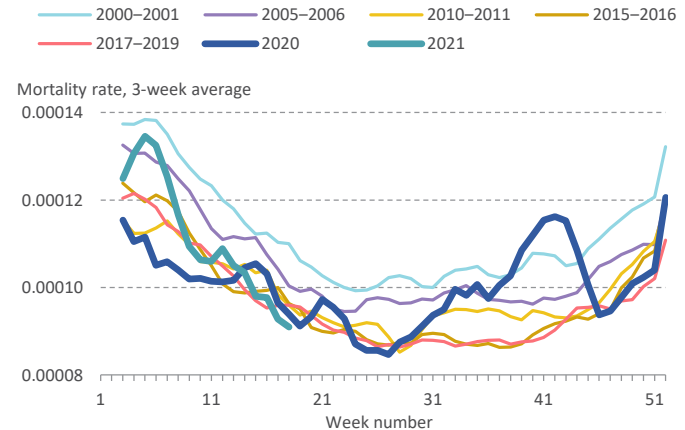
Excess mortality in Israel in 2020

Over the last 20 years, mortality rates have been falling. This trend continued in the first two and a half months of 2020. After that, we see the impact of the COVID pandemic.

The first wave of higher mortality — ending by early May (week 18) — corresponds to the first wave of COVID. A slightly shorter second wave began at the end of May. The much more significant excess mortality began in early July and rose steadily through that month. From early August until late September, mortality levels in Israel were at or above the 2005–2006 level. From then until the final week of October, mortality rose to levels last experienced in the 1990s. The final COVID bump began in late December 2020, peaked in early February 2021 at levels seen in the early 2000s, then fell to “normal” seasonal levels by late March and below those levels by late April.

These trends show that although COVID-related mortality rates were highest in January 2021, excess mortality, as measured in relation to seasonal norms, was actually highest in October 2020.

Mortality rate by week, selected years



Source: [Alex Weinreb](#), Taub Center | Data: Ministry of Health

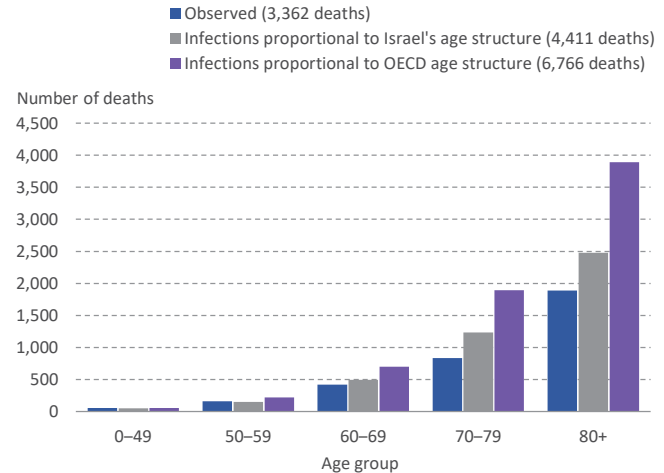
The number of deaths would have been much greater with an older age-pattern of infection

COVID-19 mortality in Israel was much lower than expected given the very high levels of infection. There were two main reasons for this.

First, the elderly — whose risk of mortality from COVID is much higher — are a much smaller percentage of the population in Israel than in most developed countries. People aged 70+ constitute 8.2% of the population, relative to 12.7% in the OECD as a whole. Second, from July until the end of the year, confirmed infections in Israel were disproportionately concentrated among people in the 20–55 age groups — where the risk of mortality was close to zero — rather than among the elderly.

If COVID infection rates in Israel during 2020 had been proportionate to its age structure, Israel would have experienced 31% more deaths (4,411 instead of 3,362). And if COVID infection rates in Israel during 2020 were proportionate to the OECD age structure, Israel's toll of deaths in 2020 would have doubled, to around 6,766 deaths.

Effects of shifting age-specific infection rates on total number of COVID-19 deaths in Israel, March 18 through December 31, 2020



Source: [Alex Weinreb](#), Taub Center | Data: Ministry of Health

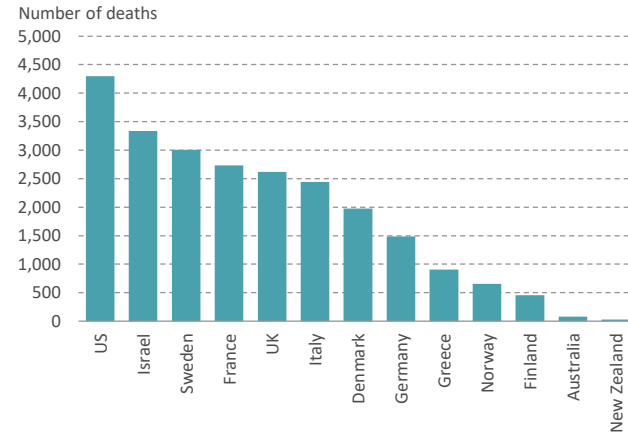
The number of deaths would have been much smaller had Israel kept infection levels down

How many people would have died in Israel had we kept infections down? To find this, we apply Israel's age-specific infection rates and age-specific COVID-19 fatality rates to infection levels experienced in other developed countries.

This exercise confirms how profoundly Israel's failure to limit infection, relative to these other countries, impacted mortality. Had Israel kept its infection levels to those of New Zealand and Australia, no more than 80 Israelis would have died from COVID during 2020, a mere 2.4% of the actual toll. Had Israel kept its infection levels to those of Finland or Norway, no more than several hundred would have died, around 14–20% of the actual number.

Even putting aside these best-performers, Israel did poorly. Had Israel kept its infection levels to those of Italy, France, or the UK, it would have saved 600–900 lives, around 18–27% of the total. In this counter-factual scenario, Israel even experienced around 10% more deaths than Sweden, which for most of 2020 took an extreme laissez-faire approach to managing the epidemic.

Expected number of deaths, March 18 through December 31, 2020



Source: Alex Weinreb, Taub Center | Data: Ministry of Health

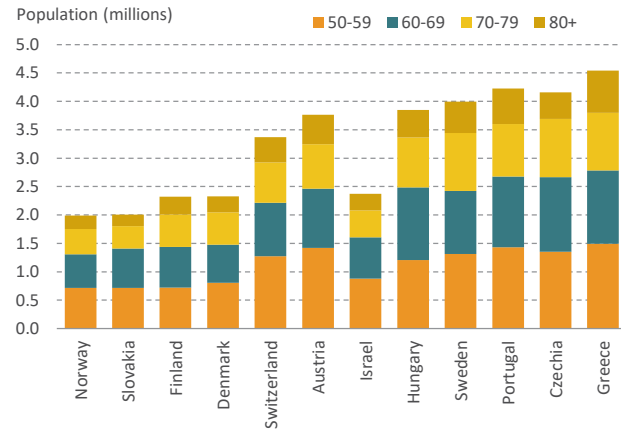
Israel's age structure helped its vaccination campaign

Israel's vaccination campaign has been very rapid and successful. Within the first two months, more than 90% of people aged 70+ had received at least one dose, as had about 80% of people in their 50s and 60s.

Israel's young age structure was one factor in facilitating this success. We can see this by comparing the number of people aged 50+ in Israel — the group in greatest need of vaccination — to the number in OECD countries with populations in the 5–11 million range. In terms of total population, Israel falls between Austria and Hungary. However, Israel has 1.5 million fewer people aged 50+. The number of people aged 50+ in Israel is similar to that in Finland and Denmark, whose total populations are at least 3.4 million smaller.

While its young age structure has eased Israel's path to near-universal vaccination among the elderly, it will make it challenging to reach herd immunity without vaccinating a large share of children. People aged 0–19 account for around 35% of Israel's population, but only 19–24% in the other countries represented here.

Population aged 50+, by age group



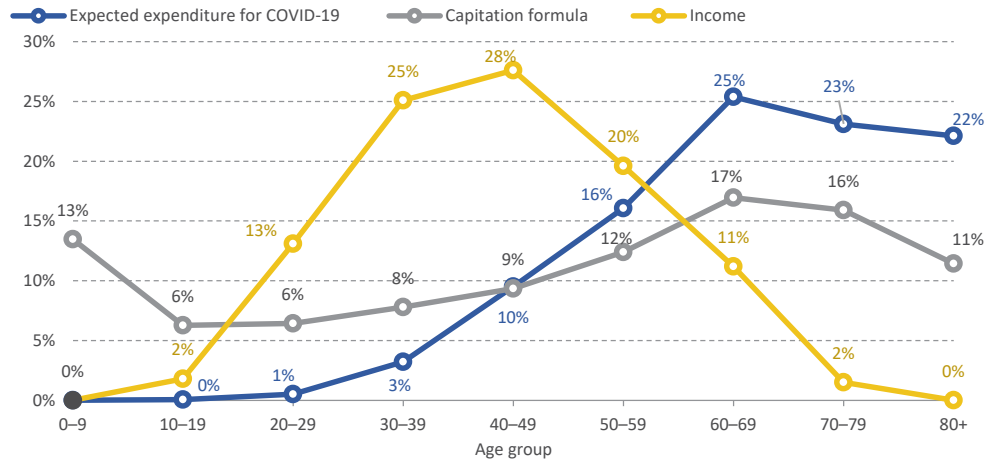
Source: Alex Weinreb, Taub Center | Data: OECD, 2018; US Census International Database

COVID-19 placed a disproportionate burden on working-age populations

At a fundamental level, the Israeli healthcare system — providing nationalized health insurance to all — is based on an intergenerational solidarity-cum-insurance principle. The health tax, which finances the system, is income based (up to a limit) and, as can be seen in the figure, about half of the cost is borne by workers at the prime working ages of 30–49. This stands in stark contrast to the amounts allocated to these age groups according to a “capitation formula” that reflects age-dependent morbidity rates. In contrast, the elderly population, which contributes little to the system’s financing, is responsible for a large share of the expenditure.

The dynamics of the COVID-19 crisis have disturbed this intergenerational calculus. As the figure shows, the healthcare costs associated with this crisis rise sharply with age. Yet unlike the life-cycle considerations that underlie the routine management of the system, the COVID crisis is a unique event. Accordingly, the working-age population ends up financing the healthcare needs of the elderly with no promise of intergenerational reciprocity.

The share of each age group in income, in healthcare expenditure according to the capitation formula, and in expected healthcare expenditure due to COVID-19



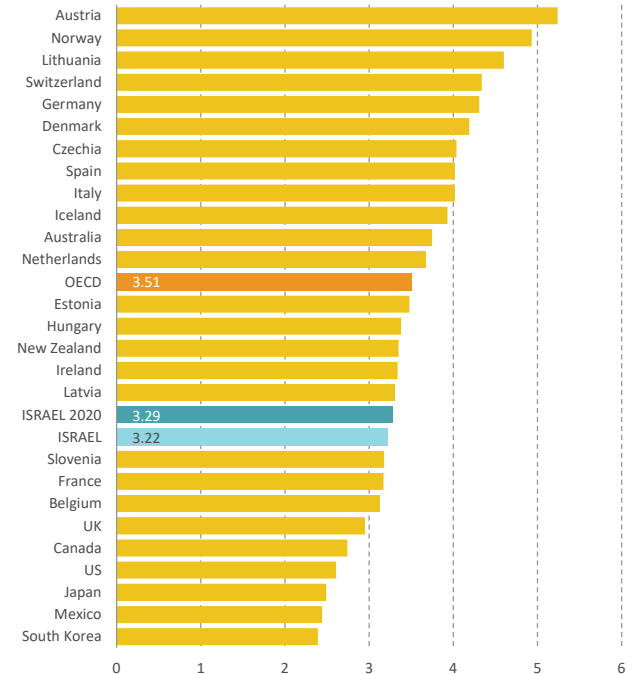
Source: [Chernichovsky, Bental, Arazi, and Seela](#), Taub Center based on Chernichovsky and Bental, 2020

Increase in the number of positions for physicians during COVID, but these are likely to be withdrawn

In 2020, the healthcare system received about 600 new positions for physicians in response to the COVID-19 crisis. This is in addition to the accelerated increase over the last few years (between 2014 and 2018, the average number of physicians rose by about 980 per year). Were these positions to become permanent, they would help speed the closing of the gap in the number of physicians relative to other developed countries, bringing the number of practicing physicians per 1,000 population to 3.29, as compared to 3.22 in 2018. Even then, the number of physicians would still be lower than the OECD average of 3.51. However, the current outlook is that these new positions that were allocated to deal with the crisis will be withdrawn. The situation with respect to the number of nurses is far more dire.

Later in this book (pages 85–92) we will dive more deeply into how the supply of physicians in Israel has changed since the turn of the century.

Physicians per 1,000 population, OECD, 2018



Note: For Canada, Iceland, Ireland, Italy, Norway, and the UK, data are for 2019.
 Source: [Chernichovsky, Bental, Arazi, and Seela](#), Taub Center | Data: OECD; CBS; World Bank

THE LABOR MARKET

Labor markets worldwide were greatly disrupted by COVID-19. Waves of layoffs, shutdowns, leaves of absence, lowered wages, and bankruptcies swept across the globe. Each country chose a path to try to steer their way through the storm, some more successful and some less. Israel entered the pandemic with a sound labor market — high rates of labor force participation, particularly for women, and historically low rates of unemployment. This all changed overnight. The path chosen by policy makers in Israel was dominated by leaves of absence with an all-or-nothing character to them; workers placed on leave of absence were entitled to receive unemployment benefits, but only if they did not work at all. These workers retained their contractual connection with their employers, but the physical and emotional connection was weakened and made a return to work less simple than in some other countries, in which employees were allowed to continue working part-time and in addition to their part-time wages, received partial unemployment benefits that were transferred by the government to the employers and through them to the workers.



THE LABOR MARKET

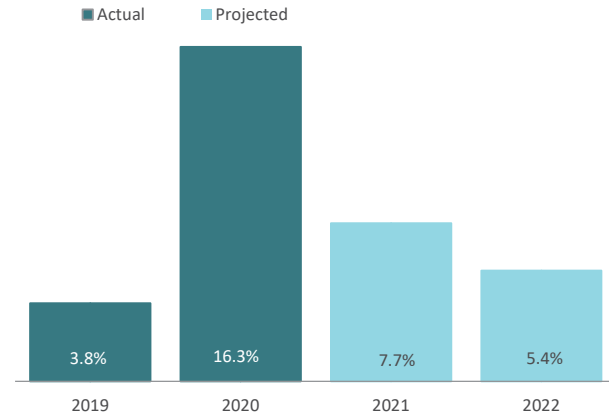
In this section, we break down the labor market effects of the pandemic. First, we show how different populations — disaggregated by gender, education level, sector, age, and industry — were affected over the course of the pandemic and through the different shutdowns. We then look towards another major change that transpired and that will have a lasting effect, namely, the ability to work from home, which potentially holds much promise for certain parts of the population.

Unemployment will fall, but is unlikely to return to its 2019 level in the near future

The term “unemployment” was redefined in 2020. Until then, the unemployed included only those who did not work during the period being measured but actively searched for employment. This was clearly too narrow a definition to encompass what happened during the first shutdown in Israel, in which over a third of the labor force was not working and also not searching. This new category of unemployed included two groups: those on temporary leave, who are not working and are also not searching; and those who were laid off or quit and stopped looking, some of whom probably chose to invest in some form of education or training and others of whom gave up. The CBS accounts for all these categories, using the term “broad unemployment rate.”

The broad unemployment rate at the end of 2020 was 16.2%. This will fall significantly in 2021 and 2022, but it will take more time until the rate returns to the vicinity of the 2019 rate, which was historically low (3.8%). Obviously, the rate will fall quicker the sooner the economy is able to return to full normalcy.

The broad unemployment rate



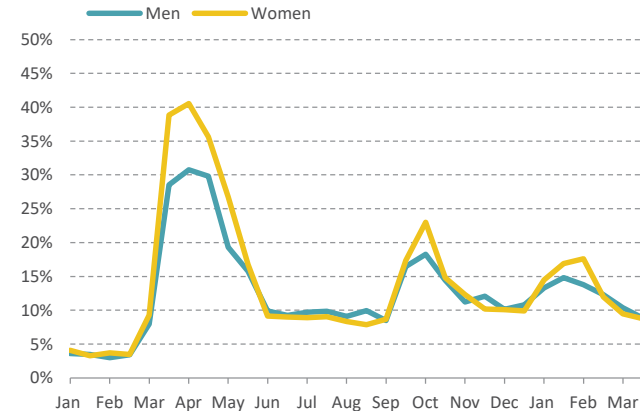
Source: [Taub Center researchers](#) | Data: Bank of Israel, Research Department Staff Forecast, January 2011

Women's employment was harmed disproportionately

The broad unemployment rate among labor force participants includes the standard unemployed and those on unpaid leave, but not those who left the labor force.

Women were disproportionately placed on leave of absence during the lockdowns. Before the pandemic began, women comprised 49% of the workforce, while during the first lockdowns in March and April, they comprised 57% of those on leave. At its apex, 30% of working men were unemployed and 38% of working women. During the second and third lockdowns this gap fell, but women were still disproportionately harmed. The gap early on stemmed largely from the predominance of women in the education system and other industries greatly harmed, and also by the fact that lower income workers were more harmed than those with higher incomes, and women have lower salaries on average. Interestingly, during the recovery periods the unemployment rate for women fell below that of men.

The broad unemployment rate among labor force participants by gender, January 2020 through March 2021
Ages 25–64



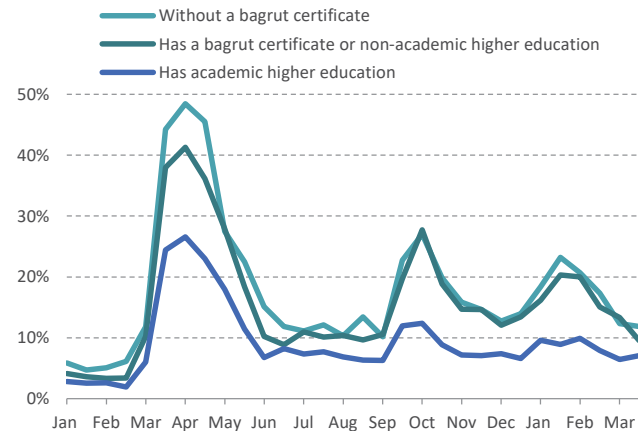
Source: [Zontag, Epstein, and Weiss](#), Taub Center | Data: CBS, Labor Force Survey

Less educated workers were harmed more extensively during shutdowns and between them

The fall in employment due to the crisis was especially large for workers with low levels of education. The education-based gaps in the size of the decline in employment was larger during the lockdowns. At the height of the first lockdown, which had the most significant effect on employment, the broad unemployment rate stood at 27% among those with higher education, 41% among workers with a bagrut certificate or non-academic higher education, and 48% among workers without a bagrut certificate. In later lockdowns, there was still a large gap between those with an academic education and those without, but there was no longer a difference between those with a bagrut or non-academic higher education and those without a bagrut.

The broad unemployment rate among labor force participants by education level, January 2020 through March 2021

Ages 25–64



Source: [Zontag, Epstein, and Weiss](#), Taub Center | Data: CBS, Labor Force Survey

Haredi workers were most affected, while for non-Haredim, early on, women were affected more than men

The employment crisis had the largest impact on workers from the Haredi sector. Among Haredim, men and women were affected similarly, but for different reasons. On the one hand, the level of marketable education for Haredi women is higher than among the men, suggesting lower unemployment during the shutdowns. However, a large portion of Haredi women work in part-time jobs, which cut in the opposite direction. Given the overall effect of the crisis and the high poverty levels among Haredim, it is possible that following the COVID-19 crisis an increase in employment rates or in the number of work hours in this sector will be seen.

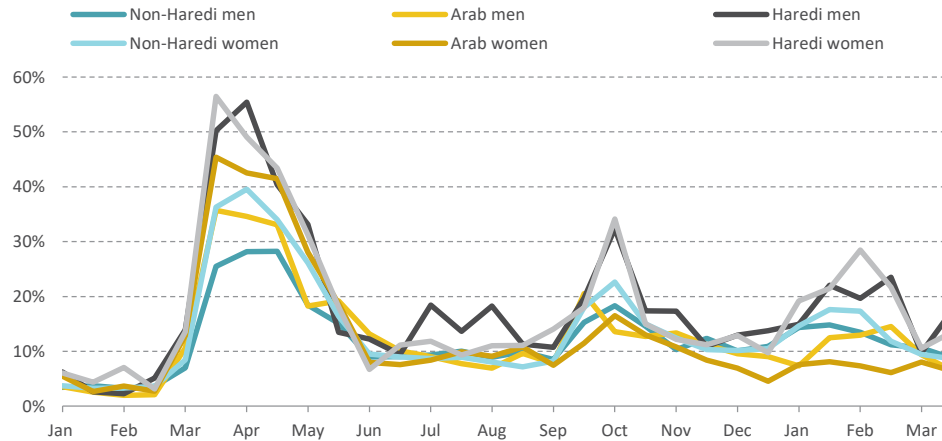
Among workers in the Arab sector, the picture is more complex. During the early months of the crisis, the unemployment

rates in this sector were higher than among non-Haredi Jews. However, this gap narrowed over the following months, and since June the unemployment rates among Arabs, men and women, tended to be lower than among non-Haredi Jews. For men this reflects the continuing operation of the construction industry during later shutdowns, and for women, it reflects the relatively high education level among those employed and widespread employment in the public sector.

Among non-Haredi Jews, women were disproportionately harmed during the shutdowns, reflecting mostly differences in occupations and differences in the industries in which they tend to be employed.

The broad unemployment rate among labor force participants by gender and sector, January 2020 through March 2021

Ages 25–64



Note: The Haredi sector is by self-definition.

Source: [Zontag, Epstein, and Weiss](#), Taub Center | Data: CBS, Labor Force Survey

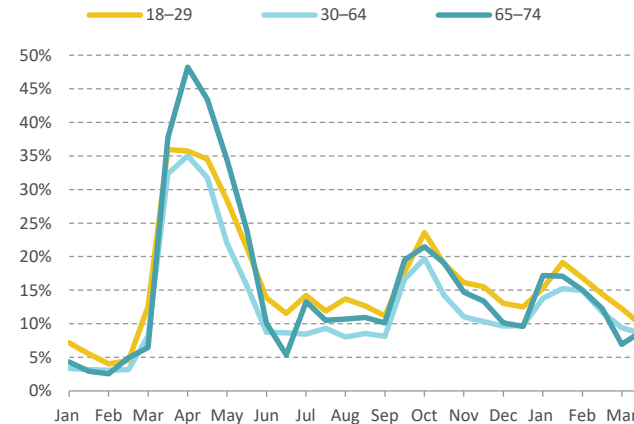
Young and old workers were most greatly harmed, though for different reasons

During the early months of the crisis, the growth in the broad unemployment rate was slightly steeper among young people ages 18–29 and far greater among older workers ages 65–74 than among workers ages 30–64.

One reason for the sizable harm among younger workers is that many of them have not yet settled into their eventual occupations, but rather are temporarily employed in the types of jobs most affected by the shutdowns, such as waiting tables in restaurants.

A possible explanation for the severe impact on the employment of older workers during the first shutdown is that this population belongs to a high health-risk group from COVID, and, therefore, some older employees may have preferred to remove themselves from risk and some employers may have preferred not to put their older workers at risk. These differences did not persist in the later shutdowns.

The broad unemployment rate among labor force participants by age groups, January 2020 through March 2021



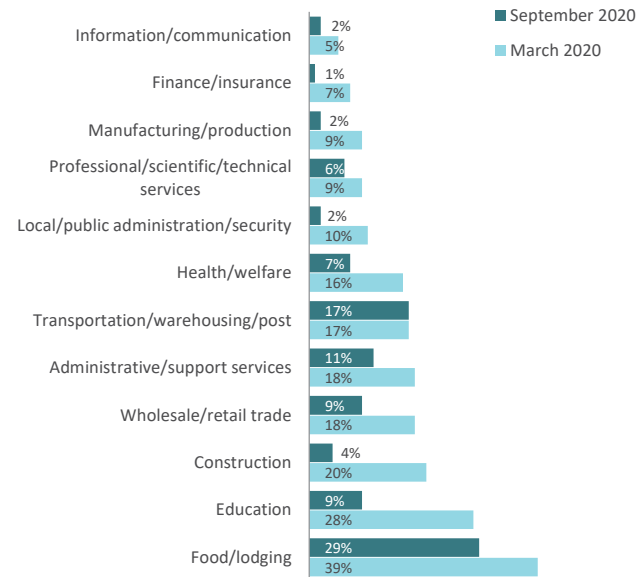
Source: [Zontag, Epstein, and Weiss](#), Taub Center | Data: CBS, Labor Force Survey

Leaves of absence were not evenly spread across industries

The figure compares the share of workers who were temporarily absent from their place of work in the first two weeks of the shutdowns in March and September in different industries. Firms in the food and lodging industries had very high rates of workers placed on unpaid leave in both shutdowns, with high tech firms and those in the financial sector at the other extreme (see pages 34–35). However, there were industries, such as construction and education, in which the portion of workers on unpaid leave declined substantially during the second closure. In the case of education, this is related to the expansion of remote learning, but in other industries it could be due to a decline in the level of uncertainty regarding the COVID-19 crisis or to the fact that businesses had become accustomed to functioning under the new circumstances.

Share of workers who were temporarily absent from their place of work during the first two weeks of the shutdowns by industry in March and September 2020

Ages 25–64



Source: [Zontag, Epstein, and Weiss](#), Taub Center | Data: CBS, Labor Force Survey

Pre-COVID-19, the percentage of Israeli workers working mainly from home was below the EU average

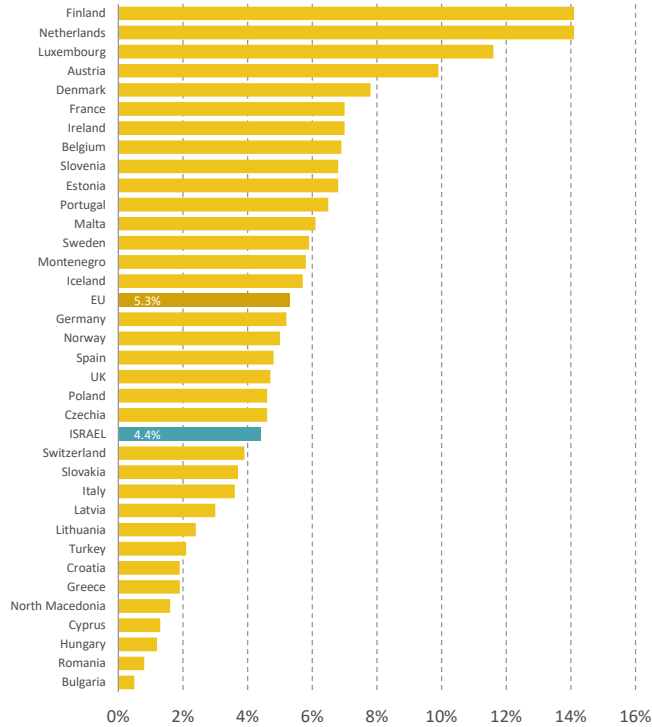
One of the most profound changes that occurred during the pandemic, one that is likely to be maintained and expanded, is the increased ability to work from home in some industries.

The practice of working from home existed prior to the outbreak of the COVID-19 epidemic, although its scope varied from country to country. There are countries in which working from home was very common, like the Netherlands and Finland, where about 14% of the labor force generally worked from home. In contrast, in countries like Bulgaria and Romania, this practice hardly exists, with under 1% of the labor force generally working from home. According to the CBS Social

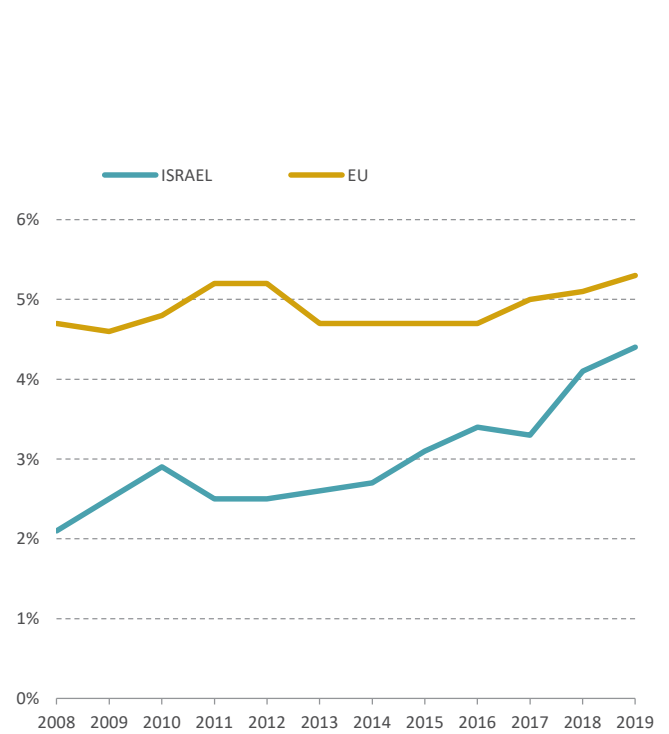
Survey, in 2019 in Israel about 4.4% of workers claimed to work from home “most days of the week” — a rate far lower than the average in European countries at the time of 5.3%.

Despite the relatively low rate of workers working from home, the trends show that in the last decade the gap with the OECD is closing, and the percent of Israeli workers working from home more than doubled itself from 2% in 2008 to about 4.4% in 2019. Over this same period the European average grew only about 13%, remaining close to 5% over the entire period.

The share of workers who usually work from home, 2019



The share of workers who usually work from home



Source: [Shavit Madhala and Benjamin Bentel](#), Taub Center | Data: Eurostat; CBS, Social Survey 2008–2019

The ability to work from home depends on occupation and industry characteristics

The index of the ability to work from home is theoretical, is based on worker characteristics, and reflects an evaluation of a worker's potential to work remotely, measured in standard deviations from the average worker.

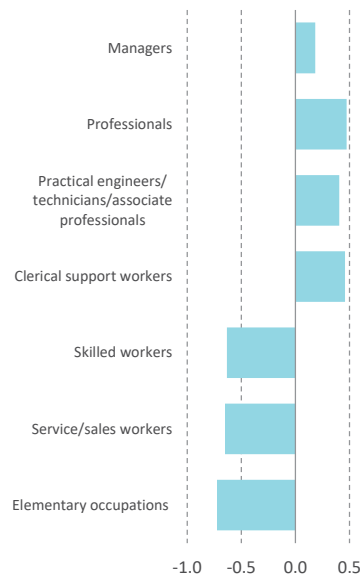
An examination of the index of the ability to work from home for different occupational groupings shows that in prestigious occupations characterized by high hourly wages, the average potential to work from home is relatively high. An exception to this is the occupational grouping of managers, which has the highest average hourly wage but a relatively low ability to work from home (about 0.18 standard deviations from the average worker) when compared with other prestigious occupations — academic professionals and engineers and technicians

(0.47 and 0.40 standard deviations, respectively). In contrast, clerical occupations with relatively low hourly wages have a high potential to work from home (0.46 standard deviations from the average worker).

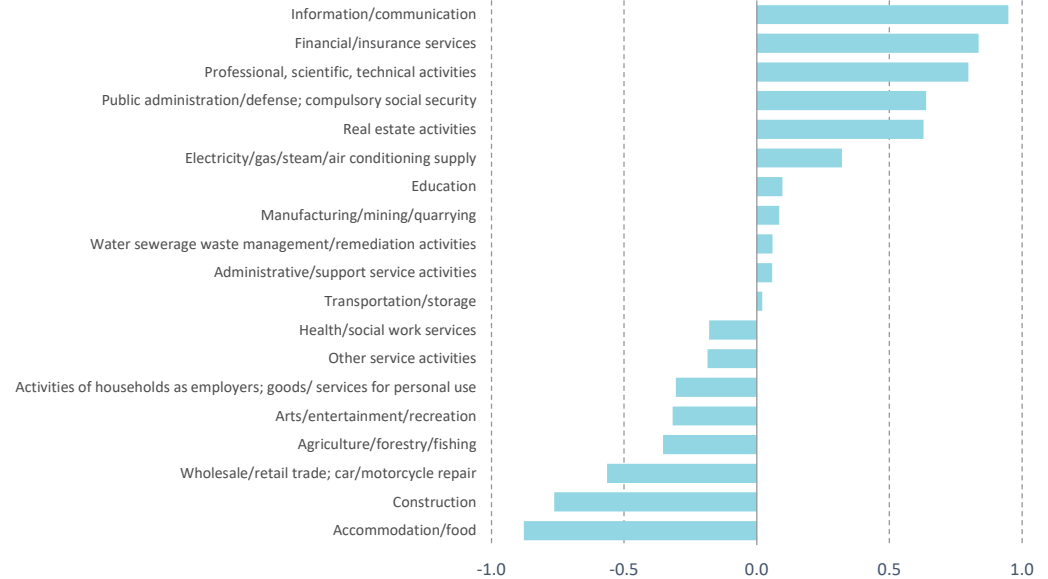
A look at the average index in different industry sectors shows that in the information and communication sector, in the financial and insurance sector, as well as in the professional, scientific and technical services sector, there is a high potential for workers to work remotely. In contrast, in the wholesale and retail trades, construction, and food and drink services sector, the potential ability of workers to work remotely as predicted by the index is especially low.

The index of the ability to work from home relative to the average worker

By occupational group, in standard deviation units



By industry, in standard deviation units



Note: Occupations are shown in descending order according to hourly wage.
 Source: [Shavit Madhala and Benjamin Bentel](#), Taub Center | Data: PIAAC, 2015

Women and Jews were better able to work remotely

Beginning in September 2020, the CBS Labor Force Survey included questions about working from home. From September until February 2021, we experienced two lockdowns (lockdowns 2 and 3), where the average share of hours worked from home out of all working hours for Israeli workers amounted to about 27% during the second lockdown and 25% during the third lockdown. During non-lockdown periods, the share of worker hours worked from home halved, and stood at about 13%.

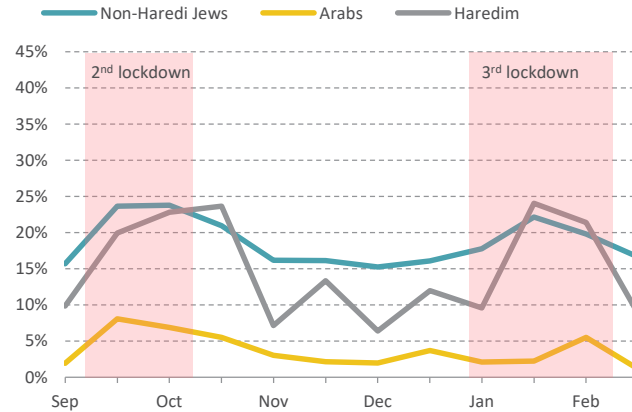
A look at the extent of work from home broken down by gender reveals different patterns for the two groups. While during the period between lockdowns (the beginning of September and November–December) the rate of working from home was quite similar between men and women across all sectors, during the lockdowns a significant gap opened as the result of a sharp rise in the amount of working from home among women relative to the more moderate rise among men.

The extent of working from home among women rose to about 31% during the first half of October, while among men, it rose to only about 20%.

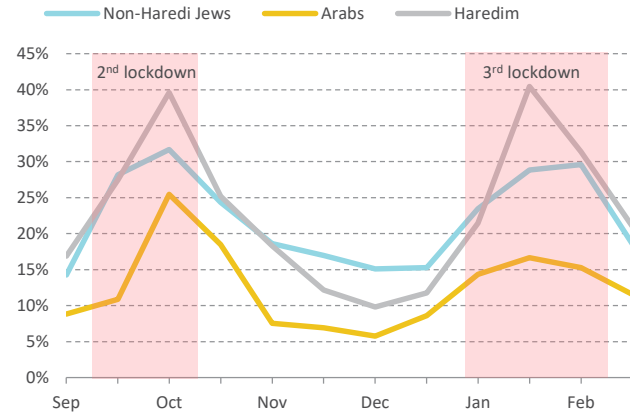
A breakdown by population groups shows that while there is a lack of significant differences between workers in the Haredi sector and those in the non-Haredi Jewish sector, there are substantial differences between Jewish workers (Haredim and non-Haredim) and workers from the Arab sector, where the ability to work from home among the latter is especially low relative to the other groups. A further breakdown by gender shows that the difference between men is particularly large, with Arab men having a particularly low propensity to work from home.

The share of hours spent working from home out of the total working hours, September 2020 to February 2021 Ages 25–64

Men



Women



Note: For those working 20 hours or more per week.

Source: Zontag, Madhala, and Bental, Taub Center | Data: CBS, Labor Force Survey

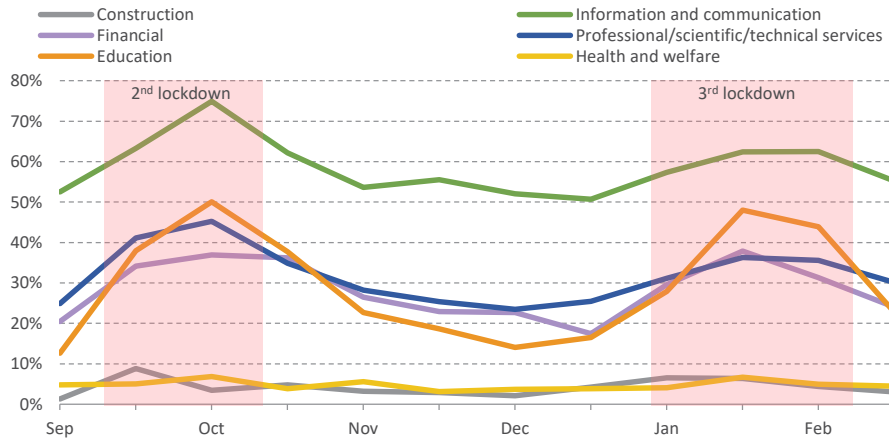
A large percentage of ICT workers continued to work remotely when the economy was open

As seen in the projections of the index of the ability to work from home, there are substantial differences in this capacity across industry sectors, and these manifest themselves in its extent in practice. It is not surprising, that at the top of the scale is the information and communications industry, with extensive abilities to work from home. It is interesting to note that while during the period examined the average rate of work from home in this industry rose during the lockdowns, it remained high when there was no lockdown as well, with a little over 50% of work hours done from home. This is a clear sign for the future in this industry. In contrast, in other main industry areas like finance, professional, scientific and

technical services, and education, the extent of work from home expanded significantly during the lockdowns, at which time there apparently was no choice but to work remotely, while during the non-lockdown periods, the share of work from home contracted again to about 20% of work hours. Against these fluctuations, stands the construction industry and health and welfare services, which require the worker's physical presence and where the extent of work from home remained low and stable during the period examined.

The share of hours spent working from home out of the total working hours by economic branch, September 2020 to February 2021

Ages 25–64



Note: For those working 20 hours or more per week.

Source: Zontag, Madhala, and Bental, Taub Center | Data: CBS, Labor Force Survey

Pros and cons of working past retirement age

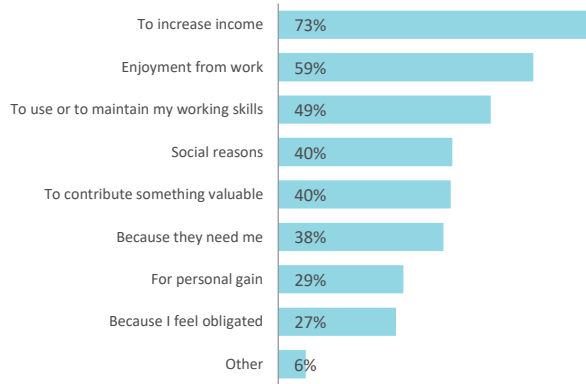
The decreases in labor force participation for older workers due to COVID-19 shown previously, beg the question: what motivates the work decision of more elderly workers? These graphs show the reasons behind 60–80-year-olds' labor force participation choices. Note that respondents were allowed to choose multiple answers.

The main reason that people continue to work past the age of 60 is to increase their income. Interestingly, however, over a quarter of those employed are not doing so for economic reasons. Some personal and social factors that motivate people to continue working include enjoyment from work

(59%), using and maintaining work skills (49%), and social reasons (relations with other workers or with customers) (40%).

The decision to retire also stems from a variety of reasons. Almost half of the retirees in the sample reported that they retired because they had sufficient income to do so, 22% cited health reasons, 11% cited the expectation of a low wage, and 16% reported difficulty in finding a job in their profession. The last of these has implications for public policy; a policy to help older jobseekers find appropriate employment could increase their employment significantly.

Reasons for continuing to work among employed individuals aged 60–80



Reasons for retirement among non-employed individuals aged 60–80



Note: Respondents had the option of giving more than one reason and therefore the total is more than 100%.

Source: [Axelrad, Luski, and Sherman](#), Taub Center | Data: Questionnaire sample

WELFARE

The year 2020 could easily be called the year of the “Welfare State” in Israel and many other countries. After two years of stability with no major initiatives in social welfare policy in Israel, the COVID-19 crisis led to a dramatic change in the response to social problems. The protective measures taken during the pandemic and the resulting mass unemployment created economic and social distress among many groups in Israeli society. The safety net extended by the State of Israel involved the expansion of coverage by the social security system, and in particular unemployment insurance, an increase in disability pensions, the provision of financial assistance to the self-employed ineligible for unemployment insurance, and an expansion of the wage subsidy program. The welfare state was hard pushed to deal with illness, unemployment, and distress on an unprecedented level. Its performance was impressive.



WELFARE

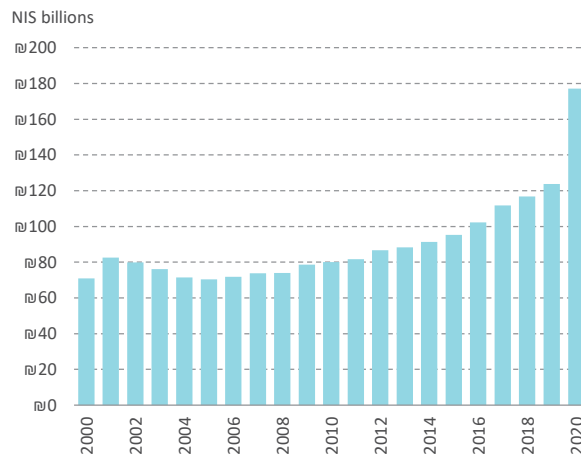
Despite this, it is expected that once the unemployment benefits for those not working as a result of the pandemic are ended, there will be an increase in the incidence of poverty and greater inequality, at least in the short run. The long-term effects of the crisis on the effectiveness of the Israeli welfare state and on the welfare of its citizens are difficult to predict; but there is no doubt that they are largely dependent on the social policies adopted by the government both during the crisis and after it has passed.

A massive increase in welfare expenditures in 2020

The economic and social impact of the COVID-19 crisis and the social welfare policy adopted in response to it are clearly visible in the budgetary additions in 2020. The budget expenditure on welfare in 2020 was NIS 177 billion — NIS 53 billion more than in the previous year. Of that, about NIS 7 billion represents a natural increase expected were there a budget (calculated on the basis of the growth in the budget from 2018 to 2019) and an addition of about NIS 900 million following an agreement with organizations representing people with disabilities to raise the level of their cash benefits, while the rest — about NIS 45 billion — is composed of budget additions to deal with the COVID crisis. Overall, this represents a 42% increase in welfare expenditure in response to the massive aggregate shock, as compared to about 6% in the previous year.

Expenditure on social welfare

2020 prices

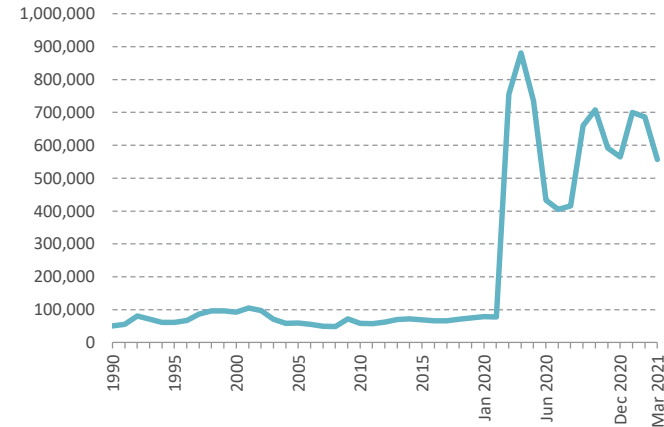


Source: [John Gal and Shavit Madhala](#), Taub Center | Data: Ministry of Finance

The number of unemployment benefit recipients increased thirteen-fold in 2020

Skyrocketing unemployment and changes to the unemployment benefit program to provide an effective safety net for those harmed by the COVID-19 crisis brought about a steep increase in the number of unemployment benefit recipients in Israel, unprecedented since the program was initiated in 1973. The data show a dramatic 13-fold rise in the number of unemployment benefit recipients — from a monthly average of about 70,000 individuals in the past few years to about 900,000 individuals in April 2020, the period of the first lockdown.

Unemployment benefit recipients
Monthly average

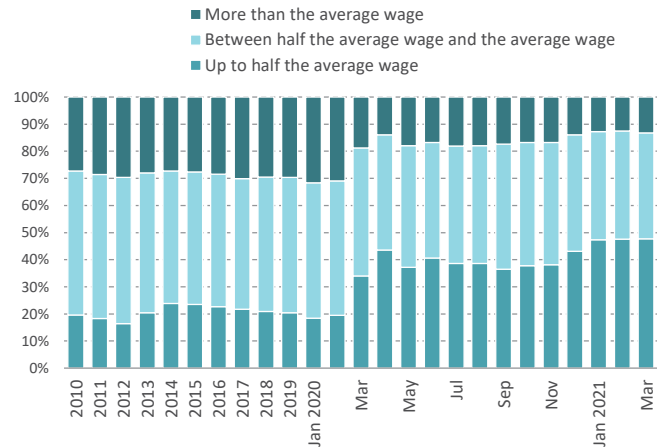


Source: [John Gal and Shavit Madhala](#), Taub Center | Data: NII

Low salaried workers were most harmed by COVID-19

A look at those receiving unemployment benefits indicates a change in the composition by salary level. Prior to the crisis, the share of those receiving unemployment benefits whose wages were up to half of the market average was less than 20%, but from April to July that percentage doubled and reached about 40%. This reflects the injury to employees in industry sectors characterized by low wages and to those with low wages in sectors less harmed by the crisis.

Recipients of unemployment insurance according to wage level



Note: Wage levels are prior to unemployment.

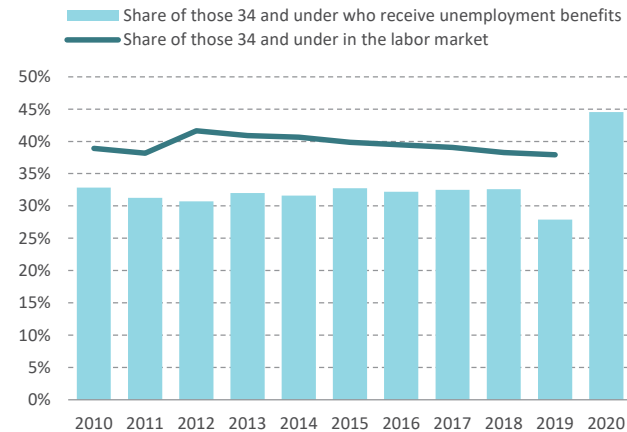
Source: [John Gal and Shavit Madhala](#), Taub Center | Data: NII

Young workers were disproportionately harmed during the pandemic

In Israel, as in other parts of the world, young people have been the major employment group harmed by COVID-19 (see also page 30). This is due to their weak standing in the labor market, their tendency to work in industry sectors particularly hard hit by the crisis, and their lack of a sufficient financial cushion. In April 2020, about half a million young adults under 34 were registered with the employment services as seeking work, out of 1.15 million jobseekers. About 44% of all employees who were separated from their jobs were young, while this group constitutes about 38% of the labor force.

Data on unemployment benefit uptake show an increased need among young adults. Almost half of those receiving the benefit during the crisis period were age 34 and under, compared to about 30% over the preceding decade. In numbers, in April 2020, about 400,000 young adults received unemployment benefits, and with the recovery of the economy, and the return to normalcy, those numbers dropped to about 200,000 in July, although their share out of those receiving the benefit remained relatively unchanged.

Share of those 34 and under who receive unemployment benefits

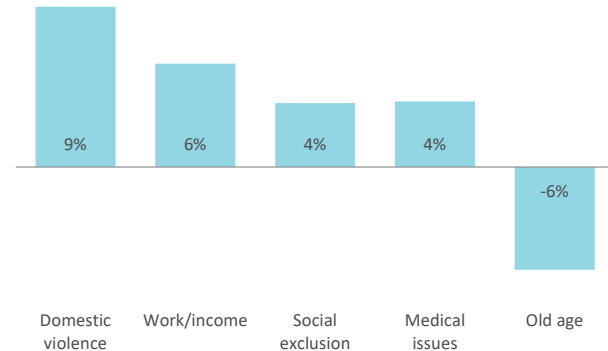


Source: [John Gal and Shavit Madhala](#), Taub Center | Data: NII

An increase in the number of active welfare cases apart from the elderly

Economic hardships resulting from the lack of employment, a rise in domestic violence with a background of economic difficulties and repeated lockdowns, and the suffering of the elderly who are reliant on aid but cannot leave their homes, are reflected in the number of active cases dealt with by the social services in October 2020 versus December 2019. The numbers show a rise of about 9% in the number of active cases of domestic violence, from about 15,000 cases at the end of 2019 to about 16,500 cases in October 2020. There was also an increase in cases in areas related to work and income, problems between parents and children, loneliness, and medical reasons. The only area where there was a substantial decline in the number of cases was the elderly — from about 134,000 to about 126,000 cases. It is most likely that this decrease is a result of the difficulties that the elderly population faced in physically getting to the welfare services during the COVID crisis.

Rate of change in the number of active welfare cases by main area between December 2019 and October 2020



Note: Social exclusion distress is related primarily to relations between parents and children, youth, and issues of social isolation.

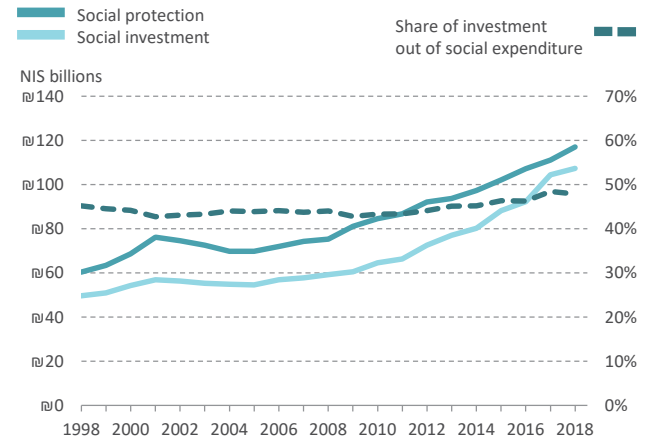
Source: [John Gal and Shavit Madhala](#), Taub Center | Data: Ministry of Labor, Social Affairs and Social Services

An increasing share of welfare expenditure was devoted to social investment, until 2020

We distinguish between social expenditure on social protection, that is measures to alleviate the current distress of individuals, and social investment, which is assistance to help individuals acquire and strengthen work skills and their human capital in order to better integrate into the labor market and to contribute to economic growth. A series of social programs adopted within the past few years — like investment in early childhood education programs, labor force integration programs, and the Saving for Every Child program — essentially advanced social investment in Israelis.

A look at social expenditure in Israel in the past two decades shows the simultaneous rise in social protection and social investment. The share of social protection out of the budget pie is greater, although not substantially. Naturally, 2020 changed all that as will be shown in the coming pages.

Expenditure on social investment and social protection
2018 prices



Source: [Gal, Madhala, and Yanay](#), Taub Center | Data: OECD

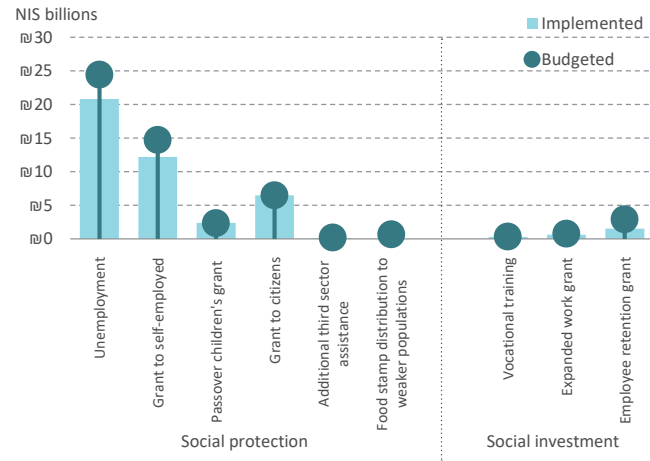
Little investment in human capital improvements during 2020

Following the current crisis there was a dramatic turn in allocations between social protection and social investment. The necessities of the time demanded that the majority of resources added this year to the assistance program for dealing with the COVID-19 crisis be turned towards assuring a security net for those currently facing distress (social protection), with just a small portion allocated to skills development and the labor market (social investment).

Hence, the expenditure on social protection planned in 2020 was NIS 49 billion, with about NIS 42 billion implemented, while the expenditure on social investment was planned at NIS 4.1 billion but only NIS 2.5 billion was actually spent. Expenditure on social investment is expected to grow somewhat in 2021 with the opening of new employment programs and increased investment in vocational training financed by the Ministry of Labor, Social Affairs and Social Services.

Expenditure on welfare within the assistance program in response to the COVID-19 crisis through December 2020

By category

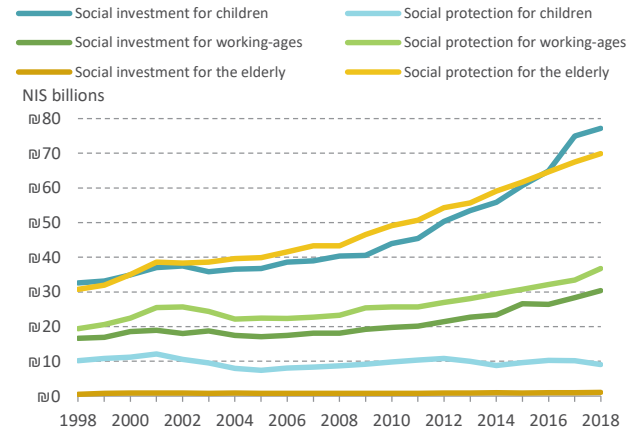


Source: [John Gal and Shavit Madhala](#), Taub Center | Ministry of Finance

Most social protection spending is for the elderly and most social investment expenditure is for children

Focusing on different target populations for social policy in Israel, one sees that the rise in social investment and social protection took place in different areas. Naturally, social protection grew mainly in those areas relating to the elderly, and for this group, there is almost no social investment. In contrast, the main rise in social investment expenditure is for children and families, where the social protection element is much smaller. For the working-age population, there is a nearly equal division between social investment and social protection programs.

Social expenditure by target group
2018 prices

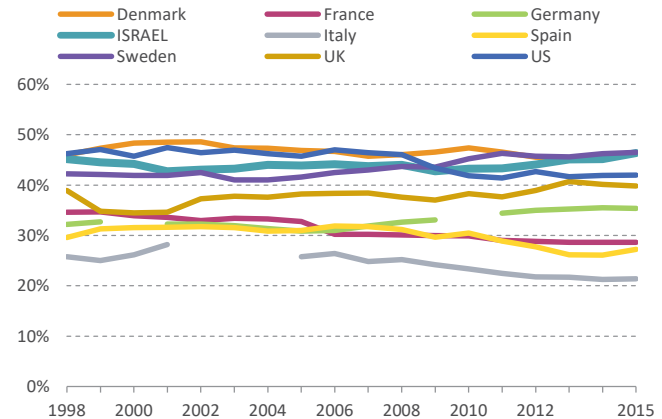


Source: [Gal, Madhala, and Yanay](#), Taub Center | Data: Ministry of Finance; OECD

Israel is among leaders in the portion of welfare spending devoted to social investment

Although there is a great deal of lively public discussion in Europe surrounding the importance of social investment, it is hard to distinguish a substantial rising trend in the portion of social investment out of social expenditure in these countries. In addition, it is possible to see the high budgetary emphasis that Israel has placed on social investment over the years, which places Israel towards the top of the list along with social-democratic countries (Sweden and Denmark) characterized by generous universal social programs and high progressive taxes. This finding is not surprising given Israel's high fertility rate and the fact that social investment is focused on children (as shown on the previous page).

The share of social investment out of total social expenditure



Note: Social expenditure is the total expenditure on social protection and social investment without any additional budget expenditures.

Source: [Gal, Madhala, and Yanay](#), Taub Center | Data: OECD

Social spending as a percentage of GDP in Israel is among the lowest amongst welfare states

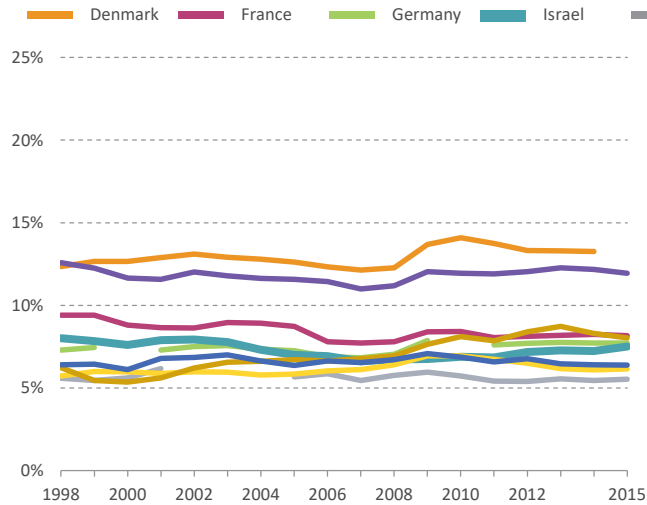
A comparative analysis of various welfare states as shown on the previous page places Israel among countries that focus a great deal of their social expenditure on social investment programs. When examining the overall extent of expenditure devoted to social investment, though, we find that there is a substantial gap between Israel and the social-democratic countries that dedicate a great deal of resources to social investment. This gap is seen in the amount of social investment as a percent of GDP. While Denmark and Sweden consistently spent more than 11% of GDP on social investment, Israel wavered between only 6.7% and 8% of GDP.

A picture of the gap between Israel and other welfare states becomes even sharper when looking at the percent of social protection out of GDP. This shows that Israel's expenditure

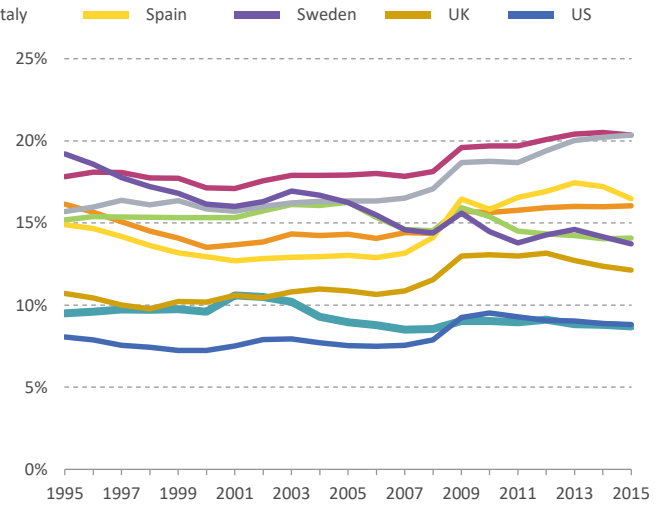
pattern is more like liberal countries (the UK and US), and that the relatively large share of Israel's social investment out of social expenditure is essentially a result of its low expenditure on social protection. Since 2009, Israel has spent a lower percentage of GDP on social protection programs than other comparable countries, including the US.

Some of the explanation for this lies in the relatively low percent of elderly in Israel and the fact that the majority of social protection expenditure is for the elderly (as shown on page 52). Nevertheless, a relatively large share of the explanation also rests on the low taxation levels in Israel relative to other developed countries, and especially relative to social-democratic countries like Denmark and Sweden.

Social investment as a percent of GDP



Social protection as a percent of GDP



Source: Gal, Madhala, and Yanav, Taub Center | Data: OECD

EDUCATION

In March 2020, the COVID-19 pandemic forced the first school closure across Israel's education system. In one fell swoop and without any chance of prior planning, the education system essentially came to a halt, and over 2 million students were confined to their homes. No one saw this coming; no one prepared for this. The lockdown continued for almost a month and half, and the main means of dealing with the new situation was remote learning. A process that seemed impossible, almost a fantasy, became the overnight reality for the education system, with most of the burden falling on those working in the field of education.

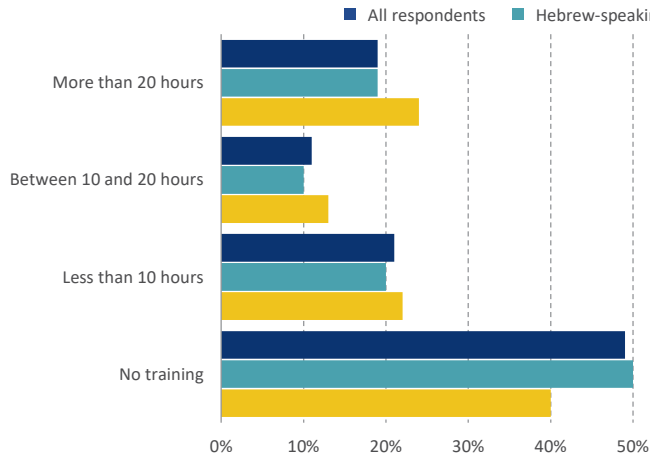
In the coming pages we will show the changes in the system, the implications for the future, and the abilities of the system to preserve the positive changes that have come about as a result of the COVID-19 crisis.

Despite a lack of preparation, the vast majority of teachers successfully moved to remote teaching

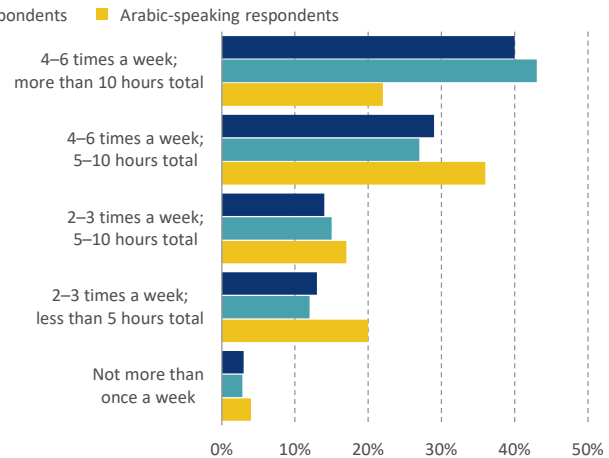
The findings on the following pages are based on a survey among teachers conducted in Hebrew and Arabic by the Taub Center and the *Histadrut* Teachers Union. It is important to note that the survey was conducted following the first lockdown, when the teachers' experience, knowledge, and training regarding remote learning was at its lowest. On the other hand, the willingness of students and parents to deal with the difficulties presented by remote learning may have been greater in this period than in succeeding periods when the effects of extended separation from physical contact with the teachers and the school were beginning to show.

Prior to the COVID-19 outbreak, almost 50% of teachers had had no training in remote teaching and another 20% had had training of fewer than 10 hours. Nevertheless, about 90% of respondents reported that they used remote teaching during the lockdown more than once a week, and more than a third reported using it at least 4 to 6 times a week and for a total of more than 10 hours. In a breakdown by respondent language, we see that Hebrew and Arabic-speaking respondents used remote teaching more than once a week at similar rates (86% and 90%, respectively), although the rate of teachers who reported using remote teaching for more than 10 hours a week was greater among Hebrew-speaking respondents.

Responses to the question:
How many hours of training in remote teaching did you have before the COVID-19 crisis?



Responses to the question:
How frequently and how many weekly hours did you teach remotely during the COVID-19 crisis?



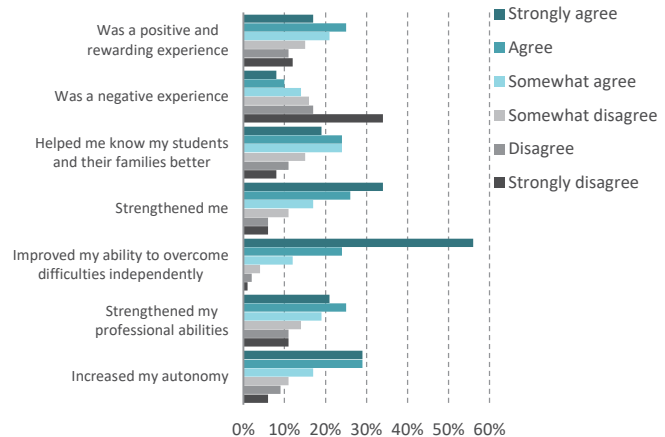
Source: [Michael Debowy and Nachum Blass](#), Taub Center | Data: Taub Center and Teachers Union Survey

Remote teaching was a predominantly positive experience for most teachers

Teacher responses show that the experience they had with remote teaching generally had a positive effect on many important aspects related to the required skills for teaching. The vast majority of teachers felt that remote teaching improved their abilities in various areas, and in particular boosted their self-confidence and their trust in their abilities to overcome difficulties. A negligible percentage felt that remote teaching did not contribute to them professionally.

Responses to the question:

To what extent do you agree with the following statements about remote teaching?

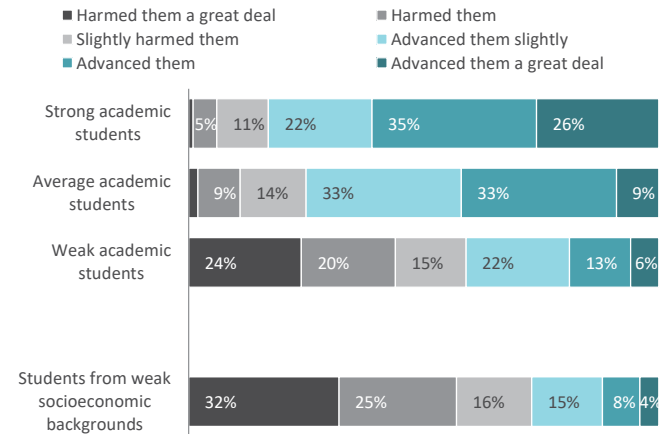


Source: [Michael Debowy and Nachum Blass](#), Taub Center | Data: Taub Center and Teachers Union Survey

According to teachers, remote teaching benefited strong students and harmed weak ones

Teacher responses regarding the influence of remote teaching on their students are clear: remote teaching advances the strong students and harms those who are academically weaker. Average students are more similar to strong students, especially in terms of the percent who were judged to have been harmed by remote teaching, but the positive impact was less strong. Students from weaker socioeconomic backgrounds were greatly harmed, even more so than academically weaker students. The strength of the phenomenon is somewhat surprising. About 61% of teachers felt that remote teaching advanced or even greatly advanced strong students and only 6% felt that it harmed or greatly harmed them. With regard to academically weaker students, the numbers are 19% and 44%, respectively. The numbers are more extreme when relating to the students’ socioeconomic backgrounds — 57% of teachers felt that remote learning harmed students from weak socioeconomic backgrounds or harmed them a great deal, and only 12% felt that it advanced them or advanced them a great deal.

Responses to the question:
In retrospect, did remote teaching during the lockdown advance or harm your students?



Source: [Michael Debowy and Nachum Blass](#), Taub Center | Data: Taub Center and Teachers Union Survey

A lack of computing infrastructures handicaps remote learning

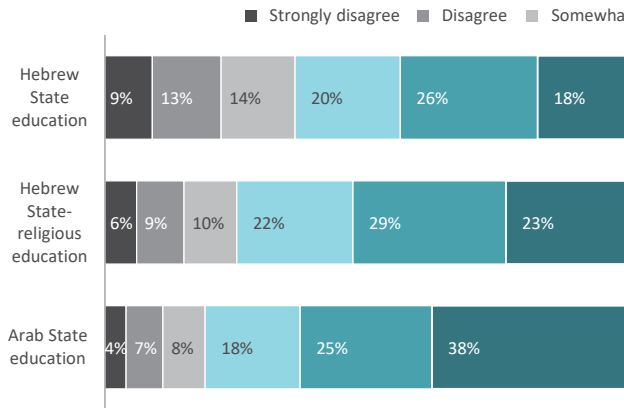
A major impediment to remote teaching, both during the last year and in the future, is the lack of the required equipment and infrastructure for large portions of the population. As seen in the graphs, while there is a large percentage of students in each system who teachers believe lack the proper infrastructures, the problem is particularly acute in the Arab education system in which over 80% of students are deemed (from the teachers' perspectives) to have some level of deficiency and for almost 40% the lack is especially severe.

In addition, the greater the number of students from low socioeconomic backgrounds the greater the perceived deficiencies.

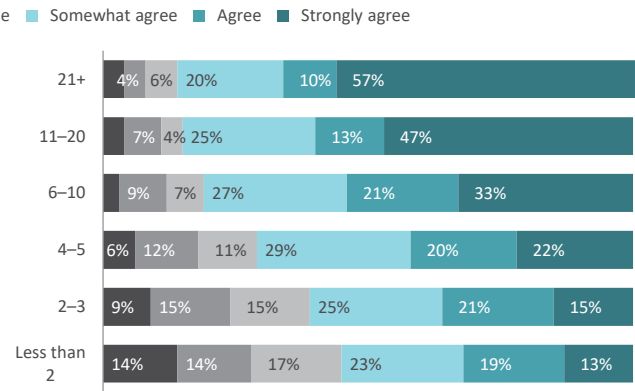
The difficulties with remote learning for many of these families and others, however, goes far beyond this, and includes issues such as a lack of sufficient quiet spaces to allow children to learn remotely and parent availability to assist the children.

Responses to the question:
To what extent do you agree with the following statement:
Most of my students did not have a computer-technology infrastructure

By supervisory authority



By the number of students from low socioeconomic backgrounds in the class



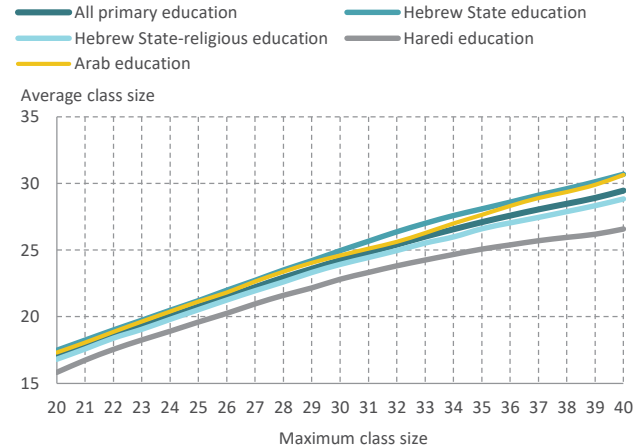
Source: [Michael Debow and Nachum Blass](#), Taub Center | Data: Taub Center and Teachers Union Survey

Relationship between maximum class size and average class size

Due to social distancing requirements, parts of the education system functioned in small capsules in the course of the COVID-19 crisis. In the coming pages we will assess the ability of the system to support small classes into the future.

The first stage is to understand the implication of lowering the maximum number of students per class. This graph indicates that there is a real difference between the maximum class size and the average class size. For instance, if we set the maximum class size to 25 students per class, the average class size will be reduced to between 20 and 22 students. As can be seen, the average is different across sectors; the average is relatively low in Haredi schools and the highest in State schools.

Maximum class size and average class size in primary schools



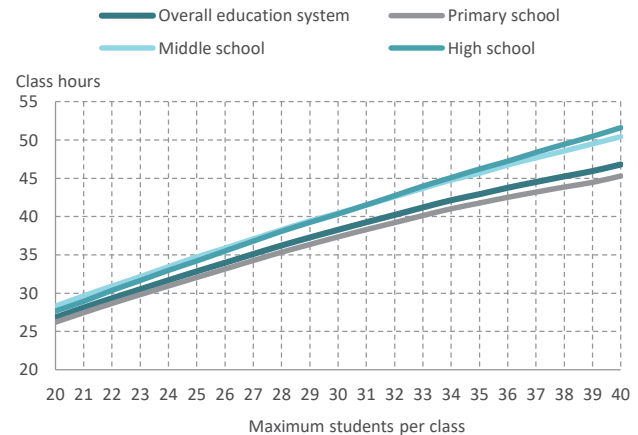
Source: Michael Debowy and Nachum Blass, Taub Center | Data: Transparency in Education website (Hebrew)

Number of hours per class increases with maximum class size

On the basis of the previous graph, it is possible to calculate the number of hours of face-to-face teaching as a function of the maximum number of students under the assumption that the overall allocation of learning hours and conditions of teacher employment will not change.

These data indicate that if school principals are given the freedom to allocate learning hours, in many schools it will be possible to greatly reduce class size while adhering to the Ministry of Education's minimum learning hours requirement (29 weekly hours for Grades 1 and 2, 30 for Grades 3 and 4, and so on). For example, in a primary school with 80 students in Grade 3, the school principal can decide that students will be divided into 2 classes with 45 hours of face-to-face instruction per class, or three classes of 27 students with 30 hours of face-to-face instruction per class, based upon the principal's approach, the characteristics of the teaching staff available, and the availability of classrooms.

Hours of face-to-face instruction per class and maximum students per class



Source: Michael Debowy and Nachum Blass, Taub Center | Data: Transparency in Education website (Hebrew)

There is a need for additional classrooms in order to decrease the maximum class size

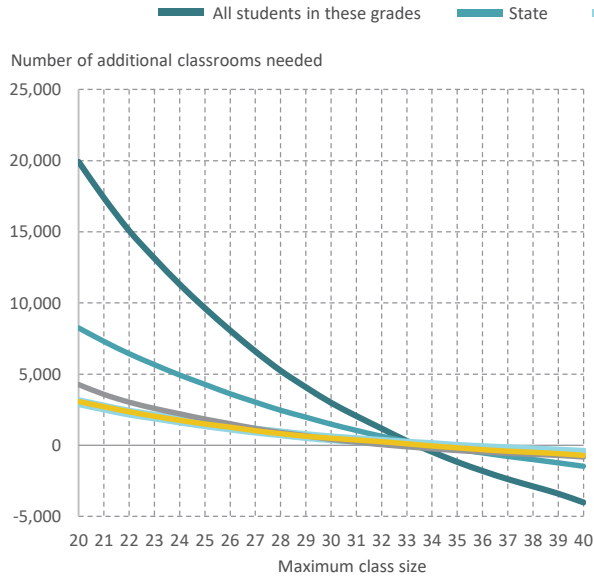
Above and beyond the number of teaching hours, the possibility of reducing class size largely depends on locating sufficient physical space to hold classes and on the extent of construction that will be required to attain this. The two graphs indicate the number of additional classrooms required in primary and middle schools for each class size. For example, a decision to set the maximum class size at 25 students per class will require an addition of 9,633 classrooms in the primary education system and 4,112 classrooms in middle school. It is clear that a solution for some of these classrooms can be found in existing schools or in facilities near these schools, while others will require construction (perhaps partially in provisional structures).

Considering that the cost of constructing a classroom is close to NIS 800,000, this is a tremendous expenditure. However, wise use of available spaces in schools, revising the physical layout (number of square meters per classroom) to account for the smaller class sizes, and the possibility to learn in spaces outside of the school can yield a partial solution and reduce the expenditure considerably.

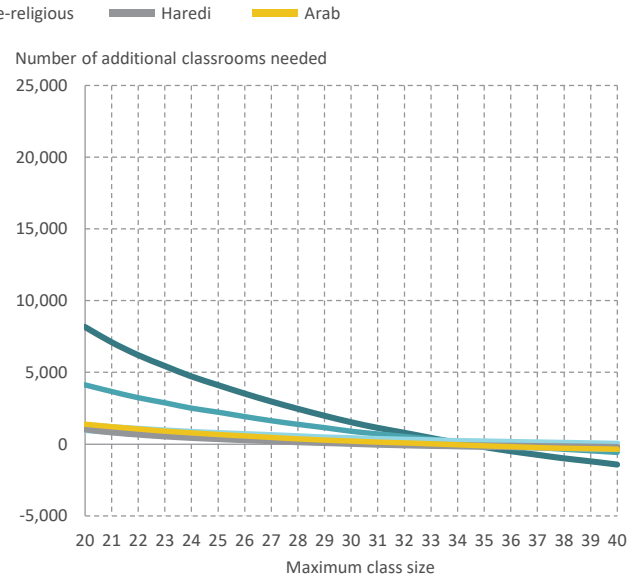
Spreading the process out over a number of years can also make the process of reducing class size more manageable.

Maximum class size and additional classrooms needed in the system by education level

Primary school



Middle school



Source: Michael Debowy and Nachum Blass, Taub Center | Data: Transparency in Education website (Hebrew)

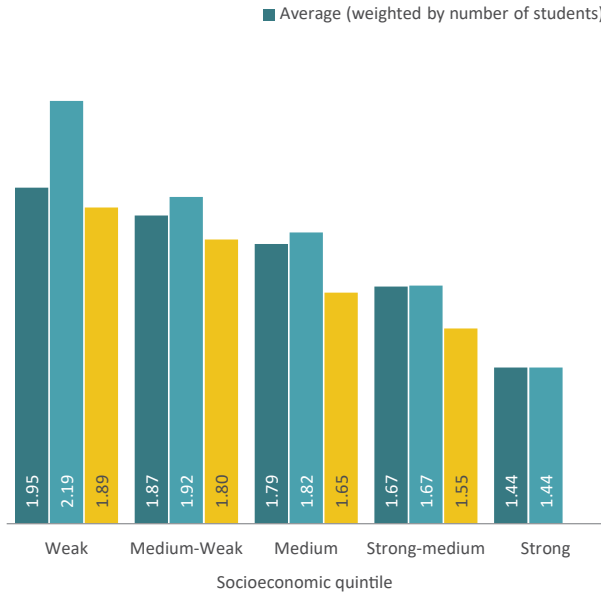
The per-student allocation of teacher hours is greater in socioeconomically weaker schools

The number of weekly hours allocated for official primary education (including special education within regular schools) contains a significant component of differential budgeting through which the average student allocation rises as students come from weaker socioeconomic backgrounds. The graphs show that in primary schools serving students from the strongest socioeconomic quintile, a class of 20 students

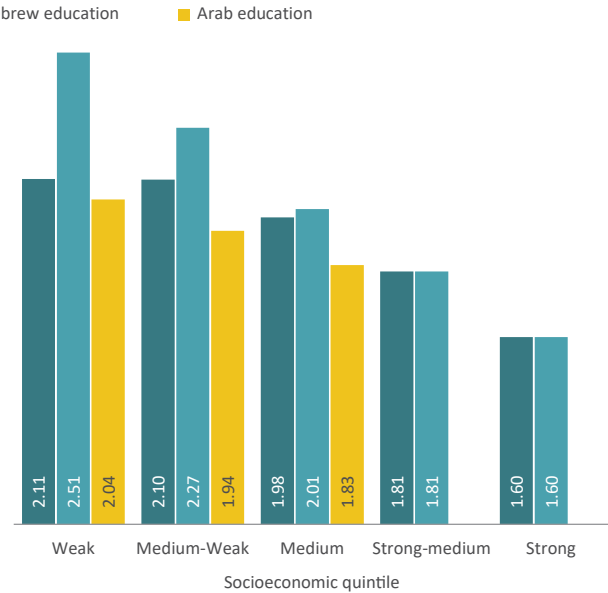
would allow for 29 weekly hours. In contrast, a class with the same number of students from the weakest socioeconomic backgrounds would allow the school to allocate 39 weekly hours. In middle school, the numbers are similar — 32 hours and 42 hours, respectively. This allows for a reduction in class size while abiding by the set minimum number of face-to-face teaching hours for schools serving weaker populations.

Average number of learning hours per student by socioeconomic quintile and education sector

Primary school



Middle school



Source: Michael Debowy and Nachum Blass, Taub Center | Data: Transparency in Education website (Hebrew)

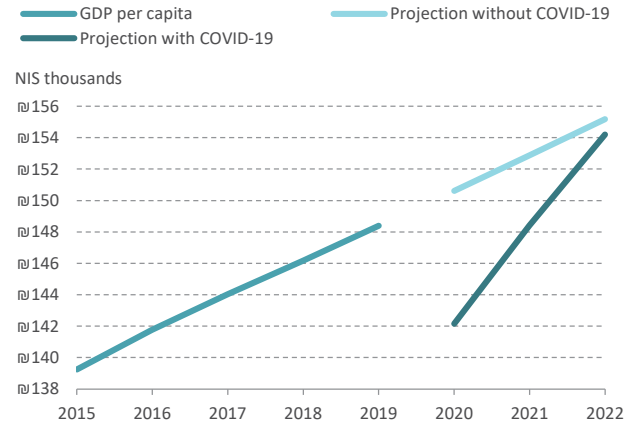
MACRO- ECONOMIC TRENDS

Like most of the countries in the developed world, Israel's economy took a hit in 2020. As it turns out, however, on an aggregate level the damage was far less severe than thought, and in the absence of another shock the economy should be able to recover within a reasonable period of time. This, however, does not mean that there are no concerns. For instance, many businesses have clearly suffered terminal damage, and a substantial number of bankruptcies could have wide range effects. In the following pages we show the effects of the pandemic and discuss the outlook for the coming years.

A quick recovery in GDP per capita

GDP in Israel fell in 2020 by 2.4%, and when the population growth (1.8%) is factored in, this means a decrease in GDP per capita of 4.2%. This was instead of the expected growth of 1.2% in GDP per capita, meaning that the economy lost about 5.4% relative to what was expected without the COVID-19 pandemic. The result is that GDP per capita in 2020 returned to its level nearly 4 years earlier — in 2016. With this, the relatively quick exit from the pandemic as a result of the speedy vaccination program allows the country to close most of the gap in the next couple of years, with an expected increase in GDP of 6.5% in 2021 and 5.8% in 2022. Of course, if more closures are needed, for instance, due to some new mutation that is resistant to the existing vaccines, the recovery could look very different.

GDP per capita in Israel
2015 prices

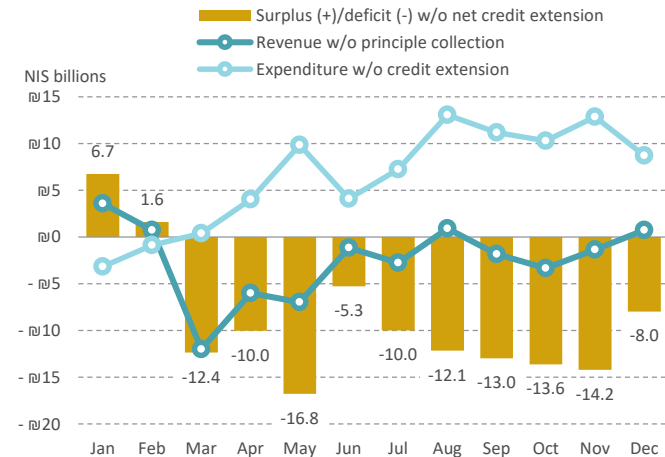


Source: [Taub Center researchers](#) | Data: CBS, Statistical Abstract of Israel 2020

Tax revenue largely recovered in mid-2020, but expenditures and deficits continued to climb

The graph presents monthly gaps between 2020 and 2019. In the first quarter of 2020, the trajectory of the government's expenditure was similar to that in 2019, demonstrating the extension of the 2019 budget in the absence of an approved budget for 2020. This trend was reversed with the full onset of the crisis in March; expenditure had still not adjusted to the new situation, but government revenues plummeted as a result of the lockdown imposed on the economy and the deferral of payment of various taxes. As a result, the monthly deficit in March was NIS 12 billion higher than in March 2019. In April, a sharp increase was recorded in expenditure and in May the addition to the monthly budget reached approximately NIS 17 billion. With the exit from the first lockdown the gap in revenues narrowed significantly, but the gap in expenditure continued to grow as did monthly deficits relative to 2019. The result is shown on the next page.

Revenue, expenditure, and the deficit in 2020 relative to 2019

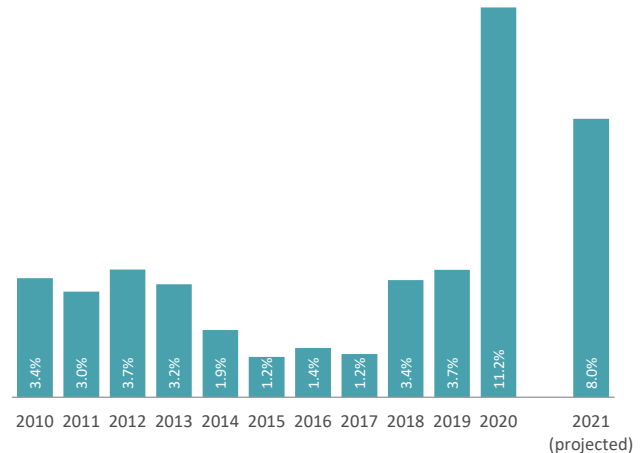


Source: [Benjamin Bentel and Labib Shami](#), Taub Center | Data: The Accountant General Department, Ministry of Finance

Large deficits that will need to be lowered

Israel's deficits had been falling over an extended period, reaching between 1% and 2% of GDP from 2014–2017. A number of wage agreements in 2018 led to an increase in the deficit above the planned target, which turned out more costly than expected in view of the developments during the first half of 2020 and expectations for the next few years. The large deficit in 2020 resulted directly from the need to support workers on unpaid leave and businesses that suffered losses, and from the massive healthcare needs that resulted from the COVID-19 pandemic. However, the deficit would have been more in line with that in other OECD countries had it not increased since 2018. While the 2021 deficit is expected to remain high, it will become imperative to lower this substantially in the near future.

The deficit in the government budget relative to GDP

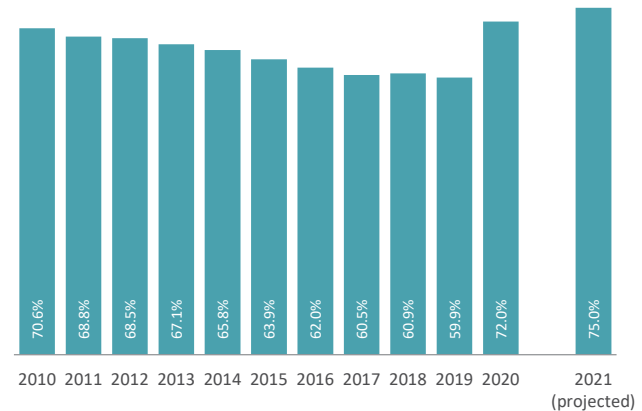


Source: [Benjamin Bental and Labib Shami](#), Taub Center | Data: Bank of Israel

Returning the debt-GDP ratio to its 2019 level could require a decade of low deficits and high growth

In contrast to the exceptionally large deficit relative to other developed countries, Israel's national debt is relatively low. The downward trend in this measure that characterized the Israeli economy since the 1990s put Israel in a very favorable position in international capital markets. However, the increase in the deficit shown in the previous graphs and the drop in GDP depicted on page 72 raised the debt-to-GDP ratio to 72% in 2020. This is expected to continue to increase in 2021 and to fall only once deficits are cut and GDP growth resumes, allowing a return of the debt-to-GDP ratio to its pre-crisis level within a span of about 10 years. Nonetheless, the situation of Israel's national debt is much better than that of most other developed countries. According to IMF figures, the average national debt across those countries in 2019 was 104% of GDP and in 2020 and 2021 it is expected to rise to 124%.

Debt-to-GDP ratio

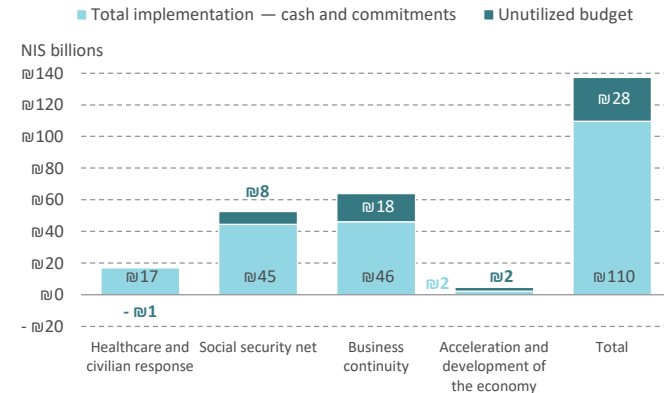


Source: [Benjamin Bental and Labib Shami](#), Taub Center | Data: Bank of Israel

Only 80% of the funds allocated to combat COVID-19 in 2020 were utilized

The total amount allocated by the government for coping with the COVID-19 crisis stood at NIS 137.3 billion at the end of December, but only 80% had been utilized. The program has four components: healthcare and civilian response (NIS 16.3 billion, 104% implemented), expansion of the social security net (NIS 52.5 billion, 85% implemented), business continuity (NIS 63.9 billion, 72% implemented), and a program for acceleration and development of the economy (NIS 4.6 billion, 46% implemented). Under-utilization of the acceleration and development of the economy program and the business continuity program is liable to hinder the economy's ability to recover and limit the future engines of growth. On the other hand, the slight excess utilization of the sub-component of Ministry of Health allocations results primarily from the expenditures that focused on the additional needs of the healthcare system during the first half of the year. Some of these extra expenditures are likely to improve the healthcare system also in the long run.

The economic program, March to December 2020: Budget and implementation



Source: [Benjamin Bental and Labib Shami](#), Taub Center | Data: The Accountant General Department, Ministry of Finance

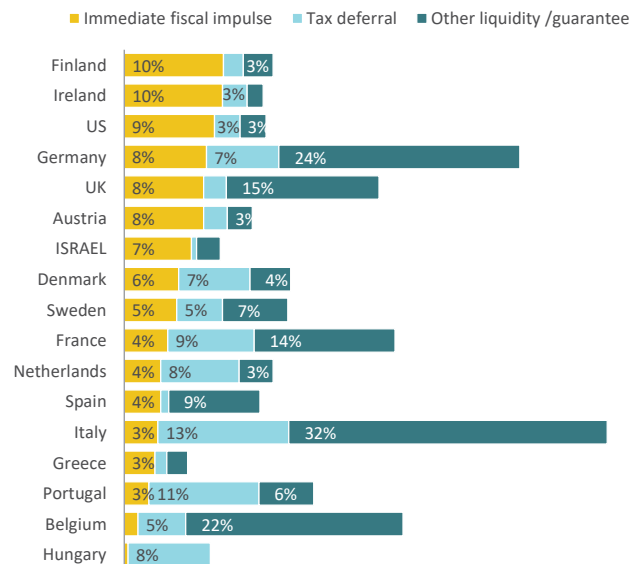
Generous fiscal support, limited indirect support

The figure compares assistance programs of various countries according to a classification into three assistance channels: 1) the immediate fiscal impulse, including direct support to households, grants to businesses, tax reductions, investment in the healthcare system, etc.; 2) the deferral of tax payments; 3) the provision of state guarantees to private borrowers.

Israel is in the group of countries that granted a relatively large fiscal incentive. In contrast, Israel is in the group of countries with a low total extent of intervention. This is primarily the result of the limited scope of state guarantees provided to borrowers in the private market. In this context, Italy is an outlier whose policy constitutes a sort of mirror image to Israel's: a high level of guarantees and tax deferrals and a low level of fiscal incentives.

In Israel, the government left the management of risk in the hands of the banks to a large extent. In view of the character of the risk, it appears that it is worth considering the expansion of the use of guarantees in order to provide the business sector with certainty and the ability to weather the crisis.

Structure of the support program in various countries



Note: The data are updated to November 2020. Assistance programs in most countries were finalized as early as autumn 2020.

Source: [Benjamin Bentat and Labib Shami](#), Taub Center | Data: The Accountant General Department, Ministry of Finance; Bruegel; IMF

Throughout the pandemic productivity has increased in all technology levels

While the labor market took a large hit during 2020, the same cannot be said for production and productivity. Dividing the Israeli economy by technology level, the figures compare 2020 to 2019 on a monthly basis.

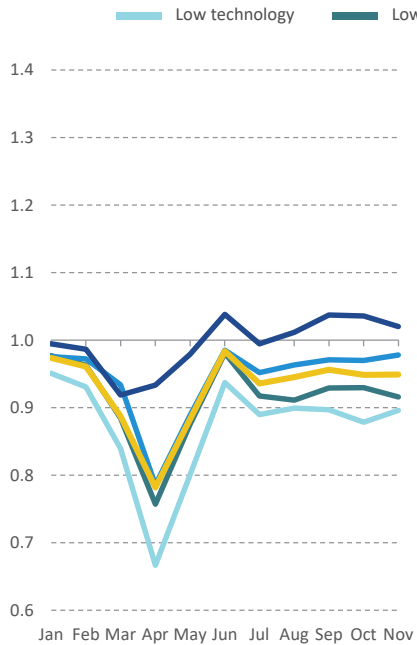
The left-hand panel shows the most profound economic effect of the pandemic — the fall in the number of hours worked. During March, April, and May, when over a third of the labor force was unemployed (see pages 26–30), there was a deep dip in the number of hours worked. The exception is in the high tech sector in which many workers were more able to continue working at their usual capacity from home, so work hours fell by less. While there was significant recovery after the first shutdown, the decrease was never completely erased, except for in the aforementioned high tech sector.

The same is not true, however, for production. Here the dip was far smaller even during the apex of the crisis in April.

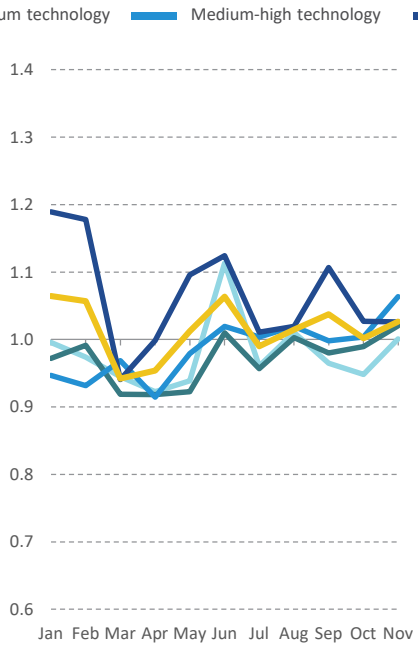
While the high tech sector still did the best, at no technology level was the loss greater than 8% of its 2019 production in any month.

Most remarkably, however, is the ratio of the two — indicating the change in productivity. From the start of the pandemic and through the end of the year, at no technology level was there a fall in productivity in any month, with high tech actually underperforming any other industry. The largest gainer in the early months were traditional industries. The phenomenon we see here is that, despite the enormous decrease in the number of hours worked, productivity did not fall (if anything — it increased), i.e., production became far more efficient. This demonstrates quite graphically the finding discussed on page 27 — that the populations that were laid off and suffered most were the low-education, low-skill, low-productivity (and therefore low-income) workers.

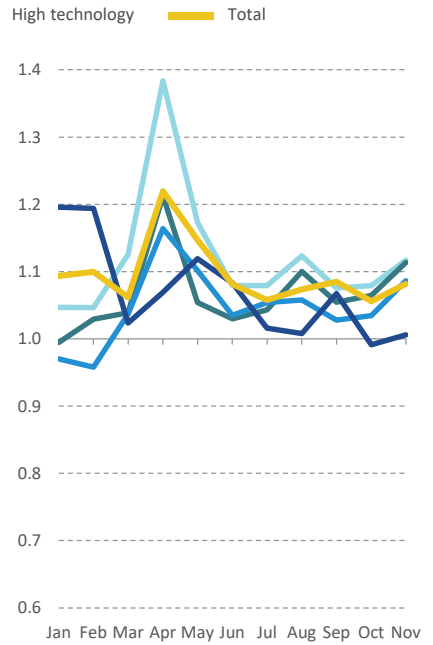
Work hours: 2020 relative to the same month in 2019



Production: 2020 relative to the same month in 2019



Productivity: Change in production relative to the change in work hours



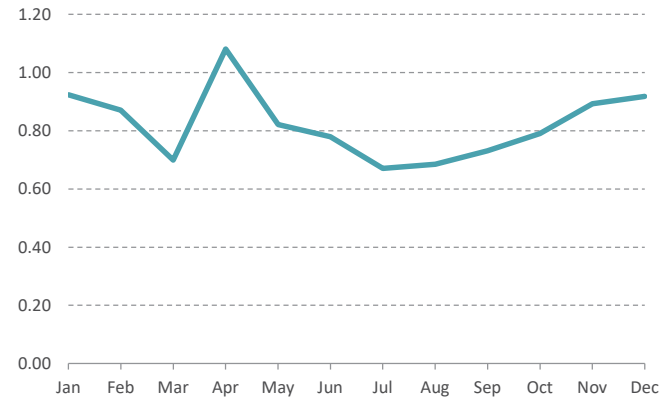
Source: Benjamin Bental, Taub Center | Data: CBS

Monetary policy: Bank of Israel's steps to calm the market

In response to signs of distress in the Israeli financial market in mid-March, the Bank of Israel announced a series of steps to calm the market. The Bank budgeted \$15 billion in “swap transactions,” allowing the banks to transfer shekel loans to the Bank of Israel and to borrow against them in dollars, widened the extent of repo transactions, and instituted additional relief to provide liquidity to the banks. Towards the end of March, the Bank showed its willingness to purchase up to NIS 50 billion government bonds on the secondary market. This stabilized the government bonds market and lowered long-term interest rates (see the figure). At the beginning of April, the Bank lowered the interest rate by 15 base points, to 0.1%. In early July, the Bank widened its intervention in the capital market while easing capital requirements for the banks. At the end of October, the Bank of Israel left the interest level of 0.1% and expanded the purchase of government bonds on the secondary market by NIS 35 billion. These steps lowered the interest rate at which companies borrow in the capital market and lessened the damage in the business sector.

Nominal return on 10-year government bonds

2020



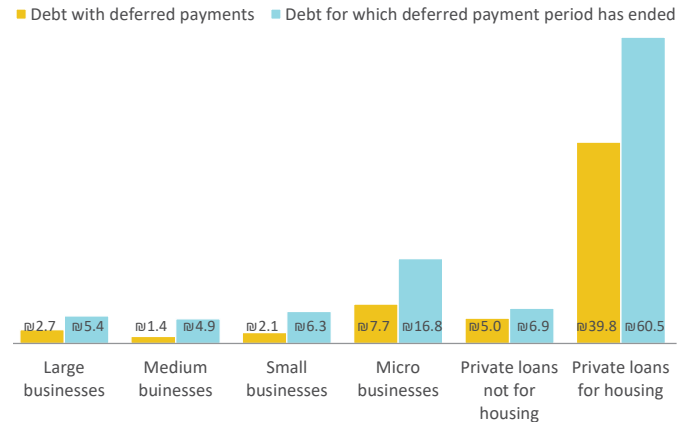
Source: [Benjamin Bental and Labib Shami](#), Taub Center | Data: Bank of Israel

Concern for the stability of the banking system

The financial system, guided by the Bank of Israel, has helped households and businesses deal with the COVID crisis by allowing delayed repayment of loans, including mortgages, and by increasing credit lines. These steps were intended to be temporary. By the end of December 2020, the extensions ended for about 63% of all delayed loans. Among large businesses, the rate was about 67%; for medium businesses, small, and micro businesses, the rates stood at 78%, 75%, and 68%, respectively. For non-housing loans by private clients, this figure was 58%, and 60% for housing loans. By the end of December, the total amount of delayed loans was about NIS 159 billion, out of total credit to the Israeli public amounting to about NIS 1,063 billion, that is, about 15%. This high rate requires a watchful eye to evaluate the risk of insolvency and to assess the threat to the financial system's stability.

The status of deferred payments on loans to business and private customers, December 2020

NIS billions



Source: [Taub Center researchers](#) | Data: Bank of Israel

The non-observed economy: a decrease in tax evasion but an increase in crime

Evaluating the size of the non-observed economy and its makeup is important in order to allow estimation of the extent of tax evasion in the country and in order to determine the best tools to fight the phenomenon. Non-compliance with laws and accepted institutional regulations influences the growth of the market and harms the system's efficiency.

By its nature, the non-observed economy cannot be directly measured, but there are a number of approaches used to estimate its size and makeup. The estimates we used are based on the demand for cash model, adjusted for the Israeli economy. Under this method, non-observed economic activities are based on cash interchanges, with the size of the non-observed economy estimated by calculating the "excess demand" for cash that stems from the non-observed economy's components (tax evasion and criminal activities).

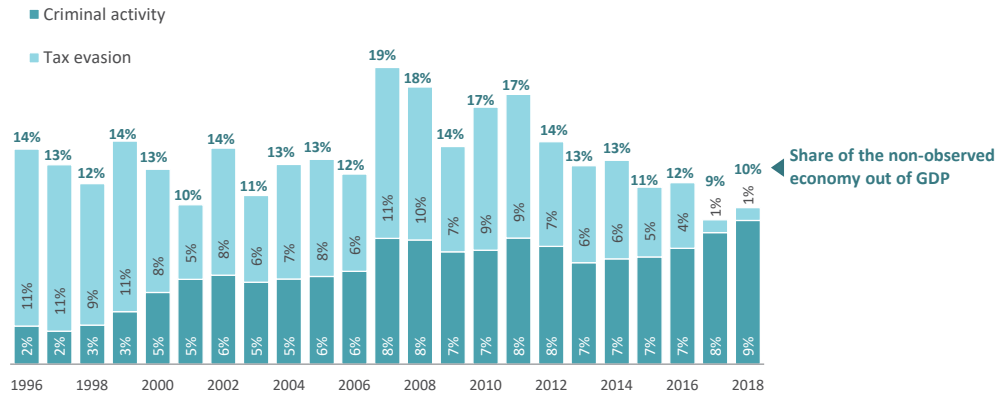
According to the model, indirect taxes, child allowances, unemployment benefits, and income support have a positive impact on the size of the non-observed economy and contribute to its expansion. In contrast, net direct taxation and benefit

payments (aside from child allowances, unemployment, and income support) have a negative influence on the non-observed economy and contribute to its reduction.

The estimates show that the size of the non-observed economy in Israel has been trending downward in the past few years from about 14% of GDP in 1996 to 10% in 2018. This reflects a non-observed economy of about NIS 49 billion in 1996 versus NIS 134 billion in 2018 (GDP grew by about 260% between these years). The highest share was seen in 2007–2008, at the time of the worldwide economic recession.

Looking at the components, the portion of tax evasion has been declining over the past decade, with particularly low rates in the past few years: 4% in 2016 and just 1% in 2017 and 2018. In contrast, the share of crime in the non-observed economy in Israel has risen substantially over the past two decades. This is matched by the rise in the portion of criminal files opened by the vice squad (crimes with an economic character of an interpersonal nature based on cash transactions, like drugs) out of all criminal files opened by the police.

The share of the non-observed economy and its main components out of GDP



Source: [Labib Shami](#), Taub Center, based on data from the Bank of Israel, CBS, and the OECD

SPOTLIGHT SUPPLY OF PHYSICIANS

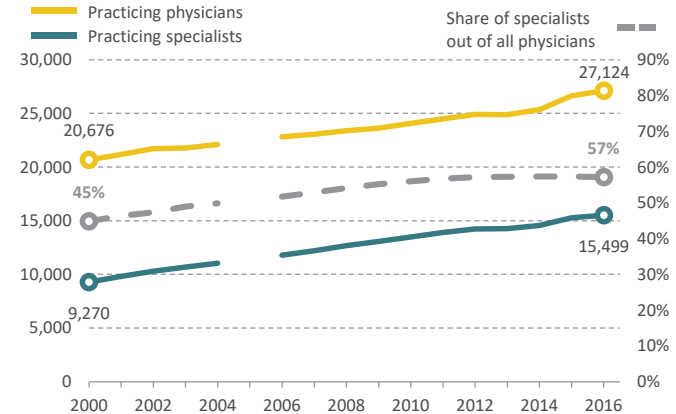
According to OECD data, in 2017, Israel had 3.3 physicians per 1,000 people. This exceeds the pessimistic forecast of the State Comptroller (2009), who, a decade ago, predicted that by 2020 the number would drop from 3.2 per 1,000 residents to 2.8 — in other words, below the “red line” of 2.9 physicians per 1,000 residents that the Horev Commission determined in 2010. Thus, the Israeli health system enjoys a relatively healthy supply of physicians. This stems from periods during which the health system thrived, including the massive, one-time immigration from the former Soviet Union when a disproportionately large supply of medical personnel arrived, as well as from the substantial increase in the number of new doctors in the last decade and the increase in the number of doctors of retirement age who have chosen to remain in the labor force.

In this Spotlight we examine how the supply of doctors has changed both in quantity and quality since the turn of the century.

An increase in both the quantity and quality of physicians

In the past two decades, there has been a considerable increase in the share of specialists among active physicians. From 2000 to 2016, the overall number of practicing physicians increased by 31%. In contrast, the number of practicing specialists in Israel increased by 67%, pointing to an increase in the “quality” of the physicians (physicians with more training). Since 2004, more than half of the practicing physicians in Israel are specialists, and, in recent years, the share of specialists has neared 60%. Non-specialist physicians include general practitioners (those with licenses who have not completed a specialization, many of whom are employed as physicians in positions that do not require a specific specialization) and medical residents who are still in the process of specialization.

Practicing physicians and specialists in Israel



Note: The CBS data for 2005 are incomplete.

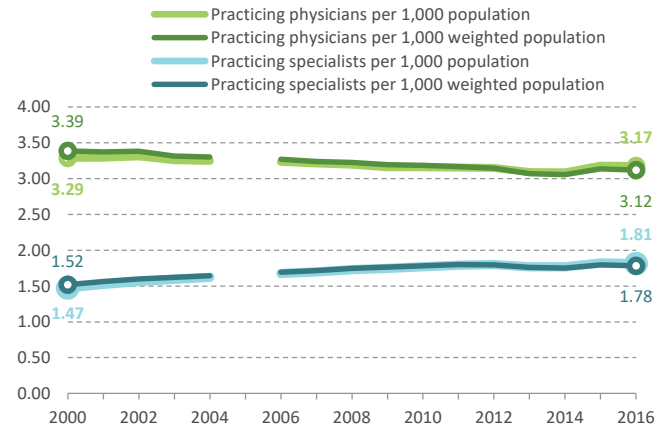
Source: [Tur-Sinai, Zontag, Blondheim, Weinreb, and Chernichovsky](#), Taub Center |

Data: CBS; Ministry of Health

A decrease in physicians per capita but an increase in specialists per capita

Correcting for the growth in the population and its aging, a different pattern emerges. Between 2000 and 2016, there was a decrease of 8% in the number of practicing physicians per 1,000 population, weighted to account for the increasing medical needs of Israel's aging population. In contrast, during the same period, there was an increase of some 15% in the number of practicing specialists per 1,000 weighted population. In other words, the decrease in the number of general physicians per person relative to an estimate of needs (as per the capitation formula) was accompanied by a qualitative increase as demonstrated by the rise in the number of specialists relative to those needs.

Practicing physicians and specialists per 1,000 population and per 1,000 weighted population in Israel



Note: The CBS data for 2005 are incomplete.

Source: [Tur-Sinai, Zontag, Blondheim, Weinreb, and Chernichovsky](#), Taub Center |

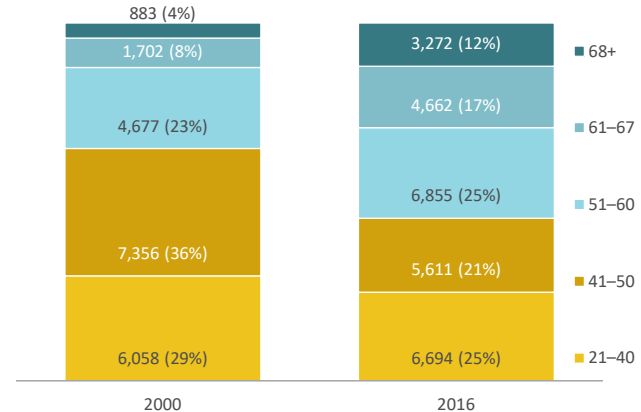
Data: CBS; Ministry of Health

Physicians: An aging population

The average age of practicing physicians in Israel has risen significantly since 2000. The number of physicians in the 61–67 age group increased by 174% from 2000 to 2016, while the number who continue to practice after the official male retirement age (67) grew even more significantly, by 271%. More importantly, the share of active physicians over retirement age out of all active physicians in Israel tripled from 4% to 12%. This process of “population aging” within the physician population has resulted in a decrease in the absolute number of practicing physicians ages 41–50, likely linked to the age distribution of those physicians who came from the former Soviet Union in the 1990s. At the same time, there has been an increase in the number of young physicians (up to age 40) after many years of decline which reached a low in 2009.

The increase in the number of young physicians apparently stems from the trend in the growth of new license holders since 2007. Despite this increase, the share of young physicians among all active physicians dropped from 29% at the start of the century to 25%.

Practicing physicians in Israel by age group

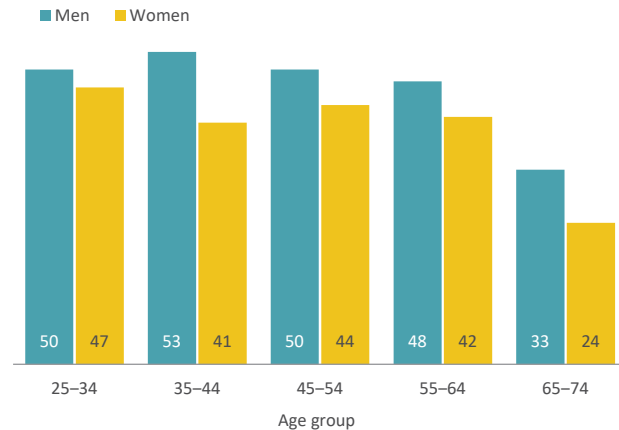


Source: [Tur-Sinai, Zontag, Blondheim, Weinreb, and Chernichovsky](#), Taub Center | Data: CBS; Ministry of Health

The aging of physicians lessens the supply of doctor-hours

The change in the distribution of physician ages affects the average number of hours worked. Between ages 25 and 64 the number of weekly work hours of male physicians ranges from 48 to 53, and of female physicians, from 41 to 47. Conversely, male physicians ages 65 to 74 work an average of only 33 weekly hours, and female physicians of the same age work an average of 24 weekly hours. The growth in the number of older physicians out of all the active physicians seen on the previous page exacerbates the effect of the decrease in doctor supply per capita shown on page 87. The result is liable to be an increase in the average number of hours of work of medical residents and young physicians. Since many of the latter are still at the stage of specialization, they are obliged to work long, strenuous hours in hospital wards. The already heavy burden on these doctors and residents could well increase substantially.

Average number of weekly work hours per physician, 2014–2017

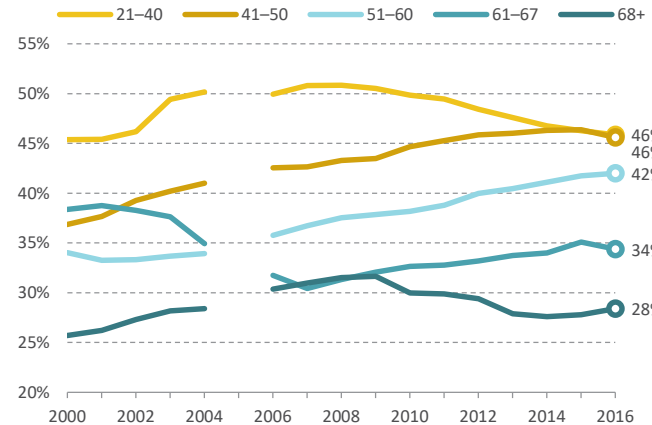


Source: [Tur-Sinai, Zontag, Blondheim, Weinreb, and Chernichovsky](#), Taub Center |
Data: CBS, Labor Force Survey 2014–2017

Physicians expected to retire in the near future are predominantly male

In recent decades, there have been no significant changes in the gender distribution of physicians in Israel, with the share of women near 40% since 2000, similar to their share among new medical license holders (42%–45%). However, with regard to the physicians who are expected to retire in the coming years — those ages 60 and over — the share of women is relatively low. As a result, it seems likely that there will be an increase in the share of women among all active physicians. Given the disparity between the average work hours of male and female physicians shown on the previous page, this is likely to reduce, to a certain extent, the average number of work hours per physician, further decreasing the supply of doctor services.

Share of female physicians out of all practicing physicians
By age group



Note: The CBS data for 2005 are incomplete.

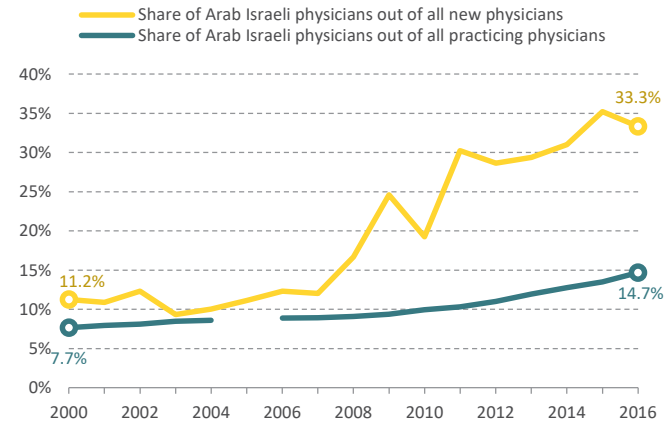
Source: [Tur-Sinai, Zontag, Blondheim, Weinreb, and Chernichovsky](#), Taub Center |

Data: CBS; Ministry of Health

Rapidly increasing numbers of Arab Israeli physicians

Between 2000 and 2016, the share of new physicians from the Arab sector out of all new physicians grew, and, in recent years, their share reached over 30%, as opposed to 11% in 2000. As a result, the share of Arab physicians among active physicians has increased and, in 2016, reached some 15%, closing in on their share of the population — 21% — and even closer to their share in the relevant physician aged population (25–74) — some 18%. These gaps will close quickly as physicians on the cusp of retirement are disproportionately not Arab.

Share of new physicians and practicing physicians from the Arab sector



Note: The CBS data for 2005 are incomplete.

Source: [Tur-Sinai, Zontag, Blondheim, Weinreb, and Chernichovsky](#), Taub Center |

Data: CBS; Ministry of Health

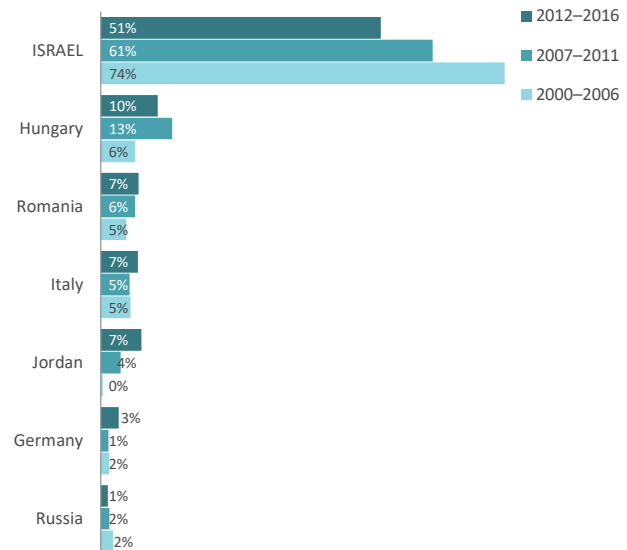
Increased medical training abroad

New physicians in Israel can be divided into three groups: physicians who studied in Israel, physicians born in Israel who studied abroad, and new immigrant physicians who were both born and studied abroad. The mix has changed dramatically since 2000. The share of new immigrants who studied abroad dropped significantly from 55% to 24%, and the share of graduates who studied in Israel increased significantly from 33% to 44%. Most notably, the share of native-born Israelis who studied abroad increased from 12% to 32%.

For those born in Israel, the share of medical graduates from Israeli universities dropped steadily: from 74% between 2000 and 2006 to 51% in 2012–2016. In general, the country with the second-largest number of Israeli medical school graduates is Hungary, where a tenth of all Israeli physicians licensed in the 2000–2016 period studied. The significant growth in the number of Israeli-born medical students in Jordan since the 2000–2006 period, which reached 7% of all new physicians in recent years, parallels the timing of the increase in the number of new physicians from the Arab sector.

Distribution of new physicians by country of medical school

Israel-born physicians only



Source: [Tur-Sinai, Zontag, Blondheim, Weinreb, and Chernichovsky](#), Taub Center | Data: CBS

SPOTLIGHT OVER- EDUCATION

Overeducation describes a situation in which a worker's acquired education level exceeds that required for his or her occupation. Overeducation can also be viewed as underemployment — people taking jobs whose educational requirements are below their education level. There will always be overeducation, as some people decide to change careers, others studied subjects for which the demand has fallen, and still others are unable to integrate into their field of study.

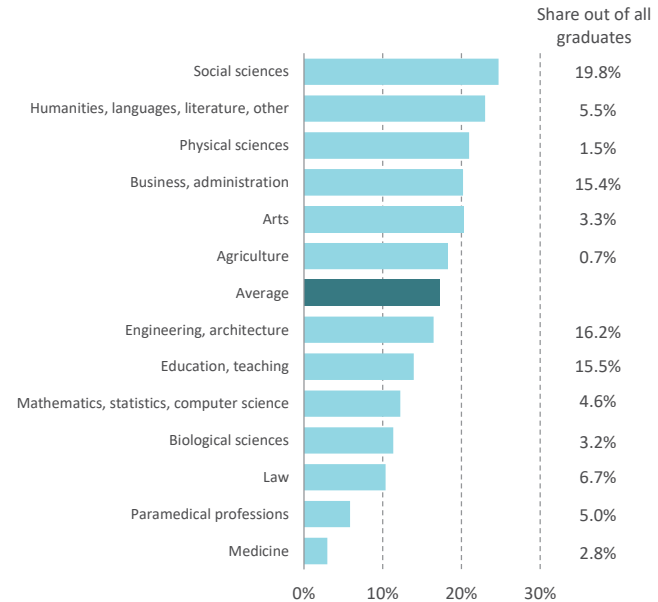
The empirical literature includes both objective and subjective measures of overeducation, though the former are more common. Objective measures are based on an assumed correspondence between occupations and education level, as determined by criteria set by job analysts or statistical measures conducted by researchers. Subjective measures are based on workers' self-reported match between their education level and their job.

In this Spotlight we look at overeducation in Israel for degree holders who are employed in occupations not requiring a degree using a hybrid model.

The greatest degree of overeducation is among graduates in social sciences and humanities

A basic breakdown of overeducation by field of study shows that, broadly speaking, individuals who studied humanities and social sciences are more likely to be overeducated. On the other end, graduates from medical studies, law faculties, mathematics, statistics and computer sciences are associated with the lowest rates of overeducation. All told, between 2017 and 2019, about 17.5% of workers in Israel with academic degrees were overeducated.

Overeducation by study major, ages 25–64, 2017–2019



Source: [Haim Bleikh](#), Taub Center | Data: CBS, Social Survey 2017–2019

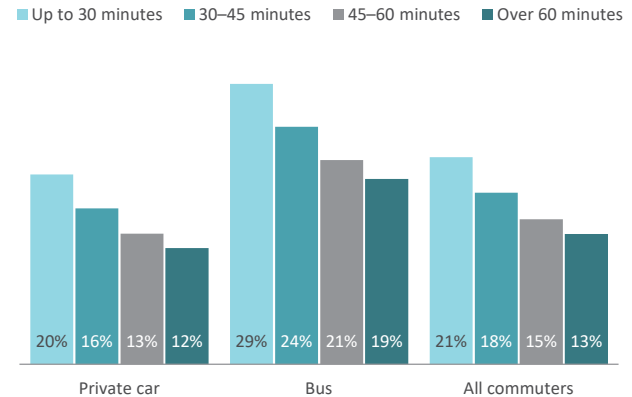
A willingness to commute lowers overeducation

In general, the costs of commuting, and particularly the amount of time it takes to travel to work, can partially explain the phenomenon of overeducation. Job seeking behavior is influenced in most cases by two central factors: the spatial distribution of jobs relative to private dwellings and the spatial flexibility of job seekers — that is, the readiness to either make a residential move or spend time commuting.

The data show that there is a negative correlation between commuting time and overeducation. The availability of a private car for commuting increases the spatial mobility of workers and works to reduce the rate of overeducation. In addition, the increased usage of private cars allows jobseekers to widen the radius of their job search and increase the number of work options open to them.

The relation between overeducation and commute time, 2015–2019

Expected probabilities



Source: [Haim Bleikh](#), Taub Center | Data: CBS, Social Survey 2015–2019

For older workers overeducation increases with age but decreases with tenure

The relationship between overeducation and age is not monotonic. Notably, this is true also after excluding immigrants from the sample for whom the risk of overeducation is naturally higher in older age groups. Excluding immigrants, the prevalence of overeducation among younger individuals appears to be higher relative to older age groups. This is possible evidence that overeducation is more substantial for younger people at the very early stages of their career trajectory, but, as time passes, workers on average improve their job match. On the other hand, for workers who change

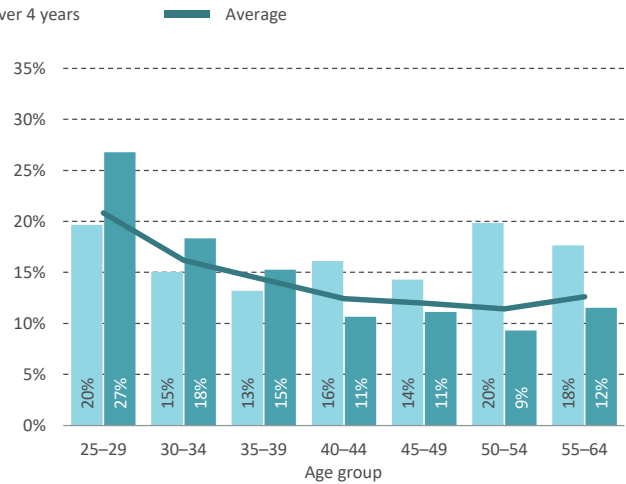
jobs after the age of 45, the likelihood of being overeducated increases with age. It is plausible that skill obsolescence is more pronounced at older ages due to the intense pace of technological changes, a lack of up-to-date knowledge of new skill requirements, and a lack of appropriate training. An additional factor contributing to overeducation levels is likely to be ageism, that is, employment discrimination on the basis of age. All of these factors are likely to lead workers to accept employment that is not commensurate with their level of education.

Percentage overeducated by age and job tenure, 2017–2019

With immigrants



Without immigrants



Note: Age groups 55–59 and 60–64 are combined in the figure on the right due to small sample sizes.

Source: [Haim Bleikh](#), Taub Center | Data: CBS, Social Survey 2017–2019

A lack of Hebrew proficiency among immigrants is a major determinant of overeducation

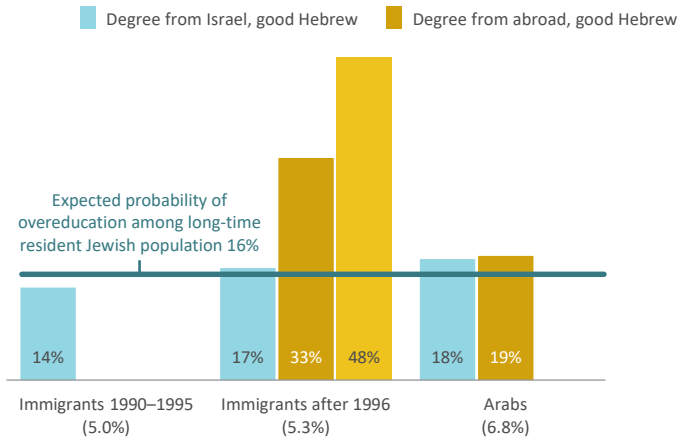
Low Hebrew proficiency levels are associated with higher rates of overeducation among immigrants. Immigrants who were educated abroad and do not have a good knowledge of Hebrew have the highest rates of overeducation. The rates of overeducation among the Arab Israeli population are not different from those of the veteran Jewish population. Among new immigrants who have good Hebrew language skills and earned their degree abroad, the rate of overeducation is lower than that of foreign-degree recipients with poor Hebrew but is significantly higher than among those who acquired their education in Israel with a good knowledge of the language.

Overeducation that is influenced by poor Hebrew proficiency sounds logical when it comes to immigrants who have come to Israel at a relatively older age, but the data show that this phenomenon also exists among young age groups who have many years of work ahead of them. The fairly constant flow of immigrants to Israel highlights the importance of this finding that language skills are crucial for both entering the Israeli labor market and for competing successfully in it.

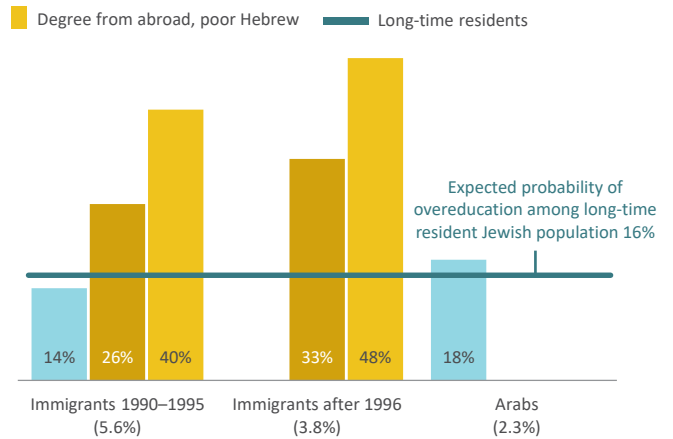
Overeducation, Hebrew proficiency, and country where academic degree was earned

Expected probabilities

Ages 25–44



Ages 45–64



Note: In parentheses, the relative share of the population group out of all salaried employees with an academic degree ages 25–64. Missing groups reflect a small number of observations.

Source: [Haim Bleikh](#), Taub Center | Data: CBS, Social Survey 2015–2019

SPOTLIGHT EARLY CHILDHOOD

Early childhood is a particularly critical age for cognitive, social, and emotional development and has a significant effect on later stages in life. Studies have shown that investment in early childhood education yields high returns in terms of educational, economic, social, and health outcomes later in life. Nowhere is this more important than in Israel, where 11.3% of the population is below the age of 6, more than in any other developed country.

In this Spotlight we first demonstrate how Israel compares to other countries in both attendance and the quality of preschool education, and then show the relationship between participation in early childhood frameworks and later accomplishments in Israel.

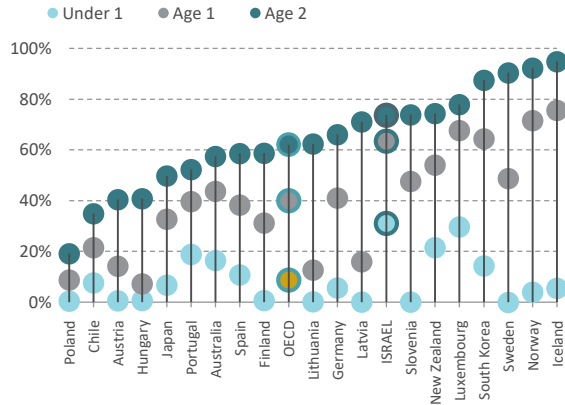
Israel has unusually high enrollment rates in preschool programs at all ages

Enrollment in Early Childhood Education and Care (ECEC) frameworks in Israel is exceptionally high. The preschool enrollment rate for children ages birth to 2 in Israel is 56% as compared to 35% on average in the OECD countries. In countries with the highest enrollment rates — such as Iceland, Norway, and Sweden — most of the children enter the preschool system at the age of 1 or 2. Israel, in contrast, heads the list for the enrollment of children aged under 1, with a rate of 31% in contrast to the OECD average of 9%.

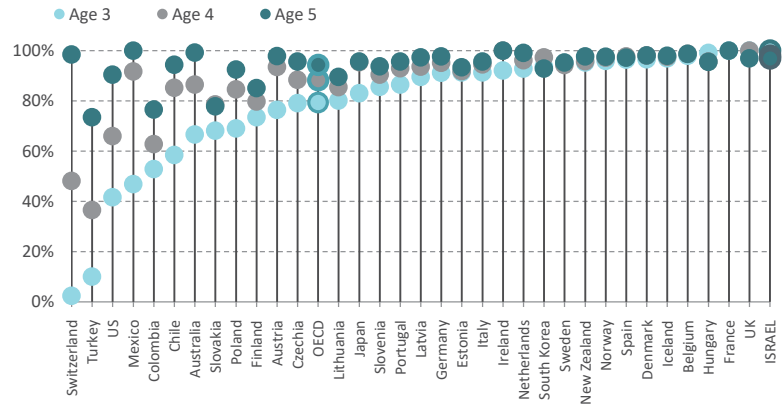
A similar finding holds for children ages 3 to 5, particularly in the wake of the implementation of the Trajtenberg Committee's decision for the country to provide free education from age 3. In 2017, enrollment stood at 99% as compared to the OECD average of 87%. That is, in Israel there is almost universal attendance of children of this age in preschool. In Israel, there is almost no difference in participation rates between those aged 3, 4, and 5, while in countries such as Switzerland, Turkey, the US, and Mexico, the enrollment rates for children ages 4 and 5 are significantly higher than for 3-year-olds.

Preschool enrollment rates for children, 2017

Under age 2



Ages 3 to 5

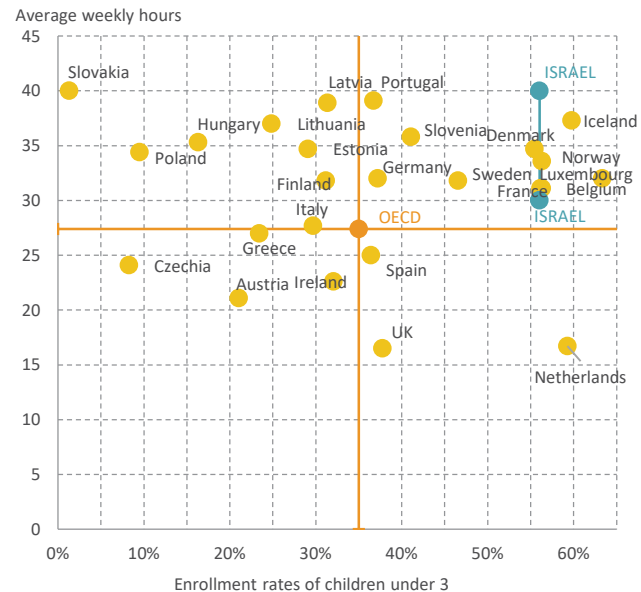


Source: [Dana Vaknin](#), Taub Center | Data: OECD, 2019

Young Israeli children spend long hours in daycare

According to some sources, young children up to the age of 3 spend an average of 30 to 40 hours a week in daycare in Israel, with the actual number depending on the number of days per week in daycare (5 or 6) and the number of hours per day (a full day usually ends at 16:30; a half-day at 13:30). Some sources report that the numbers are higher; that young children up to the age of 3 in Israel spend an average of up to 50 hours per week in a preschool setting. In either case, Israel finds itself in company with the Scandinavian countries, France, and Belgium, with both particularly high enrollment rates and a large number of weekly hours. Given the relatively large amount of time spent in preschool education in Israel, its quality, discussed in the following pages, is critical.

Enrollment rates for children under 3 in formal education and the average number of weekly hours spent in daycare, 2017

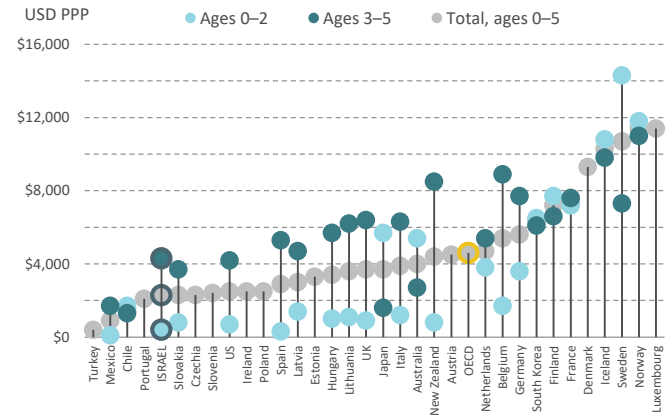


Source: [Dana Vaknin](#), Taub Center | Data: OECD, 2018; European Commission, 2019

Public expenditure on early childhood educational frameworks is relatively low in Israel

Public expenditure per child in the preschool system in Israel is low by international standards and is similar to levels in countries such as Portugal, Slovakia, and the US. To some extent this reflects the large number of children in Israel. Public investment per child in Israel in preschool education up to the age of 2 — the critical period for cognitive, social, and emotional development — is among the lowest in the OECD. Even though public expenditure per child on these services for ages 3 to 5 is higher in Israel, it is still among the countries with the lowest expenditure per child. This is a first indication of the quality of the frameworks in Israel.

Public expenditure per child on early childhood education and care, 2015



Note: Data are incomplete for some countries.
 Source: [Dana Vaknin](#), Taub Center | Data: OECD, 2018

Quality of support staff in preschool frameworks is particularly low

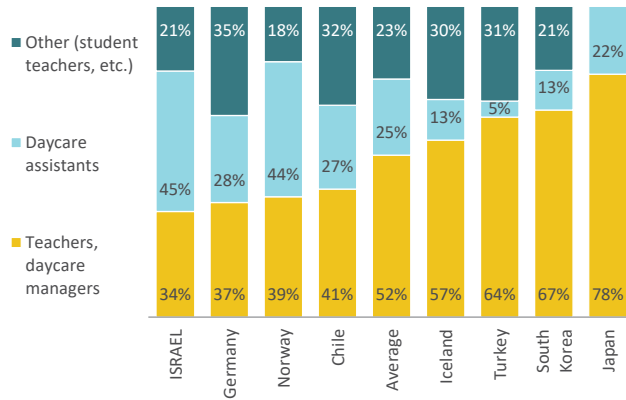
A large share of preschool staff in Israel (45%) are assistants with a relatively low level of formal education. Moreover, the share of teachers in the preschool staff in Israel is 34%, which is the lowest among the countries in the survey.

Many studies have found a positive link between the quality of preschool education and high achievement later in life. The lower the child-staff ratio (shown on the next page) and the higher the staff's level of education, the higher will be the child's average achievement level in school. The staff's level of formal education is low in Israel relative to the other survey countries. To wit, 46% of the staff in Israeli preschools have an academic education in contrast to 52% on average in the other countries. Moreover, 39% of the staff in Israel have no more than a high school education, which is double the

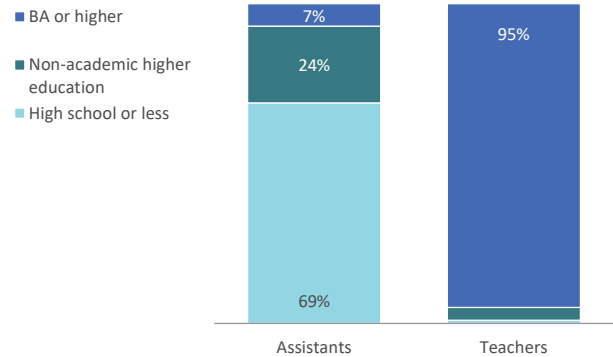
average in the other countries. The gap between Israel and the other countries is primarily the result of the difference in education level between the teachers and the assistants in preschool education; 95% percent of the preschool teachers in Israel have a bachelor's degree or above — an impressive figure by any standard — which puts Israel alongside Norway (95%) and above other countries in the survey, such as Chile (81%), Germany (74%), and South Korea (49%). However, the formal education of the assistants in preschool education is particularly low; about 70% have a high school education or less as compared to only 25% on average in the other countries. Interestingly, this share is higher in Hebrew-speaking preschool education (74%) than in Arabic-speaking preschool education (49%).

Preschool staff, 2018

Composition in Israel relative to other countries



Level of formal education of preschool staff in Israel



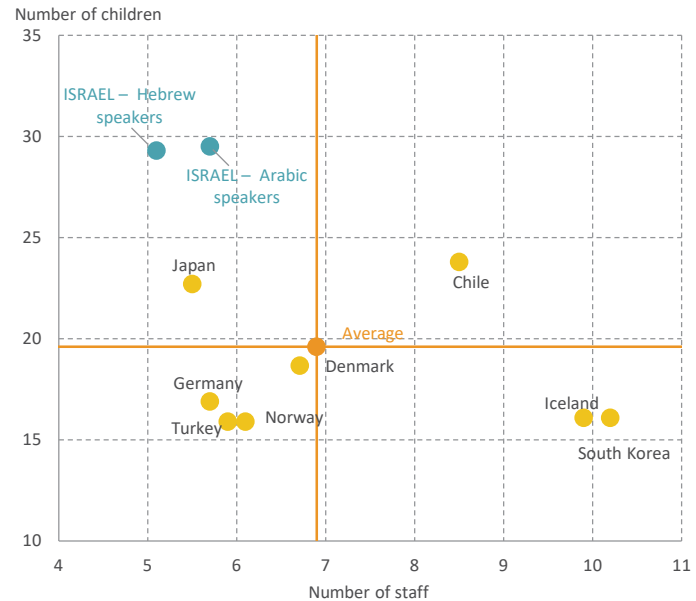
Source: [Dana Vaknin](#), Taub Center | Data: TALIS, 2019; RAMA, 2019

High child-staff ratio in preschools

The child-staff ratio in preschool education in Israel — among both Hebrew speakers and Arabic speakers — is exceedingly high relative to other countries surveyed, again reflecting the large number of children in Israel. An Israeli preschool setting has an average of 29 children and about 5 staff members on any given workday. The average number of children in an Israeli preschool setting is higher than the average for the other countries in the survey by 50%. In contrast, the number of staff per preschool in Israel is 23% lower than the average for the other countries. In Iceland and South Korea, for example, the situation is far better on both counts, with 10 staff members and 16 children on average.

Studies have found that a low child-staff ratio in preschool has a positive effect on working conditions and reduces staff workload. This, in turn, improves job satisfaction and the quality of the service provided, as well as the quality of the educational and emotional processes in the preschool setting. When the child-staff ratio is high, as it is in Israel, the staff find it difficult to focus on the individual needs of each child.

Number of children and number of staff in preschool settings, 2018

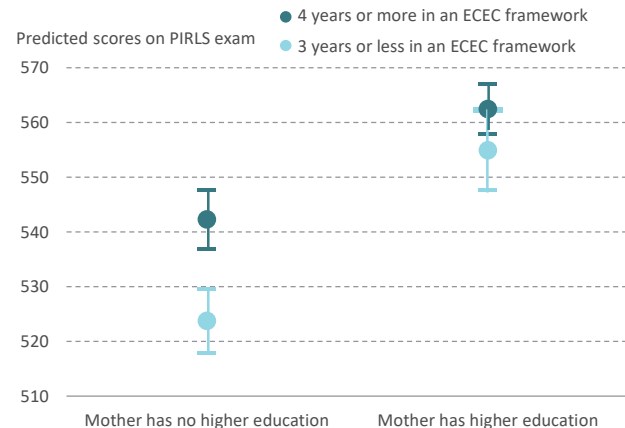


Source: [Dana Vaknin](#), Taub Center | Data: TALIS, 2019

Children with less educated mothers benefit more from early childhood frameworks

Children's participation in early childhood education frameworks contributes to their later academic achievements as measured by reading comprehension in Grade 4. This is especially true for children of mothers without a higher education. This figure shows that children who were in an early childhood program for 4 years or more attain higher achievements than those who were in such frameworks for 3 years or less. These findings are statistically significant, though, only for children of mothers with lower education levels. It is likely that this is explained by differences in the extent of positive stimuli that children receive in their home environment in different socioeconomic strata. Children in households from weaker socioeconomic groups apparently experience less positive stimulation at home and are more dependent on educational frameworks for positive stimuli than are children from stronger backgrounds.

Predicted scores by mother's level of education and the number of years in preschool, PIRLS 2016



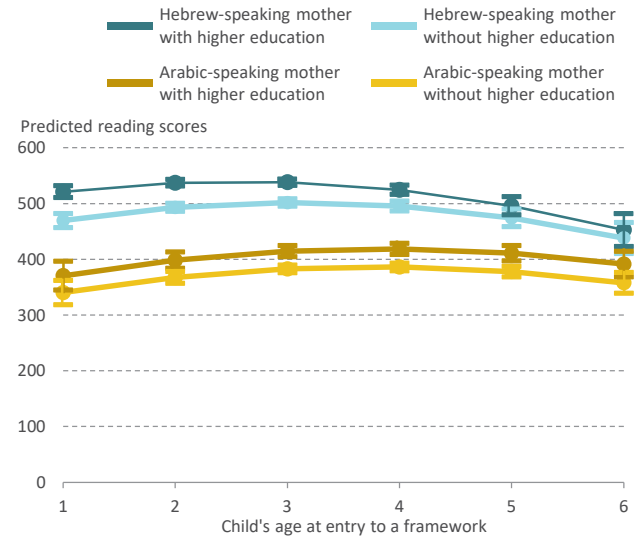
Source: [Zontag, Navon, Vaknin, Bowers, Blank, and Shavit](#), Taub Center |
Data: PIRLS 2016 International Database

The benefit from early childhood frameworks is diminished when starting too early or late

The figure illustrates a three-way relationship between starting age in an ECEC framework (self-reported), mother's education, and reading score in the PISA 2018 exams. For both Hebrew and Arabic speakers, the score initially rises as the entry age increases, reaches a peak among those tested in Hebrew at age 2–3 and among those tested in Arabic at age 3–4, and then falls for those who entered at a relatively late age. Confidence intervals show some notable patterns. Children who enter ECEC frameworks very early or very late have lower reading achievements than do those who enter in the middle years (about 3–4). Early entry has a more substantial negative impact for those tested in Arabic, but also impacts those tested in Hebrew whose mothers do not have a higher education. The effect of late entry, on the other hand, is most prominent for Hebrew speakers.

The lower achievements related to early entrance among the lower social strata hints at the possibility that the low quality of ECEC frameworks attended by children from these strata is responsible for the lower achievements observed.

Predicted scores in reading by mother's education and child's age at entrance to ECEC framework, PISA 2018



Source: [Zontag, Navon, Vaknin, Bowers, Blank, and Shavit](#), Taub Center |
Data: PISA database

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