TAUB CENTER
FOR SOCIAL POLICY STUDIES IN ISRAEL

Bagrut Exam Accommodations Level the Playing Field or Magnify the Achievement Gap?

Sarit Silverman, Alex Weinreb, and Nachum Blass

Policy Paper No. 07.2024

Jerusalem, May 2024

Taub Center for Social Policy Studies in Israel

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

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

Please cite this publication as:
Silverman, S., Weinreb, A., & Blass, N. (2024), Do Bagrut Exam Accommodations Level the Playing Field or Magnify the Achievement Gap? The Taub Center for Social Policy Studies in Israel.
https://doi.org/10.5281/zenodo.11237707

Center address: 15 Ha'ari Street, Jerusalem, Israel

Telephone: 02 5671818 Fax: 02 5671919

Email: info@taubcenter.org.il Website: www.taubcenter.org.il

Bagrut Exam Accommodations Level the Playing Field or Magnify the Achievement Gap?

Sarit Silverman, Alex Weinreb, and Nachum Blass

Introduction

Bagrut (matriculation) exams have been a cornerstone of Israel's education system since before the establishment of the State. Exam scores and the share of students that qualify for bagrut certificates are considered strong indicators of school success. For this reason, all factors and conditions that affect eligibility and exam scores are of great significance to students, parents, the schools they attend, the communities they reside in, the Ministry of Education, and educational researchers.

In recent years, one of the key issues associated with Israel's bagrut exams has been testing accommodations granted to students diagnosed with learning disabilities (LDs).[1] The discussion is anchored in two trends. First, there has been a rapid increase in the share of students who receive testing accommodations. Second, there are signs that students from higher socioeconomic groups use accommodations more often and benefit more from them than their peers.

The central goal of the current work is to examine the developing changes in accommodation rates in general and across socioeconomic levels and to evaluate if and how these changes contribute to achievement in bagrut exams.

* Sarit Silverman M.E.d., Ph.D. in Learning Disabilities, Senior Researcher, Taub Center for Social Policy Studies in Israel; Prof. Alex Weinreb, Research Director and Chair, Demography Area, Taub Center; Nachum Blass, Principal Researcher and Chair, Taub Center Education Policy Program.

1 Accommodations for special education students (e.g., cerebral palsy, auditory or visual impairment, and autism spectrum disorder) is a separate subject beyond the scope of the current study.

Background

Students with LDs and Attention Deficit Hyperactivity Disorder (ADHD)[2] face many challenges in the school system, including conveying their knowledge and abilities to their teachers and external evaluators, especially in exams. School systems use testing accommodations to reduce obstacles LD students face in exams and level the playing field so they can perform to the best of their abilities (Fuchs et al., 2005; Gregg et al., 2008; Lai & Berkeley, 2012; Tindal & Fuchs, 2000).

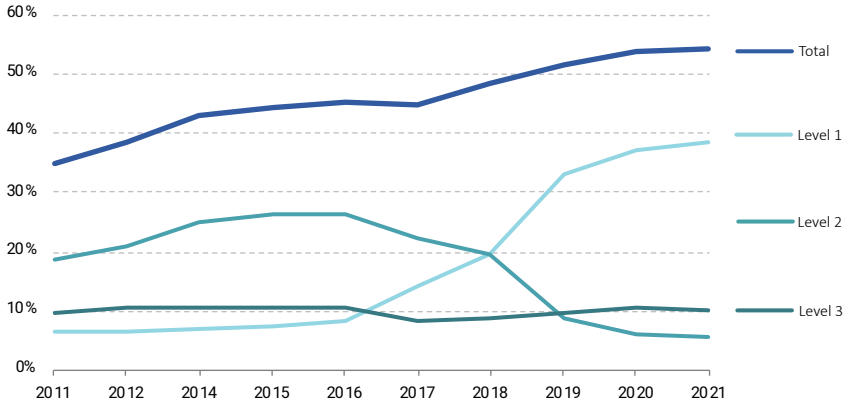
Testing accommodations for LD students for Israel's end-of-high-school bagrut exams vary by the extent of modification to the test depending on the student's difficulties, who authorizes them, and divided into three levels.[3] Level-1 accommodations modify the testing conditions, such as providing extended time. Level-2 accommodations modify the conditions, presentation mode, and students' response method, such as having the test read aloud or allowing typed exam answers. Level-3 accommodations modify the conditions, presentation, response mode, and content, such as a modified exam. The different accommodation levels are approved by different committees. The majority of level-1 accommodations are approved by school committees (hereinafter referred to as school-granted accommodations). Until 2015, eligibility for extended time required didactic or psycho-didactic evaluations, which were, and continue to be, quite expensive. However, since then, school committees can grant eligibility based on teachers' recommendations. The approval process for other level-1 accommodations has changed throughout the years, the majority of which no longer require evaluations. Evaluations are required for all level-2 and level-3 accommodations, which are approved by school district committees (hereinafter referred to as district-granted accommodations).

2 Despite the differences between LDs and ADHD, for the purpose of discussing test accommodations in this paper, they will be collectively referred to as "LDs."

3 For an example of the accommodations given to examinees in the bagrut exams in 2018/19, see Table A1 in the Appendix. Since the 2019/20 school year, there have been several procedural changes in the accommodation guidelines. The most significant change concerns the "From Disabilities to Learning" program. Districts enrolled in the program now only allow participating students to be entitled to district-granted accommodations (Ministry of Education, 2018).

Over the past decade, the percentage of students who receive accommodations due to LDs for bagrut exams has steadily increased, as seen in Figure 1. This trend is problematic for two main reasons. First, one would expect the percentage of students that receive accommodations due to LDs to reflect the LD prevalence rate among students. However, a series of meta-analyses estimates that the prevalence of developmental dyscalculia, developmental dyslexia, and ADHD, is each in the 5–7% range (Devine et al., 2013; Polanczyk et al., 2007; Yang et al., 2022). Considering the high levels of comorbidity among different LDs, a liberal estimate is that approximately 15% of students suffer from LDs (Moll et al., 2016; Pennington, 2006). As shown in Figure 1, however, the percentage of Israeli secondary school students that received bagrut accommodations due to LDs nationally was 34% in 2011 and rose to 54.1%, according to the latest data, in 2021. Each of these far exceeds the reasonable expectation based on international LD prevalence rates. This disparity suggests that factors beyond the true underlying prevalence of LDs are influencing the number of students receiving accommodations in bagrut exams Israel.

Figure 1. Bagrut Exam Accommodation Trends 2011–2021 by Accommodation Level



Note: Data was unavailable for 2013.

Source: Sarit Silverman, Alex Weinreb, and Nachum Blass, Taub Center | Data: CBS, Statistical Abstract of Israel, Education, Table 4.18

Second, there are also psychometric considerations that affect the interpretability of Israel's bagrut scores both on the individual and national levels due to the prevalence of the accommodations. Achievement tests should be carefully designed as an objective measure of students' abilities, irrespective of family, place of origin, or school. Differences in students test scores are meant to reflect different levels of ability or knowledge in a given subject. Any intervening sources of variance that can contribute to differences in scores unrelated to the subject being measured should be avoided, which is why consistency in testing conditions is important. In this regard, it is extremely problematic that more than half of the students test under different conditions. In actuality, the increased variance is even greater than suggested in Figure 1 since each student that receives accommodations is only counted once in the data at the highest level they received: if a student receives level-3 and level-1 accommodations s/he is only counted in the data at level-3, so the percentages of students that received level-1 and level-2 accommodations are underestimates.

The bottom line is that current standards for implementing accommodations in Israel's bagrut exams are at odds with psychometric standards. Under the latter, a large majority of students would test under identical conditions, leaving only a small minority to receive as minimal a set of modifications as possible. Where, as is currently the case, a majority of students receive accommodations, the system is creating differences in test performance that would otherwise not exist, casting suspicion on the construct validity of test scores (are they measuring what they are intended to measure) and their reliability (are they doing this consistently across test takers). As these questions are raised, the very credibility of bagrut exams is undermined, both scientifically and in the eyes of the public.

As seen in Figure 1, the main culprit is level-1, school-granted accommodations. These rose from 6.5% in 2011 to 38.63% in 2021, with virtually all of the increase occurring from 2016–2021. This very rapid increase coincides with the policy shift in which some of the school-granted accommodations no longer required didactic or psycho-didactic testing (Ministry of Education, 2014). The change was made in response to the rise in psycho-didactic and didactic testing and its associated high costs. It also aimed to provide autonomy to teachers who are supposed to understand their students' needs more than evaluators who meet students in one or two sessions.

However justified these reasons are, they create a clear conflict of interest for schools. Without sufficient oversight over the percentage of students who receive school-granted accommodations, schools can directly raise their own bagrut scores, without changing their pedagogical approaches, standards, or anything else, by granting more accommodations. They have every interest in doing so since a standard measure of school success in the eyes of the parents and the general public is high or rising scores. What's more, since one of a school's core functions is to help its students reach their full potential, as judged by measures like bagrut scores, it might be considered legitimate to give accommodations to "regular" students, even if it is at the expense of those who did not receive these accommodations.

In contrast, level-2 accommodations increased from 2011–2016 by around eight percentage points, then decreased sharply by 21 percentage points by 2021. The decrease can only be partially explained by the increase in level-1 accommodations, since the rise in level-1 outpaced the decline in level-2. Level-3 accommodations remained stable throughout the entire period at around 10% of all students – we assume that this is a better measure of the actual prevalence of LDs amongst high school students and reflects the students who truly need accommodations. The stability in level-3 throughout the whole period, and in level-2 since 2017 likely relates to greater oversight by the district committees over the percentage of students that qualify for accommodations.

Accommodations by SES and maternal education

Given that district-granted accommodations (levels-2 and 3) require expensive evaluations, one would expect higher rates of these accommodations in higher socioeconomic status (SES) schools and districts. An examination of accommodations by local SES and maternal education shows this is largely the case for level-2 accommodations, but not for level-3. This is shown in Figure 2, which displays the percentage of students that received testing accommodations due to LDs for the years 2011–2021 by accommodation level, local SES (Eshkol), and education system (Hebrew, Arab). In the Hebrew education system, there is a strong relationship between SES and accommodations: higher SES districts have higher rates of accommodations. However, there are interesting shifts during this period by accommodation level. For level-2 and 3 accommodations, the SES gap was notable in the 2011–2018 period but then

narrowed. In contrast, school-granted accommodations increased across all SES levels, and the SES gap widened over time. The difference in school-granted accommodation rates between the highest SES districts and the lowest SES districts was 6.3% in 2011 compared to 20.86% in 2021

Overall, two patterns can be seen in these trends. The SES gaps:

- Narrowed for district-granted accommodations that require expensive testing[4]
- Widened for school-granted accommodations that include many "free" accommodations

The latter, in particular, suggests that in the Hebrew education system, schools in more advantaged districts are using school-granted accommodations to their advantage. Moreover, their increased use of these accommodations has more than compensated for the reduction in level-2 accommodations.

In the Arab education system, there is a similar pattern but with more overlap between SES levels, suggesting that the relationship between SES and accommodations is weaker. This could be due to smaller SES gaps within Arab communities. For district-granted accommodations, students in the Hebrew education system had higher accommodation rates than students in the Arab education system across almost all years and levels of SES (with a few exceptions for level-2). This is probably an outcome of reduced access and availability to didactic evaluations in Arabic: currently there are no didactic evaluations with norms in Arabic, and, more generally, there is an insufficient number of trained educational psychologists and LD specialists in the Arab community (Asadi, et al, 2014; Elroy et al., 2018; Rabinowitz, 2010). For school-granted accommodations, the differences between Arabic and Hebrew education systems were different by the level of SES. For lower SES districts, students in the Arab education system had greater accommodation rates, while for higher SES schools, rates were higher among students in the Hebrew education system.

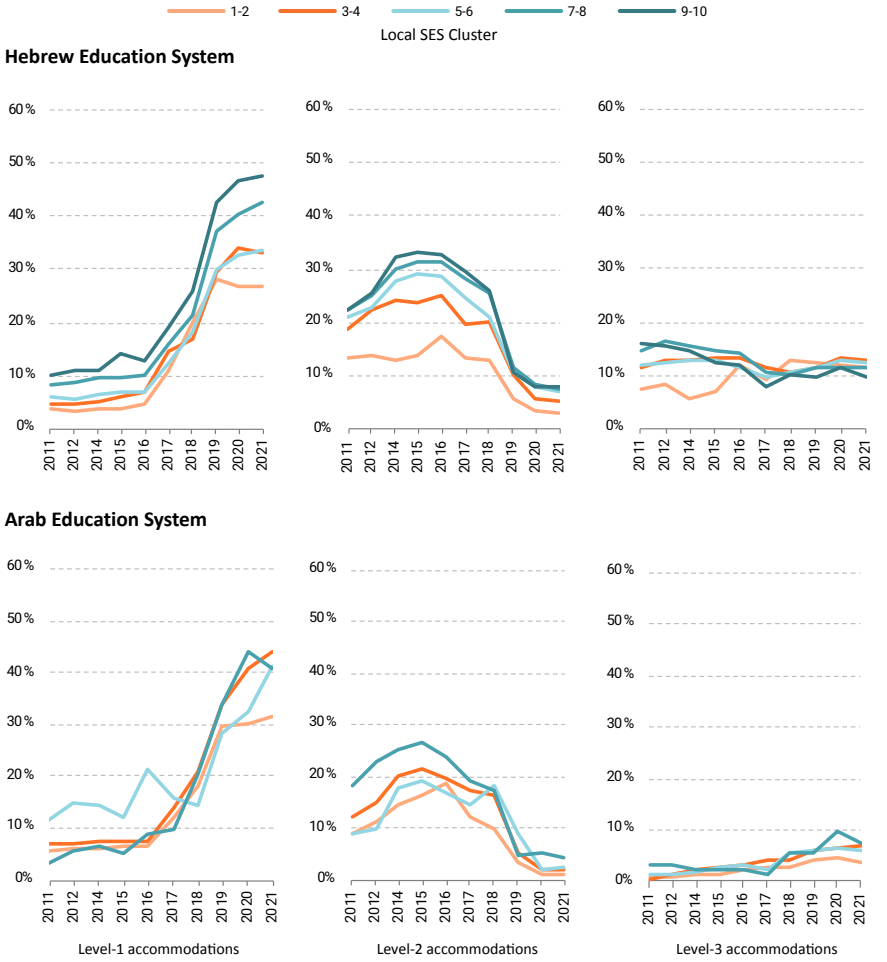
4 Students attending schools enrolled in the 'From Disabilities to Learning' program are eligible for evaluation through the Ministry of Education. Additionally, scholarships are available to partially fund these evaluations. For more information, visit the Ministry of Education Psychology Service website.

Similar trends can be observed when differentiating by maternal education, as shown in Figure 3. For school-granted accommodations in both Hebrew and Arab education systems, there is a very strong relationship with maternal education: higher levels of maternal education corresponded to higher rates of school-granted accommodations. This is particularly true in the Arab education system; by 2020, around 55% of students with mothers with an MA degree received school-granted accommodations, relative to 45% of their peers in the Hebrew education system. Among students whose mothers had not completed secondary education, school-granted accommodations were much lower: they were granted to around 30% of students in both Hebrew and Arab education systems.

The trends in district-granted accommodations are completely different. In schools both education systems, there was a notable downward trend over time in level-2 accommodations that was accompanied, in the Arab education system in particular, by decreasing variation across mothers' educational levels. Level-3 accommodations not only remained relatively flat – as noted earlier – but in the Hebrew education system they were negatively associated with mothers' education; children with less educated mothers had higher rates of level-3 accommodation than their peers.

Overall, these opposing trends further support the hypothesis that the total bagrut exam accommodation rates do not reflect the actual prevalence of LDs. Rather, school-granted and district-granted accommodations are serving different groups of students.

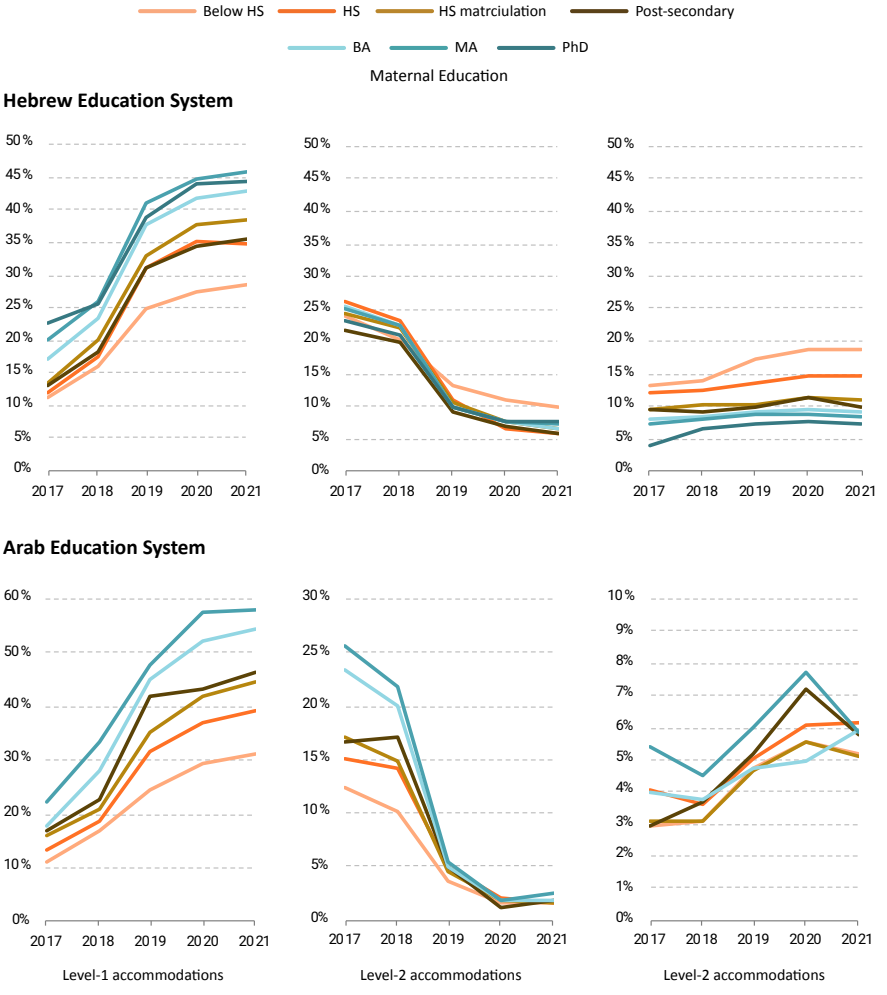
Figure 2. Percentage of Students that Received Accommodations by Accommodation Level, Local SES (Eshkol), and Population Group



Note: Data was unavailable for 2013.

Source: Sarit Silverman, Alex Weinreb, and Nachum Blass, Taub Center | Data: CBS, Statistical Abstract of Israel, Education, Table 4.18

Figure 3. Percentage of Students that Received Accommodations by Accommodation Level, Maternal Education, and Population Group



Notes: Prior to 2017 maternal education was categorized by years of education, not levels as demonstrated in the figure. Since the number of test takers with Arab speaking mothers with PhDs was less than 30, these data were omitted.

Source: Sarit Silverman, Alex Weinreb, and Nachum Blass, Taub Center | Data: CBS, Statistical Abstract of Israel, Education, Table 4.18

Study Aims

The rapid rise of school-granted accommodations in recent years is problematic from scholastic, psychometric, and educational equity perspectives. Regarding educational equity, instead of leveling the playing field for students with LDs, the current system allows students from higher SES backgrounds to receive higher rates of accommodations than their lower SES peers, which may be contributing to increasing achievement gaps that the education system as a whole, and Israeli society in general, claims to want to close.

The central goal of this paper is to evaluate that suspicion empirically. We examine how accommodations for bagrut exams can contribute to achievement by exploring the relationship between accommodation type and SES on bagrut exam scores. In the final section, we briefly discuss two changes in testing policy that could truly level the playing field.

Data

We use annual Ministry of Education data on bagrut scores, bagrut qualification rates, bagrut qualification with honors rates, and students receiving testing accommodations. These metrics are measured at the school level,[5] with discrete measures every school year between 2013/14 and 2019/20.[6] The dataset includes Israeli high schools listed on the "Transparency in Education" website, in which bagrut exams are offered, and excludes those registered as "special education" and Haredi[7] schools, resulting in an analytic sample of around 725 schools in 2013/14, rising to around 850 in 2019/20[8]. Sample sizes increased both due to new schools and to the growing number of students taking bagrut exams in a given subject in each school.

5 The ideal method to understand the relationship between testing accommodations and achievement would be to analyze data at the student level. However, data on the individual student level are unavailable.

6 Test scores by school are available on the Movement for Freedom of Information website.

7 Haredi schools were not included because there were insufficient representative data of the Haredi population.

8 The number of schools with complete data available for math and English differs slightly, therefore, there are small differences in the number of schools reported throughout the results.

There were two main stages in the analysis. First, two series of multivariate linear regression models were used to identify the relationship between schools' bagrut scores and testing accommodations, one for bagrut scores in English and the other for math. We focused on these subjects since they are required for bagrut qualification and are important for university acceptance. In each case, a regression was run for each available year separately (2013/14–2019/20) to understand how the relationships changed over time. This is especially important given the shifting composition of accommodations documented in Figure 1. Models included a range of other school-level controls delineated below.[9]

Second, to look at the effect of the increases in the share of students that receives accommodations on national test scores, we employ multivariate decomposition techniques. These differentiate the effects of this shift in student composition on test scores from changes in the relationship between actual school characteristics on test scores. As a robustness check, we also decompose two other changes that occurred in the same period: the rising percentage of students receiving a bagrut qualification; and the rising percentage students qualifying with honors.

Variables

The key **dependent** variable in the first set of models is a single year- and school-specific bagrut score for each of the two main subjects: English and math. In each case, this is a single weighted average that accounts for two things:

a. Exam difficulty, rising from 3 units to the most challenging 5 units.
b. Differences in the proportion of students in each of these three levels.

To address the first of these, we added bonuses similar to those used for university acceptance for four and five units in math and English (English and math 4 units – 12.5 points, English 5 units – 25 points, Math 5 units – 35 points). To address the second, we multiplied the scores by the proportion of test takers for each unit level in the school. In other words, our measure incorporates both the varying levels of difficulty in a given subject and the portion of students at each level. For example, if a school had the following data for math:

9 The data are available on the Ministry of Education Transparency in Education website for the years 2014–2020. Bagrut qualification data are available from 2016–2020.

	Number of test takers	School average
3 units	67	80
4 units	82	85
5 units	30	80

The calculation for that schools' math score would be:

((80*67)+((85+12.5)*82)+((80+35)*30))/(67+82+30) = 93.88

The key **independent** variable in all models is the percentage of students in each school that received bagrut exam accommodations. The data from the "Transparency in Education" website provide two variables for accommodations, school-granted that do not require evaluation and district-granted that require evaluation. These categories do not fully overlap with the Ministry of Education guidelines outlined in Appendix Table 1; the accommodations included in school-granted that do not require evaluation are extended time, use of an electric dictionary for English, an enlarged test booklet, and typing exam responses[10], while district-granted includes all the remaining accommodations.

To identify possible non-linear relationships between SES and accommodations on test scores, we standardized the percentage of accommodations in every given year (dividing the percent by the standard deviation), then converted that into a categorical variable by dividing the standard scores into quintiles. The lowest quintile includes schools with the lowest accommodation rates, and the highest quintile includes schools with the highest accommodation rates.

The school's SES is also a key independent variable. We capture this by using its score on the Nurture Index (NI) as a categorical variable. This is a Ministry of Education scale of 1–5 that indicates how much financial support a school needs based on socioeconomic and demographic factors. To increase the intuitive interpretability of the results we inverted the scale such that higher values indicate higher SES.

10 Typing exam responses is level-1 but district-granted.

Several school characteristics were included as control variables in our models: municipal SES (Eshkol); percentage of special education students;[11] and school population group (Hiloni, Arab, Bedouin, Druze, National-Religious).

Models also include interaction terms between school SES and the two types of accommodations included in the model. These allow us to identify if, and by how much, the SES-based advantage of more accommodations rises at a different pace in poor and wealthy settings.

Finally, all models are estimated using OLS with two minor modifications. Frequency weights capture the number of test-takers in any given school – since the national average is the average across test-takers, not across schools; and standard errors are then adjusted for clustering at the same school level.

Results

Appendix Tables 2–3 present the descriptive statistics for the variables in the analysis. Full regression results are available in Appendix Tables 4–5. To facilitate interpretation, we graph the predicted marginal effects from these models in Figures 5–8. Before presenting these, we lay out three ideal-type patterns in a heuristic model, depicted in Figure 4.

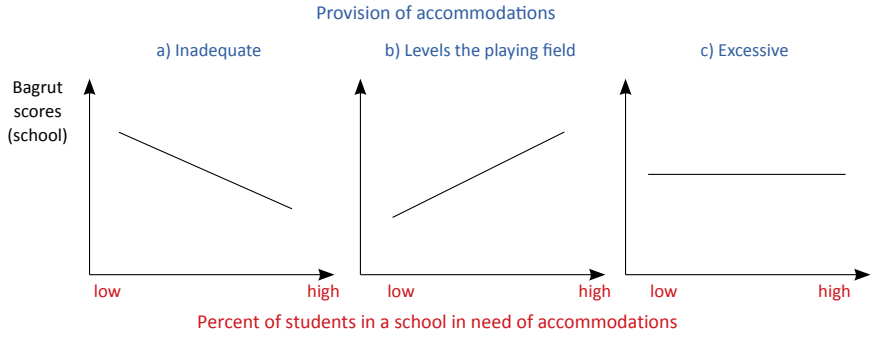
Consider a scenario in which the need for accommodations is assessed, but all accommodations are withheld, or too few are granted. Those students who need accommodations but do not receive them will generally score lower on standardized exams. At the school level, this suggests the downward-sloping lines shown in panel (a) of Figure 4. It points to lower average scores in schools with a higher share of students who should receive accommodations but do not. Panel (b) points to the opposite scenario: if the accommodations are overly generous, then schools with a higher share of students who receive accommodations will outperform schools with a lower share. Panel (c) represents a scenario in which just the right amount of accommodations is granted.

We now show that in terms of district-granted accommodations, Israel remains closer to the panel (a) outcome. However, in terms of school-granted

11 Along with the rise in test accommodations, there has been a rapid rise in special education students as well (see Blass, 2022). To account for the rise of integrated special education students in mainstream schools that could partially explain the inflation in accommodation rates, we added this variable as a control.

accommodations, Israel is much closer to panel (b), suggesting excessive use of accommodations, especially in higher SES schools.

Figure 4. Assessing the balance between the need for, and provision of, testing accommodations



Source: Sarit Silverman, Alex Weinreb, and Nachum Blass, Taub Center

Math as the outcome variable

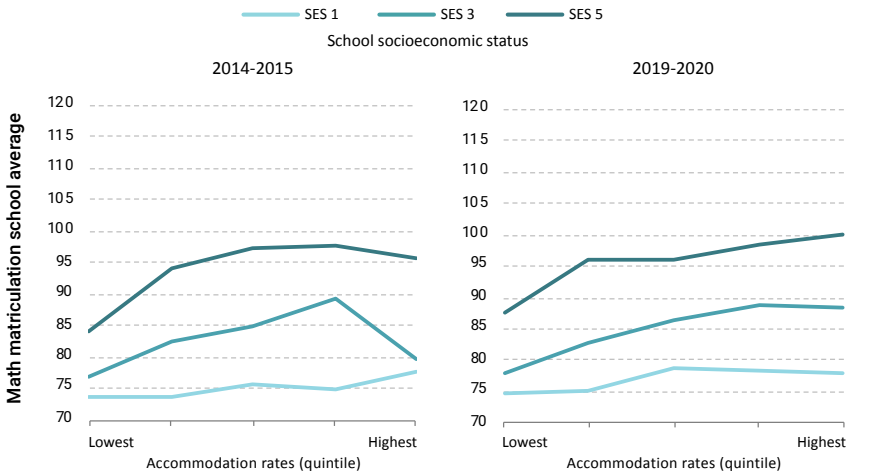
Appendix Table 4 shows that through most of the observation period, the interaction term between school SES and school-granted accommodations was positive and statistically significant. However, differences in the main effect of school-granted accommodations over the years influence the interpretation of the interaction[12]. In the earlier years, 2013/14–2015/16, the main effect was statistically significant for the lower school-granted quintiles, while in the later years, 2017/18–2019/20, the main effect was significant for the higher school-granted quintiles. This shift, in conjunction with the interaction, points to a larger advantage in math achievement in higher SES schools related to higher rates of school-granted accommodations in the later years, which as seen in Figure 1, are precisely the years in which the proportion of students receiving school-granted accommodations rises sharply.

We show this visually in Figure 5. It graphs the combined main effect of school-granted accommodations on bagrut scores and the interaction term with school SES. Math achievement in the lower SES schools seems to be less

12 The main effect can also be referred to as a simple effect, or direct effect, depending on the academic discipline. It is typically contrasted to "interaction effects."

impacted by school-granted accommodation levels than higher SES schools. The difference in math achievement in years 2018/19–2019/20 in the lowest SES schools between the highest and lowest school granted quintile was 2.8 percentage points, compared to 12.6 percentage points in the highest SES school category, indicating that higher SES schools are benefitting more from higher levels of school-granted accommodations. Their pattern resembles the excessive use of accommodations depicted in Figure 4, panel (b).

Figure 5. The relationship between school-granted accommodations and weighted math bagrut scores at the beginning and end of the observation period



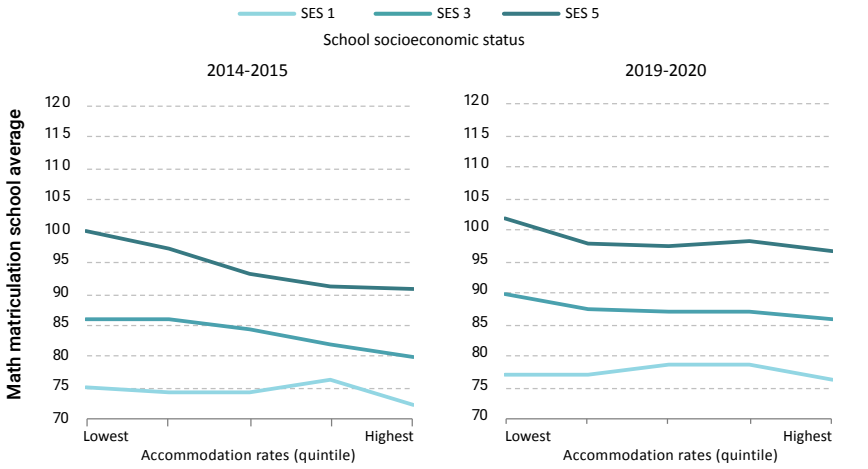
Notes: Graphs are marginal effects based on models identical to those reported in Appendix table 4, but using joint 2013/14–2014/15 data and 2018/19–2019/20 data (to smooth any year-on-year fluctuations). The marginal effects account for both the main model parameter and SES X Accommodation interaction term. SES levels 2 and 4 are omitted for easier visualization.

Source: Sarit Silverman, Alex Weinreb, and Nachum Blass, Taub Center | Data: Transparency in Education website; The Movement for Freedom of Information

The relationship between math scores and district-granted accommodations is completely different, as demonstrated in Figure 6. The coefficient value fluctuates but is rarely statistically significant at any level of district-granted accommodations, suggesting that district-granted accommodations alone do not directly influence school level math achievement. Moreover, while the interaction term between district-granted accommodations and school SES

is statistically significant in all years, besides 2019/20, it is negative, meaning that schools in which a higher share of students were granted district-granted accommodations had lower mean math scores, though this negative effect is concentrated in SES 3–5, and was stronger in 2013/14–2014/15 than in 2018/19–2019/20. In contrast, in the lower SES schools, math achievement seems stable across levels of district-granted accommodations and over time.

Figure 6. The relationship between district-granted accommodations and weighted math bagrut scores at the beginning and end of the observation period



Notes: Graphs are marginal effects based on models identical to those reported in Appendix table 4, but using joint 2013/14–2014/15 data and 2018/19–2019/20 data (to smooth any year-on-year fluctuations). The marginal effects account for both the main model parameter and SES X Accommodation interaction term. SES levels 2 and 4 are omitted for easier visualization.

Source: Sarit Silverman, Alex Weinreb, and Nachum Blass, Taub Center | Data: Transparency in Education website; The Movement for Freedom of Information

Examination of explained variance across the years reveals an interesting trend: as accommodations increased – driven by the sharp increases in school-granted, level-1 accommodations – the explained variance in bagrut scores increased as well, from an R^2 of 0.52 in 2013/14 to 0.69 in 2019/20.[13]

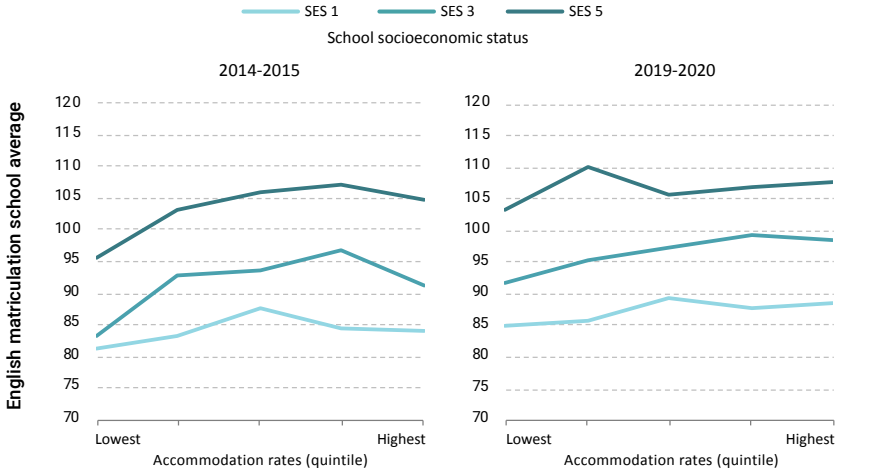
13 The increase occurred despite a 16% percent rise in the rising number of schools in the analytic sample (typically associated with a reduction in R^2), from 725 schools in 2013/14 to 840 in 2019/20.

English as the outcome variable

For school-granted accommodations, the relationship with English achievement was similar to the relationship with math. In the earlier years, the lower quintiles were significantly associated with higher achievement while in the later years, it was the higher quintiles with a significant association. However, in English scores, unlike in math, the interaction between school-granted accommodations and school SES was significant in the earlier years, 2013/14–2015/16, and not in the later years. This is likely related to high SES schools reaching a ceiling effect in 2018/19–2019/20. As seen in the right-side panel of Figure 7, their weighted average score in those years was already above 100, so school-granted accommodations made little difference in achievement.

In fact, in English scores, by 2018/19–2019/20 the steepest positive slope – closest to the "excessive" model of granting accommodations depicted in Figure 4, panel (b) – can be found in the median SES 3 group. In the lowest SES group, there is also a mild positive slope, but only between the lowest and medium quintiles of providing school-based accommodations. From medium to high, in both time periods, the effect is flat. This is the same pattern seen in math in 2018/19–2019/20, shown in Figure 5.

Figure 7. The relationship between school-granted accommodations and weighted English bagrut scores at the beginning and end of the observation period

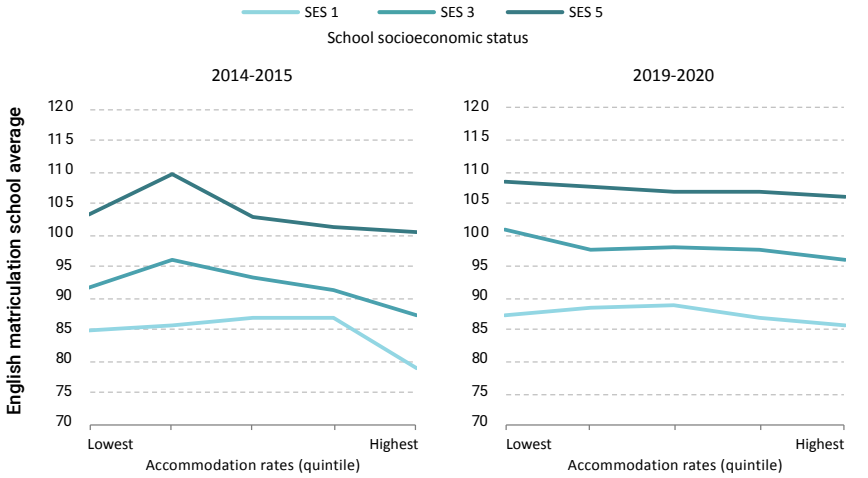


Notes: Graphs are marginal effects based on models identical to those reported in Appendix table 5, but using joint 2013/14–2014/15 data and 2018/19–2019/20 data (to smooth any year-on-year fluctuations). The marginal effects account for both the main model parameter and SES X Accommodation interaction term. SES levels 2 and 4 are omitted for easier visualization.

Source: Sarit Silverman, Alex Weinreb, and Nachum Blass, Taub Center | Data: Transparency in Education website; The Movement for Freedom of Information

District-granted accommodations did not have a consistent, statistically significant relationship with English scores over the years. The interaction between district-granted accommodations and school SES was significant and negative in the years 2013/14–2015/16, and again in 2017/18–2018/19 (see Appendix Table 4). The total relationships are displayed in Figure 8. In the years 2018/19–2019/20, there was a ceiling effect for the high SES schools regardless of district-granted accommodations – the same as in school-based accommodations shown in Figure 7 – and a consistent decrease in achievement across the remaining levels of SES as they increased.

Figure 8. The relationship between district-granted accommodations and weighted English bagrut scores at the beginning and end of the observation period



Notes: Graphs are marginal effects based on models identical to those reported in Appendix table 5, but using joint 2013/14–2014/15 data and 2018/19–2019/20 (to smooth any year-on-year fluctuations). The marginal effects account for both the main model parameter and SES X Accommodation interaction term. SES levels 2 and 4 are omitted for easier visualization.

Source: Sarit Silverman, Alex Weinreb, and Nachum Blass, Taub Center | Data: Transparency in Education website; The Movement for Freedom of Information

As in the analysis of math scores, explained variance increased across the years for English scores, from an R^2 of 0.59 in 2013/14 to 0.70 in 2019/20, despite the 19% rise in the number of schools in the analysis (from 714 schools in 2014 to 852 in 2020).

Multivariate Decomposition Analysis

The shifts in both the slope and the height of the regression lines seen in Figures 5–8 imply that increases in average math and English bagrut scores between 2013/14 and 2019/20, about which there has been considerable positive press (see, for example, Dvir, 2022), could be at least partly an artifact of growth in the proportion of students with accommodations. The final stage in our analysis evaluates this claim by decomposing those increases into two main causes: a shift in the proportion of students granted accommodations; and a shift in the relationship between accommodations and educational outcomes.

Only the latter indexes a true secular increase in educational outcomes. The analysis employs a multivariate decomposition technique outlined by Powers et al. (2011) and is estimated using 'mvdcmp' in Stata 17.

Our initial models focus on the change in math and English scores in 2014/15 compared to 2019/20, and, other than ignoring interaction terms, they replicate the prior multivariate models. Full model results are presented in Appendix Tables 6–7. Here we focus on the main findings.

Compositional shifts in schools across these six years – that is, the increasing share of students that were granted accommodations – account for 42% and 27% of the increase in math and English scores, respectively. Increases in the share of students in the fourth and fifth quintiles of school-granted accommodations explained the entire compositional shifts for both test subjects. In contrast, increases in the proportion of students in the highest quintile of district-granted accommodations only had a minor effect (roughly a quarter of the effect size in terms of decomposition). Not all compositional changes are positive. For example, net of other factors in the model, a rising share of special education students within the school was associated with lower scores for both subjects. In addition, most of the other compositional shifts have no clear substantive effect. Overall, however, the results are unambiguous: a substantial share of the increase in average bagrut scores in math and English between 2013/14–2019/20 stems from the rise in school-granted accommodations.

We extended this analysis in two ways. First, we looked at the effects of shifts in accommodations on the percentage of students by school that received bagrut qualification, presented in Appendix Table 8. This has also been rising in recent years: from 66.2% in 2015/16 to 73.4% in 2019/20.[14] Here, too, increases in the share of students in the fourth and fifth quintiles of school-granted accommodations explained the entire share of the increase in bagrut qualification accounted for by compositional shifts. This is true also for models that do not control for the rise in special education. Second, we looked at the effects of a shift in accommodations on honors qualification rates (which rose from 7.5% in 2015/16 to 10.8% in 2019/20) presented in Appendix Table 9. 39% of this increase stemmed from compositional changes. As seen in the other models, the biggest factor, by far, was the rise in school-granted accommodations.

14 For further details, see the Ministry of Education's summary of national high school data.

Discussion

This paper has examined how the increase in accommodations for bagrut exams over the last several years has contributed to differences in school's academic achievement – as measured by bagrut scores in math and English – and how these differences were accentuated by school-level SES. The analysis reveals strong SES-based gaps in bagrut scores. Interestingly, school-granted and district-granted accommodations have different relationships with achievement: district-granted accommodations have an inverse relationship with achievement, while school-granted accommodations have a positive one.

These relationships are robust and unambiguous. The positive interaction between school SES and school-granted accommodations on math scores in recent years suggests that higher SES schools are using school-granted accommodations to boost their scores. It is beyond the scope of our data to know whether this is occurring because key personnel at the school are intentionally "playing the system" to maximize benefits for their students, or whether they are merely responding to parents' demands. But what is clear is that this is completely antithetical to the core goal of accommodations, which is to level the playing field for test-takers with LDs. Instead, the current system magnifies the advantages of students in higher SES schools. A decade ago, the public discourse surrounding bagrut accommodations highlighted how children from advantaged homes could "buy" accommodations by paying for unnecessary didactic evaluations, placing them at an unfair advantage over their peers (Israel Hayom, 2016). This partially motivated the reform that canceled the didactic evaluation requirement for some school-granted accommodations to make these accommodations equally accessible to all students. We have shown here that not only did the policy change fail to close SES-based gaps, rather, it has further exacerbated the problem.

The different patterns of district- and school-granted accommodations support our assertion that each serves a different function. The inverse relationship between district-granted accommodations and test scores suggests that schools with higher rates of district-granted accommodations have more students with LDs, which pulls down the schools' average bagrut scores. This suggests that district-granted, and not school-granted, accommodations more accurately measure the LD prevalence rate amongst high school students. This is hinted at in the national data in level-3 accommodations rates, however, the inverse relationship confirms the hypothesis.

School-granted accommodations demonstrate completely different patterns. They have been climbing fast and have a strong positive relationship with achievement. One could hypothesize that school-granted accommodations are more effective than district-granted ones at helping LD students close the gaps in their achievement scores, which could explain this trend. However, this seems unlikely since the national data presented in the introduction show that there are higher rates of school-granted accommodations amongst high schoolers with higher-educated mothers and in higher SES districts. These patterns suggest misuse.

Our decomposition analysis takes these findings one step further. We show how the rise in school-granted accommodations accounts for a substantial share of the total increase in math and English scores between 2013/14 and 2019/20, and the increase in bagrut qualification rates and in the percentage of students graduating with honors. In other words, much of the gain in math and English scores and in bagrut qualification rates, is an artifact of schools having taken advantage of a much easier accommodations policy.

The positive interaction between school SES and school-granted accommodations specifically for math scores and not for English is not all that surprising. First, higher SES schools reached a ceiling effect in their English achievement leaving little room for school-granted accommodations to contribute to scores. Across the years, as demonstrated in Appendix Table 2, the average grade in English throughout the observation period was higher than the average in math. This suggests that the English exam is easier for the students overall than the math exam, which can contribute to more pressure on schools to improve performance specifically in math and not in English. Another differentiator of math is that it is more emotionally charged than other school subjects. There is a large body of research on the effects of math anxiety and its effect on math performance (Chang & Beilock, 2016; Maloney & Beilock, 2012; Ramirez et al., 2018). This specific anxiety for math does not exist for other subjects.[15] The increased difficulty and pressure placed specifically on math may contribute to higher SES schools overusing accommodations to improve grades.

15 There is research on test anxiety but that is situational and not subject-specific. For a review, see von der Embse et al., 2018).

The Ministry of Education has addressed the misuse and inequities in accommodations over the years by changing the parameters of how accommodations can be granted, and redefining levels for specific accommodations. In addition, they developed the "From Disabilities to Learning" program, which started in the 2017/18 academic school year in middle schools in fifteen districts with plans to expand nationally (Ministry of Education, 2018). The program emphasizes accommodating learning processes, not testing, which is an important first step. Only students who participate in the program can qualify for evaluations in ninth grade to be considered for district-granted accommodations for bagrut exams. However, there are several difficulties with the implementation of the program namely (Monnickendam-Givon, 2021):

1) It aims for early intervention but middle school is too late to classify as "early."
2) It is based on a "response to intervention" model, which means that if a student improves as a result of the program they no longer qualify. Since program participation is based on poor grades, if a student with LDs works hard and performs well in school s/he wouldn't qualify.
3) There is insufficient staff (in number and training) to design interventions for LD students to correctly implement the program.
4) It does not address school-granted accommodations so it will not lower accommodation rates – given our findings here, this is the most notable problem.

Until now the various reforms have fallen short of sufficiently addressing the needs of LD students in the school system and correcting the overuse of bagrut accommodations, especially in higher SES areas. Reforms to address the needs of students with LDs are beyond the scope of this paper. Our findings merely point to clear reliability problems with the current state of bagrut accommodations that, in turn, undermine the validity of bagrut scores themselves. If our goal is to truly level the playing field, this system needs to be changed. Perhaps, instead of asking, "how can we best provide accommodations?" the question should be, "how can we optimize testing conditions for all students?".

In this final section of the paper, we briefly propose two changes – digital testing and removing time limits – that, when combined, would eliminate the

majority of accommodations. The accommodations that would remain would be an oral examination (a digital platform should ease its implementation), a modified exam, and, for students with math-specific LDs, use of an expanded formula sheet and switching the requirement in math to a different subject. These would remain available to the minority of students who require them, resulting in a sharp reduction in the share of students that would qualify for accommodations in bagrut exams. This approach has been adopted by the army's psychotechnic ranking exam, which is an adaptive exam on a digital platform and recently made all accommodations available to all test takers. If such allowances can be made to assess suitability for military service in Israel's highly-regarded armed forces, they can also be applied in bagrut exams.

Digital Bagrut Examination

Moving from paper and pencil to digital exams would follow the trend of other achievement tests: PISA adopted a digital format in 2018, and the SATs did so in 2023. There is currently a digital platform for bagrut exams that is used on a very small scale.[16] Some of the accommodations are also given using the digital platform but it is not used universally, contributing to even more differences in test conditions. We propose that all the accommodations that the digital platform would allow (auditory files for questions, spell check, etc.) be made available to all students. For example, students, with or without an LD, who prefer auditory processing should be able to choose whether or not to listen to the test question with headphones, which would provide consistent available test conditions to all students.

Digitization of bagrut exams could have many benefits beyond reducing accommodation rates. Anticipated logistical benefits would include streamlined exam distribution and faster test results as schools would no longer have to print exams (which have been known to leak in recent cheating scandals). There would also be less 3rd party involvement in testing since fewer proctors would be needed in general. Nor would they be needed to facilitate reading and writing accommodations, in particular. Added benefits would accrue to a digital platform from the wealth of information it could provide. For example, time can be measured from the point that a tester clicks to start a test until the moment they click submit. This could be used to see how time

16 Results from a small-scale RAMA study in 2019 found that most of the respondents preferred the digital exam, found the instructions clear and the platform easy to use. See RAMA, 2020.

affects performance, which would provide another medium of measurement (i.e., accuracy overall versus accuracy per minute). Lastly, a digital platform aligns with pedagogical goals of adapting the education system to 21st-century skills and opens possibilities for different types of exams in the future (e.g., interactive or adaptive formats).

Unlimited Test Time for all

It is widely known amongst teachers and students that extended time is a highly sought-after accommodation. Exclusively granting extended time to LD students is based on the rationale that it would only improve their test scores and that their non-LD peers' scores would remain unchanged if they also received extended time (Sireci et al., 2005). This claim has been refuted in multiple studies: the boost in test scores as a result of extended time is not specific to students with LDs (Cahan et al., 2016; Lewandowski et al., 2013; Lovett, 2010, 2020). A study conducted in Israel compared psychometry scores of students with ADHD to a control group under limited and extended time conditions: the increase in test scores in the extended time condition was not significantly different between the groups (Engel, 2008).

Time constraints in exams influence scores in two ways: by reducing the time available to answer questions; and by increasing students' anxiety levels, which can negatively impact performance. A literature review on students' perceptions of test accommodations found that accommodations reduced anxiety for students both with and without LDs (Lovett & Leja, 2013). Recent studies of college students with LDs found that despite the accommodation, the majority of them did not actually use the extended time available to them in exams (Holmes & Silvestri, 2019; Lindstrom et al., 2021; Spenceley & Wheeler, 2016). Together, these findings that extended time improves test scores yet LD students are not consistently using the extended time suggests a placebo effect: it is not the extended time itself that boosts test scores, but rather the accommodation that provides the possibility for more time and the resulting decreased anxiety. Reduced anxiety frees up mental resources for the task at hand so students can complete the exam to the best of their abilities.

Beyond the psychological effect of time constraints, the time it takes to complete an exam does not accurately measure knowledge and mastery (Gernsbacher et al., 2020; B. Lovett et al., 2017)2020; B. Lovett et al., 2017, though it may provide a good measure of how quickly someone can demonstrate those

things. The question, therefore, is one of pedagogical goals: is the purpose of bagrut exams to assess students' abilities in performance under pressure or measure the knowledge they have accrued during high school? Assuming the latter, the most valid method of assessment would be to remove time limits for bagrut exams (Cahan et al., 2016; Gernsbacher et al., 2020)2020. This would level the playing field and provide all students, no matter their background, with the opportunity to complete their exams to the best of their abilities.[17]

What is clear is that under the current system, extended time is not granted exclusively to a small minority of students who would theoretically benefit from this accommodation. In 2021, the national average for school-granted accommodations was 39%. On the ground, that translates to 112 schools in which 50% or more of the student-body received school-granted accommodations.[18] If we assume that extended time is the most commonly used accommodation, that clearly contradicts the core purpose of testing accommodations, especially since, as we have shown, those accommodations are being disproportionately granted in higher SES schools.

Conclusion

The current system of accommodations used for the end-of-high-school, bagrut exams is at odds with the declared goal of Israel's education system. Rather than reducing the effects of inequality, it magnifies it. Higher SES schools grant far more accommodations to their students. Those accommodations raise bagrut qualification rates, bagrut scores in math and English, and the share of students receiving honors in their bagrut qualification. In fact, a substantial portion of the increases in all these measures over the last several years stems from the increase in school-granted accommodations, rather than in a "real" increase in educational attainment.

The system needs to be reformed. Here we have presented two viable changes – taking advantage of advances in digital platforms and removing time limits. We believe that these two reforms alone can greatly improve the current bagrut system since they will help schools avoid the perverse incentives that

17 The goal of some tests is presumably to check performance under pressure. Where that is the case, time limits are important. Officially, however, that is not one of the goals of bagrut exams. If it were, nobody would be granted extended time.

18 Not including special education and Haredi schools.

currently encourage them to give their own students a leg up, irrespective of the cost to others. The result will be an increase in the share of students who are able to realize their educational potential.

Bibliography

English

Blass, N. (2022). *Special education budgeting in Israel: From the Dorner Committee recommendations to implementation of Amendment 11 to the Special Education Law*. Taub Center for Social Policy Studies in Israel.

Cahan, S., Nirel, R., & Alkoby, M. (2016). The extra-examination time granting policy: A reconceptualization. *Journal of Psychoeducational Assessment, 34*(5), 461–472.

Chang, H., & Beilock, S. L. (2016). The math anxiety-math performance link and its relation to individual and environmental factors: A review of current behavioral and psychophysiological research. *Current Opinion in Behavioral Sciences, 10*, 33–38.

Devine, A., Soltész, F., Nobes, A., Goswami, U., & Szűcs, D. (2013). Gender differences in developmental dyscalculia depend on diagnostic criteria. *Learning and Instruction, 27*, 31–39.

Elroy, I., Samuel, H., & Medina-Artom, T. (2018). *The shortage of Arab professionals in mental-health services – Causes and solutions*. Myers-JDC-Brookdale. (English executive summary)

Fuchs, L. S., Fuchs, D., & Capizzi, A. M. (2005). Identifying Appropriate test accommodations for students with learning disabilities. *Focus on Exceptional Children, 37*(6).

Gernsbacher, M. A., Soicher, R. N., & Becker-Blease, K. A. (2020). Four empirically based reasons not to administer time-limited tests. *Translational Issues in Psychological Science, 6*(2), 175–190.

Gregg, N., Morgan, D., Lindstrom, J., & Coleman, C. (2008). Accommodations: Research to practice. In: L. E. Wolf, H. E. Schreiber and J. Wasserstein (Eds.), *Adult learning disorders: Contemporary issues*. Psychology Press.

Holmes, A., & Silvestri, R. (2019). Extra time or unused time? What data from a college testing center tells us about 50% extra time as an accommodation for students with learning disabilities. *Psychological Injury and Law, 12*(1), 7–16.

Lai, S. A., & Berkeley, S. (2012). High-Stakes test accommodations: Research and practice. *Learning Disability Quarterly, 35*(3), 158–169.

Lewandowski, L., Cohen, J., & Lovett, B. J. (2013). Effects of extended time allotments on reading comprehension performance of college students with and without learning disabilities. *Journal of Psychoeducational Assessment, 31*(3), 326–336.

Lindstrom, W., Lindstrom, J. H., Barefield, T. T., Slaughter, M. H., & Benson, E. W. (2021). Examination of extended time use among postsecondary students with non-apparent disabilities. *Journal of Postsecondary Education and Disability, 34*(4), 297–309.

Lovett, B. J. (2010). Extended time testing accommodations for students with disabilities: Answers to five fundamental questions. *Review of Educational Research, 80*(4), 611–638.

Lovett, B. J. (2020). Extended time testing accommodations for students with disabilities. In: M. J. Margolis & R. A. Feinberg (Eds.), *Integrating timing considerations to improve testing practices* (pp. 47–58). Routledge.

Lovett, B. J., & Leja, A. M. (2013). Students' perceptions of testing accommodations: What we know, what we need to know, and why it matters. *Journal of Applied School Psychology, 29*(1), 72–89.

Lovett, B., Lewandowski, L., & Potts, H. (2017). Test-taking speed: Predictors and implications. *Journal of Psychoeducational Assessment, 35*(4), 351–360.

Maloney, E. A., & Beilock, S. L. (2012). Math anxiety: Who has it, why it develops, and how to guard against it. *Trends in Cognitive Sciences, 16*(8), 404–406.

Moll, K., Göbel, S. M., Gooch, D., Landerl, K., & Snowling, M. J. (2016). Cognitive risk factors for specific learning disorder: Processing speed, temporal processing, and working memory. *Journal of Learning Disabilities, 49*(3), 272–281.

Pennington, B. F. (2006). From single to multiple deficit models of developmental disorders. *Cognition, 101*(2), 385–413.

Polanczyk, G., de Lima, M. S., Horta, B. L., Biederman, J., & Rohde, L. A. (2007). The worldwide prevalence of ADHD: A systematic review and metaregression analysis. *The American Journal of Psychiatry, 164*(6), 942–948.

Powers, D. A., Yoshioka, H., & Yun, M.-S. (2011). Mvdcmp: Multivariate Decomposition for Nonlinear Response Models. *The Stata Journal, 11*(4), 556–576.

Ramirez, G., Shaw, S. T., & Maloney, E. A. (2018). Math anxiety: Past research, promising interventions, and a new interpretation framework. *Educational Psychologist, 53*(3), 145–164.

Sireci, S. G., Scarpati, S. E., & Li, S. (2005). Test accommodations for students with disabilities: An analysis of the interaction hypothesis. *Review of Educational Research, 75*(4), 457–490.

Spenceley, L. M., & Wheeler, S. (2016). The use of extended time by college students with disabilities. *Journal of Postsecondary Education and Disability, 29*(2), 141–150.

Tindal, G., & Fuchs, L. (2000). A summary of research on test changes: An empirical basis for defining accommodations. Information Services, Mid-South Regional Resource Center, University of Kentucky.

von der Embse, N., Jester, D., Roy, D., & Post, J. (2018). Test anxiety effects, predictors, and correlates: A 30-year meta-analytic review. *Journal of Affective Disorders, 227*, 483–493.

Yang, L., Li, C., Li, X., Zhai, M., An, Q., Zhang, Y., Zhao, J., & Weng, X. (2022). Prevalence of developmental dyslexia in primary school children: A Systematic review and meta-analysis. *Brain Sciences, 12*(2), 240.

Hebrew

Asadi, A., Ibrahim, R., Ben-Simon, A., & Shani, M. (2014). *A system for individual testing of reading and writing disabilities in Arabic*. Hebrew Psychology.

Dvir, N. (2022, September 11). Rising trend: The percent of those qualifying for a Bagrut during corona 2020/2021. *Israel Hayom*.

Engel, A. (2008). *Effect of extra time on the psychometric exams for those with ADHD*. National Institute for Testing and Evaluation.

Israel Hayom (2016, September 2). The insufferable accommodations. *Israel Hayom*.

Ministry of Education (2014). Media Release (2014, November 13): *"National program for meaningful learning: – Ministry of Education: Document for new accommodations for students with learning disabilities in regular education*. Ministry of Education.

Ministry of Education (2017). *Accommodations for testing of students with learning disabilities and attentions deficit tested in the 2018/2019 school year* (Administrative memorandum). Ministry of Education, Pedagogical Administration.

Ministry of Education (2018). *From disabilities to learning: The program for identification and treatment of students with learning disabilities and attention deficits*. Ministry of Education.

Monnickendam-Givon, Y. (2021). *Assistance to students with learning disabilities and attention deficit in the education system: Government policy and attitudes of civil society organizations*. Knesset, Research and Information Center.

Rabinowitz, M. (2010). *The shortage of school psychologist and school counselors in the Israeli educational system*. Knesset, Research and Information Center.

RAMA (2020). *Remote Bagrut: Research findings and evaluation, 2018/2019*. National Authority for Measurement and Evaluation in Education.

Appendix

Appendix Table 1. Summary of Bagrut Accommodations Policy for Students with Learning Disabilities, for the year 2018/19

Accommodation Level	Accommodation Type	Approved by:	Based on:	Notes
Level-1 Modify test conditions	Exam transcription	District committee	Teacher's recommendation and past test performance	**Does not** require didactic or psycho-didactic evaluation
	Extended time, 25% of exam length	School committee	Teacher's recommendation and past test performance	**Does not** require didactic or psycho-didactic evaluation
	Disregard spelling errors	School committee	Teacher's recommendation and past test performance	Requires didactic or psycho-didactic evaluation
	Enlarged test book	School committee	Medical documentation indicating a difficulty or equivalent documentation	**Does not** require didactic or psycho-didactic evaluation
	Expanded formula sheet	School committee	Didactic or psycho-didactic evaluation	/
	Type exam responses on a computer using the iTest platform	District committee approval for dictation/ transcription	Submission of application to the committee according to the regulations	Applies for all language-based subjects
	Type exam responses on a computer	Exceptions committee	Equivalent documentation Teacher's recommendation and past test performance	**Does not** require didactic or psycho-didactic evaluation
Level-2 Modify test conditions, presentation and response	Dictation/Test read aloud (by neutral proctor or type/ record exam answers)	District committee only	Didactic or psycho-didactic evaluation	The test will be completed by typing answers on a computer using the iTest platform, for all language-based subjects For English – the evaluation needs to explicitly

Appendix Table 1 (continued). Summary of Bagrut Accommodations Policy for Students with Learning Disabilities, for the year 2018/19

Accommodation Level	Accommodation Type	Approved by:	Based on:	Notes
Level-3 Modify test conditions, presentation, response, and content	Oral exam for language-based subjects	District committee	Didactic or psycho-didactic evaluation	
	Oral digital exam in English (including both playback and typed responses)	District committee	Didactic or psycho-didactic evaluation	
	Modified exam	District committee	Didactic or psycho-didactic evaluation	For a modified exam in math – the evaluation must comprehensively assess math skills including the math intelligence subscale
	Dictation or dictation and transcription (in addition to modified exams) for Arabic/ Hebrew exams: comprehension, expression, language	District committee	Didactic or psycho-didactic evaluation	
	Transcription for the subjects: Arabic/ Hebrew (comprehension, expression, language) for non-modified exam	District committee	Didactic or psycho-didactic evaluation	
	Converting the math requirement to a science subject	District committee	Didactic or psycho-didactic evaluation	Required mathematics evaluation that indicates significant developmental dyscalculia

Source: Ministry of Education, 2017

Appendix Table 2. Math and English School Bagrut Averages

	Math		English	
	Mean	Std. Dev	Mean	Std. Dev
2013/14	78.24	13.98	87.94	16.60
2014/15	80.04	14.61	87.56	17.59
2015/16	79.57	15.10	88.68	17.11
2016/17	85.95	11.55	95.39	12.42
2017/18	85.46	12.14	96.48	12.62
2018/19	85.31	12.22	96.67	12.70
2019/20	86.87	12.72	96.62	12.98

Source: Sarit Silverman, Alex Weinreb, and Nachum Blass, Taub Center | Data: The Movement for Freedom of Information

Appendix Table 3. Accommodation Rates

	School-granted		District-granted	
	Mean	Std. Dev	Mean	Std. Dev
2013/14	5.48%	6.55%	35.34%	18.80%
2014/15	5.99%	7.24%	36.20%	18.72%
2015/16	7.01%	7.79%	36.11%	18.56%
2016/17	14.17%	11.76%	28.81%	15.88%
2017/18	16.76%	13.22%	30.11%	16.28%
2018/19	21.03%	16.17%	29.52%	17.56%
2019/20	25.53%	19.58%	27.44%	18.58%

Source: Sarit Silverman, Alex Weinreb, and Nachum Blass, Taub Center | Data: Transparency in Education website

Appendix Table 4. Regression Table Predicting Math Achievement

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Local SES	0.387	0.212	0.447	0.596**	0.198	0.325	-0.107
	(-0.282)	(-0.299)	(-0.289)	(-0.239)	(-0.201)	(-0.223)	(-0.185)
Population group (reference group: Hiloni)							
Bedouin	-0.817	-1.087	0.997	0.518	-0.427	-2.910*	-5.969***
	(-2.488)	(-2.499)	(-2.305)	(-1.73)	(-1.634)	(-1.492)	(-1.635)
Arab	4.861***	3.380**	1.934	4.917***	4.249***	2.336**	0.0337
	(-1.522)	(-1.362)	(-1.495)	(-1.138)	(-1.029)	(-1.071)	(-1.006)
Druze	0.583	1.898	2.896	3.896*	3.890**	1.876	-0.93
	(-2.6)	(-2.335)	(-2.292)	(-2.009)	(-1.905)	(-1.736)	(-1.678)
Dati Leumi	-5.175***	-4.348***	-3.609***	2.481***	2.818***	2.963***	3.194***
	(-1.005)	(-1.02)	(-0.991)	(-0.64)	(-0.639)	(-0.729)	(-0.67)
Percent special education students	-16.04**	-22.08***	-19.95***	-37.28***	-30.85***	-31.49***	-39.21***
	(-6.959)	(-7.203)	(-6.395)	(-4.537)	(-4.405)	(-4.549)	(-4.776)
SES (reference group: 1)							
SES 2	4.455***	4.426***	4.812***	5.106***	4.173***	3.672***	3.256***
	(-1.307)	(-1.276)	(-1.331)	(-0.991)	(-0.906)	(-0.892)	(-0.838)
SES 3	8.943***	9.504***	10.74***	9.820***	10.25***	9.327***	9.118***
	(-1.516)	(-1.376)	(-1.434)	(-1.13)	(-1.092)	(-1.143)	(-1.026)
SES 4	12.95***	13.57***	15.10***	13.47***	14.05***	13.62***	13.41***
	(-1.663)	(-1.555)	(-1.451)	(-1.106)	(-1.139)	(-1.19)	(-1.086)
SES 5	22.05***	22.61***	22.88***	19.50***	21.55***	19.13***	19.18***
	(-1.739)	(-1.608)	(-1.536)	(-1.203)	(-1.199)	(-1.291)	(-1.121)
District granted accommodations (reference: lowest quintile)							
2nd quintile	0.851	1.775	0.75	0.474	0.688	-0.623	-0.281
	(-1.508)	(-1.45)	(-1.44)	(-0.974)	(-0.915)	(-0.886)	(-0.82)
3rd quintile	0.38	2.245	0.348	0.88	2.013*	-0.814	0.0203
	(-1.65)	(-1.541)	(-1.565)	(-1.131)	(-1.072)	(-1.085)	(-1.016)
4th quintile	0.609	2.275	1.403	1.95	3.419**	1.046	1.095
	(-1.737)	(-1.776)	(-1.788)	(-1.393)	(-1.335)	(-1.41)	(-1.219)
5thquintile	1.762	4.897**	2.522	0.464	3.525**	0.312	-0.51
	(-2.173)	(-2.262)	(-2.281)	(-1.855)	(-1.649)	(-1.817)	(-1.647)

Appendix Table 4 (continued). Regression Table Predicting Math Achievement

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
School granted accommodations (reference: lowest quintile)							
2nd quintile	2.878***	2.855***	2.586**	-0.301	1.118	1.523	0.535
	(-0.982)	(-1.028)	(-1.155)	(-1.24)	(-1.169)	(-1.233)	(-1.309)
3rd quintile	3.631***	3.847***	4.455***	1.959*	2.558**	3.980***	3.243***
	(-1.389)	(-1.266)	(-1.262)	(-1.144)	(-1.15)	(-1.143)	(-1.251)
4th quintile	0.465	5.760***	3.158*	2.122	3.170***	4.440***	4.240***
	(-2.157)	(-1.951)	(-1.795)	(-1.311)	(-1.175)	(-1.078)	(-1.148)
5th quintile	-2.082	0.129	1.026	0.951	3.062**	4.060***	3.510***
	(-3.932)	(-2.849)	(-2.663)	(-1.814)	(-1.48)	(-1.247)	(-1.338)
Interaction SES and district granted accommodations	-1.072***	-1.462***	-1.027***	-0.648***	-0.961***	-0.552**	-0.312
	(-0.258)	(-0.283)	(-0.295)	(-0.247)	(-0.23)	(-0.24)	(-0.212)
Interaction SES and school granted accommodations	1.302**	0.539	0.987**	0.369	0.276*	0.319**	0.290**
	(-0.53)	(-0.438)	(-0.388)	(-0.245)	(-0.167)	(-0.129)	(-0.12)
Intercept	71.42***	71.20***	70.43***	73.05***	71.18***	72.42***	77.27***
	(-2.515)	(-2.509)	(-2.623)	(-1.987)	(-2.009)	(-1.865)	(-1.922)
N	725	743	757	763	803	825	840
R^2	0.515***	0.506***	0.523***	0.649***	0.684***	0.67***	0.692***

Significance level: *p<.05; **p<.01; ***p<.001.

Source: Sarit Silverman, Alex Weinreb, and Nachum Blass, Taub Center | Data: Transparency in Education website; The Movement for Freedom of Information

Appendix Table 5. Regression Table Predicting English Achievement

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Local SES	-0.0265	0.203	-0.013	0.524**	0.0512	0.343*	-0.0174
	-0.248	-0.245	-0.236	-0.209	-0.169	-0.18	-0.163
Population group (reference group: Hiloni)							
Bedouin	-8.724***	-5.255**	-5.347**	-1.804	-3.745**	-4.725***	-7.428***
	-1.975	-2.049	-2.199	-1.639	-1.505	-1.537	-1.441
Arab	-1.68	0.3	-0.631	1.029	0.247	-0.799	-1.901**
	-1.358	-1.202	-1.211	-0.979	-0.981	-0.908	-0.95
Druze	-1.058	1.246	1.335	1.788	1.938	0.395	-0.856
	-1.847	-2.006	-2.036	-1.631	-1.406	-1.173	-1.531
National religious	-4.391***	-4.223***	-2.842***	1.629***	1.357**	1.537**	2.089***
	-0.887	-0.851	-0.794	-0.569	-0.56	-0.623	-0.564
Percent special education students	-27.85***	-20.54***	-39.27***	-24.39***	-24.23***	-23.15***	-28.78***
	-6.657	-7.169	-6.875	-4.749	-4.563	-4.584	-4.382
SES (reference group: 1)							
SES 2	5.321***	4.902***	5.374***	5.860***	6.055***	5.539***	5.627***
	-1.219	-1.245	-1.224	-0.973	-0.906	-0.83	-0.87
SES 3	7.353***	9.343***	10.96***	9.482***	10.49***	10.01***	10.38***
	-1.468	-1.392	-1.356	-1.111	-1.029	-0.979	-0.975
SES 4	13.77***	14.13***	14.86***	14.32***	14.95***	13.85***	14.07***
	-1.596	-1.594	-1.431	-1.121	-1.055	-1.055	-1.074
SES 5	20.78***	22.35***	22.34***	18.38***	20.36***	18.55***	18.78***
	-1.603	-1.636	-1.483	-1.188	-1.089	-1.115	-1.068
District granted accommodations (reference: lowest quintile)							
2nd quintile	2.904**	2.992**	3.642***	1.071	0.921	-0.542	0.0196
	-1.293	-1.264	-1.315	-0.876	-0.841	-0.798	-0.738
3rd quintile	1.408	2.956**	3.248**	0.738	1.594	-1.175	-0.71
	-1.421	-1.421	-1.403	-0.999	-0.998	-0.945	-0.903
4th quintile	1.432	1.865	4.488***	0.662	1.88	-0.873	-0.341
	-1.584	-1.515	-1.516	-1.267	-1.253	-1.181	-1.116
5thquintile	2.366	1.354	4.819**	-1.559	2.06	-1.039	-1.645
	-2.016	-1.955	-1.937	-1.789	-1.557	-1.649	-1.59

Appendix Table 5 (continued). Regression Table Predicting English Achievement

	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
School granted accommodations (reference: lowest quintile)							
2nd quintile	4.095***	4.895***	3.021***	1.287	1.199	2.998**	-0.026
	-0.925	-0.969	-1.14	-1.233	-1.209	-1.299	-1.374
3rd quintile	5.726***	4.744***	4.747***	3.038***	2.460**	4.147***	3.433***
	-1.255	-1.244	-1.275	-1.164	-1.071	-1.175	-1.17
4th quintile	2.846	5.341***	3.514*	3.418***	2.980***	4.031***	3.790***
	-2.008	-1.874	-1.829	-1.273	-1.101	-1.132	-1.078
5th quintile	-0.548	0.046	-0.663	3.433**	2.990**	3.964***	4.121***
	-3.987	-2.72	-2.908	-1.733	-1.318	-1.249	-1.17
Interaction SES and district granted accommodations	-0.985***	-0.792***	-1.105***	-0.159	-0.590***	-0.330*	0.0256
	-0.237	-0.225	-0.247	-0.218	-0.217	-0.188	-0.186
Interaction SES and school granted accommodations	0.843*	0.991**	0.950**	0.239	0.174	0.167	0.0733
	-0.49	-0.438	-0.389	-0.198	-0.128	-0.105	-0.103
Intercept	83.40***	80.20***	81.38***	82.02***	84.00***	84.41***	86.43***
	-2.18	-2.193	-2.331	-1.865	-1.859	-1.827	-1.729
N	714	760	766	770	810	838	852
R^2	0.568***	0.56***	0.579***	0.677***	0.695***	0.692***	0.702***

Significance level: *p<.05; **p<.01; ***p<.001.

Source: Sarit Silverman, Alex Weinreb, and Nachum Blass, Taub Center | Data: Transparency in Education website; The Movement for Freedom of Information

Appendix Table 6. Decomposition of change in school-level math bagrut grades from 2013/14 to 2019/20

		Due to difference in characteristics E			Due to differences in coefficients C		
		Coef.	p value	per cent contribution	Coef.	p value	per cent contribution
Total		2.06	.00	41.62	2.88	.00	58.38
Background characteristics							
Local SES		0.00	0.75	0.04	-0.52	0.65	-10.58
Group	Hiloni	Ref					
	Bedouin	-0.03	0.00	-0.65	-0.14	0.17	-2.76
	Arab	0.01	0.07	0.25	-0.43	0.03	-8.75
	Druze	0.00	0.91	0.00	-0.02	0.76	-0.31
	Dati Leumi	-0.04	0.00	-0.83	2.39	0.00	48.27
Percent special education students		-0.63	0.00	-12.7	-0.64	0.06	-12.96
School SES	1	Ref					
	2	-2.76	-2.76	-2.76	-0.10	0.64	-1.93
	3	-8.75	-8.75	-8.75	0.28	0.18	5.59
	4	-0.31	-0.31	-0.31	0.49	0.02	10.00
	5	48.27	48.27	48.27	0.20	0.54	3.97
School-granted accommodations quintile	1	Ref					
	2	-0.27	0.28	-5.55	-0.75	0.07	-15.28
	3	-0.27	0.00	-5.57	-0.40	0.10	-8.18
	4	0.79	0.00	15.89	-0.17	0.10	-3.44
	5	2.28	0.00	46.14	0.03	0.36	0.69
District-granted accommodations quintile	1	Ref					
	2	-0.11	0.11	-2.28	-0.15	0.33	-2.98
	3	-0.09	0.01	-1.91	-0.08	0.69	-1.60
	4	0.08	0.08	1.56	0.43	0.13	8.72
	5	0.58	0.00	11.75	0.40	0.37	8.18

Note: School SES was measured by inverting the Ministry of Education's Nurture Index for easier interpretation, so that a higher score indicates higher SES.

Source: Sarit Silverman, Alex Weinreb, and Nachum Blass, Taub Center | Data: Transparency in Education website; The Movement for Freedom of Information

Appendix Table 7. Decomposition of change in school-level English bagrut grades from 2013/14 to 2019/20

		Due to difference in characteristics E			Due to differences in coefficients C		
		Coef.	p value	per cent contribution	Coef.	p value	per cent contribution
Total		1.52	0.00	26.88	4.14	0.00	73.12
Background characteristics							
Local SES		0.00	0.27	0.06	0.63	0.573	11.06
Group	Hiloni	Ref					
	Bedouin	-0.04	0.00	-0.65	0.06	0.50	1.10
	Arab	-0.02	0.03	-0.27	-0.06	0.74	-1.14
	Druze	0.00	0.72	0.01	0.00	0.92	-0.08
	Dati Leumi	-0.01	0.00	-0.20	1.80	0.00	31.71
Percent special education students		-0.46	0.00	-8.06	0.02	0.94	0.41
School SES	1	Ref					
	2	0.04	0.00	0.64	0.14	0.463	2.42
	3	-0.12	0.00	-2.12	0.52	0.01	9.21
	4	-0.21	0.00	-3.78	0.35	0.095	6.10
	5	0.15	0.00	2.66	-0.03	0.927	-0.49
School-granted accommodations quintile	1	Ref					
	2	-0.46	0.03	-8.07	-1.03	0.006	-18.24
	3	-0.31	0.00	-5.43	-0.57	0.010	-10.12
	4	0.67	0.00	11.78	-0.28	0.004	-4.95
	5	1.92	0.00	33.91	0.01	0.854	0.11
District-granted accommodations quintile	1	Ref					
	2	-0.03	0.59	-0.57	-0.34	0.019	-5.99
	3	-0.06	0.03	-1.14	-0.28	0.128	-5.02
	4	0.08	0.05	1.42	0.04	0.896	0.63
	5	0.38	0.00	6.70	0.44	0.279	7.83

Note: School SES was measured by inverting the Ministry of Education's Nurture Index for easier interpretation, so that a higher score indicates higher SES.

Source: Sarit Silverman, Alex Weinreb, and Nachum Blass, Taub Center | Data: Transparency in Education website; The Movement for Freedom of Information

Appendix Table 8. Decomposition of change in school-level bagrut qualification rates (not including special education) from 2015/16 to 2019/20

		Due to difference in characteristics E			Due to differences in coefficients C		
		Coef.	p value	per cent contribution	Coef.	p value	per cent contribution
Total		0.041	.00	71.82	0.016	.09	28.18
Background characteristics							
Local SES		0.000	0.84	-0.04	0.022	0.33	38.53
Group	Hiloni	Ref					
	Bedouin	-0.001	0.00	-1.01	-0.001	0.70	-1.33
	Arab	-0.001	0.00	-2.08	-0.005	0.19	-9.17
	Druze	00.00	0.00	0.02	0.000	0.89	0.23
	Dati Leumi	-0.001	0.00	-0.95	0.003	0.52	5.82
Percent special education students		-0.006	0.00	-10.97	0.001	0.85	2.40
School SES	1	Ref					
	2	0.001	0.00	1.34	0.000	0.98	0.14
	3	-0.002	0.00	-3.18	-0.005	0.22	-9.46
	4	-0.002	0.00	-2.93	-0.010	0.02	-18.05
	5	0.001	0.00	2.54	-0.020	0.00	-35.79
School-granted accommodations quintile	1	Ref					
	2	0.000	.97	-0.36	-0.012	0.15	-21.88
	3	-0.014	.00	-24.46	0.003	0.63	5.88
	4	0.012	.00	21.11	0.003	0.29	5.01
	5	0.040	.00	71.39	0.001	0.15	2.44
District-granted accommodations quintile	1	Ref					
	2	0.000	.87	-0.47	-0.007	0.01	-12.14
	3	0.000	.69	-0.57	-0.008	0.02	-13.39
	4	0.002	.21	2.92	-0.016	0.00	-29.16
	5	0.011	.00	19.53	-0.025	0.00	-44.89

Note: School SES was measured by inverting the Ministry of Education's Nurture Index for easier interpretation, so that a higher score indicates higher SES.

Source: Sarit Silverman, Alex Weinreb, and Nachum Blass, Taub Center | Data: Transparency in Education website

Appendix Table 9. Decomposition of change in school-level honors bagrut qualification rates (not including special education) from 2015/16 to 2019/20

		Due to difference in characteristics E			Due to differences in coefficients C		
		Coef.	p value	per cent contribution	Coef.	p value	per cent contribution
Total		0.014	0.03	38.62	0.022	.00	64.38
Background characteristics							
Local SES		0.000	0.12	-0.50	-0.022	0.18	-59.94
Group	Hiloni	Ref					
	Bedouin	0.000	0.50	0.18	-0.001	0.71	-1.47
	Arab	0.001	0.00	3.30	0.003	0.28	8.57
	Druze	0.000	0.08	0.02	-0.001	0.44	-1.42
	Dati Leumi	-0.001	0.00	-2.60	0.006	0.12	16.17
Percent special education students		-0.004	0.00	-9.55	-0.005	0.38	-12.84
School SES	1	Ref					
	2	0.000	0.00	1.25	0.001	0.69	3.23
	3	-0.002	0.00	-4.60	0.004	0.17	12.06
	4	-0.002	0.00	-5.48	0.008	0.02	20.49
	5	0.002	0.00	6.08	0.015	0.00	39.89
School-granted accommodations quintile	1	Ref					
	2	0.000	0.94	-1.10	0.000	0.99	-0.35
	3	-0.001	0.84	-1.75	-0.007	0.18	-20.62
	4	0.004	0.13	9.80	-0.002	0.29	-6.08
	5	0.016	0.03	43.26	0.000	0.67	0.79
District-granted accommodations quintile	1	Ref					
	2	-0.003	0.04	-8.51	-0.003	0.09	-8.85
	3	-0.002	0.03	-4.83	-0.003	0.19	-8.44
	4	0.000	0.87	0.58	0.005	0.25	12.53
	5	0.005	0.13	13.08	0.005	0.49	12.54

Note: School SES was measured by inverting the Ministry of Education's Nurture Index for easier interpretation, so that a higher score indicates higher SES.

Source: Sarit Silverman, Alex Weinreb, and Nachum Blass, Taub Center | Data: Transparency in Education website