The Jaime and Joan Constantiner
School of Education
The Lester and Sally Entin
Faculty of Humanities
Tel Aviv University

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The Jaime and Joan Constantiner
School of Education

Department of Educational Policy

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Inequality in Israel and Matriculation Exams in the Context of COVID-19 Crisis

By Shani Streisfeld

The study was conducted under the guidance of
Prof. Audrey Addi-Raccah

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1. Abstract

The COVID-19 pandemic has caused significant disruption to schools and students' lives. Closure policies have led to a swift transition to distance learning. This was especially challenging for secondary school students in Israel who had to take matriculation exams (i.e., "Bagrut" in Hebrew) that provide opportunities for their future prospects. To reduce the possible academic harm, the Israeli Ministry of Education made changes to the matriculation diploma requirements. The changes applied to most school subjects except Mathematics and English, which are prestigious and beneficial for enrolling into higher education. In addition to the concern of educators and researchers about the effect of the crisis on educational achievements, there was a fear of an increase in inequality in achievements. Indeed, studies show that disadvantaged groups experienced more learning loss than well-established groups.

This study examines two questions: (1) Whether changes occurred during COVID-19 in high school students' eligibility rates for matriculation, and in high school students' eligibility rates for matriculation with five study units of English, five study units of math, and an outstanding diploma. (2) Whether changes occurred in the gaps between schools based on socioeconomic status and educational sectors (i.e., Jewish-state, Jewish-religious state, and Arab schools).

Sample: Data regarding 874 schools was collected throughout the years 2018-2022: two years pre-COVID-19, two years during COVID-19 and one year after COVID-19. The following variables were measured: Eligibility rates for a matriculation diploma, eligibility rates for an outstanding matriculation diploma, eligibility rates for five study units of math, and eligibility rates for five study units of English. Social inequality was measured according to educational sectors and schools' socioeconomic status. Variables which relate to schools' size, organization and quality of teaching staff were controlled.

Research method: To examine the hypotheses that (1) matriculation eligibility rates will decrease after COVID-19; (2) differences will be found in eligibility rates between schools of different sectors; (3) differences will be found in eligibility rates between schools of different socioeconomic status, a GLM (general linear model) was used.

Findings: The findings show that between 2018-2022, there was an increase in eligibility rates in all types of matriculation. However, the changes in matriculation eligibility rates vary based on the type of matriculation diploma, sector, and the school's socioeconomic status. The increase in matriculation was more prominent among low socioeconomic schools and Arab schools, contributing to decreasing the social gaps. However, in outstanding diplomas, there was an increase in socioeconomic gaps. In the case of matriculation diplomas with five study units of math and English, gaps decreased in 2022, except in the sectorial comparison, where gaps in math increased.

Discussion and conclusion: Reformatting matriculation exams mitigated the potential negative impact of COVID-19 on education and contributed to creating a more equitable educational system by reducing gaps between schools. However, in the more prestigious diplomas, well-established schools were able to continue securing future opportunities for their students, potentially perpetuating existing inequalities in education.

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3. Introduction

This study focuses on social inequality (sectorial and socioeconomic) in Israel as it appears in the eligibility and the quality of matriculation exams in the context of the COVID-19 crisis and the policy embedded by the Ministry of Education. The question arises whether local and global changes and policy decisions made in the field of education in Israel affected social inequality broadly. This has theoretical and practical implications for educational policy design, especially in times of crisis.

In fact, the COVID-19 crisis resulted in changes in various areas of life, including pedagogical and organizational changes in teaching and learning. To prevent infection, a policy of closures was enacted, and schools transitioned to distance learning without an adequate preparation (e.g., Bozkurt et al., 2020). In Israel, the crisis posed a threat to the matriculation exams, which mark the ending of 12 years of study and serve as an admission ticket to higher education degrees and better career options (e.g., Ayalon & Shavit, 2004). Thus, the Ministry of Education has made changes in the requirements for being entitled to a matriculation diploma. The study material for the exams was reduced by 25%, students were given more choices, there were changes in examination dates and more internal evaluation (Vurgan, 2020; Weissblay, 2020b).

Moreover, researchers and educators were concerned with COVID-19's potential impact on social inequality. Curran (2016) claims in his book *Risk, Power, and Inequality in the 21st Century*, that powerful social groups cope better in times of crisis, meaning that exposure to risks might create a fertile ground for gaps to increase. Indeed, there is evidence that during the COVID-19 crisis, schools of different socioeconomic statuses had different resources (economic, technological and knowledge) for handling the crisis and disadvantaged groups were exposed to a higher risk (Grewenig et al., 2021).

The Israeli society, which is used as the study's context, is characterized by heterogeneity and diversity in terms of sectors and socioeconomic differences. The Israeli education system is characterized by wide gaps in achievements which are expressed both at the sectorial level and at the socioeconomic level (e.g., Ayalon et al., 2019). Thus, this study aims to explore: (1) trends in matriculation eligibility rates in the context of the COVID-19 crisis; (2) trends in sectorial and socioeconomic gaps in Israel in the context of the COVID-19 crisis.

This study has several potential contributions. Firstly, as appears in the literature, there are studies that deal with social-educational inequality during crisis in standardized tests and in matriculation exams in Israel. However, most of the studies focus on the student level rather than the school level. Thus, this study contributes to the academic research knowledge regarding the global crisis and its impact on social inequality in education in Israel at the school level. Secondly, as our society confronts more crises, it is important to learn of their potential impact on achievements and inequality and review

the policy used to handle these impacts. This study examines the impact of the COVID-19 crisis on education in Israel in relation to the policy enacted.

Therefore, the current study examines changes in social gaps in Israel based on the policy enacted regarding matriculation exams following the COVID-19 crisis at the school level. The study aims to examine whether socioeconomic and sectorial gaps in matriculation exams have changed during the COVID-19 crisis, compared to previous years.

The first section of the study reviews the relevant academic literature. It first introduces the theoretical background and the context of the COVID-19 crisis, including its impact on education and inequality; then it focuses on the Israeli case and the existing sectorial and socioeconomic gaps in the Israeli education system; and finally, it elaborates on the matriculation diploma, its significance, some of the main reforms enacted, and the gaps in eligibility rates.

The second section presents the research question, aims, hypotheses, and methodology used in the study.

The third section discusses the findings of this study and proceeds to its conclusions as well as limitations.

4. Literature Review

4.1 COVID-19 Crisis and Inequality in Education

The Coronavirus disease (COVID-19) is an infectious disease that was discovered in 2019 in China and has since manifested itself through different strains around the world (World Health Organization). To prevent infection, the World Health Organization and the Ministry of Health in Israel followed a policy of social distancing, isolations, and closures along with maintaining cleanliness, implementing physical distancing, and wearing masks. As part of the closure policy, schools and educational institutions around the world were closed (e.g., Bozkurt et al., 2020; Daniel, 2020; Hammerstein et al., 2021; Schleicher, 2020). According to UNESCO, as of April 20th, 2020, approximately 151 countries have resorted to closures that have affected approximately 81.8% of the world's students. According to a study conducted among OECD countries, schools were closed for 0-19 weeks between February and late June 2020 (Thorn & Vincent-Lancrin, 2021). Education systems, which sought to address students' emotional needs to students and avoid disrupting the educational sequence as much as possible, had to adjust due to the constraints of the crisis and switch to emergency remote education by digital means (e.g., Bozkurt et al., 2020; Burgess & Sievertsen, 2020; State Comptroller of Israel, 2021; Reimers & Schleicher, 2020; Thorn & Vincent-Lancrin, 2021).

The transition to distance learning was immediate and teachers were not prepared to teach remotely with technological tools (e.g., Adva Center, 2021; Reimers & Schleicher, 2020; Bozkurt et al., 2020). Teachers, students, and researchers report on both the benefits and challenges of distance learning during COVID-19. On the one hand, distance learning has several advantages. It is perceived as innovative, up-to-date, and interesting. It might be convenient, and according to some studies, it has a positive effect on low-performing students who often find it easier to concentrate in a home-learning setting (Adva Center, 2021; Hammerstein et al., 2021). Moreover, it improves teachers' and students' digital and technological skills. On the other hand, distance learning has disadvantages. Teachers and students report on challenges such as technical difficulties and difficulties in conducting discussions (Adva Center, 2021). In addition, studies conducted in the United States showed that students' grades and chances of passing tests are lower if they learn through distance learning compared to in-person learning (Oster et al., 2021; Kogan & Lavertu, 2021).

Furthermore, the challenges imposed by the crisis changed educational priorities. Firstly, as the crisis presented a risk to people's financial stability and health, parents, children and educators faced anxiety, depression, loneliness, and uncertainty (e.g., Daniel, 2020; Robinson, 2020; Hoofman & Secord, 2021; Reimers & Schleicher, 2020; Thorn & Vincent-Lancrin, 2021). Thus, schools prioritized social-emotional learning (SEL) activities (Reimers & Schleicher, 2020). Secondly, time spent on learning

decreased significantly during schools' closures (Grewenig et al., 2021; Reimers, 2021; Kogan & Lavertu, 2021; Andrew, 2020). According to a study conducted among OECD countries, children spent about half the time doing schoolwork compared to what they would spend in normal times, and up to 20% of the students may have spent no time on schoolwork (Thorn & Vincent-Lancrin, 2021). Therefore, schools prioritized core curriculum content such as mathematics and languages (Reimers & Schleicher, 2020). These challenges and changes influenced inequality as discussed in the next section.

4.1.1 Evidence for Inequality in Education During COVID-19 Crisis

Examining inequality is crucial in the educational system. In regular times, schools serve as "social equalizers," as they provide a single integrated learning environment with similar opportunities for all students (Agostinelli et al., 2022; Reimers, 2021). According to "The structural-functionalism paradigm, society is a system in which every person has different capabilities and a specific function. Schools and education are responsible for ensuring social unity through socialization processes and the preparation of students for their future roles in society (Sabag & Biberman-Shalev, 2014). Educational gaps are explained by the principle of "meritocracy," which assumes that equal opportunities are given to all students and that every student can advance based on their capabilities and achievements. This paradigm supports "social mobility," which refers to the movement of an individual or a certain group in the social ladder, from a certain level of control over resources to another (Lewin-Epstein, 2006). A movement can be either horizontal, which means having diverse types of resources, or vertical, which means climbing up or moving down the social ladder, having a different number of resources. However, this approach seems to be less prevalent during COVID-19, due the challenges of maintaining regular schools' activities.

During crisis, the closure of schools and the transition to distance learning affect students' gaps in achievements around the world. Indeed, previous studies that deal with the loss of school days show that they have a different effect on students of different social backgrounds. For example, studies find that during summer vacations or due to extreme weather, a loss of school days significantly affects disadvantaged students (e.g., Reimers & Schleicher, 2020 ;Bonal & González, 2020; European Commission, 2020; Kuhfeld et al., 2020). During the COVID-19 crisis, disadvantaged students were less likely to attend school in person, due to differences in political contexts and COVID-19 infection rates (Camp & Zamarro, 2022; Oster et al., 2021). Thus, researchers predicted a loss of learning especially among disadvantaged students and a widening of social gaps in education around the world following school closures and distance learning (e.g., Goudeau et al., 2021; Kuhfeld et al., 2022; Kuhfeld et al., 2020; Rothstein, 2020; Haeck & Lefebvre, 2020; Bailey et al., 2021). Another study shows that the learning loss for students from less educated homes is up to 60% larger than that of their counterparts

(Engzell et al., 2021). In Panama, students who attend public schools had a greater learning loss in reading compared to students who attend private schools (Cubilla-Bonnetier et al., 2023). This may have an effect on inequality of educational outcomes, that can be explain based on the "conflict paradigm".

This approach perceives society as a sphere of constant natural struggles and conflicts. It emphasizes the importance of socioeconomic background and assumes that well-established groups act to preserve and strengthen their social status through various practices that lead to "social reproduction" (Sabag & Biberman-Shalev, 2014). Such practices include the preservation of achievement gaps between students through standardized tests, the development of classification and tracking of students in schools based on their social status (Sabag & Biberman-Shalev, 2014). While according to "the structural functionalism paradigm," schools sort students based on meritocracy, the "conflict paradigm" assumes that students are sorted by their status (Sabag & Biberman-Shalev, 2014). This study is based on the conflict paradigm as it focuses on the differences in educational gaps between schools of different social groups (i.e., schools of different sectors and socioeconomic status).

Furthermore, based on Curran (2016), in his book *Risk, Power, and Inequality in the 21st Century*, that powerful social groups (e.g., social class, ethnicity, or gender) cope better in times of crisis. They do this through various practices and resources as they keep the advantage of their status against the low socioeconomic status. Thus, exposure to risks might create a fertile ground for gaps to increase, since well-established groups might perceive them as an opportunity to secure their status while disadvantaged groups are more vulnerable, are exposed to more risks and become even weaker. Evidence for Curran's theory can be seen during the COVID-19 crisis.

For instance, researchers elaborate on the impact of lack of adequate learning spaces at home (e.g., Dietrich et al., 2021; OECD, 2020), inequality in accessibility to edge devices (e.g., Burgess & Sievertsen, 2020; European Commission, 2020; Goudeau et al., 2021), as well as parents' difficulties in helping their children study, especially among disadvantaged families (Addi-Raccah & Seeberger Tamir, 2022; Grewenig et al., 2021). Other studies conducted in the United Kingdom and Germany confirm that during COVID-19 time spent on learning and available resources were related to family income (e.g., Andrew et al., 2020; Dietrich et al., 2021). During COVID-19, less educated parents were more likely to continue working at their workplaces or lose their jobs and their ability to help their children was low (e.g., Dorn et al., 2020; Bol, 2020; European Commission, 2020).

Regarding achievements, the literature shows contradicting findings. Most of the studies show learning losses and an increase in achievement gaps between students and schools during the COVID-19 crisis (e.g., Mahon & Mahon, 2021; Bormann, 2021; Zierer, 2021; Bayrakdar & Guveli, 2020). Disadvantaged students, especially students of

low socioeconomic status, minorities, and special education students, faced more challenges and had larger learning losses compared to their counterparts (e.g., Mahon & Mahon, 2021; Sommerlad & David, 2021; Hoofman & Secord, 2021; Reimers & Schleicher, 2020; Agostinelli et al., 2022; Schuurman et al., 2023; Haelermans et al., 2022). Yet, there is also evidence that shows that during this time there were schools that improved students' achievements (Donnelly & Patrinos, 2021; Hammerstein et al., 2021). Other studies show little or no evidence for an increase in achievement gaps during school closures (Thorn & Vincent-Lancrin, 2021; Ludewig et al., 2022; Borgonovi & Ferrara, 2023; Birkelund & Karlson, 2023). For instance, a study conducted in Metro-Atlanta shows that inequality in terms of race and ethnicity grew in some regions and did not change in others (Sass & Mohammad Ali, 2022).

Moreover, a cross-sectional study which was conducted among fifth graders in Germany, at the school level, shows that achievements in math and reading in 2020, during COVID-19 closures, were slightly lower than achievements in 2019, 2018 and 2017 (Schult et al., 2021). In this study, low sociocultural capital was correlated with a larger learning loss, even though this variable played a minor role (Schult et al., 2022; Schult et al., 2021). A follow-up study showed that in 2021, after COVID-19, achievements had improved, but did not reach pre-pandemic levels (Schult et al., 2022). Another study which was conducted one year after COVID-19 in the Flemish region of Belgium shows heterogeneity in achievements which differs by subjects. The study shows that inequality in standardized tests, at the school level, increased in languages but decreased in mathematics (Gambi & DeWitte, 2021). This study also found that after COVID-19, the pandemic's impact on math was halted and that achievements improved in science and social sciences.

According to studies conducted in the Netherlands (Engzell et al., 2021; Schuurman et al., 2023), Switzerland (Tomasik et al., 2020), Austria (Weber et al., 2021), Germany (Grewenig et al., 2021), the United States (Kuhfeld et al., 2023), Spain (Bonal & González, 2020), and China (Liao et al., 2022), after a period of closure, a higher heterogeneity in grades was found as well as a greater educational loss among disadvantaged students (specifically students of low socioeconomic status and ethnic minorities).

A study conducted in the United States showed that after school closures, students of color (i.e., African American, Hispanic, and Indigenous communities) were about three to five months behind in mathematics, while white students were only one to three months behind (Dorn et al., 2020). Indeed, according to Francis & Weller (2022), Black and Hispanic/Latinx students often had less reliable internet and resources and thus participated in less remote classes. Gaps were also found in other subjects such as reading and history. Studies show that educational gaps increased more in STEM (i.e.,

science, technology, engineering, and math) subjects than in languages (Lewis et al., 2021; Hoofman & Secord, 2021; Borgonovi & Ferrara, 2023; Kogan & Lavertu, 2021).

While a greater number of studies examine gaps at the student level, only a few studies examine gaps at the school level. At the school level, during the crisis, schools of different socioeconomic statuses had different resources (economic, technological, and informational) for handling the crisis (Grewenig et al., 2021). Schools of high socioeconomic status held a higher number of practical resources which helped them continue the learning process, switch quickly to distance learning, and return smoothly from closures.

Studies show that schools of low socioeconomic status had a limited number of resources, and they conducted fewer online classes during the crisis. Therefore, the gap in educational loss was likely to widen between schools with different socioeconomic statuses (e.g., Grewenig et al., 2021; Clark et al., 2020; Goudeau et al., 2021; Andrew et al., 2020). Indeed, studies conducted in the United States (Kuhfeld et al., 2022), Belgium (Maldonado & De Witte, 2022) and Germany (Schult et al., 2022; Schult et al., 2021) show that schools of high socioeconomic status handled the crisis better and their students achieved higher grades than schools of low socioeconomic status.

This study investigates inequality in matriculation eligibility rates in Israel during COVID-19 crisis. Therefore, the next section elaborates on sectorial and socioeconomic inequality in the Israeli education system.

4.2 The Israeli Educational System

The Israeli society is comprised of various populations which are distinguished from each other ethnically, culturally, socially, and economically. Even though the education system is meant to give equal opportunities to all students, there are still sectorial and socioeconomic gaps in the educational system in terms of budgeting, accessibility, and achievements (e.g., Sabag & Biberman-Shalev, 2014; Ayalon et al., 2019; Addi-Raccah, 2022). In fact, education and schooling serve as a central route for social mobility, especially for students from minority groups and low socioeconomic status (Addi-Raccah, 2022; Sabag & Biberman-Shalev, 2014). Research shows that the context (i.e., sector and socioeconomic status) in which one is raised and educated, might influence one's choices and chances to succeed in different aspects of life (McNeal, 2015 in Addi-Raccah, 2022; Sabag & Biberman-Shalev, 2014).

Therefore, this section elaborates on the structure of the Israeli educational system, and the differences between sectors and socioeconomic statuses.

4.2.1 The Israeli educational sectors

The Israeli education system includes every child in Israel from age 5 to the 12th grade (Ministry of Education, n. d.-a). Due to religious and cultural differences, the education system is divided into sectors (i.e., supervisions). The Jewish sector is divided into Jewish-state (39%), Jewish-religious state (14%) and ultra-Orthodox (24%), while the Arab sector (23%) is combined of three religious groups: Muslim (82.8%), Christian (9.4%) and Druze (7.8%) (Nasser-Abu Alhija & Israelashvili, 2021; Noy, 2022). In the education system, there are different supervisions for the Arab, Bedouin and Druze (Addi-Raccah & Sal-Man, 2018). The Ministry of Education determines the curriculum for all sectors and makes adaptations for each sector according to its characteristics (Addi-Raccah & Sal-Man, 2018).

However, the Arab sector does not have its own autonomic supervision but is rather ascribed to the Jewish-state education. The joint curriculum emphasizes power relations between the Jewish and the Arab groups via the Zionist narrative and the absence of Arab culture and history (Alhaj, 2003 in Sabag & Biberman-Shalev, 2014; Zeedan & Hogan, 2022). In fact, according to "State Education Law," the purpose of state education is to educate one to be a loyal citizen of Israel, to learn about the Israeli Torah, Israeli history and Jewish tradition, and to inherit the values of Israel as a Jewish and democratic state (State Education Law). However, a revision to the law, which was published recently, refers to an additional purpose of the education system: to acknowledge the language, culture, and tradition of the Arab population and other populations in Israel (State Education Law).

Moreover, the Arab educational sector faces challenges in budgeting and access to the internet and edge devices, which result in gaps in achievements compared to the Jewish sector. Firstly, data collected between 2008 to 2018 showed a positive correlation between budgets and test scores, especially among the Druze community (Zeedan & Hogan, 2022). Although both increased over time, the Arab educational sector is affected by budgeting more than the Jewish sector (Zeedan & Hogan, 2022). Indeed, the Arab educational sector offers a narrow variety of academic subjects in general and at the advanced level specifically (Alhaj, 1996 in Livne, 2017; Nasser-Abu Alhija & Israelashvili, 2021). Furthermore, in a study about the digital divide in Israel, it was found that the Arab society uses computers and internet less than the Jewish society (Schejter & Tirosh, 2016). This digital divide has widened between 2003 to 2013.

Nowadays, there is a trend of improvement in the Arab education, in aspects such as teacher education, classroom density, persistence and matriculation eligibility rates (Nasser-Abu Alhija & Israelashvili, 2021). Moreover, the Arab students in Israel have high aspirations and a generally positive attitude towards school (Feniger, 2017). However, there are still gaps between the sectors both in eligibility rates and in eligibility rates for a high-quality matriculation diploma as described in the next section (Feniger, 2017; Nasser-Abu Alhija & Israelashvili, 2021). Data shows that Arab students perform

worse than students from other sectors in standardized tests such as PISA[1], and their matriculation eligibility rates are lower as well (e.g., Dadon-Golan et al., 2019; Addi-Raccah, 2022; Zeedan & Hogan, 2022; Nasser-Abu Alhija & Israelashvili, 2021). Between the three supervisions of the Arab sector, the Druze have higher achievements than the Arab students. The Bedouins, whose resources are limited, have the lowest achievements (Nasser-Abu Alhija & Israelashvili, 2021). Therefore, the marginality of the Arab sector in the education system may lead to a social and national reproduction (Alhaj, 2003 in Sabag & Biberman-Shalev, 2014; Zeedan & Hogan, 2022).

Regarding the Jewish-religious state, it is defined as Jewish-state, whose institutions are religious in their lifestyle, curriculum, teachers, and supervisors (State Education Law). Its pedagogical philosophy encourages the preparation of students for both a religious lifestyle as well as modern secular careers (Ayalon & Yogev, 1996). This ideology is also called "Torah im derech eretz," which means "Jewish religion with the way of the world" in Hebrew. There are four types of Jewish-religious institutions: high school yeshivas for boys, religious girls' high schools (i.e., "Ulpana" in Hebrew), high schools (humanistic trend), and comprehensive high schools.

The institution types are differentiated by students' characteristics such as ethnicity, gender, socioeconomic status as well as level of religiousness (Weissblay, 2012; Ayalon & Yogev, 1996; Finkelstain, 2012). Regarding socioeconomic status, there are more students of high socioeconomic status in the high school yeshivas for boys or Ulpanas for girls and comprehensive high schools compared to high schools (humanistic trend). Regarding ethnicity, 90% of the students in the comprehensive high schools are Asian-African, while only 50% of the students in the high school yeshivas, ulpanas and high schools (humanistic trend) are Asian-African. Moreover, a higher rate of students in high school yeshivas and ulpanas define themselves as religious compared to the comprehensive high schools (Weissblay, 2012). When comparing the different types of Jewish-religious schools, matriculation eligibility rates are lower among comprehensive schools and higher in girls' high schools (Weissblay, 2012).

Furthermore, schools of the Jewish-religious sector are characterized by a different hierarchy of subjects. This difference is explained by the Jewish-religious sector's religious worldview which is different from the secular worldview of the Jewish-state supervision (Ayalon & Yogev, 1996). While the Jewish-state education prioritizes sciences over humanities, the Jewish-religious education prioritizes Bible and oral law over other humanities and sciences. As prestigious subjects are more selective, there is more inequality in Bible and oral law and less inequality in sciences among Jewish-religious high schools (Ayalon & Yogev, 1996).

[1] The OECD's Programme for International Student Assessment.

Explanations for the gaps between schools of Jewish-state and Jewish-religious state include differences in the number of students in class, budgeting, learning hours, and worldviews (Vininger, 2020; Ayalon & Yogev, 1996). Firstly, many schools in the Jewish-religious sector are smaller, as they serve only girls or only boys. In these cases, schools sometimes settle for a limited curriculum, especially in sciences where expensive labs are needed (Ayalon et al., 2019). However, this characteristic is also an advantage for the Jewish-religious schools as they have the highest financial investment in students among all sectors (Ayalon et al., 2019). The matriculation eligibility rates of the Jewish-religious schools are similar to the Jewish-state, and they continue to increase over the years (Vininger, 2021). Matriculation eligibility rates for outstanding matriculation are even higher among Jewish-religious state students compared to those in Jewish-state education, as described in the next section (Vininger, 2021).

4.2.2 Socioeconomic gaps in the Israeli Educational System

The Israeli education system is also characterized by socioeconomic gaps. At the student level, socioeconomic status is frequently measured by parental level of education and income. Parents of high socioeconomic status have economic resources that enable educational advantages such as private lessons and extracurricular activities (Dahan et al., 2002; Ayalon et al., 2019). Studies conducted around the world show that students of low socioeconomic status achieve lower grades and are more likely to drop out of the educational system, while children of educated parents have better achievements (Pinson et al., 2020; Rothstein, 2020). In Israel, studies show that students of high socioeconomic status are more likely to obtain a matriculation diploma, and especially a high-quality type (Ayalon & Shavit, 2004; Zussman & Tsur, 2008; Dahan et al., 2002).

Frequently, there is a correlation between sector and socioeconomic status. For instance, ethnical segregation in Israel has led most of the Arab population to live in low socioeconomic status localities and their accessibility to resources at school is relatively low (e.g., Nasser-Abu Alhija & Israelashvili, 2021; Ayalon et al., 2019; Addi-Raccah, 2022). Indeed, research shows that school segregation is related to students' achievements because of differences in schools' compositions (Benito et al., 2014; Kurlender, 2017; Ayalon et al., 2019). Thus, the probability of Arab students obtaining a high-quality matriculation diploma increases if they study in a locality or a school of high socioeconomic status, where there are more resources and a different school composition (Addi-Raccah, 2022).

Studies indicate that tracking placement in education is related to ethnicity and socioeconomic status. According to Bar-Haim & Feniger (2021), tracking is related to the attainment of higher degree and income and is likely to mediate the relationship between socioeconomic status and these two outcomes. At the sectorial level, tracking is affected by the different value that each sector attributes to academic subjects (Livne, 2017). For

instance, the Jewish-religious sector values religious and Jewry studies. In the Arab sector, while most students used to study in the vocational track, nowadays half of them study in the technological track, and specifically in the engineering track, which is related to high matriculation eligibility rate (Yaish et al., 2015; Ayalon et al., 2019). As the mobility rates between one track and another are low, division and tracking in matriculation majors lead to inequality and social reproduction later in life (e.g., Ayalon & Shavit, 2004; Bar-Haim & Feniger, 2021; Yaish et al., 2015).

Eventually, even though the level of education in Israel continued growing among all populations, this did not reduce social gaps (Ayalon et al., 2019). In fact, to access prestigious degrees at universities, one needs high matriculation and psychometric test scores, which are dependent greatly on parents' education and socioeconomic status (Ayalon et al., 2019; Yaish et al., 2015). Although the eligibility percentages for matriculation diplomas increase every year, there are still sectorial and socioeconomic gaps at the student level in the eligibility rates for matriculation diplomas as well as in the national and international standardized tests (e.g., Zussman & Tsur, 2008; Sabag & Biberman-Shalev, 2014; Israel Central Bureau of Statistics, 2020b; Dadon-Golan et al., 2019). The significance of the matriculation exams, the gaps recorded, and the changes enacted during COVID-19 are described in the next section.

4.3 Inequality in the Matriculation Exams in Israel

This section elaborates on the matriculation exams in Israel, major reforms and their impact on inequality over the years, as well as the reform enacted during COVID-19.

4.3.1 The Matriculation Diploma - History, Significance and Reforms

Standardized tests are used around the world to evaluate students' achievements. Examples include the OECD's PISA, the SAT[2] in the United States, the Psychometric tests, and the matriculation exams in Israel. There is a continuous debate regarding standardized tests among researchers, educators, and stakeholders. Ben-Peretz (1980) refers to two roles of standardized tests. Firstly, standardized tests are supposed to evaluate the curriculum. They examine the fulfillment of educational purposes and reshape them reciprocally. Secondly, standardized tests are used as a "tracking" mechanism for sorting and guiding students in various directions (e.g., Ben-Peretz, 1980; Casas & Meaghan, 2001; Phelps, 2005).

Advocates of standardization argue that it is a beneficial way to sort students and predict academic achievements, to improve diagnosis of students' weaknesses and strengths, and therefore to improve learning processes (Phelps, 2005; Ayalon et al., 2019).

[2] A standardized test used for college admissions in the United States.

However, other scholars elaborate on the disadvantages and challenges of standardization. Casas & Meaghan (2001) argue that time is spent on preparation for tests at the expense of other valuable lessons; they argue that these tests narrow the curriculum and focus on basic skills instead of cognitive skills. Moreover, standardized tests have negative impacts on some students as well as on teachers, such as stress and anxiety (Ayalon et al., 2019; Casas & Meaghan, 2001). Regarding inequality, studies show that disadvantaged students such as minorities and students from low-income backgrounds perform worse on standardized tests (Casas & Meaghan, 2001).

One of the main manifestations of standardization in Israel's education system is the matriculation exam (i.e., "Bagrut" in Hebrew). The institutionalization of the matriculation exam in Israel began to take shape in 1928 until it received the official approval of the Hebrew University in 1933 (Gold, 2021). The matriculation exams in Israel are conducted in high schools to examine students' achievements in various subjects, to assess the curriculum, and to grant students a qualification diploma for the completion of 12 years of studying (e.g., Gold, 2021; Addi-Raccah & Sal-Man, 2018; Ben-Peretz, 1980). Exams are available for dozens of subjects, while in some subjects there are different exam forms for different levels of study. Nowadays, students are obliged to be tested in several mandatory subjects and at least one elective subject at the level of five study units (Weissblay, 2020b; Ministry of Education, n. d.-b). The composition of subjects and levels depends on the educational supervision as well as the students' choice and skills (Ministry of Education, n. d.-b). Usually, level one is the lowest while level five is the highest (Addi-Raccah & Sal-Man, 2018). The matriculation exams take place in two terms: summer and winter; Second exam dates in English and math are available shortly after summer term (Vurgan, 2020 ; Weissblay, 2020b).

The matriculation eligibility rates are used as a measure that assesses the success of students, schools, local authorities, and ministers of education (e.g., Amir, 2007; Blass, 2014; Sehayek, 2003). At the student level, eligibility for the matriculation diploma, especially a high-quality type, is significant for enrolling in prestigious degrees in higher education and pursuing careers (e.g., Ayalon & Shavit, 2004). At the school level, parents prefer to enroll their children in schools with high matriculation eligibility rates, as they are considered successful. In addition, local authorities use data regarding matriculation eligibility rates to draw more families to live there. At the national level, ministers of education invest effort and resources to increase matriculation eligibility rates. Therefore, the matriculation exams stand at the heart of the public agenda and draw the attention of key stakeholders (Sehayek, 2003; Blass, 2014).

Furthermore, matriculation exams are of great importance in entering higher education institutions and pursuing careers (e.g., Ayalon & Shavit, 2004; Amir, 2007; Gold, 2021; Blass, 2014). Until the 1970s, matriculation exams were the only admission ticket to higher education in Israel (Gold, 2021). Nowadays, admission to universities

relies either on matriculation credentials and/or a psychometric test score, depending on the institution and major (e.g., Addi-Raccah & Ayalon, 2008; Ben-Shakhar & Haimovich, 2004). Thus, the higher education system is often an intervening factor that impacts the content and subjects being studied (Gold, 2021; Sehayek, 2003). Moreover, to be accepted into the university one needs a high-quality matriculation diploma, including high levels of English and mathematics (Addi-Raccah & Ayalon, 2008; Ayalon & Shavit, 2004). Therefore, students, especially of the Jewish sector, often choose to be tested at a high level of English and mathematics, as well as to major in engineering and science (Addi-Raccah & Ayalon, 2008; Sehayek, 2003; Yaish et al., 2015). In addition, regarding attrition and graduation, a study conducted in 2004 among students at the Hebrew University shows that there is a positive correlation between matriculation grades and the probability of persisting and attaining an academic degree (Ben-Shakhar & Haimovich, 2004).

As for employment, schools offer majors for matriculation which prepare students for various jobs and careers. For instance, schools offer majors such as fashion design, tourism, architecture, account management, electronics, and computers (Sehayek, 2003). However, an important distinction should be made between the vocational track which prepares students for non-academic professions, and the academic track which prepares them for university degrees and prestigious careers (Ayalon & Shavit, 2004; Yaish et al., 2015). Since most of these majors are electives and are not available in every school, different students end up taking different majors, which enable different future opportunities.

Considering the significance of matriculation eligibility rates, ministers of education in Israel have proposed different reforms with the aim of increasing matriculation eligibility rates (Blass, 2014; Tirosh, 2020). While most of these reforms reduced socioeconomic inequalities in terms of eligibility for a matriculation diploma, they increased inequalities in terms of eligibility for a high-quality diploma, which is accepted by universities (Ayalon & Shavit, 2004). The next few paragraphs elaborate on some of the main reforms as well as their influence on inequality.

Amir (2007) indicates three major reforms designed to increase the matriculation entitlement percentage and to facilitate the entry of graduates into universities (Amir, 2007). First, there was "the lottery system" that was introduced by Minister of Education Amnon Rubinstein in 1995. According to this system, three subjects out of the seven mandatory subjects that do not have an external examination were chosen every year at the last trimester at the push of a button (e.g., Amir, 2007; Ayalon & Shavit, 2004; A Revolution, 2014). The goal of this reform was to strengthen the status of the teachers' and schools' autonomy and to ease the burden of the matriculation exams (Ayalon & Shavit, 2004; Sehayek, 2003). In 1998, Minister of Education Zevulun Hammer abolished "the lottery system" and applied "the focus system" that selects certain subjects from the

exam material instead of the entire curriculum (Ayalon & Shavit, 2004; Amir, 2007; Sehayek, 2003). According to this method, the students studied the whole curriculum but were tested on four-sevenths of it.

In 2001, Minister Limor Livnat allowed the students to take the exam on a second date without risking the existing grade, with the final grade they receive being the higher of the two (Amir, 2007; Sehayek, 2003). This initiative has led to an increase in the eligibility rates for matriculation in the Druze, Arab and Bedouin sectors (Sehayek, 2003). Moreover, according to "the accumulation method," initiated in 2005, there are different examination forms for each level of study, and students are tested according to their level. This reform has led to an increase in matriculation grades, especially in English and math (Oren et al., 2021).

In 2015, two major reforms were enacted: the "give five" program and the "significant learning" program. The "give five" program was initiated by Minister of Education Naftali Bennett to increase the eligibility rates for matriculation at the level of five study units in mathematics (Vaisbaum- Gani, 2022; Addi-Raccah & Sal-Man, 2018). This reform enabled more students to obtain a high-quality diploma which includes high levels of English and mathematics. Kimhi & Horovitz (2015) found that people who took less than three study units of math in high school are less likely to be employed, and there are income differences between those who took three, four and five study units (the higher the units, the higher the income). Indeed, between the years 2013 and 2017, the number of examinees at the level of five study units in mathematics increased from 9.7% to 15.8%. On the one hand, data indicates the reduction of gender gaps between girls and boys following the reform. On the other hand, socioeconomic gaps increased as more children of educated parents were tested at the level of five study units in mathematics (Vaisbaum- Gani, 2022). Moreover, although there was an increase in the percentage of Arab students who took the five study unit exams in mathematics, this rate is still low compared to Jewish students (Addi-Raccah, 2019). In addition, ultra-Orthodox students rarely take the five-unit exams in math (Addi-Raccah, 2019).

Moreover, in 2015, the "significant learning" program was enacted (and is still taking place). The main purposes of the program were to develop 21st-century skills, to adapt the system to students' needs and to increase achievements (Addi-Raccah & Sal-Man, 2018). This program changed the assessment criteria so that the final grade is comprised of 70% mandatory subjects and 30% elective subjects (Weissblay, 2020b; Ministry of Education, 2015). The teaching hours are also divided accordingly to 70% mandatory subjects and 30% elective subjects (Ministry of Education, 2015). Elective subjects are evaluated internally, by the schools' teachers, while of the mandatory subjects, about 70% are evaluated externally by outer examiners, and about 30% are evaluated internally by the schools' teachers (Weissblay, 2020b; Ministry of Education, 2015). In addition, the Ministry of Education offers alternative assessment and grading

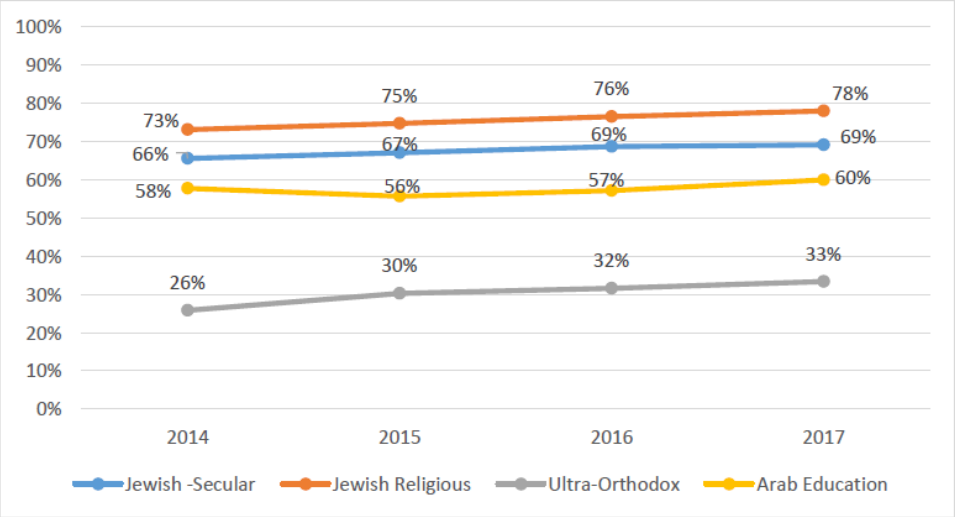
options such as project-based learning and writing projects (Ministry of Education, 2015). Tirosh (2020), the former Director General of the Ministry of Education, states that giving an internal grade to certain subjects may lower their value and lead to less investment on the part of the students. Moreover, Oren et al. (2021) show an increase in matriculation grades after the reform, which is likely to be related to the aforementioned.

During COVID-19, another reform was enacted in the matriculation diploma. As the current study aims to examine inequality in matriculation exams during COVID-19, the next sections present data regarding social inequality in matriculation exams in recent years.

4.3.2 Inequality in the Matriculation Exams at the School Level

In recent years, it seems that reaching 100% matriculation eligibility has become a top priority in Israel (e.g., Yaish et al., 2015; Blass, 2014). Indeed, matriculation eligibility rates have seen a steady increase over the years (Addi-Raccah & Sal-Man, 2018, see Figure 1). The general increase is moderate and could be explained by higher recognition of the importance of education among all sectors, more investment of local authorities in education and more parental involvement (Oren et al., 2021). However, there are gaps in the eligibility rates between students and schools of various populations (Blass, 2014; Sabag & Biberman-Shalev, 2014; Zussman & Tsur, 2008). For example, in 2000, only about 61% of the examinees in the matriculation exams in the Hebrew education system were eligible for a diploma. In 2016 the eligibility rate was 74.7%, and in 2019 about 75.7% (Israel Central Bureau of Statistics, 2020a). Yet, in the Arab education system, the percentage of eligibility was 45.3% in 2000, 62.7% in 2016 and 62.4% in 2019 (Israel Central Bureau of Statistics, 2020a). Similar gaps at the school level, are shown in Figure 1, as presented by Addi-Raccah & Sal-Man (2018).

Figure 1: Average school percentage of students who are eligible for matriculation certificate, by educational system between 2014-2017. (Addi-Raccah & Sal-Man, 2018).



Indeed, Addi-Raccah & Sal-Man (2018) show gaps between schools of different sectors between 2014 and 2017. For instance, in 2017 the highest eligibility rate was 78% in Jewish-religious education, with a smaller gap, the eligibility rates in the Jewish-secular sector was 69%, the Arab education sector's eligibility rate was 60% and in the ultra-Orthodox sector the eligibility rate was only 33%. While the gaps stay quite stable, the most noticeable increase is seen in the ultra-Orthodox sector, even though only half of the schools in the sector put their students forward for matriculation exams (Addi-Raccah & Sal-Man, 2018). In addition, in the ultra-Orthodox sector and the Jewish-religious sector, a higher proportion of schools that improve eligibility rates to a high degree was found, while in the Arab sector, a higher proportion of schools that improve eligibility rates to a low degree was found (Addi-Raccah & Sal-Man, 2018).

Studies also indicate persistent gaps in matriculation exams between schools of different socioeconomic status. Thus, according to data collected in 2012 as well as between 2014 and 2017, the matriculation eligibility rates were lower in schools of low socioeconomic status in all sectors (Addi-Raccah, 2022; Addi-Raccah & Sal-Man, 2018). The large gap between schools of different socioeconomic statuses has hardly changed over the years and has even increased among schools in the Arab sector (Addi-Raccah & Sal-Man, 2018; Addi-Raccah, 2022). Socioeconomic gaps are also reflected in the gaps between the geographical regions of the country, with the highest eligibility rates standing at about 86.1% in the Central District (which is characterized by high socioeconomic status) and the lowest eligibility rates standing at about 72.4% in the Jerusalem District (which is characterized by lower socioeconomic status).

Previous studies also found a relation between several schools' characteristics and matriculation achievements. Firstly, regarding school size, there is a negative relation between school size and achievements (Fowler & Walberg, 1991 in Shye et al., 2005). Smaller schools are characterized by higher student achievements. Secondly, regarding school structure, Addi-Raccah (2023) found that matriculation eligibility rates

in six years secondary schools are higher than in three- or four-years high schools. Moreover, regarding teachers' education, Shye et al., (2005) found a positive relation between teachers' education and matriculation achievements. The higher the percentage of teachers with an MA or PhD in school, the higher the students' achievements.

Since the eligibility rates for matriculation are constantly increasing, they cannot help in revealing social gaps alone. Therefore, consideration should also be given to the quality of the matriculation diploma which is reflected in the subjects and the levels of study (Addi-Raccah & Ayalon, 2008). The next section elaborates on inequality in the quality of matriculation diplomas at the student level.

4.3.3 Inequality in Matriculation Exams at the Student Level

As mentioned in the previous sections, the matriculation diploma is a stratification mechanism that sorts students, largely determines their chances to enter higher education institutions and affects their chances of earning a high income in the labor market (Ayalon et al., 2019; Ayalon & Shavit, 2004; Addi-Raccah, 2019; Addi-Raccah, 2022). The matriculation exams sort high school students into three groups: those who are tested in valued subjects such as mathematics and English at the level of five study units, those who are tested only in mandatory subjects and those who are not entitled to a matriculation diploma (Addi-Raccah, 2022; Ayalon et al., 2019).

Firstly, regarding socioeconomic gaps, there is evidence of a relationship between mothers' education and students' matriculation eligibility rates (Zussman & Tsur, 2008). Studies show that most children of mothers with academic credentials are entitled to a matriculation diploma in all sectors (Israel Central Bureau of Statistics, 2020a; Zussman & Tsur, 2008). In the Hebrew education sector, about 90.2% of the children of mothers with academic credentials are entitled to a matriculation diploma. In the Arab education sector, about 87.3% of the children of mothers with academic credentials are entitled to a matriculation diploma. In other words, parents' education might mitigate the sector effect. In contrast, only about 52.8% of the children of mothers whose education is below high school graduation or is unknown are entitled to a matriculation diploma (Central Bureau of Statistics, 2020a). Studies show that the percentage of those who take matriculation exams at the level of five study units of English, mathematics, chemistry, physics, biology, and computer science increases as the socioeconomic cluster is higher. This gap has grown over the years (Israel Central Bureau of Statistics, 2020b).

Regarding sectorial gaps in the quality of the matriculation diploma, Jewish students of European or American origin have the highest percentage of high-quality diplomas while Muslim and Druze Arabs have the lowest percentage (Friedlander et al., 2016). In the middle, there are Christian Arabs and Jewish students of Asian or African origin. Indeed, while the probability of obtaining a high-quality diploma is 18% for

Jewish students of European or American origin, the probability for Jewish students of Asian or African origin is 7% and that of Muslim Arabs is only 3% (Friedlander et al., 2016). This data might contradict earlier findings which show that Christian and Druze students are more likely to be eligible for a matriculation diploma (not necessarily a high-quality type) compared to Jewish and Muslim students (Dahan et al., 2002). As for five study units of English, while approximately 52% of those taking the matriculation exams at the level of five study units in English are students from the Jewish sector, only about 23.2% are students from the Arab sector (Israel Central Bureau of Statistics, 2020b). It should be noted that even within the Jewish sector there are gaps in the quality of the matriculation diploma between supervisions, as the rates of those tested in five study units in English, mathematics and scientific subjects are very low in the ultra-Orthodox supervision and higher in the general supervision.

In view of this data, this study will examine social gaps in matriculation eligibility rates during the COVID-19 crisis. The next section elaborates on inequality during the COVID-19 crisis in Israel in general and in the matriculation exams specifically.

4.3.4 Matriculation Exams and Inequality During the COVID-19 Crisis

COVID-19 occurred in waves which led to several closures of schools. The first wave of COVID-19 led to a closure of schools in Israel on March 14th, 2020 (The Crisis Experts' Teams: Education Team, 2020; Weissblay, 2021). Distance learning went on without clear instructions from the Ministry of Education for about a month, until instructions arrived on April 16th, 2020. In May 2020, students returned to face-to-face learning for a few months, until schools were closed again in September for another few months (Weissblay, 2021). In January 2021, another wave of COVID-19 led to a third closure of schools which continued for a few months. Students at different schools returned to face-to-face learning at different times, depending on their educational stage and geographical area (Weissblay, 2021). As of January 28th, 2022, there were about 33 weeks of school closure in Israel (UNESCO, n. d.; The Crisis Experts' Teams: Education Team, 2020). The immediate transition to distance learning and the lack of preparation by the Ministry of Education led to confusion and a lack of coordination in the Israeli education system.

Distance learning, and the ways in which it was conducted, could affect students' readiness and performance in the matriculation exams, and thus affect achievements and inequality. The Ministry of Education established a set of digital lessons in Hebrew and Arabic for all grade levels that were broadcast on television every day between 8 am and afternoon hours (Weissblay, 2020a). Moreover, an additional set of lessons, called "tzav shmone chinuchi" (Hebrew for "an educational call-up"), was established for students who were tested in elective subjects for matriculation. However,

those were projected on paid broadcast platforms that were not accessible to the entire student population (State Comptroller of Israel, 2021; The Crisis Experts' Teams: Education Team, 2020; Pinson et al., 2020). Moreover, initiatives of the third sector and local authorities worked to purchase edge devices and distribute them to disadvantaged students and teachers (State Comptroller of Israel, 2021).

Inequality in distance learning is present both at the school level and at the student level. At the school level, schools that serve mostly students of low socioeconomic status had a limited ability to produce high-quality educational content and lessons; thus, they struggled to continue the educational sequence (Adva Center, 2021; The Crisis Experts' Teams: Education Team, 2020). At the student level, there is evidence that the transition to distance learning in Israel mainly affected disadvantaged populations of low socioeconomic status, members of minorities, including the ultra-Orthodox and Arab sectors, and special education students (Adva Center, 2021; The Crisis Experts' Teams: Education Team, 2020; Pinson et al., 2020). During this period disadvantaged students faced various challenges such as low accessibility to edge devices and the internet.

In fact, data shows unequal accessibility among students in Israel to technological devices such as computers, phones, and tablets (Pinson et al., 2020). In 2020, approximately 26.8% of the students in Israel did not have access to the Internet. In the ultra-Orthodox society, this climbs to a rate of about 72% and in the Arab society, it is a rate of about 38% of students (Transparency in Education; State Comptroller of Israel, 2021). Furthermore, in a hearing in the Knesset conducted by the Committee for the Rights of the Child, it emerged that 140,000 students in Israel, amongst whom many belong to the Arab sector, do not have access to a computer or a tablet (Hilaie, 2020). Professionals in the Ministry of Education estimated that the rate of students who do not have access to a computer in Israel is 9%, which indicates a lack of 135,000 computers (State Comptroller of Israel, 2021). As the average number of children per household in Israel is about 3.11, in 23% of households in Israel with children aged 15, there is at most one computer (OECD, 2020; State Comptroller of Israel, 2021). In many families where several siblings study in the education system, there were difficulties in accessing technological devices, learning remotely, and preparing for the matriculation exams (Hilaie, 2020; State Comptroller of Israel, 2021).

To prevent social gaps from increasing, both in Israel and around the world, researchers recommended several steps such as the provision of technological devices, interventions involving parents and adaptations to the curriculum (The Crisis Experts' Teams: Education Team, 2020; Pinson et al., 2020; Goudeau et al., 2021). Moreover, many schools raised resources and launched initiatives to help students pass the matriculation exams successfully. For instance, the administration of a religious school in Gedera recruited computers for distance learning and teachers even came to students'

houses to help operate the computers (Shabbat, 2021). In addition, the Ministry of Education distributed tens of thousands of kosher phones to students from the ultra-Orthodox sector.

The crisis also imposed a threat on the matriculation exams, which are significant for the prospects of Israeli students. Thus, the Ministry of Education in Israel made changes and adaptations to the matriculation exams (Cohen, 2021 in Sommerlad & David, 2021). At first, the oral exam in English and the practical matriculation exams in the subjects of art, music and theater were postponed due to school closures. The concern regarding further postponements and cancellations resulted in several changes (Vurgan, 2020). Firstly, the study material for the exams was reduced by 25% and students were given more choices (Vurgan, 2020; Weissblay, 2020b; Ministry of Education, 2020). Secondly, focused practices in 73 subjects were published as well as a new exam schedule according to which exams for elective subjects were held mostly in May and exams for mandatory subjects in July (Vurgan, 2020; Weissblay, 2020b; Ministry of Education, 2020). To prepare for the matriculation exams in the summer of 2020, students in the 11th and 12th grades were permitted to study in small groups in the school area starting May 3rd, 2020 (Weissblay, 2020b). Furthermore, Vurgan (2020) mentions that before the COVID-19 crisis remedial classes were held at school to prepare students for the exams. However, during the COVID-19 crisis such classes were held online. This may have affected the achievements of students with low access to technological devices and the internet.

Moreover, changes were made in the assessment processes. In the summer of 2020, 221,273 students were tested in external exams in English, mathematics, Hebrew or Arabic (depending on their mother tongue), and one subject from the humanities cluster (e.g., literature, Bible, citizenship, or history) (Weissblay, 2020b). Schools could choose which of the four humanities subjects would be assessed externally, while the others were assessed internally by the school staff (David Gal, personal communication). In addition, students who took more than one elective subject at the level of five study units could be examined on one of them internally. Yet, if there was only one elective subject, which is a part of the science cluster (e.g., physics, chemistry, biology, or computer science), it had to be assessed externally. If there were two elective subjects at the level of five study units, and both were of the science cluster, one could be assessed internally and the other had to be assessed externally (David Gal, personal conversation). These changes are still in force due to the "Iron Swords" war.

As for students' grades, the news website, "Ynet," published data indicating a significant increase in the averages and percentages of eligibility for matriculation in 2020. Tirosh (2022) mentions that this increase brings into question the reliability of the matriculation exams and raises concerns among university heads. It should also be noted that this increase did not significantly reduce the gap between the periphery and the

center of Israel (Tirosh, 2022). Moreover, while external matriculation exam grades were determined by a fixed formula and changes that occurred over time could have been examined, a formula for determining internal exam scores was not published (Weissblay, 2020b). The Ministry of Education used a formula to check the grades and clarified that if a gap is found between the formula grades and those reported by the school, the ministry will monitor them and weigh them accordingly. This formula was not published, nor was the number of cases in which grades dropped (Weissblay, 2020b).

Considering the literature review displayed above, this study examines the gaps in eligibility for different types of matriculation diplomas between schools of different sectors and socioeconomic statuses in relation to the COVID-19 pandemic and the policy enacted by the Ministry of Education in Israel.

5. Aims and Objectives

The aim of this study is to examine whether the COVID-19 pandemic and the related changes in matriculation examinations affected the gaps in matriculation eligibility rates between schools of different sectors and socioeconomic status.

6. Research Question

This study examines gaps in four types of matriculation eligibility: (1) eligibility for a matriculation diploma; (2) eligibility for an outstanding matriculation diploma; (3) eligibility for five study units of math; (4) eligibility for five study units of English. Therefore, the following research question was examined:

(1) Whether changes occurred during COVID-19 in Israeli schools' matriculation eligibility rate in general, and eligibility rates with five study units of English, math, and an outstanding diploma.

(2) Whether changes occurred in the gaps between schools based on socioeconomic status and educational sectors (i.e., Jewish-state, Jewish-religious state, and Arab schools).

7. Hypotheses

According to the literature reviewed above, which indicates learning loss and an increase in achievement gaps after COVID-19 in most cases (e.g., Mahon & Mahon, 2021), the hypotheses of this study are as follows:

1. Matriculation eligibility rates will decrease after COVID-19. Differences in eligibility rates for a matriculation diploma will be less prominent than differences in eligibility rates for an outstanding matriculation diploma and a matriculation diploma with five units of English and math, since there were no changes in the structure of math and English matriculation exams.

Moreover, based on Curran's theory (Curran, 2017), disadvantaged groups have fewer resources and are more exposed to the crisis's potential risk, it is expected that

2. Differences will be found in matriculation eligibility rates between schools of different *sectors* before COVID-19 and after it. The decrease in matriculation eligibility rates will be more prominent among Arab schools than schools of the Jewish sectors, leading to an increase in the sectorial gaps.
3. Differences will be found in matriculation eligibility rates between schools of different *socioeconomic status* before COVID-19 and after it. The decrease in matriculation eligibility rates will be more prominent among schools of low socioeconomic status than schools of middle and high socioeconomic status, leading to an increase in the socioeconomic gaps.

8. Methodology

8.1 Data Sources and Sample

This study is based on data from the years 2018-2022, as published by The Israeli Ministry of Education on the websites "Shkifut Bechinuch" (Hebrew for "Transparency in Education") and "Bemabat Rachav" (Hebrew for "looking wider"). These websites and the data they provide are available online for free to reflect significant information to the public (Ministry of Education, 2023). Data includes schools' characteristics and educational achievements.

This study includes all post-primary schools in Israel which belong to the Jewish-state sector, the Jewish-religious state sector and the Arab sector. Only schools which prepared their students for matriculation exams and had complete data for the years were included. Schools of the ultra-Orthodox sector (n=598) and special education schools were excluded from the study since most of these schools do not submit their students to the matriculation exams. Thus, while the original data file included 1,756 schools, eventually, the sample includes 874 schools (n=874).

8.2 Variables Definitions

This study is based on data provided by the Ministry of Education focused on eligibility rates for various types of matriculation diplomas, based on socioeconomic status, sector, and year. The variables are defined for the study's purpose as follows:

8.2.1 Dependent Variables

Four different **types of matriculation** diplomas were measured at the school level:

(1) Eligibility percentage for a matriculation diploma. Defined as being eligible for a matriculation diploma with less than five study units in math and English. Varies between 0 to 100%.

(2) Eligibility percentage for an outstanding matriculation diploma. Defined according to the Ministry of Education as being eligible for five study units in English, at least four study units in math, a total mean grade of at least 90, and "success" or "outstanding" status in the program for personal development and social-community involvement (Ministry of Education, 2019). Varies between 0 to 100%.

(3) Eligibility percentage for a matriculation diploma with five study units in English. Defined as being eligible for five study units in English. Varies between 0 to 100%.

(4) Eligibility percentage for a matriculation diploma with five study units in math. Defined as being eligible for five study units in mathematics. Varies between 0 to 100%.

8.2.2 Independent Variables

Sector

Sector was examined at the school level according to the type of supervision, that characterizes the educational sector of the institution. Each sector is characterized by a separate educational system. The study includes the following types of supervision: Arab education=1, Jewish-secular state=2, and Jewish-religious state=3. As mentioned above, the ultra-Orthodox sector is excluded from this study.

School's Socioeconomic Status (SES)

Socioeconomic status was examined at the school level according to the schools' socioeconomic status (i.e., "madad tipuach" in Hebrew). It is composed of four measures: the average income of the students' parents in the school; distance from the central area; percentage of students who immigrated from under-developed countries, and parents' education (Ben-David Hadar, 2023). According to the Ministry of Education, there are ten levels of schools' socioeconomic status (1 is the highest SES, 10 is the lowest SES). Each school's socioeconomic status equals average status of its students. For the study's purpose, the variable was recoded into three SES categories: high (1-3), middle (3-7), low (7-10).

Time

Time indicates the year in which students were examined. The years are 2018-2022, five measures. The year sequence allows examination of pre (2018-2019), during (2020-2021) and post (2022) COVID-19 crisis.

8.2.3 Controlled Variables

According to the literature, some school characteristics are related to matriculation achievements. These variables refer to the size and organization of the schools and the quality of teaching staff. The following definitions refer to data collected in 2018, as this is the starting point of the study. The controlled variables are:

(1) School size. Defined as the number of students in the institution. According to 2018, high schools have about 593 students with a large gap between schools (SD=447.29). Hence, we conducted a log transformation of the number of students in schools.

(2) School structure. Defined as a dummy variable: secondary schools (six years from grade seven to twelve) coded 1 and three- or four-year high schools (grades nine to twelve) coded 0. In this sample, 62.1% of the schools are secondary (six years).

(3) The median of teaching seniority in school. Computed based on all the teaching staff in each school. According to 2018, the median is 15.01 years of seniority (50% of the teachers are below 15.01 years and 50% are above, SD=5.539).

(4) Percentages of teachers with an MA degree or a PhD in school. This variable as well as the median of teaching seniority reflects teachers' qualifications. According to 2018, about 45% (SD=12.1) of the teaching staff in schools hold a Master's or a PhD degree.

(5) Percentages of special education students. This variable was included as per the policy of inclusion in Israel, as schools are required to enroll students with special needs. It is common for these students to learn only a portion of the subjects related to the matriculation tests. According to the data from 2018, schools enroll about 6.78% (SD=7.82) special education students.

8.3 Data Analysis

This is a quantitative correlation study, conducted by IBM SPSS statistics. This type of study is useful for observing data in natural conditions, without interference (Field, 2018; Benbenishty, 2020). It is used to investigate correlations between variables and differences between groups (Benbenishty, 2020).

Firstly, this study includes descriptive statistical analyses to show distributions. Differences are examined by years, educational sectors, and socioeconomic status. Secondly, it includes a hierarchical General Linear Model (GLM) with repeated measures at the school level aimed to measure the same school at different points in time – between 2018 and 2022. Five measures enable examination of pre-, during and post-COVID-19 crisis. This is how the effect of the time factor, i.e., the COVID-19 crisis, is tested. "Repeated measures" are useful in this study which provides data regarding the same entities, i.e., schools, at multiple time points (Field, 2018). The choice of two years before COVID-19 is intended to prevent a situation where we rely on one measurement to check trends of change.

The analysis makes it possible to examine whether changes in matriculation indicators are differential for schools serving different populations (according to the school's socioeconomic status and educational sector) while controlling for the characteristics of the school in the respective year (size, teacher education, teaching seniority, type of school).

9. Results

In this section, I will display the data collected in this study. The section includes tables and charts to draw a wide perspective of the results. Firstly, descriptive statistics are analyzed to provide a wide understanding of the variables, including sector and socioeconomic status. Secondly, the General Linear Model (GLM) with repeated measures was conducted to reflect the differences between eligibility rates for different types of matriculation among schools of different socioeconomic status and sectors. The findings of this analysis are divided into two parts. At first, findings are provided without controlling for other variables. Then, variables which refer to school size (measured by the number of students in school), organization (measured by the percentage of special education students), and quality (measured by teachers' seniority and education), were controlled, as they are distributed differently among schools of different sectors and socioeconomic status.

9.1 Frequencies and Descriptive statistics

This study includes 874 schools (n=874). Based on the "madad tipuach" computation (see section 8.2.2), the schools distribute quite similarly across sectors and socioeconomic status. Figure 2 shows the distribution of schools by socioeconomic status: 284 schools belong to low socioeconomic status (32.5%); 273 schools belong to middle socioeconomic status (31.2%) and 317 schools belong to high socioeconomic status (36.3%).

Figure 2: Distribution of Schools by Socioeconomic Status

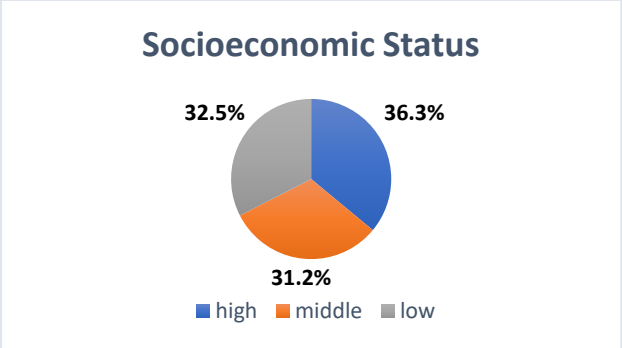
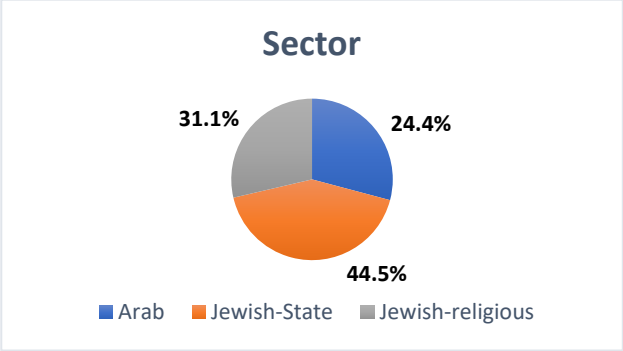


Figure 3 shows the distribution of schools by sector: 219 schools belong to the Arab sector (24.4%); The largest number of schools, 395 schools, belong to the Jewish-state sector (44.5%), and 279 schools belong to the Jewish-religious sector (31.1%). This distribution is different than the distribution of schools in Israel, as a larger portion of Jewish-religious schools was studied (31.1%, while this educational sector is 14% of the schools in Israel).

Figure 3: Distribution of Schools by Sector



For the study's purpose, variables which characterize the schools were controlled, based on the 2018 measurement. The percentage of special education students integrated into schools is 6.78% (SD=7.82) on average; the percentage of the teaching force that holds an MA or a PhD degree is 45% (SD=12.1) on average; the median of teaching seniority is 15.01 years (SD=5.54) on average and the school size is 593 students (SD=447.29) on average.

9.2 Differences in Matriculation Eligibility Rates by Sectors and SES – Without Controlling for School Variables

To answer the first research question, whether a change was found in the means of schools' matriculation eligibility rates, and to examine the first hypothesis that matriculation eligibility rates will decrease, and that the change will be more prominent in the outstanding matriculation diploma and diplomas with five study units of math and English, a repeated measures analysis was conducted.

The results indicate a significant time effect across five time points in all types of matriculation, although there are different patterns. Regarding eligibility rates for matriculation, the results show significant changes across time (Wilk's Lambda=.694, F(4,829)=91.58, p< .001)[3]. Regarding outstanding matriculation, the results show significant changes across time (Wilk's Lambda=.632, F(4,829)=120.503, p< .001). Regarding matriculation with five study units of math, the results show significant changes across time (Wilk's Lambda=.957, F(4,829)=9.211, p< .001). Regarding matriculation with five study units of English, the results show significant changes across time (Wilk's Lambda=.747, F(4,829)=70.237, p< .001).

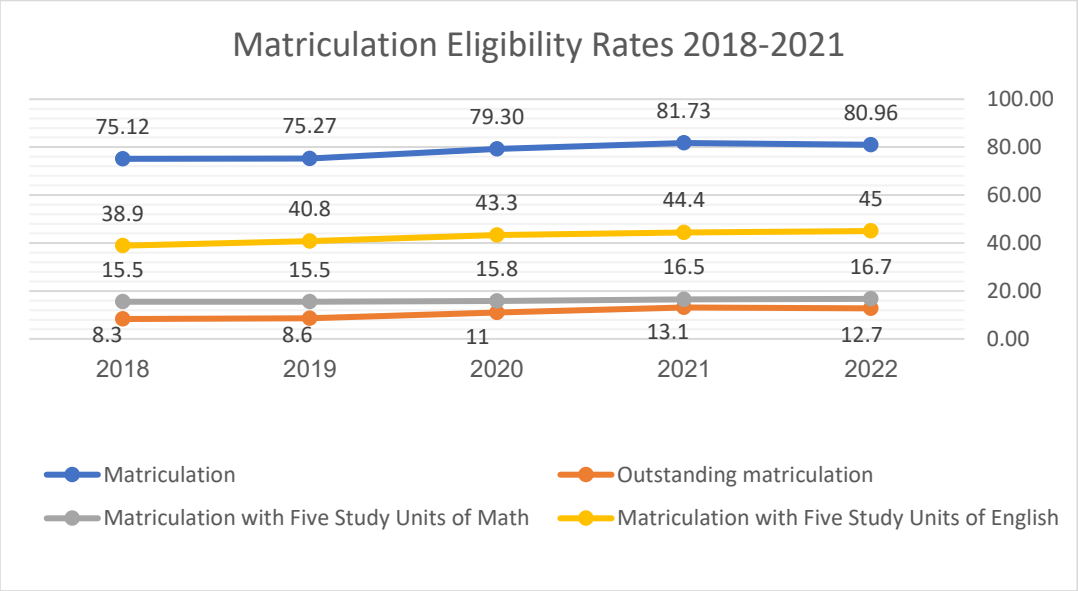
As can be seen in Figure 4, eligibility rates increased over time in all types of matriculation. These change trajectories are linear p>.001. Between 2019 and 2020, as the

[3] Mauchly's Tests of Sphericity indicates that the assumption of sphericity is violated for the repeated measures in the processing of all types of matriculation before and after controlling for school variables (p<.001).

COVID-19 crisis unfolded, there was a greater increase in the percentage of eligibility for matriculation diplomas than between 2018 and 2019 (pre-COVID-19). Although this increase continued in 2021 and 2022 (post-COVID-19), it was moderated and even decreased in some cases.

Moreover, there is a clear hierarchy of diplomas: most students are eligible for a matriculation diploma, fewer than 50% of students are eligible for a diploma with advanced English, and fewer still are eligible for a diploma with advanced math, and lastly, only around 10% of students are eligible to an outstanding diploma. As mentioned in the literature, the three latter types are more prestigious and serve as an admission ticket to the most respectable and profitable university degrees. Therefore, inequality in this aspect seems to be reproduced.

Figure 4: Matriculation Eligibility Rates between 2018-2021



9.2.1 Initial Results Before Controlling for School Variables

When examining initial differences based on sector and schools' socioeconomic status, different trends are found. Regarding sector, descriptive statistics show a general increase in all types of matriculation among all sectors, with slight exceptions (see Table 1). The results of GLM before controlling for school variables show significant changes across time in all types of matriculation. Regarding eligibility for a matriculation diploma, the increase is more prominent between 2019 and 2021 during the COVID-19 crisis (Wilk's Lambda=.691, F(4,827)= 92.66, p<.001). Similar results are found in the eligibility for an outstanding diploma (Wilk's Lambda=.653, F(4,827)= 109.82, p<.001). In the case of matriculation diplomas with five study units of English, there was a stable increase through the years, with no exceptional trends during the COVID-19 crisis (Wilk's Lambda=.760, F(4,827)=65.2, p<.001).

Table 1: Differences in Matriculation Eligibility Rates by Sector

		2018		2019		2020		2021		2022	
		M	SD	M	SD	M	SD	M	SD	M	SD
Matriculation	Arab	64.58%	24.368	63.99%	24.243	69.28%	23.653	73.18%	22.606	73.94%	21.791
	Jewish-secular	75.19%	24.506	76%	22.973	79.7%	20.633	82.43%	18.632	81.68%	18.346
	Jewish-religious	82.92%	19.009	82.7%	19.286	86.24%	17.117	87.15%	15.561	85.19%	17.537
Outstanding Matriculation	Arab	7.53%	10.923	7.36%	10.994	9.19%	12.876	11.02%	14.459	10.51%	13.243
	Jewish-secular	7.54%	8.928	8.05%	9.059	10.23%	10.582	12.45%	12.666	12.28%	11.269
	Jewish-religious	9.85%	10.898	10.29%	11.467	13.57%	13.447	15.61%	14.884	14.88%	14.118
Matriculation with Five Study Units of Math	Arab	10.79%	11.953	10.52%	12.086	10.83%	12.451	11.24%	12.915	11.27%	11.984
	Jewish-secular	16.61%	12.943	16.50%	13.276	16.40%	12.733	17.77%	13.329	17.56%	13.468
	Jewish-religious	17.48%	14.331	17.72%	14.458	18.65%	14.463	18.78%	14.349	19.68%	14.992
Matriculation with Five Study Units of English	Arab	21.59%	18.054	23.59%	19.055	25.69%	19.406	26.03%	20.074	27.88%	21.384
	Jewish-secular	45.13%	25.135	49.97%	24.72	48.96%	24.673	50.80%	24.248	50.58%	24.83
	Jewish-religious	43.27%	23.382	45.22%	23.239	48.74%	22.659	49.42%	23.014	50.16%	23.292

Regarding schools' socioeconomic status, descriptive statistics show a higher increase in eligibility rates for a matriculation diploma and an outstanding matriculation diploma between 2019 and 2021, during COVID-19, among schools of all socioeconomic statuses (see Table 2). The results of GLM before controlling for school variables show significant changes across time in all types of matriculation. Regarding eligibility for matriculation, (Wilk's Lambda=.662, F(4,827)=105.33, p<.001), there was a decrease in 2022 in eligibility rates among students of high and middle socioeconomic status and an increase among those of low socioeconomic status. Similar results are found in the eligibility for an outstanding diploma (Wilk's Lambda=.617, F(4,827)=128.61, p<.001). Regarding matriculation diplomas with five study units of math (Wilk's Lambda=.959, F(4,827)=8.93, p<.001), the increase was quite stable during COVID-19, among schools of all socioeconomic statuses. In 2022, there was a decrease in eligibility rates among schools of high socioeconomic status. Similar results are found in the eligibility for matriculation with five study units of English (Wilk's Lambda=.743, F(4,827)=71.41, p<.001).

Table 2: Differences in Matriculation Eligibility Rates by Schools' Socioeconomic Status

		2018		2019		2020		2021		2022	
		M	SD	M	SD	M	SD	M	SD	M	SD
Matriculation	High	87.92%	14.127	87.71%	13.519	89.74%	12.505	90.90%	11.442	88.21%	14.729
	Middle	76.27%	21.374	76.74%	20.535	80.83%	19.044	83.36%	16.298	82.51%	17.256
	Low	59.26%	25.731	59.50%	25.312	65.77%	24.039	69.55%	23.052	71.07%	21.956
Outstanding Matriculation	High	14.65%	11.888	15.21%	11.951	19.39%	13.786	22.88%	15.654	20.02%	14.059
	Middle	6.25%	7.843	6.76%	8.299	8.53%	9.523	10.01%	10.393	11.17%	11.075
	Low	2.95%	4.454	2.82%	4.575	3.95%	5.034	4.97%	6.067	5.76%	7.404
Matriculation with Five Study Units of Math	High	25.29%	13.079	25.44%	13.635	25.62%	13.166	27.09%	13.324	25%	13.521
	Middle	13.01%	11.179	12.75%	11.156	13.43%	11.329	13.57%	11.164	15.69%	13.172
	Low	6.70%	7.27	6.68%	7.22	6.81%	7.344	7.32%	7.488	8.25%	9.094
Matriculation with Five Study Units of English	High	60.64%	18.742	62.34%	18.211	64.46%	17.776	66.25%	17.639	62.57%	21.436
	Middle	34.69%	17.733	36.97%	18.111	40.13%	18.159	40.62%	17.817	43.91%	19.909
	Low	18.09%	15.979	19.90%	16.234	22.18%	16.918	23.14%	17.182	25.93%	19.753

However, these differences could be attributed to several variables. Such variables include schools' characteristics such as teachers' seniority and education, schools' size and structure, and percentages of special education students integrated in school. The characteristics of these variables were analyzed based on sector and school's socioeconomic status.

9.2.2 Characteristics of the Controlled Variables

There are differences in the controlled variables between schools of different sectors and socioeconomic status. This section displays these differences.

Differences by Sector

There are significant differences in all controlled variables between different sectors ($p<.001$). Firstly, regarding school size, while the Jewish-secular sector contains the largest schools with 764.94 students (SD=516.89), the Arab sector contains schools with 604.41 students (SD=516.89) and the Jewish-religious contains the smallest schools with only 337.13 students (SD=208.27) (see Figure 5). Secondly, regarding school structure, while most of the schools in the Jewish-religious sector are secondary (six-year schools) (M=72.43; SD=44.77), the rate is lower among the Jewish-secular sector (M=62.98; SD=48.35), and lowest among the Arab sector (M=47.42; SD=50.05) (see Figure 6). In addition, the percentage of special education students integrated into schools is higher among Jewish-secular schools 8.15% (SD=8.66), followed by Jewish-religious schools 7.14% (SD=8.35), and much lower among Arab schools 5.29% (SD=6.17) (see Figure 7). Moreover, the percentage of the teaching force that holds an MA or PhD degree is 47% (SD=0.1) among Jewish-religious schools, 49% (SD=0.09) among Jewish-secular schools, and 37% (SD=0.13) among Arab schools (see Figure 8). Furthermore, the median of teaching seniority is 15.8 (SD=5.08) among Jewish-religious schools, 16.4 (SD=5.26) among Jewish-secular schools, and 11.45 (SD=5.06) among Arab schools (see Figure 9).

Figure 5: Number of Students in School by Sector

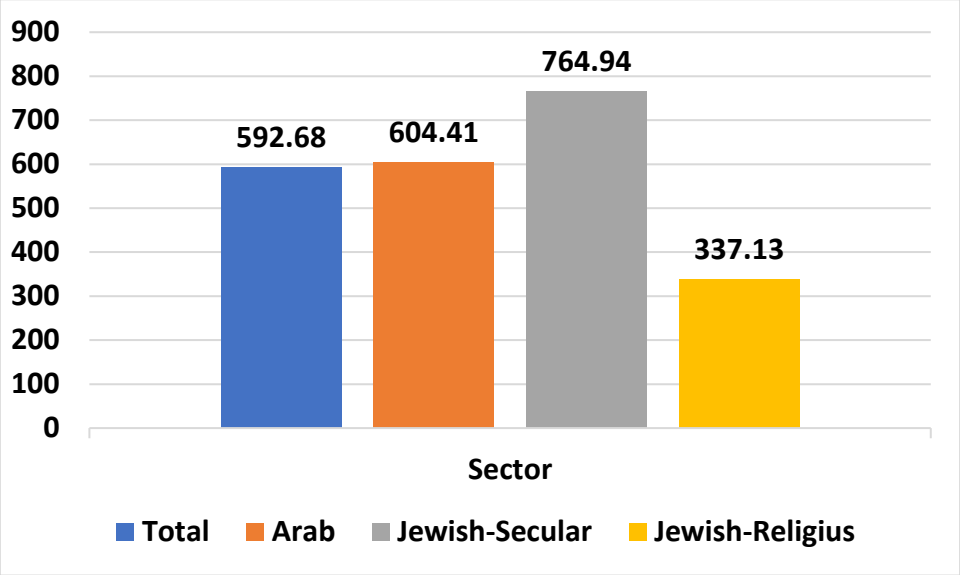


Figure 6: Percentages of Six Years Secondary Schools by Sector

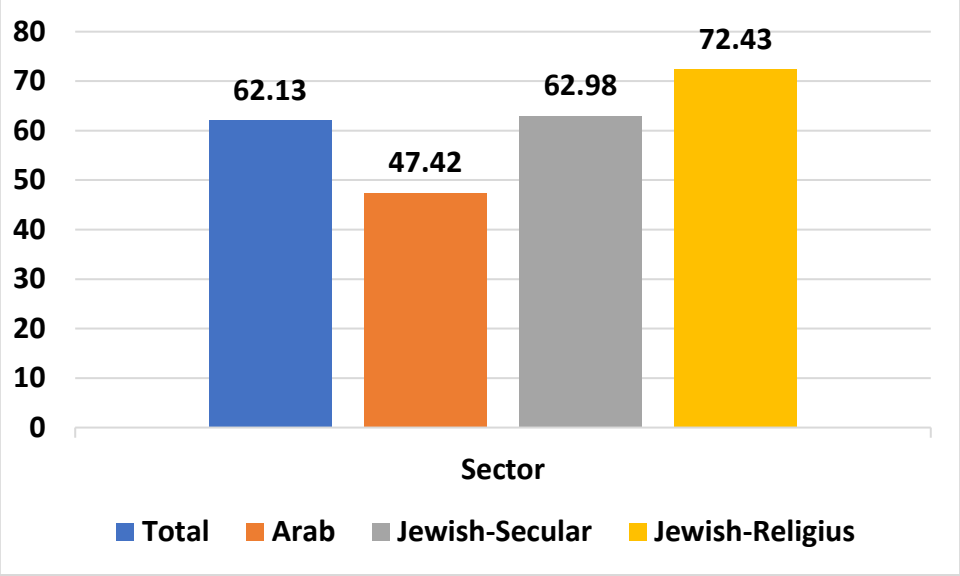


Figure 7: Percentage of Special Education Students Integrated in School by Sector

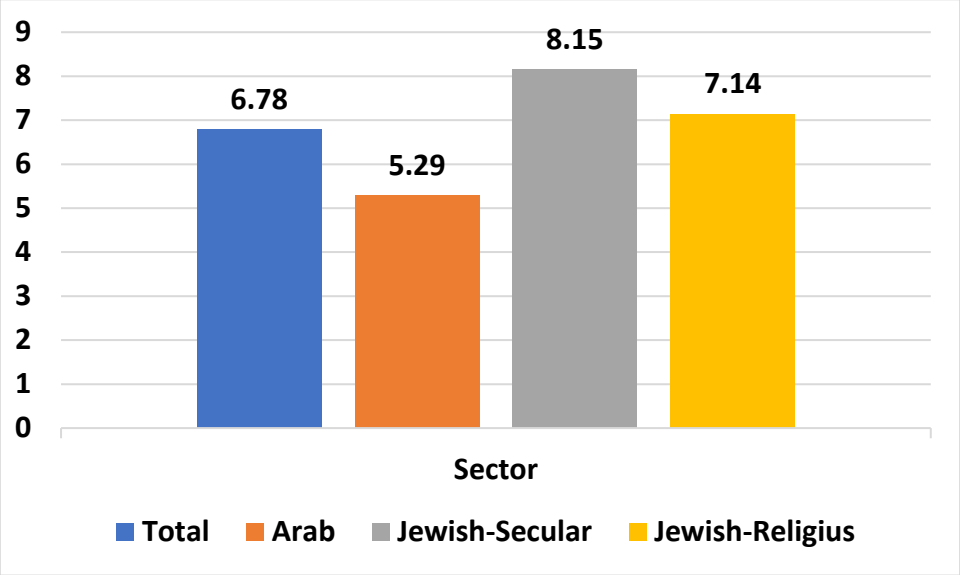


Figure 8: Percentage of Teachers Holding an MA or PhD by Sector

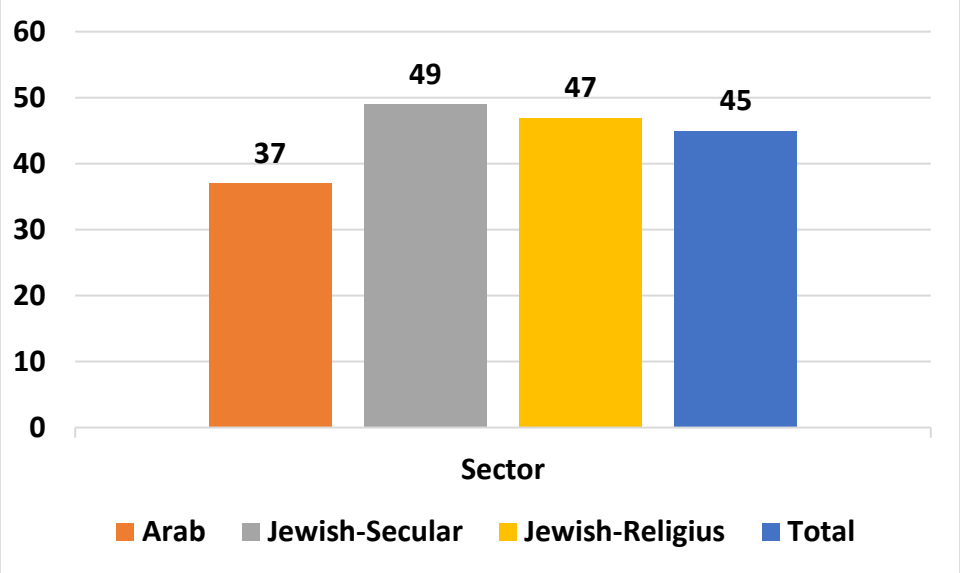
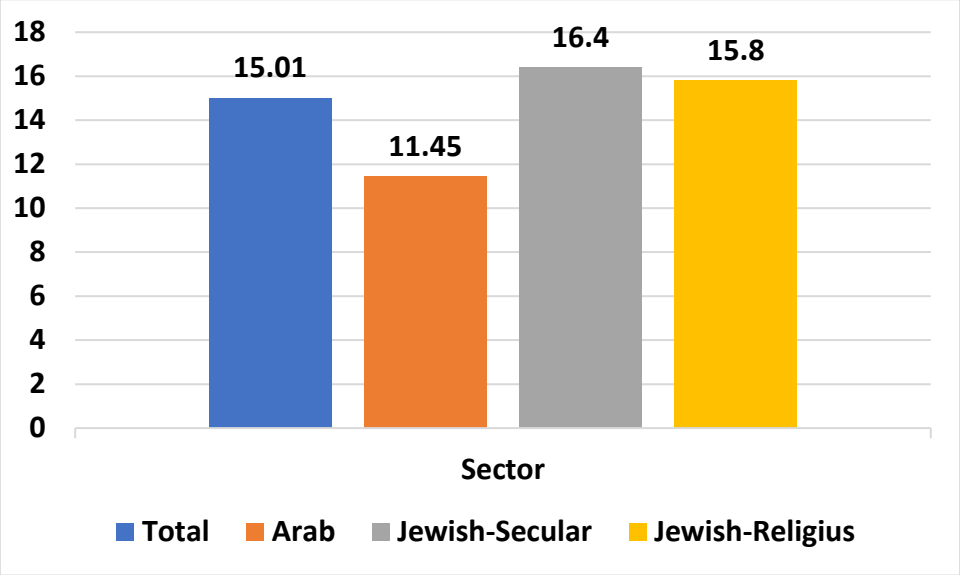


Figure 9: Median of Teachers' Seniority by Sector



Thus, it seems that Arab schools have the lowest percentage of the teaching force that holds an MA or PhD degree as well as the lowest median of teaching seniority. The Arab sector also has the lowest percentages of six-year secondary schools. Moreover, the Jewish-religious sector has the smallest schools (which might be explained by gendered segregation in schools).

Differences by Socioeconomic Status

Significant differences are also found in all controlled variables based on schools' socioeconomic status ($p<.001$). Firstly, there are differences in school size and structure between schools of different socioeconomic status (see Figures 10 and 11). Secondly, regarding size, while schools of high socioeconomic status are the largest ($M=694.05$; $SD=482.26$), schools of low socioeconomic status contain an average of 535.15 students ($SD=380.17$) and schools of middle socioeconomic status are the smallest ($M=534.81$; $SD=450.32$). Regarding structure, most of the schools of all socioeconomic statuses are secondary. However, while 67.19% of the high socioeconomic status schools are secondary (six years schools) ($SD=47.03$), the rate is lower among the middle socioeconomic schools ($M=61.9$; $SD=48.65$), and lowest among schools of low socioeconomic status ($M=56.69$; $SD=49.64$). Moreover, the percentage of special education students integrated into school is 5.29% ($SD=6.17$) among schools of high socioeconomic status, 8.15% ($SD=8.65$) among schools of middle socioeconomic status, and 7.14% ($SD=8.35$) among schools of low socioeconomic status (see Figure 6). Furthermore, the percentage of the teaching force that holds an MA or PhD degree is 51% ($SD=.093$) among schools of high socioeconomic status, 46% ($SD=.109$) among schools of middle socioeconomic status, and 38% ($SD=.121$) among schools of low socioeconomic status. In addition, the median of teaching seniority is 16.29 ($SD=4.93$)

among schools of high socioeconomic status, 15.68 (SD=5.61) among schools of middle socioeconomic status, and 12.92 (SD=5.54) among schools of low socioeconomic status.

Figure 10: Number of Students in School by Socioeconomic Status

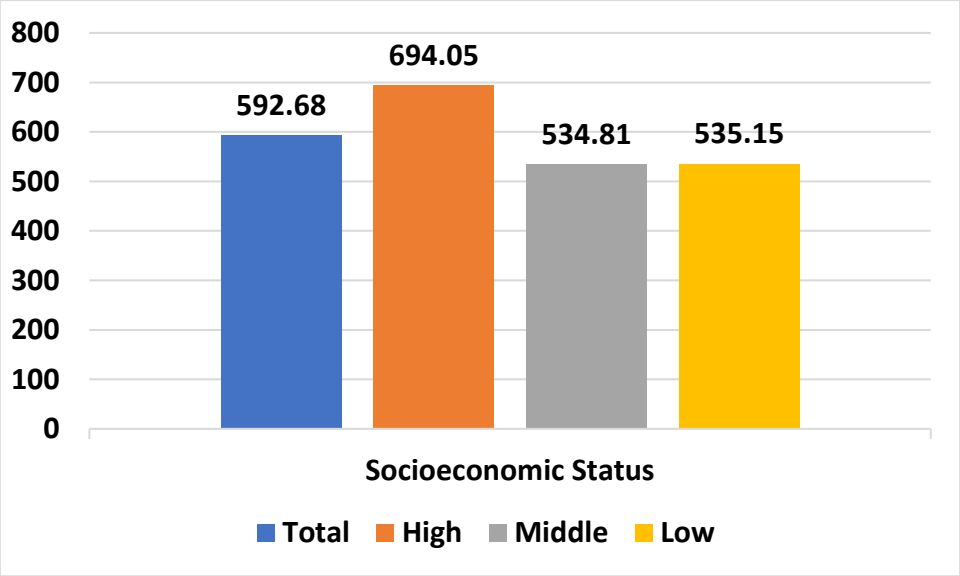


Figure 11: Percentages of Six-Year Secondary Schools by Socioeconomic Status

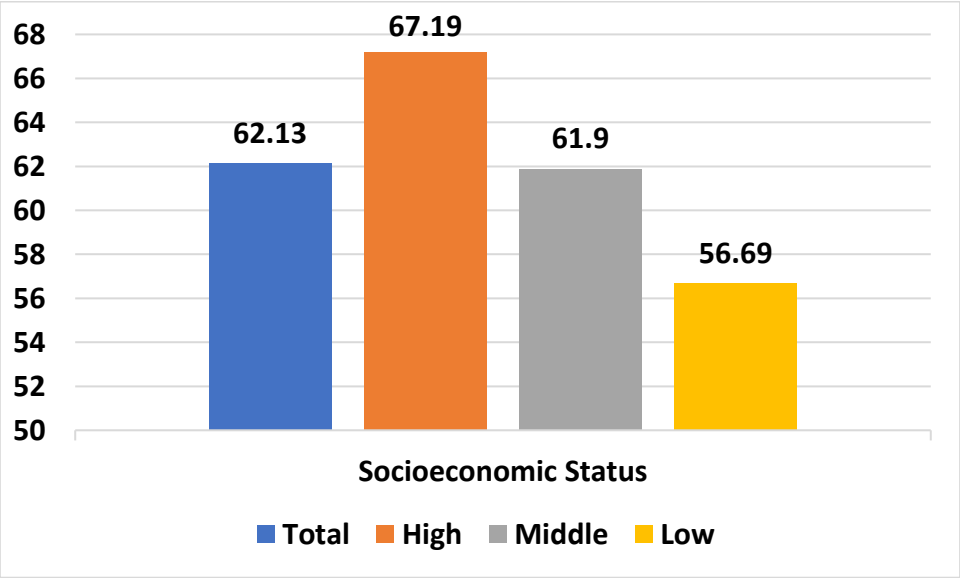


Figure 12: Percentage of Special Education Students Integrated in School by Socioeconomic Status

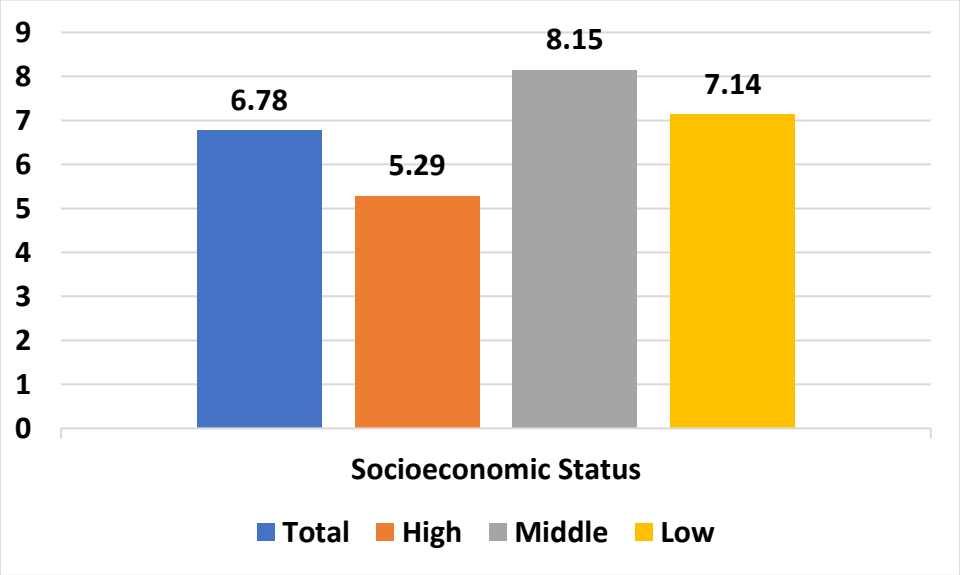


Figure 13: Percentage of Teachers Holding an MA or PhD by Socioeconomic Status

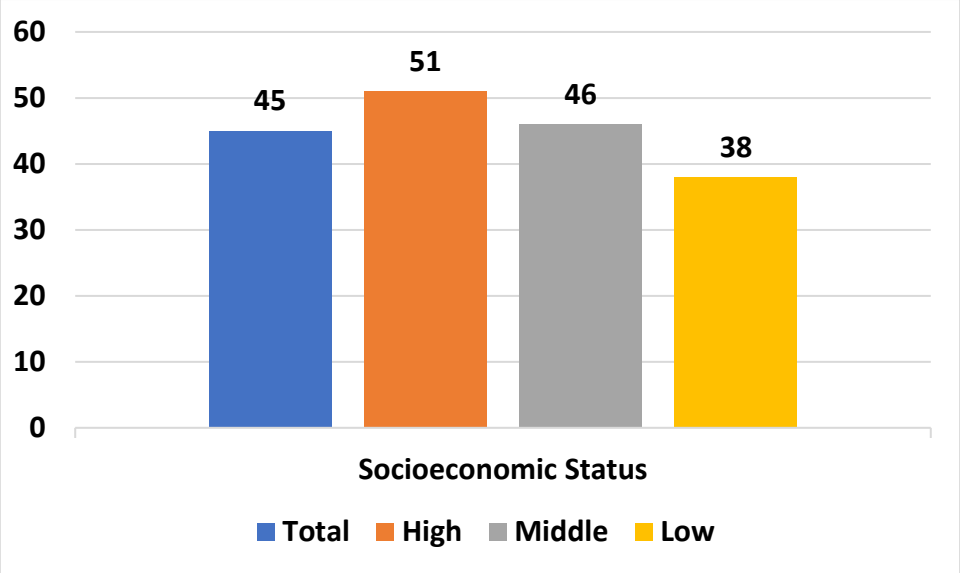
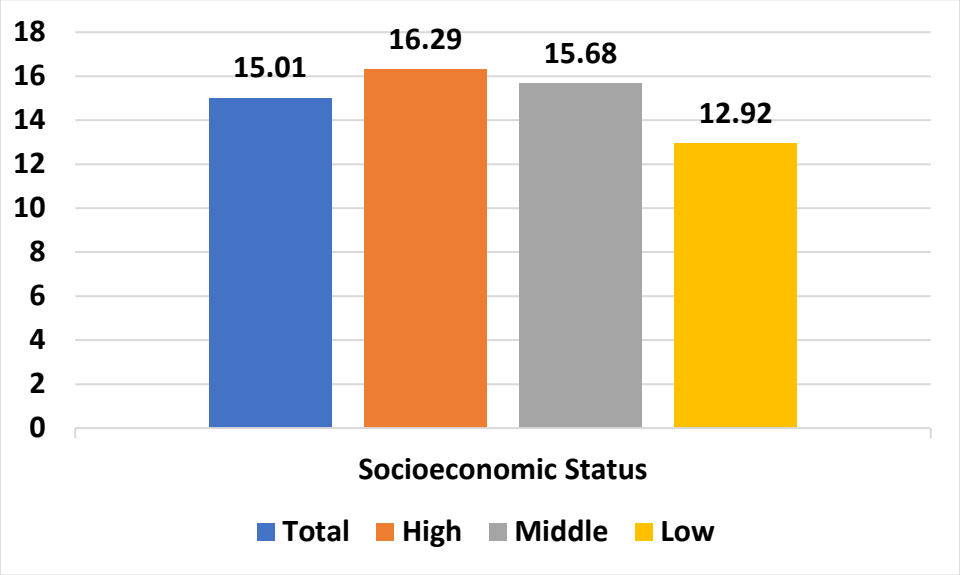


Figure 14: Median of Teachers' Seniority by Socioeconomic Status



Thus, schools of low socioeconomic status have the lowest percentage of the teaching force that holds an MA or PhD degree, as well as the lowest median of teaching seniority. The low socioeconomic status also has the largest schools and the lowest percentage of six-year secondary schools.

The next section will present the findings of the analysis after controlling for these variables.

9.3 Differences in Matriculation Eligibility Rates by Sectors and SES – After Controlling for School Variables

The literature shows that schools are distributed differently among sectors in terms of socioeconomic background. Thus, at first, a repeated measure analysis was conducted to examine the correlations between sector and schools' socioeconomic status (Appendix A). This analysis supports the literature and shows a high correlation between sector and socioeconomic status, as more than 70% of the Arab schools have a low socioeconomic status. In contrast, almost half of the Jewish-religious and Jewish-state schools have a high socioeconomic status. Therefore, separate data processing was conducted for sector and school socioeconomic status.

To answer the second research question, whether a change occurred in the gaps between schools of different sectors and socioeconomic status, and to examine the second and third hypotheses, which assume that differences will be found in matriculation eligibility rates between schools of different sectors and socioeconomic status before COVID-19 and after it, a general linear model (GLM) with repeated measures was conducted while controlling for the aforementioned school variables. The

analysis in this section shows differences between five measurements: each year from 2018 (pre-COVID-19) to 2022 (post-COVID-19).[4] As the characteristics of the school variables distribute differently across schools of different sectors and socioeconomic statuses, the following analyses refer to the average school (i.e., a school with average school size and structure, teacher seniority, percentages of teachers with MA or PhD, and special education students).

9.3.1 Sectorial Inequality in Matriculation Eligibility Rates

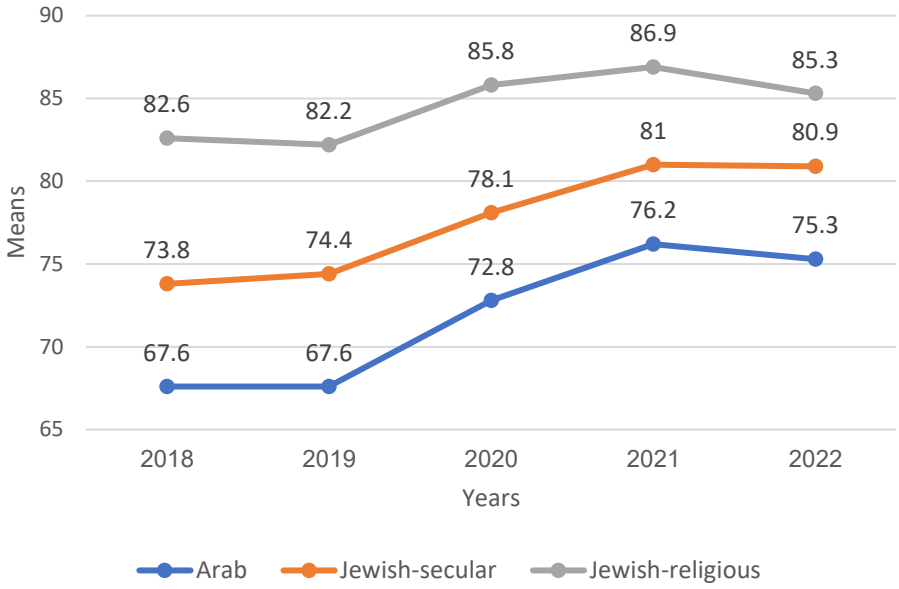
Matriculation Eligibility Rates

After controlling for school variables, the results indicate a significant time effect across five time points, Wilk's Lambda=.832, $F(4,821)=41.341$, $p< .001$, $\eta^2=.168$. Namely, 16.8% of the variance in the matriculation eligibility rates can be attributed to the time effect. Regarding differences between sectors, the results indicate a significant difference in matriculation eligibility rates among sectors, Wilk's Lambda=.971, $F(8,1642)=3.054$, $p=.002$, $\eta^2=.015$. However, only 1.5% of the variance in matriculation eligibility rates can be attributed to the sector effect. In addition, the controlled variables were not significant ($p>0.001$), except for schools' socioeconomic status which had a significant effect ($p< .001$) (see appendix B).

Figure 7 shows that after controlling for the school variables, the difference between sectors in eligibility rates for a matriculation diploma with five study units of math varies over time. Between 2018 and 2019, before COVID-19, there were little changes in matriculation eligibility rates. In 2020, as COVID-19 began, there was an increase in eligibility rates for a matriculation diploma among all sectors. This increase continued until 2021. Between 2018 and 2021, eligibility rates for the average school increased from 67.6% to 76.2% in the Arab sector, from 73.8% to 81% in the Jewish-secular sector, and from 82.6% to 86.9% in the Jewish-religious sector. However, as COVID-19 ceased in 2022, eligibility rates decreased moderately among all sectors, and especially among the Arab and the Jewish-religious sectors. Eventually, between 2018 and 2022, the most prominent improvement is seen in the Arab sector, which changed by 7.7 points, followed by the Jewish-secular sector which changed by 7.1 points, and then the Jewish-religious which changed only by 2.7 points. Regarding sectorial gaps, although the Jewish-religious sector has the highest eligibility rates, the gaps between the three sectors decreased over time.

[4] It should be mentioned that changes were also examined in this study based on two measurements, pre-COVID-19 (2018 and 2019) and post-COVID-19 (2020 and 2021). However, this analysis was excluded from this paper to enable a more complex discussion of the trends in matriculation eligibility rates over the years.

Figure 15: Eligibility Rates for a Matriculation Diploma Based on Sector – 2018-2021



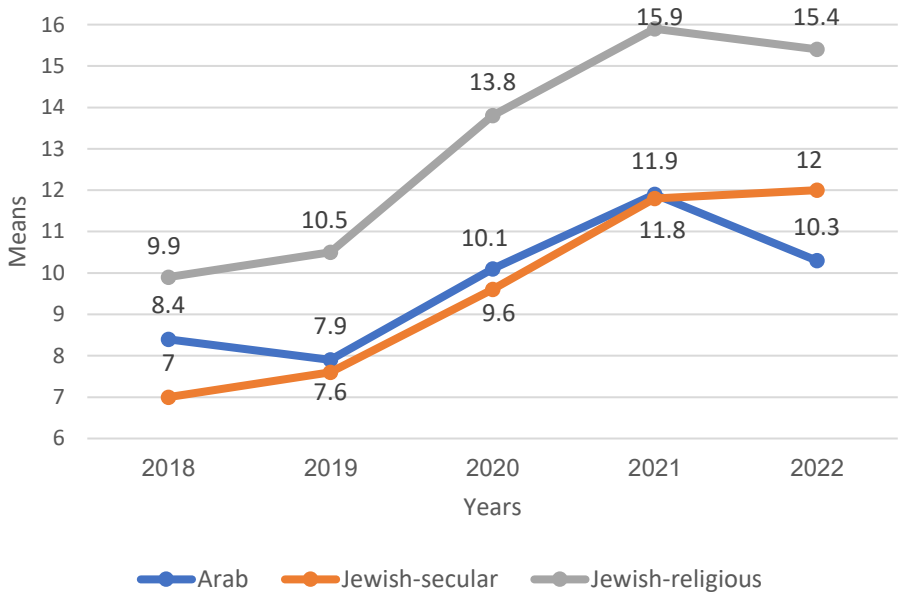
Outstanding Matriculation Rates

After controlling for school variables, the results indicate a highly significant time effect across five time points, Wilk's Lambda=.807, $F(4,821)=49.188$, $p< .001$, $\eta^2=.193$. Namely, 19.3% of the variance in the outstanding matriculation eligibility rates can be attributed to the time effect. Thus, there is significant evidence to reject the null hypothesis and argue that the time effect had a statistically significant impact on outstanding matriculation eligibility. Regarding differences between sectors, the results indicate a significant difference in eligibility rates among sectors, Wilk's Lambda=.969, $F(8,1642)=3.294$, $p=.002$, $\eta^2=.016$. However, only 1.6% of the variance in matriculation eligibility rates can be attributed to the sector effect. In addition, the controlled variables were not significant ($p>0.001$), except for schools' socioeconomic status which had a significant effect ($p< .001$). Pairwise comparisons show that the differences between the Jewish sectors are significant in most measurements.

Figure 8 shows that after controlling for the school variables, the difference between sectors in eligibility rates for an outstanding matriculation diploma varies over time. During COVID-19, between 2019 and 2021, the eligibility rates for outstanding matriculation increased among all sectors. At that time, the eligibility rates for the average school increased from 7.6% to 11.8% among the Jewish-secular sector, from 7.9% to 11.9% among the Arab sector, and from 10.5% to 15.9% among the Jewish-religious sector. While in matriculation the Arab sector had the lowest eligibility rates, in outstanding matriculation the average Arab school had higher eligibility rates than the average Jewish-secular school; though the gap was small. Yet in 2022, as COVID-19 ceased and students returned to school, there was a decrease in matriculation eligibility

rates for outstanding matriculation among the Arab sector, which places them lower than the Jewish schools. The average Jewish-religious school continued to lead in that aspect. Eventually, between 2018 and 2022, the most prominent change is seen in the Jewish-religious sector, which changed by 5.5 points, followed by the Jewish-secular sector which changed by 5 points, and then the Arab sector which changed only by 1.9 points. Sectorial gaps have widened between all sectors.

Figure 16: Eligibility Rates for an Outstanding Matriculation Diploma Based on Sector – 2018-2021

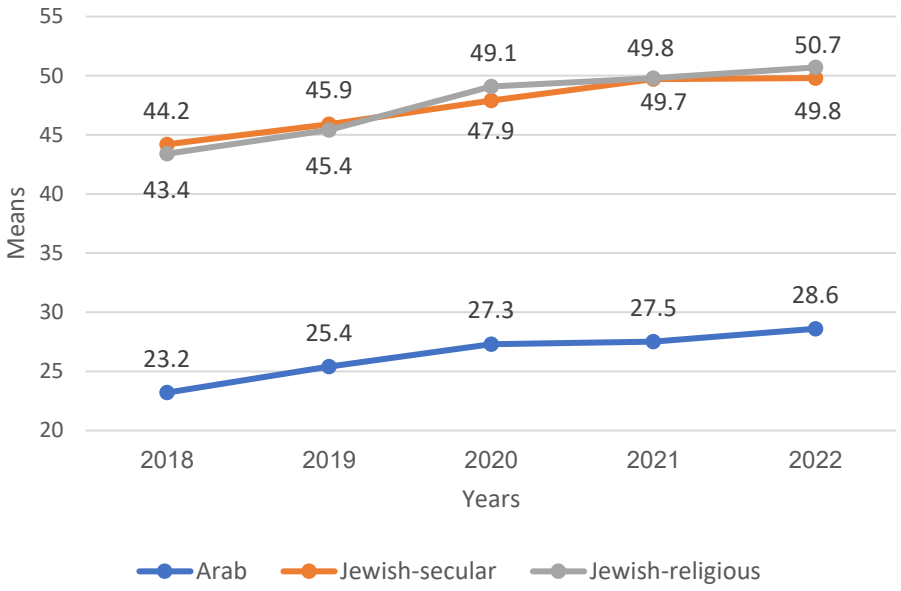


Eligibility Rates for Matriculation with Five Study Units of English

The results indicate a highly significant time effect across five time points, Wilk's Lambda=.887, $F(4,821)=26.029$, $p< .001$, $\eta^2=.113$. Namely, 11.3% of the variance in the eligibility rates for matriculation with five study units of English can be attributed to the time effect. Thus, there is significant evidence to reject the null hypothesis and argue that the time effect had a statistically significant impact on eligibility rates for matriculation with five study units of English. Regarding differences between sectors, the results indicate a non-significant difference in eligibility rates for matriculation with five study units of English among sectors, Wilk's Lambda=.986, $F(8,1642)=1.46$, $p=.167$, $\eta^2=.007$ Moreover, only 0.7% of the variance in eligibility rates for matriculation with five study units of English can be attributed to the sector effect. In addition, the controlled variables were not significant ($p>0.001$), except for schools' socioeconomic status which had a significant effect ($p< .001$). Pairwise comparisons show that the differences are significant between all sectors except for the Arab and Jewish-secular sectors.

Figure 9 shows that after controlling for the school variables, the eligibility rates for matriculation with five study units of English increased moderately over the years in all sectors. Between 2018 and 2022, matriculation eligibility rates for the average school increased from 23.2% to 28.6% among the Arab sector, from 44.2% to 49.8% among the Jewish-secular sector, and from 43.4% to 50.7% among the Jewish-religious sector. Eventually, between 2018 and 2022, there were similar improvements in all sectors: the Jewish-religious sector changed by 7.3 points, the Jewish-secular sector changed by 5.6 points, and the Arab sector changed by only 5.4 points. While the Arab sector had the lowest eligibility rates by far, the gap between the Jewish-secular state and the Jewish-religious state was small and the trends have slightly changed. Before COVID-19 the Jewish-secular led with matriculation eligibility rates of 44.2%, but after COVID-19 eligibility rates among the Jewish-religious state sector increased more and are now the highest, at 50.7%. While eligibility rates for other types of matriculation increased more during COVID-19, here we see that the increase is sustainable over the years.

Figure 17: Eligibility Rates for a Matriculation Diploma with Advanced English Based on Sector – 2018-2021



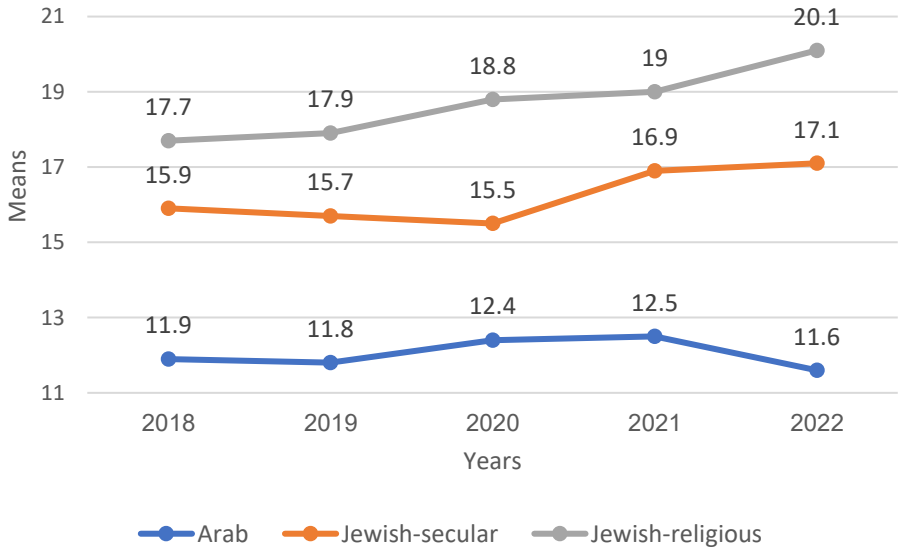
Eligibility Rates for Matriculation with Five Study Units of Math

The results indicate a highly significant time effect across five time points, Wilk's Lambda=.976, $F(4,821)=5.073$, $p< .001$, $\eta^2=.024$. Namely, 2.4% of the variance in the eligibility rates for matriculation with five study units of math can be attributed to the time effect. Thus, there is significant evidence to reject the null hypothesis and argue that the time effect had a statistically significant impact on eligibility rates for matriculation with five study units of math. Regarding differences between sectors, the

results indicate a non-significant difference in eligibility rates for matriculation with five study units of math among sectors, Wilk's Lambda=.981, F(8,1642)=2.011, p=.042, η^2=.010. Moreover, only 1% of the variance in eligibility rates for matriculation with five study units of math can be attributed to the sector effect. In addition, the controlled variables were not significant (p>0.001). Pairwise comparisons show that the differences are significant between all sectors.

Figure 10 shows that after controlling for the school variables, the difference in schools' sector in eligibility rates for a matriculation diploma with five study units of math varies over time. Between 2018 and 2022, eligibility rates for the average school increased from 15.9% to 17.1% among the Jewish-secular sector, and from 17.7% to 20.1% among the Jewish-religious sector. The increase was more profound during COVID-19. While eligibility rates continued to increase in 2022, they decreased among the Arab sector. In fact, between 2018 and 2022, the eligibility rates of the Jewish-religious sector improved by 2.4 points and those of the Jewish-secular sector improved by 1.2 points. The eligibility rates among the Arab sector declined by 0.3 points. Eventually, the average Jewish-religious school leads with the highest eligibility rates, followed by the Jewish-state sector, and finally the Arab sector. Thus, the gaps between the three sectors have widened.

Figure 18: Eligibility Rates for a Matriculation Diploma with Advanced Math Based on Sector – 2018-2021



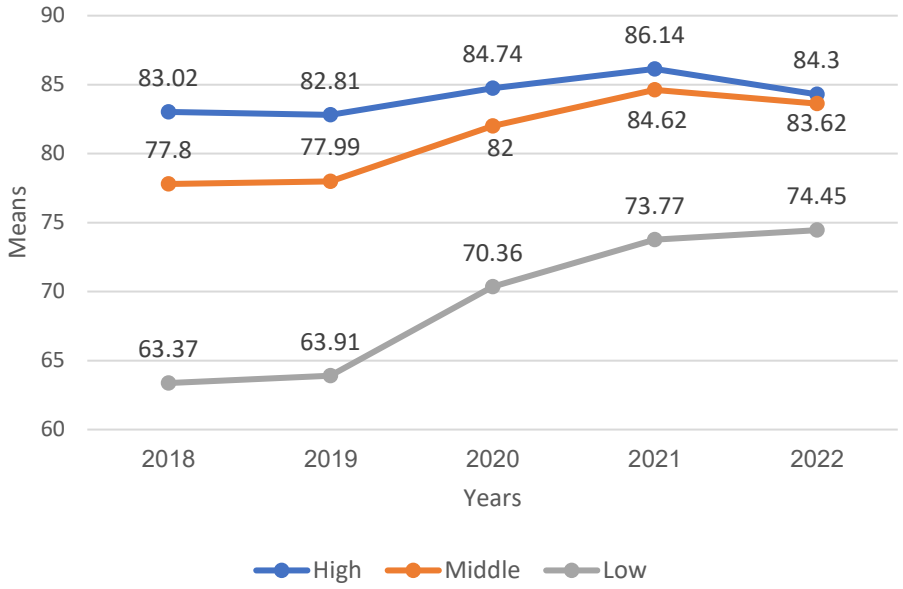
9.3.2 Socioeconomic Inequality in Matriculation Eligibility Rates

Matriculation Eligibility Rates

As for the school's socioeconomic status, the results indicate a highly significant time effect across five time points, Wilk's Lambda=.925, F(4,821)=41.341, p< .001, η^2=.075. Namely, 7.5% of the variance in the matriculation eligibility rates can be attributed to the time effect. Thus, there is significant evidence to reject the null hypothesis and argue that the time effect had a statistically significant impact on matriculation eligibility. Regarding differences between schools' socioeconomic status, the results indicate a significant difference in eligibility rates among socioeconomic statuses, Wilk's Lambda=.935, F(8,1642)=6.987, p=<.001, η^2=.033. However, only 3.3% of the variance in matriculation eligibility rates can be attributed to the socioeconomic effect. In addition, the controlled variables were not significant (p>0.001).

Figure 11 shows that after controlling for the school variables, the difference in schools' socioeconomic status in eligibility rates for a matriculation diploma varies over time. Eligibility rates for the average school slightly changed between 2018 and 2019, then increased during COVID-19, among all sectors. Between 2018 and 2022, eligibility rates increased from 63.37% to 74.45% among schools of low socioeconomic status, from 77.8% to 83.62% among schools of middle socioeconomic status, and from 83.02% to 84.3% among those of high socioeconomic status. A notable increase was recorded among the lower socioeconomic status. Yet, in 2022 eligibility rates slightly increased among schools of lower socioeconomic status, and even decreased among those of higher status. Eventually, between 2018 and 2022, the most prominent change is seen in the low socioeconomic status, which changed by 11.08 points, then the middle socioeconomic status which changed by 5.82 points, and then the high socioeconomic status which changed by only 1.28 points. Thus, the gaps between schools' three socioeconomic statuses narrowed over the years.

Figure 19: Eligibility Rates for a Matriculation Diploma Based on SES – 2018-2021



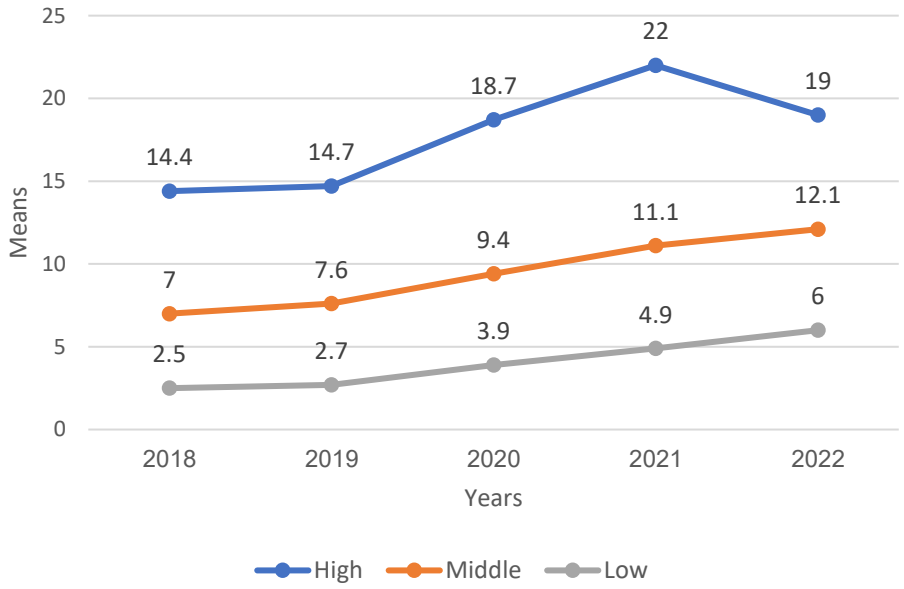
Outstanding Matriculation Diploma

The results indicate a highly significant time effect across five time points, Wilk's Lambda=.880, F(4,821)=27.925, p< .001, η^2=.120. Namely, 12% of the variance in the outstanding matriculation eligibility rates can be attributed to the time effect. Thus, there is significant evidence to reject the null hypothesis and argue that the time effect had a statistically significant impact on outstanding matriculation eligibility. Regarding differences between schools' socioeconomic status, the results indicate a significant difference in eligibility rates among schools' socioeconomic status, Wilk's Lambda=.911, F(8,1642)=6.987, p=<.001, η^2=.045. However, only 4.5% of the variance in outstanding matriculation eligibility rates can be attributed to the socioeconomic effect. In addition, regarding the controlled variables, the results show that teachers' scholarliness and school size were significant.

Figure 12 shows that after controlling for the school variables, the difference in schools' socioeconomic status in eligibility rates for an outstanding matriculation diploma varies over time. Eligibility rates for the average school increased among schools of all socioeconomic statuses. While the increase was steady among the middle and low socioeconomic status, it was higher during COVID-19 among the high socioeconomic status. Moreover, in 2022 there was a decrease in eligibility rates among schools of high socioeconomic status. Between 2018 and 2022, eligibility rates increased from 2.5% to 6% among those of low socioeconomic status, from 7% to 12.1% among those of middle socioeconomic status, and from 14.4% to 19% among those of high socioeconomic status. Between 2018 and 2022, there were quite similar changes in the eligibility rates; the low socioeconomic status changed by 3.5 points, the middle socioeconomic status changed by 5.1 points, and the high socioeconomic status changed

by 4.6 points. Thus, there was a noticeable widening of gaps between schools' three socioeconomic statuses during COVID-19, which decreased again in 2022.

Figure 20: Eligibility Rates for an Outstanding Matriculation Diploma Based on SES – 2018-2021



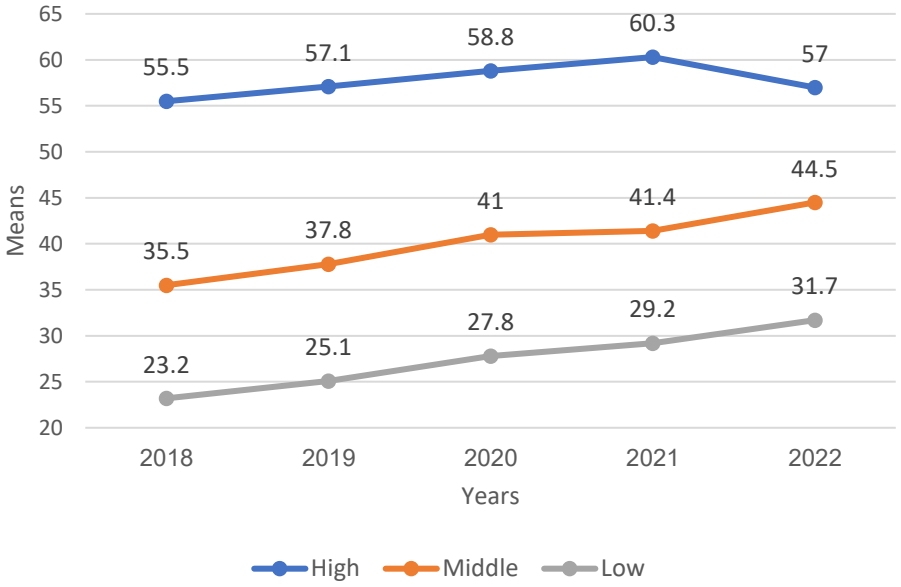
Eligibility Rates for Matriculation with Five Study Units of English

The results indicate a highly significant time effect across five time points, Wilk's Lambda=.967, F(4,821)=7.007, p< .001, η^2=.033. Namely, 3.3% of the variance in the eligibility rates for a matriculation diploma with five study units of English can be attributed to the time effect. Thus, there is significant evidence to reject the null hypothesis and argue that the time effect had a statistically significant impact on eligibility rates for a matriculation diploma with five study units of English. Regarding differences between schools' socioeconomic status, the results indicate a significant difference in eligibility rates among schools of different socioeconomic statuses, Wilk's Lambda=.966, F(8,1642)=3.582, p=<.001, η^2=.017. However, only 1.7% of the variance in eligibility rates for matriculation with five study units of English can be attributed to the socioeconomic effect. In addition, none of the controlled variables were significant.

Figure 13 shows that after controlling for the school variables, the difference in schools' socioeconomic status in eligibility rates for a matriculation diploma with five study units of English slightly varies over time. Between 2018 and 2022, eligibility rates for the average school increased from 23.2% to 31.7% among low socioeconomic status, from 35.5% to 44.5% among those of middle socioeconomic status, and from 55.5% to 57% among those of high socioeconomic status. Eventually, between 2018 and 2022, the most prominent change is seen in the middle socioeconomic status, which changed by 9

points, then the low socioeconomic status which improved by 8.5 points. The high socioeconomic status improved only by 1.5 points after a decrease in 2022. Thus, the gaps between schools' three socioeconomic statuses slightly decrease.

Figure 21: Eligibility Rates for a Matriculation Diploma with Advanced English Based on SES – 2018-2021



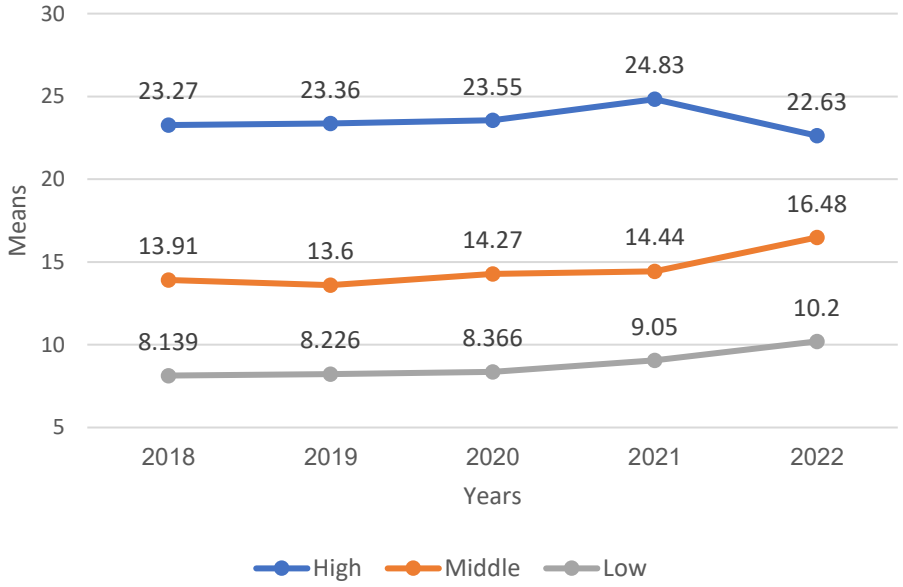
Eligibility Rates for Matriculation with Five Study Units of Math

The results indicate a non-significant time effect across five time points, Wilk's Lambda=.995, F(4,821)=7.007, p=.345, η^2=.005. Namely, 0.5% of the variance in the eligibility rates for a matriculation diploma with five study units of math can be attributed to the time effect. Thus, there is no significant evidence to reject the null hypothesis and argue that the time effect had a statistically significant impact on eligibility rates for a matriculation diploma with five study units of math. Regarding differences between schools' socioeconomic status, the results indicate a non-significant difference in eligibility rates among schools with different socioeconomic statuses, Wilk's Lambda=.976, F(8,1644)=2.561, p=.009, η^2=.012. Moreover, only 1.2% of the variance in eligibility rates for matriculation with five study units of math can be attributed to the socioeconomic effect. In addition, none of the controlled variables were significant.

Figure 14 shows that after controlling for the school variables, the difference in schools' socioeconomic status in eligibility rates for a matriculation diploma with five study units of math slightly varies over time. Between 2018 and 2021 a moderate increase can be seen in all the socioeconomic statuses. In these years, eligibility rates for the average school increased from 8.14% to 10.2% among those of low socioeconomic status, from 13.91% to 16.48% among those of middle socioeconomic status, and decreased from

23.27% to 22.63% among those of high socioeconomic status. Then, in 2022 there was a decrease among the high socioeconomic status and a larger increase among the middle status. Eventually, between 2018 and 2022, the eligibility rates in the low socioeconomic status improved by 2.06 points and in the middle socioeconomic status there was an improvement of 2.57 points. The high socioeconomic status declined by 0.64 points. Thus, the gaps between schools' three socioeconomic statuses decreased.

Figure 22: Eligibility Rates for a Matriculation Diploma with Advanced Math Based on SES – 2018-2021



The findings show that while the policy formulated by the Ministry of Education during COVID-19, enabled the increase in the matriculation eligibility rates for disadvantaged schools, decreasing inequality, it at the same time increased the gap between schools regarding an outstanding matriculation diploma across schools of different socioeconomic status and sectors as well as matriculation with five study units of math across schools of different sectors.

10. Discussion and Conclusion

This study examines the effect of the COVID-19 global crisis, and the policy enacted during this time in Israel, on inequality in matriculation eligibility rates at the school level. The study's purpose was to investigate whether changes occurred in schools' matriculation eligibility rates after the COVID-19 crisis and whether differences were found in trends among schools of different sectors and socioeconomic status. To examine this purpose, a GLM analysis with repeated measures was conducted via SPSS. Data from five different occurrences, between 2018 to 2022, was measured. It encompasses two years before COVID-19, two years during COVID-19 and one year after COVID-19. Analyzing five years allows an examination of the accumulative effect of the pandemic and the sustainability of the changes.

The first hypothesis, which suggests that eligibility rates will decrease after the COVID-19 crisis, was rejected. In fact, the findings show that matriculation eligibility rates increased between 2018 to 2022 in all types of matriculation diplomas. It contradicts most of the literature regarding COVID-19 which indicates a decrease in achievements during this time (e.g., Kuhfeld et al., 2022; Schult et al., 2021). This can be explained by the Ministry of Education's policy to reformulate the format of the matriculation exams, making it easier to achieve a matriculation diploma (Addi-Raccah & Streisfeld, 2024). This policy seems to have mitigated the possible negative impact of the crisis and afforded schools with an opportunity to encourage their students to participate in the matriculation examinations. This occurred mainly in schools of low socioeconomic status or Arab schools, as interviews conducted with school principals revealed that they viewed the policy of the Ministry of Education as an opportunity for improving their schools' outcomes (Addi-Raccah et al. 2023). In this regard, the findings show the potential power of policy and its relation to inequality, especially at times of crisis.

Yet, gaps were found between schools' eligibility rates for different types of matriculation diplomas. The increase in eligibility rates was higher in matriculation diplomas and outstanding matriculation diplomas than in matriculation diplomas with five study units of English and math. This finding can be explained by the policy enacted by the Ministry of Education, which included changes in the assessment of various subjects, except for math and English which remained external (Weissnlay, 2020b). Moreover, the results show that the changes caused by COVID-19 and its resulting policies are not sustainable as trends returned to moderate in 2022 in most types of matriculation. A possible explanation for this result could be that students examined in 2022 were already impacted by COVID-19 in 10th grade, while students examined in 2020-2021 learned normally in 10th grade. In other words, low achievements in 2022 could be explained by the negative impact of COVID-19 on learning among 10th graders.

Regarding the second and third hypotheses, the findings indeed show complex trends and differences between schools of different sectors and socioeconomic statuses. These differences have the potential to increase social gaps. In this regard, while gaps decreased in matriculation diplomas, they increased in outstanding diplomas, which are prestigious and valuable for students' prospects. The gaps in diplomas with advanced math and English stay quite stable; the socioeconomic gaps slightly decrease in both math and English, but the sectorial gaps increase in math and stay quite stable in English. This suggests that socially disadvantaged groups (i.e., low-SES schools and Arab schools), managed to improve the eligibility rates of students obtaining a matriculation diploma, thus narrowing the social gap. However, simultaneously, socially well-established schools compared to disadvantaged schools increased the eligibility rate for outstanding matriculation diplomas, which increased socioeconomic and sectorial gaps. We can also see, regarding sectors, that the average Jewish-religious school achieves higher eligibility rates than schools in the Jewish-secular sector and the Arab sector. This finding might be attributed to the different pedagogical and religious ideologies as well as differences in budgeting, learning hours and number of students per class (Ayalon & Yogev, 1996; Vininger, 2020).

The different trends in gaps between schools of different sectors and socioeconomic statuses, especially in prestigious matriculation diplomas, could be explained by "the conflict paradigm". Well-established groups use various practices to preserve their social status. During COVID-19, as more students achieved matriculation diplomas, social reproduction was achieved through differences in eligibility rates for outstanding diplomas and diplomas with five study units of math. Schools in the Jewish sector and of high socioeconomic status provided their students with opportunities to achieve not only a matriculation diploma, but a better type of diploma (such as outstanding matriculation or matriculation with five study units of math).

Although the Ministry of Education's policy during the COVID-19 crisis benefited all schools, well-established schools were able to maintain their advantage, especially in terms of the prestigious diploma (either an outstanding diploma and/or a diploma with five study units in English or math). More internal evaluation and the reduced material enabled these schools to enhance students' chances of obtaining a prestigious matriculation. They provided additional assistance for reinforcing students' learning, and prioritized mathematics and English over other subjects following the school closures, as students could better focus on their studies while other activities were limited (Addi-Raccah et al., 2023). This finding supports Curran's theory (Curran, 2017) that exposure to risks might increase inequality, as well-established groups handle crises better (Addi-Raccah & Streisfeld, 2024).

In conclusion, while many studies indicate a decrease in achievements during the COVID-19 crisis, the findings of this study show an increase in achievements and a reduction of social gaps, as more students were eligible for a matriculation diploma, especially among disadvantaged groups. This is an achievement of significant social value since the matriculation diploma is often a barrier to integration into higher education (Addi-Raccah, 2008). This finding could be attributed to the Ministry of Education's policy in matriculation exams, which is likely to mitigate the negative effect of the crisis. Therefore, it emphasizes the potential power of policy and its ability to affect inequality.

However, there were different trends in different types of matriculation as well as among different sectors and socioeconomic statuses. On the one hand, in matriculation, gaps between sectors and socioeconomic statuses narrowed and apparently reduced social inequality. On the other hand, when examining the prestigious types of matriculation (i.e., the outstanding diploma and matriculation with advanced math), it appears that well-established groups (i.e., high socioeconomic schools and Jewish religious schools) improved more than others. This finding is compatible with Curran's theory (Curran, 2017), which suggests that inequality increases during crises as well-established groups handle the crisis better while disadvantaged groups are exposed to more risks that affect their ability to withstand the crisis.

Nowadays, as crises have become common in our society, the policies and measures taken to handle crises can mitigate their potential negative effect on students' achievements and inequality. Therefore, policymakers are encouraged to use their power in students' favor and enact similar policies during other crises (such as the current "Iron Swords" war). However, researchers and policymakers should pay close attention to the importance of different types of matriculation diplomas. As matriculation becomes more accessible, social equality is now measured by eligibility rates for better types of matriculation diplomas such as outstanding matriculation and matriculation with five study units of math and English. Future reforms should take these changes into consideration.

11. Limitations

This study was conducted in times of crisis. However, as mentioned in the literature, there have been additional policy changes in the format of the matriculation exams during COVID-19. Therefore, the observed differences cannot be attributed necessarily or only to the crisis itself nor to the changes in the matriculation exams. These factors are intertwined, and both were considered in the analysis of the findings.

Moreover, this is a correlation study. Therefore, the findings indicate correlations but not causality. In addition, the study is conducted at the school level and therefore does not examine the personal characteristics of students.

Regarding population and sample, Jewish-Orthodox students were excluded from this study, since their matriculation submission rates are very low. In addition, the Arab sector includes different streams (e.g., Bedouin, Druze, Muslim). Due to their relatively small size and the educational policy which does not distinguish between them, they were considered as a unified group.

12. Future Research

This study is conducted at the school level. Future research could examine gaps at the student level as well.

While this study is focused on three sectors in Israel and does not elaborate on differences inside the Arab sector, future research could examine the differences between the distinct groups in this sector thoroughly.

This study is focused on several social characteristics. Literature suggests that there are more characteristics which could affect matriculation eligibility rates. Such characteristics include teaching methods, personal characteristics of students as well as the ability and resources available to handle crises. Future research may examine these. In fact, a continuation study which examines school principals' strategies, is being conducted at present. The initial findings of this study are cited (Addi-Raccah et al., 2023).

Trends in achievements should be studied in the coming years. Other findings may arise after a longer time period. Continuing this research could examine the long-term effects of COVID-19. Moreover, a new national crisis, the "Iron Swords" war in Israel, is likely to affect achievements as well.

13. List of Figures and Tables

14. Works Cited

Addi-Raccah, A., & Ayalon, H. (2008). From high school to higher education: Curricular policy and postsecondary enrollment in Israel. *Educational Evaluation and Policy Analysis, 30*(1), 31-50.

Addi-Raccah, A., Sal-man, Y. (2018). *Inequality in matriculation diploma in Israel*. TAU Research Alliance in Education.

Addi-Raccah, A. (2019). *Schools and Matriculation Diploma: A Contextual Perspective of the Israeli Education System*. Tau Research Alliance in Education.

Addi-Raccah, A. (2022). School credentials: A matter of educational sector, school and urban locality's socio-economic contexts. *Sage, 54*(1). 3-28.

Addi-Raccah, A. & Seeberger Tamir, N. (2022). Mothers as teachers to their children: lessons learned during the COVID-19 pandemic. *Journal of Family Studies, ahead-of-print*(ahead-of-print), 1–24.

Addi-Raccah, A. (2023). School's Structure and Eligibility for Matriculation. In (Eds.), Y. Harpaz & E. Hurvitz. *Saving the Middle-School Educational Ideas for Adolescence School*. (pp. 404-428). Dvir – Publishing House. (Hebrew).

Addi-Raccah, A., Harrison-Weiss, D. & Streisfeld, S. (2023). *Social Gaps between Schools in Matriculation and Schools' Principals Actions During COVID-19 Crisis. Report no. 2.* Tel Aviv University. (Hebrew).

Addi-Raccah, A. & Streisfeld, S. (2024). *Social Gaps in Entitlement for Matriculation Certificate in Israel: A Pre and post-COVID-19 Comparison*. Social Justice Research (Manuscript submitted for publication).

Adva Center. (2021). Sociological lexicon for COVID-19 era. Adva Center. (Hebrew).

Agostinelli, F. Doepke, M., Sorrenti, G., & Zilibotti, F. (2022). When the great equalizer shuts down: Schools, peers, and parents in pandemic times. *Journal of Public Economics, 206*(104574). 1-10.

Amir, D. (2007). The matriculation exams- where from and where to? *Al"e (A Journal for Mathematics Teachers), 37*. 9-15. (Hebrew).

Andrew, A. (2020). Inequalities in Children's Experiences of Home Learning during the COVID-19 Lockdown in England. *Fiscal Studies, 41*(2020). 653-683.

Andrew, A., Cattan, S., Costa-Dias, M., Farquharson, C., Kraftman, L., Krutikova, S., & Sevilla, A. (2020). *Learning during the lockdown: Real-time data on children's experiences during home learning*. Institute for Fiscal Studies.

A Revolution in the Matriculation Exams? That's How it Looked Like in 1995. (January 9th, 2014). News 12. https://www.mako.co.il/news-israel/education/Article-33a515bbdc67341004.htm (Hebrew).

Ayalon, H. & Shavit, Y. (2004), Educational reforms and inequalities in Israel: The MMI hypothesis revisited. *Sociology of Education, 77*(2), 103-120.

Ayalon, H. & Yogev, A. (1996). The alternative worldview of state religious high schools in Israel. *Comparative Education Review, 40*(1). 7-27.

Ayalon, H., Blass, N., Feniger, Y., & Shavit, Y. (2019). *Educational Inequality in Israel: From Research to Policy.* Taub Center. (Hebrew).

Bailey, D. H., Duncan, G. J., Murnane, R. J., & Au Yeung, N. (2021). Achievement gaps in the wake of COVID-19. *Educational Researcher, 50*(5), 266–275.

Bar-Haim, E., & Feniger, Y. (2021). Tracking in Israeli high schools: social inequality after 50 years of educational reforms. *Longitudinal and Life Course Studies, 12*(3). 423-440.

Bayrakdar, S., & Guveli, A. (2020). *Inequalities in home learning and schools' provision of distance teaching during school closure of COVID-19 lockdown in the UK (No. 2020-09)*. ISER Working Paper Series.

Bemabat Rachav, Numbers About Eduaction. State of Israel, Ministry of Education. http://ic.education.gov.il/QvAJAXZfc/opendoc_pc.htm?document=Mabat_rachav.qvw&host=qvsprodlb&sheet=SH11&lang=en-US (Hebrew).

Benbenishty, R. (2020). Quantitative Research Methods. Y.A.R. Yeutzim (Hebrew).

Ben-David Hadar, I. (2023). *Background Document: Madad Tipuach*. Bar Ilan University.

Benito, R., Alegre, M. A., & Gonzàlez-Balletbò, I. (2014). School segregation and its effects on educational equality and efficiency in 16 OECD comprehensive school systems. *Comparative Education Review, 58*(1), 104–134.

Ben-Peretz, M. (1980). Matriculation examinations and the school curriculum. *Studies in Education, 25*. 37-46. (Hebrew).

Ben-Shakhar, G. & Haimovich, T. (2004). Matriculation certificate (Bagrut) grades and psychometric entrance test (PET) scores as predictors of graduation and attrition. *Megamot*, (3) 446–470. (Hebrew).

Birkelund, J. F. & Karlson, K. B. (2023). No evidence of a major learning slide 14 months into the COVID-19 pandemic in Denmark. *European Societies, 25*(3), 468–488.

Blass, N. (2014). The Matriculation Exams Issues and Suggestions for a Reform. Taub Center. (Hebrew).

Bol, T. (2020). *Inequality in homeschooling during the Corona crisis in the Netherlands*. First results from the LISS Panel.

Bonal, X. & González, S. (2020). The impact of lockdown on the learning gap: family and school divisions in times of crisis. *International Review of Education, 66*(5-6), 635–655.

Borgonovi, F. & Ferrara, A. (2023). COVID-19 and Inequalities in Educational Achievement in Italy. *Research in Social Stratification and Mobility, 83*(2023). 1-14.

Bormann, I. (2021). How does research knowledge about social inequality in education matter during the pandemic? Results of an analysis of a public discourse in Germany. *Cogent Education, 8*(1), 1-17.

Bourdieu, P. (1986). The forms of capital. In N. W. Biggart (Ed.), *Readings in Economic Sociology*. (pp. 280-291). Blackwell Press.

Bozkurt, A., Jung, I., Xiao, J., Vladimirschi, V., Schuwer, R., Egorov, G., Lambert, R. S., Al-Freih, M., Pete, J., Olcott, D., Rodes, V., Aranciaga, I., Bali, M., Alvarez, V. A., Roberts, J., Pazurek, A., Raffaghelli, J. E., Panagiotou, N., De Coëtlogon, P., Shahadu, S., Brown, M., Asino I. T., Tumwesige, J., Ramírez Reyes, T., Barrios Ipenza, E., Ossiannilsson, E., Bond, M., Belhamel, K., Irvine, V., Sharma, C. R., Adam, T., Janssen, B., Sklyarova, T., Olcott, N., Ambrosino, A., Lazou, C., Mocquet, B., Mano, M., & Paskevicius, M. (2020). A global outlook to the interruption of education due to COVID-19 pandemic: Navigating in a time of uncertainty and crisis. *Asian Journal of Distance Education, 15*(1), 1–126.

Burgess, S., & Sievertsen, H. H. (2020, April 1). *Schools, skills, and learning: The impact of COVID-19 on education.* VoxEu. org. https://voxeu.org/article/impact-covid-19-education

Camp, A. M. & Zamarro, G. (2022). Determinants of ethnic differences in school modality choices during the COVID-19 crisis. *Educational Researcher, 51*(1), 6–16.

Casas, F. R. & Meaghan, D. E. (2001). Renewing the debate over the use of standardized tests in the evaluation of learning and teaching. *Interchange (Toronto. 1984), 32*(2), 147–181.

Clark, H., Coll-Seck, A. M., Banerjee, A., Peterson, S., Dalglish, S. L., Ameratunga, S., Balabanova, D., Bhutta, Z. A., Borrazzo, J., Claeson, M., Doherty, T., El-Jardali, F., George, A. S., Gichaga, A., Gram, L., Hipgrave, D. B., Kwamie, A., Meng, Q., Mercer, R., Narain, S., Nsungwa-Sabiiti, J., Olumide, A. O., Osrin, D., Powell-Jackson, T., Rasanathan, K., Rasul, I., Reid, P., Requejo, J., Rohde, S. S., Rollins, N., Romedenne, M., Singh Sachdev, H., Saleh, R., Shawar, Y. R., Shiffman, J., Simon, J., Sly, P. D., Stenberg, K., Tomlinson, M., Ved, R. R., & Costello, A. (2020). After COVID-19, a future for the world's children? *The Lancet (British Edition), 396*(10247), 298–300.

Cubilla-Bonnetier, D., Grajales-Barrios, M., Ortega-Espinosa, A., Puertas, L., & De León Sautú, N. (2023). Unequal literacy development and access to online education in public versus private Panamanian schools during COVID-19 pandemic. *Frontiers in Education (Lausanne)*8, 1-10.

Curran, D. (2016). Risk, power, and inequality in the 21st century. Palgrave Macmillan.

Dadon-Golan, Z., Ben-David Hadar, I., & Klein, J. (2019). Equity in education: the Israeli case. *International Journal of Educational Management, 33*(7), 1670–1685.

Dahan, M., Mironichev, N., Dvir, E., & Shye, S. (2002). *Educational gaps in Israel: Have they narrowed? On the factors determining eligibility for Matriculation Certificate*. The Center for Social Justice and Democracy in Memory of Y. Chazan at the Van Leer Jerusalem Institute. (Hebrew).

Daniel, J. (2020). Education and the COVID-19 pandemic. *Prospects, 49*(1), 91-96.

Dietrich, H., Patzina, A., & Lerche, A. (2021). Social inequality in the homeschooling efforts of German high school students during a school closing period. *European Societies, 23*(sup1), S348–S369.

Donnelly, R., & Patrinos, H. A. (2021). Learning loss during Covid-19: An early systematic review. *Prospects, 51*(4), 601–609.

Dorn, E., Hancock, B., Sarakatsannis, J., & Viruleg, E. (2020). *COVID-19 and learning loss—Disparities grow and students need help*. McKinsey and Company. https://www.mckinsey.com/industries/public-and-social-sector/our-insights/covid-19-and-learning-loss-disparities-grow-and-students-need-help

Endblad, M., Heller, O., Kradi. L. & Kasir. N. (2021). Standard of living, poverty and inequality in income 2018-2019 and an estimation of 2020. National Insurance. (Hebrew).

Engzell, P., Frey, A., & Verhagen, M. D. (2021). Learning loss due to school closures during the COVID-19 pandemic. *Proceedings of the National Academy of Sciences - PNAS, 118*(17), 1-7.

European Commission. (2020). *Educational inequalities in Europe and physical school closures during Covid-19*. Retrieved from: https://ec.europa.eu/jrc/sites/jrcsh/files/fairness_pb2020_wave04_covid_education_jc_i1_19jun2020.pdf

Feniger, Y. (2017). 'Aspirations, achievements and attitude towards school among minority students in Israel'. In: R. Arviv-Elyashiv, Y. Feniger, & Y. Shavit (Eds.), *A chance for a change? Theory and research on equality of educational opportunities* (pp. 297-320). Mof"t Institute. (Hebrew).

Field, A. P. (2018). *Discovering statistics using IBM SPSS statistics (5th edition.)*. SAGE Publications.

Finkelstain, A. (2012). *The Religious Public Education in Israel. Status Report, Tendencies and Achievements*. Ne'emanei Torah Veavoda (Hebrew).

Francis, D. V. & Weller, C. E. (2022). Economic Inequality, the Digital Divide, and Remote Learning During COVID-19. *The Review of Black Political Economy, 49*(1), 41–60.

Friedlander, D., Okun, B. S., & Goldscheider, C. (2016). Ethno-religious hierarchy in educational achievement and socioeconomic status in Israel: A historical perspective. In N. Khattab, S. Miaari, & H. Stier (Eds.), *Socioeconomic inequality in Israel* (pp. 97–121). Springer.

Gambi, L., & DeWitte, K. (2021). *The Resiliency of School Outcomes After the Covid-19 Pandemic: Standardised Test Scores and Inequality One Year After Long Term School Closures* (Discussion Paper Series Dps21.12). KU Leuven.

Gold, K. (2021). Institutionalization of the Matriculation diploma in Israel, 1935-1928. *Iyunim: A Multi-Disciplinary Journal for the Study of Israel.* (Hebrew).

Goudeau, S., Sanrey, C., Stanczak, A., Manstead, A., & Darnon, C. (2021). Why lockdown and distance learning during the COVID-19 pandemic are likely to increase the social class achievement gap. *Nature Human Behaviour, 5*(2021). 1-9.

Grewenig, E., Lergetporer, P., Werner, K., Woessmann, L., & Zierow, L. (2021). COVID-19 and educational inequality: How school closures affect low-and high-achieving students. *European economic review, 140*(103920). 1-21.

Haeck,C. & Lefebvre, P. (2020). Pandemic school closures may increase inequality in test scores. *Canadian Public Policy, 46*(S1), S82–S87.

Haelermans, C., Korthals, R., Jacobs, M., de Leeuw, S., Vermeulen, S., van Vugt, L., Aarts, B., Prokic-Breuer, T., van der Velden, R., van Wetten, S., & de Wolf, I. (2022). Sharp increase in inequality in education in times of the COVID-19-pandemic. *PLOS ONE, 17*(2). 1-37.

Hammerstein, S., König, C., Dreisörner, T., & Frey, A. (2021). Effects of COVID-19-related school closures on student achievement-a systematic review. *Frontiers in Psychology, 12*(June), 1-8.

Heck, R. H. & Reid, T. (2023). Multilevel modeling in neuropsychological research. In: *APA handbook of neuropsychology, Volume 2: Neuroscience and neuromethods* (pp. 699–719). American Psychological Association.

Hilaie, S. (2020, July 28). *A computer for every child? 140 thousand students do not have one*. Ynet. https://www.ynet.co.il/article/B1XHGFTgP (Hebrew).

Hoofman, J., & Secord, E. (2021). The Effect of COVID-19 on Education. *The Pediatric Clinics of North America, 68*(5), 1071–1079.

Hox, J., Moerbeek, M., & van de Schoot, R. (2017). *Multilevel Analysis Techniques and Applications*. Routledge.

Israel Central Bureau of Statistics. (2020a). Table 4.20: examinees in the matriculation exams, according to eligibility for a diploma and chosen traits. (Hebrew).

Israel Central Bureau of Statistics. (2020b). Table 4.21: examinees in the matriculation exams who were examined in five units in chosen subjects. (Hebrew).

Kimhi, A., & Horovitz, A. (2015). *Impact of the level of high school math on Israeli pupils' academic and career outcomes*. Taub Center.

Kogan, V., & Lavertu, S. (2021). How the covid-19 pandemic affected student learning Ohio: Analysis of spring 2021 ohio state tests. Ohio State University, *John Glenn College of Public Affairs, 2021*(10). 1-35.

König, C., & Frey, A. (2022). The impact of COVID-19-related school closures on student achievement: a meta-analysis. *Education Measurement: Issues and Practice, 41*(1). 16–22.

Kuhfeld, M., Soland, J., Tarasawa, B., Johnson, A., Ruzek, E., & Liu, J. (2020). Projecting the potential impact of COVID-19 school closures on academic achievement. *Educational Researcher, 49*(8), 549–565.

Kuhfeld, M., Soland, J. & Lewis, K. (2022). Test score patterns across three COVID-19-impacted school years. *Briefs, XX*(X), 1-7.

Kuhfeld, M., Lewis, K., & Peltier, T. (2023). Reading achievement declines during the COVID-19 pandemic: evidence from 5 million U.S. students in grades 3–8. *Reading & Writing, 36*(2), 245–261.

Kurlender, M. (2017). 'School integration: A review of theory and evidence'. Invited Seminar at Tel-Aviv University, October 2013. In: R. Arviv-Elyashiv, Y. Feniger, & Y. Shavit (Eds.), *A chance for a change? Theory and research on equality of educational opportunities* (pp. 283-296). Mof"t Institute. (Hebrew).

Lewin-Epstein, N. (2006). 'Mobility'. In: U. Ram & N. Berkovitch (Eds.), *In/equality* (pp. 291-299). Be'er Sheva: Ben Gurion University of the Negev. (Hebrew).

Lewis, K., Kuhfeld, M., Ruzek, E., & McEachin, A. (2021). *Learning during COVID-19: Reading and math achievement in the 2020-21 school year*. NWEA.

Liao, H., Ma, S., & Xue, H. (2022). Does school shutdown increase inequality in academic performance? Evidence from COVID-19 pandemic in China. *China Economic Review, 75*(101847). 1-19.

Livne, I. (2017). 'Tracking within a track: de facto paving in the theoretical track in secondary education in Israel'. In: R. Arviv-Elyashiv, Y. Feniger, & Y. Shavit (Eds.), *A chance for a change? Theory and research on equality of educational opportunities* (pp. 83-109). Mof"t Institute. (Hebrew).

Ludewig, U., Kleinkorres, R., Schaufelberger, R., Schlitter, T., Lorenz, R., König, C., Frey, A., & McElvany, N. (2022). COVID-19 pandemic and student reading achievement: Findings from a school panel study. *Frontiers in Psychology, 13*(876485). 1-15.

Mahon, D., & Mahon, A. (2021). Educational responses to the challenges of the COVID-19 global pandemic: online provision and its consequences for the social resilience of minority communities. *Globalisation, Societies and Education*, 1-12.

Maldonado, J. E. & De Witte, K. (2022). The effect of school closures on standardised student test outcomes. *British Educational Research Journal, 48*(1), 49–94.

Ministry of Education. (n. d.-a). *Education Rules*. https://edu.gov.il/heb/data/Information/Pages/edu-law.aspx#:~:text=%D7%97%D7%95%D7%A7%20%D7%9C%D7%99%D7%9E%D7%95%D7%93%20%D7%97%D7%95%D7%91%D7%94%2C%20%D7%94%D7%AA%D7%A9%22%D7%98,%D7%A9%D7%9C%20%D7%94%D7%99%D7%9C%D7%93%20%D7%9C%D7%9C%D7%99%D7%9E%D7%95%D7%93%D7%99%D7%9D%20%D7%A2%D7%93%20%D7%9C%D7%A1%D7%99%D7%95%D7%9E%D7%9D . (Hebrew).

Ministry of Education. (n. d.-b). *Conditions for Matriculation diploma eligibility*. https://edu.gov.il/minhalpedagogy/exams/matriculation-certificate/Pages/The-Reforma-constition.aspx (Hebrew).

Ministry of Education. (2015). Curriculums and the assessment structure of the Matriculation exams according to the new examination program. (Hebrew).

Ministry of Education (2019). *The national program for meaningful learning - the secondary schools: the organization of the studies and the graduation certificates - update* https://apps.education.gov.il/Mankal/horaa.aspx?siduri=285#_Toc256000029 (Hebrew).

Ministry of Education. (2020). *Preparation for the Matriculation exams in view of the coronavirus – a special term summer 2020*. (Hebrew).

Ministry of Education. (2023). *'Shkifut Bechinuch' system: years 2011, 2013-2022*. (Hebrew).

Nasser-Abu Alhija, F. & Israelashvili, M. (2021). *Education in Arab Society in Israel*. Mof"t Institute. (Hebrew).

Noy, M. (2022). *The Structure of the Education System, Central Legalization and General Data*. The Knesset Center of Research and Information. (Hebrew).

OECD. (2020). Learning remotely when schools close: How well are students and schools prepared? Insights from PISA. *OECD Policy Responses to Coronavirus (Covid-19)*.

Oren, C., Raf, Y., & Maagan, D. (2021). *Trends in Matriculation Grades between the years 1991-2017: A Research Report*. National Institute for Testing & Evaluation (NITE). (Heb).

Oster, E. Halloran, C., Jack, R., & Okun, J. C. (2021). *Pandemic schooling mode and student test scores: Evidence from US states*. NBER Working Paper Series.

Phelps, R. P. (2005). *Defending standardized testing*. L. Erlbaum Associates.

Pinson, H., Abu-Rabia, S., Ben-David Hadar, I., Dadon, Z., Kafri, Y., & Foris, M. (2020). *Thinking group: gaps and inequality in distance learning. The* Main Scientist Chamber in the Ministry of Education. (Hebrew).

Reimers, F. M. (2021). *Primary and Secondary Education During Covid-19 Disruptions to Educational Opportunity During a Pandemic*. Springer International Publishing AG.

Reimers, F., & Schleicher, A. (2020). Schooling disrupted, schooling rethought: How the Covid-19 pandemic is changing education. *OECD*.

Robinson, S. K. (2020). A global reset of education. *Prospects, 49*(1), 7-9.

Rothstein, R. (2020, April 14). *The coronavirus will explode achievement gaps in education*. Economic Policy Institute. https://www.epi.org/blog/the-coronavirus-will-explode-achievement-gaps-in-education/

Sabag, C. & Biberman-Shalev, L. (2014). *Education, Society and Justice*. Pardes. (Hebrew).

Sass R. T., & Mohammad Ali, S. (2022). *Student achievement growth during the COVID-19 pandemic*. Metro Atlanta Policy Lab for Education. Georgia State University.

Schejter, A. & Tirosh, N. (2016). The digital divide in Israel. In A. Schejter & N. Tirosh (Eds.), *A justice-based approach for new media policy* (pp. 63–69). Springer International Publishing.

Schleicher, A. (2020). *The impact of COVID-19 on education: Insights from education at a glance 2020*. OECD Journal: Economic Studies.

Schult, J., Mahler, N., Fauth, B. & Lindner, M. A. (2021). Did students learn less during the COVID-19 pandemic? Reading and mathematics competencies before and after the first pandemic wave. *School Effectiveness and School Improvement, 33*(4). 544-563.

Schult, J., Mahler, N., Fauth, B., & Lindner, M. A. (2022). Long-term consequences of repeated school closures during the COVID-19 pandemic for reading and mathematics competencies. *Frontiers in Education, 13*(Lausanne), 1-13.

Schuurman, T. M., Henrichs, L. F., Schuurman, N. K., Polderdijk, S., & Hornstra, L. (2023). Learning loss in vulnerable student populations after the first Covid-19 school closure in the Netherlands. *Scandinavian Journal of Educational Research, 67*(2), 309–326.

Sehayek, D. (2003). Matriculation exams a review of the changes that have been applied in the Matriculation exams over the years and a discussion of their purposes. The Knesset Center of Research and Information. (Hebrew).

Shabbat, R. (2021). The teachers arrived at the students' houses to prepare them for the Matriculation. *Citron: A Journal of education, Jewry and Society Issues, 88*. 6-9. (Hebrew).

Shye, S., Olizky, T., Ben Shitrit, M. & Mironichev, N. (2005). *Eligibility and Ineligibility for the Israel Matriculation Certificate: An Analysis of Student's achievements and Failures according to Demographic and School Environmental Factors*. The Center for Social Justice and Democracy in memory of Y. Chazan at the Van Leer Jerusalem Institute.

Sommerlad, E., & David, Y. (2021). *Digital inequalities in times of the COVID-19 pandemic in Israel and Germany*. COVID-19 and an Emerging World of Ad Hoc Geographies.

State Comptroller of Israel. (2021). Computerization infrastructures for distance learning and alternative learning spaces during Covid-19. State Comptroller of Israel. (Hebrew).

State Education Law, 1953. Ministry of Education. Retrieved December 6th, 2020, from https://cms.education.gov.il/educationcms/units/zchuyot/chukimveamanot/chukim/chokchinuchmamlachti1953.htm

The Crisis Experts' Teams: Education Team. (2020). *Position paper: Covid-19 crisis and its influence on the Israeli education system.* The crisis experts' teams: education team. (Hebrew).

Thorn, W., & Vincent-Lancrin, S. (2021). *Schooling during a pandemic: The experience and outcomes of schoolchildren during the first round of COVID-19 lockdowns*. OECD publishing.

Tirosh, R. (2022). *The average grade of the Matriculation exam increased, the gap between the students remained / interpretation.* Ynet. https://www.ynet.co.il/news/article/bjdtocqfq?utm_source=ynet.app.android&utm_medium=social&utm_campaign=general_share&utm_term=bjdtocqfq&utm_content=Header (Hebrew).

Tomasik, J. M., Helbling, L. A., & Moser, U. (2020). Educational gains of in-person vs. distance learning in primary and secondary schools. *International Journal of Psychology, 56*(4), 566-576.

Transparency in Education. State of Israel, Ministry of Education. https://shkifut.education.gov.il/national (Hebrew).

UNESCO (n.d.). *COVID-19 Impact on Education.* Available online: https://en.unesco.org/covid19/educationresponse (accessed on May 7th, 2022).

Vaisbaum- Gani, Y. (2022). Sociological implications of the "High Five" national plan, to promote mathematics, on equal opportunities in Education. [Thesis Submitted for the MA Degree of Humanities]. Tel-Aviv University. (Hebrew).

Vininger, A. (2020). *Data on the Jewish Religious State Education*. The Knesset Center of Research and Information. A presentation. (Hebrew).

Vininger, A. (2021). *Chosen Data on the Jewish Religious State Education*. The Knesset Center of Research and Information. (Hebrew).

Vurgan, Y. (2020). *Arranging matriculation exams in view of the Covid-19 virus crisis*. The Knesset Center of Research and Information. (Hebrew).

Weber, C., Helm, C., & Kemethofer, D. (2021). Are social and ethnic reading inequalities increasing during school closures?—the mediating role of parental involvement in distance learning. *Frontiers in Education, 6*. 1-18.

Weissblay, E. (2012). *Data on the Jewish Religious State Education*. The Knesset Center of Research and Information. (Hebrew).

Weissblay, E. (2020a). *Distance learning in emergency during the closing of educational institutions due to the burst of COVID-19 virus*. The Knesset Center of Research and Information. (Hebrew).

Weissblay, E. (2020b). *Matriculation exams during COVID-19 period – present situation*. The Knesset Center of Research and Information. (Hebrew).

Weissblay, E. (2021). *The Education System During COVID-19 Crisis*. The Knesset Center of Research and Information. (Hebrew).

World Health Organization. *Coronavirus Disease (COVID-19)*. Available online: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/question-and-answers-hub/q-a-detail/coronavirus-disease-covid-19 (accessed on May 7th, 2022)

Yaish, M., Blank, C. & Shavit, Y. (2015). Tracking in High School Education in Israel. In: A. Weiss & Chernichovsky, D. (Eds.), *State of the Nation Report* (pp. 413-435). Taub Center.

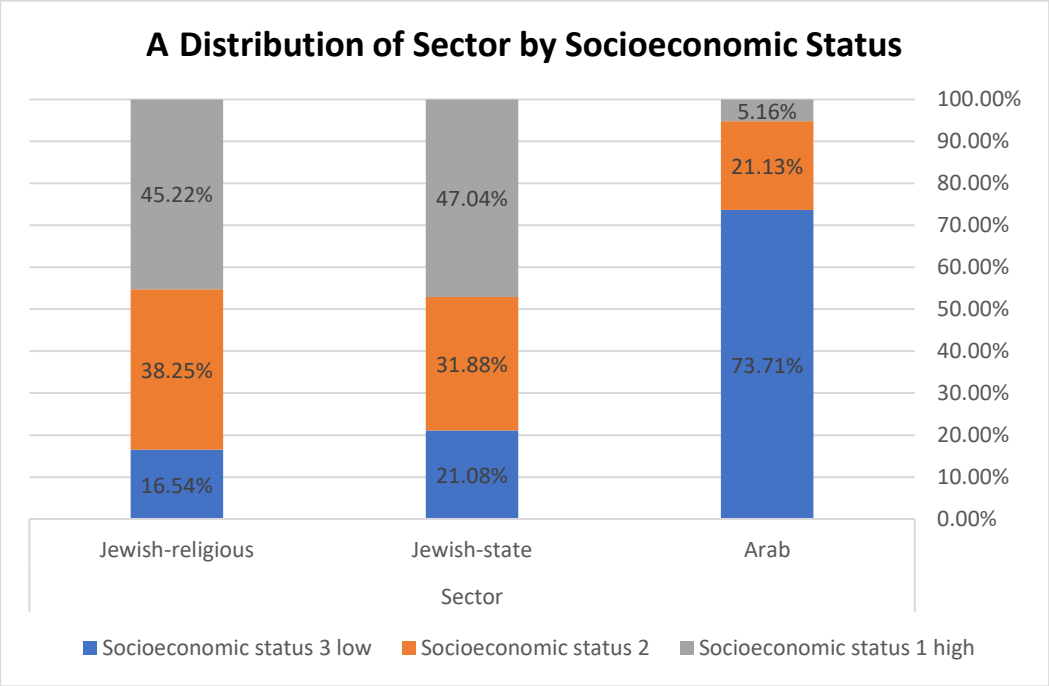
Zeedan, R. & Hogan, R. E. (2022). The correlation between budgets and matriculation exams: The case of Jewish and Arab schools in Israel. *Education Sciences, 12*(8), 1-24.

Zierer, K. (2021). Effects of pandemic-related school closures on pupils' performance and learning in selected countries. *Education Sciences, 11*(6), 1-12.

Zussman, N. & Tsur, S. (2008). The effect of Israeli students' socioeconomic background on their achievements in the matriculation examinations. Research Department, Bank of Israel. (Hebrew).

15. Appendixes

Apendix A： A Distribution of Sector By Socioeconomic Status



Appendix B：Multivariate test：Inequality in Matriculation Eligibility Rates by Sector

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
factor1	Pillai's Trace	.168	41.341[b]	4.000	821.000	< .001	.168
	Wilks' Lambda	.832	41.341[b]	4.000	821.000	< .001	.168
	Hotelling's Trace	.201	41.341[b]	4.000	821.000	< .001	.168
	Roy's Largest Root	.201	41.341[b]	4.000	821.000	< .001	.168
factor1 * six	Pillai's Trace	.009	1.861[b]	4.000	821.000	.115	.009
	Wilks' Lambda	.991	1.861[b]	4.000	821.000	.115	.009
	Hotelling's Trace	.009	1.861[b]	4.000	821.000	.115	.009
	Roy's Largest Root	.009	1.861[b]	4.000	821.000	.115	.009
factor1 * Zvetek_median.2018	Pillai's Trace	.009	1.940[b]	4.000	821.000	.102	.009
	Wilks' Lambda	.991	1.940[b]	4.000	821.000	.102	.009
	Hotelling's Trace	.009	1.940[b]	4.000	821.000	.102	.009
	Roy's Largest Root	.009	1.940[b]	4.000	821.000	.102	.009
factor1 * Zteach_ma_p.2018	Pillai's Trace	.005	1.026[b]	4.000	821.000	.393	.005
	Wilks' Lambda	.995	1.026[b]	4.000	821.000	.393	.005
	Hotelling's Trace	.005	1.026[b]	4.000	821.000	.393	.005
	Roy's Largest Root	.005	1.026[b]	4.000	821.000	.393	.005
factor1 * Zspecial_ed_p.2018	Pillai's Trace	.007	1.428[b]	4.000	821.000	.223	.007
	Wilks' Lambda	.993	1.428[b]	4.000	821.000	.223	.007
	Hotelling's Trace	.007	1.428[b]	4.000	821.000	.223	.007
	Roy's Largest Root	.007	1.428[b]	4.000	821.000	.223	.007
factor1 * Zses_10_tichon	Pillai's Trace	.090	20.249[b]	4.000	821.000	< .001	.090
	Wilks' Lambda	.910	20.249[b]	4.000	821.000	< .001	.090
	Hotelling's Trace	.099	20.249[b]	4.000	821.000	< .001	.090
	Roy's Largest Root	.099	20.249[b]	4.000	821.000	< .001	.090
factor1 * StdZ01	Pillai's Trace	.008	1.667[b]	4.000	821.000	.156	.008
	Wilks' Lambda	.992	1.667[b]	4.000	821.000	.156	.008
	Hotelling's Trace	.008	1.667[b]	4.000	821.000	.156	.008
	Roy's Largest Root	.008	1.667[b]	4.000	821.000	.156	.008
factor1 * sector	Pillai's Trace	.029	3.044	8.000	1644.000	.002	.015
	Wilks' Lambda	.971	3.054[b]	8.000	1642.000	.002	.015
	Hotelling's Trace	.030	3.064	8.000	1640.000	.002	.015
	Roy's Largest Root	.027	5.471[c]	4.000	822.000	< .001	.026

a. Design: Intercept + six + Zvetek_median.2018 + Zteach_ma_p.2018 + Zspecial_ed_p.2018 + Zses_10_tichon + StdZ01 + sector
Within Subjects Design: factor1

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

[5]

Appendix C：Multivariate test：Inequality Eligibility Rates for an Outstanding Matriculation by Sector

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
factor1	Pillai's Trace	.193	49.188[b]	4.000	821.000	< .001	.193
	Wilks' Lambda	.807	49.188[b]	4.000	821.000	< .001	.193
	Hotelling's Trace	.240	49.188[b]	4.000	821.000	< .001	.193
	Roy's Largest Root	.240	49.188[b]	4.000	821.000	< .001	.193
factor1 * six	Pillai's Trace	.013	2.633[b]	4.000	821.000	.033	.013
	Wilks' Lambda	.987	2.633[b]	4.000	821.000	.033	.013
	Hotelling's Trace	.013	2.633[b]	4.000	821.000	.033	.013
	Roy's Largest Root	.013	2.633[b]	4.000	821.000	.033	.013
factor1 * Zvetek_median.2018	Pillai's Trace	.007	1.540[b]	4.000	821.000	.189	.007
	Wilks' Lambda	.993	1.540[b]	4.000	821.000	.189	.007
	Hotelling's Trace	.008	1.540[b]	4.000	821.000	.189	.007
	Roy's Largest Root	.008	1.540[b]	4.000	821.000	.189	.007
factor1 * Zteach_ma_p.2018	Pillai's Trace	.016	3.320[b]	4.000	821.000	.010	.016
	Wilks' Lambda	.984	3.320[b]	4.000	821.000	.010	.016
	Hotelling's Trace	.016	3.320[b]	4.000	821.000	.010	.016
	Roy's Largest Root	.016	3.320[b]	4.000	821.000	.010	.016
factor1 * Zspecial_ed_p.2018	Pillai's Trace	.007	1.393[b]	4.000	821.000	.235	.007
	Wilks' Lambda	.993	1.393[b]	4.000	821.000	.235	.007
	Hotelling's Trace	.007	1.393[b]	4.000	821.000	.235	.007
	Roy's Largest Root	.007	1.393[b]	4.000	821.000	.235	.007
factor1 * Zses_10_tichon	Pillai's Trace	.085	19.041[b]	4.000	821.000	< .001	.085
	Wilks' Lambda	.915	19.041[b]	4.000	821.000	< .001	.085
	Hotelling's Trace	.093	19.041[b]	4.000	821.000	< .001	.085
	Roy's Largest Root	.093	19.041[b]	4.000	821.000	< .001	.085
factor1 * StdZ01	Pillai's Trace	.033	7.107[b]	4.000	821.000	< .001	.033
	Wilks' Lambda	.967	7.107[b]	4.000	821.000	< .001	.033
	Hotelling's Trace	.035	7.107[b]	4.000	821.000	< .001	.033
	Roy's Largest Root	.035	7.107[b]	4.000	821.000	< .001	.033
factor1 * sector	Pillai's Trace	.032	3.290	8.000	1644.000	< .001	.016
	Wilks' Lambda	.969	3.294[b]	8.000	1642.000	< .001	.016
	Hotelling's Trace	.032	3.298	8.000	1640.000	< .001	.016
	Roy's Largest Root	.025	5.123[c]	4.000	822.000	< .001	.024

a. Design: Intercept + six + Zvetek_median.2018 + Zteach_ma_p.2018 + Zspecial_ed_p.2018 + Zses_10_tichon + StdZ01 + sector
Within Subjects Design: factor1

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

[5] Variables definitions：factor1=year of examination; six=schools of six years from grade seventh to twelve; Zvetek_median= school median of teaching seniority in Z scores; Zteach_ma_p.2018= percentages of teachers with MA or PhD in the school in Z scores based on 2018 measurement; Zspecial_ed_p.2018= percentages of students with special needs in the school based on 2018 measurement; Zses_10_tichon= socioeconomic status of the school in Z score; STDZ01= school size in Z score.

Appendix D: Multivariate test: Inequality Eligibility Rates for a Matriculation with Five Study Units of Math by Sector

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
factor1	Pillai's Trace	.024	5.073[b]	4.000	821.000	<.001	.024
	Wilks' Lambda	.976	5.073[b]	4.000	821.000	<.001	.024
	Hotelling's Trace	.025	5.073[b]	4.000	821.000	<.001	.024
	Roy's Largest Root	.025	5.073[b]	4.000	821.000	<.001	.024
factor1 * six	Pillai's Trace	.006	1.238[b]	4.000	821.000	.293	.006
	Wilks' Lambda	.994	1.238[b]	4.000	821.000	.293	.006
	Hotelling's Trace	.006	1.238[b]	4.000	821.000	.293	.006
	Roy's Largest Root	.006	1.238[b]	4.000	821.000	.293	.006
factor1 * Zvetek_median.2018	Pillai's Trace	.012	2.546[b]	4.000	821.000	.038	.012
	Wilks' Lambda	.988	2.546[b]	4.000	821.000	.038	.012
	Hotelling's Trace	.012	2.546[b]	4.000	821.000	.038	.012
	Roy's Largest Root	.012	2.546[b]	4.000	821.000	.038	.012
factor1 * Zteach_ma_p.2018	Pillai's Trace	.003	.666[b]	4.000	821.000	.616	.003
	Wilks' Lambda	.997	.666[b]	4.000	821.000	.616	.003
	Hotelling's Trace	.003	.666[b]	4.000	821.000	.616	.003
	Roy's Largest Root	.003	.666[b]	4.000	821.000	.616	.003
factor1 * Zspecial_ed_p.2018	Pillai's Trace	.004	.740[b]	4.000	821.000	.565	.004
	Wilks' Lambda	.996	.740[b]	4.000	821.000	.565	.004
	Hotelling's Trace	.004	.740[b]	4.000	821.000	.565	.004
	Roy's Largest Root	.004	.740[b]	4.000	821.000	.565	.004
factor1 * Zses_10_tichon	Pillai's Trace	.019	4.032[b]	4.000	821.000	.003	.019
	Wilks' Lambda	.981	4.032[b]	4.000	821.000	.003	.019
	Hotelling's Trace	.020	4.032[b]	4.000	821.000	.003	.019
	Roy's Largest Root	.020	4.032[b]	4.000	821.000	.003	.019
factor1 * StdZ01	Pillai's Trace	.006	1.291[b]	4.000	821.000	.272	.006
	Wilks' Lambda	.994	1.291[b]	4.000	821.000	.272	.006
	Hotelling's Trace	.006	1.291[b]	4.000	821.000	.272	.006
	Roy's Largest Root	.006	1.291[b]	4.000	821.000	.272	.006
factor1 * sector	Pillai's Trace	.019	2.012	8.000	1644.000	.042	.010
	Wilks' Lambda	.981	2.011[b]	8.000	1642.000	.042	.010
	Hotelling's Trace	.020	2.010	8.000	1640.000	.042	.010
	Roy's Largest Root	.013	2.702[c]	4.000	822.000	.030	.013

a. Design: Intercept + six + Zvetek_median.2018 + Zteach_ma_p.2018 + Zspecial_ed_p.2018 + Zses_10_tichon + StdZ01 + sector
Within Subjects Design: factor1

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

Appendix E: Multivariate test: Inequality Eligibility Rates for a Matriculation with Five Study Units of English by Sector

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
factor1	Pillai's Trace	.113	26.029[b]	4.000	821.000	<.001	.113
	Wilks' Lambda	.887	26.029[b]	4.000	821.000	<.001	.113
	Hotelling's Trace	.127	26.029[b]	4.000	821.000	<.001	.113
	Roy's Largest Root	.127	26.029[b]	4.000	821.000	<.001	.113
factor1 * six	Pillai's Trace	.005	1.099[b]	4.000	821.000	.356	.005
	Wilks' Lambda	.995	1.099[b]	4.000	821.000	.356	.005
	Hotelling's Trace	.005	1.099[b]	4.000	821.000	.356	.005
	Roy's Largest Root	.005	1.099[b]	4.000	821.000	.356	.005
factor1 * Zvetek_median.2018	Pillai's Trace	.005	1.074[b]	4.000	821.000	.368	.005
	Wilks' Lambda	.995	1.074[b]	4.000	821.000	.368	.005
	Hotelling's Trace	.005	1.074[b]	4.000	821.000	.368	.005
	Roy's Largest Root	.005	1.074[b]	4.000	821.000	.368	.005
factor1 * Zteach_ma_p.2018	Pillai's Trace	.002	.378[b]	4.000	821.000	.824	.002
	Wilks' Lambda	.998	.378[b]	4.000	821.000	.824	.002
	Hotelling's Trace	.002	.378[b]	4.000	821.000	.824	.002
	Roy's Largest Root	.002	.378[b]	4.000	821.000	.824	.002
factor1 * Zspecial_ed_p.2018	Pillai's Trace	.009	1.888[b]	4.000	821.000	.111	.009
	Wilks' Lambda	.991	1.888[b]	4.000	821.000	.111	.009
	Hotelling's Trace	.009	1.888[b]	4.000	821.000	.111	.009
	Roy's Largest Root	.009	1.888[b]	4.000	821.000	.111	.009
factor1 * Zses_10_tichon	Pillai's Trace	.034	7.201[b]	4.000	821.000	<.001	.034
	Wilks' Lambda	.966	7.201[b]	4.000	821.000	<.001	.034
	Hotelling's Trace	.035	7.201[b]	4.000	821.000	<.001	.034
	Roy's Largest Root	.035	7.201[b]	4.000	821.000	<.001	.034
factor1 * StdZ01	Pillai's Trace	.002	.468[b]	4.000	821.000	.759	.002
	Wilks' Lambda	.998	.468[b]	4.000	821.000	.759	.002
	Hotelling's Trace	.002	.468[b]	4.000	821.000	.759	.002
	Roy's Largest Root	.002	.468[b]	4.000	821.000	.759	.002
factor1 * sector	Pillai's Trace	.014	1.461	8.000	1644.000	.167	.007
	Wilks' Lambda	.986	1.460[b]	8.000	1642.000	.167	.007
	Hotelling's Trace	.014	1.459	8.000	1640.000	.167	.007
	Roy's Largest Root	.010	2.028[c]	4.000	822.000	.089	.010

a. Design: Intercept + six + Zvetek_median.2018 + Zteach_ma_p.2018 + Zspecial_ed_p.2018 + Zses_10_tichon + StdZ01 + sector
Within Subjects Design: factor1

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

Appendix F: Multivariate test: Inequality in Matriculation Eligibility Rates by Socioeconomic Status

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
withinsubject	Pillai's Trace	.075	16.548[b]	4.000	821.000	<.001	.075
	Wilks' Lambda	.925	16.548[b]	4.000	821.000	<.001	.075
	Hotelling's Trace	.081	16.548[b]	4.000	821.000	<.001	.075
	Roy's Largest Root	.081	16.548[b]	4.000	821.000	<.001	.075
withinsubject * six	Pillai's Trace	.010	1.992[b]	4.000	821.000	.094	.010
	Wilks' Lambda	.990	1.992[b]	4.000	821.000	.094	.010
	Hotelling's Trace	.010	1.992[b]	4.000	821.000	.094	.010
	Roy's Largest Root	.010	1.992[b]	4.000	821.000	.094	.010
withinsubject * Zsize	Pillai's Trace	.009	1.887[b]	4.000	821.000	.111	.009
	Wilks' Lambda	.991	1.887[b]	4.000	821.000	.111	.009
	Hotelling's Trace	.009	1.887[b]	4.000	821.000	.111	.009
	Roy's Largest Root	.009	1.887[b]	4.000	821.000	.111	.009
withinsubject * Zvetek_median.2018	Pillai's Trace	.009	1.916[b]	4.000	821.000	.106	.009
	Wilks' Lambda	.991	1.916[b]	4.000	821.000	.106	.009
	Hotelling's Trace	.009	1.916[b]	4.000	821.000	.106	.009
	Roy's Largest Root	.009	1.916[b]	4.000	821.000	.106	.009
withinsubject * Zteach_ma_p.2018	Pillai's Trace	.007	1.460[b]	4.000	821.000	.212	.007
	Wilks' Lambda	.993	1.460[b]	4.000	821.000	.212	.007
	Hotelling's Trace	.007	1.460[b]	4.000	821.000	.212	.007
	Roy's Largest Root	.007	1.460[b]	4.000	821.000	.212	.007
withinsubject * Zspecial_ed_p.2018	Pillai's Trace	.006	1.206[b]	4.000	821.000	.307	.006
	Wilks' Lambda	.994	1.206[b]	4.000	821.000	.307	.006
	Hotelling's Trace	.006	1.206[b]	4.000	821.000	.307	.006
	Roy's Largest Root	.006	1.206[b]	4.000	821.000	.307	.006
withinsubject * sector01	Pillai's Trace	.003	.622[b]	4.000	821.000	.647	.003
	Wilks' Lambda	.997	.622[b]	4.000	821.000	.647	.003
	Hotelling's Trace	.003	.622[b]	4.000	821.000	.647	.003
	Roy's Largest Root	.003	.622[b]	4.000	821.000	.647	.003
withinsubject * SES_10_3	Pillai's Trace	.065	6.879	8.000	1644.000	<.001	.032
	Wilks' Lambda	.935	6.987[b]	8.000	1642.000	<.001	.033
	Hotelling's Trace	.069	7.095	8.000	1640.000	<.001	.033
	Roy's Largest Root	.069	14.169[c]	4.000	822.000	<.001	.065

a. Design: Intercept + six + Zsize + Zvetek_median.2018 + Zteach_ma_p.2018 + Zspecial_ed_p.2018 + sector01 + SES_10_3
Within Subjects Design: withinsubject

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

Appendix G: Multivariate test: Inequality in Eligibility Rates for an Outstanding Matriculation by Socioeconomic Status

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
withinsubject	Pillai's Trace	.120	27.925[b]	4.000	821.000	<.001	.120
	Wilks' Lambda	.880	27.925[b]	4.000	821.000	<.001	.120
	Hotelling's Trace	.136	27.925[b]	4.000	821.000	<.001	.120
	Roy's Largest Root	.136	27.925[b]	4.000	821.000	<.001	.120
withinsubject * six	Pillai's Trace	.013	2.603[b]	4.000	821.000	.035	.013
	Wilks' Lambda	.987	2.603[b]	4.000	821.000	.035	.013
	Hotelling's Trace	.013	2.603[b]	4.000	821.000	.035	.013
	Roy's Largest Root	.013	2.603[b]	4.000	821.000	.035	.013
withinsubject * Zsize	Pillai's Trace	.034	7.144[b]	4.000	821.000	<.001	.034
	Wilks' Lambda	.966	7.144[b]	4.000	821.000	<.001	.034
	Hotelling's Trace	.035	7.144[b]	4.000	821.000	<.001	.034
	Roy's Largest Root	.035	7.144[b]	4.000	821.000	<.001	.034
withinsubject * Zvetek_median.2018	Pillai's Trace	.008	1.554[b]	4.000	821.000	.185	.008
	Wilks' Lambda	.992	1.554[b]	4.000	821.000	.185	.008
	Hotelling's Trace	.008	1.554[b]	4.000	821.000	.185	.008
	Roy's Largest Root	.008	1.554[b]	4.000	821.000	.185	.008
withinsubject * Zteach_ma_p.2018	Pillai's Trace	.019	3.895[b]	4.000	821.000	.004	.019
	Wilks' Lambda	.981	3.895[b]	4.000	821.000	.004	.019
	Hotelling's Trace	.019	3.895[b]	4.000	821.000	.004	.019
	Roy's Largest Root	.019	3.895[b]	4.000	821.000	.004	.019
withinsubject * Zspecial_ed_p.2018	Pillai's Trace	.005	1.084[b]	4.000	821.000	.363	.005
	Wilks' Lambda	.995	1.084[b]	4.000	821.000	.363	.005
	Hotelling's Trace	.005	1.084[b]	4.000	821.000	.363	.005
	Roy's Largest Root	.005	1.084[b]	4.000	821.000	.363	.005
withinsubject * sector01	Pillai's Trace	.017	3.552[b]	4.000	821.000	.007	.017
	Wilks' Lambda	.983	3.552[b]	4.000	821.000	.007	.017
	Hotelling's Trace	.017	3.552[b]	4.000	821.000	.007	.017
	Roy's Largest Root	.017	3.552[b]	4.000	821.000	.007	.017
withinsubject * SES_10_3	Pillai's Trace	.089	9.588	8.000	1644.000	<.001	.045
	Wilks' Lambda	.911	9.771[b]	8.000	1642.000	<.001	.045
	Hotelling's Trace	.097	9.954	8.000	1640.000	<.001	.046
	Roy's Largest Root	.093	19.149[c]	4.000	822.000	<.001	.085

a. Design: Intercept + six + Zsize + Zvetek_median.2018 + Zteach_ma_p.2018 + Zspecial_ed_p.2018 + sector01 + SES_10_3
Within Subjects Design: withinsubject

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

Appendix H: Multivariate test: Inequality Eligibility Rates for a Matriculation with Five Study Units of Math by Socioeconomic Status

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
withinsubject	Pillai's Trace	.005	1.121[b]	4.000	821.000	.345	.005
	Wilks' Lambda	.995	1.121[b]	4.000	821.000	.345	.005
	Hotelling's Trace	.005	1.121[b]	4.000	821.000	.345	.005
	Roy's Largest Root	.005	1.121[b]	4.000	821.000	.345	.005
withinsubject * six	Pillai's Trace	.006	1.199[b]	4.000	821.000	.310	.006
	Wilks' Lambda	.994	1.199[b]	4.000	821.000	.310	.006
	Hotelling's Trace	.006	1.199[b]	4.000	821.000	.310	.006
	Roy's Largest Root	.006	1.199[b]	4.000	821.000	.310	.006
withinsubject * Zsize	Pillai's Trace	.007	1.367[b]	4.000	821.000	.244	.007
	Wilks' Lambda	.993	1.367[b]	4.000	821.000	.244	.007
	Hotelling's Trace	.007	1.367[b]	4.000	821.000	.244	.007
	Roy's Largest Root	.007	1.367[b]	4.000	821.000	.244	.007
withinsubject * Zvetek_median.2018	Pillai's Trace	.013	2.803[b]	4.000	821.000	.025	.013
	Wilks' Lambda	.987	2.803[b]	4.000	821.000	.025	.013
	Hotelling's Trace	.014	2.803[b]	4.000	821.000	.025	.013
	Roy's Largest Root	.014	2.803[b]	4.000	821.000	.025	.013
withinsubject * Zteach_ma_p.2018	Pillai's Trace	.003	.661[b]	4.000	821.000	.619	.003
	Wilks' Lambda	.997	.661[b]	4.000	821.000	.619	.003
	Hotelling's Trace	.003	.661[b]	4.000	821.000	.619	.003
	Roy's Largest Root	.003	.661[b]	4.000	821.000	.619	.003
withinsubject * Zspecial_ed_p.2018	Pillai's Trace	.004	.904[b]	4.000	821.000	.461	.004
	Wilks' Lambda	.996	.904[b]	4.000	821.000	.461	.004
	Hotelling's Trace	.004	.904[b]	4.000	821.000	.461	.004
	Roy's Largest Root	.004	.904[b]	4.000	821.000	.461	.004
withinsubject * sector01	Pillai's Trace	.010	2.142[b]	4.000	821.000	.074	.010
	Wilks' Lambda	.990	2.142[b]	4.000	821.000	.074	.010
	Hotelling's Trace	.010	2.142[b]	4.000	821.000	.074	.010
	Roy's Largest Root	.010	2.142[b]	4.000	821.000	.074	.010
withinsubject * SES_10_3	Pillai's Trace	.025	2.550	8.000	1644.000	.009	.012
	Wilks' Lambda	.976	2.561[b]	8.000	1642.000	.009	.012
	Hotelling's Trace	.025	2.571	8.000	1640.000	.009	.012
	Roy's Largest Root	.024	4.993[c]	4.000	822.000	<.001	.024

a. Design: Intercept + six + Zsize + Zvetek_median.2018 + Zteach_ma_p.2018 + Zspecial_ed_p.2018 + sector01 + SES_10_3
Within Subjects Design: withinsubject

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

Appendix I: Multivariate test: Inequality Eligibility Rates for a Matriculation with Five Study Units of English by Socioeconomic Status

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
withinsubject	Pillai's Trace	.033	7.007[b]	4.000	821.000	<.001	.033
	Wilks' Lambda	.967	7.007[b]	4.000	821.000	<.001	.033
	Hotelling's Trace	.034	7.007[b]	4.000	821.000	<.001	.033
	Roy's Largest Root	.034	7.007[b]	4.000	821.000	<.001	.033
withinsubject * six	Pillai's Trace	.005	1.007[b]	4.000	821.000	.403	.005
	Wilks' Lambda	.995	1.007[b]	4.000	821.000	.403	.005
	Hotelling's Trace	.005	1.007[b]	4.000	821.000	.403	.005
	Roy's Largest Root	.005	1.007[b]	4.000	821.000	.403	.005
withinsubject * Zsize	Pillai's Trace	.002	.405[b]	4.000	821.000	.805	.002
	Wilks' Lambda	.998	.405[b]	4.000	821.000	.805	.002
	Hotelling's Trace	.002	.405[b]	4.000	821.000	.805	.002
	Roy's Largest Root	.002	.405[b]	4.000	821.000	.805	.002
withinsubject * Zvetek_median.2018	Pillai's Trace	.005	1.068[b]	4.000	821.000	.371	.005
	Wilks' Lambda	.995	1.068[b]	4.000	821.000	.371	.005
	Hotelling's Trace	.005	1.068[b]	4.000	821.000	.371	.005
	Roy's Largest Root	.005	1.068[b]	4.000	821.000	.371	.005
withinsubject * Zteach_ma_p.2018	Pillai's Trace	.003	.531[b]	4.000	821.000	.713	.003
	Wilks' Lambda	.997	.531[b]	4.000	821.000	.713	.003
	Hotelling's Trace	.003	.531[b]	4.000	821.000	.713	.003
	Roy's Largest Root	.003	.531[b]	4.000	821.000	.713	.003
withinsubject * Zspecial_ed_p.2018	Pillai's Trace	.009	1.856[b]	4.000	821.000	.116	.009
	Wilks' Lambda	.991	1.856[b]	4.000	821.000	.116	.009
	Hotelling's Trace	.009	1.856[b]	4.000	821.000	.116	.009
	Roy's Largest Root	.009	1.856[b]	4.000	821.000	.116	.009
withinsubject * sector01	Pillai's Trace	.010	2.177[b]	4.000	821.000	.070	.010
	Wilks' Lambda	.990	2.177[b]	4.000	821.000	.070	.010
	Hotelling's Trace	.011	2.177[b]	4.000	821.000	.070	.010
	Roy's Largest Root	.011	2.177[b]	4.000	821.000	.070	.010
withinsubject * SES_10_3	Pillai's Trace	.034	3.560	8.000	1644.000	<.001	.017
	Wilks' Lambda	.966	3.582[b]	8.000	1642.000	<.001	.017
	Hotelling's Trace	.035	3.604	8.000	1640.000	<.001	.017
	Roy's Largest Root	.034	6.923[c]	4.000	822.000	<.001	.033

a. Design: Intercept + six + Zsize + Zvetek_median.2018 + Zteach_ma_p.2018 + Zspecial_ed_p.2018 + sector01 + SES_10_3
Within Subjects Design: withinsubject

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

תוכן עניינים

תקציר

מגפת הקורונה (COVID-19) גרמה לשיבושים משמעותיים בכל תחומי החיים והובילה לסגירת בתי-הספר. מדיניות סגרים הובילה למעבר מהיר ופתאומי ללמידה מרחוק. השינוי היה מאתגר במיוחד עבור תלמידי התיכונים בישראל שנדרשו להיבחן בבחינות הבגרות, שמספקות הזדמנויות לעתידם כבוגרים. בכדי להפחית את הנזק הלימודי הפוטנציאלי, משרד החינוך ביצע שינויים בדרישות לזכאות לתעודת בגרות. השינויים תקפים לרוב מקצועות הלימוד, מלבד מתמטיקה ואנגלית, הנחשבים יוקרתיים וחשובים בקבלה להשכלה גבוהה. נוסף על החשש של אנשי חינוך וחוקרים מהשפעת המגפה על הישגים לימודיים, היה חשש מעלייה באי השוויון בהישגים. אכן, מחקרים ממדינות שונות מראים שבתקופת משבר הקורונה קבוצות מוחלשות חוו יותר הפסד לימודי מאשר קבוצות חזקות.

שאלות המחקר: מחקר זה בוחן שתי שאלות: (1) האם התרחשו שינויים במהלך משבר הקורונה באחוזי התלמידים הזכאים לבגרות בבית הספר, וכן באחוז התלמידים בבית הספר הזכאים לבגרות ברמת חמש יחידות מתמטיקה, חמש יחידות אנגלית ובגרות מצטיינת? (2) האם התרחשו שינויים בפערים בין בתי הספר ביחס למעמד חברתי-כלכלי ומגזר (ממלכתי, ממלכתי-דתי וערבי)?

מדגם: נאספו נתונים לגבי 874 בתי ספר עבור השנים 2018-2022, שנתיים לפני משבר הקורונה, שנתיים במהלך הקורונה ושנה אחריה. המשתנים הבאים נמדדו: אחוזי זכאות לתעודת בגרות, אחוזי זכאות לתעודת בגרות מצטיינת, אחוזי זכאות לתעודת בגרות עם חמש יחידות לימוד מתמטיקה, אחוזי זכאות לתעודת בגרות עם חמש יחידות לימוד אנגלית. אי שוויון חברתי נמדד לפי מגזר חינוכי ומעמד חברתי-כלכלי של בית הספר (לפי מדד טיפוח). נערך פיקוח על משתנים הקשורים לגודל בית הספר, ארגון ואיכות ההוראה.

שיטת המחקר: כדי לבחון את השערות המחקר לפיהן (1) אחוזי זכאות לבגרות ירדו לאחר הקורונה (2) יימצאו הבדלים באחוזי הזכאות לבגרות בין בתי ספר ממגזרים שונים (3) יימצאו הבדלים באחוזי הזכאות לבגרות בין בתי ספר ממעמדות חברתיים-כלכליים שונים, בוצעו ניתוחי מדידות לאורך זמן .

ממצאים: הממצאים מראים שבין השנים 2018-2022, הייתה עלייה באחוזי הזכאות בכל סוגי הבגרויות. אולם, השינויים באחוזי הזכאות לבגרות נמצאו שונים לפי סוג תעודת הבגרות, מגזר ומעמד חברתי כלכלי של בית הספר. העלייה באחוזי הזכאות לבגרות הייתה בולטת יותר בקרב בתי ספר ממעמד חברתי-כלכלי נמוך ובתי ספר ערביים, ממצא שתורם לצמצום פערים חברתיים. אולם, באשר לתעודת בגרות מצטיינת, נמצאה עלייה בפערים חברתיים-כלכליים. במקרה של תעודת בגרות עם חמש יחידות לימוד מתמטיקה ואנגלית, פערים עלו בשנת 2022, מלבד בהשוואה בין מגזרים, שם פערים במתמטיקה עלו.

דיון ומסקנות: הרפורמות בבחינות הבגרות מיתנו את ההשפעה הפוטנציאלית השלילית של הקורונה על החינוך, ותרמו ליצירת מערכת חינוך שוויונית יותר באמצעות צמצום פערים בין בתי הספר. אולם, בתעודות הבגרות היוקרתיות יותר, בתי ספר חזקים המשיכו להבטיח לתלמידיהם יתרון בהזדמנויות לעתיד, וכך לשעתק את אי השוויון הקיים בחינוך בישראל.