Bank of Israel   **Research Department**

Segregation of students in primary and middle schools

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Abstract

The research examined whether the allocation of students to classes by socio-demographic characteristics (such as parents' education level) in primary and middle (junior high) schools in Israel during 2001–10 is random or not, based on conventional indices of segregation.

There is very little segregation within primary schools: generally, in a grade with 100 students, even the transfer of only one student from one class to another is enough to reach random assignment. In the Arab educational system, segregation is higher than in the Hebrew education system. There are almost no differences in segregation by school characteristics or class level, or over time. Segregation within schools (in the Hebrew education system) is about 10 percent of the segregation between and within schools, combined.

Since middle schools are larger than primary schools, as are their catchment area, the segregation indices *between* middle schools are lower than in primary education; for the same reason, the indices *within* the middle schools are higher than in primary schools, particularly in the Arab educational system and for immigrants from Ethiopia in the Hebrew State-Religious education system, though those are narrowing. All in all, segregation within middle schools is similar to that in primary schools. Thus, the concern that integration policy in middle schools will lead to segregation within the schools, came about to only a very limited extent.

Segregation between schools in the Hebrew educational system is greater than in the Arab educational system, due to the greater socioeconomic heterogeneity in the former. In the Hebrew educational system segregation between schools is ordered by the following descending ranking: ultra-Orthodox, State-Religious, State. Over the years, the indices of segregation increased markedly between primary schools and between middle schools in all educational streams, especially with regard to immigrants from Ethiopia.

סגרגציה של תלמידים בבתי הספר היסודיים ובחטיבות הביניים

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תקציר

המחקר בחן האם הקצאת התלמידים בין כיתות בתוך בתי הספר היסודיים ובחטיבות הביניים בישראל בשנים 2001-2010, לפי מאפייניהם החברתיים-דמוגרפיים (כהשכלת הורים), היא מקרית או שקיימת סגרגציה (בידול) של התלמידים; כל זאת בהסתמך על מדדי בידול מקובלים.

נמצא שהסגרגציה בתוך בתי הספר היסודיים קטנה מאוד: בשכבה של מאה תלמידים נדרש, בדרך כלל, מעבר של תלמיד אחד בלבד מכיתה לכיתה כדי להגיע לשיבוץ אקראי. בחינוך הערבי הסגרגציה גבוהה מאשר בחינוך העברי. כמעט אין הבדלים ברמתה לפי מאפייני בית הספר, דרגת הכיתה ועל פני זמן. הסגרגציה בתוך בתי הספר (בחינוך העברי) מהווה כ-10 אחוזים מהסגרגציה בין ובתוך בתי הספר יחדיו.

כיוון שחטיבות הביניים גדולות מבתי הספר היסודיים, וכך גם אזורי הרישום להן, מדדי הסגרגציה *בין* החטיבות נמוכים מאשר בחינוך היסודי; מאותה סיבה המדדים *בתוך* החטיבות גבוהים מאשר ביסודי, בפרט בחינוך העברי ולגבי יוצאי אתיופיה בחינוך הממלכתי-דתי, אך גם אלה מצומצמים. בסך הכול הסגרגציה בתוך חטיבות הביניים דומה לזו שבבתי הספר היסודיים. מכאן שהחשש כי האינטגרציה אשר הונהגה בחטיבות הביניים, שהייתה אחת המטרות המרכזיות להקמתן, תביא לסגרגציה בתוך החטיבות התממש רק במידה מוגבלת ביותר, אם בכלל.

הסגרגציה בין בתי הספר בחינוך העברי גבוהה יותר מאשר בחינוך הערבי, בשל הטרוגניות חברתית-כלכלית גבוהה יותר בראשונים. בחינוך העברי הסגרגציה בין בתי הספר היא במסדר היורד הבא של זרמי החינוך: החרדי, הממלכתי-דתי והממלכתי-עברי. במהלך השנים עלו משמעותית מדדי הסגרגציה בין בתי הספר היסודיים ובין חטיבות ביניים בכל זרמי החינוך, במיוחד לגבי יוצאי אתיופיה.

A. INTRODUCTION

The phenomenon of segregation of students in the Israeli educational system by socioeconomic background, religious level, scholastic achievements, and so forth has been pushed aside in research, but the issue remains publicly sensitive. This is attested to by prominent cases such as the assignment of students of Ethiopian descent and female students from Sephardic backgrounds in separate schools in the State-Religious school system and in separate classes in the ultra-Orthodox school system.

The research on segregation of students began in studies conducted in the US regarding racial segregation. These led to an historic decision by the Supreme Court to prohibit the existence of separate schools in order to ensure equal opportunity (Brown v. Board of Education, 1954). The groundbreaking report of Coleman (1966) on the connection between the students' socioeconomic background and the characteristics of their classmates and schoolmates and their scholastic achievement also contributed to the discussion. In Israel, the issue garnered a lot of attention as a result of the establishment of integrative middle schools in the late 1960s, but the attention has since waned. Studies conducted recently, including ones that deal with Israel, show that the composition of students in a class and in the school may have a positive effect on average scholastic achievements. Students from a strong background raise the scholastic achievements of students from a weak background, while the latter decrease only slightly the achievements of the former, such that overall, the average achievements in integrative classes improve. (See, for instance, Ammermueller and Pischke, 2009; Imberman et al., 2012; and Lavy et al., 2012.)[1] In contrast, other studies did not find such an effect (for instance Hanushek et al., 2003; Angrist and Lang, 2004). Social connections are created in the school system among students[2], and even among their parents, and these have ramifications on a variety of areas during their lifetime (expectations and motivation, social capital, patterns of behavior, and so forth). As such, the segregation of students in classes and in schools reduces the equality of opportunity, and has a negative impact on social cohesion.

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[1] For a review of previous studies from Israel, see Resh and Dar (2012).

[2] For instance, about 60 percent of youth aged 13–18 in Israel first met their best friend at school (Mesch and Talmud, 2006).

The struggle against segregation in the education system, globally and in Israel, has in the past focused on prevention of the phenomenon of separate schools for students from different social strata. The struggle to cancel segregation between blacks and whites in the US and the establishment of middle schools in Israel are, as stated, well-known examples of this.

This struggle sometimes ignored the existence of apparently integrative schools that implement separation, tracking and ability grouping mechanisms. Separation mechanisms place students in homeroom classes in accordance with their socioeconomic background (or scholastic achievements), even though the curriculum is supposed to be uniform. Tracking mechanisms introduce assignment—apparently by scholastic ability but in practice by socio-economic background—such that the curriculum is not uniform, but is rather adjusted according to the students' needs as viewed by those doing the assigning. A prominent example of this from the past in Israel is the widespread referral of students from Sephardic backgrounds to professional schools or to "low" technology tracks in comprehensive schools. The ability grouping mechanisms are used by the schools to divide the students of a homeroom class into groups for certain classes by their scholastic level, and in practice may lead to separation by socioeconomic characteristics. In the 2005-6 school year, about 20 percent of primary schools and about 82 percent of middle schools used ability grouping (Cohen-Navot et al., 2009). In the middle schools, the rate of students in ability groups during the 2008-9 school year increased from about 60 percent in Grade 7 to about 90 percent in Grade 9, and the frequency of ability grouping was higher in the Hebrew education system than in the Arab education system (Glickman and Lipstadt, 2013).

It should be noted that the Ministry of Education prohibits the selection of students upon acceptance to primary schools and the practice of separation, tracking and ability grouping in elementary schools, and limits these practices in post-primary education.[3] In primary education, the Ministry allows the existence of supra-regional frameworks and tracks within

[3] See Ministry of Education (1994), Director General's Circular 54/8. The Circular permits ability groups in middle schools from the second semester of seventh grade, only in Mathematics and English, and instructs that more study hours be allocated to students in the medium and low ability groups and that methods be developed to advance these students. The Circular requires that advancement tests be held for students at least twice a year, with the objective of enabling those whose achievements have improved to move to a higher ability group.

the schools—for gifted students[4] and in defined areas of study (such as nature and arts)[5]—and the direction of students toward them.[6]

There is widespread research literature around the world dealing with measuring the scope of segregation *between* schools and its ramifications, and such indices have even been calculated recently in Israel (Fogel, 2011). In contrast, there are few studies in the world that have measured the scope of segregation *within* schools (for instance, Coltfelter et al., 2003; Conger, 2005).

In regard to Israel, as a direct result of the establishment of middle schools in the late 1960s, the share of classes in which there was an absolute majority of those with Asian/ African backgrounds or European/American backgrounds declined as early as the beginning of the 1970s (Rash et al., 1980). Lavy (2011) examined segregation into classes by the background characteristics of the students, as a preliminary stage of a study on the efficiency of teaching methods, during the first half of the 2000s; Relying on Pearson X^2 studies, and did not find evidence of segregation. Fogel (2011) tested segregation according to parents' income in classes in the state school system in Tel Aviv-Jaffa in the 2007/8 school year, and found that separation within the primary schools was higher than in the middle schools, and that separation within educational institutions was higher than between them.

This study calculates standard segregation indices of students in homeroom classes within schools in the 2000/1 to 2009/10 school years, by comparing the socioeconomic composition of the students in homerooms in a certain grade level at a given school to the composition of all students in that grade level. The gap between the two hints at the assignment of students in homeroom classes by background characteristics, in other words segregation. The study also assesses the correlation between the level of segregation *between* schools and the level *within* the schools, because the two phenomena are by their nature connected to each other, and for the most part there is apparently substitution between them.

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[4] These are separate classes in regular schools, one weekly study day in separate schools, and afternoon classes in frameworks outside the schools.
[5] See Ministry of Education (2011), Director General's Circular 5771/6(a).
[6] The Bank of Israel Research Department is currently conducting a study on gender segregation for religious reasons.

The study assesses only the segregation that is created as a result of the separation mechanism described above, and does not deal with tracking, which is discussed in depth in the literature and is mainly practiced in secondary schools, or ability grouping, which is hard to identify in the system-wide administrative data.

The analysis will focus on primary and middle school education, separately, and will not be conducted regarding secondary school, where study tracks and majors are in place.[7] Furthermore, it is limited to regular schools and classes, thus excluding special education—because the assignment of students in special education classes is set first and foremost by type of disability. Boarding schools were also excluded from the study.[8] The analysis will be conducted separately for each educational stream[9] and for grade levels, and by additional characteristics (for instance, school size).

The segregation indices were calculated in relation to major available socio-demographic characteristics: parents' education, immigration to Israel (particularly from Ethiopia), and number of siblings. No distinction was made by parents' income or by the scholastic achievement of the students (such as the Measure of School-wide Efficiency and Growth (MSEG) tests) due to the lack of available data. Since the research literature shows that these characteristics are in line with scholastic achievements, they are included in the budget formulae for teaching hours allocated by the Ministry of Education to the schools (such as the "Shoshani index" and the "Strauss index").[10] The calculations were made on the basis of administrative files of students, schools and classes.

The main finding of the study is that there is very little segregation within primary schools: generally, in a grade with 100 students, even the transfer of only one student from one class to another is enough to reach random assignment. Segregation is higher in the Arab education

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[7] It is worth assessing segregation in kindergarten clusters in the future, as opposed to other kindergartens where the characteristics of the children are, for the most part, similar, because their parents generally live near the kindergarten in neighborhoods usually characterized by socioeconomic homogeneity.

[8] By the nature of things, grade levels where there is only one class will also be stricken from the analysis.

[9] Arab schools in eastern Jerusalem have been excluded from the study.

[10] For more discussion see Blass et al. (2010).

system than in the Hebrew education system. No significant differences were found based on school characteristics or class level. The separation of students of Ethiopian background is low, and is stable over time. The segregation *between* primary schools is high, and the higher its value in the educational stream is, the less segregation there is *within* the schools. In total, segregation within the (Arab) schools constitutes about 10 percent of total segregation.

In the middle schools, the segregation indices between schools is lower than in the primary education system, a direct result of the absorption of students from a wide catchment area. In contrast, the segregation within the schools is higher than within the primary schools, particularly in the Hebrew education system and among those of Ethiopian descent in the State-Religious school system, but it is still low. Over all, segregation in the middle schools is similar to that in the primary schools. This shows that the concern that the integration instituted in the middle schools—and which was one of the main objectives in establishing them—would lead to segregation within the middle schools came to pass only to a very limited extent, if at all.

Segregation between the primary and middle schools in the Hebrew education system is higher than in the Arab system. In the Hebrew system, segregation is common in the following descending order: Ultra-Orthodox, State-Religious, and state. Over the years, the segregation indices between schools increased significantly in all educational streams, particularly regarding students of Ethiopian descent. It is possible that this is the result of separation between residential neighborhoods and of the opening of schools that select students.

Chapter B is devoted to presenting the segregation indices that will be used in the study and to defining the socio-demographic characteristics by which the indices were calculated. Chapter C presents the findings, and Chapter D summarizes.

B. SEGREGATION INDICES AND DEFINITION OF SOCIO-DEMOGRAPHIC CHARACTERISTICS

1. Segregation indices

The study made use of a number of segregation indices that are common in the literature. (For more information, see: Allen and Vignoles, 2007; Fogel, 2011.) Obviously, the segregation indices within schools can only be calculated in cases where there are at least two classes in the grade level. We sample the indices on the rate of students whose mothers have a higher education.

Dissimilarity index (*D*) of a school

$$D = 1/2 \sum_{i=1}^{I} \left| \frac{ED_i}{ED_j} - \frac{nonED_i}{nonED_j} \right|$$

Where:

i	Class *i* (for instance 1a) in a given school, in where there are *I* classes in grade level j ($i \in j$, for instance 1a is in Grade 1 level)
ED_i	The number of students in class *i* whose mothers have a higher education
ED_j	The number of students in grade level *j* whose mothers have a higher education
$nonED_i$	The number of students in class *i* whose mothers do not have a higher education
$nonED_j$	The number of students in grade level *j* whose mothers do not have a higher education

This is the most common segregation index, which expresses the rate of students whose mothers have a higher education that need to move between classes in order for their rate in each class to be identical to their rate in the entire grade level. The index obtains values between 0 and 1. In a case where the rate of students whose mothers have a higher education is equal in all classes within the grade level, the index obtains a value of 0 (full integration), and in a case where all the students whose mothers have a higher education are in one class and there are no other students in that class (full segregation), the value is 1. Later in the study, we will focus on this index because it is common and it is easy to interpret its results.

Segregation ratio index (SR) of a school

$$SR_i = \left. \frac{\dfrac{ED_i}{ED_j}}{\dfrac{n_i}{N_j}} \right.$$

Where:

n_i The number of students in class i

N_j The number of students in grade level j

SR_i is the share of students in class i whose mothers have a higher education out of all students whose mothers have a higher education in grade level j, compared to the number of students in class i out of the number of students in grade level j.

Gorard's segregation index[11] (GS) of a school

$$GS = 1/2 \sum_{i=1}^{I} \left| \frac{ED_i}{ED_j} - \frac{n_i}{N_j} \right| = D * (1 - P_j)$$

Where:

P_j The share of students whose mothers have a higher education in grade level j
        ($p_j = ED_j / N_j$).

This is a development of the dissimilarity index, which is intended to deal with the fact that the dissimilarity index remains unchanged even of the number of students whose mothers have a higher education increased (decreased) by the same rate in each class, while from an intuitive perspective, the D index should have declined (increased), as actually happens with the GS index. The value of the index is between 0 (full integration) and 1-*p* (full segregation).

Hutchens square root index[12] (H) of a school

$$H = \sum_{i=1}^{I} \left[\frac{ED_i}{ED_j} - \sqrt{\left(\frac{ED_i}{ED_j} * \frac{nonED_i}{nonED_j} \right)} \right]$$

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[11] For more information, see Gorard and Taylor, 2002.
[12] For more information, see Hutchens, 2001.

The H index is similar to the *D* index, but the segregation in the *H* index is calculated as the distance weighted (by the rate of students whose mothers have a higher education in class *i* compared to their rate among all students in grade level *j*) to a situation of uniform distribution, while the *D* index contains no weighting. The index ranges from 0 (full integration) to 1 (full segregation).

Isolation index of a school

$$I_s = {}_{ed}P^*{}_{ed} = \sum_{i=1}^{I} \frac{ED_i}{ED_j} * \frac{ED_i}{N_i}$$

Where:

N_i The number of students in class *i*

The isolation index is the likelihood that students whose mothers have a higher education will learn together with similar students in the same class.

Interaction index of a school

$$I_n = {}_{ed}P^*{}_{noned} = \sum_{i=1}^{I} \frac{ED_i}{ED_j} * \frac{nonED_i}{N_i}$$

The interaction index is the likelihood that students in class *I* whose mothers have a higher education will learn together with students in the same class whose mothers do not have a higher education. The isolation index and the interaction index complement each other in cases where there are only two population groups (for instance, mothers with and without a higher education), such that $I_s + I_n = 1$.

All of the indices described thus far are obtained at the grade level for each of the schools. In order to obtain one index per grade level at all the schools together (hereinafter—the overall index), a weighted average was calculated by the number of classes in each grade level at a school out of all classes in that grade level in all the schools together. (It was also possible to calculate the overall index as a simple arithmetic average of the school index.)

Segregation indices compared to a random assignment of students in the classes

The random assignment of students in classes may generate segregation indices with values that are higher than 0 (meaning an apparent lack of full integration) because the number of students is a discrete value. For instance: In a grade level that has three classes and two students of Ethiopian descent, it is not possible to distribute them uniformly among the classes. This phenomenon grows more serious as the number of classes in the grade level declines and the number of students meeting the criterion by which the segregation is tested grows smaller. Moreover, as long as the school management and teaching staff do not take measures directed at achieving full integration of the students (which require time resources), the random assignment of the students into classes will not generate uniform distribution. Therefore, there is room to compare the actual segregation indices to those that we obtained with a random assignment of students in classes and that serve as a benchmark. For more, see Conger (2005). Only in a case where the actual segregation index exceeds the random index will it be possible to conclude that a policy of segregation is being practiced.

The random assignment of the students was conducted in the following manner: Each of the students was randomly assigned a number between 0 and 1, and was assigned to a class according to the number of classes in the grade level. For instance, in a case of 3 classes in a grade level, and a random value of 0.41, the student was assigned to the second class (as were all the students that received a random value of between one-third and two-thirds). Therefore, the number of students in all the classes is identical (excluding the remainders), and not necessarily equal to their actual numbers. The reason for choosing this approach is that the actual number of students in each class may be the result of segregation policy.

When the number of students regarding which the random assignment is calculated increases, the result comes close to uniform distribution. Therefore, the gap between actual segregation and segregation in the random assignment may be negative in cases where the number of students is relatively small and the actual assignment of students is close to uniform.

Breaking down the segregation index for all schools into indices between schools and within them

It is possible to calculate the segregation index for all schools (in one grade level), S^T, which can be broken down into an index *between* the schools and an index *within* the schools. (For more information, see Conger, 2005).

The segregation index *between* schools (S^{AS})

$$S^{AS} = (\frac{nonED}{N} - I_n^s)/(\frac{nonED}{N})$$

Where:

$$I_n^s = {}_{ed}P^{S*}{}_{noned} = \sum_{j=1}^{J} \frac{ED_j}{ED} * \frac{nonED_j}{N_j}$$

ED   The number of students in all schools whose mothers have a higher education

nonED   The number of students in all schools whose mothers do not have a higher education

N   The number of students in all schools

The segregation index within the schools (S^{WS})

$$S^{WS} = (I_n^s - I_n^{all})/(\frac{nonED}{N})$$

Where:

$$I_n^{all} = {}_{ed}P^{all*}{}_{noned} = \sum_{i=1}^{I \bullet J} \frac{ED_i}{ED} * \frac{nonED_i}{N_i}$$

I_n^{all} is basically the segregation index I_n of the classes within the school, weighted for the entire education system ($I \cdot J$ classes).

The overall segregation index S^T measures how different the rate of students in the classes (in a given grade level) whose mothers have a higher education is from the rate among all students in that grade level in the education system, and is expressed as: $S^T = S^{WS} + S^{AS}$.

2. Defining the socio-demographic characteristics and the stage of education

The segregation indices were calculated in relation to the available main socio-demographic characteristics: education level of the parents, immigration to Israel (particularly from Ethiopia), and number of siblings.

Mother with a higher education: A mother with more than 12 years of education. In a case where this value is missing in the student files, the education level of the father is examined—due to the high correlation between the education level of both parents[13]—and if it exceeds 12 years of study, the mother is defined as having a higher education. In a case where the education levels of both parents are missing from the file, the mother is defined as not having a higher education, based on examinations made in the past (Fogel, 2011).

Father with a higher education: The definition is parallel to that of a mother with a higher education.

New immigrant: A student who is either an immigrant to Israel from 1989 onwards, or at least one of whose parents is, and a student of Ethiopian descent (details below).

Of Ethiopian descent: A student who immigrated to Israel from one of the Ethiopian crescent countries (Ethiopia, Eritrea, Djibouti, Sudan and Somalia), or at least one of whose parents did, at any time.

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[13] The correlation in the ultra-Orthodox system is not high. In any case, the number of years of study of parents to ultra-Orthodox students is generally not an appropriate index for the level of human capital required for the needs of the labor market in Israel.

Number of siblings: The number of brothers and sisters (including the student himself) born to the mother.

Primary school: An educational institution where the range of classes is from Grade 1 through 9 (to which a cluster of kindergartens is occasionally attached), or some of these classes. The study included students of primary schools in Grades 1–6 only, and students in Grades 7–9 studying in 8- or 9-year primary schools were excluded from the study. Also excluded from the study schools in which there is only one class per grade level, since it is not possible to calculated intra-school segregation indices in such schools.

Middle school: The study included students in Grades 7–9. Following the transfer to a middle school structure about four-fifths of students in Grades 7–9 study in post-primary schools, in independent middle schools, or in middle schools attached to secondary schools. It should be noted that in the ultra-Orthodox school system, almost all students in Grades 7–8 study in primary schools, while Grade 9 students study in *yeshivot*, which are not in the database. Ultra-Orthodox students in Grades 7–9 were therefore excluded from the study. Also excluded from the study schools in which there is only one class per grade level.

C. FINDINGS[14]

1. *Primary schools*

The *D* indices by education level of the parents and rate of immigrants (in Hebrew education) are about 0.19[15] (Tables A3–A7 in the Appendix), meaning that about one-fifth of students in a grade level need to move from one class to another in order to achieve uniform distribution of the students among the classes by those characteristics. However, the random segregation indices reach about 0.18, such that the gap between the actual segregation indices and the random segregation indices is less than 10 percent (Table 1 and Figure 1), and in absolute terms is negligible about 0.01. In other words, in a grade level of 100 students, just one student needs to move from one class to another in order to achieve random distribution.[16] The differences between the actual and random segregation indices were more or less stable over the years.

The differences between the actual and random segregation indices declined slightly with the move from Grade 1 to Grade 6 (Table 2), even though it could be hypothesized that if scholastic achievements have a marked effect on the assignment of students to the various classes, the segregation indices could be expected to grow with the age level, due to the widening of the scholastic achievement gaps by socioeconomic background of the students as the age level increases. It may be that the relative stability of the segregation indices in the move between age levels is a result of the aspiration to continue studying in the same homeroom class with the transition between age levels, for social, pedagogical (such as the same homeroom teacher) and administrative convenience considerations. Another possible explanation is the institution of ability groups (which cannot be identified in the database we have)—that to a large extent overlap socioeconomic characteristics—in selected subjects

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[14] The socio-demographic characteristics of the students in primary and middle schools, by educational stream and year, are presented in Tables A1 and A2 in the Appendix.

[15] The standard deviation of the actual indices are as follows: *D*–0.0003; *GS*–0.0003; *H*–0.0002; *Is*–0.0006. As such, every change of one-thousandth or more in the value of one of the indices shown in the tables is significant. The standard deviations of the random indices are similar.

[16] In the tables in the Appendix, the cells where the actual segregation index significantly exceeds the random index are marked with a dark background, based on two criteria: 1) A relative gap of at least 10 percent; 2) An absolute gap of at least 0.033, meaning 3 students or more in a grade level of 100 students need to move to a different class in order to obtain random distribution.

such as Mathematics and English, which are studied only in the higher class levels, contrary—as stated—to Ministry of Education guidelines.

An assessment of the differences between the actual and random segregation indices by educational streams raises the following findings (Table 3 and Figure 1, as well as Table A5 in the Appendix). In the Arab school system, the differences are larger than in the Hebrew school system, but there also, the absolute values are low. For instance, the difference between the actual D index according to the mother's level of education and the random index in the Arab school system is 0.04, meaning about 4 students in a grade level of 100 students need to move between classes in order to obtain random distribution. Possible explanations for the gaps in the indices between the Arab and Hebrew school systems are that the Arab schools are larger and have more classes per grade level, making segregation possible. It is also possible that the few students from a strong background are referred to separate classes in order to give them a preferred scholastic environment. Another possible explanation is the desire to compete with the increasing number of unrecognized schools that implement a selection policy on acceptance. The differences between the actual and random segregation in the Arab stream are higher than in the Bedouin and Druze streams.

The differences between the actual and random segregation indices in the State-Hebrew school system are presented in Table 4 (and in Table A6 in the Appendix). It is not possible to indicate significant differences between them according to the various indicators (year, grade level, socioeconomic background, and number of classes in the grade level).

Most of the students of Ethiopian descent study in the State-Religious school system, were they have more than once been separate from other students (Vargon, 2006), which aroused broad media attention and even reached the courts (such as the case of Petach Tikva, see Supreme Court 7426/08). It is therefore worth assessing the segregation indices of those of Ethiopian descent in the State-Religious primary schools (Table 5 and Figure 2, as well as Table A7 in the Appendix). The differences between the actual and random segregation indices are small, both in relative and in absolute terms. While there is a marked increase in the differences between the segregation indices as the socioeconomic backgrounds of the

school's students increases and as the number of classes in the grade level increases, the differences remain very small. It should be emphasized that the cases of exclusion of students of Ethiopian descent that attracted media attention mostly concerned them being directed to separate schools and not to separation within the schools.

The results of estimations of the factors that are correlated with the difference between the actual D index and the random index are presented in Table 6. As expected, we found a positive correlation between the heterogeneity of the grade level (measured by the standard deviation of the education level of the mother) in the primary school system and the level of segregation, where the other variables are constant. The other results are similar to those presented above: segregation declines with the number of classes in the grade level; segregation in the Arab school system is higher, and there is no change according to the class level or year.

In regard to estimations concerning the segregation of students of Ethiopian descent in the State-Religious school system, the results are similar to those presented above, other than an increase in segregation as the number of classes in the grade level increases—apparently due to the ability to group these students into a separate class.

The outcome of the breakdown of the segregation index into two—between the primary schools and within them—is presented in Tables 7–9 and in Figures 3–4. The segregation indices between the schools in the Hebrew education system exceed those in the Arab education system (Figure 3a). A possible explanation of this is the greater heterogeneity in the socioeconomic backgrounds of the Jewish sector than in the Arab sector, including between residential neighborhoods. In the Hebrew education system, the segregation index between the ultra-Orthodox schools is much higher than in the State-Religious school system, and the latter is almost double that in the State-Arab school system. This ranking is consistent with the tendency among the religious public toward separation in the education system by religious belief, which is occasionally correlated with socioeconomic background.[17] In the

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[17] In the same context, it is interesting to note that segregation by the father's level of education (in terms of years of study) is much higher than segregation by the mother's level of education only in the ultra-Orthodox

Arab education system, the segregation index between the schools is higher in the Arab streams than in the Bedouin or Druze streams, apparently due to the relative socioeconomic heterogeneity among the Arabs and the existence of unofficial recognized schools in their communities.

The higher the segregation index between schools is, the lower the index is among schools (Figure 3b), since these indices are somewhat interwoven tools: Separation between schools reduces the need to isolate within the schools, and vice versa. An assessment of this connection with in the local authorities (Figure A2 in the Appendix) shows that it exists, but that it is relatively weak. Segregation between schools in the Hebrew education system in general exceeds 90 percent of total segregation, and comes close to full segregation only among the ultra-Orthodox. In contrast, segregation between schools in the Arab education system is 60–80 percent of total segregation.

In terms of segregation within the schools, it is far more significant in the Arab school system (particularly among the Bedouin) than in the Hebrew school system, apparently because the Arab schools are relatively large. In the Hebrew school system, the segregation of immigrants, particularly those of Ethiopian descent, within the State-Religious school system exceeds that within the State school system, but has similar shares of total segregation.

No prominent differences were found in the segregation indices within the State-Arab or State-Religious school systems by the socioeconomic background of the school, other than slight segregation of immigrants, including those of Ethiopian descent, in the State-Religious schools with strong backgrounds, apparently due to the small number of students of Ethiopian descent in those schools.

In the transition from 2001 to 2010, the segregation index between schools increased significantly in most education streams (Figure 4), particularly with regard to students of Ethiopian descent in the State-Hebrew and State-Religious school systems. It is possible that the increase is the result of the segregation of residential neighborhoods and of the opening of

sector. This finding perhaps hints to the religious level of the father (which is positively correlated with the number of years of study in religious institutions) being dominant in the assignment to schools.

schools that select students. Segregation between schools in the Arab school system also increased significantly, among other things due to the expansion of recognized unofficial education, to which many students from relatively strong socioeconomic backgrounds were sent. The segregation indices within schools remained more or less stable (with a decline among those of Ethiopian descent), such that the overall segregation indices increased greatly.

2. *Middle schools*

The main finding obtained by observing the actual segregation indices and the random indices for the middle schools is that it is not possible to point to significant gaps among them (Table 10 and Table A8 in the Appendix), which is similar to the finding in the primary schools, and even though there was room to expect a wider gap due to the integrative nature and size of the middle schools. For instance, the actual D index according to education level of the parents was about 0.22[18] in the middle schools, while the value of the parallel random index is 0.21. There were no significant changes over the years in the differences between the actual and random segregation indices for the parents' level of education. The differences expanded in the transition from seventh to ninth grades (Table 11 and Figure 5, as well as Table A9 in the Appendix), but they were very small in ninth grade as well.

The differences between the actual and random segregation indices by the parents' level of education in the State-Hebrew and State-Religious school systems exceed those in the Arab school system (Table 12 and Figure 6), but have low absolute values (Table A10 in the Appendix). The differences between the segregation indices of immigrants are relatively large in the State-Religious schools system due to the segregation of students of Ethiopian descent. (More details below.)

The differences between the actual and random segregation indices in the State-Hebrew middle schools are presented in Table 13 and in Figure 7, as well as in Table A11 in the

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[18] The standard deviations of the actual indices are as follows: *D*–0.0005; *GS*–0.0005; *H*–0.0003; *Is*–0.0008. As such, any change of one one-thousandth or more in the value of one of the indices presented in the tables is significant. The standard deviations of the random indices are similar.

Appendix. In absolute terms, they are generally not significant, but it is still possible to point to a number of trends: The differences increased over the years, and in the transition from seventh to ninth grades. They also increased the higher the socioeconomic background of the students in the school was[19]—perhaps because parents with a stronger socioeconomic background have a greater ability to influence the school's management to separate their children, and perhaps because of the school management's policy to separate students by scholastic achievement, which is correlated with their socioeconomic background. The differences also expand as the number of classes in the grade level increases, as a direct result of the ability to separate.

There is a significant segregation of students of Ethiopian descent within the State-Religious middle schools (Table 14, Figure 8 and Table A12). Segregation, in both absolute and relative terms, is higher in schools with students from middle socioeconomic backgrounds, since the number of students of Ethiopian descent at such schools enables segregation with greater ease than in schools with students from either weak or strong socioeconomic backgrounds, where the share of students of Ethiopian descent is higher or lower (respectively) so that segregation is not possible or unnecessary (respectively). Segregation increases with the number of classes in a grade level.

The results of estimations (Table 6 above) show that segregation in the middle schools is positively correlated with heterogeneity within the grade level, with the socioeconomic ranking, and with the level of the class. Segregation decreases with an increase in the number of classes in the grade level, is higher in the Hebrew education system, and does not change over the years. The findings are consistent with the raw data outlined above. Similar results were obtained regarding the segregation of students of Ethiopian descent in the State-Religious school system, except that in their case, segregation is positively correlated with the number of classes in the grade level.

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[19] For instance, the difference between the actual and random D index by the mother's level of education or the father's level of education is 0.024 regarding schools where the student come from weak socioeconomic backgrounds, and 0.044 in schools where the students come from a strong socioeconomic background. See Table A11 and Figure 7. In the latter case, the move of about 4 students in a grade level of 100 is required in order for the distribution of students to be random. In relative terms, segregation is higher at the middle socioeconomic level (Table 13).

The segregation indices between and within the middle schools are shown in Tables 15–17 and in Figures 9–10. The order of the segregation indices between and within the schools by educational stream is the same in the middle schools as it is in the primary schools. It is not possible to point to a clear pattern in the segregation indices within the middle schools as dependent on the socioeconomic background of the students. In the transition between 2001 and 2010, the segregation index between middle schools increased significantly, similar to the situation in the primary schools, while it remained stable for students of Ethiopian descent in the State-Religious school systems.

Close to 80 percent of total segregation in the State middle schools is between schools, and more so in the State-Religious system. The rate in the Arab stream is similar to the State-Hebrew system, while the rates are much lower among the Bedouin and the Druze.

At the local authority level, there is, as expected, a (weak) negative correlation between the segregation indices within the middle schools and those between the schools (Figure A2 in the Appendix), similar to the situation in the primary schools.

3. Comparison between the middle schools and the primary schools

Three characteristics of middle schools should have caused material differences in segregation policy both between and within the schools compared to primary schools.

A. They draw their students from larger and more varied catchment areas from the standpoint of student characteristics;
B. The number of students in the middle schools is higher, thereby enabling more segregation;
C. The age of the students is higher and the more academic character of the studies may lead to greater segregation by scholastic ability, which to a large extent overlaps with socioeconomic background.

The gap between the actual and random D segregation indices in the middle schools is similar to the gap in the primary schools, and there are marked differences by educational stream: In the State-Hebrew and State-Religious streams, the gap is higher in the middle schools (See also Figure A1 in the Appendix, where the segregation ratio (SR) index is shown), and in the Arab stream it is higher in the primary schools.

A breakdown of the segregation index to between and within the schools shows that in general, the segregation *between* the middle schools is lower than *between* the primary schools (See also Figure 9 and Figure A2 in the Appendix), by all socioeconomic characteristics examined. In contrast, the segregation *within* the middle schools is higher than it is *within* the primary schools, but only in the Hebrew school system—as found regarding the D index. A similar picture is obtained regarding students of Ethiopian descent in the State-Religious school system (Figure 10).[20] In any case, segregation within the middle schools is low: In order to reach random assignment in a grade level of 100 students, the transfer of just one student is required.

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[20] These results are correct both by the gap between the actual and random segregation indices and by the breakdown of the segregation index within and between schools. In the Arab school system, the gap between the segregation indices declines markedly in the transition from primary to middle schools, while it remains more or less stable by the breakdown.

The foregoing shows that the concern that the integration instituted in the middle schools, and which was one of the main objectives in establishing them, would lead to segregation within the middle schools has come to pass to a very limited extent, if at all, since overall, segregation in the middle schools is similar to that in the primary schools.

The increase in the segregation indices between primary schools in the transition from 2000 to 2010 is similar to that in the middle schools. In contrast, the segregation indices within the State-Hebrew primary schools remained unchanged, compared to a marked increase in the middle schools. In the primary and middle schools in the State-Religious stream, both declined.

D. CONCLUSION

The study assessed the segregation of students within and between primary and middle schools by various characteristics (parents' level of education, country of birth and so forth). The issue has educational and social significance of the first order, since the existence of segregation may attest to opposition on the part of parents and teachers to the principle of integration, which the educational system is trying to implement—the integration of students from various socioeconomic backgrounds in a joint scholastic framework.

The main finding is that segregation within the primary and middle schools is low: In a grade level of 100 students, it is generally the case that the transfer of just one student from one class to another is required to reach random assignment. No marked differences were found by educational streams or school characteristics. These findings contradict the picture that occasionally emerges in public discussion regarding predominant segregation, in particular of students of Ethiopian descent. We cannot assess the reasons for avoiding segregation in the schools, but we can hypothesize that they are varied: It is possible that the school managements believe that the administrative and educational difficulties involved outweigh the benefits that may be derived from it, and it is possible that they find more efficient ways of segregation that are less subject to dispute (such as ability groups). Another possible

explanation is that parents find ways to send their children to schools that are not in their registration area, thereby also increasing segregation between the schools.

Segregation within the schools is much lower than it is between them, such that in the primary schools it constitutes about 10 percent of total segregation. In the middle schools segregation between the schools is lower than in the primary schools, due to the absorption of students from broader catchment areas, which bring together a more heterogeneous population than in the residential neighborhood. In contrast, segregation within the middle schools is higher than in the primary schools—a direct result of the variation in the composition of students, of the size of the schools, and of the importance of the scholastic element, which leads to segregation by scholastic ability, which to a large extent overlaps socioeconomic background. This is particularly the case in the Hebrew education system, and among those of Ethiopian descent within the State-Religious school system.

In any case, segregation within the middle schools is also low: For the most part, the transfer of no more than one student from one class to another is required in a grade level of one hundred students in order to create random assignment. Over all, segregation in the middle schools is similar to the level in the primary schools. It therefore follows that the concern that the integration instituted in the middle schools, which was one of the main objectives of creating them, would lead to segregation within the schools, came to pass only to a very limited extent, if at all.

The primary schools

Figure 1: Dissimilarity (*D*) index by the mother's level of education, within primary schools, by educational stream, 2001–2010
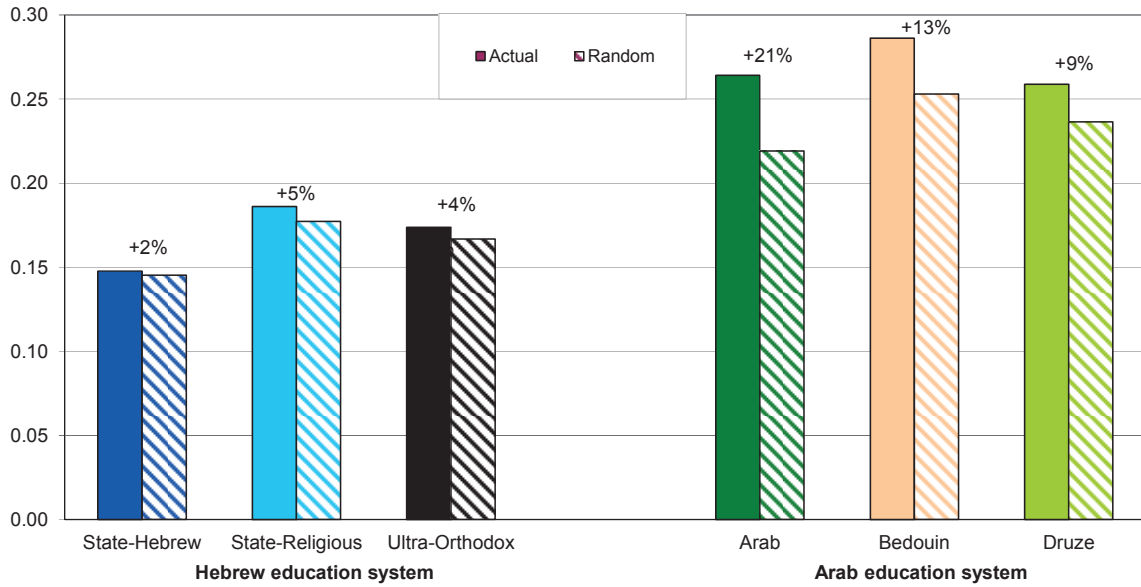
SOURCE: Based on Ministry of Education.

Figure 2: Dissimilarity (*D*) index of students of Ethiopian descent within the State-Religious primary schools, 2001–2010
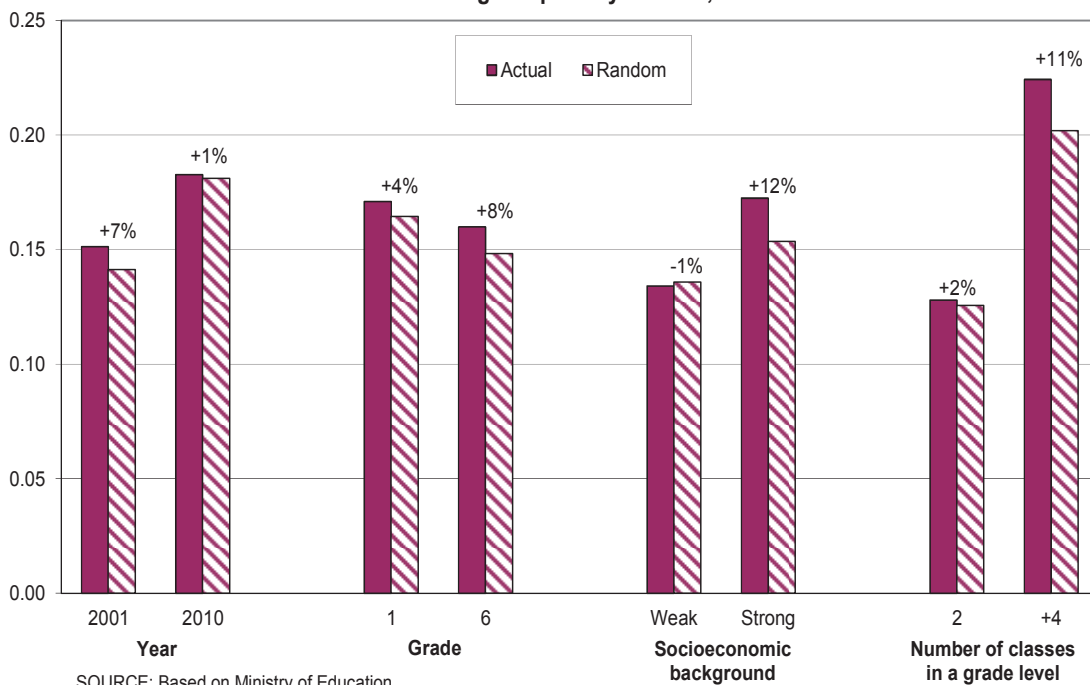
SOURCE: Based on Ministry of Education.

**Figure 3a: Segregation indices by the mother's education level,
between and within primary schools, 2001–2010**

SOURCE: Based on Ministry of Education.
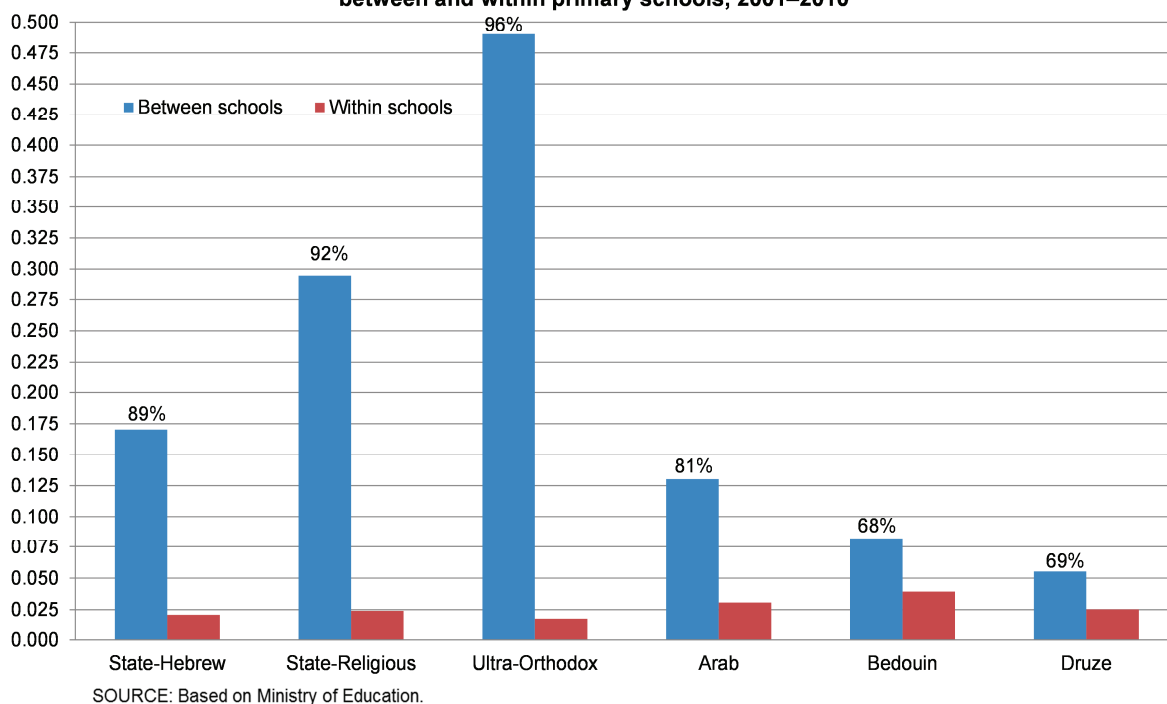
**Figure 3b: Segregation index by the mother's education level,
between and within primary schools, 2001–2010**

SOURCE: Based on Ministry of Education.
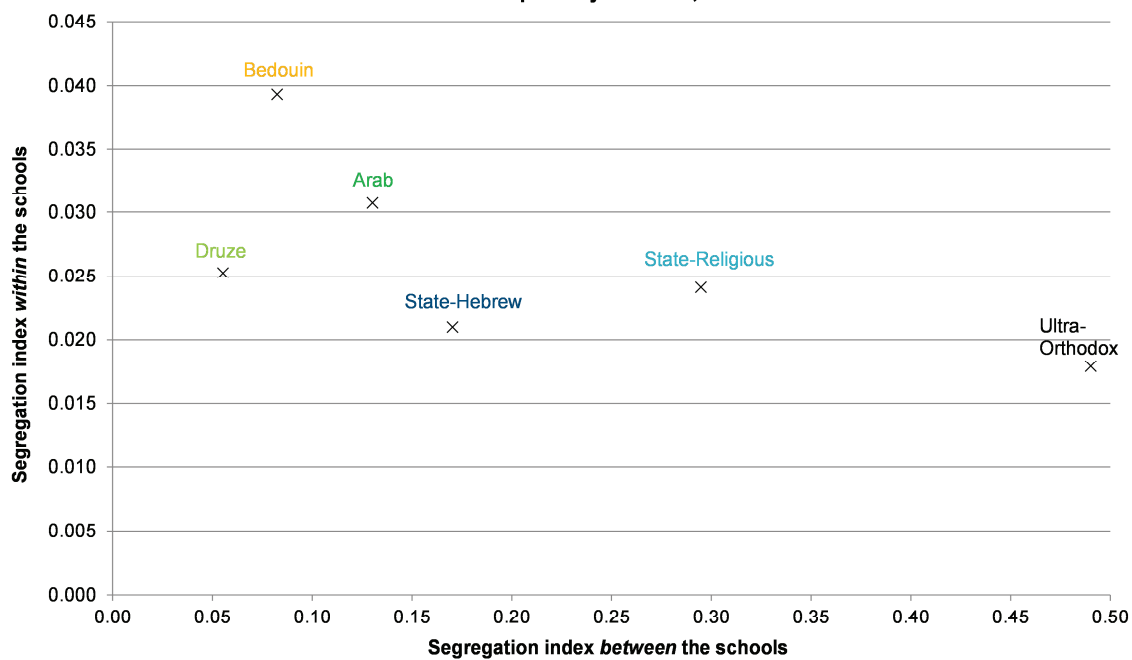
Table 1: The difference between the actual and random segregation indices within primary schools[a] by year (percent)

A. By parents' level of education

Index	By mother's level of education[b]				By father's level of education[b]			
	2001–2010	2001	2007	2010	2001–2010	2001	2007	2010
D	7.6	7.1	8.9	4.7	7.1	8.3	7.0	4.0
GS	8.8	7.5	10.2	5.6	8.1	8.6	8.4	5.2
H	6.1	8.3	8.0	1.1	3.6	8.0	3.0	-2.6
Is	1.1	1.4	1.2	1.0	1.0	1.6	0.9	-1.2

B. By rate of immigrants (in Hebrew schools)

Index	2001–2010	2001	2007	2010
D	4.6	3.7	4.8	4.7
GS	4.1	3.7	3.8	3.9
H	0.3	1.0	2.1	-2.4
Is	-0.2	1.1	0.6	0.5

a) Grades 1–6.
b) Thirteen years or more of education.
SOURCE: Based on Ministry of Education.

Table 2: The difference between actual and random segregation indices within primary schools[a], by grade level, 2001–10 (percent)

Index	By mother's level of education[b]			By father's level of education[b]		
	Total	Grade 1	Grade 6	Total	Grade 1	Grade 6
D	7.6	9.8	6.1	7.1	9.1	7.1
GS	8.8	10.8	7.3	8.1	10.4	8.0
H	6.1	12.3	3.9	3.6	10.5	2.7
Is	1.1	1.3	1.0	1.0	1.2	1.1

a) Grades 1–6.
b) Thirteen years or more of education.
SOURCE: Based on Ministry of Education.

Table 3: The difference between the actual and random segregation indices within primary schools[a], by educational stream, 2001–10 (percent)

A. By mother's level of education[b]

Index	Total	Hebrew schools			Arab schools		
		State-Hebrew	State-Religious	Ultra-Orthodox	Arab	Bedouin	Druze
D	7.6	1.6	5.0	4.1	20.5	13.1	9.4
GS	8.8	1.1	5.8	3.1	20.7	12.9	10.3
H	6.1	-12.9	-0.8	2.5	25.1	14.5	4.8
Is	1.1	0.4	1.5	0.8	5.6	8.5	0.0

B. By father's level of education[b]

Index	Total	Hebrew schools			Arab schools		
		State-Hebrew	State-Religious	Ultra-Orthodox	Arab	Bedouin	Druze
D	7.1	1.6	4.8	5.2	19.9	10.4	7.2
GS	8.1	1.5	4.6	4.5	20.1	10.5	8.3
H	3.6	-12.7	0.8	3.8	20.8	11.3	-8.8
Is	1.0	0.4	1.2	1.0	5.1	6.0	-0.8

C. By rate of immigrants (in Hebrew schools)

Index	Total	State-Hebrew	State-Religious	Ultra-Orthodox
D	4.6	4.5	7.5	2.1
GS	4.1	4.1	6.5	2.1
H	0.3	-3.5	10.7	-0.4
Is	0.7	0.3	1.9	0.5

a) Grades 1–6.

b) Thirteen years or more of education.

SOURCE: Based on Ministry of Education.

Table 4: The difference between the actual and random segregation indices within the State-Hebrew primary schools[a], 2001–10 (percent)

A. Year

Index	By mother's level of education[b]			By father's level of education[b]			By rate of immigrants			By rate of large families[c]		
	2001	2007	2010	2001	2007	2010	2001	2007	2010	2001	2007	2010
D	4.1	4.1	0.3	4.1	1.9	2.0	3.7	4.8	4.7	-0.2	0.1	-0.3
GS	3.4	3.7	-0.7	3.3	1.8	0.6	3.7	3.8	3.9	-0.3	0.2	0.2
H	2.6	-3.4	-9.2	0.8	-6.7	-6.3	1.0	2.1	-2.4	-1.4	-1.5	-1.6
Is	1.0	0.8	0.7	1.0	0.5	0.8	1.1	0.6	0.5	0.1	-0.7	-0.7

B. Grade level

Index	By mother's level of education[b]			By father's level of education[b]			By rate of immigrants			By rate of large families[c]		
	Total	1	6	Total	1	6	Total	1	6	Total	1	6
D	2.9	5.1	1.5	3.1	5.1	2.5	4.6	6.0	4.9	-0.2	0.9	-0.5
GS	2.6	4.9	1.1	2.8	5.8	2.1	4.1	5.0	4.8	-0.1	0.7	-0.1
H	-5.1	0.9	-9.0	-3.8	1.5	-6.6	0.3	4.1	-1.5	-2.1	0.1	-2.3
Is	0.7	0.8	0.7	0.7	0.7	0.6	0.7	1.3	0.6	-0.8	-0.2	-1.3

C. Socioeconomic background of the students at the school[d]

Index	By mother's level of education[b]			By father's level of education[b]			By rate of immigrants			By rate of large families[c]		
	Weak	Middle	Strong	Weak	Middle	Strong	Weak	Middle	Strong	Weak	Middle	Strong
D	5.6	4.2	1.0	4.6	4.6	1.5	1.9	6.4	10.1	-1.2	0.6	-0.4
GS	4.5	4.5	1.0	4.5	4.2	1.3	1.7	6.0	8.4	-1.0	0.5	-0.2
H	0.4	-1.8	-4.7	0.9	0.4	-5.4	-1.1	4.3	5.8	-2.1	-1.1	-4.2
Is	0.5	1.1	1.6	0.4	1.1	1.3	0.2	1.1	1.1	-1.4	-0.3	-1.0

D. Number of classes in the grade level

Index	By mother's level of education[b]			By father's level of education[b]			By rate of immigrants			By rate of large families[c]		
	2	3	4+	2	3	4+	2	3	4+	2	3	4+
D	0.6	5.4	6.7	1.5	4.9	5.5	3.8	5.3	5.9	0.5	-1.9	1.8
GS	1.1	4.9	4.3	1.7	4.2	5.1	3.7	4.5	4.6	0.8	-1.6	1.4
H	-7.9	-5.2	6.5	-6.4	-2.5	3.3	-1.6	0.5	6.2	-1.4	-3.6	0.5
Is	0.6	0.9	0.9	0.5	0.8	0.8	0.3	0.6	3.2	-0.6	-1.8	0.0

a) Grades 1–6. b) Thirteen years or more of education. c) 4 or more siblings (including the student).
d) Weak background - cultivation deciles 8–10; Middle background - cultivation deciles 4–7; Strong background – cultivation deciles 1–3.
SOURCE: SOURCE: Based on Ministry of Education.

Table 5: The difference between the actual and random segregation indices of students of Ethiopian descent within the State-Religious primary schools[a], 2001–10 (percent)

Index	Year			Grade level			Socioeconomic background[b]			Average number of classes in a grade level		
	2001	2007	2010	Total	1	6	Weak	Middle	Strong	2	3	4
D	7.0	3.4	0.9	5.8	3.9	7.8	-1.3	6.3	12.3	1.8	10.4	11.1
GS	6.7	2.1	1.5	5.6	4	7.7	-1.0	6.8	10	2.1	9.0	10.5
H	19.4	12.2	3.6	15.3	16	16.7	0.0	17.8	40.2	9.0	22.2	18.4
Is	6.3	5.2	0.1	5.2	6.0	5.1	-2.2	5.1	6.7	1.4	15.3	19.4

a) Grades 1–6.
b) Weak background - cultivation deciles 8–10; Middle background - cultivation deciles 4–7; Strong background - cultivation deciles 1–3.
SOURCE: Based on Ministry of Education.

Table 6: The factors correlated with the difference between the actual and random dissimilarity (D) indices of the grade level within the primary and middle schools[a] (percentage points)

The explanatory variable		Primary schools				Middle schools			
		Total		State-Religious		Total		State-Religious	
		Mother with higher		Ethiopian descent		Mother with higher		Ethiopian descent	
Heterogeneity of grade level[b]		6.76***	2.60	2.38	12.79***	31.04***	36.56***	24.63***	14.27
Number of classes per grade level		-26.06***	-31.39***	24.40***	28.01**	-9.82***	-15.11***	18.10***	28.42***
Cultivation decile[c]		-6.01		4.25		16.38*		87.88***	
Cultivation declie squared		0.76*		0.51		-0.81		-6.38***	
Educational stream (compared to State-Hebrew)	State-Religious	10.83*				36.07***			
	Ultra-Orthodox	-6.97				293.04***			
	Arab	31.84***				-31.91			
	Bedouin	36.63**				-74.76***			
	Druze	-13.89				-23.74			
Grade level (compared to Grade 1)	2	-0.29	-1.07	6.87	6.33				
	3	5.77	4.52	10.25**	11.36**				
	4	-7.21	-8.71*	8.04	8.80				
	5	2.25	0.66	4.44	6.46				
	6	-4.30	-5.55	5.18	7.33				
Grade level (compared to Grade 7)	8					6.50	6.90	0.30	1.08
	9					13.65**	14.47**	18.74	13.92
Year (compared to 2001)	2002	3.92	4.05	11.72*	11.51**	-11.05	-8.17	1.91	6.78
	2003	1.58	1.34	1.03	0.89	-4.51	-3.93	5.52	6.93
	2004	1.36	0.03	5.60	5.40	-5.81	-6.83	26.24	28.81
	2005	1.28	-0.32	7.01	5.26	-9.99	-8.99	0.94	7.52
	2006	-6.48	-7.23	10.94	8.45	20.38	21.68	59.40***	68.13***
	2007	4.64	4.48	9.62	9.62	5.76	6.43	32.59	35.31
	2008	4.09	4.32	14.95**	14.15*	2.04	0.89	29.60	38.95*
	2009	-1.51	-1.12	7.11	5.98	-0.49	1.82	12.22	24.40
	2010	-3.40	-2.84	-3.54	-5.37	28.56	29.93	17.26	24.42
Number of observations		71305	71305	6724	6724	14649	14649	2423	2423
F.E. per school			V		V		V		V
Adjusted R^2		0.004	0.022	0.023	0.122	0.017	0.063	0.066	0.19

a) Primary schools - Grades 1 to 6; Middle schools - Grades 7 to 9.

b) Standard deviation of the mother's level of education in the grade level.

c) Socioeconomic background is on a scale of 1 to 10: 1 is the weakest; 10 is the strongest.

SOURCE: Based on Ministry of Education.

Table 7: Segregation between and within primary schools[a] by educational stream, 2001–10

A. Hebrew schools

	State-Hebrew			State-Religious			Ultra-Orthodox		
	Between schools	Within schools	Total	Between schools	Within schools	Total	Between schools	Within schools	Total
Mother with higher education[b]	0.170	0.021	0.191	0.295	0.024	0.319	0.490	0.018	0.508
%	89	11	100	92	8	100	96	4	100
Father with higher education[b]	0.166	0.021	0.187	0.307	0.023	0.329	0.582	0.018	0.599
%	89	11	100	93	7	100	97	3	100
Immigrants	0.160	0.024	0.184	0.174	0.033	0.207	0.257	0.018	0.275
%	87	13	100	84	16	100	93	7	100
Ethiopian descent	0.117	0.015	0.131	0.245	0.038	0.283	0.109	0.009	0.118
%	89	11	100	87	13	100	92	8	100

B. Arab schools

	Arab			Bedouin			Druze		
	Between schools	Within schools	Total	Between schools	Within schools	Total	Between schools	Within schools	Total
Mother with higher education[b]	0.130	0.031	0.161	0.082	0.039	0.122	0.055	0.025	0.081
%	81	19	100	68	32	100	69	31	100
Father with higher education[b]	0.113	0.032	0.144	0.072	0.037	0.110	0.049	0.028	0.077
%	78	22	100	66	34	100	64	36	100

a) Grades 1–6 only.

b) Thirteen years or more of education.

SOURCE: Based on Ministry of Education.

Table 8: Segregation between and within Hebrew primary schools[a], by educational stream and socioeconomic background[b], 2001–10

A. State schools

	Strong background			Middle background			Weak background		
	Between school	Within schools	Total	Between school	Within schools	Total	Between schools	Within schools	Total
Mother with higher education[c]	0.126	0.023	0.149	0.094	0.022	0.115	0.065	0.022	0.088
%	84	16	100	81	19	100	75	25	100
Father with higher education[c]	0.117	0.023	0.14	0.092	0.022	0.114	0.065	0.021	0.087
%	84	16	100	81	19	100	75	25	100
Immigrants	0.064	0.025	0.089	0.146	0.025	0.171	0.147	0.026	0.173
%	72	28	100	85	15	100	85	15	100
Ethiopian descent	0.044	0.016	0.060	0.092	0.016	0.108	0.139	0.014	0.153
%	74	26	100	86	14	100	91	9	100

B. State-Religious schools

	Strong background			Middle background			Weak background		
	Between schools	Within schools	Total	Between schools	Within schools	Total	Between schools	Within schools	Total
Mother with higher education[c]	0.119	0.031	0.150	0.217	0.029	0.245	0.098	0.031	0.128
%	79	21	100	88	12	100	76	24	100
Father with higher education[c]	0.131	0.029	0.16	0.224	0.026	0.25	0.098	0.029	0.127
%	82	18	100	90	10	100	77	23	100
Immigrants	0.121	0.025	0.146	0.116	0.034	0.150	0.252	0.043	0.295
%	83	17	100	77	23	100	86	14	100
Ethiopian descent	0.056	0.024	0.080	0.138	0.037	0.175	0.266	0.047	0.313
%	70	30	100	79	21	100	85	15	100

a) Primary schools - Grades 1 to 6 only; Middle schools - Grades 7 to 9.

b) Standard deviation of the mother's level of education in the grade level.

c) Thirteen years or more of education.

SOURCE: Based on Ministry of Education.

Table 9: The change in segregation between and within primary schools[a] by educational stream, 2001 compared to 2010

A. State-Hebrew schools

	Year	State			State-Religious			Ultra-Orthodox		
		Between schools	Within schools	Total	Between schools	Within schools	Total	Between schools	Within schools	Total
Mother with higher education[b]	2001	0.151	0.021	0.172	0.276	0.026	0.302	0.412	0.021	0.433
	2010	0.192	0.021	0.212	0.301	0.022	0.324	0.508	0.016	0.523
Percent change		27	0	23	9	-13	7	23	-25	21
Father with higher education[b]	2001	0.154	0.021	0.175	0.295	0.024	0.318	0.537	0.023	0.56
	2010	0.183	0.021	0.204	0.305	0.022	0.326	0.581	0.015	0.596
Percent change		19	-1	17	3	-8	3	8	-35	6
Immigrants	2001	0.138	0.021	0.159	0.143	0.035	0.177	0.279	0.019	0.298
	2010	0.177	0.025	0.201	0.192	0.026	0.218	0.234	0.018	0.252
Percent change		28	16	27	35	-26	23	-16	-3	-15
Ethiopian descent	2001	0.089	0.014	0.104	0.2	0.045	0.245	0.093	0.028	0.121
	2010	0.132	0.015	0.147	0.256	0.022	0.278	0.11	0.032	0.142
Percent change		48	4	42	28	-51	14	18	15	18

B. Arab schools

	Year	Arab			Bedouin			Druze		
		Between schools	Within schools	Total	Between schools	Within schools	Total	Between schools	Within schools	Total
Mother with higher education[b]	2001	0.12	0.028	0.149	0.043	0.048	0.091	0.064	0.022	0.087
	2010	0.151	0.032	0.184	0.094	0.037	0.131	0.059	0.023	0.082
Percent change		26	14	24	121	-23	44	-9	3	-6
Father with higher education[b]	2001	0.107	0.033	0.14	0.053	0.04	0.093	0.048	0.028	0.077
	2010	0.136	0.031	0.167	0.082	0.037	0.119	0.055	0.022	0.077
Percent change		27	-7	19	55	-9	27	14	-23	0

a) Grades 1–6.

b) Thirteen years or more of education.

SOURCE: Based on Ministry of Education.

The middle schools

Figure 5: Dissimilarity index (*D*) by the mother's level of education, within middle schools, by class level, 2001–2010
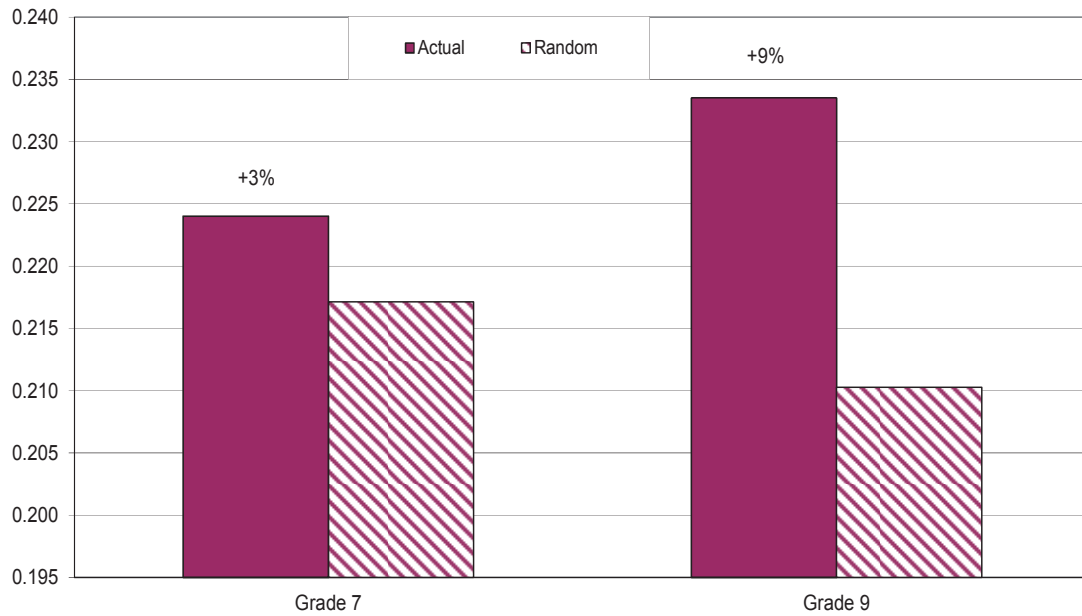
Figure 6: Dissimilarity index (*D*) by the mother's level of education, within middle schools, by educational stream, 2001–2010
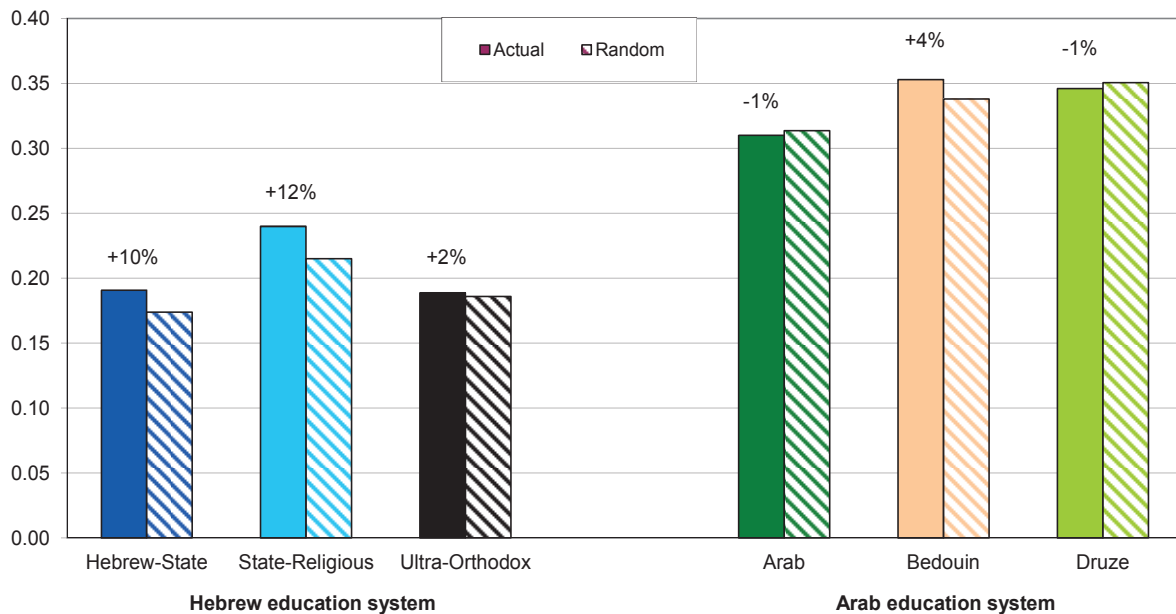
Figure 7: Dissimilarity index (*D*) by the mother's level of education, within State-Hebrew middle schools, 2001–2010

SOURCE: Based on Ministry of Education.
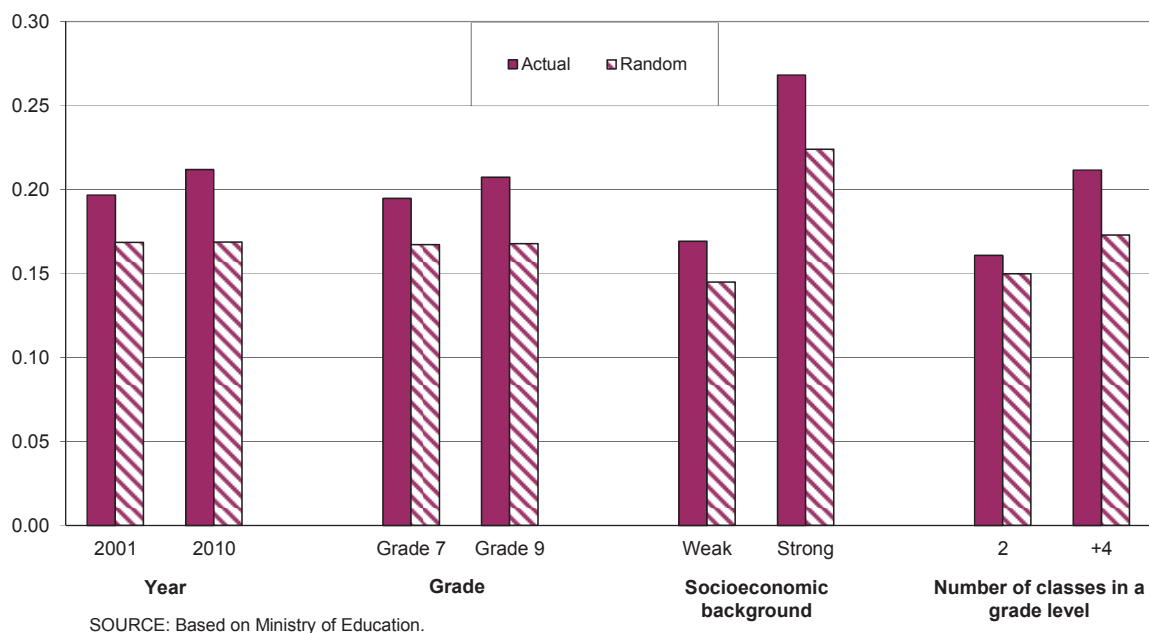
Figure 8: Dissimilarity index (*D*) of students of Ethiopian descent, within State-Religious middle schools, 2001–2010

SOURCE: Based on Ministry of Education.
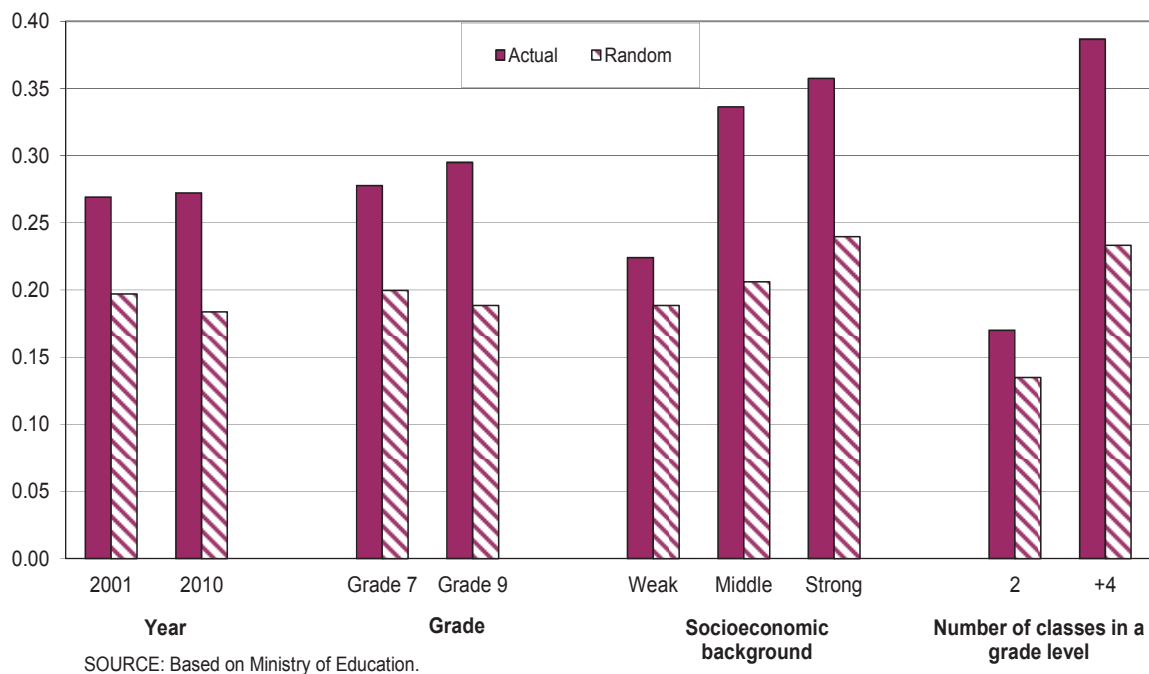
Figure 9: Segregation indices by the mother's education level, between and within primary and middle schools, State-Hebrew educational system, 2001–2010
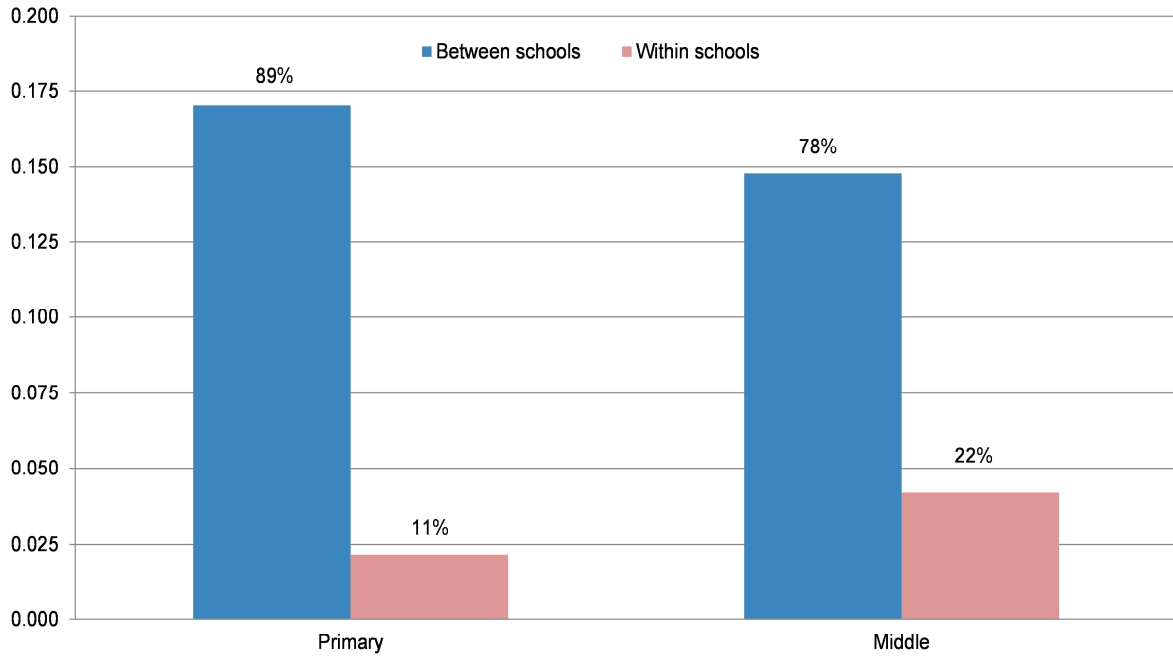
SOURCE: Based on Ministry of Education.

Figure 10: Segregation indices for student of Ethiopian descent, between and within primary and middle schools, State-Religious educational system, 2001–2010

SOURCE: Based on Ministry of Education.

37
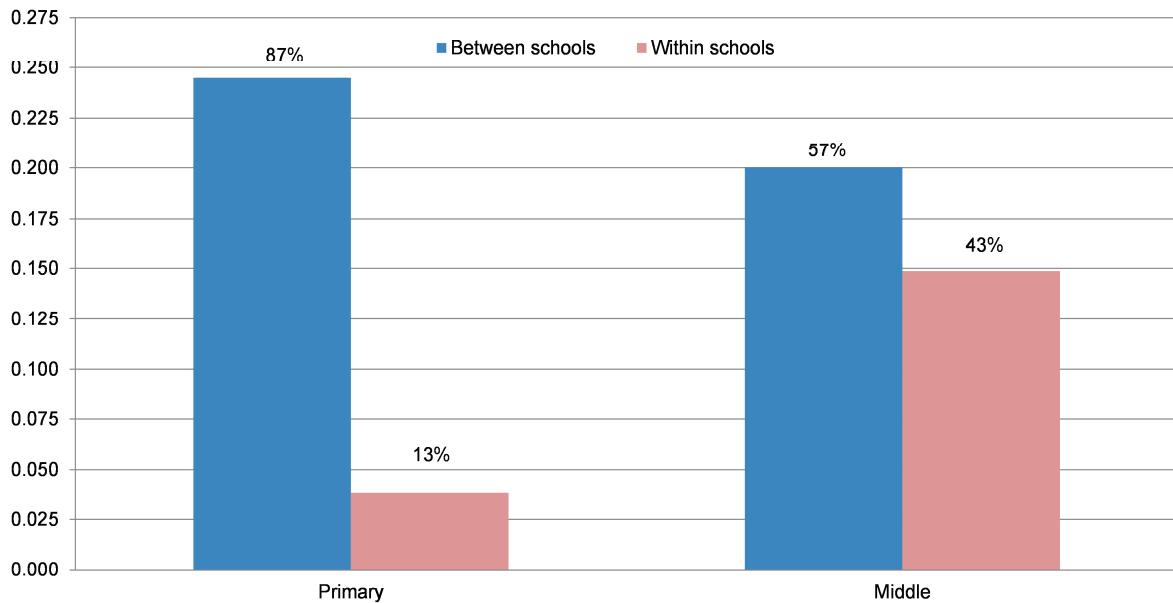
Table 10: The difference between the actual and random segregation indices within middle schools[a], by year (percent)

A. By parents' level of education

Index	By mother's level of education[b]				By father's level of education[b]			
	2001-10	2001	2007	2010	2001-10	2001	2007	2010
D	6.2	4.5	7.7	6.8	5	4.1	8.1	-0.3
GS	5.3	3.2	6.9	6.2	3.9	2.8	6.1	-1.3
H	0.1	-0.1	3.1	-1.0	-2.8	-1.6	-0.4	-13.2
Is	1.8	1.3	2.4	2.3	1.8	1.6	2.6	0.5

B. By rate of immigrants (Hebrew education)

Index	2001-10	2001	2007	2010
D	4.5	4.2	3.3	6.9
GS	1.3	0.7	-0.1	3.8
H	-4.0	-2.0	-4.9	1.3
Is	1.6	3.6	2.5	2.2

a) Grades 7–9.

b) Thirteen years or more of education.

SOURCE: Based on Ministry of Education.

Table 11: The difference between the actual and random segregation indices within middle schools[a], by grade level, 2001–10 (percent)

Index	By mother's level of education[b]			By father's level of education[b]		
	Total	Grade 7	Grade 9	Total	Grade 7	Grade 9
D	6.2	3.2	11.1	5.0	3.7	9.2
GS	5.3	2.6	10.0	3.9	2.9	7.9
H	0.1	-6.0	10.6	-2.8	-5.7	7.5
Is	1.8	1.5	2.5	1.8	1.6	2.4

a) Grades 7–9.

b) Thirteen years or more of education.

SOURCE: Based on Ministry of Education.

Table 12: The difference between the actual and random segregation indices within middle schools[a], by educational stream, 2001–10 (percent)

A. By mother's level of education[b]

Index	Total	Hebrew education		Arab education		
		State	State-Religious	Arab	Bedouin	Druze
D	6.2	9.7	11.6	1.5	-1.1	4.3
GS	5.3	9.0	11.5	0.9	-1.2	4.5
H	0.1	7.0	7.5	-2.7	-6.7	-0.2
Is	1.8	2.8	2.7	0.5	0.0	-2.7

B. By father's level of education[b]

Index	Total	Hebrew education		Arab education		
		State	State-Religious	Arab	Bedouin	Druze
D	5.0	9.9	8.2	0.3	-2.9	-0.1
GS	3.9	9.5	7.1	-1.8	-3.1	-0.2
H	-2.8	10.6	1.2	-7.3	-12.7	-6.4
Is	1.8	3.0	2.1	0.4	-0.1	-0.9

C. By rate of immigrants (Hebrew education)

Index	Total	State	State-Religious
D	4.5	2.3	17.8
GS	1.3	-0.4	11.2
H	-4.0	-10.2	21.4
Is	2.8	1.2	9.8

a) Grades 7–9.
b) Thirteen years or more of education.
SOURCE: Based on Ministry of Education.

Table 13: The difference between the actual and random segregation indices within State-Hebrew middle schools[a], 2001–10 (percent)

A. Year

	By mother's level of education[b]			By father's level of education[b]			By rate of immigrants			By rate of large families[c]		
	2001	2007	2010	2001	2007	2010	2001	2007	2010	2001	2007	2010
D	6.0	8.9	12.5	5.2	12.8	13.1	4.2	3.3	6.9	-2.1	-5.2	-0.9
GS	4.3	7.6	14.7	3.7	11.6	13.6	0.7	-0.1	3.8	-1.2	-4.0	0.5
H	3.5	4.0	9.2	1.4	8.8	12.2	-2.0	-4.9	1.3	-6.0	-9.4	-2.7
Is	2.0	3.0	3.3	2.0	3.3	3.2	3.6	2.5	2.2	-3.3	-3.5	-3.1

B. Grade level

	By mother's level of education[b]			By father's level of education[b]			By rate of immigrants			By rate of large families[c]		
	Total	Grade 7	Grade 9	Total	Grade 7	Grade 9	Total	Grade 7	Grade 9	Total	Grade 7	Grade 9
D	9.0	5.7	13.5	8.1	6.6	11.5	4.5	2.9	7.5	-3.1	-4.3	-1.7
GS	8.7	6.0	12.8	7.6	6.5	10.5	1.3	0.1	3.5	-2.0	-2.8	-1.0
H	5.1	-4.0	16.6	3.5	-1.3	12.8	-4.0	-7.9	3.4	-6.6	-8.3	-4.6
Is	2.4	2.2	2.9	2.4	2.2	2.8	2.8	2.0	4.1	-3.5	-3.4	-3.5

C. Socioeconoimic background of the school's students[d]

	By mother's level of education[b]			By father's level of education[b]			By rate of immigrants			By rate of large families[c]		
	Weak	Middle	Strong	Weak	Middle	Strong	Weak	Middle	Strong	Weak	Middle	Strong
D	16.8	27.5	19.7	17.6	26.1	15.8	4.1	24.0	35.5	1.7	0.8	0.8
GS	16.2	26.3	16.2	16.8	24.5	12.9	3.6	20.5	28.7	1.8	1.0	1.6
H	35.4	45.7	13.2	35.5	35.3	6.8	0.6	34.9	59.8	1.3	-1.0	-2.3
Is	1.5	5.8	8.0	1.7	5.8	6.0	1.9	5.8	6.5	-1.5	-2.4	-4.9

D. Number of classes per grade level[d]

	By mother's level of education[b]			By father's level of education[b]			By rate of immigrants			By rate of large families[c]		
	2	3	4+	2	3	4+	2	3	4+	2	3	4+
D	-6.1	3.5	14.6	-6.2	6.3	12.7	-6.5	3.5	8.3	-10.3	-2.2	-2.2
GS	-4.8	3.2	13.5	-6.0	5.2	11.9	-8.1	0.0	4.7	-6.2	0.3	-1.8
H	-18.2	-0.4	15.9	-17.8	6.0	11.3	-21.5	-0.1	2.5	-23.0	-6.4	-5.3
Is	0.2	1.7	3.3	0.2	2.0	3.1	-1.6	4.3	3.7	-1.9	-0.9	-6.3

a) Grades 7–9.

b) Thirteen years or more of education.

c) 4 or more siblings (including the student).

d) Weak background - cultivation deciles 8–10; Middle background - cultivation deciles 4–7; Strong background - cultivation deciles 1–3.

SOURCE: Based on Ministry of Education.

Table 14: The difference between the actual and random segregation indices of students of Ethiopian descent within State-Religious middle schools[a], 2001–10 (percent)

Index	Year			Grade level			Socioeconomic background[b]			Average number of classes per grade level		
	2001	2007	2010	Total	Grade 7	Grade 9	Weak	Middle	Strong	2	3	4
D	36.6	43.2	48.1	48.0	39.0	56.6	18.9	63.2	49.2	26.1	38.6	65.9
GS	33.3	36.8	42.3	42.6	34.0	50.2	18.0	56.5	45.1	24.4	33.5	59.2
H	53.7	74.9	77.2	74.2	54.9	96.4	30.3	103.7	72.1	33.6	59.8	106.6
Is	32.5	38.0	36.0	35.1	32.4	38.9	47.7	48.5	22.8	9.4	38.1	44.4

a) Grades 7–9.

b) Weak background - cultivation deciles 8–10; Middle background - cultivation deciles 4–7; Strong background - cultivation deciles 1–3.

SOURCE: Based on Ministry of Education.

Table 15: Segregation between and within middle schools[a], by educational stream, 2001–10

A. Hebrew education

	State			State-Religious		
	Between schools	Within schools	Total	Between schools	Within schools	Total
Mother with higher education[b]	0.148	0.042	0.190	0.268	0.052	0.320
%	78	22	100	84	16	100
Father with higher education[b]	0.144	0.041	0.185	0.276	0.050	0.326
%	78	22	100	85	15	100
Immigrants	0.147	0.038	0.185	0.153	0.096	0.249
%	79	21	100	61	39	100
Ethiopian descent	0.061	0.038	0.099	0.200	0.149	0.349
%	61	39	100	57	43	100

B. Arab education

	Arab			Bedouin			Druze		
	Between schools	Within schools	Total	Between schools	Within schools	Total	Between schools	Within schools	Total
Mother with higher education[b]	0.134	0.031	0.165	0.075	0.045	0.120	0.031	0.039	0.070
%	81	19	100	62	38	100	45	55	100
Father with higher education[b]	0.119	0.033	0.152	0.059	0.044	0.103	0.035	0.036	0.072
%	78	22	100	57	43	100	50	50	100

a) Grades 7–9.

b) Thirteen years or more of education.

SOURCE: Based on Ministry of Education.

Table 16: Segregation between and within Hebrew middle schools[a], by educational stream and socioeconomic background[b], 2001–10

A. State schools

	Strong background			Middle background			Weak background		
	Between schools	Within schools	Total	Between schools	Within schools	Total	Between schools	Within schools	Total
Mother with higher education[b]	0.087	0.036	0.123	0.081	0.055	0.137	0.062	0.056	0.118
%	71	29	100	60	40	100	52	48	100
Father with higher education[b]	0.077	0.035	0.113	0.079	0.054	0.134	0.068	0.055	0.124
%	69	31	100	59	41	100	55	45	100
Immigrants	0.040	0.032	0.072	0.111	0.045	0.156	0.136	0.040	0.175
%	56	44	100	71	29	100	77	23	100
Ethiopian descent	0.020	0.037	0.058	0.052	0.041	0.093	0.060	0.037	0.097
%	35	65	100	56	44	100	62	38	100

B. State-Religious schools

	Strong background			Middle background			Weak background		
	Between schools	Within schools	Total	Between schools	Within schools	Total	Between schools	Within schools	Total
Mother with higher education[b]	0.082	0.063	0.145	0.184	0.050	0.234	0.101	0.113	0.214
%	56	44	100	79	21	100	47	53	100
Father with higher education[b]	0.092	0.061	0.153	0.180	0.049	0.229	0.102	0.106	0.207
%	60	40	100	79	21	100	49	51	100
Immigrants	0.057	0.046	0.103	0.108	0.108	0.093	0.139	0.200	0.160
%	55	45	100	116	116	100	87	125	100
Ethiopian descent	0.051	0.091	0.142	0.139	0.172	0.312	0.128	0.137	0.265
%	36	64	100	45	55	100	48	52	100

a) Grades 7–9.

b) Weak background - cultivation deciles 8–10; Middle background - cultivation deciles 4–7; Strong background - cultivation deciles 1–3.

c) Thirteen years or more of education only.

SOURCE: Based on Ministry of Education.

Table 17: The change in segregation between and within middle schools[a] by educational stream, 2001 compared to 2010

A. Hebrew Schools

	Year	State			State-Religious		
		Between schools	Within schools	Total	Between schools	Within schools	Total
Mother with higher education[b]	2001	0.127	0.037	0.165	0.252	0.061	0.313
	2010	0.164	0.052	0.215	0.281	0.050	0.331
Percent change		29	38	31	12	-18	6
Father with higher education[b]	2001	0.130	0.038	0.168	0.265	0.053	0.319
	2010	0.154	0.050	0.204	0.286	0.048	0.334
Percent change		18	32	22	8	-10	5
Immigrants	2001	0.156	0.042	0.198	0.174	0.095	0.269
	2010	0.143	0.039	0.182	0.131	0.082	0.212
Percent change		-9	-6	-8	-25	-14	-21
Ethiopian descent	2001	0.047	0.045	0.092	0.189	0.126	0.314
	2010	0.076	0.042	0.118	0.189	0.141	0.330
Percent change		63	-7	29	0	12	5

B. Arab schools

	Year	Arab			Bedouin			Druze		
		Between schools	Within schools	Total	Between schools	Within schools	Total	Between schools	Within schools	Total
Mother with higher education[b]	2001	0.127	0.029	0.156	0.038	0.037	0.075	0.022	0.044	0.066
	2010	0.161	0.035	0.195	0.079	0.046	0.125	0.020	0.041	0.061
Percent change		26	20	25	110	24	67	-6	-8	-7
Father with higher education[b]	2001	0.113	0.032	0.144	0.040	0.045	0.085	0.028	0.036	0.064
	2010	0.145	0.038	0.184	0.064	0.040	0.104	0.032	0.037	0.069
Percent change		29	20	27	60	-11	22	14	3	8

a) Grades 7–9.

b) Thirteen years or more of education only.

SOURCE: Based on Ministry of Education.

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Appendix

Table A1: Sociodemographic characteristics of primary school[a] students by sector, 2001–10 (rate, percent)

A. 2001–10

Index	Total	Hebrew schools			Arab schools		
		State	State-Religious	Ultra-Orthodox	Arab schools	Bedouin	Druze
Mother with a higher education[b]	36.1	43.3	45.1	46.9	12.2	4.7	9.2
Father with a higher education[b]	34.9	40.7	41.5	47.6	13.4	6.3	14.3
Immigrants[c]		21.9	22.9	16.5			
Ethiopian descent[d]		1.9	9.4	0.4			
Number of siblings[e]	2.7	1.6	2.7	4.5	2.9	4.8	2.6

B. 2001

Index	Total	Hebrew schools			Arab schools		
		State	State-Religious	Ultra-Orthodox	Arab schools	Bedouin	Druze
Mother with a higher education[b]	34.1	40.7	41.2	48.9	9.1	2.8	5.5
Father with a higher education[b]	34.1	38.5	37.9	54.0	12.8	6.3	11.9
Immigrants[c]		17.1	15.6	8.0			
Ethiopian descent[d]		1.4	8.6	1.8			
Number of siblings[e]	2.8	1.7	2.8	4.6	3.2	5.0	3.0

C. 2010

Index	Total	Hebrew schools			Arab schools		
		State	State-Religious	Ultra-Orthodox	Arab schools	Bedouin	Druze
Mother with a higher education[b]	38.8	47.2	48.9	45.0	15.7	5.8	13.0
Father with a higher education[b]	35.9	43.4	44.4	42.5	14.5	6.7	15.0
Immigrants[c]		23.6	25.5	18.9			
Ethiopian descent[d]		2.1	8.9	0.5			
Number of siblings[e]	2.5	1.5	2.5	4.2	2.6	4.4	2.1

a) Grades 1–6.
b) Thirteen years or more of education.
c) A student who is either an immigrant to Israel from 1989 onwards, or at least one of whose parents is, and a student of Ethiopian descent.
d) A student who either immigrated from one of the Horn of Africa countries (Ethiopia, Eritrea, Djibouti, Sudan, and Somalia), or at least one of whose parents did, at any time.
e) Number of siblings (including the student himself) from the mother.
SOURCE: Based on Ministry of Education.

Table A2: Sociodemographic characteristics of middle school[a] students by sector, 2001–10 (rate, percent)

A. 2001–10

Index	Total	Hebrew schools		Arab schools		
		State	State-Religious	Arab schools	Bedouin	Druze
Mother with a higher education[b]	36.5	41.3	48.4	10.4	4.0	5.6
Father with a higher education[b]	36.1	39.3	45.3	13.4	6.7	12.4
Immigrants[c]		22.9	22.1			
Ethiopian descent[d]		2.0	9.1			
Number of siblings[e]	2.6	1.6	2.7	2.9	4.8	2.6

B. 2001

Index	Total	Hebrew schools		Arab schools		
		State	State-Religious	Arab schools	Bedouin	Druze
Mother with a higher education[b]	35.9	40.4	45.6	8.4	3.2	3.4
Father with a higher education[b]	35.8	38.2	42.5	13.1	6.6	9.8
Immigrants[c]		22.2	19.1			
Ethiopian descent[d]		1.3	8.6			
Number of siblings[e]	2.7	1.7	2.9	3.3	5.0	3.2

C. 2010

Index	Total	Hebrew schools		Arab schools		
		State	State-Religious	Arab schools	Bedouin	Druze
Mother with a higher education[b]	37.7	43.0	51.7	12.6	4.2	7.5
Father with a higher education[b]	36.3	40.6	48.3	13.6	6.2	14.1
Immigrants[c]		24.9	26.1			
Ethiopian descent[d]		2.7	9.1			
Number of siblings[e]	2.2	1.2	2.3	2.4	4.3	2.0

a) Grades 7–9.

b) Thirteen years or more of education.

c) A student who is either an immigrant to Israel from 1989 onwards, or at least one of whose parents is,
   and a student of Ethiopian descent.

d) A student who either immigrated from one of the Horn of Africa countries
   (Ethiopia, Eritrea, Djibouti, Sudan, and Somalia), or at least one of whose parents did, at any time.

e) Number of siblings (including the student himself) from the mother.

SOURCE: Based on Ministry of Education.

The difference between actual and random D segregation indices within primary schools

Table A3: The difference between actual and random _D_ segregation indices within primary schools[a] by year

A. By parents' level of education

Index	By mother's level of education[b]				By father's level of education[b]			
	2001–10	2001	2007	2010	2001–10	2001	2007	2010
Actual	0.187	0.184	0.188	0.187	0.185	0.183	0.186	0.186
Random	0.174	0.172	0.173	0.178	0.172	0.169	0.174	0.179
Difference	0.013	0.012	0.015	0.008	0.012	0.014	0.012	0.007

B. By rate of immigrants (Hebrew schools)

Index	2001–10	2001	2007	2010
Actual	0.201	0.229	0.193	0.193
Random	0.192	0.220	0.184	0.185
Difference	0.009	0.008	0.009	0.009

a) Grades 1–6.

b) Thirteen years or more of education.

SOURCE: Based on Ministry of Education.

Table A4: The difference between actual and random _D_ segregation indices within primary schools[a] by grade level, 2001–10

Index	By mother's level of education[b]			By father's level of education[b]		
	Total	Grade 1	Grade 6	Total	Grade 1	Grade 6
Actual	0.187	0.188	0.185	0.185	0.186	0.183
Random	0.174	0.171	0.174	0.172	0.171	0.171
Difference	0.013	0.017	0.011	0.012	0.016	0.012

a) Grades 1–6.

b) Thirteen years or more of education.

SOURCE: Based on Ministry of Education.

Table A5: The difference between actual and random D segregation indices within primary schools[a] by educational stream, 2001–10

A. By mother's level of education[b]

Index	Total	Hebrew schools			Arab schools		
		State	State-Religious	Ultra-Orthodox	Arab schools	Bedouin	Druze
Actual	0.187	0.148	0.186	0.174	0.264	0.286	0.259
Random	0.174	0.145	0.177	0.167	0.219	0.253	0.237
Difference	0.013	0.002	0.009	0.007	0.045	0.033	0.022

B. By father's level of education[b]

Index	Total	Hebrew schools			Arab schools		
		State	State-Religious	Ultra-Orthodox	Arab schools	Bedouin	Druze
Actual	0.185	0.149	0.191	0.186	0.248	0.261	0.210
Random	0.172	0.147	0.182	0.176	0.207	0.236	0.196
Difference	0.012	0.002	0.009	0.009	0.041	0.025	0.014

C. By rate of immigrants (Hebrew schools)

Index	Total	State	State-Religious	Ultra-Orthodox
Actual	0.201	0.190	0.207	0.231
Random	0.192	0.181	0.193	0.226
Difference	0.009	0.008	0.014	0.005

a) Grades 1–6.

b) Thirteen years or more of education.

SOURCE: Based on Ministry of Education.

Table A6: The difference between actual and random D segregation indices within State-Hebrew primary schools[a], 2001–10

A. Year

Index	By mother's level of education[b]			By father's level of education[b]			By rate of immigrants			By rate of large families[c]		
	2001	2007	2010	2001	2007	2010	2001	2007	2010	2001	2007	2010
Actual	0.159	0.162	0.162	0.164	0.165	0.167	0.229	0.193	0.193	0.251	0.236	0.235
Random	0.152	0.155	0.162	0.158	0.162	0.164	0.220	0.184	0.185	0.251	0.236	0.236
Difference	0.006	0.006	0.000	0.006	0.003	0.003	0.008	0.009	0.009	0.000	0.000	-0.001

B. Grade level

Index	By mother's level of education[b]			By father's level of education[b]			By rate of immigrants			By rate of large families[c]		
	Total	Grade 1	Grade 6	Total	Grade 1	Grade 6	Total	Grade 1	Grade 6	Total	Grade 1	Grade 6
Actual	0.160	0.161	0.160	0.164	0.165	0.164	0.201	0.207	0.199	0.238	0.234	0.245
Random	0.156	0.153	0.158	0.159	0.157	0.160	0.192	0.195	0.190	0.239	0.232	0.247
Difference	0.005	0.008	0.002	0.005	0.008	0.004	0.009	0.012	0.009	-0.001	0.002	-0.001

C. Socioeconomic background of the school's students[d]

Index	By mother's level of education[b]			By father's level of education[b]			By rate of immigrants			By rate of large families[c]		
	Weak	Middle	Strong	Weak	Middle	Strong	Weak	Middle	Strong	Weak	Middle	Strong
Actual	0.156	0.159	0.183	0.152	0.166	0.190	0.218	0.198	0.183	0.244	0.231	0.237
Random	0.148	0.152	0.181	0.145	0.159	0.187	0.214	0.186	0.166	0.247	0.230	0.238
Difference	0.008	0.006	0.002	0.007	0.007	0.003	0.004	0.012	0.017	-0.003	0.001	-0.001

D. Number of classes per grade level

Index	By mother's level of education[b]			By father's level of education[b]			By rate of immigrants			By rate of large families[c]		
	2	3	4+	2	3	4+	2	3	4+	2	3	4+
Actual	0.151	0.165	0.196	0.156	0.169	0.197	0.186	0.211	0.254	0.200	0.282	0.308
Random	0.150	0.157	0.183	0.153	0.161	0.187	0.179	0.200	0.240	0.199	0.288	0.303
Difference	0.001	0.008	0.012	0.002	0.008	0.010	0.007	0.011	0.014	0.001	-0.006	0.005

a) Grades 1–6.

b) Thirteen years or more of education.

c) 4 or more siblings (including the student).

d) Weak background - cultivation deciles 8–10; Middle background - cultivation deciles 4–7; Strong background - cultivation deciles 1–3.

SOURCE: Based on Ministry of Education.

Table A7: The difference between actual and random D segregation indices for students of Ethiopian descent within State-Religious primary schools[a], 2001–10

Index	Year			Grade level			Socioeconomic background[b]			Average number of classes per grade level		
	2001	2007	2010	Total	Grade 1	Grade 6	Weak	Middle	Strong	2	3	4
Actual	0.151	0.165	0.183	0.164	0.171	0.160	0.134	0.180	0.172	0.128	0.244	0.224
Random	0.141	0.160	0.181	0.155	0.165	0.148	0.136	0.169	0.154	0.126	0.221	0.202
Difference	0.010	0.005	0.002	0.009	0.006	0.012	-0.002	0.011	0.019	0.002	0.023	0.022

a) Grades 1–6.

b) Weak background - cultivation deciles 8–10; Middle background - cultivation deciles 4–7; Strong background - cultivation deciles 1–3.

SOURCE: Based on Ministry of Education.

The difference between actual and random D segregation indices within middle schools

Table A8: The difference between actual and random D segregation indices within middle schools[a] by year

A. By parents' level of education

Index	By mother's level of education[b]				By father's level of education[b]			
	2001–10	2001	2007	2010	2001–10	2001	2007	2010
Actual	0.228	0.221	0.228	0.240	0.219	0.215	0.218	0.218
Random	0.215	0.211	0.212	0.224	0.209	0.206	0.201	0.218
Difference	0.013	0.009	0.016	0.015	0.010	0.008	0.016	-0.001

B. By rate of immigrants (state schools)

Index	2001–10	2001	2007	2010
Actual	0.231	0.247	0.247	0.214
Random	0.221	0.237	0.215	0.200
Difference	0.013	0.009	0.016	0.015

a) Grades 7–9.

b) Thirteen years or more of education.

SOURCE: Based on Ministry of Education.

Table A9: The difference between actual and random D segregation indices within middle schools[a] by grade level, 2001–10

Index	By mother's level of education[b]			By father's level of education[b]		
	Total	Grade 7	Grade 9	Total	Grade 7	Grade 9
Actual	0.228	0.224	0.234	0.219	0.215	0.225
Random	0.215	0.217	0.210	0.209	0.208	0.206
Difference	0.013	0.007	0.023	0.010	0.008	0.019

a) Grades 7–9.

b) Thirteen years or more of education.

SOURCE: Based on Ministry of Education.

Table A10: The difference between actual and random _D_ segregation indices within middle schools[a] by educational stream, 2001–10

A. By mother's level of education[b]

Index	Total	Hebrew schools		Arab schools		
		State	State-Religious	Arab schools	Bedouin	Druze
Actual	0.228	0.191	0.240	0.189	0.310	0.353
Random	0.215	0.174	0.215	0.186	0.313	0.338
Difference	0.013	0.017	0.025	0.003	-0.003	0.015

B. By father's level of education[b]

Index	Total	Hebrew schools		Arab schools		
		State	State-Religious	Arab schools	Bedouin	Druze
Actual	0.219	0.192	0.244	0.200	0.262	0.317
Random	0.209	0.174	0.226	0.199	0.270	0.318
Difference	0.010	0.017	0.019	0.001	-0.008	0.000

C. By rate of immigrants (Hebrew schools)

Index	Total	State	State-Religious
Actual	0.231	0.214	0.277
Random	0.221	0.209	0.236
Difference	0.010	0.005	0.042

a) Grades 7–9.

b) Thirteen years or more of education.

SOURCE: Based on Ministry of Education.

Table A11: The difference between actual and random D segregation indices within State middle schools[a], 2001–10

A. Year

Index	By mother's level of education[b]			By father's level of education[b]			By rate of immigrants			By rate of large families[c]		
	2001	2007	2010	2001	2007	2010	2001	2007	2010	2001	2007	2010
Actual	0.198	0.199	0.212	0.203	0.202	0.216	0.247	0.222	0.214	0.358	0.345	0.371
Random	0.186	0.183	0.189	0.193	0.179	0.191	0.237	0.215	0.200	0.366	0.364	0.375
Difference	0.011	0.016	0.023	0.010	0.023	0.025	0.010	0.007	0.014	-0.008	-0.019	-0.003

B. Grade level

Index	By mother's level of education[b]			By father's level of education[b]			By rate of immigrants			By rate of large families[c]		
	Total	Grade 7	Grade 9	Total	Grade 7	Grade 9	Total	Grade 7	Grade 9	Total	Grade 7	Grade 9
Actual	0.200	0.195	0.208	0.204	0.199	0.212	0.231	0.226	0.238	0.356	0.340	0.380
Random	0.184	0.184	0.183	0.188	0.186	0.190	0.221	0.220	0.222	0.367	0.356	0.387
Difference	0.017	0.011	0.025	0.015	0.012	0.022	0.010	0.006	0.017	-0.011	-0.015	-0.007

C. Socioeconomic background of the school's students[d]

Index	By mother's level of education[b]			By father's level of education[b]			By rate of immigrants			By rate of large families[c]		
	Weak	Middle	Strong	Weak	Middle	Strong	Weak	Middle	Strong	Weak	Middle	Strong
Actual	0.169	0.212	0.268	0.165	0.214	0.280	0.223	0.225	0.255	0.466	0.378	0.335
Random	0.145	0.167	0.224	0.141	0.170	0.242	0.214	0.181	0.188	0.459	0.375	0.333
Difference	0.024	0.046	0.044	0.025	0.044	0.038	0.009	0.044	0.067	0.008	0.003	0.003

D. Number of classes per grade level

Index	By mother's level of education[b]			By father's level of education[b]			By rate of immigrants			By rate of large families[c]		
	2	3	4+	2	3	4+	2	3	4+	2	3	4+
Actual	0.163	0.204	0.212	0.166	0.210	0.214	0.207	0.252	0.235	0.181	0.248	0.432
Random	0.173	0.197	0.185	0.177	0.198	0.190	0.222	0.244	0.217	0.201	0.254	0.442
Difference	-0.011	0.007	0.027	-0.011	0.012	0.024	-0.014	0.009	0.018	-0.021	-0.006	-0.010

a) Grades 7–9.

b) Thirteen years or more of education.

c) 4 or more siblings (including the student).

d) Weak background - cultivation deciles 8–10; Middle background - cultivation deciles 4–7; Strong background - cultivation deciles 1–3.

SOURCE: Based on Ministry of Education.

Table A12: The difference between actual and random D segregation indices for students of Ethiopian descent within State-Religious primary schools[a], 2001–10

Index	Year			Grade level			Socioeconomic background[b]			Average number of classes per grade level		
	2001	2007	2010	Total	Grade 7	Grade 9	Weak	Middle	Strong	2	3	4
Actual	0.269	0.289	0.272	0.282	0.278	0.295	0.224	0.336	0.357	0.170	0.288	0.387
Random	0.197	0.202	0.184	0.191	0.200	0.188	0.188	0.206	0.240	0.135	0.208	0.233
Difference	0.072	0.087	0.088	0.092	0.078	0.107	0.036	0.130	0.118	0.035	0.080	0.154

a) Grades 7–9.

b) Weak background - cultivation deciles 8–10; Middle background - cultivation deciles 4–7; Strong background - cultivation deciles 1–3.

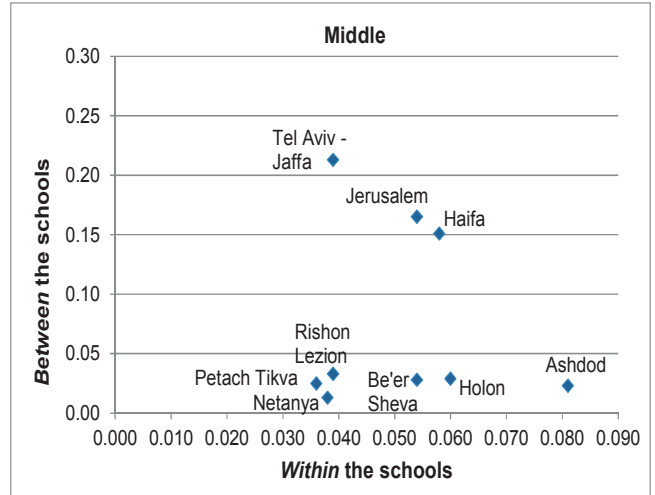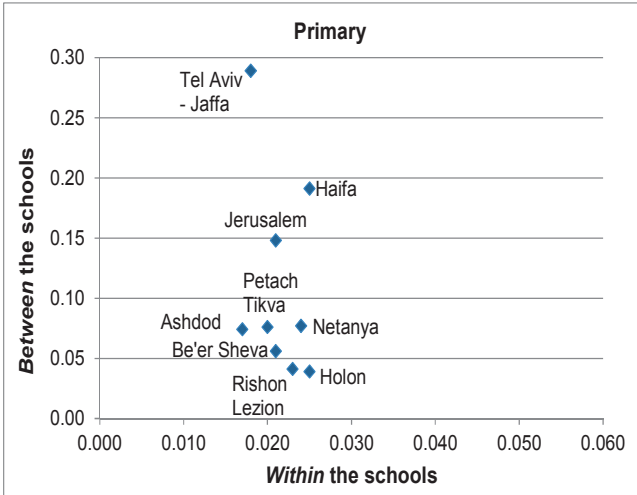SOURCE: Based on Ministry of Education.

Figure A1: SR Index of mother's education level by educational stream and class level, 2001–2010
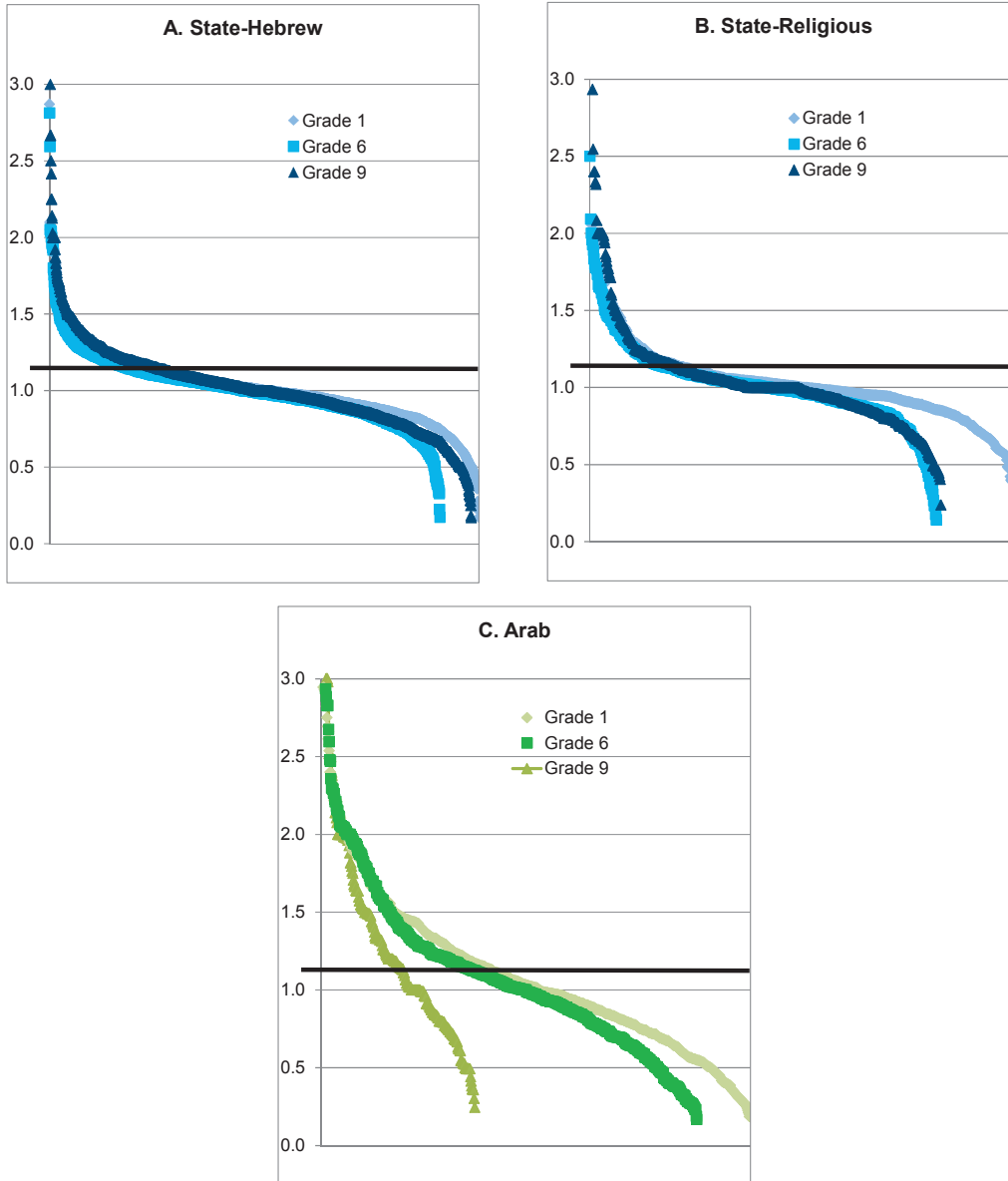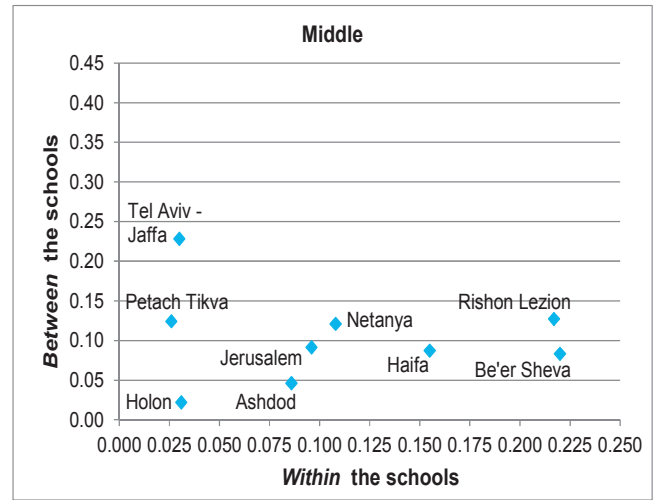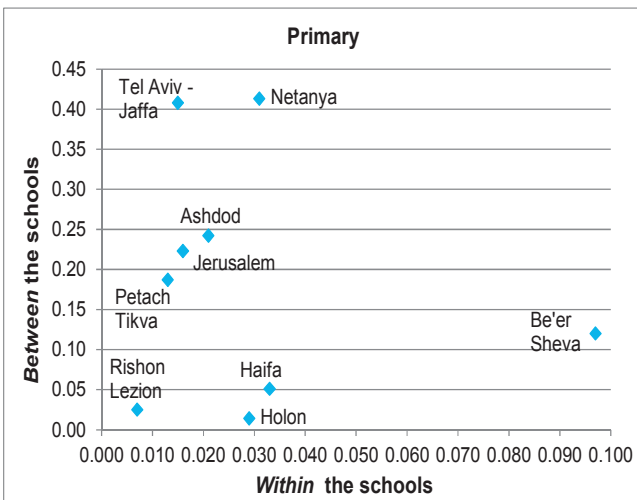
SOURCE: Based on Ministry of Education.

Figure A2: Segregation between and within schools in selected local authorities, 2001–10

State-Hebrew school system, segregation by mother's level of education

Primary

Middle

State-Religious school system, segregation of students of Ethiopian descent

Primary

Middle

SOURCE: Based on Ministry of Education.