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Trends of segregation or integration in the residential environment
Based on socio-economic status of pupils in the school

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Abstract

Introduction

This review focuses on trends of segregation by geographic areas (primarily place of residence), and the repercussions of segregation on the characteristics and output of the education system, and on the educational opportunities available to members of different social groups. It is based on peer-reviewed articles, books, chapters of books and reports by research institutions and authorities in Israel. The review includes five parts. The first part examines the trends, dimensions and scope of segregation. The second part addresses the implications and effects of segregation on the education system and its output. In the third part, we review policies and interventions aimed at reducing the scope of segregation, as reported in various countries in the world, with an emphasis on the United States. The fourth part focuses on describing the situation in Israel, and finally, in the fifth part, we present a number of policy options and recommendations.

The phenomenon of segregation by geographic area

Some researchers contend that the discourse on social segregation and its consequences is no longer relevant today (Glaeser & Vigdor, 2012). However, many studies indicate trends of residence-based social segregation. These trends require investigation and discussion, and there is a need to examine ways to contend with this phenomenon. Segregation by place of residence is a multi-layered phenomenon that can be based on various dimensions – such as race, ethnicity, income and status – and there is often an overlap between these dimensions. In the U.S., there has been an emphasis in recent years on the growth of class-based spatial segregation. In Europe, class-based segregation is moderate and attention is instead focused on ethnic-based segregation in Germany (Glitz, 2014); Holland (Musterd, 2014); Sweden (Andersson, 2014); Britain (Johnston, Poulsen & Forrest, 2015); and Belgium (Van der Bracht, Coenen & Van de Putte, 2015). There is considerable research on spatial segregation based on religion (especially in Europe), which largely overlaps class-based segregation. In the U.S., class-based spatial segregation is explained in part by demographic changes (Reardon & Owens, 2014) related to “white flight” – that is, the white population’s economic situation enables it to move out of mixed and heterogeneous neighborhoods. Thus, city centers are abandoned in favor of suburbs, and people move from large cities to smaller communities. We also have witnessed “locked-out segregation” – the formation of homogenous communities or neighborhoods that social groups cannot join because they are unable to finance the cost of housing or as a result of social exclusion. This phenomenon goes hand in hand with “locked-in segregation” – a process in which a social group finds itself stuck in a neighborhood that does not attract new residents (Johnson et al., 2014). Studies also indicate that a social group can be

in a situation of hyper-segregation, which reflects multiple aspects of segregation that amplify its differentiation from the general population (Massey & Tannen, 2015). In addition to these explanations, the literature highlights a number of difficulties that researchers face when attempting to examine trends and changes in the extent of segregation over time or in different places: First, there is no accepted index for measuring segregation, and different researchers employ different indexes to calculate the level of segregation (De la Roca et al, 2013; Johnson et al., 2014). Secondly, studies on segregation by place of residence focus on different periods of time. Some of the research describes segregation at a given point of time, while others are longitudinal studies that address different ranges of time; this makes it difficult to conduct apt comparisons. Thirdly, the studies on segregation analyze geographic units of different sizes, ranging from residential neighborhoods to countries (Johnson et al., 2014; Orfeild, 2014; Parisi et al., 2015).

The impact of segregation on the education system and its output

From a social perspective, residential segregation is likely to affect the level of equality in education, and there are at least two reasons for this. First, the context in which individuals grow up, develop and function is liable to influence their achievements in various areas (such as employment, education and health) (Berliner, 2006, 2009; Harding et al., 2011). The second reason is that place of residence can have an indirect effect on educational opportunities via the education system and its output. Neighborhoods and residential areas constitute a significant social context for children and adults because they provide access to resources, social opportunities and interactions that influence their development (Sampson, 2001). There are many characteristics of the neighborhood or residential area that affect its level and quality, and consequentially, determine its impact on the various outcomes of those living in it (Putnam, 2015) – for example, the level of crime (Deming, 2012); employment and business opportunities (Kaim, 1992; Stoll, 2005); the presence or lack of role models and peer group influence (Diez Roux, 2001; Wilson, 2012); the range of public services, and the welfare services in the place of residence (Putnam, 2015). Studies show that living in a wealthy neighborhood for an extended period of time contributes to the achievements of adolescents because of the advantages of greater resources that support learning, and quality services for children and schools (Crowder & South, 2003; Heckman, 2008). On the other hand, residing in an area that is considered weak engenders a process of isolation among its residents that is expressed in low income, more exposure to alcohol, drugs and violence, and family difficulties. These characteristics limit exposure to educational opportunities (Flores, 2008). This effect is particularly salient when residence in the neighborhood begins at a very young age (Anderson, Leventhal & Dupere, 2014). Areas of residence have an impact on educational processes in the schools because schools tend to reflect the neighborhood in which they are located. That is, segregation in residence reflects and also reinforces segregation in the education system (Goyette, Iceland & Weininger, 2014; Lareau, 2014). As we can learn from the literature on social

segregation and integration in schools, the social composition (class, ethnic and racial) has an effect, sometimes a significant one, on the pupils' cognitive dimensions and, consequently, also on the pupils' chances for social mobility. Moreover, studies have found a connection between school quality and housing values in the neighborhood or residential area in which schools are located (Machin, 2011; Rothwell, 2012). For example, research has underlined the link between national test scores in schools and the value of housing in their surroundings (Central Bureau of Statistics in Israel, 2015; Fiva & Kirkebøen, 2008). Thus, the location of a school can affect its resources and culture, learning processes, pupils' motivation, parental involvement and more (for example, Silverman, 2014), and accordingly, influences the inequality among schools and their pupils' achievements (Bischoff & Reardon, 2013). However, the distinct and relative impact of the school or neighborhood is not always possible to examine and identify, and the findings on this topic are also inconsistent. For example, a comprehensive study on neighborhoods and schools in Chicago found that the general level of neighborhood quality is likely to have a broader impact on various outputs than the quality of the school itself (Sampson, 2013). On the other hand, various intervention programs indicate that improving the quality of the school for pupils in weak areas boosts their chances of enrolling in college (Chetty et al., 2011). Many researchers today suggest the need to continue examining the impact of residential characteristics (social composition, concentration of poverty) on the school's educational processes and outcomes. There is also a need to study the possibility of a differential impact of place of residence on various social groups (Burdick-Will et al., 2011). Attention should also be focused on the direct and indirect effects of residential characteristics, via the education system, on educational opportunities. This undoubtedly poses a research challenge: to determine and examine the unique impact of place of residence (Duncan & Murnane, 2011; Putnam, 2015).

Policies and interventions aimed at reducing segregation

Policymakers who are disturbed by segregation processes look for solutions to counter this phenomenon in order to offer better educational opportunities to minority and poor populations. The literature describes two main types of intervention: The first is a demographic change involving the transfer of populations among different residential areas. Intervention programs of this type focus on reducing segregation by changing the demography of the neighborhoods in which it exists. The second type of intervention is to improve the neighborhood and/or school through processes of change that focus on pockets of segregated groups of minorities and the poor. Here, the emphasis is on preserving the demographic status quo, while fostering improvement within the neighborhood and/or school. The interventions can be divided into two types: internal school interventions and external ones. However, this dichotomy is not clear-cut; some of these programs are categorized as internal school programs, but aim to effect changes that pertain to aspects outside of the school, whether directly and openly, or indirectly (Brighouse & Scouten, 2011.) An analysis

of the two types of reforms and intervention programs (demographic change and neighborhood/school improvement) reveals a number of general trends for ongoing development of new and existing reforms. Demographic changes at the neighborhood level are reflected in only slight improvement in learning achievements, but are expressed in longer-term changes in other variables, such as chances of enrolling in college and income level in the job market (Chetty, Herndon & Katz, 2015). In regard to changes at the school level, studies show that their impact is very low without taking into account factors outside of the school, including the community, parents and neighborhood. Thus, changes in the school itself will not be significant without also making changes in the community and in the neighborhood (Berliner, 2009; Green & Gooden, 2014).

The situation in Israel

A number of studies published recently on the situation in Israel point to processes of economic-based segregation among and within communities (Milgrom, 2015). There is also segregation based on nationhood, religion and class in various communities. Segregation in Israel, therefore, has a multi-dimensional character that relates to both cultural-social and political dimensions, and this is also expressed in the education system. Since the establishment of Israel, structural segregation has existed in the education system, based on sector. The education system is composed of four prominent sectors that are distinct in their social and organizational characteristics, and segregated by ethnicity (Jewish, Arab) and level of religiousness within the Hebrew (Jewish) education system – state (secular), state-religious, and independent education (predominantly ultra-Orthodox). This also has significance in the geographic space. In the Jewish and Arab education systems, for example, there is segregation based on nationhood, combined with segregation based on geography and socio-economic status, and this has a direct impact on segregation at the school level. Indeed, there are few schools where Jews and Arabs learn together. The same is true for Hebrew state, state-religious and the various independent schools. They are distinct education systems that segregate at the school level, which is also connected to segregation in the geographic space (for example, ultra-Orthodox neighborhoods in various cities). Therefore, the discussion on the connection between social segregation by place of residence/community and education must address the sectoral structure of the education system.

There is scant literature focusing on the situation in Israel. A number of publications address segregation based on place of residence, and others discuss segregation among schools. The evidence on the link between segregation in residence and schools is very limited and is based on only a few cities. Consequently, in order to describe the current situation in Israel for this review, we processed data from the Ministry of Education's research room, from reports posted on the ministry's *B'Mabat Rachav* website, and from the Central Bureau of Statistics. The data is drawn

from schools in 48 large communities that include the majority of schoolchildren in Israel. According to this data, the extent of segregation as measured by parental education changed more among schools than among communities during the years 2002-2012, and these changes varied by sector. In Hebrew state education and in Arab education, the level of segregation increased, while segregation remained stable in state-religious education and decreased in ultra-Orthodox education. In addition to examining the level of segregation – that is, the extent to which each school reflects the composition of the sector and community – we also studied the pupils' learning conditions, according to the population of pupils in the school. In this context, we found that segregation in Hebrew state education grew following a rise in the percentage of pupils learning in wealthy homogeneous conditions. A similar process, though to a lesser extent, occurred in state-religious Hebrew education. In Hebrew ultra-Orthodox education, the decrease in segregation occurred due to an increase in the percentage of pupils learning in weak homogeneous conditions. Thus, there are more processes of homogenization among schools. In Arab education, the situation is more complicated: there is increase in segregation among schools that reflects a process of stratification within the Arab sector that expands to differences between schools along a decrease in the percentage of pupils learning in poor homogeneous conditions schools a lower percentage of pupils learning. The segregation in Israel means disparate learning opportunities, depending on education sector. In regard to these processes, no consistent and clear connection was found with learning achievements or with achievement gaps among pupils from stronger versus weaker backgrounds (according to parental education), as measured by percentage of pupils eligible for matriculation. The combination of the social composition of school and community are indeed linked to learning achievements. However, learning in a wealthy community does not necessarily boost the achievement of pupils from a different social background who learn in a school with mixed social groups. This data underlines the need to examine the effect of educational processes at the community level – particularly in light of the trends of decentralization and the growing role of local government in the field of education.

Directions for the future

This review raises a number of directions for shaping education policy. In light of the significant sectoral distinction based on nationhood/religion and expressed geographically, and because each sector develops as a unit in which social processes are conducted in a unique way, there is almost no interaction among the social groups. Bold leadership is needed today by policymakers in order to generate change and lower the social barriers among the different education sectors built into the education system. In addition, class-based social segregation exists within each of the sectors. Therefore, action is needed in several directions in order to formulate a data-driven policy for reducing class-based segregation in each education sector: First, there is need to continue to promote research on integration and segregation processes, and their effects on various ecological

contexts, including the impact of place of residence on educational processes and outcomes. Specifically, it is important to address three significant contexts that influence achievements: the education sector, the community/neighborhood where the school is located, and the school itself. Secondly, in order to understand the effects and repercussions of the various contexts, with the aim of designing data-driven policy, there is a need to combine research methods and studies; we also recommend conducting controlled experiments (see for example Sampson, Sharkey & Raudenbush, 2008). Thirdly, policymakers need to decide on the results they seek to achieve, both in terms of the time frame (short-term or long-term) and the fields they wish to influence. Furthermore, in each of the sectors, it is essential that the changes at the school level be accompanied by changes in the community and in the neighborhood (Berliner, 2009; Green & Gooden, 2014). In this process, the local leadership (that is, the local government and school principals) in the various communities is very important. In this context, successful educational activity should be identified in schools located in communities that are weak socio-economically, in order to learn from these cases. Finally, in order to study the connection between place of residence and diverse social processes like education, there is a need to synchronize data among various authorities. We believe that this is possible and that today there are databases in Israel that can be utilized. However, the variables and data must be clearly defined and standardized in order to ensure their compatibility. The integration of various databases would make it possible to expand and deepen existing knowledge on the connection between geographic space and education, in all of its various aspects.

Introduction

This review focuses on trends of segregation by geographic areas (primarily place of residence), and the repercussions of segregation on the characteristics and output of the education system, and on the educational opportunities available to members of different social groups. The survey is based on peer-reviewed articles, research reports, books and chapters of books – most of them published within the past three years and found via electronic databases. We will also refer to various publications by research institutions and authorities in Israel (see Appendix 1).

The review includes five parts. The first part examines the trends, dimensions and scope of segregation. The second part addresses the implications and effects of segregation on the education system and its output. In the third part, we review policies and interventions aimed at narrowing the dimensions of segregation, as reported in various countries in the world, with an emphasis on the United States. The fourth part focuses on describing the situation in Israel, and presents data processed specifically for this review. Finally, in the fifth part, we suggest directions to consider and a number of recommendations.

Part One: The phenomenon of segregation by geographic regions

Some researchers contend that the discourse on social segregation and its repercussions is no longer relevant today (Glaeser & Vigdor, 2012). However, many studies indicate trends of residence-based social segregation. These trends require investigation and discussion, and there is a need to examine ways to contend with this phenomenon. Segregation by place of residence is a global phenomenon that occurs in many countries. It is a multi-layered phenomenon that can be based on various dimensions such as race, ethnicity, income, status and even religion – for example, in Holland (Sykes, 2011); in Belgium (Agirdag & Van Houtee, 2011); in Sweden (Öhrn, 2012); in Germany (Bender-Szymanaski, 2012); in Chile (Valenzuela et al., 2014) and in the U.S. (Bischoff & Reardon, 2013). The discussion on social segregation places emphasis on the distribution of different populations in geographic regions (residential neighborhoods). This segregation can apply to different situations, as Massey and Denton (1988) describe in the context of segregation on a racial basis (Massey & Denton, 1988). (See also Fogel, 2011).

1. Unevenness – This refers to the level of representation of majority/minority groups in neighborhoods within the space of the metropolis. A situation of even representation exists when members of different groups – for example, the majority group and members of the minority group – are similarly distributed in each and every space in various geographic spaces. A situation of absolute unevenness exists when members of different groups do not share a residential area – that is, where members of one group reside, there are no residents from another group. This index is relative to the social composition of the population under study.
2. Isolation – This refers to the extent to which members of a minority group live in neighborhoods where most of the residents are also members of minorities. This dimension relates to the experience of isolation, and to the likelihood that members of majority and minority groups will be exposed to and actually encounter each other in the framework of a shared residential neighborhood. For example, there could be a situation in which whites and blacks live in equal numbers in a neighborhood (a balanced situation), yet in practice have no exposure to the other group in their place of residence.
3. Clustering – This refers to the extent to which neighborhoods of minority groups are adjacently situated in a space. The more adjacent these neighborhoods, creating spatial clusters – the more segregated the locality.
4. Concentration – This refers to the relative part of the metropolis' physical space that is populated by members of minority groups. A high concentration is a situation in which a

particular group is concentrated only in a small and limited number of geographic areas and does not “occupy” broad and dispersed territorial parts of the settled area.

5. Centralization – This refers to the extent to which members of a minority group live in close proximity to the center of the metropolis. A group that is more concentrated in neighborhoods in the center of the city is less present in the suburbs, and the urban space is more segregated.

There is overlap among these five dimensions, and the more a group is characterized by these dimensions, the more distinct it is from the general population. When a group is characterized by four of the five dimension, the phenomenon is defined as a situation of hyper-segregation (Massey & Tannen, 2015).

In regard to the United States, residential segregation based on socio-economic status has increased in recent decades. During the years 1970-2009, the percentage of families living in neighborhoods segregated by class – poor neighborhoods or wealthy neighborhoods – rose from 15% to 33%, with the segregation of the wealthy groups particularly salient (Bischoff & Reardon, 2013). During the decade from 1999 to 2009, there was a significant increase in residential segregation based on income in the U.S., particularly among blacks and Hispanics (for example, Bischoff & Reardon, 2013; Reardon, Fox & Townsend, 2015). Studies indicate less segregation in some places, along with growing segregation in other areas – for example, in areas of accelerated urbanization (in southern and western cities in the U.S.) or in areas with a large concentration of immigrants. Moreover, research on the phenomenon of hyper-segregation shows that during the years 1970-2010, there was a decline in hyper-segregation in the Afro-American population (Massey & Tannen, 2015), but there are still areas where this phenomenon exists. The research literature on segregation based on race or ethnicity indicates that the level of segregation between blacks and whites decreased in the late 1960s and early 1970s (Reardon & Owens, 2014; Siegel-Hawley, 2013a; Parisi, Lichter & Taquino, 2015).

However, there is research evidence of broad regions in which a process of re-segregation has occurred since the 1990s – that is, a return to a process of growing social segregation (Hall, Crowder & Spring). Indeed, many studies report such growth, particularly among Latino groups and Asian immigrants (De la Roca & Ellen, 2015; De la Roca, Ellen & O'Regan, 2013, Steil, 2015). Similar studies report a growing trend of social heterogeneity in the American population alongside a decline in ethnic-based segregation and, in particular, a decrease in racial-based segregation in metropolitan areas in the southern and western United States (Lee, Iceland & Farrell, 2014). Other studies on segregation between blacks and whites report a significant decline in segregated processes in large cities (Parisi, Lichter & Taquino, 2015; Massey & Tannen, 2015), together with an increase in segregation among various localities. In addition, it was reported that the more

diverse the population is in terms of ethnic fabric, the less segregation there is between blacks and whites, because the social heterogeneity blurs the racial distinction (Parisi, Lichter & Taquino, 2015).

In regard to Europe, in light of the historic changes of recent decades (including the fall of the Berlin Wall and dissolution of the Soviet Union), and in the wake of the economic crisis and large waves of immigration to western Europe, social segregation became a significant issue and the subject of comprehensive study (Andersson, 2014 ; Musterd, 2014). The research literature points to ethnic-based spatial segregation, and even a trend of growing segregation, for example in Germany (Glitz, 2014); Holland (Musterd, 2014; Hochstenbach, Musterd & Teernstra, 2014); Sweden (Andersson, 2014); Britain (Johnston, Poulsen & Forrest, 2015); and Belgium (Van der Bracht, Coenen & Van de Putte, 2015). There are also numerous research studies on spatial segregation based on religion, particularly in Europe – for example, in Northern Ireland (Borooah & Knox, 2015; Murtagh, 2011; Shuttleworth, Barr, & Gould, 2013); Britain (Gale, 2013); Portugal (McGarrigle, 2015); and Sweden (Schenkert, Burchardt, & Wohlrab-Sahr, 2015). In some of the cases studied (for example, in Britain and in Portugal), this involved residential segregation of Muslim immigrants. That is, there was an overlap between religious segregation and class-based segregation.

In comparison to the U.S., few studies in Europe addressed segregation on an economic-class basis, and the level of class-based segregation seems to be more moderate relative to the U.S. (Marcinczak et al., 2015). A study examining the level of class-based geographic segregation in 13 cities in the European Union during the years 2001-2011 found an increasing level of class-based segregation in the major cities (although there were differences among various cities and between Eastern and Western Europe). In most of the cities studied (for example, Amsterdam, Oslo, Stockholm and Madrid), the affluent population is the most segregated group from a spatial perspective – that is, there are distinct wealthy neighborhoods. This process of segregation of wealthy groups was not found in London or Athens, for example, while in Budapest and in Prague the weak population is the most segregated group (Marcinczak et al., 2015).

Some explanations have been offered for the various trends of segregation. According to the “white flight” phenomenon (Coleman, 1975; Galster, 1990), the racial segregation can be explained by the white population abandoning and migrating from the mixed and heterogeneous neighborhoods – at least those whites whose economic situation enables them to do so. Thus, city centers are being abandoned in favor of suburbs, and large cities in favor of smaller localities.

Johnston, Poulsen and Forrest (2014) note two additional processes related to segregation that might help in understanding its complex trends. The first process, “locked-out segregation,” expresses the segregation of groups that create for themselves homogenous localities or wealthy

homogenous neighborhoods that are, in effect, closed to weak social groups. The weak groups cannot move to the wealthy homogeneous places of residence as a direct result of mechanisms of social exclusion, or due to the lack of economic means to afford the high cost of housing there. Another process is “locked-in segregation,” when weak social groups find themselves stuck inside a weak neighborhood and are unable to leave it because of discrimination or the lack of resources required to move to a better neighborhood. In this process, other social groups are not interested in moving into this weak neighborhood (Johnston, Poulsen & Forrest, 2014).

An additional explanation for the trend of growing segregation relates to economic processes like the housing crisis and higher rate of foreclosures in the U.S., which primarily hurt the minority population and engendered changes in the ethnic/racial composition of the population in integrated neighborhoods, as members of the minority population moved to poorer neighborhoods. A study of foreclosure rates at the neighborhood level found a wide range – from 2% of homes foreclosed in wealthy areas to a rate of 16% in poor areas (Dwyer & Lassus, 2015). Massey and Tannen (2015) note that studies have shown that black neighborhoods were a primary target for mortgage providers during the “housing bubble” and that the level of separation between blacks and whites was the single strongest predictor of the number and rate of neighborhood foreclosures in metropolitan areas (Massey & Tannen, 2015).

Globalization processes and the ascendance of neo-liberal approaches, together with the weakening of welfare policy and public housing, are some of the explanations offered for the phenomenon of growing class-based segregation in Europe (Marcinczak et al., 2015). Economic and globalization processes provide good explanations for the increase in segregation in some areas, but other explanations are needed to explain the fluctuations over time and the downward trend in the level of segregation in other areas. According to the “buffering hypothesis,” the integration of diverse ethnic populations mitigates the racial separation between whites and Afro-Americans/blacks. That is, the presence of various ethnic groups mediates and increases the contact and interaction among different social groups, reduces discrimination against a specific group, and eases tensions between whites and blacks as the two dominant groups in the urban space (Parisi, Lichter & Taquino, 2015).

Hall, Crowder and Spring (2015) cite four reasons for the fluctuations found in the level of social segregation and, in particular, the trend of less racial segregation (Hall, Crowder & Spring, 2015):

1. A rise in the level of education among minority groups, which has enabled them access to less segregated neighborhoods.
2. The development of racial views and perspectives in the U.S. that strengthen egalitarian and “race-blind” outlooks.
3. A decrease in official and open discrimination regarding the integration of minority groups in predominantly white neighborhoods.

4. The internal migration of socially and racially heterogeneous populations, which changed the social composition of the neighborhoods.

In general, the research literature on social segregation shows that it is difficult to identify clear-cut trends of segregation based on place of residence, and this is because of two substantial issues: First, there is considerable overlap between socio-economic status and other factors, particularly race and ethnicity. This overlap makes it difficult to isolate each of the influences from a research perspective and assess the interaction of these influences. In practice, many studies focus on racial/ethnic segregation or class-based segregation, and only a few address a combination of both (Bischoff & Reardon, 2013; Dela Roca, Ellen & O'Regan, 2014; Hall, Crowder & Spring, 2015; Parisi, Lichter & Taquino, 2015; Siegel-Hawley, 2013; Steil, De la Roca & Ellen, 2015). All this, as noted, is despite the fact that social segregation is a multi-dimensional and complex phenomenon. Hence, it is essential to address the interaction among the relevant factors.

The second issue stems from the lack of consensus among researchers regarding the level of social segregation, the ways of measuring it, and its characteristics. First, there is no accepted index for measuring segregation and different researchers employ different indexes for calculating the level of segregation (De la Roca, Ellen & O'Regan, 2014; Johnston, Poulsen & Forrest, 2014). Secondly, the various studies focus on different periods of time. Some of the research describes the situation at a given point of time, while others are longitudinal studies that address trends of segregation over different ranges of time. Finally, the studies on segregation analyze geographic units of different sizes, ranging from residential neighborhoods to countries (Johnson, Poulsen & Forrest, 2014; Orfeild, 2014; Parisi, Lichter & Taquino, 2015). Consequently, it is difficult to compare various research findings, or to resolve contradictions between different trends indicated by the findings of different researchers.

These trends in the level of segregation – on a class, racial/ethnic or religious basis – have an impact on the education system. Residential segregation is closely tied to the education system, and there is a reciprocal relation between place of residence and segregation in schools (Mickelson, 2011). As described in part 2, the research literature indicates that the connections between a pupil's place of residence, school and educational opportunities are complex (Harding et al., 2011).

Part Two: The impact of segregation on the education system and its output

From a social perspective, residential segregation is likely to influence the extent of inequality in education for at least two reasons: The *first reason* is that the context in which individuals grow up, develop and function influences their achievements in various fields (employment, education, health) (Berliner, 2006, 2009; Harding et al., 2011). The *second reason* is that the place of

residence may have an indirect influence on educational opportunities via the education system and its output.

Neighborhoods and residential areas constitute a significant social context for children and adults because they provide access to resources, social opportunities and interactions that affect their development (Sampson, 2001). There are many characteristics of the neighborhood/residential area that determine its level and quality, and influence the various output of its residents (Putnam, 2015; Yelgun & Karaman, 2015) – for example, exposure to crime and violence (Deming, 2012); employment and business opportunities (Kain, 1992; Stoll & Newbery, 2005); lack of role models and peer group influence (Diez Roux, 2001; Wilson, 2012); and range of public services like centers for early childhood care, libraries and parks (Putnam, 2015). Lee, Iceland, & Farrell (2014) conclude that the presence of minority groups in situations of segregation has negative repercussions in all fields of life: health, security, employment and education. They note that for minority groups, “spatial isolation heightens exposure to problems and reduces access to resources and opportunities” (Lee, Iceland, & Farrell, 2014: 417). As we can learn from the literature on segregation and integration in schools, the social component (class, ethnic and racial) in general and the area of residence in particular sometimes has a significant impact on the cognitive dimensions of pupils and, consequently, on their chances of mobility.

Studies show that living in a wealthy neighborhood for an extended period of time contributes to the achievements of adolescents because of the advantages of greater resources that support learning, and quality services for children and schools (Crowder & South, 2003; Heckman, 2008). On the other hand, residing in an area that is considered weak engenders a segregation process among its residents that is expressed in low income, more exposure to alcohol, drugs and violence, and family difficulties. These characteristics limit exposure to educational opportunities (Flores, 2008). This effect is particularly salient when residence in the neighborhood begins at a very young age (Anderson, Leventhal & Dupere, 2014; Aughinbaugh & Rothstein, 2014). In neighborhoods that are considered weak, the school dropout rate is higher than in wealthy neighborhoods (Crowder & South, 2003; Patterson, 2008).

Thus, areas of residence have an impact on educational processes in the schools, which tend to reflect the neighborhood in which they are located. This impact is likely to be expressed in the school’s resources and culture, learning processes, the motivation of pupils, parental involvement, and so on (for example: Silverman, 2014). Accordingly, this is reflected in the lack of equality among schools and in the achievements of their pupils (Bischoff & Reardon, 2013). Residential segregation, therefore, mirrors and even reinforces the segregation in the education system (Goyette, Iceland & Weininger, 2014; Lareau, 2014). The literature indicates that integrated schools are linked to heterogeneous places of residences, and this has a positive effect on learning

achievements in high school. In the long run, this effect has broad social significance: adults who studied in integrated high schools prefer integrated schools and heterogeneous residential neighborhoods for their children (Siegel-Hawley, 2013). In this sense, the existence of integrated schools also leads to racial integration in residential areas, while a retreat from integration in schools – for example, due to a change in educational policy – reinforces residential segregation and social inequality (Siegel-Hawley, 2013). In addition, researchers have found a connection between the quality of schools and the value of housing/areas of residence in which schools are located (Black, 1999; Machin, 2011; Rothwell, 2012). For example, studies emphasize the connection between national test results in schools and housing values in the vicinity (Central Bureau of Statistics, 2015; Fiva & Kirkiboen, 2008).

In an effort to better understand the impact of place of residence and neighborhood, studies were conducted in recent years to examine the separate effects of the neighborhood and of the school. A comprehensive study on neighborhoods and schools in Chicago found that the general quality of a neighbor is likely to have a broader impact on various types of output (income level, crime rate, persistence in work) than the quality of the school itself (Sampson, 2013). Deluca and Rosenbaum (2014) found that Afro-American children who moved to a heterogeneous suburban neighborhood with good schools significantly improved their chances of completing their studies and pursuing higher education – despite the fact that their family’s economic situation had not changed (Deluca & Rosenbaum, 2014).

A comprehensive study on schools in Milwaukee, Wisconsin examined the relative contribution of the school and the neighborhood in shaping the pupils’ achievements (Carlson & Cowen, 2015). This study, which focused on short-term achievements, found that the school’s contribution was greater than the neighborhood’s contribution. However, this study also identified effects from the neighborhood that are likely to have a long-term impact. This research highlights two main issues related to examining the effects of segregation on the education system and its output. The literature indicates that it is difficult to examine the school and the neighborhood as two separate components, because the school reflects the neighborhood in which it is located and usually serves the neighborhood’s children. In addition, the family’s decisions regarding school choice or place of residence reinforce the overlap in the impact of the two components (Duncane & Murnane, 2011; Putnam, 2015). In order to separately examine the impact of schools and neighborhoods, there is a need to control for the parents’ effect on these two contexts. In addition, educational reforms enable various situations to be identified – for example, when school choice results in a lack of overlap between the neighborhood and the school. The distinction between the effects of the neighborhood and those of the school is related to the type of output examined – learning achievements/national test scores were found to be more closely linked to schools, while health aspects and broad social

output (employment and type of social relations) were found to be more closely linked to neighborhoods (Cook et al., 2002; Fryer & Katz, 2013). This output can be mapped according to short-term and long-term impact. The neighborhood's influence is likely to be long-term and dominant because of the substantial time the pupils spend in the neighborhood, as opposed to the school (Carlson & Cowen, 2015). Only a few studies have tried to address the problem of separating the influence of these components through experimental research methods or longitudinal studies (Carlson & Cowen, 2015).

An additional aspect of the influence of schools in particular neighborhoods is the quality of teaching. A number of studies in different countries have focused on teaching personnel, emphasizing the teachers' choice of particular schools in which to teach. For examples, studies in the United States showed that teachers prefer to teach in schools where most of the children are from a high socio-economic background, and within a relatively short period of time seek to transfer out of schools where the socio-economic level is low. (Boyd et al., 2011; Cowan & Goldhaber, 2015). A study in Finland examined teachers' organizational and professional commitment to work as influenced by the socio-economic status of the school's neighborhood, and found low organizational commitment in weak areas in comparison to wealthy areas (Linnansaari-Rajalin et al., 2015). A study in England found that schools in weak areas have difficulty in recruiting and retaining teachers (McIntyre & Thompson, 2015). These trends, which are also characterized by relatively low motivation of teachers in weak areas, engender less stability among teaching staffs in weaker areas (Boyd et al., 2011). Nonetheless, these findings are not clear-cut. Still, due to the possible effects of segregation, policymakers are seeking solutions for reducing this phenomenon and providing better educational opportunities for minority groups and populations in poor areas.

Part Three: Policies and interventions for reducing segregation

There are two main types of intervention discussed in the literature:

1. A demographic change expressed in the transfer and mobility of populations among different residential areas. In this intervention type, programs focus on reducing segregation by changing the neighborhoods in which it exists.
2. Improving the neighborhood/school through processes of renovation and change, focusing on segregated minorities and poor areas. In this intervention, the emphasis is on preserving the demographic status quo, while fostering improvement within the neighborhood and/or school. These interventions can be divided into two types: external-to-school reforms and internal-to-school reforms. However, this dichotomy is not clear-cut, and processes within the school can be significant for processes outside the school. For example, programs aimed at narrowing the summer learning gap, after-school tutoring programs and the

lengthened school day are categorized as internal-to-school, but are designed to generate changes related to external-to-school aspects (for example, more hours in an organized framework, and compensation for deficiencies and gaps created in the school), regardless of whether this goal is pursued directly and declaratively, or indirectly (Brighthouse & Schouten, 2011).

We describe the two main patterns of intervention below, drawing from various reforms and programs in the U.S. and citing the objectives of the intervention programs, their target populations, examples of salient programs, and whether they achieved their defined objectives.

Demographic change

Objectives of the intervention programs: Enabling families from areas with high rates of poverty and weak neighborhoods to improve their area of residence by moving to more wealthy neighborhoods.

Target population: These programs focused on two main populations:

1. The entire population – with an emphasis on the family as a complete unit, without separating the pupils from their siblings and parents.
2. The pupils – treating the pupils as a separate unit in the intervention (for example, school choice, voucher).

Salient programs:

Gatreaux program – a reform based on a lottery conducted among 7,500 Afro-American families; the lottery winners received improved housing conditions in suburban Chicago or in urban areas. The project began in 1966 with a very gradual transfer of families to the selected areas. An assessment of the program's contribution showed improvement primarily in lower rates of school dropout and higher rates of college enrollment among those who moved to the suburbs rather than urban areas. This project served as the foundation for the MTO reform.

MTO (Moving to Opportunity) – a comprehensive reform planned by the U.S. Department of Housing and Urban Development. It began in the 1990s and included 4,600 households from Baltimore, Boston, Chicago and Los Angeles, who were divided into three groups. One group received a voucher enabling them to exchange public housing in a poor area for housing in wealthier or more heterogeneous areas. This group received counseling and guidance. A second group received vouchers, but no counseling and guidance. And a third group did not receive vouchers, but was eligible for various types of support without changing their area of residence. Two key findings arose from the studies conducted on this reform:

1. The younger the children were at the time of the move (under age 13), the more positive the impact in terms of higher college enrollment and earning capacity (Chetty, Herndon & Katz, 2015).
2. Among populations that relocated, there was improvement primarily in regard to behavior problems, health and emotional well-being (among women more than men), but there was no impact on learning achievements (Jeffery et al., 2006; Ludwing et al., 2011).

BMP (Baltimore Mobility Program) – a reform based on MTO that included about 2,000 low-income Afro-American families who began moving to wealthier neighborhoods in 2003. The emphasis was on neighborhoods with a more heterogeneous population.

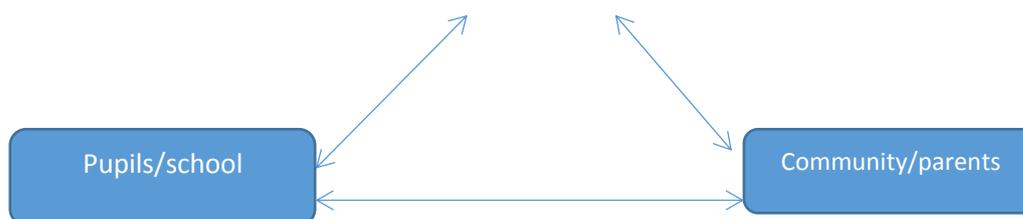
The findings regarding the different programs in the U.S. are mixed. The researchers note that the results of the demographic change improve if the relocation process is combined with intensive counseling and ongoing support of families that make the demographic change (Briggs, Popkin & Georing, 2010; Darrah & Deluca, 2014; Sharkey, 2009).

Studies in others countries also examined processes of internal migration that led to demographic changes. Unlike the U.S., these were not processes initiated by the municipalities and government to transfer a population and improve its housing conditions. Instead, the changes resulted from the private initiative of individuals. For example, studies in Australia found that people were only migrating toward similar neighborhoods or wealthier ones, with the aim of improving their standard of living (Clark & Morrison, 2012; Clark et al., 2013). Researchers in England found that demographic changes led to changes in behavior, such as a generally positive attitude toward school and a downturn in anti-social behavior (Gibbens, Silva & Weinhardt, 2014). In Israel, a study found that moving to a better neighborhood in the Tel Aviv area improved income levels and quality of life (Modai-Snir & Plaut, 2014).

Improving the neighborhood/school

Objectives of the intervention programs: Strengthening, supporting, guiding and investing in communities, parents and pupils in minority areas suffering from conditions of deprivation and poverty. There are a variety of intervention programs at the level of the family, the neighborhood and the school.

Target population: The neighborhood, school, its pupils, and the community of parents, with an emphasis on the interactions among them.



Salient programs:

Programs at the family level – programs aimed at intervention, enrichment and guidance, with an emphasis on empowering parents and preparing them to support their children before entering school (in pre-kindergarten), in order to prepare them for success in school. The emphasis in these programs is on the development of the child and parents. For example, the Home Instruction for Parents of Preschool Youngsters (HIPPY) program began to operate in Israel in 1969 and has since been adopted in many countries in the world. (See the program’s website: <http://www.hippyusa.org>.)

Programs at the neighborhood level – programs operating in neighborhoods of impoverished minority groups, seeking to address various aspects of employment and education. One example is the Harlem Children’s Zones (HCZ), a program that addresses different needs related to the problems in a particular area: dilapidated housing conditions, drug abuse, school dropout, violence and crime, and chronic health problems. Another program based on the principles of the Harlem program is Promise Neighborhood, which focuses on distressed populations and rural neighborhoods, with the aim of improving pupils’ achievements and learning conditions.

Other programs, such as Jobs-Plus, focus on boosting employment of parents by finding places of work, providing support services and guidance (including financial advice and workshops on dealing with work-related difficulties). The New Hope program in Milwaukee, based on a similar principle, offered benefits to poor people working in full-time jobs – a salary bonus to bring them over the poverty line, health insurance at a lower price, and childcare subsidies. For those working in a part-time job, the program offered assistance in finding full-time employment.

Programs at the school level – programs like Challenging Schools Bonus (CBS) concentrate on improving the quality and stability of teaching in schools located in weak areas. Other programs focus on imparting reading and writing habits in elementary schools (Rowan, 2011), including: Success for All – a program encompassing over 1,200 schools, with the goal of strengthening

reading in small, multi-age groups in schools and improving reading comprehension skills (Rowan & Miller, 2007); the America's Choice program, which focuses on improving reading and writing habits through workshops and in-depth training for teachers (Rowan & Correnti, 2009); and the Talent Development High School program (TDHS), which aims to restructure the learning process in secondary schools by improving the teacher-pupil ratio, through proficiency courses and infrastructure, and a revised scheduling of hours.

As we have seen, considerable effort has been invested in the United States since the 1970s in developing reforms and programs aimed at fostering neighborhoods defined as impoverished. The findings regarding the success of these processes are mixed (Andrews & Erikson, 2014; Ross & Stedman, 2014). Various studies found positive effects of programs such as the New Hope program in Milwaukee and the Jobs-Plus programs in Baltimore (Bloom et al., 2005; Duncan, Huston & Weisner, 2009; Keels et al., 2005; Sharkey, 2014; Warren, 2005). These studies and many others that examined the success of various intervention programs indicate that a key condition for their success is a partnership between the government, the private sector and the local community (Putnam, 2015). In addition, studies show that there are differences in the effects of reforms at the neighborhood level as opposed to the school level: Changes at the neighborhood level are more associated with reducing health problems and emotional well-being, while changes at the school level are more related to narrowing academic disparities and reducing dangerous behavior (Katz, 2014). We can see, therefore, that upgrading the quality of teaching and other school improvements are likely to result in higher achievements, but these effects at the micro/school level are also related to or influenced by effects at the macro level (Johnson, 2012; Katz, 2014).

Analyses of the two types of reforms and intervention programs – demographic change and improvement of the neighborhood or school – have produced a number of findings that suggest general directions for research on these reforms, and for continued development of existing and new reforms. Demographic changes at the neighborhood level result in relatively minor improvements in learning achievements, but have a more significant impact on other variables, such as chances of entering college and income level in the job market in the longer term (Chetty, Herndon & Katz, 2015). In addition, it turns out that reforms within the school have very little impact without taking into consideration factors external to the school, such as the community, the parents and the neighborhood. Thus, changes in the school itself will not be significant without also making changes in the community and in the neighborhood (Berliner, 2009; Green & Gooden, 2014).

In Israel, there have been a number of programs aimed at improving the neighborhood and/or the school. For example, the *Hotem* program aimed at recruiting quality teaching personnel for peripheral areas and the War on Poverty Committee recently recommended a *Shchunah Shava*

project for the physical renewal of neighborhoods – infrastructure and investment in the public space, as well as social, educational and occupational investment in distressed neighborhoods (Report of the War on Poverty Committee, 2014). This is in addition to the former Project Renewal policy in Israel, which sought to expand apartments, repair and renew buildings, renovate apartments of the elderly, and improve public infrastructure (Biton, 2009). It should be noted that today there are neighborhood renewal projects in places such as Jaffa and southern Tel Aviv, and in the Maonot-Yam area in Bat Yam, though there is not yet information on the repercussions of this change vis-à-vis the composition of the population or the local education system (Eizenberg & Cohen, 2015; Ferster & Misgav, 2014).

Part Four: The case of Israel

1. Trends of segregation and integration in the education system

The discussion about the connection between place of residence, school and educational opportunities is very relevant in Israel as a heterogeneous society. Today in Israel, the level of segregation by parents' education is high relative to other countries (Fogel, 2011) and there are distinct concentrations of poor areas and wealthy areas. This poses challenges for the education system. For example, a high percentage of the children defined as poor are concentrated primarily in localities that belong to a low socio-economic cluster and learn in schools that are part of the independent or Arab education systems (Report of the War on Poverty Committee in Israel, 2014). However, to date, there is little discussion on concentrations of social groups that are socio-economically weak or strong. In addition, the existing research addresses localities and schools separately. There are almost no studies that examine the school in the context of the locality or neighborhood in which it is situated, and there is no up-to-date discussion on the impact of the neighborhood on educational processes in the school and the achievements of pupils.¹

At the level of localities or neighborhoods, the research shows trends of growing segregation. In Milgrom's study, which focuses on the years 1983-2008, we see a rise in class-based/economic segregation among various neighborhoods in the four main cities in Israel (Jerusalem, Tel Aviv, Haifa and Beersheba) (Milgrom, 2015). Another study, which examines processes of internal migration, indicates an increase in class-based segregation (Broide & Navon, 2006) and notes that education plays a relatively small role in the decision to migrate. Modai-Snir and Plaut (2014) conducted a longitudinal study (1998-2008) that identifies residential changes in the Tel Aviv metropolitan area resulting from the movement of residents to wealthier neighborhoods and improvement in the quality of residential neighborhoods (Modai-Snir & Plaut, 2014). Since the ability to move from one neighborhood to another requires economic resources, this process

¹ A number of studies of this type were conducted in the past by Ayalon and Yogev to examine the effects of the Build Your Own Home project in Yavneh.

reinforces the segregation of neighborhoods based on class and contributes to the growth of economic inequality. However, it is doubtful whether these processes have an impact on the education system, because the groups that substantially benefit from a class perspective when moving to wealthier neighborhoods are primarily older parents with grown children, rather than parents with children of school age. Other studies focus on subgroups in Israeli society and examine migration trends within these subgroups – for example, the study by Gurovich and Cohen-Kastro (2014) on the ultra-Orthodox society in Jerusalem or the work of Masry-Herzalla and Razin (2014) on the migration of the Israeli Palestinian population to Jerusalem. In the former, the topic of education is not discussed, while the latter reports that education does not constitute a consideration in the migration processes of the Arab residents because they are willing to drive their children to schools, regardless of their place of residence.

The studies that focus on segregation in the education system are also few in number (Fogel, 2011). In this context, a central factor in understanding integration and segregation in the education system is the sectoral distinction. The education system is comprised of four main sectors with distinctive social and organizational characteristics. These sectors constitute a segregated education system based on nationhood (Jewish or Arab) and level of religiousness (state-religious or independent education, primarily ultra-Orthodox). Segregation based on nationhood is intertwined with segregation based on geography and has direct repercussions on segregation at the school level. Indeed, there are few schools where Jews and Arabs learn together, and the Arab population lives separately from the Jewish population at the level of localities or in segregated neighborhoods in the mixed localities. Few live in Jewish neighborhoods. One of the examples of this is the migration of Arabs to the Hagiva Hatzarfatit (French Hill) neighborhood in Jerusalem due to its proximity to Hebrew University and other Arab neighborhoods. This process is less evident in other parts of the city, partly due to the hostility of the surroundings and opposition by the residents (Masry-Herzalla & Razin, 2014). Segregation based on ethnicity has repercussions on educational input, processes and output (Harboun, Abu Asbeh & Abu Nasra, 2013; Addi-Raccah & Mazawi, 2004). This is true vis-à-vis the Hebrew state (secular), state-religious and ultra-Orthodox schools. During the past decade, there has been a significant increase in the percentage of pupils learning in recognized-unofficial education, as well as a slight rise in the percentage learning in exempt institutions (Knesset Research and Information Center, 2011). Recognized-unofficial education includes pupils learning under the auspices of the Independent Education Center and pupils in the Ma'ayan Hahinuch Hatorani stream; thus, the data indicates a trend of segregation based on religiousness. These educational frameworks are distinct and create segregation at the school level, and this is sometimes accompanied by segregation in the geographic space – for example, ultra-Orthodox neighborhoods in various cities (Flint, 2014).

Therefore, the discussion on the connection between social segregation and education must address the sectoral structure of the education system. One expression of this is the study by Blass et al. (2014) that examined segregation during the years 2001-2010 among elementary and middle schools and within schools in the different education sectors, according to various indexes: parents' education, new immigrants, and immigrants from Ethiopia in particular. These researchers found more segregation among schools than within schools, and found that segregation was different in each sector. The largest extent of segregation was in ultra-Orthodox education, and the lowest was in secular state education and Arab education. The researchers found that segregation among the schools grew during the years 2001-2010. Other studies that examined social segregation in the education system focused on one particular sector in the education system. For example, Achdut et al. (2008), who mainly focused on the Hebrew state education system, point to income-based social polarization after the opening of school districts in Holon and Netanya. In addition, Fogel et al. (2015) published research on the connection between Meitzav scores and the cost of housing in the area where a school is located. This study found that in the case of state education, an improvement in Meitzav achievements is linked to an increase in the price of housing. These two studies are based on geographic information systems (GIS) and thus promote additional research methods in the effort to understand the connection between education and geographic space. The study also focuses on particular localities; Blass et al. (2014) report on segregation within schools in nine localities, and Fogel (2011) presents the case of Tel Aviv and, as mentioned, Achdut et al. (2008) focus on Holon and Netanya. There are sometimes publications that address the differences among localities. Based on data from the Israeli Central Bureau of Statistics (ICBS), the Adva Center publishes a number of figures pertaining to matriculation results in various localities. The ICBS also addresses the connection between socio-economic cluster and pupils' achievements. However, so far, we have not found information and/or research that examines processes of segregation among schools and localities, or a study of the relative impact of the locality and the school on the pupils' output. (A summary of most of these studies appears in Appendix 2.)

One of the possible explanations for the paucity of data and lack of comprehensive research examining the connection between place of residence and education is that it is impossible to identify the contexts in which pupils are situated. For example, we know the pupils' school and locality, but do not know their neighborhood, statistical area or school district. This issue is significant primarily in large localities, which tend to have a heterogeneous population but can be segregated from a socio-economic perspective at the level of neighborhood or statistical area (*Pnai Hahevra*, 2014). In Tel Aviv, for example, there are about 58 neighborhoods that are very different from one another. As of 2012, there was a disparity of more than three deviations between the wealthiest and poorest neighborhoods.

Secondly, from a technical perspective, there are no connections and integration among various sources of information. Thus, we draw information on localities from CBS data and find substantial information on the education system at the Ministry of Education, but there is currently no synchronization among these databases or open access to them. Consequently, it is not surprising to find a situation in which studies focus only on the education system without reference to the dimension of locality or neighborhood, while other studies, which do address localities, refrain from in-depth analysis of schools.

2. Characteristics of the education system

For many years, education policymakers have wrestled with the issues of segregation and integration in the education system, and sometimes in the geographic space. These issues include various dimensions of reference, as reflected in several key milestones in education policy in Israel:

- When the state was founded, the education system was formed as a public system of education, characterized by centralization and broad government supervision (Ichilov, 2010) – for example, the Compulsory Education Law, the State Education Law, and the training of teachers in institutions supported and supervised by the Ministry of Education. The process of centralization (*mamalchtiut*) was designed to establish the schools, particularly elementary schools, as part of the “melting pot” that would shape and develop the pupils’ identification with the state’s values and Israeli culture (Shmida, 1987). Nonetheless, parents were allowed to choose the education sector in which their children would learn (Hebrew state education, state-religious education, ultra-Orthodox education or Arab education). That is, along with the centralization process, there was recognition of separate and distinct education systems, thus legitimizing diversity within the education system and creating/preserving distinct separation on a sectoral basis.
- In the 1950s and 1960s, the waves of immigration to Israel contributed to social heterogeneity and were accompanied by ethnic gaps in learning achievements (and in school dropout rates). There was also a geographic aspect to these disparities, because of the concentration of Mizrahi immigrants in localities in the periphery in the south and north of the country, as part of the government’s policy of population dispersal. In an attempt to narrow these disparities, the Ministry of Education invested in differential education or compensatory education for weak social groups, such as “norm B” in survey tests, the establishment of vocational schools and programs to foster outstanding pupils from among “deprived” children. However, these measures were insufficient to contend with the ethnic gaps.
- In 1968, the minister of education at the time, Zalman Aran, recommended implementing integration and a reform. The reform, approved as the Knesset’s recommendation to local

authorities, was accompanied by a demand for ethnically heterogeneous learning frameworks as a means of narrowing the achievement gap and strengthening social integration as part of the “melting pot” policy. The integration sought to eliminate the connection between the pupils’ place of residence and the ethnic composition of the school by actively changing the social composition of schools (busing and redefining school districts) (Resh & Dar, 2012) and with the help of court rulings that supported the principle of integration as outweighing the particular preferences of various groups (Ichilov, 2010; Gibton, 2004; Dror, 2011). This policy was gradually implemented in many localities until the Likud rose to power (Chen & Addi, 1995). The integration policy boosted the status of local authorities in determining local education policy and created de facto diversity among localities in the structure and resources of the education system.

- In parallel to the policy of integration, there were gradual and ongoing trends of decentralization that contributed to a weakening of integration and considerable diversity in the education system. School autonomy was encouraged (1985-1992) and school networks with an ethnic character (Kedma, El Hama’ayan, MOFET) were established (in the 1980s and 1990s), as well as special schools (1988-1989) (Dror, 2011; Raichel, 2008), some of which belong to recognized-unofficial education. The diversification of the education system reflects the Ministry of Education’s response to the wishes of the parents (particularly the more wealthy ones, who sought to avoid sending their children to heterogeneous schools), and to political and religious pressure groups that wished to provide education that is consistent with their worldview. In practice, the era of integration as a central strategy for narrowing gaps ended in the 1990s; today this issue is not part of the education discourse and there is a retreat from integration (Gibton, 2004; Kizel, 2011).
- Neo-liberal views have taken root since the 1990s, emphasizing the development of the individual and his or her abilities. The education system emphasizes fulfilment of individual potential in all social groups, including pupils with low learning achievements (primarily from groups with meager resources), as well as enrichment for outstanding pupils. The neo-liberal approach, which seeks efficiency in achieving educational output, views the school as the significant unit for educational action and regards the school’s staff as the primary agent for promoting and improving the achievements of all of the school’s pupils in accordance with their social characteristics. Thus, the policy of integration gave way to a policy of decentralization that emphasizes processes related to the school’s autonomy and self-management, choice of schools, and privatization trends, allowing space for parental involvement and wide diversity in the education system (Addi-Raccah & Einhorn, 2009; Gibton, 2011; Gofen & Blomqvist, 2014; Volansky, 2006 Noy, 2014). These ideological changes are expressed in the development of special programs and the expansion of partnerships with entities participating in the educational process (the third

sector, parents and local authorities). Examples of this include self-managed schools and the 30 Localities project (1994-1999),² as well as school choice. During the 1990s and early 2000s, various committees were formed to study trans-regional schools (Kashti, Shlasky & Elroy, 2001) and/or schools with a special orientation (Weinstein Committee, 2002), and controlled choice of schools (Inbar Committee, Lavie Committee). When monitoring the implementation of the recommendations of these committees, we find great variance among schools and growing trends of class-based separation (Inbar 1994 in Almog-Barkat & Inbar, 2010; Knaani & Shilhav, 2001). Knaani and Shilhav (2001) found that controlled choice in Jerusalem reinforced social separation and polarization, with pupils from both high and low social status choosing to learn with those of similar social backgrounds. A policy of controlled choice was also instituted in Tel Aviv, but the findings were different: The choice was mainly exercised by the socially weak groups (primarily by those with high achievements) who opted to learn in strong and wealthier schools, rather than vice versa. Most of the pupils in Tel Aviv also had mid-range or high achievements (Haymann & Shapira, 2003).

- The 1990s also featured the massive immigration of about one million people from the former Soviet Union. The policy of direct absorption enabled immigrants to choose areas of residence in the periphery and in localities with a high concentration of Mizrahim due to the supply and relatively low cost of housing in those areas (Gonen, 1998). This reduced to some extent the identification of cities in the periphery with the Mizrahi social component. However, due to the immigrants' relatively meager economic resources, these localities retained the character of a population center of low socio-economic status (Gonen, 1998; Hasson, 1998). Nonetheless, this had an impact on the social composition of the schools and on educational processes.
- In 2008, the trends of separation became further entrenched upon enactment of the Unique Cultural Education Institutions Law, which enables ultra-Orthodox education to operate independent programs that are not subject to the core curriculum. This legislation reinforces sectoral separation and preserves the diversity in the education system (Gibton, 2010).

² The project operated in 35 development towns and localities in national priority areas identified by the ministry as requiring additional educational resources, with careful attention to social diversity in terms of geographic deployment, population types (Jews, Arabs, Druze), size of locality and percentage of new immigrants. In the framework of the project, objectives and plans were adapted to the specific needs of each locality. However, common goals were also defined, such as boosting learning achievement and improving the local education system, elimination of separatist learning frameworks, and fostering local educational leadership (State Comptroller and Ombudsman, August 1, 2015) <http://old.mevaker.gov.il/serve/showHtml.asp?bookid=142&id=0&frompage=406&contentid=1105&parentcid=1097&direction=1&bctype=1&frombutton=0&startpage=20&sw=1536&hw=794>

- Today, there is an effort to formulate a policy of controlled choice, enabling parents to choose from a variety of localities, with an emphasis on maintaining balanced social integration.

Table 1 outlines a number of key milestones in education policy in Israel.

Table 1: Key milestones in education policy

Decades						
1950	1960	1970	1980	1990	2000	2010
Compulsory Education Law (1949)	Policy of fostering	Reforms and integration, along with nascent decentralization-community schools; encouraging teacher initiatives (1971); Local Authorities Law (1975)	Continued gradual transition to decentralization; 30 Localities project; school autonomy; special schools Along with supporting integration and reforms	Self-managed schools; trans-regional and special schools (Kashti Committee, Inbar Committee), opening of colleges and academies	Controlled choice / opening of school districts (Lavie Committee, Haymann & Shapira); self-management; trans-regional and special schools (Weinstein Committee); Unique Cultural Education Institutions Law 2008; standards, retreat from integration	Opening of school districts / controlled choice Self-management; standards Involvement of parents and the third sector
			Ideology			Neo-liberal society
						Decentralization processes, a system with great diversity
			Diversity and			Diversity and integration
			Dimensions of inequality			Class; nationhood
-	-	** .318	.312	.337	.387	*.378
-	-	.432	.468	.497	.523	.498

** 1979; * 2012; based on Bar (2012), Description and Analysis of Dimensions of Poverty and Inequality in Israel and in Development Countries, Knesset Center for Research and Information.

An analysis of policy and Table 1 indicate four main characteristics: First, ideological changes expressed in the transition from a centralized system to a decentralized one, and accompanied by a strategic change from social integration as a means of fostering weak groups and narrowing social gaps, to a focus on the school as the central unit for educational action, without necessarily relating to the social composition of the school. Secondly, education policy in Israel is cumulative: A new policy does not necessarily eliminate the previous one; it is added to it (Gibton, 2010). Rather than reforms that encompass the entire system, there are experimental projects (community schools, choice) that take root in the system alongside what already exists. Thirdly, the question of integration and separation that occupied researchers and policymakers during the state's first decades primarily focused on the ethnic factor and the disparities in educational and economic achievements between Israelis from European-American origin and those from Asia-Africa. Since the 1990s, a significant change has occurred in the dimensions of social disparities. The discussion on gaps in learning achievements shifted from ethnic inequality (as a dominant factor in class definition) to class inequality (as measured by parents' education and income) (Dahan, 2013),³ coupled with inequality based on nationhood (Jewish or Arab), which has persisted since the establishment of the state. Dahan (2013) notes that "the geographic distribution of place of residence of the two groups of origin, which is a key index in terms of the development of the ethnic gap, also received research attention. It was found that the extent of the population's segregation by origin, which is measured by the tendency of Jews from European/American origin to live separately from Jews of Asian/African origin, diminished over the years" (p. 5). Finally, the education policy is based on a very limited number of comprehensive and systematic laws. The existing legislation is also not up-to-date and is sometimes hastily enacted, without public debate (Gibton, 2010; Gibton, 2013).

Consequently, there are no clear indicators of the education system's conduct, which leaves broad space for action stemming from the field (such as involvement by third-sector education NGOs, local authorities or initiatives by parents). In this situation, there is inherent tension between public policy, the decisions of private citizens (Tamir, 2015) and a dynamic education policy that frequently changes, primarily in light of the frequent changes in government. (During the years 2000-2015, there were eight different ministers of education.) The result of these processes is wide diversity in the types of schools and the activities conducted in them. This diversity underlies the discussion of social segregation in Israeli society and in the education system. However, as noted, this subject requires

³ One of the explanations for the narrowing the ethnic gap is the rise in the education level throughout the population, in part due to greater access to education in the society. Nonetheless, the subject of integration on an ethnic basis sometimes becomes a topic of public debate in the wake of specific incidents of separation (such as the case of separating Ethiopians in the town of Immanuel) in the state-religious or ultra-Orthodox sectors. Integration on the basis of nationhood – Jewish or Arab – is less common and occurs in the framework of special schools. There are fewer situations of interaction on the basis of nationhood that derive from sharing a place of residence (for example, in Jaffa).

comprehensive empirical study regarding the repercussions of this diversity on processes of segregation and separation in the education system.

3. Segregation and socio-economic trends in education

In the framework of this review, we tried to collect some descriptive data on the multiple contexts in which pupils study, with the goal of understanding inequality in the education system, as expressed in segregation based on a combination of socio-economic status in schools and place of residence. The combination of these two units, school and locality, exposes pupils to different educational and social opportunities that can affect their learning achievements, as described in the literature. However, it is important to note that the locality comprises a unit of analysis that is too broad, especially in regard to large localities, and does not take into full account the surroundings or community in which the children develop. The study of segregation at the level of the locality and its repercussions on the education system is clearly still in its infancy, and additional, more comprehensive studies are needed.

For the purpose of this review, we utilized data from the following sources:

- A. Ministry of Education data – on pupils in the schools and in the localities, as a place of residence.⁴
- B. Publications and data from the Israeli Central Bureau of Statistics.

In examining segregation in the education system and changes in this phenomenon, we focused on two points in time: 2002 (preliminary information published by the Ministry of Education) and 2012, for which we had accessible and combined information on pupils and schools. Our analyses addressed the following questions:

1. Is there segregation among schools in various localities based on parents' education?
2. Was there a change in the extent of social segregation between the years 2002-2012?

Social segregation is linked to how closely the social composition of the school's pupils reflects and represents the social make-up of the sector and/or locality in which it is located. However, in some cases the school's social composition might be representative yet offer different learning opportunities due to the social composition of the population in the locality – for example, in areas where wealthy populations are dominant as opposed to localities with a high concentration of people of lower socio-economic status. Thus, in addition to assessing the level of social segregation, we examined the extent to which the social composition of the school environment reflects a “rich” or “poor” structure of opportunities for learning, an issue that research on education has cited as important for promoting the

⁴ We would like to thank Dr. Haim Gat for his advice on the use and analysis of data from the Ministry of Education's Research Room, and the staff of the Research Room for assistance in remote work with the ministry's Computer Room.

achievements of pupils and for their future development. Therefore, in addition to the two previous questions, we also addressed three additional questions:

3. What is the distribution of pupils in socially heterogeneous learning contexts or in homogeneous concentrations of wealthy and less wealthy learning contexts, as defined by the locality's socio-economic cluster and educational composition of the parents in the school?
4. To what extent were there changes between the two points of time in the social composition of localities and schools that indicate a change in the social context of the school process?
5. Is there a connection between the social contexts of the locality/school in which the pupils learn and rates of eligibility for matriculation?

These questions were examined in regard to each education sector. First, we present some data relevant to the education system.

Trends of social composition of schools and localities in Israel

Table 2 shows the distribution of pupils and schools in the education system by education sector in 2002 and 2012.⁵ The data is taken from the Ministry of Education's *B'Mabat Rachav* website and was processed for this review.

Table 2: Distribution of pupils (in %) by education sector and year

	2002		2012	
	Pupils	Schools	Pupils	Schools
Hebrew state	50.3	40	42.5	35
State-religious	14.1	18	13.6	16
Ultra-Orthodox	13.1	25	17.3	29
Arab	22.5	17	26.6	20
Total	1,316,671	3719	1,509,494	4403

We learn from this table that most of the pupils learn in the Hebrew state education system, but that the population of pupils in the Arab and ultra-Orthodox sectors is growing. The education system is well aware of this trend in regard to the years 2002-2012.

⁵ The study is based on pupils in the regular education system. Pupils learning in special education are not included in this stage of the analysis because many of them need to travel long distances to school, outside of their area of residence (Fogel et al., 2009).

However, it is important to note that the four sectors reflect to a large extent the segregation that exists among different social groups on the Jewish-Arab and religious-secular axes. The sectoral structure of the education system offers little opportunities for social and learning interactions with pupils of different nationhood or religiousness. One expression of this is the low percentage of Arab pupils learning in Hebrew schools and vice versa. In 2012, for example, Jews comprised only 1% of the pupils in Arab education and Arabs accounted for just 5% of the pupils in Hebrew education. This same is true in regard to teaching personnel, though there are efforts to integrate Arab teachers in Hebrew schools (Alnashef, 2014).

The sectoral structure of the education system is also connected to the locality's socio-economic cluster, and this reinforces the social separation and limits the possibilities of interaction among the various groups. This is reflected in Table 3, which shows the distribution of pupils according to the socio-economic cluster of the locality in which they learn.⁶

Table 3: Distribution of pupils (in %) by socio-economic cluster of locality, sector and year

Socio-economic cluster	2002				2012			
	Hebrew-state	State-religious	Ultra-Orthodox	Arab	Hebrew-state	State-religious	Ultra-Orthodox	Arab
1-2 (low)	0	0	6	47	0	1	16	48
3-4	13	30	64	47	11	28	56	47
5-6	51	50	23	3	49	51	22	2
7-8	33	20	7	3	37	20	5	3
9-10 (high)	3	0	0	0	3	0	1	0
Total - %	100	100	100	100	100	100	100	100
Number	659,676	185,196	170,451	300,646	640,575	204,022	260,226	412,911

As indicated in Table 3, the pupils learning in the different sectors also learn in localities that are different from a socio-economic perspective. The pupils in the Arab sector learn in localities of low socio-economic status, while pupils in Hebrew state education are more concentrated in wealthy localities relative to other pupils. This trend has persisted over time, and was even somewhat stronger in 2012 than in 2002. Especially interesting in the growth of the population of pupils in the ultra-

⁶ The data is based on the Ministry of Education's *B'Mabat Rachav* website.

Orthodox sector from 2002 to 2012 in localities from the lowest socio-economic clusters (from 6% to 16%). This has various political and social implications for the different sectors. Among the Arab population, there is no mobility, and pupils continue to live in localities with a relatively low socio-economic status, even if the composition of the population changes (for example, a higher percentage of the population with higher education). It is reasonable to assume, therefore, that the changes in Arab education would be expressed in salient differences within the localities more than among the localities.⁷ In this context, the Arab sector is segregated at the level of locality due to economic, cultural and political factors. Most of the Arab population lives in homogeneous localities (about 124 localities), and only a small percentage (about 8% of the Arab population) lives in eight mixed localities⁸ (Gharrah, 2012). Thus, most of the schools in Arab education are located in Arab localities; in the case of mixed localities, the schools are located in neighborhoods with a concentration of Arabs. In this sense, segregation in the Arab sector is largely due to a lack of alternatives. In regard to the ultra-Orthodox sector, the tendency to live together in conditions of geographic segregation at the level of locality or neighborhoods/areas is primarily motivated by a desire to preserve cultural uniqueness and a religious lifestyle (Gurovich & Cohen-Kastro, 2014). To a large extent, this is segregation by choice, or attributable to a lack of economic resources.

The distinctions between wealthy and less wealthy localities and the distinctions of education sector overlap to a considerable extent. This can affect the structure of the pupils' educational opportunities. Belonging to a locality defined as wealthy by socio-economic cluster means living in a wealthy environment with a low poverty rate and greater resources, including in the field of education (Pollack & Koret, 2012). There is also a connection between socio-economic cluster and the ability to stay in school and attain learning achievements (Addi-Raccah & Mazawi, 2004). Based on data from the Central Bureau of Statistics, we can find a high and stable correlation between a locality's socio-economic cluster and the percentage of pupils eligible for matriculation – the correlation was 0.60 in 2002 and 0.63 in 2012.⁹ Thus, we can assume that pupils are exposed to different educational opportunities at the level of the locality according to the education sector in which they learn. We elaborate on this subject below.

Based on figures from the Ministry of Education's databases for 2002 and 2012, we examined and analyzed data for 48 cities and local authorities in which information was available for at least 10,000

⁷ There is no significant movement to mixed cities, with the exception of Jerusalem, which is ranked in a low socio-economic cluster (4).

⁸ Jerusalem, Tel Aviv-Jaffa, Haifa, Acre, Lod, Ramle, Ma'alot-Tarshiha, Upper Nazareth.

⁹ Analyzed for this review, based on the Central Bureau of Statistics' **Data on Local Authorities** file http://www.cbs.gov.il/webpub/pub/text_page.html?publ=58&CYear=2012&CMonth=1. We arrive at similar results when examining eligibility for matriculation and socio-economic cluster of a statistical area. In this case, the correlation between the two indexes is higher for 2012 (in an aggregative analysis of statistical areas of a number of localities, based on an analysis of *Pnai Hahevra* data, 2014).

pupils.¹⁰ In total, as shown in Table 4, the data encompasses over 60% of the pupils in the education system in Israel in the years 2002 and 2012. However, we can see that the percentage of Arab pupils learning in large localities is lower than that of pupils in Hebrew education.

Table 4: Pupils in 48 localities, by education sector and year

	2002		2012	
	Number	% of all pupils in the locality	Number	of all pupils % in the locality
Hebrew state	676352	69	604977	67
State-religious	190367	66	191951	62
Ultra-Orthodox	173394	85	193590	76
Arab	305077	38	413150	40
Total	1345190	64	1403666	68

When analyzing the data, we took into account all of the pupils learning in the locality – that is, the entire peer population to which the school’s pupils are exposed. Moreover, it should be noted that only a small percentage of the pupils learning in the locality live in other localities. Similarly, only a small percentage of local residents learn in schools outside of the locality. For example, among the first graders who live in the locality (that is, one of the 48 localities in the sample) only 1.3% do not attend local schools, and 5.3% of the first graders in local schools live outside of the locality.

The data below refers to first graders learning in the 48 localities in the sample. Since elementary schools in big cities tend (more than secondary schools) to be neighborhood schools, the social composition of the pupils in first grade reflects the social make-up of their residential surroundings (for example, the neighborhood). Therefore, the focus on this age group enables us to study the correlation between the locality and the school.

In order to respond to the first two questions – whether there is segregation among the schools in different localities based on parents’ education, and whether a change in social segregation occurred between the years 2002 and 2012 – we calculated the level of social segregation by examining how closely the educational make-up of the first graders’ parents reflects the educational composition of the

¹⁰ It was not possible to identify smaller localities, and they were combined in the same category.

pupils learning in the education sector (calculated for each sector separately, according to the percentage of parents with at least 15 years of education), for the two years examined. The index was calculated according to segregation index H (see Appendix 3). On this index, 0 describes a situation in which every school in each education sector is similar in terms of the educational composition of the parents, and 1 describes a situation in which the educational composition of the pupils in each school is different than the educational make-up of its respective education sector, and there are schools with a high percentage of parents with over 15 years of education and schools where the parents' education level is very low. The advantage of the H index is its ability to distinguish between segregation among schools stemming from differences among localities versus internal differences in the locality. This calculation was made for each education sector.

Table 5: Extent of social segregation among schools according to parents' education and the % attributed to the locality – among first grade pupils, by education sector

	2002		2012	
	Segregation among schools	% attributed to the locality	Segregation among schools	% attributed to the locality
Hebrew state	.138	43	.189	46
State-religious	.235	40	.218	40
Ultra-Orthodox	.403	33	.369	27
Arab	.163	17	.212	15

First, the data shows that in each education system in the 48 localities we studied, there is segregation among schools in each education sector, and that this segregation is more attributable to the disparate distribution of pupils among the various schools within the locality than to disparities among the localities. In the case of neighborhood schools, this can indicate that neighborhoods within the localities are distinct from one another. However, the policy of the local authority in demarcating school districts can also have an impact, and thus affect the composition of pupils in the school. Secondly, in the same two years, there was less disparity among schools in Arab education and especially in Jewish state education than in the other sectors, and particularly in comparison to ultra-Orthodox education. These trends are consistent with the findings of earlier studies (Blass et al., 2014).

Thirdly, in regard to the differences over time, we see that in Hebrew state education and in Arab education there was an increase in segregation among the schools (a change of 36.9% and 30%,

respectively). On the other hand, in ultra-Orthodox and state-religious education, there was some decrease (a change of 8.4% and 7.2%, respectively). That is, schools were somewhat more similar in terms of the parents' education in 2012 than in 2002. Moreover, in Hebrew state education, the social segregation among schools largely stems from the location of the schools in the various localities. In the other education sectors, there are internal processes at play within the localities. That is, in Arab education, the difference in social segregation is more salient within the localities than among them, and a similar trend is evident in state-religious education and ultra-Orthodox education.

In Arab education, segregation processes should be examined in light of the strengthening of recognized-unofficial education, as another distinction within this sector. It was found that 23.1% of first graders learn in unofficial (recognized) education, primarily in mixed cities: 47.1% are enrolled in unofficial education, while in homogeneous Arab localities only 7.7% of the children are enrolled in unofficial education. For the purpose of comparison, in Hebrew state and state-religious education, only a small percentage of elementary school pupils learn in unofficial education, while all of the pupils in ultra-Orthodox education learn in the unofficial system. According to Khamaisi (no date cited), in the Arab sector there is growing diversity among the various localities, and migration processes are occurring among them. There is also evidence of growing separatist trends among the various groups that define the Arab sector, such as distinctions based on place of residence between Christians and Muslims. In the framework of this review, we did not address these distinctions and their significance vis-à-vis the education system. Instead, we treated the Arab sector as a whole. However, these social distinctions within Arab education should certainly be addressed in the future.

In light of the relative stability in the percentage of segregation attributed to differences among localities, along with the changes that occurred in segregation in each sector, we can learn that there were changes in the extent of segregation within the localities. These changes can stem from various factors that still require investigation in the Israeli context. However, we can point to possible demographic changes (growth in the percentage of the ultra-Orthodox population or in the percentage of immigrants from the former Soviet Union, from developed countries or from developing countries, etc.) or a change in education policy – for example, in policy related to school districts (such as the change instituted in the city of Tel Aviv). Support for the assertion that greater change occurred in segregation within localities than among them can be seen in Figures 1 to 4 in Appendix 4. The segregation index H, as noted, provides information on the extent to which the distribution by parents' education is equal and balanced among the schools. That is, it is an index of representation. However, the "quality" of the different learning conditions to which the pupils are exposed is not addressed.

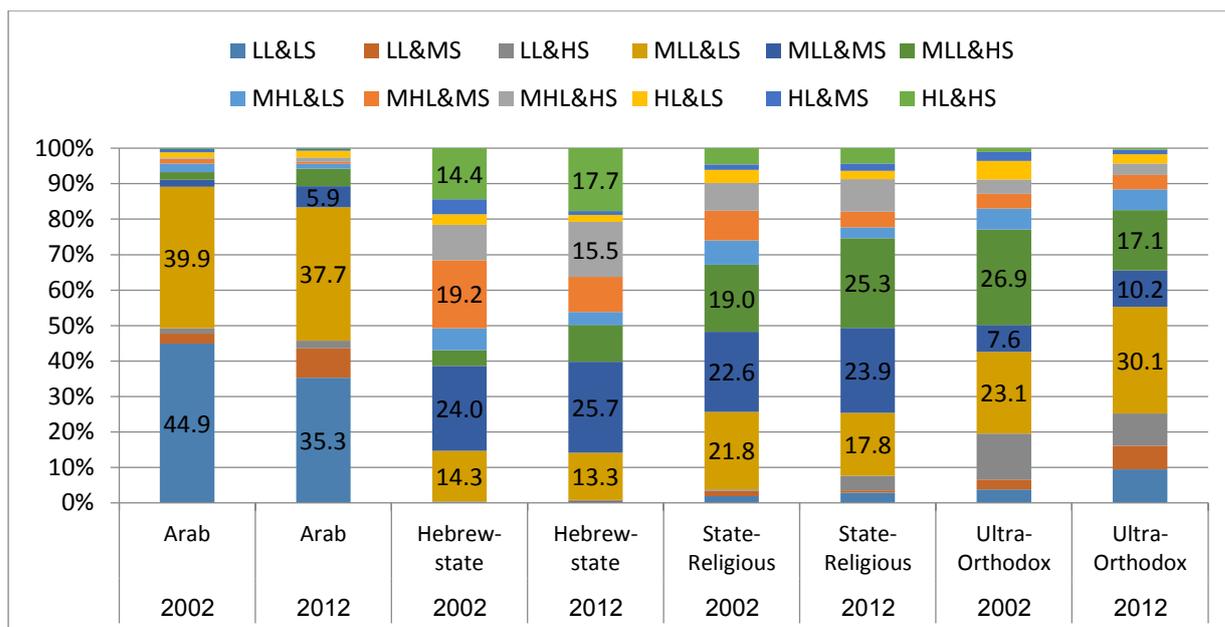
In order to respond to the third and fourth questions – regarding the distribution of pupils learning in heterogeneous social contexts or homogeneous concentrations of wealthy or less wealthy groups, and to what extent changes occurred between 2002 and 2012 in the social composition of localities and

schools that may indicate a change in the social context of the school process – we examined the percentage of pupils in first grade, using a combination of two indexes:

1. The locality's socio-economic status, based on the Central Bureau of Statistics' socio-economic clusters, with low status localities in socio-economic clusters 1-3; middle-low status defined as clusters 4-5; middle-high status defined as clusters 6-7; and high status defined as clusters 8-10.
2. The composition of parents' education in the school, based on a calculation of the percentage of pupils in the school who have a parent with 15 or more years of education. Based on this data, a school's social status was defined as follows: 1) low status – the percentage of pupils with a parent who has 15 years of education is half a standard deviation lower than the average of schools in the sample; 2) middle status – reflects a heterogeneous class composition (the percentage of parents with 15 years of education ranges between half a standard deviation below the average and half a standard deviation above the average); 3) high status – schools in which the percentage of parents with 15 years of education is half a standard deviation above the average.

A combination of these two indexes enables us to learn whether there are concentrations of pupils in the education system who are learning in poor or wealthy social contexts, with the latter providing diverse and multiple educational opportunities. For this purpose, we calculated the percentage of pupils learning in heterogeneous conditions (schools with a heterogeneous composition of parents' education in localities in the middle-class socio-economic cluster), and in homogeneous conditions in terms of the social environment in which they learn (schools with a high percentage of parents with education in wealthy localities, or alternatively a low percentage in localities that are socio-economically weak). This question was examined in the four sectors. The following figure (the table is displayed in Appendix 3) refers to the distribution of first graders in 2002 and 2012 according to these indexes, in 48 large localities (local councils and municipalities). The figure combines the two social contexts: school and locality.

Figure 5: Distribution of pupils by social context, education sector and year (in %)

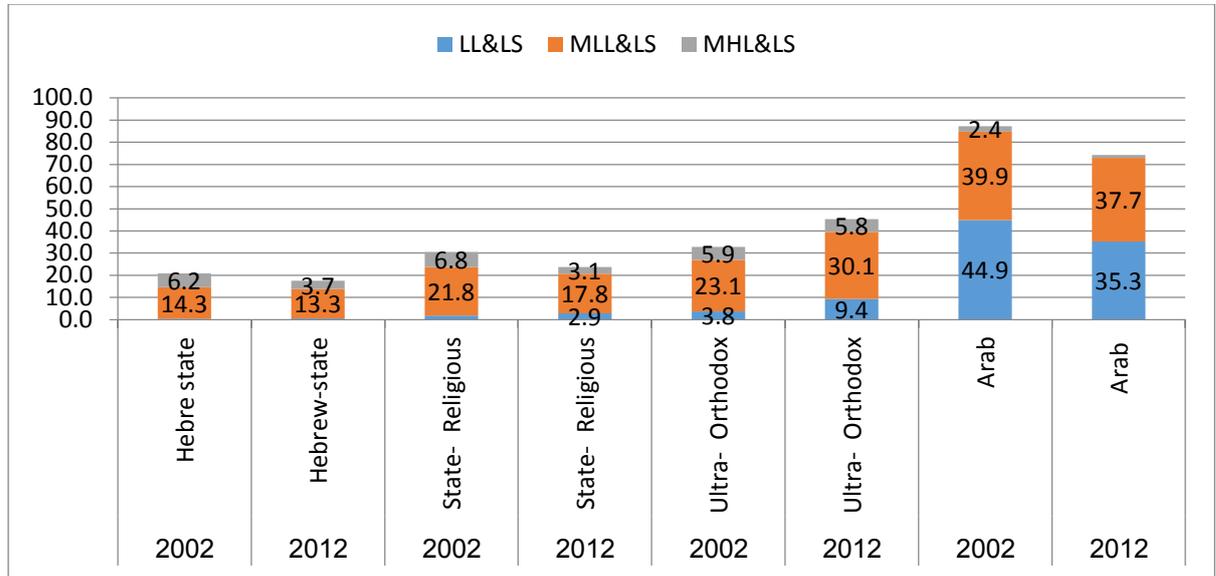


Key:

LS-Low SES school; LL-Low locality; MHL-Middle-High SES locality; MS-Middle SES school; MLL-Middle-Low SES locality; LS-Low SES school; HL-High SES locality; HS-High SES school

This figure illustrates the wide diversity of social contexts to which the school's pupils are exposed. This diversity is clearly evident in Hebrew education, with its different sectors, as opposed to Arab education. In the latter, because of its geographic isolation, pupils are exposed to two main social contexts in the educational process: learning in weak schools in weak localities and learning in weak schools in somewhat wealthier localities. The following figures offer a more comprehensive picture of the social contexts in which the pupils learn. Figures 6 to 8 are derived from Figure 5 above, but focus on a smaller number of social contexts.

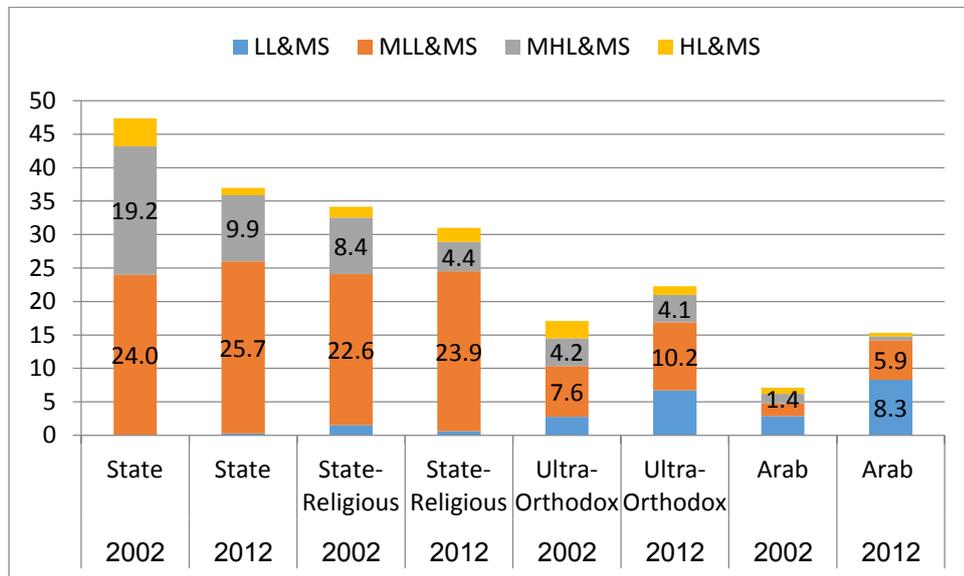
Figure 6: Distribution of pupils in low socio-economic status (SES) schools in localities of various SES, by education sector and year



Key:

LS-Low SES school; LL-Low locality; MHL-Middle-High SES locality;
 MLL-Middle-Low SES locality; LS-Low SES school; HL-High SES locality; HS-High SES school

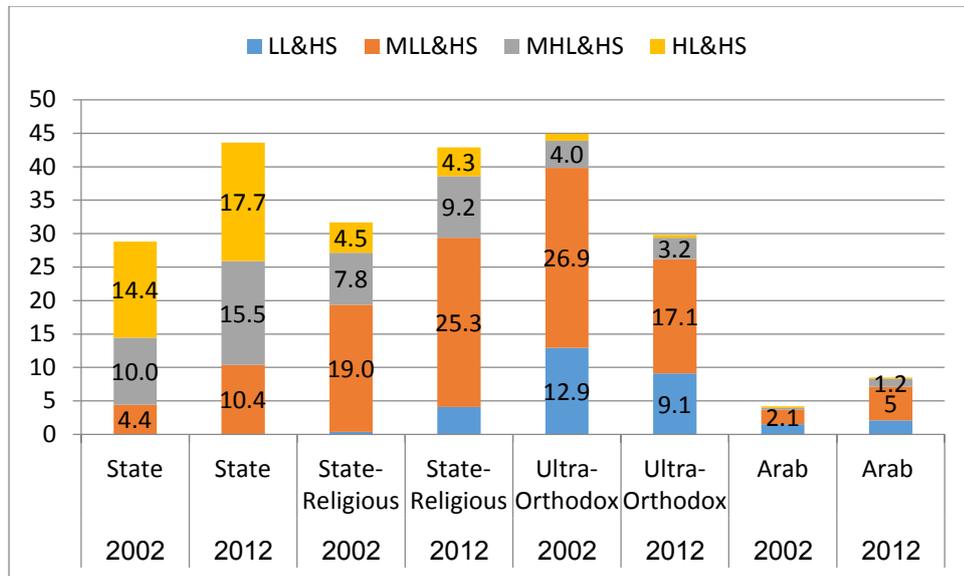
Figure 7: Distribution of pupils in heterogeneous schools in localities of various SES, by education sector and year



Key:

LS-Low SES school; LL-Low locality; MHL-Middle-High SES locality; MS-Middle SES school;
 MLL-Middle-Low SES locality; LS-Low SES school; HL-High SES locality; HS-High SES school

Figure 8: Distribution of pupils in high SES schools in localities of various SES, by education sector and year



Key:

LS-Low SES school; LL-Low locality; MHL-Middle-High SES locality; MS-Middle SES school; MLL-Middle-Low SES locality; LS-Low SES school; HL-High SES locality; HS-High SES school

The salient trends emerging from these figures indicate an increase in the percentage of pupils learning in a wealthy social context in the Hebrew state sector. This is expressed in the higher percentage of pupils learning in schools where a substantial percentage of the parents have 15 or more years of education – in general and in wealthy localities. There is also a considerable percentage of pupils in heterogeneous localities who learn in strong schools. A similar trend, albeit of more moderate scope, is evident in state-religious education (see Figure 6). In the ultra-Orthodox sector, we see a higher percentage of first graders who live in weak areas and learn in schools of low socio-economic status (Figure 8). In the Arab sector, the percentage of pupils learning in schools with a low percentage of parents with 15 years of education and which are located in very weak or heterogeneous localities is lower than the percentage of pupils learning in heterogeneous schools in localities defined as weak. This situation can be explained by the fact that the Arabs are a “captive population.” Most of them live in localities in a low socio-economic cluster. However, due to the rise in the population’s educational make-up in general, and among parents in particular, the pupils learn in schools that are wealthier than the localities in which they live. This stands out in Figure 7, which shows an increase in the percentage of pupils learning in heterogeneous situations in the different localities. In this sense, the residential segregation of the Arab population leads to situations of socio-economic integration within the Arab community, as reflected in the social composition of the schools.

The social context (figures 5-8) in which schools are situated can explain the sources of the changes in the level of segregation (Figure 5). In Hebrew state education, the increase in segregation is primarily attributable to the creation of concentrations of pupils learning in socially advantageous conditions, while there is less learning in heterogeneous conditions (as measured by parents' education). In state-religious education, there is an increase in the extent of segregation, but not a substantial one. It too stems from the increase in the education level of the population, with more pupils in this sector learning in high socio-economic conditions instead of heterogeneous learning conditions. However, as noted, these trends are less salient in comparison to Hebrew state education. State-religious education has remained quite stable over time. In ultra-Orthodox education, we see less segregation, and this is apparently due to increasing homogeneity among the schools as part of a general "weakening" of the population's level of education (Regev, 2014). Thus, there is a higher percentage of pupils learning in schools with a low level of education among the parents in poor localities; relatively few pupils learn in wealthy schools. This, of course, is relative to the year 2002. However, it is important to remember that ultra-Orthodox education features the highest amount of segregation in comparison to the other education sectors.

When examining Arab education, we find increasing segregation within the localities. In practice, pupils are learning in more diverse social contexts than in the past. In the same locality, we can find homogeneous schools with pupils from low socio-economic status, as well as schools with a wealthier population of pupils. In the past, most of the pupils learned in homogeneous schools of low socio-economic status. Today, therefore, more pupils in Arab education are able to improve the social context of their learning environment, and this process also heightens the differentiation among the schools and the diversity in their social composition.

That is, the Arab sector is undergoing processes of socio-economic stratification within the Arab localities themselves. Pupils have opportunities to learn in high or heterogeneous situations, partly due to the limited possibilities for Arabs to live in diverse geographic spaces. Consequently, this facilitates situations of "natural" integration for the pupils. However this is not occurring equally in all of the localities.¹¹ This process is happening in light of the significant changes this sector has experienced in recent years. First, the level of education has risen in the Arab population, including an increasing percentage of Arabs earning an academic degree. Secondly, the percentage of pupils in the education system grew (Gharrah, 2012). Together with this trend, we are also witnessing an expansion of recognized-unofficial education. In first grade, 17.4% of the pupils were enrolled in unofficial education in 2002. A decade later, in 2012, this number had risen to 23.1%. It should be noted that recognized-unofficial education is more common in mixed Jewish-Arab localities than in segregated

¹¹ In addition, it is occurring differently in official education versus recognized-unofficial education.

Arab localities.¹² For example, while official education in East Jerusalem is administered by the Israeli Ministry of Education, the curriculum is subject to the standards of the Palestinian Authority, and the pupils do not prepare for Israeli matriculation exams. Therefore, these schools are not an attractive option for parents. In this context, recognized-unofficial education is prestigious, mainly private, offers a high level of studies, and more teaching and learning resources than those in official public education in Israel. In comparison, official education offers inferior learning conditions (Masry-Herzalla & Razin, 2014). Nonetheless, according to Masry-Herzalla and Razin (2014), the choice of schools is not a relevant consideration in the process of migration to Jerusalem. Parents are willing to invest in their children's education and drive them to distant schools, regardless of their place of residence. It should be noted that some of these processes occur differently in different localities. Indeed, some of the disparities among the schools derive from the social characteristics of the locality.

The social context and learning achievements

The next part of the review focuses on responding to the fifth question: Is there a connection between the social contexts of the locality and the school in which the pupils learn, on the one hand, and rates of matriculation eligibility, on the other hand? We examined learning achievements by focusing on twelfth grade, when the pupils take matriculation exams. Success on these exams qualifies the pupils for a matriculation certificate, which is required for enrollment in institutions of higher education.¹³ In general, a large percentage of pupils in Hebrew state and state-religious education take the matriculation exams. The same is true in Arab education, with the exception of pupils in East Jerusalem.¹⁴ In Hebrew ultra-Orthodox education, relatively few pupils take matriculation exams (only 26.7% of twelfth graders, Central Bureau of Statistics, 2014) and a low percentage are eligible for a matriculation certificate.

In regard to the connection between the social context of the school/locality and learning achievements (as measured by eligibility for matriculation), we see in Figure 9 that pupils learning in wealthy schools and localities (in high socio-economic clusters of 6 and above) are more likely to achieve eligibility for matriculation than their peers learning in other social contexts. This trend is consistent in all of the sectors. On the other hand, we see that the percentage of eligibility for matriculation among pupils learning in less wealthy schools depends to a considerable extent on the locality where the schools are located. Accordingly, the disparities in matriculation eligibility among wealthy schools in different localities (that is, wealthy versus less wealthy localities) are smaller than the disparities among less

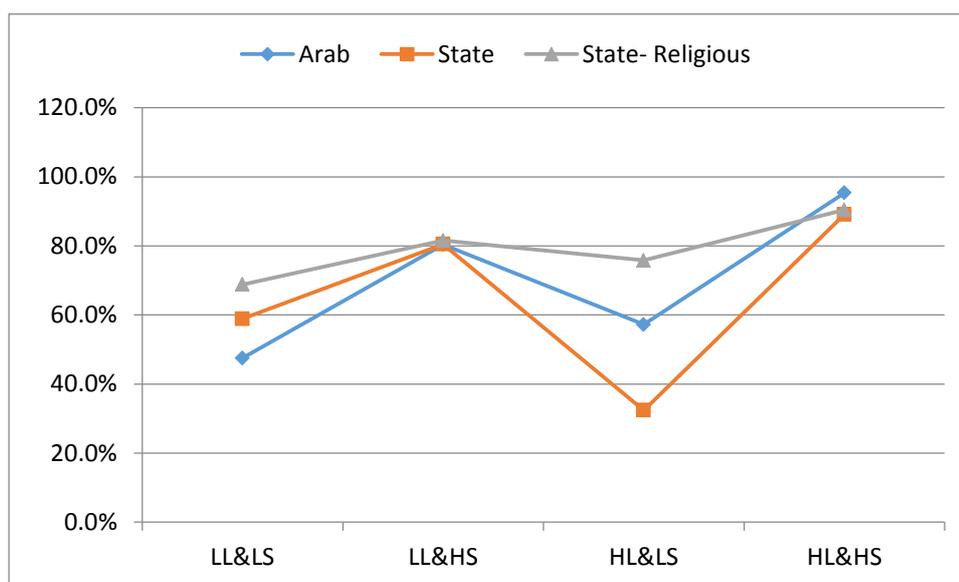
¹² In 2002, 35.7% of the first graders in mixed cities were enrolled in unofficial education, compared to only 18.6% percent of the first graders in segregated localities. This distinction was stronger in 2012, with 47.1% of first graders in mixed cities learning in unofficial education, compared to only 7.7% of first graders in segregated cities.

¹³ In this review, we did not distinguish between different types of matriculation certificates.

¹⁴ Although the education system is run by the Ministry of Education in Israel, the program of study is subject to the standards of the Palestinian Authority, and the pupils do not prepare for Israeli matriculation exams.

wealthy schools. This is true in every education sector. Sometimes, there is higher eligibility for matriculation in less wealthy schools in localities of low socio-economic status than in similar schools in wealthy localities. Indeed, a comprehensive study of this question vis-à-vis Hebrew state education found that this pattern is preserved even after controlling for the pupil's background data and previous learning achievements (Addi-Racah, 2015). In state-religious education, the pupils with the lowest achievements are those who learn in poor localities and in schools that are weak from a social perspective.¹⁵

Figure 9: Eligibility for matriculation, by social context and education sector (in %)



Key:
 LS-low SES school; LL-Low SES locality; LS-Low SES school; HL-High SES locality; HS-High SES school

Socio-economic segregation and learning achievements

In Israel, there is a connection between a pupil's socio-economic status and learning achievements, and the percentage of disparity in learning achievements attributed to the pupil's background is among the highest in the world (OECD, 2013). These figures are based on a representative sample of the **entire** population. However, as we have seen in this review, the discussion of inequality in education in Israel cannot ignore the sectoral structure of the education system. First, there are differences in learning achievements among the sectors. Secondly, there are socio-economic differences within each sector.¹⁶ This has implications for the education system's ability to contend with socio-economic

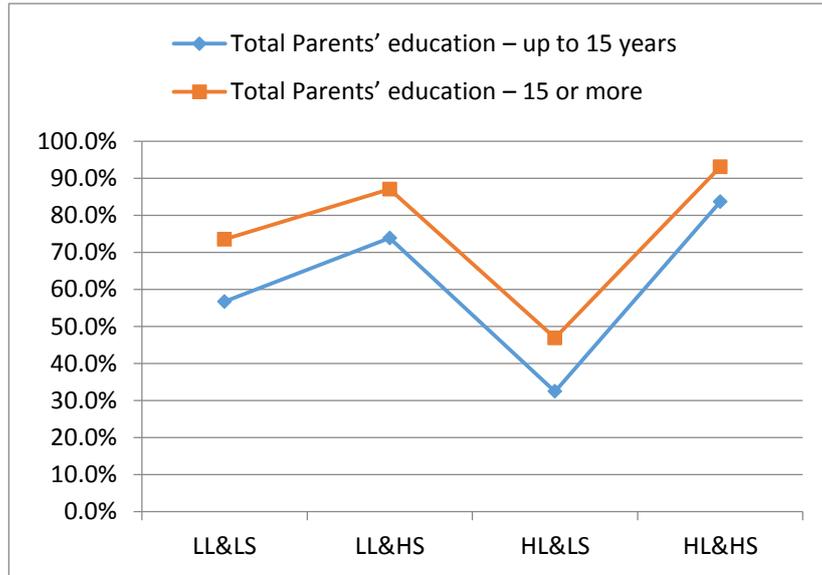
¹⁵ It should be noted that the pattern of distribution reported for first grade was also found in twelfth grade. The next part examines the percentage of eligibility for matriculation in these learning contexts.

¹⁶ For example, Meitzav scores in fifth grade indicate that the percentage of variance in learning achievements in mathematics that can be attributed to parents' education is 4.1% in the Arab sector, 6.9% in Hebrew state education, 9% in state-religious education and 2.6% in ultra-Orthodox education. The data was processed for this

inequality according to the characteristics and needs of each sector, and in regard to the locality in which schools are located. The diagrams below present a number of descriptive trends of matriculation eligibility among pupils whose parents have up to 15 years of education and pupils whose parents have 15 years of education or more, according to social context and education sector.¹⁷

Eligibility for matriculation (%), by parents' education and sector (Figures 10-12)

Figure 10: Hebrew state education



review in a multi-level analysis that controlled for the variance among schools and among localities. The reported attribution of variance is for disparities in achievements at the individual level.

¹⁷ Here too, the data focuses on pupils in Hebrew education, not including the ultra-Orthodox sector (where a low percentage of pupils take matriculation exams) or pupils in East Jerusalem (where pupils take other exams).

Figure 11: State-religious education

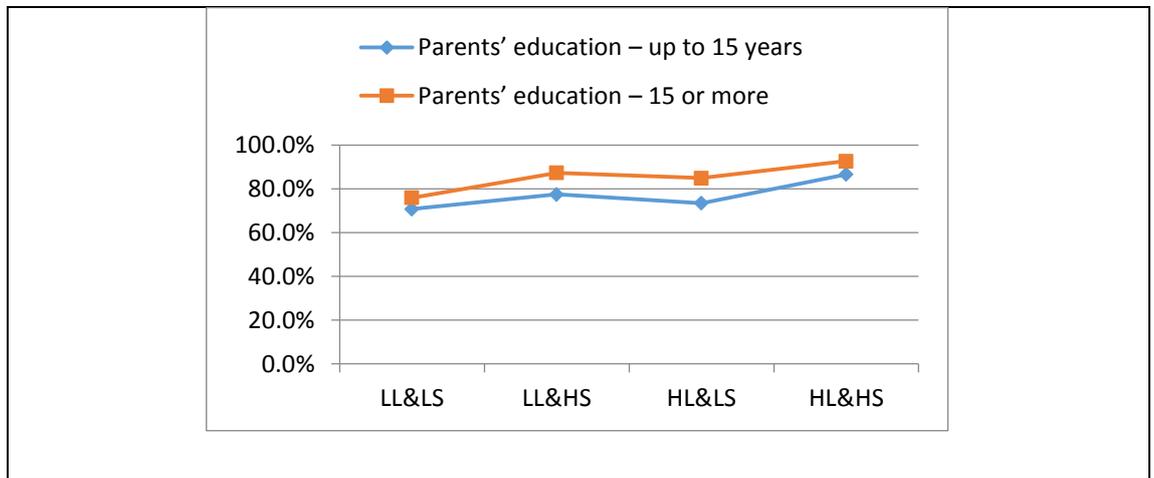
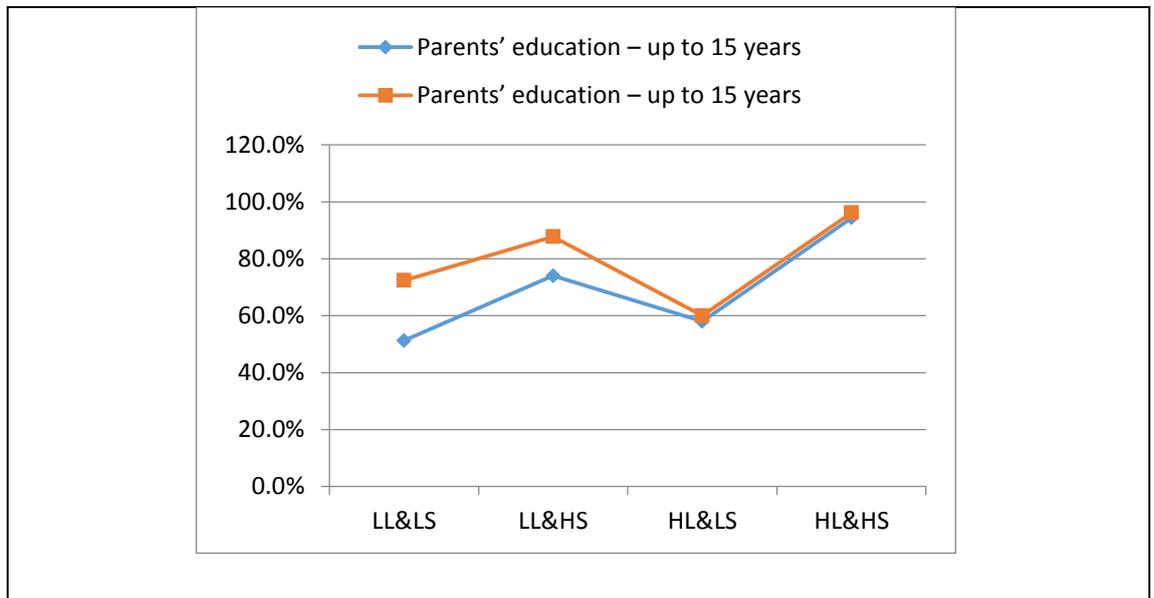


Figure 12: Arab education



This analysis does not include pupils in Arab education in Jerusalem, who do not participate in the Israeli matriculation exams. It also does not include the entire population of ultra-Orthodox pupils; only a very small percentage of these pupils take the matriculation exams.

Key:

LS-Low SES school; LL-Low SES locality; LS-Low SES school; HL-High SES locality; HS-High SES school

In general, we see that pupils whose parents earned academic degrees (more than 15 years of study) are more likely to attain eligibility for matriculation than pupils whose parents have low levels of education. This is true in most of the social contexts and education sectors. Along with this general assertion, we should also note that the socio-economic gap in matriculation entitlement (based on parents' education) depends on the education sector and social context in which the pupils learn, and it is not possible to identify a clear and consistent trend in regard to this gap. These findings indicate, on the one hand, the complexity of the potential factors of influences on the different social settings in which pupils learn, and on the other hand, suggest possibilities for existing activities and interventions at the local level (some operated by the local authority or third-sector organizations, and others at the initiative of the principals/schools), alongside the various programs implemented by the Ministry of Education (Roziner, 2012). In general, the discussion of learning achievements, such as matriculation achievements, indicates that the disparities observed within the education sectors in different social contexts require each education sector to address socio-economic inequality in a different way, in accordance with each sector's particular characteristics and needs.

Part Five: Summary and suggestions for the future

This document focuses on a discussion of geographic space in regard to socio-economic inequality in education. Based on the latest literature, we addressed the trends of ethnic and class-based segregation in different countries in the world. Residential segregation exists in various countries and is connected to educational processes and output. Accordingly, the educational opportunities in geographic spaces have an impact on social inequality. A number of social and educational interventions were presented that aimed to contend with social disparities in places of residence, as well as interventions designed to change the segregated structure of the place of residence. In Israel too, there is discussion of the geographic space – place of residence (neighborhoods or locality) – as a factor in stratification processes. However, we learned that there is scant research on the connection between residential segregation and education, and that the sectoral structure of Israeli society should be taken into account. This structure, which is clearly reflected in the education system, offers little opportunities for social and learning interactions among pupils of different religions or nationhood. In this research, we examined five questions and reached the following key findings:

We examined whether there is segregation among schools in different localities based on socio-economic status. The data processed for this purpose indicates that pupils learning in different sectors also learn in localities that belong to different socio-economic clusters. The pupils in the Arab sector learn in localities with low socio-economic status, while pupils in Hebrew state education are more likely than other pupils to be concentrated in wealthy localities. In addition, we used the segregation index H to examine the extent of socio-economic segregation (based on parents' education) at two points of time (2002 and 2012) vis-à-vis first graders learning in 48 localities. We found that there is

significant segregation among the schools in ultra-Orthodox education, more than in the other education sectors, and especially in comparison to Hebrew state education. When comparing the two points of time, we found that the trend of segregation persisted over time, and even strengthened to some extent. It is especially interesting that segregation strengthened between the years 2002 and 2012 among pupils in the Hebrew state sector and in the Arab sector, while it declined in ultra-Orthodox education and remained stable in state-religious education. We should note that social segregation among schools in Hebrew state education is largely a function of the location of the schools in different localities. In the other education sectors, there are internal local processes at play. That is, in Arab, state-religious and ultra-Orthodox education, there is more social segregation within the localities than among them. We examined the social contexts (heterogeneous or homogeneous) of wealthy and less wealthy groups, as defined by the locality's socio-economic status and the educational make-up of the parents in the school. The findings show that in all of the education systems in the 48 localities studied, each education sector offers learning opportunities in different social configurations: Pupils learn in relatively wealthy conditions in Hebrew state education; a similar trend is found in state-religious education, but to a more moderate extent; in ultra-Orthodox education there is a tendency to learn in conditions of poor social configurations, and in Arab education we see more opportunities for learning in heterogeneous conditions, at the school level. (This does not reflect the processes within the schools.) Finally, we examined the question of whether there is a connection between the locality's social contexts and the pupils' school, on the one hand, and the rates of eligibility for matriculation, on the other hand. The data indicates that pupils (twelfth graders) who learn in wealthy schools and in wealthy localities (high socio-economic clusters of 6 and above) achieve a higher percentage of eligibility for matriculation than their peers who learn in a different social context; this trend is consistent in all of the sectors. On the other hand, the percentage of matriculation eligibility among pupils learning in less wealthy schools depends to a considerable extent on the locality in which the schools are located. Accordingly, the disparities in the percentage of eligibility for matriculation among wealthy schools are smaller than those observed for less wealthy schools, and this is true in all education sectors.

The review points to a number of directions that should be addressed and studied when designing education policy:

1. Integration has been a central issue in the education system since the state was founded, as part of the ethos of Israeli society. However, the education system maintains social segregation based on nationhood and religion, as expressed in the sectoral structure of this system. This sectoral distinction is significant and is reflected in geographic spaces, with each sector functioning as a unit in which social processes are conducted in a unique way. This means that there is almost no interaction among social groups that differ in nationhood or level of religiousness. In our view, courage and leadership is needed from policymakers today

in order to generate comprehensive change and lower the social barriers in the various education sectors that are built into the education system.

2. Social segregation exists not only among sectors but also to a considerable extent within the sectors, on a socio-economic basis. There are various explanations for socio-economic segregation, which depends on a system of unique factors in each sector. Nonetheless, action should be taken to reduce socio-economic segregation in each education sector. For this purpose, action is needed in several directions in order to facilitate the formulation of policy based on data:

First, we must continue to promote research that addresses expressions of integration and segregation processes, and the impact of various ecological contexts, including place of residence (locality and neighborhoods), on educational processes and output. Specifically, it is important to address three significant contexts that affect achievements: education sector, locality/neighborhood in which the school is located, and the school itself. This is essential in light of the diversity and great complexity of the education system, and the neo-liberal policy that guides it.

Secondly, in order to understand the influence and repercussions of the various contexts with the aim of shaping data-based policy, there is a need to employ mixed research methods. We also recommend considering carrying out controlled experiments (see, for example, Sampson, Sharkey & Raudenbush, 2008).

Thirdly, segregation will not diminish on its own: Real intervention is required in the field of education. In designing various intervention programs for contending with segregation processes, policymakers need to decide on the outcomes they seek to achieve, both in terms of the time frame (short-term or long-term) and the areas or spheres they wish to influence. Of course, the sectoral context must also be addressed – the same size does not fit all. In each of the sectors, it is essential to ensure that changes at the school level are accompanied by changes in the community and in the neighborhood (Berliner, 2009; Green & Gooden, 2014). In this process, the local leadership in the various localities – that is, the local government and the school principals – play an important role. In this context, an effort should be made to identify successful educational activity in schools in localities of low socio-economic status, and learn from these examples.

3. The ability to learn about the connection between place of residence and different social processes such as education demands synchronizing data from various authorities. We believe that this is possible and that there are databases in Israel today that can be used. However, it is essential to precisely and clearly define the variables and standardize identification of data in order to ensure the compatibility of these databases. Combining data from different databases

will help to expand and deepen existing knowledge regarding the connection between geographic space and education, in all of its different aspects.

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Appendix 1: Searching and identifying relevant literature

Databases

We conducted a search of the literature in peer-reviewed articles, research reports and books/chapters of books via Internet search engines (Ebsco, Psycnet, ERIC, Proquest Educational sources and JSTOR) and OECD websites, and found publications based on reviews of articles (for example Johnson, 2012).

We searched for literature on segregation processes in Israel by using the database of the Szold Institute, the inter-university information catalogue and electronic databases (ERIC, PROQUEST, Ebsco and JSTOR).

Information from official sources: Ministry of Education, National Authority for Measurement and Evaluation in Education (RAMA), the Knesset website, publications of the Central Bureau of Statistics, and the Bank of Israel, as well as research institutes and social centers such as the Adva Center, Taub Center and Van Leer Institute.

Relevant search phrases in English:

Residential segregation, spatial segregation, homogeneity/heterogeneity, neighborhood, cities, zoning, tract, metropolitan, race/racial, ethnicity, Afro-American, Latinos, Hispanic, immigrants, minority, religious ,socioeconomic, income, poverty (with composition), school segregation, school/class composition, desegregation, community

Search phrases focused on educational aspects, with an emphasis on output:

Achievement, aspiration, dropout; higher education enrollment/access, motivation, parental involvement, school leadership, school choice, zoning, catchment area

In Hebrew:

Segregation, separation, socio-economic status, local authorities, residential neighborhoods, place of residence, opportunities in education, localities, periphery and center, migration, internal migration

We conducted the search via the basic keywords listed above, in addition to other concepts including: integration, exclusion, social integration, social closure, homogeneity/heterogeneity, inequality, education by sector (Arab, state, state-religious, ultra-Orthodox), educational opportunities, social gap, choice, school districts and education spaces.

In databases in English, we added the word "Israel" to phrases describing segregation, as well as keywords such as Arab localities, Arab/Palestinian education, and Arab-

An initial search for “residential segregation” and “education” yielded a very large number of sources. Thus, the international review relates to the most recent literature (about 2,420 items published in 2014 were found via Google Scholar with these words in their title),¹⁸ as well as key publications of the past five years. The initial searches conducted in Hebrew yielded a limited number of results. Therefore, the search in Hebrew databases was broadened to include the years 2005-2015.

¹⁸ During the course of the search, we cross-checked the terms.

Appendix 2: Summary of articles on residential segregation and the education system

Article	Subject of research	Key findings – initial analysis	Did the article address the connection between place of residence and the education system?
Milgrom (2015)	Residents of localities in Israel (Tel Aviv, Haifa, Beersheba and Jerusalem)	Residential segregation is growing on an economic basis (income). There is variance among the cities vis-à-vis this trend.	No, it does not discuss education.
Fogel (2011)	Pupils in Hebrew education, elementary and middle schools, 2008	Economic (parental income) and ethnic (hardship country) segregation among schools is high in ultra-Orthodox education, followed by state-religious and less in state education. There is more segregation in elementary education than in secondary. Israel has a high level of segregation relative to the world. In Tel Aviv, the segregation (education and hardship country) is high among the classrooms.	In part, a study of Tel Aviv. The rest of the data refers to the national level.
Blass et al. (2014)	Pupils in elementary and middle schools	There is more segregation among schools based on parental education than within schools (among the classrooms). This is more pronounced in ultra-Orthodox education than in Hebrew state-religious or state education. In Arab education, there is more segregation among schools than in Hebrew education. Segregation grew during the years 2001-2010.	In part, it studies the extent of segregation among and within schools in 9 cities. The rest of the data is at the national level.
Fogel et al. (2015)	Data at the level of school and neighborhood/place of residence. 2012	Improvement in achievements on Meitzav exams boosts property values	Yes, based on a calculation of the school's radius from place of residence
Achdut et al. (2008)	Pupils from two cities (Netanya and Holon), focus on elementary education, 2005	Opening school districts increases polarization between schools. This was studied by examining the characteristics of pupils (with an emphasis on parental income) who enrolled in schools outside of their city's school districts. This phenomenon was more pronounced in state education than in state-religious education.	Yes, based on school districts, with data provided by the local authorities

Appendix 3: Calculating the segregation index H

We calculated the H index according to its definition in the article by Reardon, Yun and Eitle (2000)

$$H = \frac{\sum_{i=1}^k \frac{t_i}{T} (E - E_i)}{E}$$

where t_i and T represent the number of pupils in school i and the number of pupils in the sector (locality), respectively.

H reflects the weighted average of the disparity between the variance of sector (or locality) and the variance of each school relative to the general variance in the education sector (or locality). The closer the H index is to 0, the more similar the educational composition of the pupils' parents in all of the schools. An index that is close to 1 indicates a situation of segregation. The H index also helps to calculate to what extent the differences between schools can be attributed to disparities between localities:

The formula of E:

$$E = \sum_{r=1}^n Q_r \ln \frac{1}{Q_r}$$

E – The Theil index, which reflects the extent of variance. n – number of groups from 1 to r ; Q – the relative size of group r . A value of 0 indicates that there is only one group (for example, only those with 15 or more years of education).

Figure 2: State-religious education

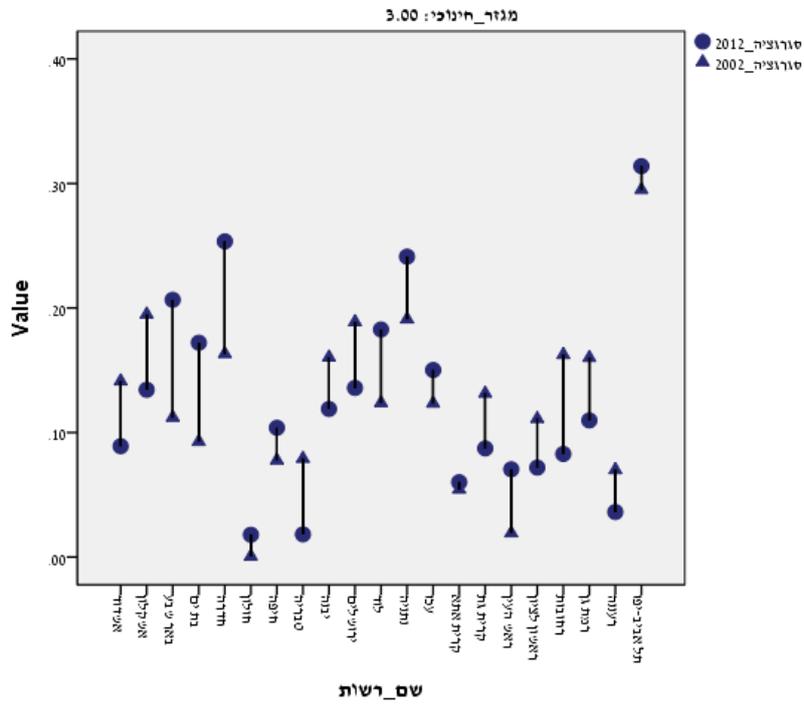


Figure 3: Ultra-Orthodox education

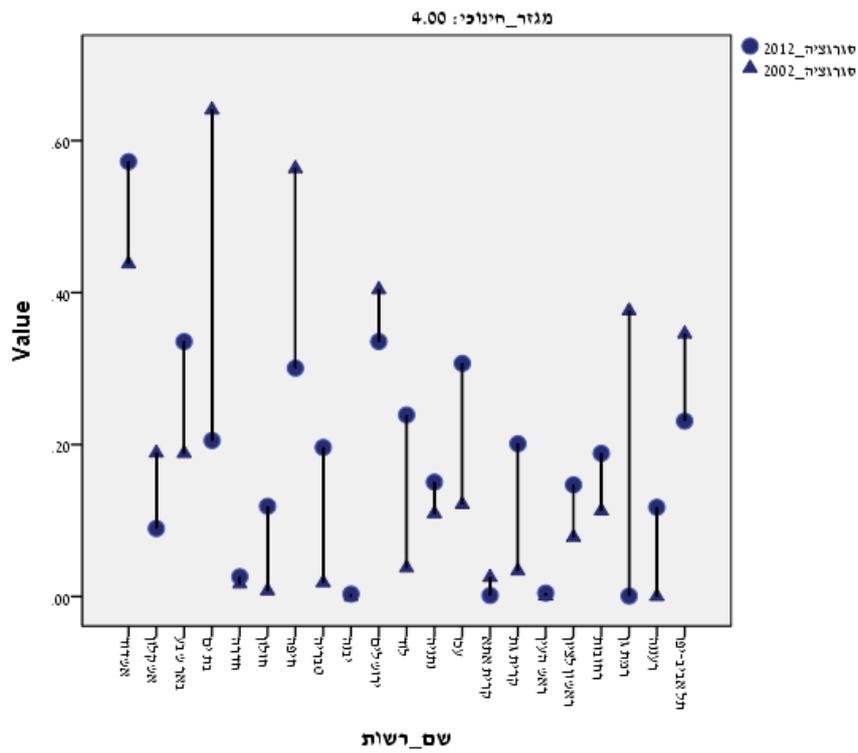
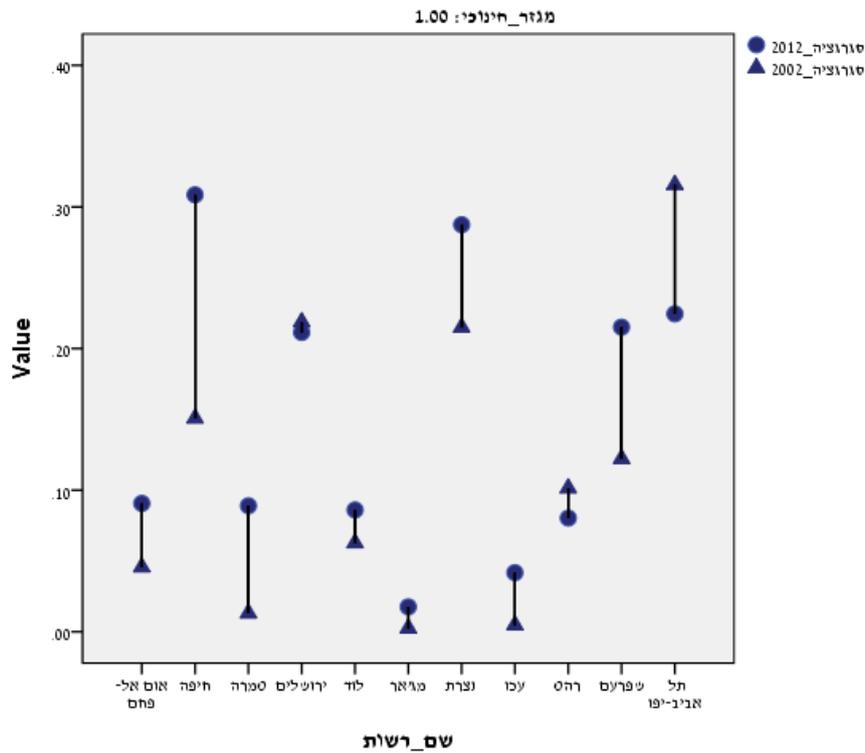


Figure 4: Arab education



Locality's name (from right to left): Tel Aviv-Jaffa, Shfar'am, Rahat, Acre, Nazareth, Maghar, Lod, Jerusalem, Tamra, Haifa, Umm al-Fahm

Figures 1-4 show the changes that occurred from 2002-2012, by sector, in a number of large cities (which include the different sectors). The figures include a number of Arab localities, as well as localities with schools from all three sectors of Hebrew education: state, state-religious and ultra-Orthodox. This can help us understand various processes of socio-economic segregation in the different sectors in those localities.

In general, we see from these figures that there is a trend of growing segregation within the localities in Arab education and in Hebrew state education. We already pointed to this trend in Table 5.

However, we can now see the localities in which this phenomenon is salient. In state-religious and ultra-Orthodox education, we see significant variance among the localities in the scope of change in segregation. In state-religious education, there was an increase in segregation in nine localities, stability in two and a decrease in segregation in the other ten. In ultra-Orthodox education, there was an increase in segregation in eleven localities, stability in three and a significant decrease in segregation in the other six. These figures underline the lack of similar segregation trends among the sectors over time. In addition, there is variance among the localities in how strongly the segregation processes are expressed. **These differences require, of course, further study in regard to the factors underlying these fluctuations.**