Proceedings of the 2013 Land Policy Conference

Education, Land, and Location

Edited by Gregory K. Ingram and Daphne A. Kenyon

Land Policy Series

Infrastructure and Land Policies (2013)
Value Capture and Land Policies (2012)
Climate Change and Land Policies (2011)
Municipal Revenues and Land Policies (2010)
Property Rights and Land Policies (2009)
Fiscal Decentralization and Land Policies (2008)
Land Policies and Their Outcomes (2007)

Education, Land, and Location

Edited by

Gregory K. Ingram and Daphne A. Kenyon

LINCOLN INSTITUTE
OF LAND POLICY
CAMBRIDGE, MASSACHUSETTS

Library of Congress Cataloging-in-Publication Data

Education, land, and location /
edited by Gregory K. Ingram and
Daphne A. Kenyon.
pages cm
Includes index.
Summary: "Addresses links between K-12 education, location, and land, and effects on racial, ethnic, and socioeconomic segregation; academic achievement; and equality of opportunity. Topics include: expanding school choice, charter schools, and homeschooling; property taxes, school finance, and alternative revenue sources; the structure of school districts; transportation to school; effects of school location; and the role of housing policies"—Provided by publisher.
ISBN 978-1-55844-289-4 (alk. paper)
1. School sites—United States. 2. School sites—United States—Sociological aspects.
3. Educational sociology—United States. 4. Education and state—United States.
5. Education—United States—Finance. 6. Municipal finance—United States.
7. Land use—United States. 8. Land use—Government policy—United States.
I. Ingram, Gregory K.
LB3220.E35 2014
371.6'10973—dc 3
2014006527

Designed by Vern Associates

Composed in Sabon by Achorn International in Bolton, Massachusetts.
Printed and bound by Puritan Press Inc., in Hollis, New Hampshire.
♻ The paper is Rolland Enviro100, an acid-free, 100 percent PCW recycled sheet.

MANUFACTURED IN THE UNITED STATES OF AMERICA

CONTENTS

13

Residential Histories, Geography of Opportunities, and Educational Achievement in the City of Santiago

Carolina Flores

Santiago, Chile, like many Latin American cities, shows a high level of socioeconomic residential segregation (Arriagada and Rodriguez 2003; Flores 2008; Sabatini 2003). Poor populations form large homogeneous clusters of households far away from high-quality opportunities in several arenas, including education. This chapter explores the relationship between residential segregation and student achievement in a context in which all parents are able to choose schools, and thus local opportunities are supposedly less influential in the quality of opportunities parents have access to.

During the early 1980s, Chile implemented a universal education voucher system generalizing school choice, which up to then had been voluntary. Since in such systems parents are allowed to choose schools outside the catchment area, voucher advocates suggest that in the presence of choice, school segregation should be lower than residential segregation (Coons and Sugarman 1978; Moe 2001). Yet despite the voucher system, the Chilean education system is highly segregated; school segregation is even higher than residential segregation (Valenzuela, Bellei, and De los Ríos 2009). Poor students are concentrated in poor, underachieving schools that, given the high level of socioeconomic residential segregation, tend to be located in neighborhoods where poverty is concentrated.

A number of reasons can explain why not all Chilean families use choice as a means to access better extra-local schools, which in turn fosters school segregation. First, some studies have focused on the potential differences in parental preferences (Henig 1994; Saporito 2003). It has been demonstrated, however, that parental preferences are not radically different after controlling for a number

of restrictions on school choice (Compton-Lilly 2003; Flores and Carrasco 2013; Lareau and Horvat 1999).

Second, school choice is not as free as the voucher system intends. Indeed, the Chilean education system imposes several limits on choice. For one thing, private schools (which provide more than half of primary and secondary education in Chile) have until recently been allowed to select students based on certain criteria. For another, private schools are allowed to charge add-on fees; this creates a differentiated copayment structure among schools that limits parental choice to affordable schools.

Another restriction on choice that potentially explains school segregation is the spatial mismatch in educational opportunities, which suggests that residential segregation brings about an uneven distribution of opportunities, by which attractive schools are located far away from neighborhoods where poor families reside (Kain 2004). Neighborhood poverty plays a role in children's achievement because it decreases the quality of local opportunities for poor parents. In addition, despite having the possibility to go somewhere else, poor parents keep "choosing" (or getting stuck with) local underachieving schools. The spatial mismatch of educational opportunities, coupled with the attachment to local schools, challenges the idea that choice breaks the link between residential segregation and access to opportunities.

The literature also recognizes that residential segregation encompasses a number of social mediators that affect youth development. Children living and attending schools located in segregated areas are more exposed to negative peer effects and experience collective and institutional socialization processes that do not encourage educational achievement (Brooks-Gunn et al. 1993; Mayer 1997, 2002). What is more, it has been suggested that these effects are cumulative over time (Howell-Moroney 2005).

This chapter assesses two paths through which residential segregation may have an impact on educational achievement. On one hand, the research aims to give a picture of the spatial mismatch in the distribution of educational opportunities and to test to what degree this mismatch restricts school choice. On the other hand, it aims to measure a few neighborhood social mediators, to compare them in segregated versus nonsegregated areas, and to estimate the relationship between these social mediators and academic achievement.

Theoretical Framework

There has been increasing interest in the spatial distribution of the urban population and the social composition of neighborhoods. Residential segregation can be defined as the separation of groups in urban space, or "the degree to which two or more groups live separately from one another, in different parts of the urban environment" (Massey and Denton 1988, 282). Until the seminal work of W. J. Wilson (1987), the literature had paid more attention to racial and ethnic segregation, while socioeconomic segregation had been set aside (Jargowsky

1996). Yet the most obvious division of Latin American urban population occurs with respect to class structure. Socioeconomic residential segregation is relevant because it explains differences in both access to opportunities and subsequent outcomes in several areas, such as education, health, and employment.

Several theories have been proposed to explain the relevance of socioeconomic residential segregation on children's development. One school of thought argues that homogeneous poverty in neighborhoods is related to having few or less desirable opportunities at the local level. People in segregated areas lack access to good educational opportunities because of a spatial mismatch between the place of residence and the location of attractive educational opportunities (Galster and Killen 1995; Kain 1968). (In a school choice system, the implications of spatial mismatch on educational outcomes are less obvious and need to be clarified.) Another school of thought in the study of the consequences of spatially concentrated poverty argues that the neighborhood triggers a number of socialization mechanisms, affecting individual outcomes in a cumulative way (Brooks-Gunn et al. 1993; Howell-Moroney 2005; Jencks and Mayer 1990).

SPATIAL MISMATCH AND SCHOOL CHOICE

The concept of "spatial mismatch," developed by Kain (1968), states that since minorities are constrained in their choices of residence, they have to "trade-off a higher probability of employment . . . against higher transport costs" (Kain 2004, 10). Spatial mismatch in the labor market could explain the relatively high unemployment rates among minorities living in the inner city compared with minorities elsewhere.

Kain expands the concept of spatial mismatch to include other limitations associated with the restricted residential choices of minorities. He argues that spatial mismatch in educational opportunities is "the most serious type of spatial mismatch that currently exists in U.S. metropolitan areas" (Kain 2004, 21). Spatial mismatch in education pinpoints two problems associated with residential segregation and educational outcomes: (1) the low quality of schools in poor neighborhoods; and (2) the school segregation and associated peer effects arising from the limited array of educational opportunities in already segregated neighborhoods.

Regarding the allegedly low quality of schools in poor neighborhoods, it has been shown that schools with low academic achievement and a high concentration of poverty are overrepresented in poor Chilean neighborhoods (Flores and Carrasco 2013). However, judging school quality under different student composition conditions has been very controversial because quality judgments are often unfair, biased, and statistically inappropriate (Fitz-Gibbon 1997; Goldstein and Spiegelhalter 1996; San Martín and Carrasco 2012). In fact, there is evidence in the Chilean case that low achievement is the result of social composition rather than school resources such as copayment (Mizala and Torche 2012). Nonetheless, under the compensatory notion of justice (Jencks 1988), it is reasonable to argue that schools in poor neighborhoods are "not good enough," since their

systematically low results in standardized tests suggest they do not compensate for the disadvantage of their students.

The second problem of the effect of residential segregation on educational outcomes through the spatial mismatch hypothesis refers to school segregation. Although it has been recognized that the evidence about peer effects on educational outcomes is mixed (Kain and O'Brien 1998, 2000), some evidence suggests that the problems of "ghetto education" will not be solved until minority children have wide access to high-quality schools where "the majority of the students come from middle and upper income families" (Kain 2004, 24).

In a school system that is spatially organized around districts, school segregation is the logical consequence of residential segregation (Denton 1996; Fitz, Gorard, and Taylor 2002; Nechyba 2003). This relationship is not necessarily effective in systems where parents are able to choose schools outside the catchment area. School choice advocates argue that in a choice system, parents' decisions are less restricted by local opportunities, and choice can decrease school segregation below the level of residential segregation (Coons and Sugerman 1978; Moe 2001). Potentially, choice can enable members of a social group to reside in the same neighborhood but not attend the same schools and allow students from different social groups or parts of the city to meet in the classroom.

In a choice system where educational opportunities are unevenly distributed in space, the link between school and residential segregation is contingent on the willingness and ability of poor parents to choose nonlocal schools. First, prohibitive transportation costs prevent students of poor families from traveling to distant neighborhoods to obtain better educational opportunities. In addition, much research has demonstrated that proximity to home is one of the most valued attributes when choosing a school (Chumacero, Gomez, and Paredes 2011; Gallego and Hernando 2009) and that in Chile, students from the lower classes attend schools that are on average half the distance from home relative to those attended by students from middle- and upper-class households (Flores and Carrasco 2013).

A third reason poor parents may not choose nonlocal schools has to do with information availability. Since poor parents are more likely to rely on informal sources of information such as conversations with family and neighbors (Raczynski et al. 2010), it is reasonable to think that they are relatively less informed about distant schools, which makes them less likely to choose a school outside the neighborhood. In practice, not all parents have equal access to information about school performance, which creates information asymmetries between informed and uninformed parents (Fitz, Gorard, and Taylor 2002).

Finally, it has been argued that parental preferences for mainstream indicators of school quality (such as test scores) are correlated with socioeconomic status, race, and ethnicity (Henig 1994; Saporito 2003; Williams and Echols 1992). Under this hypothesis, poor parents value academic achievement less than wealthier parents; therefore, they do not have the drive to choose nonlocal schools with higher test scores. By contrast, other studies show that low-income parents

have the same attitudes about education that wealthy parents do (Compton-Lilly 2003; Flores and Carrasco 2013; Lareau and Horvat 1999).

Thus, despite having the opportunity to choose schools elsewhere, it is likely that poor parents will keep choosing local, underachieving schools because they cannot afford high school transport costs, they actually want their children to remain in the neighborhood, or they are less informed about nonlocal, better-quality schools.

From the supply side, a voucher system encourages schools to select suitable students in order to receive and retain funding while minimizing costs (Sapelli 2002). This facilitates the creation of a two-tier system: schools that can afford to select, and schools that have "empty desks" that can be used to accommodate excluded children (Adler, Petch, and Tweedie 1989). In addition, it is reasonable for schools to locate near the children they want to educate. Since socioeconomic status may indicate how well prepared children are for the formal school system, the rational outcome in an unregulated setting is that poor and segregated neighborhoods will have inferior educational opportunities compared with more affluent neighborhoods.

The impact of choice on segregation is affected by the spatial segregation of the population. Market-based education policy has underrated the importance of geography. "A fundamental deficiency of the market model of education is that it is geographically naïve and socially regressive. It does not and cannot address adequately the difficulties of those people and places disadvantaged by the operation of the market" (Pacione 1997, 172).

Thus, the voucher system leads to school segregation in that it encourages schools to select students, while allowing parents to choose schools likely based on differing information regarding the local supply of schools. Studies in the United States have found that charter schools increase the rate of socioeconomic concentration (see, for example, Frankenberg, Siegel-Hawley, and Wang 2010). Similarly, Elacqua and Santos (2013) provide evidence that eliminating school choice in Chile could even decrease school segregation.

SOCIAL MEDIATORS OF NEIGHBORHOOD EFFECTS

Ecological models of development assume that individuals cannot be studied without considering the context in which they operate (Bronfenbrenner 1986). According to this approach, educational outcomes depend on individual characteristics such as intelligence and also on other elements that characterize the proximal and distal contexts in which children live. Poverty, as one of these characteristics, can be experienced on many levels: in the household, at school, in the neighborhood. Research has focused mostly on the effects of poverty in the most proximal environments, such as school, family, and peers, while the neighborhood context has been less explored and is certainly less understood (Brooks-Gunn et al. 1993).

The increasing awareness about the neighborhood's effects on children's development and learning process has called attention to the fact that the link

between household and school poverty and low educational outcomes may be considerably weaker than what is commonly thought (Mayer 1997). Low-income parents may differ from middle- or high-income parents in factors such as social adjustment, skills, enthusiasm, dependability, and willingness to work hard (Brooks-Gunn, Duncan, and Aber 1997). The possibility that these differentials are actually caused by contextual differences such as neighborhood deprivation and isolation suggests that increasing poor parents' income is not a sufficient means to improve educational outcomes among poor children. Similarly, teachers in schools in segregated areas may differ from teachers in schools in middle- and high-income areas. While neighborhood deprivation may have something to do with such differences, increasing a school's resources while disregarding the importance of the neighborhood might not be an effective policy either.

The literature identifies three mechanisms through which concentration of poverty harms educational attainment: contagion, collective socialization, and institutional socialization (Jencks and Mayer 1990). The "epidemic" hypothesis of contagion asserts that one of the most important determinants of children's behavior and outcomes is peer influence. Close friends, classmates, neighborhood mates, and the like mimic one another, creating a behavioral contagion effect. Deprived neighborhoods concentrate behavioral problems that spread among children. Truancy, disruptive behavior in the classroom, and low educational achievement are common in poor neighborhoods because like begets like (Brooks-Gunn et al. 1993). Even if children are not in direct contact with one another, peers affect children's development because they compete for resources, which are rather scarce in segregated areas (Connell 1995).

Models of collective socialization assert that adults in a neighborhood influence children, since they are role models for young people (Sampson, Morenoff, and Earls 1999). Isolation and segregation bring about joblessness among adults, which generates a poor system of concrete expectations and goals (Wilson 1987). Children growing up in such a system are less likely to learn the culture of work (Willis 1977). These models also focus on the supervising role of adults and the level of "intergenerational closure," or the degree to which adults and children in the community are linked to one another. Moreover, adults looking out for children foster "collective efficacy" for children, a concept that refers to shared expectations and mutual engagement by adults in the active support and social control of children (Sampson, Morenoff, and Earls 1999), which is critically enabled by the neighborhood's social capital. In this sense, "concentrated disadvantage . . . is associated with sharply lower expectations for shared child control" (633), which makes the environment less conducive to learning.

Finally, the literature refers to the models of institutional socialization, or the idea that the way in which adults coming into the neighborhood through institutions perceive neighborhood conditions has an impact on children's behavior (Jencks and Mayer 1990). In psychology, this is known as the Pygmalion effect in the classroom (Rosenthal and Jacobson 1992): students' achievement levels depend on teachers' expectations, which can encourage or discourage learning.

In this sense, neighborhood effects can be influenced by the way adults in institutions (such as teachers in schools) judge the capabilities of youths (Bauder 2001). According to Bauder, "Local institutions use labels of 'dysfunctionality,' based on an interpretation of the cultural attributes of their clients and service area to assess career potential" (594). Thus, teachers may consider residence as a determinant of functionality. Poor children in segregated areas will often be considered "dysfunctional" for (unsuited to) college and will be socialized as such, whereas poor children in integrated neighborhoods will be pushed to keep up with the community's expectations.

Some authors argue that the negative effects of socioeconomic segregation are particularly severe early in life (Duncan, Brooks-Gunn, and Klebanov 1994) and that these effects accumulate over time (see, for example, Howell-Moroney 2005). Thus, the effect of having always resided in a segregated neighborhood is potentially more negative than the effect of changing residences between segregated and mixed areas and experiencing integration, even if it is only for short periods of time.

Social science researchers have dedicated considerable effort to estimating the magnitude and significance of contextual effects on several individual outcomes. Important methodological efforts to measure the effects of segregation have been developed in the analysis of crime (Sampson and Groves 1989; Sampson, Morenoff, and Gannon-Rowley 2002), educational achievement (Ainsworth 2002; Mayer 2002), and child development in general (Brooks-Gunn et al. 1993; Jencks and Mayer 1990). Although these authors provide some evidence supporting the hypothesis that context affects individuals, it seems that how and why space matters, and how the effects accumulate over time, are issues still barely understood.

Data and Methods

This section explains the data and methods used to provide a picture of the spatial mismatch in the distribution of educational opportunities in the city of Santiago and to test to what degree spatial mismatch determines school choice. Two research questions address this mismatch: (1) To what degree are the main attributes of schools unevenly distributed across the city? (2) To what degree is parental choice in segregated areas tied to or restricted by local opportunities? This section also describes how social mediators that explain neighborhood effects on academic achievement were compared in segregated and mixed neighborhoods, and how relationships between these social mediators and academic achievement were estimated.

DATA

This study focuses on the city of Santiago, Chile. Secondary data from the 2002 Chilean census (INE 2002) and the National System for the Measurement of the Quality of Education (SIMCE 2010, 2011), as well as primary data from an

original survey that will be referred to hereafter as the Fondecyt survey,[1] were analyzed.

Census data allowed mapping the distribution of socioeconomic groups across the city. In 2002, the metropolitan area of Santiago had a population of over 5.25 million, distributed over approximately 15,400 square kilometers. The city was physically divided into 41,389 census blocks, 1,327 census zones, 373 census districts, and 34 municipalities. Based on census data, households and spatial units were characterized in terms of socioeconomic status (SES). This variable was constructed according to the ESOMAR methodology developed by the Chilean Association of Institutes of Market and Opinion Studies (ADIMARK), based on the household possession of basic goods, housing quality, and the education and labor status of household heads. The ESOMAR stratification method classifies households into five groups (low, mid-low, mid, mid-high, and high SES), defined by percentiles 0 to 10, 10 to 45, 45 to 70, 70 to 90, and 90 to 100, respectively.

The National System for the Measurement of the Quality of Education (SIMCE) administers national standardized tests on the subjects of math, language, and natural and social sciences. These tests are applied to all children in the 4th, 8th, and 10th grades. The test includes a socioeconomic questionnaire for parents. Test results are accompanied by basic school characteristics, such as average test score, social composition, address for geocoding, and copayment structure (the last two obtained from official data provided by the Ministry of Education).

The Fondecyt survey provides information about residential histories and social mediators in the neighborhoods. It includes 1,081 families selected from fourth graders who took the SIMCE test in 2009 and who, by the time of the fieldwork (2011), were in the sixth grade. Sample selection was made in two steps. First, a representative sample of 60 schools, stratified according to school SES and the level of spatial segregation in the school location, was selected.[2] Wealthy schools and affluent neighborhoods were omitted in order to focus on the comparison between segregated and mixed neighborhoods that mostly concentrate middle- and low-class schools and children. Thus, the sample includes schools from the low, mid-low, and mid socioeconomic groups located in segregated or mixed neighborhoods in the city of Santiago. The sample encompasses 29 schools in segregated neighborhoods (7, 14, and 8 from low, mid-low, and mid SES, respectively) and 31 schools in mixed neighborhoods (3, 10, and 18 from low, mid-low, and mid SES, respectively). The second step was the selection of a random sample of families within the sample of schools; each family's household address (for georeferencing) and the child's national identity number

1. This survey was financed through the National Fund for Scientific and Technological Research (FONDECYT), project number 11080188.

2. Sampling error was set at 5 percent.

(in order to merge survey data with tests scores and other SIMCE data) also were obtained.

In the Fondecyt survey sample, 47 percent of households can be classified as low SES, 43 percent as mid-low, and the rest (10 percent) as mid. Fifty-four percent of the families currently reside in neighborhoods of concentrated poverty. As expected, 66 percent of the low SES group reside in segregated neighborhoods, compared to 48 percent of the mid-low and 26 percent of the mid groups. On average, parents have resided in 3.6 residences in their lifetimes, whereas students have resided in 2 residences (almost 60 percent of students have always lived in the same house). Forty-eight percent of families have always lived in segregated neighborhoods, 44 percent have never lived in segregated neighborhoods, and 8 percent have moved from segregated to mixed neighborhoods or vice versa.

METHODS

School locations were georeferenced, and their presence in segregated versus nonsegregated census zones was compared. Residential segregation was defined and measured using clustering, one of Massey and Denton's (1988) five dimensions of segregation (evenness, exposure, clustering, centralization, and concentration). The clustering definition ("the extent to which areal units inhabited by minority members adjoin one another [. . .] in space" (293), forming a cluster of poverty) was used for two reasons. First, clustering is the only segregation dimension that takes into account the spatial dimension of segregation. Second, clustering can be used to identify segregated and mixed local areas (Flores 2009). Moreover, clustering can be calculated based on the spatial Moran's I, a measure of the degree to which "things" in one place resemble "things" in adjacent locations.[3] In practice, this index corresponds to the slope of the simple regression between the standardized values of these two elements.

The local value of spatial autocorrelation is an efficient way to measure clustering at the local level and to identify areas where poverty is concentrated. For normally distributed variables, local Moran's I is asymptotically normal; thus, the index can be statistically tested to identify areas where clustering is statistically significant (Anselin 1995). In this way, local Moran's I defines segregated areas as high-poverty areas significantly surrounded by similarly deprived areas.[4]

Measuring the relationships between neighborhood social mediators and educational achievement is a challenge. Selection bias has been largely discussed in the literature as one of the main methodological problems in this type of analysis (Galster 2003; Sampson 2001). Confounding factors, unobserved and difficult to control for, may explain both residential decisions and academic achievement, which renders the relationship spurious. For example, a cultural trait common to

3. For a description of the computation of the spatial Moran's I, see Flores (2009).

4. Segregated areas can be found in the upper-right corner of the upper-right quadrant of the Moran's I scatter plot in figure 13.2 that relates a variable with its spatial lag.

poor families might explain both residential and educational decisions leading to lower test scores. However, as mentioned earlier, evidence suggests that in terms of education, the poor are as rational as the elite, which moderates the selection bias argument in this case.

In this study, survey data were used to measure neighborhood social mediators, mainly through factor analysis. Census, SIMCE, and Fondecyt survey data were used in a set of hierarchical linear models that measure the relationships between social mediators, educational achievement, and children's school attendance.

Results

SPATIAL CONCENTRATION OF POVERTY AND SPATIAL MISMATCH IN SANTIAGO

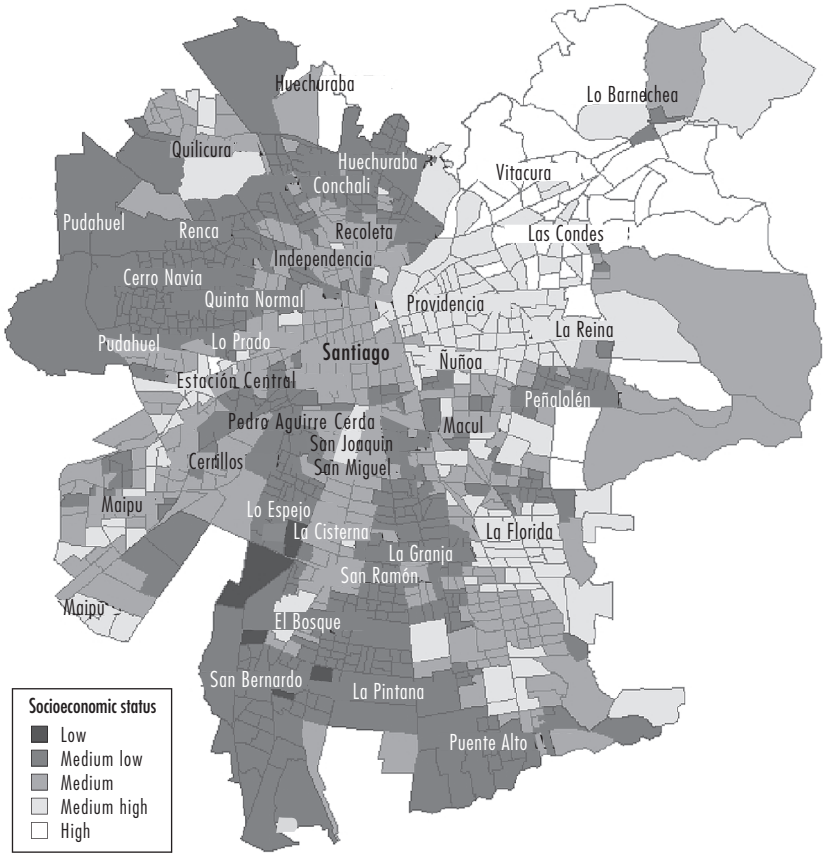
In the early 1980s, Chile implemented a universal voucher system in education, following very closely the suggestions of Milton Friedman (1955). With the implementation of the voucher, school choice became universal and unrestricted: since then, all parents can use the voucher in any school, public or private, that accepts vouchers as a valid method of payment (almost 95 percent of schools in 2012). However, choice in the Chilean universal voucher system is limited by several constraints. Since 1993, private schools have been allowed to charge fees to parents (in addition to the voucher), which creates a copayment structure that limits parental choice to affordable schools.[5] School selection (fostered by the voucher system itself and, until recently, allowed only for private schools) is another restriction on choice because only some students are selected by the schools their parents prefer.[6]

Beyond the limitations to choice imposed by copayment and selective admissions, residential segregation and the uneven spatial distribution of schools also restrict choice. Latin American cities in general, and Santiago in particular, are characterized by a pattern of residential segregation in which socioeconomic groups settle in separate areas, forming large homogeneous population clusters (Arriagada and Rodriguez 2003; Flores 2008; Sabatini 2003). Urban development in the twentieth century has been for the most part characterized by the spatial concentration of the elites in an area that extends from the city center out toward the periphery on one side. Similarly, the poor population is concentrated on the opposite periphery.

5. In fact, more than half of private subsidized schools charge a monthly fee that ranges from US$10 to almost US$200. Fees naturally discriminate between those who can and those who cannot afford to pay them.

6. The General Education Law (Ley General de Educación, or LEGE), enacted in 2009, prohibits selection before 12 years of age based on school achievement or other characteristics, such as socioeconomic status, that are used to predict future school achievement.

Figure 13.1
Socioeconomic Status in the Metropolitan Area of Santiago, 2002

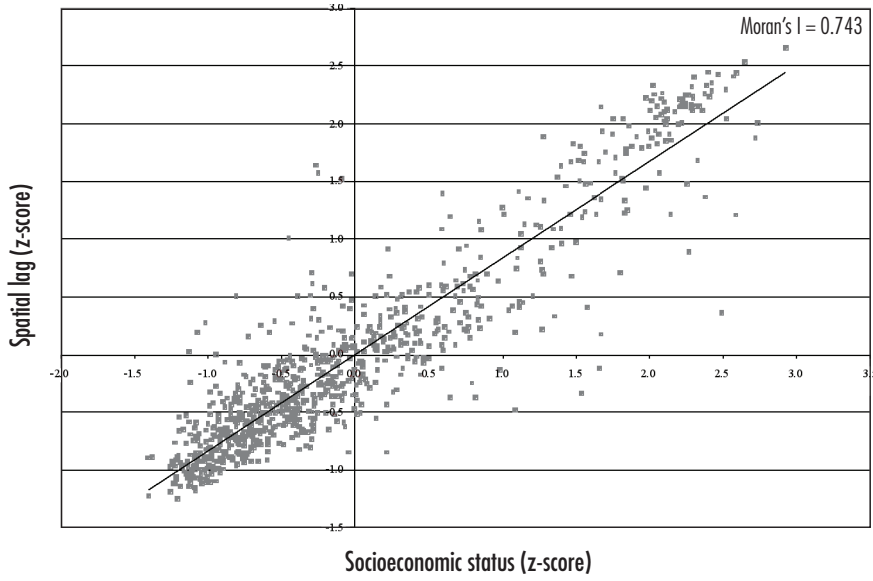


Source: INE (2002).

Based on census data from 2002, figure 13.1 shows the distribution of five socioeconomic groups across census zones in the city of Santiago. The upper classes, depicted in lighter shades, are concentrated in a cone-shaped area that extends from the city center toward the northeastern part of the city, while the lower classes, depicted in darker shades, are located for the most part in the northwestern and southern areas.

When socioeconomic groups are concentrated in opposite parts of the city, the spatial concentration of poverty is expected to be high. Figure 13.2 depicts the Moran's I scatter plot showing the relationship between the standardized value of the socioeconomic index for each census zone calculated from the 2002

Figure 13.2
Moran's I Scatter Plot of Socioeconomic Index in Census Zones, 2002



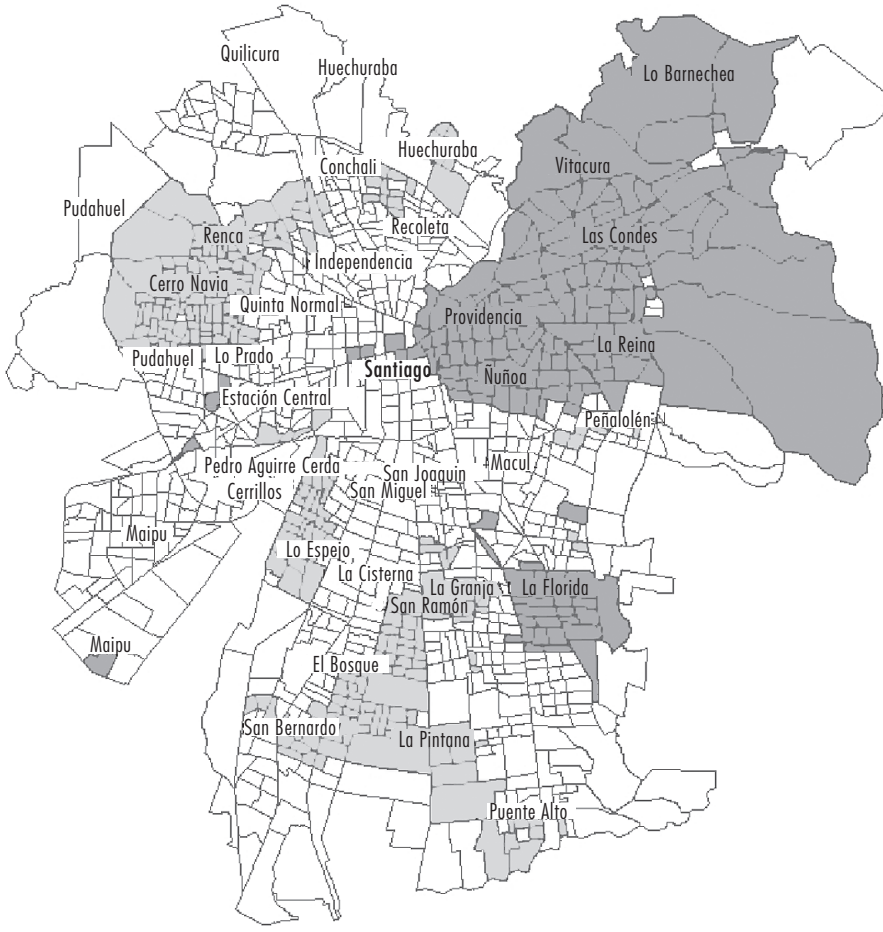
Source: Calculations based on INE (2002).

census and its standardized spatial lag.[7] The spatial Moran's I for the socioeconomic index at the census zone level is positive and significant; this means that poverty in a neighborhood significantly predicts poverty in its vicinity.

Segregation at the neighborhood level (census zone) can be obtained from the local Moran's I, which is in turn a result of the global Moran's I. In this case, neighborhoods of concentrated poverty are those where the neighborhood has a low socioeconomic index and its spatial lag also has a low socioeconomic index. Local Moran's I considers as segregated areas all census zones of lower-than-average SES that are significantly surrounded by other lower-than-average neighborhoods. However, this does not necessarily represent a problem of concentration of poverty. Since the poverty rate in 2002 was around 20 percent, in this research segregated census zones are defined as the areas from the bottom 20 percent of the socioeconomic distribution that are significantly surrounded by other similar areas. These areas are displayed in figure 13.3 in light gray, whereas mixed areas are in white (affluent areas are in dark gray).

7. Calculated with a contiguity matrix of order 1. For details, see Flores (2009).

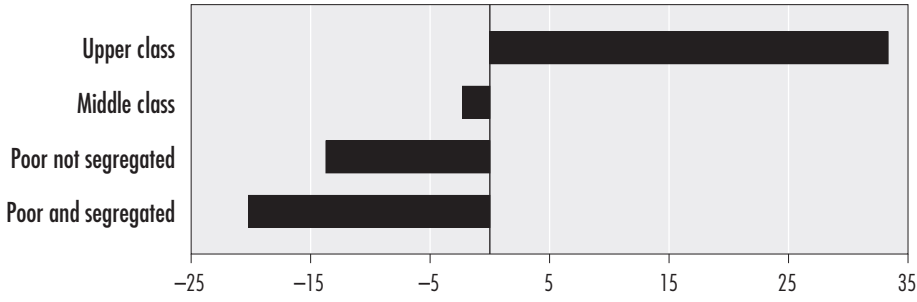
Figure 13.3
Segregated Census Zones According to Local Moran's I, 2002



Source: Calculations based on INE (2002).

According to INE (2002), almost one-fourth of the population in the Santiago metropolitan area resides in a segregated census zone. Sixty-three percent of those residents are from the lowest quintile of the income distribution. The spatial poverty rate, or the share of the total population that is poor and inhabits areas where poverty is concentrated, is 15.3 percent—close to 800,000 people. Segregation is especially high among young children. According to census data,

Figure 13.4
Average Standardized Math Test Scores of Schools in Different Types of Neighborhoods, 2002



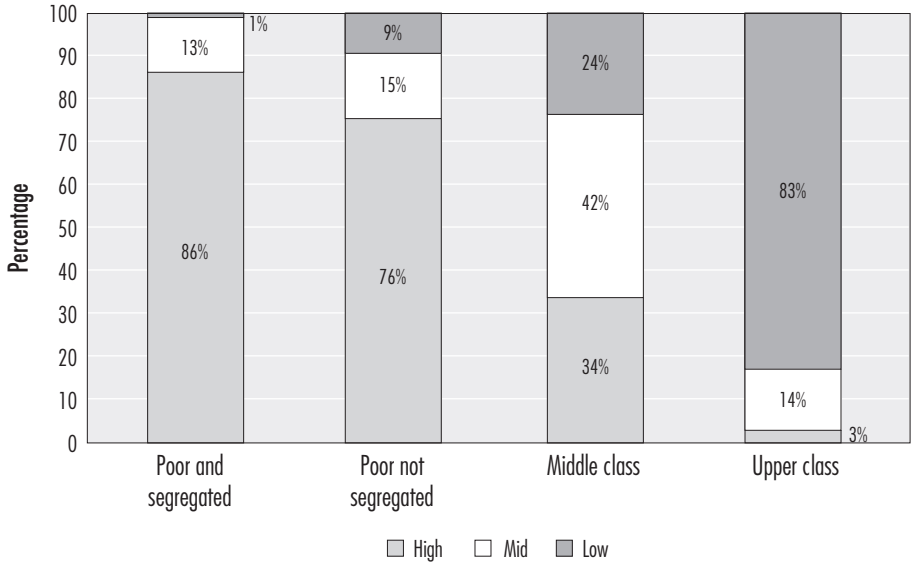
Note: Data are difference from grand mean of 252.
Source: Calculations based on INE (2002).

20.7 percent of children up to age 18 are poor and reside in areas where poverty is concentrated. Spatial poverty is higher among younger children: 21.8 percent for ages 0–5; 21.4 percent for ages 6–13; and 18.3 percent for ages 14–18. By contrast, the spatial poverty rate is 10.3 percent for young people ages 19–24 and 12.9 percent for people over age 24.

As expected, the geography of opportunities is quite uneven. Compared to schools elsewhere in the city, schools located in areas of poverty concentration are more likely to be public and free of charge, have a high concentration of poor students, and have very low academic achievement. Figure 13.4 shows the average standardized math test scores (difference from grand mean) of schools located in different types of neighborhoods. Clearly, the results for schools in poor neighborhoods are lower than those for schools in other neighborhoods. What is more interesting is the difference between poor schools in segregated neighborhoods and poor schools in mixed neighborhoods. In fact, the former present significantly lower results than the latter. The reason for that difference may be the higher levels of concentrated poverty in schools in poor and segregated neighborhoods.

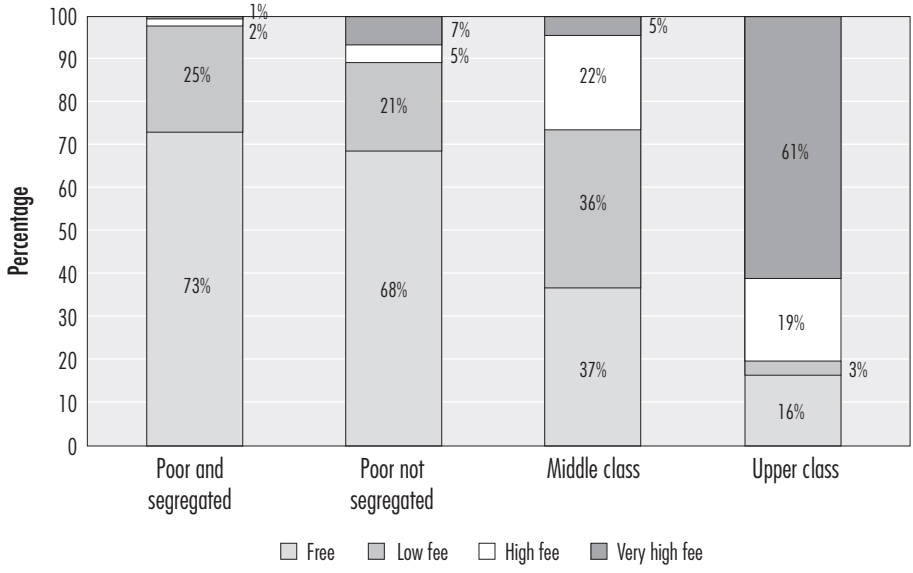
According to figure 13.5, there is a 10 percentage point difference in the share of schools with a high concentration of poverty in poor and segregated neighborhoods versus those in poor not segregated neighborhoods (86 percent versus 76 percent, respectively). It is also interesting to note, as displayed in figure 13.6, that schools in poor neighborhoods are more often free of charge or require very low copayments. This is particularly true in segregated neighborhoods. Thus, schools in poor neighborhoods, especially in segregated ones, have fewer resources to invest in their students than schools that charge some fees to parents (mostly represented in middle- and upper-class neighborhoods).

Figure 13.5
Percentage of Schools with High, Mid, and Low Concentrations of Poverty, by Type of Neighborhood, 2010 and 2011



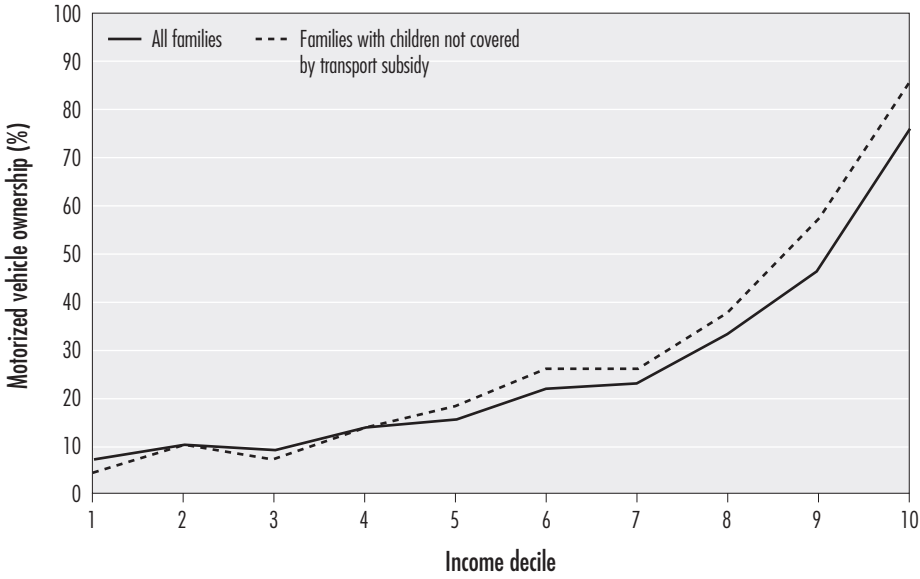
Sources: Calculations based on SIMCE (2010, 2011) and INE (2002).

Figure 13.6
Percentage of Schools with Different Levels of Copayment, by Type of Neighborhood, 2010 and 2011



Sources: Calculations based on SIMCE (2010, 2011) and INE (2002).

Figure 13.7
Motorized Vehicle Ownership in the City of Santiago, by Household Income Decile, 2011



Source: Based on Chilean Ministry of Social Development (2011).

A measure of Euclidean distances from home to school using GIS procedures shows that students in the sample reside within an average distance of 1 kilometer from school. Students residing in segregated areas tend to live significantly closer to school (900 meters on average) than students residing in mixed neighborhoods (1.2 kilometers on average). Nonetheless, parents seem to be aware of the quality gap between schools in segregated neighborhoods and those in mixed neighborhoods. According to our data, only 37 percent of parents in segregated areas agree with the idea that "in general, schools in the neighborhood are very good," compared with 45 percent of parents in mixed areas.

As mentioned earlier in this chapter, one of the reasons parents do not choose schools beyond the limits of their neighborhood is because transportation costs can be unaffordable or unbearable. According to official data (Chilean Ministry of Social Development 2011), around 28 percent of families in Santiago own at least one motorized vehicle. This share decreases to 24 percent among families with children not covered by the transport subsidy (explained in the next paragraph). As shown in figure 13.7, vehicle ownership is less prevalent among the poor population. Less than 10 percent of poor families, roughly within income deciles 1 and 2, own a vehicle. This percentage is even smaller for poor families with children

not covered by the transport subsidy. Thus, a large share of families are likely to rely on the public transport system if their children attend distant schools.

In Chile, there is a public transport subsidy for fifth- to twelfth-grade students. Students pay about one-third of the price for each ticket (in 2013, the student transport fee was around US$0.40 per trip by bus and subway). This subsidy does not cover caregivers. Thus, transporting small children to distant schools involves a high monetary cost for those accompanying them.

In addition, Santiago's public transport system (Transantiago) leaves much to be desired in terms of safety and reliability (Figueroa and Orellana 2007; Muñoz, Ortúzar, and Gschwender 2009). Therefore, beyond the monetary burden to parents of small children, there is an important time and safety cost associated with the use of public transport when choosing a school outside the neighborhood.

The very noticeable spatial mismatch in educational opportunities and the fact that poor families in segregated areas are more tied to local schools than other families may explain why school segregation in Santiago is even higher than residential segregation (Valenzuela, Bellei, and De los Ríos 2009).

NEIGHBORHOOD SOCIAL MEDIATORS AFFECTING EDUCATION

Table 13.1 describes four indexes created through factor analysis to measure some of the neighborhood social mediators identified in the literature: bonding social capital, role models, collective efficacy, and negative peer effects. The index for bonding social capital is constructed using five statements included in the Fondecyt survey, to which parents declared their level of agreement: "Neighbors think together about possible solutions to neighborhood problems"; "Neighbors are very close to each other"; "In general, neighbors get along well"; "I believe neighbors care about what happens to me"; and "Neighbors are willing to help each other." The index shows a Chronbach's alpha of 0.87 and generates one factor that explains 66 percent of total variance. The index presents an average of 0.06 for families in mixed neighborhoods and –0.03 for families in segregated neighborhoods.

The index for the availability of role models is constructed using three statements included in the Fondecyt survey to which parents declared their level of agreement: "Children in this neighborhood have many adults from whom to learn delinquency and drug addiction"; "Children in this neighborhood have plenty of working adults from whom to learn the value of discipline and effort"; and "In this neighborhood there are severe unemployment problems." The index has a Chronbach's alpha of 0.77 and produces one factor that explains 60 percent of variance. The index has a mean of 0.22 in mixed areas and –0.17 in segregated neighborhoods. The Fondecyt survey includes seven statements about collective efficacy, to which parents declared their level of agreement: "I trust other mothers in the neighborhood to take care of my child as well as they take care of their own children"; "In this neighborhood, adults make sure no child gets in trouble"; "Neighbors share the same values and beliefs for raising children"; "I can trust in my neighbors"; "In this neighborhood, children can play

Table 13.1
Social Mediator Indexes Created Through Factor Analysis

	Index			
Social Mediator	Variance Explained from Factor (%)	Chronbach's Alpha	Difference Mixed/Segregated Neighborhood	Pearson Correlation with Math Test Scores
Bonding social capital (z-score)	66	0.87	0.09***	0.10***
Role models (z-score)	60	0.77	0.39***	0.16***
Collective efficacy (z-score)	60	0.85	0.18***	0.10*
Negative peer effects (z-score)	69	0.80	–0.48***	–0.26***

***, * = statistically significant at 0.01 and 0.1 levels.
Source: Calculations based on Fondecyt survey.

safely in the street"; "If there is a fight, my neighbors would intervene to stop it"; "When I am not at home, I trust my neighbors to be alert to whatever happens there." The index of collective efficacy has a Chronbach's alpha of 0.85 and one factor that explains nearly 60 percent of variance. The index has an average of 0.1 in mixed neighborhoods and –0.082 in segregated neighborhoods, and it is positively and significantly correlated with the math test scores.

Finally, the Fondecyt survey includes three statements about peer effects, to which parents declared their level of agreement: "I believe most children in this neighborhood will go to college"; "Many children in this neighborhood will engage in delinquency and drug addiction"; and "Children in this neighborhood are a very bad example for my child." The index of negative peer effects has a Chronbach's alpha of 0.8 and one factor that explains 69 percent of variance. The index has an average of 0.22 in segregated neighborhoods and –0.26 in mixed neighborhoods.

Intergenerational closure, another neighborhood social mediator, is measured as agreement with the following statement: "In this neighborhood I know the rest of the parents and they know me." Seventy-two percent of parents agreed overall, and the level of agreement was higher in mixed neighborhoods (75 percent) than in segregated neighborhoods (68 percent). As expected, the data suggest that intergenerational closure fosters academic achievement.

Beyond the fact that these neighborhood mediators are perceived to be more problematic in segregated than in mixed areas, we found that all the items have a small but significant correlation with math test scores, in the expected direction. Hierarchical linear models were estimated in order to measure the relationship between social mediators and educational achievement in math. The models combine census, SIMCE, and Fondecyt survey data in a single data set

that contains information about children (N = 884), residential neighborhoods (N = 109), and schools (N = 59).

Table 13.2 describes the variables measured at the individual (student and family), neighborhood, and school levels. The dependent variable is the students' SIMCE math test score. The student- and family-level independent variables are whether the student has failed a grade in the past, household income, mother's education, and student's sex. A variable of distance from home to school was included as a dummy, distinguishing between students residing 10 blocks or less away from school (roughly a walkable distance) from those residing farther away. We also measured residential history (student has always, sometimes, or never resided in a segregated area) and the perception of the quality of educational opportunities in the neighborhood.[8] The table also describes the aforementioned social mediators (intergenerational closure, collective efficacy, bonding social capital, role models, and negative peer effects) measured at the student level and aggregated at the neighborhood level.[9] School-level variables include a dummy variable to differentiate between public and private voucher schools, as well as variables on socioeconomic status (individual SES averaged across schools) and the monthly copayment.

A null cross-classified hierarchical model of students/households nested non-hierarchically in schools and residential neighborhoods was run. This model tests the hypotheses that there is significant variability between average test scores at the school level and at the residential neighborhood level. The model, based on 884 students nested in 109 residential neighborhoods and 59 schools, showed a significant between-school variance of 889.1 ($P < 0.001$), which represents 27 percent of total variance, and a not-significant between-neighborhood variance of 63.04, which represents less than 1 percent of total variance. Thus, the data do not support considering the neighborhood a random factor. That does not mean that the neighborhood does not matter, but that it will be considered a fixed factor. In practice, this result suggests that a two-level model of students/households nested in schools should be run, where neighborhood social mediators are considered attributes of the household.[10]

Fixed effects and random effects of a series of four two-level models of student/household characteristics nested in schools are shown in table 13.3. Null

8. Agreement with the statement "In my neighborhood schools are very good," where 1 is high disagreement and 5 is high agreement.

9. Each of these variables can be considered as an attribute of a student or, when averaged across all residents in the neighborhood, as an attribute of the neighborhood. Descriptive figures are presented for both, since random effects models can be accommodated either way.

10. Neighborhood characteristics can be included as individual responses (respondents' appreciation of their neighborhoods) or, averaged across respondents in the same neighborhood, as true characteristics of the neighborhood. In this research, I opted for the first solution in order to avoid average biases.

Table 13.2
Main Variables for Students, Neighborhoods, and Schools

	Average	Standard Deviation	Min.	Max.
Student Level (N = 884)				
Dependent: SIMCE math test score	242	57	113	381
Student has failed a grade (yes = 1; no = 0)	0.15	0.36	0	1
Household income (z-score)	0	1	–1.2	7.1
Mother's education (years)	10.6	3.1	0	20
Student's sex (male = 1; female = 0)	0.53	0.5	0	1
Lives close to school (10 blocks or less = 1; more than 10 blocks = 0)	0.72	0.45	0	1
Always lived in segregated area	0.48	0.5	0	1
Sometimes lived in segregated area	0.08	0.27	0	1
Never lived in segregated area	0.44	0.5	0	1
Educational opportunities in neighborhood	3	1	1	5
Intergenerational closure	3.6	0.9	1	5
Collective efficacy (index)	0	1	–2.5	2.3
Role models (index)	0	1	–2.3	2.2
Bonding social capital (index)	0	1	–2.4	2.1
Negative peer effects (index)	0	1	–2.3	2
Neighborhood Level (N = 109)				
Type of neighborhood (segregated = 1; mixed = 0)	0.48	0.50	0	1
Educational opportunities in neighborhood	2.97	0.71	1	5
Intergenerational closure	3.61	0.53	1	5
Collective efficacy (index)	0.12	0.62	–1.3	1.8
Role models (index)	0.12	0.72	–1.9	1.8
Bonding social capital (index)	0.03	0.64	–2	1.7
Negative peer effects (index)	–0.15	0.70	–2.3	1.4
School Level (N = 59)				
Type of school (public = 1; private voucher = 0)	0.5	0.5	0	1
Socioeconomic status (household incomes from table 13.3 averaged across neighborhoods)	–0.04	0.44	–1.7	1.2
Monthly copayment (z-score)	0	1	–0.4	10.1

Sources: SIMCE (2010, 2011); Fondecyt survey; INE (2002).

Table 13.3
Hierarchical Linear Models, Fixed and Random Effects

	Model 1	Model 2	Model 3	Model 4
Fixed Effects				
Intercept	245.2***	244.7***	245.4***	252.6***
Public school (dummy)				–14.3**
School's socioeconomic status (z-score)				32.0***
Monthly copayment (z-score)				–4.5
Household income (z-score)	5.6***	5.4***	5.2*	4.3**
Mother's education (years)	6.3***	6.0***	6.2***	3.9**
Sex (male)				7.8**
Student has failed a grade (dummy)				–22.9***
Lives close to school (LCS, dummy)				–4.6
LCS * ALSA				–1.7**
Always lived in segregated area (ALSA, dummy)	–8.9**	–7.5*	–7.2*	–0.4*
Sometimes lived in segregated area (dummy)	–1.4	–1.1	–1.3	–0.6
Bonding social capital (BSC)		4.1*	3.9*	2.0
Role models (RM)		3.9	3.8*	3.3
Negative peer effects (NPE)		–0.9	–1.3	–0.3
Collective efficacy (CE)		–3.5	–2.7	–1.7
Intergenerational closure (IC)		3.8**	4.6**	3.9**
CE * IC			2.9*	2.6*
Perceived quality of local opportunities				–1.0
Random Effects				
Level 1 variable	2,323	2,313	2,256	2,246
Level 2 variable	686.4***	635.0***	524.4***	299.3***
LR vs. linear	107.6***	96.3***	97.6***	29.1***

Note: Dependent variable is math test score.
***, **, * = statistically significant at <0.01, <0.05, and <0.1 levels.

model results (not in the table) suggest that 28 percent of total variance is explained by school characteristics.[11]

Model 1 includes four key independent variables: household income, mother's education, and whether the student has always or sometimes resided in a segregated area (as opposed to never having resided in such an area). As expected, household income and mother's education are positively and significantly associated with test scores. Interestingly, after controlling for household economic and cultural resources, neighborhood segregation still negatively affects academic achievement. However, this effect holds only for those who have always resided in a segregated area. There are no differences in test scores for children who have sometimes resided in a segregated area (that is, moved between segregated and mixed areas) or for children who have never resided in a segregated area. Thus, model 1 provides evidence of a negative direct effect of never having experienced social mixture at the neighborhood level on test scores, above and beyond the effects of poverty at home.

Model 2 is aimed at opening up the black box of segregation by means of estimating the effects on test scores of the social mediators associated with segregation. The model includes the effects of bonding social capital, role models, negative peer effects, collective efficacy, and intergenerational closure. Model 3 includes the interaction between collective efficacy and intergenerational closure. Finally, model 4 includes the rest of the student- and school-level controls.

As expected, bonding social capital and role models appear to be positively and significantly associated with test scores. These effects are not robust, since their significance tends to fade away in model 4. Negative peer effects show a negative effect on test scores, although the effect is not statistically significant in model 2 and for the rest of the models. Collective efficacy has no independent effect on test scores, but it acts as a moderator of intergenerational closure. In fact, under average collective efficacy, one additional standard deviation of intergenerational closure increases test scores by almost five points. This effect increases by almost three points for each additional standard deviation in collective efficacy. In other words, the model suggests that intergenerational closure is positively associated with academic achievement, but it is even more positive if collective efficacy is higher.

Model 4 shows that boys tend to do better than girls and that children who have previously failed a grade have significantly lower test scores. The model includes lives close to school, moderated by a history of always having lived in a segregated area. The results suggest that students who have a constant or intermittent history of social mixture at the neighborhood level and who attend a school that is closer to home have lower test scores than those who attend a school that is farther away. However, this coefficient is not significant. The

11. The null model showed a within-group variance of 2,556.2 and a significant between-school variance of 924.4.

moderating effect of a residential history of constant segregation is negative and significant, which means that the trade-off between living close to school and "better learning" (mirrored in higher test scores) is true only for students with a constant history of segregation.

In terms of school characteristics, model 4 shows that even after controlling for socioeconomic status of the household and the school, public schools tend to have significantly lower test scores than private schools. This model also suggests that test scores for schools with one additional standard deviation of socioeconomic status are, on average, 32 points higher. Moreover, after controlling for context and social composition of the school, copayment does not have a significant impact on learning.

Conclusions

This research shows that in the highly segregated city of Santiago, there is a noticeable spatial mismatch in the geography of educational opportunities. Parents in segregated neighborhoods have a significantly different local supply of schools as compared with parents in mixed neighborhoods. Local schools in segregated neighborhoods are more likely to have a higher concentration of poverty, lower test scores, and lower copayments than local schools in all other types of neighborhoods, including poor nonsegregated neighborhoods.

Moreover, despite recognizing the lower quality of local schools and having the ability to choose schools elsewhere, parents in segregated neighborhoods are relatively more tied to local schools than parents in other neighborhoods. This might be the case for several reasons, including informational asymmetries that make poor parents relatively more informed about local schools, a fondness for remaining local (probably for safety reasons), and high transportation costs (in terms of money, time, and safety). Previous research does not support the hypothesis that parents remain in local low-quality schools because they view mainstream indicators of school quality such as test scores as less valuable.

In terms of the effects of the spatial mismatch and local attachment of poor parents on educational achievement, two findings are important. First, under these conditions, choice does not decrease school segregation below the level of residential segregation, as some authors have argued. Given that poor parents are more attached to local schools than other parents, the spatial mismatch restriction on parental choice actually fosters school segregation, thus affecting test scores via school effects and student sorting (which are highly significant in our models). Second, the models show that for parents in segregated areas, staying close to home when choosing schools significantly predicts lower test scores. Thus, the evidence suggests that poor children are the ones who would benefit the most from parents' choosing schools outside the neighborhood, but that these parents are the ones least likely to do so.

Regarding social mediators, the study found a strong and robust positive effect of intergenerational closure on test scores. This positive effect is ampli-

fied by collective efficacy. This means that parents who know one another in the neighborhood create a positive setting for learning and that this setting is even more positive the clearer and more highly shared are local social norms for raising children. The models suggest that this normative environment (which I have called collective efficacy) does not have a positive impact on learning unless it is accompanied by intergenerational closure.

Thus, residential segregation has both an indirect and a direct impact on educational achievement. First, the indirect effect is understood in a context of complete freedom of choice, in which parents in segregated neighborhoods are restricted by, among other things, the local availability of schools. Residential segregation presents a major restriction on choice, which fosters school segregation and negatively affects educational attainment. Second, the direct effect is mostly (but not totally) explained by intergenerational closure and the normative environment created by adults in the neighborhood, both of which tend to be more problematic in segregated than in mixed neighborhoods.

REFERENCES

Adler, M., A. Petch, and M. Tweedie. 1989. *Parental Choice and Education Policy*. Edinburgh: Edinburgh University Press.

Ainsworth, J. W. 2002. Why Does It Take a Village? The Mediation of Neighborhood Effects on Educational Achievement. *Social Forces* 81:117–152.

Anselin, L. 1995. Local Indicators of Spatial Autocorrelation—LISA. *Geographical Analysis* 27:93–115.

Arriagada, C., and J. Rodriguez. 2003. *Segregación residencial en áreas metropolitanas de américa latina: Magnitud, características, evolución e implicaciones de política*. Serie Población y Desarrollo, CELADE-CEPAL 47.

Bauder, H. 2001. "You're Good with Your Hands, Why Don't You Become an Auto Mechanic": Neighborhood Context, Institutions and Career Development. *International Journal of Urban Regional Research* 25:593–608.

Bronfenbrenner, U. 1986. Ecology of the Family as a Context for Human Development: Research Perspectives. *Developmental Psychology* 22:723–742.

Brooks-Gunn, J., G. Duncan, and J. L. Aber. 1997. *Neighborhood Poverty: Context and Consequences for Children*. New York: Russell Sage Foundation.

Brooks-Gunn, J. G., G. Duncan, P. Klebanov, and N. Sealand. 1993. Do Neighborhoods Influence Child and Adolescent Development? *American Journal of Sociology* 99:353–395.

Chilean Ministry of Social Development. 2011. CASEN Survey.

Chumacero, R., D. Gomez, and R. Paredes. 2011. I Would Walk 500 Miles (If Paid): Vouchers and School Choice in Chile. *Economics of Education Review* 30(5): 1103–1114.

Compton-Lilly, C. F. 2003. *Reading Families: The Literate Lives of Urban Children*. New York: Teachers College Press.

Connell, J. P. 1995. How Do Urban Communities Affect Youth? Using Social Science Research to Inform the Design and Evaluation of Comprehensive Community Initiatives. In *New Approaches to Evaluating Community Initiatives*, Vol. 1,

Concepts, Methods, and Contexts, ed. J. P. Connell, A. C. Kubisch, L. B. Schorr, and C. H. Weiss, 93–125. Washington, DC: Aspen Institute.
Coons, J., and S. Sugarman. 1978. *Education by Choice: The Case for Family Control.* Berkeley: University of California Press.
Denton, N. 1996. The Persistence of Segregation: Links Between Residential Segregation and School Segregation. *Minnesota Law Review* 80:795–824.
Duncan, G., J. Brooks-Gunn, and P. K. Klebanov. 1994. Economic Deprivation and Early Childhood Development. *Child Development* 65:296–318.
Elacqua, G., and H. Santos. 2013. Los efectos de la elección escolar en la segregación socioeconómica en Chile: Un análisis georreferenciado. Working Paper. Santiago: Espacio Público.
Figueroa, O., and A. Orellana. 2007. Transantiago: Gobernabilidad e institucionalidad. *Eure* 33(100):165–171.
Fitz, J., S. Gorard, and C. Taylor. 2002. School Admissions After the School Standards and Framework Act: Bringing the LEAs Back In? *Oxford Review of Education* 28:373–393.
Fitz-Gibbon, C. T. 1997. *The Value Added National Project*. London: School Curriculum and Assessment Authority.
Flores, C. 2008. Segregacao residencial e resultados educacionais na cidade de Santiago do Chile. In *A Cidade Contra a Escola?*, ed. R. Kaztman and L. Queiroz, 145–179. Rio de Janeiro: Letra Capital.
———. 2009. Advances in Research Methods for the Study of Urban Segregation. In *Urban Segregation and Governance in the Americas*, ed. B. Roberts and R. H. Wilson, 21–35. New York: Palgrave Macmillan.
Flores, C., and A. Carrasco. 2013. (Des)igualdad de oportunidades para elegir escuela: Preferencias de los padres, libertad de elección y segregación escolar. Working Paper. Santiago: Espacio Público.
Frankenberg, E., G. Siegel-Hawley, and J. Wang. 2010. Choice Without Equity: Charter School Segregation and the Need for Civil Rights Standards. Los Angeles: Civil Rights Project/Proyecto Derechos Civiles (January). http://files.eric.ed.gov/fulltext/ED509773.pdf.
Friedman, M. 1955. The Role of Government in Public Education. In *Economics and the Public Interest*, ed. R. A. Solo, 123–144. New Brunswick, NJ: Rutgers University Press.
Gallego, F., and A. Hernando. 2009. School Choice in Chile: Looking at the Demand Side. Working Paper No. 356. Santiago: Instituto de Economía, Pontificia Universidad Católica de Chile.
Galster, G. C. 2003. Investigating Behavioural Impacts of Poor Neighbourhoods: Towards New Data and Analytic Strategies. *Housing Studies* 18:893–914.
Galster, G. C., and S. P. Killen. 1995. The Geography of Metropolitan Opportunity: A Reconnaissance and Conceptual Framework. *Housing Policy Debate* 6(1):7–43.
Goldstein, H., and D. Spiegelhalter. 1996. League Tables and Their Limitations: Statistical Issues in Comparison of Institutional Performance. *Journal of the Royal Statistical Society: Series A* 159:385–443.
Henig, J. 1994. *Rethinking School Choice: Limits of the Market Metaphor*. Princeton, NJ: Princeton University Press.

Fusarelli, L. D. 2007. Restricted Choices, Limited Options: Implementing Choice and Supplemental Educational Services in No Child Left Behind. *Educational Policy* 21(1):132–154.

Hastings, J. S., T. J. Kane, and D. O. Staiger. 2006. Gender and Performance: Evidence from School Assignment by Randomized Lottery. *AEA Papers and Proceedings* 96(2):232–236.

Hastings, J. S., R. Van Weelden, and J. Weinstein. 2007. Preferences, Information, and Parental Choice Behavior in Public School Choice. Working Paper No. 12995. Cambridge, MA: National Bureau of Economic Research.

Hsieh, C.-T., and M. Urquiola. 2006. The Effects of Generalized School Choice on Achievement and Stratification: Evidence from Chile's Voucher Program. *Journal of Public Economics* 90:1477–1503.

Renzulli, L. A., and L. Evans. 2005. School Choice, Charter Schools, and White Flight. *Social Problems* 52(3):398–418.