

Towards Conceptualizing and Empirically Examining Legacy of Place: An Exploratory Consideration of Historic Neighborhood Characteristics on Contemporary Dropout Behavior

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Received: 24 May 2016 / Accepted: 10 January 2018
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Abstract The study presented here has two main purposes. First, we introduce a novel conceptualization of neighborhood effects that includes historical characteristics of place as independent influencers on individual outcomes. Second, we provide two empirical examples of this concept by analyzing the influence that historic neighborhood dropout and poverty rates have on contemporary dropout behavior. Using multilevel logistic models, we find that students living in neighborhoods marked with a dropout or poverty legacy are over 16% more likely to drop out compared to students living outside of these areas. The influence of legacy of place remains even when controlling for contemporary neighborhood attributes including current dropout and poverty rates. The findings set the stage for future conceptual and empirical work that considers the historical development of place as it relates to the impact that these histories have for contemporary individuals.

Keywords Legacy of place · Neighborhood effects · Dropout behavior

Introduction

The literature on structural inequalities documents the negative effect that concentrated poverty and low SES can have on a host of different outcomes; however, this literature tends to focus on neighborhood characteristics at a single

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point in time and does not consider the lasting impacts that inequality of place can have for contemporary residents. The study presented here has two main purposes. First, we introduce a novel conceptualization of neighborhood effects that includes historical characteristics of place as independent influencers on individual outcomes. Second, we provide two empirical examples of this concept by analyzing the influence that historic neighborhood dropout and poverty rates have on contemporary dropout behavior. Although ecological context has been acknowledged as an important contributor to a diverse set of outcomes (for an overview see Sampson et al. 2002), few studies consider the history of this context as an essential component for understanding the mechanisms by which ecological context matters to contemporary outcomes. Furthermore, when research offers a historical narrative about the built environment (Sampson 2012; Sharkey 2013), empirical tests incorporating this history are not offered. In analyzing neighborhood history, we formulate the concept of legacy of place, which considers the initial and reinforcing mechanisms that lead to the persistence of an attribute over time within geographic space. By providing a theoretically sound conceptualization for legacy of place, along with specific empirical examples, we highlight the importance of considering historic neighborhood development in the lexicon of neighborhood effects research.

Legacy of Place

Explicit links between neighborhood contexts and individual outcomes have been well documented in many ecological studies (Jencks and Mayer 1990; Roscigno et al. 2006; Sampson et al. 2002; Wodtke et al. 2011). These studies often operationalize place as spatial boundaries like zip-codes, school enrollment areas, or census tracts. Although these administrative boundaries may not be directly tied to social space, they are correlated with socially significant individual outcomes.

The concept of legacy of place we put forward builds upon this well-established neighborhood effects literature to incorporate the role of former neighborhood compositions into the discussion. Neighborhood history is important to contemporary neighborhood demographics, as historical patterns of residential segregation along economic and racial lines are a central element to the development of present-day neighborhood attributes (Kozol 2005; Massey and Denton 1988; Sampson 2012; Sharkey 2013). Therefore, we understand legacy of place to be *the confluence of socially significant areal characteristics built through historic social processes, which over time, become thought of as intrinsic attributes of a particular place*. These attributes are so entrenched into the fabric of place that it would require extreme exogenous interventions to change these characteristics (Sharkey 2013). To illustrate the concept further, imagine a contemporary neighborhood has the unfortunate distinction of being labeled ‘poor’. Individuals who only have experienced this neighborhood as poor may assume it has always been impoverished. The attribute of poverty, therefore, is thought of as intrinsic to the area without any understanding of the social/political processes that contributed to the development of this characteristic. Legacy of place considers both the historical development of neighborhood traits and the effects that the contemporary outcomes

of development have on individuals and ecological context. Our concept requires a discussion on the possible reasons why past neighborhood attributes may influence contemporary individual behavior even though individuals are not directly exposed to previous neighborhood contexts.

Traditional mechanisms, like social capital and institutional factors (Ainsworth 2002; Albrecht and Albrecht 2011; Sampson et al. 2002; Stanton-Salazar and Dornbusch 1995), are informative to our current understanding of legacy of place mechanisms. Social capital, considered here as both economic and non-economic resources, can be passed down to future generations of residents through the dissemination of knowledge and social networks—which, when considered together, are beneficial to the acquisition of material and labor market resources in a local area. In this way, social capital theories include a temporal mechanism for how past conditions influence contemporary neighborhood and individual outcomes; although, to the best of our knowledge, it has not been operationalized this way. In contemplating the impact of neighborhood history, Sharkey (2013) analyzes how parental neighborhood characteristics are a transmittable resource from one generation to the next. Although our concept does not focus on the direct transmission of parental neighborhood onto children, we find this conceptualization of neighborhood history in line with our own theorization about legacy of place.

In addition to social capital, an examination of institutional factors are important in identifying potential mechanisms for legacy of place. The quality and quantity of accessible resources are important aspects influencing social outcomes of residents. The difference in the scope of institutional resources between neighborhoods is partly a result of the composition of the local neighborhood based on demographic characteristics (Sampson et al. 2002). If past institutional resources were partially allocated based on the racial and/or economic compositions of neighborhoods and this allocation assists in neighborhood wealth formation, then former institutional resource allocation becomes an important indicator of contemporary neighborhood resources and individual outcomes. While these mechanisms are important in understanding how neighborhoods influence individual behavior, additional mechanisms are needed to understand how a neighborhood's legacy influences contemporary outcomes.

Building upon former thinking on neighborhood effects mechanisms, we offer new pathways to explain why legacy may influence contemporary outcomes including: (1) the role that historic residential and school segregation play in reinforcing systems that perpetuate unequal neighborhood resource allocation; and (2) the perceptions that others have of the historic neighborhood. Figure 1 below shows a conceptual model of legacy of place as the concomitant consideration of past residential segregation and school segregation in neighborhoods. This conceptual model hypothesizes that legacy will affect both contemporary neighborhood compositions as well as individual outcomes, such as educational attainment. We argue that legacy of place is formed through historic economic and racial residential segregation, which influences economic and social status resource allocation in the present day. Past residential segregation is important to our concept because neighborhood formation policies including mechanisms such as racial steering, white-flight, and status-flight contribute to historic attributes of

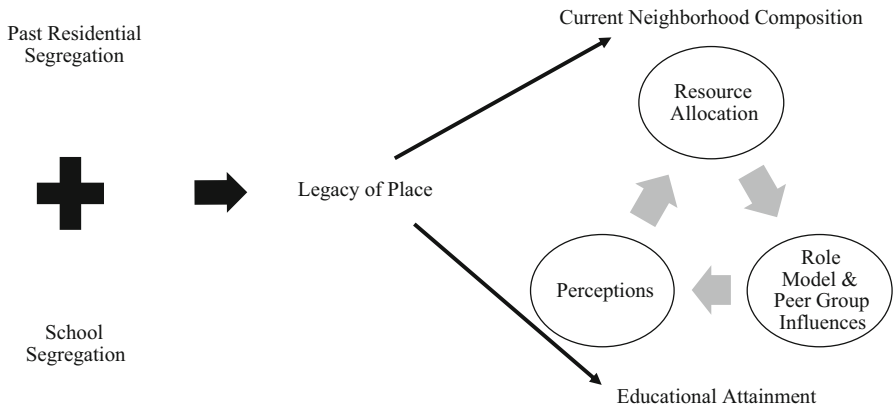


Fig. 1 Legacy of place influence on contemporary neighborhood and individual educational attainment

place, including school segregation. School segregation influences the amount of social capital resources available to a neighborhood, which contributes to the existence of clusters of high poverty and high dropout rates among neighborhoods with low levels of social capital. These clusters limit the number of positive role models, positive peer group influences, and school resources available to children due to lower tax revenue generated by lower property values.

Over time, neighborhoods with less economic and social resources become less desirable, which affects the ability of the neighborhood to attract and keep higher educated and better-resourced individuals. Qualitative work by Small (2004) underscores this point, as he finds that civic participation is strongly tied to the perceptions that individuals have of their neighborhood. Long-term residents, who were politically active in working towards a developmental role in the architectural design of the Villa Victoria neighborhood, were more likely to have positive attitudes and higher rates of civic participation than newcomers. Newer residents described Villa Victoria in a negative light and emphasized their desire to move as soon as the opportunity arose. Qualitative works like these (also consider Suttles 1970; Anderson 1990) emphasize the importance of perceptual differences in how residents choose to invest or divest in their neighborhood. Similarly, based off historic realities of place, contemporary perceptions about neighborhoods form and perpetuate cycles of limited access to social capital resources. This mechanism assumes that places, much like brands (e.g. Coca-Cola, Apple, etc.), have their own perceptions and stereotypes associated with them. People have positive, negative, or ambivalent feelings towards a place given their understanding about the area, but these feelings are separate from any actual individuals residing in these places. This is supported by research finding that when individuals have constrained knowledge about neighborhood compositions, they rely more on social networks and perceptions about neighborhoods when making decisions on where to live (Krysan et al. 2014). Negative perceptions about neighborhoods perpetually dealing with high dropout or poverty rates may prevent resources from flowing into these areas in the form of political investments and social capital.

Neighborhoods change through processes of in- and out-migration or the development of individuals within neighborhoods. For example, if a neighborhood is composed of many high school non-completers, the neighborhood can either attract more high school completers from other areas and/or see more non-completers leave. Outside of migration, a neighborhood can develop and retain high school completers, which will affect both the numerator and denominator in dropout rate calculations. What advantages can neighborhoods utilize to attract or develop individuals with higher educational attainment or higher economic success? As we have argued, if a neighborhood has a long history of divestment due to resource allocation disparities, which leads to negative perceptions of the area, then there may not be many options under the current status quo. Therefore, we argue that neighborhoods with long histories of high dropout or poverty rates are not only qualitatively different than neighborhoods without this legacy, but they have an independent influence on contemporary individual outcomes. In this paper, we will focus specifically on individual dropout and dropout related behavior. Legacy of place allows the linkage of individual dropout behavior to the educational and economic outcomes of place.

For the purposes of this paper, we will focus on two legacies that a place may develop namely dropout legacy and poverty legacy. By adding legacy of place measures to investigations of educational attainment outcomes, educational policy makers can focus on remedying the influence of past residential segregation on the current institution of education. However, it is essential to discuss the multiple influences, both individual and place-based, on dropout behavior to better situate and support our definition and empirical tests for an independent effect of dropout and poverty legacies on contemporary dropout behaviors. This literature is discussed next.

Dropout Research

Understanding the complete set of factors affecting dropout behavior is vital due to the correlation that low-levels of education have with negative social outcomes, such as earning lower wages (Olneck and Kim 1989; Warren et al. 2008), having higher prevalence of criminal behavior (Lochner 2004; Ou 2008), and requiring more public assistance (Rumberger 1983). Much work has already been devoted to understanding the individual factors leading to increased risk of not completing school [see Bowers (2010) for an overview]. Along with individual and familial predictors of risk, schools (Goldsmith 2009; Owens 2010) and neighborhoods (Crowder and South 2011; Jackson and Mare 2007; Wodtke et al. 2011) play an important role in a student's likelihood of not completing high school.

Although the influence that neighborhoods have on individual outcomes has been studied extensively in education literature, few studies have considered temporal components of these associations (Crowder and South 2011; Sampson et al. 2002; Wheaton and Clarke 2003; Wodtke et al. 2011). Previous studies have investigated the association of varying lengths of individual exposure to neighborhoods (Wodtke 2013; Wodtke et al. 2011), yet little work has focused on how the temporal

dimension of place, as seen in local neighborhood structure and history (Sharkey and Elwert 2011), may affect individual educational outcomes. From an historic place-based perspective, the concept of legacy of place is theoretically and pragmatically a new factor that needs to be considered as part of the catalogue of determinants of contemporary, individual dropout behavior. Unlike former research, legacy of place encompasses unmeasured processes that may determine access to educational resources, social capital accumulation, and exposure to mentors all of which aide higher educational attainment. Along with contemporary and historical neighborhood context other exogenous factors including family characteristics are important to consider as determinants of individual dropout behavior.

Findings are mixed concerning the importance of family characteristics in relation to neighborhood influences. Björklund and Jäntti (2012) find that controlling for family traits is more important than neighborhood characteristics, while Wheaton and Clarke (2003) find the opposite. Results from Sharkey and Elwert (2011) support the idea that controlling for family (e.g. parental) background measures while estimating neighborhood characteristics may lead to misleading conclusions. This is because parental income and educational outcomes are, in part, a result of parental neighborhood contexts. By controlling for family background measures in neighborhood effects models, one assumes that individuals can be disconnected from their neighborhood context. Methodology controlling for both family and neighborhood background may, therefore, lead to the underestimation of neighborhood associations. The role that family characteristics play in neighborhood choice is important, as neighborhood effects likely operate through family influences (Wodtke et al. 2011). In empirical models, we include both parental education and income as we focus on how the *historic* neighborhood affects contemporary outcomes keeping in mind the intersection historic neighborhood attributes have with parental characteristics and choices made by families to live in specific places.

Research Hypothesis

Based on the literature reviewed above and our new conceptualization of legacy of place, the following question is addressed: What effect does dropout and poverty legacy neighborhoods have on a student's dropout behavior risk? We hypothesize that students living in areas with either legacy will have higher odds of not completing high school themselves. This association, if strong enough, will remain even when controlling for student demographic characteristics, parental educational attainment, parental income, school characteristics, and contemporary neighborhood attributes. By examining the impact that areas with a dropout or poverty legacy have on contemporary individual behavior, the total social impact and cost of dropout behavior will be better understood and the concept of legacy of place expounded.

Data and Methods

To address the research hypothesis, individual geospatial data on dropout behavior are required along with neighborhood demographic data measured across time. To conform to these data requirements, a unique combined data set was generated, which includes student data from the Education Longitudinal Study of 2002-Restricted File (ELS-2002) and historic and contemporary neighborhood data from the 2000 Neighborhood Change Database (NCD). Included in the restricted version of the ELS-2002 are geospatial identifiers that allow NCD data to be attached to each student record based on the census tract the student lived in during the ELS-2002 base year survey.

The ELS-2002 is a longitudinal study following students from the 10th grade into the labor market and postsecondary education. This analysis uses base year data from 2002, first follow-up data from 2004, and second follow-up data from 2006. The ELS-2002 first sampled schools followed by randomly sampling 10th grade students within each sample school. Respondents to the base year survey included students, parents, and school administrators. The ELS-2002 offers the necessary diversity of questions and large sample size to carry out a thorough analysis of the association of student and parental demographics and the influence of neighborhood context on a student's propensity to drop out of high school. For further documentation on the ELS-2002, including sampling techniques and weighting, see Ingels et al. (2007).

Data from the 2000 NCD contain standardized U.S. census data from 1970, 1980, 1990, and 2000, to 2000 census tract boundaries (GeoLytics 2003). Census tracts are used as proxies as neighborhoods, which is in line with previous studies investigating ecological contexts (Crowder and South 2011; Stoll et al. 2000). These data allow neighborhoods to remain spatially stable over time, thus allowing neighborhood characteristics to be tracked longitudinally.

For these analyses, dropout and poverty legacy are operationalized as neighborhoods that experience census tract dropout/poverty rates in the top quartile for two out of three census years from 1970 to 1990. These calculations were made before attaching these data to the individual data of the ELS-2002 so that the individual sample would not have any bearing on determining neighborhood dropout legacy or poverty legacy. Dropouts were defined as the proportion of individuals in a census tract with less than a high school education, meaning no diploma or equivalent. These proportions were calculated only for the population 25 years and over so that an adequate amount of time was allowed for an individual to obtain a diploma or equivalent. Poverty is measured as the proportion of persons in poverty for whom poverty status is determined. Poverty status is based on varying thresholds for different household size and income compositions which is a measure of poverty consistent with previous research (Poston Jr. et al. 2010).

Dependent Variable

The dependent variable is a dichotomous variable measuring if students dropped out of high school at some point in time during the survey. Students without evidence of having dropped out were coded as '0' and students with the evidence of having dropped out were coded as '1'. Dropout information was gathered from the second-year follow-up. A student in the first follow-up was considered having dropped out if they were out of school in the spring term of 2004 and had not yet received a diploma and missed four or more weeks of school not due to illness or accident. The second follow-up updates first follow-up dropouts. If students were reported as having dropped out in the first follow-up then they were kept as such in the second follow-up. Furthermore, students who reported in the second follow-up that they completed their GED since the last interview or had yet to receive a high school diploma and were not in a completion program were classified as having dropped out. Students could also be classified as having dropped out if their transcript indicated that they had dropped out, were dismissed, were incarcerated, or had received a GED (Ingels et al. 2007).

Independent Variables

Previous research has shown that males are more likely to drop out of high school compared to females and that there are racial differences seen in students who dropout (Bowers 2010; Ravitch 2013). Therefore, sex and race are included as student demographic variables. Race was measured by a series of dummy variables including Hispanic, black non-Hispanic, Asian non-Hispanic, and other non-Hispanic with white non-Hispanic being the reference group. The other non-Hispanic category included student's choosing more than one race, Native Hawaiian/Pacific Islander, and American Indian/Alaskan Native non-Hispanic. Also included in the analyses is a composite measure of standardized test scores (Rumberger and Lim 2008).

Other research has shown that students with parents from lower SES backgrounds, measured by education and income, had higher probabilities of dropping out compared to those from high SES backgrounds (Dalton et al. 2009; Rumberger and Rotermund 2012). In the base year survey, parents were asked to select the highest level of education they had completed with eight possible choices ranging from 'did not finish high school' to 'completed PhD, MD, or other advanced degree'. Both mother's and father's education was obtained where available. If either mother's or father's education was missing from the parent survey, then it was obtained from the student base year survey. The parent with the highest level of education completed was used to represent parental education. Parental education was measured using the following categories: (1) less than high school (reference); (2) high school or GED; (3) some college; and (4) college degree or greater.

Parental income was reported, in the base year survey, as a thirteen level categorical income variable ranging from 'None' to '\$200,001 or more'. To make income continuous, we used the median value of each category and assigned this value as parental income. Incomes in the bottom and top category were assigned

zero and \$200,001, respectively. The transformed income variable was then logged in the regression analyses.

School type and area urbanicity were also included in the full models, which is in line with research investigating differences in dropout rates based on urbanicity (Jordan et al. 2012; Rumberger and Thomas 2000). School type was measured as a series of dummy variables indicating if a school was private, catholic, or public (reference). School type was determined in the original sample by the Common Core of Data 1999–2000 and the Private School Survey 1999–2000 (Ingels et al. 2007). A series of dummy variables was included to control for the community setting where rural (small town or rural community) and suburban (urban fringe of large or mid-size city) were compared to urban (large or mid-sized central city) areas (Lankford et al. 2002; Roscigno et al. 2006).

Considering the research question centers on neighborhood context, controls for contemporary neighborhood attributes are included in the analyses including a dichotomous variable indicating if neighborhoods are in the top quartile of dropout rates in 2000, the employment rate, a measure of poverty, and neighborhood stability. The employment rate is the proportion of the civilian population 16+ employed in the neighborhood divided by the population 16 and over. High poverty areas have been defined in previous literature as neighborhoods between 20 and 40% or more poverty (Jargowsky 1997; Wilson 2012). Sensitivity tests did not reveal any difference in magnitude or significance for the effect of high poverty neighborhoods on dropout behavior when measured at varying levels (20, 30, and 40%). We include a dummy variable for neighborhoods with at least 30% poverty.

Finally, a neighborhood stability variable was added to full models in the analyses below. By controlling for neighborhood stability, the true influence of place can be tested as opposed to a legacy of the same individuals within a given place. Granted, individuals with similar demographic characteristics likely cluster in a particular area, it is not attributes of the individual that are displayed in potential findings of legacy's influence, but rather the area which is attracting similarly socially positioned individuals. In other words, by controlling for neighborhood stability, we control against legacy being a proxy for a continuation of the same individuals in the neighborhood. We hypothesize that dropout legacy and poverty legacy will remain correlated with dropout behavior even when controlling for neighborhood stability. If legacy remains significantly correlated with individual contemporary dropout behavior when controlling for neighborhood stability, then one can reasonably argue that legacy has an independent influence outside of individuals remaining or moving from a neighborhood. Sampson (2012) provides evidence for this hypothesis, as he found that nearly fifty percent of the Project on Human Development in Chicago Neighborhoods sample moved during the observation period, yet neighborhoods continued to maintain their demographic profiles.

The neighborhood stability variable was created using two sources of information from tract data for 2000. First, the proportion of occupied housing units where the householder moved in before 1980 was calculated. Second, to control for the fact that some neighborhoods may have older housing structures making it more likely that they would have more individuals who moved in before 1980, this variable was

standardized by the number of housing units built before 1980. The proportion of individuals who moved into their house before 1980 was divided by the proportion of houses built before 1980. The resulting proportion can be understood as the proportion of individuals who have remained in the neighborhood since before 1980. These individuals are referred to as foundation neighbors. If the current proportion of foundation neighbors equals the proportion of houses built before 1980 then we could say that all of the possible foundation neighbors remain, making the neighborhood more stable.

For example, imagine two separate neighborhoods. Neighborhood A has a proportion of individuals who moved into their homes before 1980 equal to 0.35, and this neighborhood is composed of 68% of houses built before 1980. Neighborhood B has a proportion of individuals who moved into their homes before 1980 equal to 0.20 and 23% of houses built before 1980. Neighborhood A has a proportion of foundation neighbors equal to 0.5147 ($0.35/0.68$). In other words, 51.47% of the possible foundation neighbors remain in Neighborhood A. Neighborhood B has a lower percentage of individuals who moved in before 1980 compared to Neighborhood A, but has a higher proportion of foundation neighbors ($0.20/0.23$) or 0.8696. Said another way, 86.96% of the possible foundation neighbors remain in Neighborhood B.

Analytic Strategy

Considering the binary distribution of the dependent variable, logistic regression was used to estimate the coefficients. Multilevel models were used as they allow for coefficient estimation of nested data across schools. Nested models were used to determine how the relationship between the legacy of place and student dropout behavior changes with the introduction of student, parent, school, and neighborhood stability variables.

Results

Table 1 shows the weighted means and standard errors for all variables in the analyses for the entire sample and stratified by neighborhood type (legacy/non-legacy). The dependent variable shows that 13% of the entire sample is considered to have dropped out of school. Roughly 57% of the students are white, followed by Hispanic students (18%) and black students (15%) as the largest represented racial/ethnic groups. Most students are from families whose parents have some college education (57%) and have an average income of \$63,071. In addition, the vast majority of students attend public schools (91%) and almost half of the students attend schools in suburban areas (49%). When examining the means stratified by legacy status, students living in legacy and non-legacy neighborhoods are different in important ways.

First, 20% of students living in dropout legacy neighborhoods experienced a dropout episode compared to 11% of students living in non-dropout legacy neighborhoods. This patterns holds for students living in a poverty legacy

Table 1 Descriptive statistics of variables used in analysis by neighborhood type

Variable	ELS—2002	All neighborhoods		Dropout legacy neighborhoods		No dropout legacy neighborhoods		Poverty legacy neighborhoods		No poverty legacy neighborhoods		
		Variable names	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Dependent variables												
Dropout episode	F2EVERDO		0.13	0.003	0.20	0.009	0.11	0.003	0.21	0.010	0.11	0.003
Applied to college ^a	F2B01		0.79	0.004	0.72	0.010	0.81	0.004	0.71	0.011	0.81	0.004
Attended college ^a	F2B07		0.73	0.004	0.60	0.011	0.76	0.005	0.59	0.012	0.75	0.005
Held a job after high school ^a	F2C01		0.93	0.002	0.91	0.007	0.94	0.003	0.90	0.007	0.94	0.003
Volunteer in last 2 years ^b	F2D09		0.42	0.005	0.33	0.011	0.44	0.005	0.33	0.012	0.43	0.005
School activities ^c	FIXTRACU		1.98	0.018	1.78	0.041	2.03	0.020	1.74	0.043	2.03	0.020
Lowest math quartile	BYTXMQU		0.24	0.004	2.06	0.024	2.67	0.012	2.00	0.026	2.66	0.012
Student variables												
Sex (male = 1)	BYSEX		0.50	0.005	0.47	0.011	0.51	0.005	0.48	0.012	0.50	0.005
White	BYRACE_R		0.57	0.005	0.33	0.011	0.63	0.005	0.23	0.010	0.64	0.005
Hispanic	BYRACE_R		0.18	0.004	0.33	0.011	0.14	0.004	0.34	0.012	0.14	0.004
Black	BYRACE_R		0.15	0.003	0.27	0.010	0.12	0.004	0.33	0.011	0.11	0.003
Asian	BYRACE_R		0.04	0.002	0.03	0.004	0.05	0.002	0.05	0.005	0.04	0.002
Other	BYRACE_R		0.06	0.002	0.04	0.004	0.06	0.003	0.05	0.005	0.06	0.002
Standardized test scores	BYTXCSTD		50.45	0.099	45.69	0.216	51.61	0.108	45.10	0.229	51.50	0.106
Parental variables												
No high school	BYPARED		0.06	0.002	0.16	0.008	0.04	0.002	0.16	0.009	0.05	0.002
High school or GED	BYPARED		0.19	0.004	0.27	0.010	0.17	0.004	0.24	0.010	0.18	0.004
Some college	BYPARED		0.57	0.005	0.49	0.011	0.59	0.005	0.51	0.012	0.59	0.005
College graduate or greater	BYPARED		0.18	0.004	0.08	0.006	0.20	0.004	0.10	0.007	0.19	0.004
Transformed income	BYINCOME		63,071	461.53	39,930	727.38	68,743	527.24	37,387	788.19	68,103	512.44

Table 1 continued

Variable	ELS—2002	All neighborhoods		Dropout legacy neighborhoods		No dropout legacy neighborhoods		Poverty legacy neighborhoods		No poverty legacy neighborhoods	
		Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
School variables											
Public school	BYSCTRL	0.91	0.003	0.95	0.005	0.90	0.003	0.96	0.005	0.90	0.003
Catholic school	BYSCTRL	0.05	0.002	0.04	0.004	0.06	0.003	0.03	0.004	0.06	0.003
Private school	BYSCTRL	0.03	0.002	0.02	0.003	0.04	0.002	0.01	0.003	0.04	0.002
Urban	BYURBAN	0.37	0.005	0.50	0.011	0.34	0.005	0.61	0.012	0.32	0.005
Suburb	BYURBAN	0.49	0.005	0.38	0.011	0.51	0.005	0.32	0.011	0.52	0.005
Rural	BYURBAN	0.14	0.003	0.12	0.007	0.15	0.004	0.07	0.006	0.16	0.004
Neighborhood variables											
Dropout legacy	NCD	0.20	0.004	—	—	—	—	0.71	0.011	0.10	0.003
Poverty legacy	NCD	0.16	0.004	0.59	0.011	0.06	0.003	—	—	—	—
High dropout area (yes = 1)	NCD	0.22	0.004	0.75	0.010	0.08	0.003	0.72	0.011	0.12	0.003
Proportion employed	NCD	0.61	0.001	0.52	0.002	0.63	0.001	0.51	0.002	0.63	0.001
High poverty area (yes = 1)	NCD	0.07	0.002	0.28	0.010	0.01	0.001	0.38	0.012	0.01	0.001
Foundation neighbors	NCD	0.30	0.001	0.31	0.003	0.29	0.001	0.27	0.003	0.30	0.001
N		10,530		2010		8520		1680		8850	

Data U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002—restricted use data; Neighborhood Change Database 2000; Survey design with Panel Weight F2BYWT used. Differences in Student *N* due to missing values in dependent variables

^aStudent *N* = 10,440

^bStudent *N* = 10,430

^cStudent *N* = 9480

neighborhood (21%) compared to a non-poverty legacy neighborhood (11%). There also appears to be a racial difference, as students living in legacy neighborhoods are more likely to be racial minorities compared to students living in non-legacy neighborhoods (63–64% of students in non-legacy neighborhoods are white). Another major difference between these two types of areas is found in parental education and income as students' parents in legacy areas have lower educational attainment and income compared to students' parents in non-legacy places. Finally, differences are seen in the urbanicity of schools attended, as a greater proportion of students in legacy neighborhoods attend schools in urban areas and a greater proportion of students in non-legacy neighborhoods attend schools in suburban and rural areas.

Table 2 shows six models, three models including the dropout legacy indicator and three models including the poverty legacy indicator. All models include the main effect of legacy on student dropout behavior. Model 1 only includes the influence of dropout legacy on the probability of dropping out of school without any other predictors. This model shows that students living in a dropout legacy neighborhood are over 40% more likely to drop out of school compared to students not living in these neighborhoods. Model 2 adds student, parental, and school characteristics to Model 1. After controlling for these indicators, students living in a dropout legacy neighborhood are 15.1% more likely to drop out compared to their peers in non-dropout legacy neighborhoods. The results show a large gender gap in risk of dropping out, as males are almost twice as likely as females to experience a dropout episode. The results also point to racial gaps in the risk of dropping out. Hispanics are just under 8% more likely and blacks are 5.5% more likely to drop out compared to whites. Students who identify as Asian demonstrate lower odds of dropping out compared to students who identify as white.

In line with previous research which has found strong correlations between parental SES and student educational attainment (Dalton et al. 2009; Rumberger and Rotermund 2012), the results show that students whose parents did not graduate from high school are more likely to drop out themselves compared to students whose parents received a high school diploma/GED or greater. In addition, family income is an important predictor of dropout behavior as increases in family income are correlated with lower odds of students dropping out. Students who attended catholic or private schools are less likely to drop out of school compared to students who attended public schools.

Model 3 considers the influence of contemporary neighborhood attributes on dropout legacy. In this model, even when controlling for contemporary neighborhood dropout indicators, the effect of dropout legacy remains and predicts that students residing in dropout legacy neighborhoods will have 17.1% higher odds of dropping out compared to students who do not reside in these neighborhoods, all else being held equal. In results not shown here, effect sizes of these coefficients were explored. The results indicate dropout legacy neighborhoods have the third highest predictive power among the neighborhood level ($\beta = 0.0612$); the proportion of the neighborhood that is employed ($\beta = 0.0747$) and the proportion of foundation neighbors ($\beta = -0.1863$) have larger effect sizes. Additionally, one may expect that contemporary indicators of dropout rates ($\beta = 0.0156$) would

Table 2 Multilevel logistic regression of dropout episodes on legacies of place and student, parent, and school demographics (school $N = 640$; Student $N = 10,530$)

Variables	Dropout legacy			Poverty legacy		
	Model 1 OR	Model 2 OR	Model 3 OR	Model 4 OR	Model 5 OR	Model 6 OR
Dropout legacy (yes = 1)	1.402**	1.151***	1.171***			
Poverty legacy (yes = 1)				1.454***	1.203***	1.165***
Sex (male = 1)		1.813***	1.811***		1.817***	1.813***
Student race ^a						
Hispanic		1.077***	1.065***		1.073***	1.055***
Black		1.055***	1.055***		1.041***	1.043***
Asian		0.694***	0.682***		0.685***	0.676***
Other		1.413***	1.406***		1.408***	1.392***
Standardized test scores		0.928***	0.929***		0.928***	0.929***
Parent's education ^b						
High school or GED		0.801***	0.799***		0.803***	0.791***
Some college		0.552***	0.551***		0.553***	0.546***
College or greater		0.557***	0.556***		0.559***	0.55***
Log parent's income		0.943***	0.943***		0.944***	0.944***
School type ^c						
Catholic		0.054***	0.145***		0.152***	0.113***
Private		0.275*	0.432*		0.439*	0.381*
Urbanicity ^d						
Suburb		0.474*	0.344***		0.295***	0.3***
Rural		0.71	0.835		0.749	0.786
Neighborhood variables						
High dropout area 2000 (yes = 1)			1.055***			1.064***
Proportion employed			2.705***			2.309***
High poverty area (yes = 1)			1.174***			1.124***
Proportion foundation neighbors			0.202***			0.218***
Intercept	− 4.636***	0.79**	0.698***	− 4.631***	0.426*	0.3
AIC	1,544,581	1,410,338	1,405,789	1,543,770	1,410,163	1,405,733
σ^2_{β}	16.82	13.9	6.35	16.78	7.09	7.96

Data U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002—restricted use data; Neighborhood Change Database 2000; Panel Weight F2BYWT was used. * $P < .05$, ** $P < .01$, *** $P < .001$

^aReference is 'White'

^bReference is 'No High School'

^cReference is 'Public School'

^dReference is 'Urban'

eliminate any legacy effect; yet, this final model provides the strongest evidence for an independent legacy effect on students' odds of dropping out of school. Therefore, we observe legacy of place as an important independent contributor of contemporary dropout episodes, and this additional analysis speaks to the overall disinvestment in local areas impacting this outcome.

Similar results to Models 1 through 3 appear in Models 4 through 6 which analyze the effect of poverty legacy on students' dropout behavior. The findings in Model 6 conform to those in Model 3 as students residing in poverty legacy neighborhoods are 16.5% more likely to dropout compared to students residing in non-poverty legacy neighborhoods. And like the supplemental analyses exploring effect sizes of the neighborhood covariates discussed above for Model 3, the same effect sizes for these neighborhood variables are noted in Model 6. For both dropout and poverty legacy, the influence of legacy remains with the inclusion of our measure of neighborhood stability, as students are less likely to drop out in neighborhoods with greater stability. This finding evidences that legacy is more than a proxy for the same individuals remaining in the neighborhood. Instead, the independent influence of legacy of place on contemporary student dropout behavior lends support for our theoretical hypothesis that indicate historic processes of racial and economic segregation have lasting influences on contemporary outcomes.

To offer more support of the theoretical and empirical contribution of the concept of legacy of place, we estimated a series of multilevel logistic regression models similar to the full models, Models 3 and 6 in Table 2, to see if our hypotheses regarding the influence of legacy would operate as expected with different outcomes. These outcomes included: (1) whether the individual student received scores in the lowest quartile for a standard math test in 10th grade; (2) was involved in school activities; (3) participated in volunteer work while in high school; (4) held a job since leaving high school; (5) applied for college; and (6) attended college.

Figure 2 displays the odds ratios of dropout legacy for each model with values under one indicating lower likelihood of the outcome and values above one indicating greater likelihood of the outcome due to dropout legacy. As expected, dropout legacy is a statistically significant predictor of each of these contemporary student outcomes in the hypothesized direction. For example, all outcomes that would indicate students' successfully completing high school and transiting to college or work have negative coefficients for the legacy of place indicator and subsequent odds ratios below one. Stated different, the odds of students applying to college, attending college, holding a job, volunteering in least 2 years, and participating in high school activities are lower for students living in dropout legacy areas, controlling for individual, parental, school, and neighborhood characteristics. Conversely, students living in dropout legacy neighborhoods have higher odds of scoring in the lowest quartile for a standardized math test in 10th grade. Taken together, these models lend stronger support for the independent contributions that the theoretical and empirical concept of legacy of place has on contemporary student outcomes since all coefficients operated as hypothesized.

Figure 3 displays the odds ratios of poverty legacy for each model. Once again, these results parallel those found in Fig. 2 as students are less likely to participate in school activities, volunteer, apply to college, or attend college when living in a

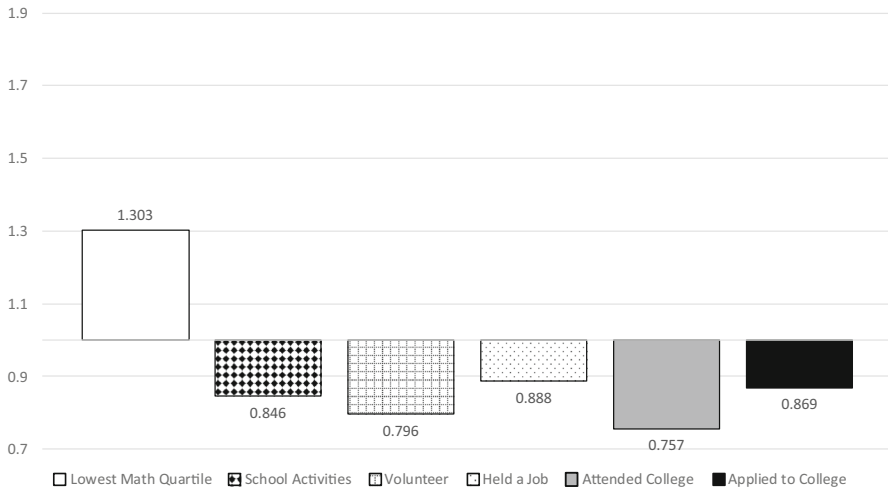


Fig. 2 Odds ratios of dropout legacy for each supplemental outcome variable. Data U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002—restricted use data; Neighborhood Change Database 2000; Data are weighted using Panel Weight F2BYWT; All outcomes are statistically significant at the *** $P < .001$ level. Full models in “[Appendix](#)”

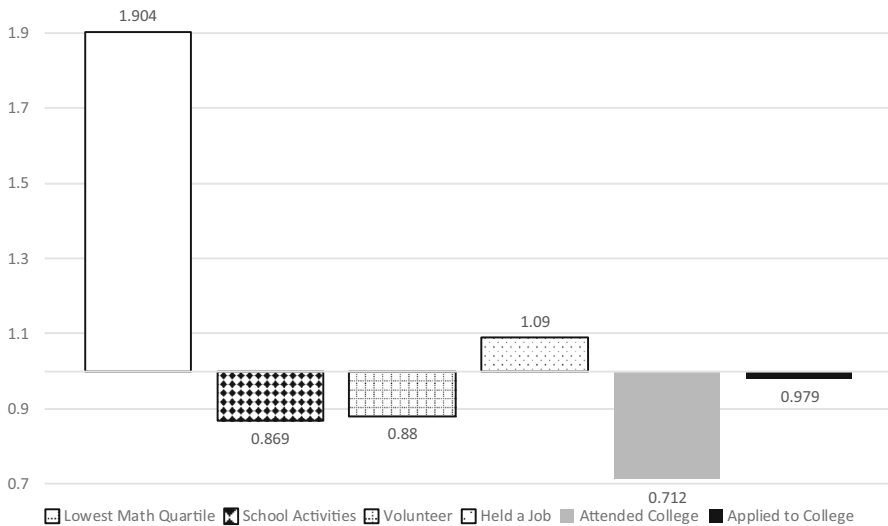


Fig. 3 Odds ratios of poverty legacy for each supplemental outcome variable. Data U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002—restricted use data; Neighborhood Change Database 2000; Data are weighted using Panel Weight F2BYWT; All outcomes are statistically significant at the *** $P < .001$ level except ‘applied to college’ which is significant at ** $P < .01$. Full models in “[Appendix](#)”

poverty legacy neighborhood. Additionally, students are much more likely to score in the lowest quartile of standardized math scores when residing in poverty legacy neighborhoods. One noted difference between the models in Figs. 2 and 3. Students

living in a poverty legacy neighborhood are more likely to hold a job after high school than their counterparts in non-poverty legacy neighborhoods. This finding is opposite for students living in dropout legacy neighborhoods. The exact mechanisms making students more likely to hold a job after high school if they live in a poverty legacy neighborhood are unknown. The structure of the labor markets in dropout legacy and poverty legacy neighborhoods may be such that more low-skilled jobs are available in poverty legacy neighborhoods compared to dropout legacy neighborhoods. Since we know from Table 1 that 41% of dropout legacy neighborhoods do not have a poverty legacy and that 29% of poverty legacy areas do not also have a dropout legacy, there is sufficient non-overlap between these two types of neighborhoods to have distinct labor market structures. Further investigations into the types of jobs these students hold, the earning potential, and the skill level required to perform these jobs are necessary to fully understand this finding.

Limitations

There are several limitations to the current study that should be noted. First, children's residence was captured at the base-year survey. Measuring residence at one point in time ignores possible moves into and out of legacy neighborhoods. Second, the length of exposure to these neighborhoods as measured by the length of stay are not captured in these data. Finally, the sample only includes students from the tenth grade onward, ignoring students who may have dropped out of formal education prior to tenth grade. Students who dropped out before the tenth grade may be demographically different than those who stayed in school long enough to be included in the sampling frame. The effect of legacy may be even greater than reported in the analyses if more students who drop out before the tenth grade reside in legacy neighborhoods or less if these students reside in non-legacy neighborhoods. Therefore, any associations noted here offer conservative estimates of legacy of place on individual dropout decisions.

Discussion and Conclusion

Towards a More Promising Future

We have presented the new concept of legacy of place, which we theorize as areal characteristics developed by historical social processes that come to be seen as intrinsic attributes of place. Although places may have a multitude of legacies, we focused on dropout and poverty legacies to better ground the broader concept and to provide testable hypotheses that underscored the importance for considering a place's history. Throughout this paper, we argued that legacy of place not only impacts current neighborhood compositions, but also has an independent influence on contemporary behavior. Specifically, we show that dropout and poverty legacies affect contemporary dropout and dropout related behavior.

Past neighborhood effects literature have found correlations between contemporary neighborhood compositions and educational attainment outcomes (Crowder

and South 2011; Jackson and Mare 2007; Leventhal and Brooks-Gunn 2000). Legacy of place adds to this literature by including the role of historic resource allocation processes into the discussion. This study hypothesized that the social history of an area would have a present-day influence on individual student dropout behavior. To test this hypothesis, longitudinal neighborhood dropout and poverty data were included with traditional individual and structural covariates to predict dropout behavior. We operationalized dropout and poverty legacy as neighborhoods with dropout/poverty rates in the top quartile in two out of three census years from 1970 through 1990.

Results showed that students living in legacy neighborhoods had over 16% higher odds of dropping out of school compared to their peers not living in these types of neighborhoods. In all models, results were consistent for both dropout and poverty legacy. Again, the influence of dropout and poverty legacy hold even with the inclusion of contemporary dropout and poverty measures for the neighborhood, respectively. These results reveal just how important the consequences of historic neighborhood formation processes are to contemporary student success as measured by a student's propensity to drop out of school. These findings should provide inertia for the creation of policies that address the lasting influence of historic neighborhood racial and economic segregation. Such policies may help to equalize racial educational outcome gaps considering minorities are more likely to reside in legacy neighborhoods compared to whites. Furthermore, these types of interventions may be necessary in ending neighborhood legacies as Saenz and Siordia (2012) find that individuals from neighborhoods with high dropout rates are more likely to have children who also live in neighborhoods with above average dropout rates.

The results also evidence the extent to which legacy is merely a replication of individuals remaining in the neighborhood. If legacy of place is simply a continuation of neighbors with low levels of education or income remaining in the area over time—thus lowering the education and economic profile of the neighborhood—then we would expect the direction of the effect of neighborhood stability to be the same as the effect of legacy. The findings reveal this is not the case. The neighborhood stability variable showed that the greater presence of foundation neighbors living in an area, the better the odds were for students to complete high school. Legacy, therefore, is a characteristic of place not merely a continuation of individuals remaining in the same place.

Finally, we presented several models with theoretically similar and dissimilar outcomes to individual dropout behavior, to show further support for the use of legacy of place as a new, independent theoretical and empirical concept. As such, the use of multiple student outcomes, as presented in Figs. 2 and 3, indicate a statically significant association between living in a legacy area and the individual student outcomes as hypothesized. Positive associations were noted for more negative student outcomes (low standardized math scores), while negative associations were observed for different measures of student success (e.g. applying for college). Only one exception was noted for this pattern. Students living in neighborhoods with a poverty legacy had greater odds of holding a job after high school. This finding was previously discussed in light of potential differences in job market structures between legacy and non-legacy neighborhoods. Taken together,

these analyses lend more support for the unique contribution that legacy of place has on contemporary student behaviors and that these associations remain even when including other measures of the current environment, as well as individual, parental and school characteristics.

In sum, we argue that legacy of place considers the mechanisms of past residential segregation, school segregation, and differential resource allocation simultaneously and incorporates these measures into individual models of dropout behavior. Studies that only consider contemporary neighborhood compositions miss out on capturing the structural reasons for such neighborhood contexts and compositions as they fail to incorporate historic realities of place.

Appendix

See Tables 3 and 4.

Table 3 Multilevel logistic regression of dropout legacy on multiple indicators of dropout behavior (school $N = 640$)

Variables	Applied to college	Attended college	Held a job	Volunteer	School activities	Lowest math quartile
	OR	OR	OR	OR	OR	OR
Dropout legacy (yes = 1)	0.869***	0.757***	0.888***	0.796***	0.846***	1.303***
Sex (male = 1)	0.494***	0.547***	1.099***	0.722***	0.698***	0.431***
Student race ^a						
Hispanic	1.084***	0.984*	0.541***	1.188***	1.111***	1.151***
Black	1.765***	1.16***	0.756***	1.517***	1.595***	1.483***
Asian	2.022***	1.784***	0.271***	1.293***	1.422***	0.549***
Other	1.027**	0.598***	0.588***	1.089***	1.188***	0.88***
Standardized test scores	1.085***	1.092***	1.017***	1.048***	1.049***	0.541***
Parent's education ^b						
High school or GED	1.111***	0.984*	0.931***	0.949***	0.86***	0.934***
Some college	1.9***	1.804***	1.213***	1.339***	1.239***	0.792***
College or greater	3.053***	2.886***	0.805***	1.855***	1.606***	0.959*
Log parent's income	1.069***	1.048***	0.976***	1.026***	1.021***	1.017***
School type ^c						
Catholic	5.523***	7.064***	1.35	1.358*	2.455***	1.468
Private	3.732***	3.699***	0.545	1.576**	3.604***	2.121
Urbanicity ^d						

Table 3 continued

Variables	Applied to college	Attended college	Held a job	Volunteer	School activities	Lowest math quartile OR
	OR	OR	OR	OR	OR	
Suburb	1.473	1.522*	1.67	1.241*	1.631**	6.221***
Rural	1.068	0.968	10.257***	0.973	1.065	2.125*
Neighborhood variables						
High dropout area 2000 (yes = 1)	0.894***	0.919***	0.815***	0.98**	0.864***	0.855***
Proportion employed	0.684***	0.615***	1.682***	0.417***	0.449***	0.296***
High poverty area (yes = 1)	0.95***	1.087***	1.318***	0.928***	0.98	1.384***
Proportion foundation neighbors	2.073***	2.442***	0.454***	1.359***	1.677***	0.274***
Intercept	− 2.339***	− 3.098***	4.132***	− 3.011***	− 0.586***	25.755***
σ^2_{β}	5.79	4.39	15.09	1.40	3.53	7.18
Student <i>N</i>	10,440	10,440	10,440	10,430	9480	10,530

* $P < .05$, ** $P < .01$, *** $P < .001$ ^aReference is ‘White’^bReference is ‘No High School’^cReference is ‘Public School’^dReference is ‘Urban’**Table 4** Multilevel logistic regression of poverty legacy on multiple indicators of dropout behavior (school *N* = 640)

Variables	Applied to college	Attended college	Held a job	Volunteer	School activities	Lowest math quartile OR
	OR	OR	OR	OR	OR	
Poverty legacy (yes = 1)	0.979**	0.712***	1.09***	0.88***	0.869***	1.904***
Sex (male = 1)	0.495***	0.547***	1.101***	0.723***	0.699***	0.433***
Student race ^a						
Hispanic	1.087***	0.991	0.539***	1.188***	1.115***	1.112***
Black	1.768***	1.182***	0.751***	1.52***	1.608***	1.411***
Asian	2.022***	1.817***	0.27***	1.292***	1.401***	0.508***
Other	1.034***	0.603***	0.586***	1.093***	1.212***	0.875***
Standardized test scores	1.085***	1.093***	1.017***	1.048***	1.049***	0.54***
Parent’s education ^b						

Table 4 continued

Variables	Applied to college	Attended college	Held a job	Volunteer	School activities	Lowest math quartile OR
	OR	OR	OR	OR	OR	
High school or GED	1.117***	0.996	0.937***	0.951***	0.871***	0.919***
Some college	1.912***	1.828***	1.223***	1.346***	1.255***	0.79***
College or greater	3.077***	2.927***	0.81***	1.863***	1.631***	0.956*
Log parent's income	1.069***	1.048***	0.976***	1.027***	1.021***	1.017***
School type ^c						
Catholic	5.663***	5.523***	1.339	1.354*	3.408***	1.467
Private	3.834***	3.086***	0.549	1.57**	9.152***	2.149*
Urbanicity ^d						
Suburb	1.358	1.331	1.756	1.228	1.605*	6.019***
Rural	1.045	0.915	9.554***	0.967	1.461	2.132*
Neighborhood variables						
High dropout area 2000 (yes = 1)	0.845***	0.89***	0.757***	0.919***	0.84***	0.803***
Proportion employed	0.669***	0.472***	1.941***	0.425***	0.484***	0.405***
High poverty area (yes = 1)	0.927***	1.147***	1.25***	0.934***	1.021	1.147***
Proportion foundation neighbors	2.014***	2.162***	0.446***	1.267***	1.602***	0.315***
Intercept	− 2.411***	− 3.416***	4.01***	− 3.01***	− 1.015***	25.626***
σ^2_{β}	6.14	3.13	15.22	1.43	4.28	6.90
Student <i>N</i>	10,440	10,440	10,440	10,430	9480	10,530

* $P < .05$, ** $P < .01$, *** $P < .001$ ^aReference is 'White'^bReference is 'No High School'^cReference is 'Public School'^dReference is 'Urban'

References

- Ainsworth, J. W. (2002). Why does it take a village? the mediation of neighborhood effects on educational achievement. *Social Forces*, 81(1), 117–152.
- Albrecht, C. M., & Albrecht, D. E. (2011). Social status, adolescent behavior, and educational attainment. *Sociological Spectrum*, 31(1), 114–137. <https://doi.org/10.1080/02732173.2011.525698>.
- Anderson, E. (1990). *Streetwise: race, class, and change in an urban community*. Chicago: University of Chicago Press.
- Björklund, A., & Jäntti, M. (2012). Intergenerational income mobility and the role of family background. In B. Nolan, W. Salverda, & T. M. Smeeding (Eds.), *The oxford handbook of economic inequality*. *Oxford handbooks online*. Oxford University Press: Oxford.

- Bowers, A. J. (2010). Grades and graduation: A longitudinal risk perspective to identify student dropouts. *Journal of Educational Research*, 103(3), 191–207.
- Crowder, K., & South, S. J. (2011). Spatial and temporal dimensions of neighborhood effects on high school graduation. *Social Science Research*, 40(1), 87–106. <https://doi.org/10.1016/j.ssresearch.2010.04.013>.
- Dalton, B., Glennie, E., & Ingels, S. J. (2009). *Late high school dropouts: characteristics, experiences, and changes across cohorts*. Retrieved from Washington, DC: <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2009307>
- GeoLytics, I. (2003). *Neighborhood Change Database (NCDB) 2000*.
- Goldsmith, P. R. (2009). Schools or neighborhoods or both? Race and ethnic segregation and educational attainment. *Social Forces*, 87(4), 1913–1941.
- Ingels, S. J., Pratt, D. J., Wilson, D., Burns, L. J., Currivan, D., Rogers, J. E., & Hubbard-Bednasz, S. (2007). *Education longitudinal study of 2002: Base-year to second follow-up data file documentation (NCES 2008-347)*. Retrieved from Washington, DC
- Jackson, M. I., & Mare, R. D. (2007). Cross-sectional and longitudinal measurements of neighborhood experience and their effects on children. *Social Science Research*, 36(2), 590–610. <https://doi.org/10.1016/j.ssresearch.2007.02.002>.
- Jargowsky, P. A. (1997). *Poverty and place*. New York: Russell Sage Foundation.
- Jencks, C., & Mayer, S. E. (1990). The social consequences of growing up in a poor neighborhood. In L. E. Lynn Jr. & M. G. H. McGeary (Eds.), *Inner-city poverty in the United States* (pp. 111–186). Washington, D.C.: National Academy Press.
- Jordan, J. L., Kostandini, G., & Mykerezi, E. (2012). Rural and urban high school dropout rates: Are they different? *Journal of Research in Rural Education*, 12, 1–21.
- Kozol, J. (2005). *The shame of the nation: The restoration of apartheid schooling in America*. New York: Three Rivers Press.
- Krysan, M., Crowder, K., & Bader, M. D. M. (2014). *Pathways to residential segregation* (K. A. Goyette & A. Lareau Eds.). New York, NY: Russell Sage Foundation.
- Lankford, H., Loeb, S., & Wyckoff, J. (2002). Teacher sorting and the plight of urban schools: A descriptive analysis. *Educational Evaluation and Policy Analysis*, 24(1), 37–62.
- Leventhal, T., & Brooks-Gunn, J. (2000). The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin*, 126(2), 309–337. <http://dx.doi.org/10.1037/0033-2909.126.2.309>
- Lochner, L. (2004). Education, work, and crime: A human capital approach. *International Economic Review*, 45(3), 811–843. <https://doi.org/10.2307/3663638>.
- Massey, D. S., & Denton, N. A. (1988). The dimensions of residential segregation. *Social Forces*, 67(2), 281–315.
- Olneck, M. R., & Kim, K.-S. (1989). High school completion and men's incomes: An apparent anomaly. *Sociology of Education*, 62(3), 193–207.
- Ou, S.-R. (2008). Do GED recipients differ from graduates and school dropouts?: Findings from an inner-city cohort. *Urban Education*, 43(1), 83–117. <https://doi.org/10.1177/0042085907305187>.
- Owens, A. (2010). Neighborhoods and schools as competing and reinforcing contexts for educational attainment. *Sociology of Education*, 83(4), 287–311. <https://doi.org/10.1177/0038040710383519>.
- Poston, D. L., Jr., Singelmann, J., Siordia, C., Slack, T., Robertson, B. A., Saenz, R., et al. (2010). Spatial context and poverty: Area-level effects and micro-level effects on household poverty in the Texas borderland & lower Mississippi Delta: United States, 2006. *Applied Spatial Analysis and Policy*, 3(2–3), 139–162.
- Ravitch, D. (2013). *Reign of Error: The Hoax of the Privatization Movement and the Danger to America's Public Schools*. New York: Alfred A. Knopf.
- Roscigno, V. J., Tomaskovic-Devey, D., & Crowley, M. (2006). Education and the inequalities of place. *Social Forces*, 84(4), 2121–2145. <https://doi.org/10.2307/3844492>.
- Rumberger, R. W. (1983). Dropping out of high school: The influence of race, sex, and family background. *American Educational Research Journal*, 20(2), 199–220. <https://doi.org/10.3102/00028312020002199>.
- Rumberger, R., & Lim, S. A. (2008). *Why students drop out of school: A review of 25 years of research*. Retrieved from UC Santa Barbara:
- Rumberger, R. W., & Rotermund, S. (2012). The relationship between engagement and high school dropout. In Christenson et al. (Ed.), *Handbook of research on student engagement* (pp. 491–513). New York: Springer.

- Rumberger, R. W., & Thomas, S. L. (2000). The distribution of dropout and turnover rates among urban and suburban high schools. *Sociology of Education*, 73(1), 39–67. <https://doi.org/10.2307/2673198>.
- Saenz, R., & Siordia, C. (2012). The inter-cohort reproduction of Mexican American dropouts. *Race and Social Problems*, 4(1), 68–81. <https://doi.org/10.1007/s12552-012-9062-x>.
- Sampson, R. J. (2012). *Great American City: Chicago and the enduring neighborhood effect*. Chicago: The University of Chicago Press.
- Sampson, R. J., Morenoff, J. D., & Gannon-Rowley, T. (2002). Assessing “neighborhood effects”: Social processes and new directions in research. *Annual Review of Sociology*, 28, 443–478. <https://doi.org/10.2307/3069249>.
- Sharkey, P. (2013). *Stuck in place: Urban neighborhoods and the end of progress toward racial equality*. Chicago, IL: The University of Chicago Press.
- Sharkey, P., & Elwert, F. (2011). The legacy of disadvantage: Multigenerational neighborhood effects on cognitive ability. *American Journal of Sociology*, 116(6), 1934–1981. <https://doi.org/10.1086/660009>.
- Small, M. L. (2004). *Villa Victoria*. Chicago, IL: The University of Chicago Press.
- Stanton-Salazar, R. D., & Dornbusch, S. M. (1995). Social capital and the reproduction of inequality: Information networks among Mexican-origin high school students. *Sociology of Education*, 68(2), 116–135.
- Stoll, M. A., Holzer, H. J., & Ihlanfeldt, K. R. (2000). Within cities and suburbs: Racial residential concentration and the spatial distribution of employment opportunities across sub-metropolitan areas. *Journal of Policy Analysis and Management*, 19(2), 207–231.
- Suttles, G. D. (1970). *The social order of the slum; ethnicity and territory in the inner city*. In. Chicago: University of Chicago Press.
- Warren, R., Grodsky, E., & Lee, J. C. (2008). State high school exit examinations and postsecondary labor market outcomes. *Sociology of Education*, 81(1), 77–107.
- Wheaton, B., & Clarke, P. (2003). Space meets time: Integrating temporal and contextual influences on mental health in early adulthood. *American Sociological Review*, 68(5), 680–706. <https://doi.org/10.2307/1519758>.
- Wilson, W. J. (2012). *The truly disadvantaged: The inner city, the underclass, and public policy* (2nd ed.). Chicago: The University of Chicago Press.
- Wodtke, G. (2013). Duration and timing of exposure to neighborhood poverty and the risk of adolescent parenthood. *Demography*, 50(5), 1765–1788. <https://doi.org/10.1007/s13524-013-0219-z>.
- Wodtke, G. T., Harding, D. J., & Elwert, F. (2011). Neighborhood effects in temporal perspective: The impact of long-term exposure to concentrated disadvantage on high school graduation. *American Sociological Review*, 76(5), 713–736. <https://doi.org/10.1177/0003122411420816>.