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Employment of Low-Income African American and Latino Teens: Does Neighborhood Social Mix Matter?

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Abstract

We quantify how teen employment outcomes for low-income African Americans and Latinos relate to their neighborhood conditions during ages 14–17. Data come from surveys of Denver Housing Authority (DHA) households who have lived in public housing scattered throughout Denver County. Because DHA household allocation mimics random assignment to neighborhood, this program represents a natural experiment for overcoming geographic selection bias. Our logistic and Tobit regression analyses found overall greater odds of teen employment and more hours worked for those who lived in neighborhoods with higher percentages of pre-1940 vintage housing, property crime rates and child abuse rates, though the strength of relationships was highly contingent on gender and ethnicity. Teen employment prospects of African Americans were especially diminished by residence in more socially vulnerable, violent neighborhoods, implying selective potential gains from social mixing alternatives.

Keywords

neighborhood effects; teen employment; social mix; logistic regression; natural experiments

Introduction: Teen Employment in Scholarly and Policy Context

In the U.S. there has been longstanding public and scholarly interest in the labor market performance of teenage youth, at least since the 1960s when the post-war “baby boom” generation began entering the labor force in substantial numbers. American public policy interest was first manifested in the 1968 Kerner Commission report on civil disorders and

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the subsequent Youth Employment and Demonstration Projects Act, which was passed in 1977. Scholarly attention was focused during the same period by a multi-university set of economists assembled under the auspices of the National Bureau of Economic Research, which yielded a comprehensive volume on the topic (Freeman and Wise, 1982a). Continued deterioration of the employment prospects in minority communities led to the declaration of a "black youth employment crisis" (Freeman and Holzer, 1986). The themes advanced during this period over a quarter century ago still resonate with our current work. Freeman and Wise note, "The youths who make up the relatively small group that is chronically without work have distinct characteristics. They are disproportionately African American, disproportionately high school dropouts, and *disproportionately residents of poverty areas [emphasis ours]* (1982b: 2)."

Though three decades have passed, the concerns have only intensified as the consequences of the latest financial crisis and recession have become clear (Fernandes-Alcantara, 2010; Symonds, Schwartz and Ferguson, 2011). The U.S. teen employment rate dropped nearly in half during the last ten years: from 45 percent in 1999–2000 to only 26 percent in 2011 (Center for Labor Market Studies, 2102; Sum, Gillis and Palma, 2012). This represents the lowest rate since the end of World War II. Perhaps even more discouraging, while the overall economy began adding net jobs in 2009, the net loss of jobs for teens has continued unabated (Sum, Gillis and Palma, 2012).

Within these overall trends the longstanding themes of income, ethnic and geographic disparities persist. Employment rates for those aged 16–19 years in 2010 varied from 19.3 percent for teens whose household income was under $20,000 to 30.6 percent for those from households earning over $150,000 (Center for Labor Market Studies, 2012). Within each income category the rates were lowest for blacks, then Latinos, and highest for whites. The combined effects of income and ethnicity meant that white teens were employed at almost three times the rate of African American teens (Sum, Gillis and Palma, 2012). Even more crucially from the perspective of the current study, minority teens living in high-poverty neighborhoods had by far the lowest employment rates (Sum et al., 2006).

These disparities in teen employment have been a longstanding concern in the U.S. because of its weak institutional system for helping teens transition from secondary school into employment, especially with some technical skills (Commission on the Skills of the American Workforce, 1990; Annie E. Casey Foundation, 2012). The nation has thus relied on part-time employment as a key vehicle for human capital development in teens. Considerable research has supported the notion that a moderate amount of work experience by teens positively influences their shorter- and longer-term prospects for employability and earnings because they learn invaluable technical, interpersonal, customer-relation and soft skills while on the job (Sum et al., 2006; Mortimer, 2010). The impact of teen work experience seems especially powerful for those who do not obtain post-secondary educational credentials (Ruhm, 2005).[1] Probing the underlying causes of teen employment,

[1]We acknowledge that working as a teen is a double-edged sword. It appears that to hold a job is good but working more than 20 hours weekly is not, given the longstanding evidence on the deleterious effects on high school academic performance of working excessive hours (Steinberg and Dornbusch, 1991;Steinberg, Fegley and Dornbusch, 1993; Warren, LePore and Mare, 2000; Sum et al., 2006; Mortimer, 2010).

especially from ethnic and spatial perspectives, thus remains a critical endeavor today, as it has in the past.

The earliest multivariate scholarly work in this ethnic-geographic realm examined spatial patterns of minority teens' residences and potential jobs to ascertain if there was a substantial "spatial mismatch" that inhibited their chances for employment (Ellwood, 1986; Leonard, 1986, Ihlanfeldt, 1991). Subsequently, scholars expanded the notion of "accessibility" to include not only spatial but social distance, such as information-poor networks and deviant work norms (O'Regan and Quigley, 1991). These early studies generally concluded that both the lack of job proximity and social isolation associated with poor, minority neighborhoods independently restricted employment opportunities for teen residents, at least in some U.S. metropolitan areas (Holzer, 1991; Kain, 1992; O'Regan and Quigley, 1996).

These conclusions have been strongly challenged, however, primarily on the grounds of geographic selection bias (Ginther, Haveman and Wolfe 2000). The issue is that adults likely have (unmeasured) motivations, behaviors, and skills related to their own and their children's economic prospects and move from and to certain types of neighborhoods as a consequence of these unobserved characteristics. Any observed relationship between neighborhood conditions and economic outcomes for teens may therefore be biased because of this systematic spatial selection process, *even if all parental observable characteristics are controlled* (Manski 1995, 2000; Duncan et al. 1997; Duncan and Raudenbush 1999, Dietz 2002).[2]

The scholarly response to this challenge has emphasized the use of natural experiments and a randomized control experiment. In the former, data are produced from idiosyncratic public policy initiatives (typically involving subsidized housing) that create exogenous variation in neighborhood environments for tenants. In random assignment experiments data are produced by a design whereby households are randomly assigned to different neighborhoods. Studies based on the Chicago *Gautreaux* natural experiment revealed non-trivial relationships between neighborhood context measures and minority teen labor force outcomes (Rosenbaum, 1995; Rosenbaum, Reynolds and DeLuca, 2002; DeLuca et al. 2010).[3] These results can be questioned, however, because not only was there self-selection of public housing tenants into the program, but the geographic assignment of participants was not random.

These results subsequently have been overshadowed by those produced by the only extant random assignment experiment of relevance here: the well-known Moving To Opportunity (MTO) demonstration (Orr et al., 2003; Sanbonmatsu et al., 2011 Ludwig, 2012). MTO revealed no statistically significant differences in idleness (neither working nor in school) between those aged 15–20 whose parents were assigned initially to low-poverty

[2]The direction of the bias has been the subject of debate, with Jencks and Mayer (1990) and Tienda (1991) arguing that neighborhood impacts are biased upwards, and Brooks-Gunn, Duncan, and Aber (1997) arguing the opposite. Gennetian, Ludwig, and Sanbonmatsu (2011) show that these biases can be substantial enough to seriously distort conclusions about the magnitude and direction of neighborhood effects.

[3]For a review of this literature, see DeLuca and Dayton (2009).

neighborhoods compared to comparable individuals in the control group living initially in public housing in deprived neighborhoods; even more surprisingly, employment rates for the former group were significantly *lower* (Gennetian et al. 2012). MTO has been seen by many as the "gold standard" study, so these findings have been interpreted in some circles as definitive proof that relocating low-income minority teens would not improve their economic prospects (e.g., Smolensky, 2007: 1016).

Nevertheless, numerous issues have been raised about the efficacy of MTO as a test of neighborhood effects (cf. Clampet-Lundquist and Massey, 2008; Sampson, 2008; Briggs, Ferryman, Popkin, and Rendon; 2008, DeLuca and Dayton, 2009; Burdick-Will et al., 2010; Briggs, Popkin and Goering, 2010; Briggs et al., 2011; Turner et al., 2012; Ludwig, 2012). The debate focuses on five domains. First, although MTO randomly assigns participants to treatment groups, it neither randomly assigns characteristics of neighborhoods initially occupied by voucher-holders (except maximum poverty rates for the experimental group) nor characteristics of neighborhoods in which participants in all three groups may move subsequently. Thus, there remains considerable question about the degree to which geographic selection on unobservables persists. Second, MTO may not create adequate duration of exposure to neighborhood conditions by any group at any location to observe much treatment effect.[4] Third, MTO overlooks the potentially long-lasting and indelible developmental effects upon adult experimental group participants who spent their childhoods in disadvantaged neighborhoods. Fourth, it appears that even experimental MTO movers rarely moved out of predominantly African American-occupied neighborhoods near those of concentrated disadvantage and achieved only modest changes in school quality and job accessibility. Thus, they may not have experienced sizable enhancements in their opportunity structures. Fifth, many participants in MTO may not have been expected to evince much labor market activity in *any* neighborhood context without additional assistance. About one-quarter of the MTO families were headed by an adult unable to work because of disabling, chronic illness, while many more needed childcare and transportation that, likewise, were not in the package of supports offered in the experiment. Thus, despite its theoretical promise and conventional wisdom notwithstanding, MTO may not have provided definitive evidence about the potential employment effects on low-income minority teens from prolonged residence in multiply-advantaged neighborhoods.

Our study aims to advance our understanding of this vital empirical issue by utilizing a natural experiment related to the Housing Authority of the City and County of Denver (DHA) that provides a variety of methodological advantages. First, the DHA allocation process mimics random assignment. Second, DHA dwellings are located in a wide variety of neighborhood environments (which we measure with an unusually rich set of indicators). Third, residents assigned to DHA public housing typically reside there over five years (over twice as long as the average tenure observed in the voucher based MTO), thus providing sustained exposures to neighborhoods. Fourth, given the ethnic composition of the DHA

[4]Non-experimental analysis focusing on MTO families who resided for a majority of the study period in low-poverty and/or higher education neighborhoods revealed their substantially better adult employment and earnings than in the control group (Turner et al., 2012).

residents, we have adequate sample sizes to stratify analyses by Latino and African American families (unlike MTO or other natural experiments).

In this study we analyze data from administrative sources and data we have collected from extensive surveys with current and former DHA tenants, which provide rich, retrospective information on youth outcomes, family characteristics and residential histories. We focus in this paper on pre-adult labor market outcomes of African American or Latino teenage (age 14–17) children of current and former residents of the DHA.

Our primary research question involves identifying the magnitude of context effects as operationalized by a robust set of disaggregated neighborhood indicators:

> For African American and Latino teens who spent a considerable period during childhood living in DHA public housing to which they were quasi-randomly assigned, are there statistically and economically significant differences in their teen employment outcomes (ages 14–17) that can be associated with differences in the neighborhood environments to which they were exposed during these ages?

The rest of our paper is organized as follows. The first section sketches the theoretical bases for how teens' neighborhoods might affect their employment outcomes. These mechanisms involve multiple processes within and external to the neighborhood. The second section describes our study sample, survey, and neighborhood indicators forming the basis of our empirical work. The third section presents our analytical approach. The fourth section reports our findings; we find several statistically and economically significant neighborhood effects on low-income, minority teen employment. Consistent with prior work, these relationships are strongly conditioned on gender and ethnicity; different aspects of a neighborhood's socioeconomic composition prove important predictors for different ethnic groups. The fifth section discusses our findings in detail, offers some potential explanations based on mechanisms of neighborhood effects, and draws implications for "social mix" policies. The last section concludes, provides caveats, and offers suggestions for future research.

How Neighborhoods Might Affect Teen Employment Outcomes

Neighborhood effects may transpire through a variety of causal mechanisms that can occur either through social interactions and biological processes within the neighborhood, and/or by actions of others located outside of the neighborhood; for extended discussions, see Jencks and Mayer (1990), Duncan, Connell and Klebanov (1997), Gephart (1997), Briggs (1997), Friedrichs (1998), Sampson (2001), Dietz (2002), Sampson, Morenoff, and Gannon-Rowley (2002), Ioannides and Loury (2004), Briggs et al. (2011), and Galster (2012). The potential intra-neighborhood social mechanisms include socialization and social control (norms, peers, and role models), networks, social disorder, exposure to violence, and competition. The potential intra-neighborhood biological mechanisms involve environmental exposures. The potential extra-neighborhood mechanisms are stigmatization and institutional resources. Because these mechanisms are well-known, we describe them only briefly:

- *Socialization:* Teens may develop attitudes, values, behaviors and expectations about school, health habits, illegal activities and work as a result of interactions with neighborhood peers and role models. Some types of collective socialization may reinforce normatively these developments, while other types (perhaps arising within kin or cultural groups) may operate in offsetting fashion. These attitudes, values, behaviors and expectations may affect labor market outcomes.
- *Networks:* Teens may obtain differential amounts of information about skill-enhancing and employment opportunities, depending on the degree to which they rely on local social networks and the resources these networks can access.
- *Social Disorder:* Teens may be able to take advantage of a different range of skill-enhancing and employment opportunities, depending on the degree to which they feel secure leaving their homes and traversing their neighborhoods. In addition, socially disordered environments might encourage teens to adopt certain attitudes and behaviors than are detrimental to productive economic outcomes.
- *Exposure to Violence:* Exposure to neighborhood violence may lead to adverse physical responses (e.g., ill health from stress), psychological responses (e.g., post-traumatic stress disorder) and inhibitions to speech communication, all of which may impede labor market performance.
- *Competition:* Teens may intensify their work efforts in a neighborhood context of greater socioeconomic competition and status-seeking, so that they can have higher disposable income and the associated consumption patterns. Conversely, if low-income teens feel more “relative deprivation” in advantaged contexts they may retreat into a defeatist position that engenders self-fulfilling prophecies about their ability to compete. Finally, low-income minority teens may find themselves unable to compete successfully against neighboring teens who may have superior hard and soft skills due to their superior socioeconomic position.
- *Stigmatization:* Prospective employers may evaluate teen job applicants raised in certain locales based on the reputation of the places (a version of “statistical discrimination”), especially if they have limited prior employment history.
- *Environment and Health:* Neighborhood-based variations in exposure to ambient noise, toxins, lead, or other pollutants can indelibly affect mental, physical and behavioral development and the severity of asthma and other diseases, thereby affecting labor market performance.
- *Institutional Resources:* Public and private institutions controlling important services and facilities may vary geographically in their quantity and quality, thereby differentially affecting teens’ opportunities to develop human capital, access potential workplaces, and secure labor market success as teens.

While current scholarship is not decisive, it suggests that several intra- and extra-neighborhood mechanisms above may be operative (Van Kempen, 1997; Dietz, 2002; Sampson, Morenoff and Gannon-Rowley, 2002; Ellen and Turner, 2003; Galster, 2012) and that different mechanisms may have varying salience across different groups (Burdick-Will

et al, 2010; Galster, Andersson and Musterd, 2010; Clampet-Lundquist et al. 2011; Sharkey and Faber, 2014). For this latter reason we will stratify our analyses by gender and by ethnicity.

The Natural Experiment Involving Public Housing in Denver

In addition to its large-scale, conventional public housing developments, the DHA has operated since 1969 a program providing approximately 1,500 low-income families with opportunities to live in scattered-site, single-family and small-scale, multi-family units. These units are located in a wide range of neighborhoods throughout the congruent City and County of Denver, whereas the conventional developments are typically located in less-advantaged neighborhoods. From 1987 onwards, as applicants (who met certain basic eligibility criteria) came to the top of the public housing waiting list they were offered a vacant DHA unit (in either conventional or scattered-site programs) with the number of bedrooms appropriate for their family size and gender of children. If they did not accept this unit they were offered the next similarly sized unit that became available (typically after a nontrivial wait). If applicants did not accept this second unit they dropped to the bottom of the queue, creating a wait of a year or more.

As detailed in Appendix A, we conducted a variety of statistical tests to ascertain whether the initial assignment of households to a DHA dwelling unit (and neighborhood thereby) mimicked random assignment of household to neighborhood. These tests were based on the intuitively appealing notion that in a quasi-random assignment there would be few statistically significant correlations among observed DHA tenant characteristics and neighborhood characteristics, no more than might occur through chance. We found that only DHA tenant ethnicity generated associations with neighborhood conditions (in particular, aspects of neighborhood disadvantage). This indicates that, *conditioned on ethnicity*, the DHA allocation process produced a quasi-random initial assignment of households across neighborhood characteristics. The empirical implication is that our models reported here control for ethnicity to avoid geographic selection bias. We also carried out a test that gives us added confidence that there are unlikely any unobserved DHA tenant characteristics that are both highly correlated with neighborhood characteristics initially assigned and strongly predict teen outcomes. This test involved a Monte Carlo simulation of the correlations that would be observed between neighborhood characteristics and typically unobserved household characteristics based purely on chance and compared these to actual correlations observed in our dataset; see Appendix A for details.

The quasi-randomness of this initial DHA assignment potentially erodes over time as some residents selectively leave their initial locations while others stay. Thus, three potential sources of geographic selection based on parent/caregiver unobservables might arise post initial assignment. First, DHA households can voluntarily transfer between scattered-site and conventional public housing developments. This occurred rarely, however.[5] Second, a substantial part of our information comes from households no longer residing in DHA housing, and their subsequent locations were likely not randomly chosen.[6] In these cases, contextual exposures will be a combination of randomly assigned and (to some degree) selectively chosen neighborhood characteristics. To the extent that the former contexts are

sufficient to rupture the correlation between unobservable caregiver characteristics affecting teen outcomes and neighborhood characteristics they experienced, our estimates of neighborhood effects will not be substantially biased. A third potential source of selection relates to those who do *not* move out of their DHA housing for an extended period. Perhaps their unwillingness or inability to move out of DHA is related to some unobservable caregiver characteristics that also may be connected to teen outcomes being investigated.

To investigate the degree to which selective moves subsequent to DHA residence and selective remaining in DHA residence may affect our measurement of neighborhood effects, we replicate our analyses using three overlapping samples of teens about whom we gained information through our survey (described below), what we label "ever," "mostly" and "currently" in DHA:

- *"Ever in DHA" sample:* includes teens whose family was assigned to their first, quasi-randomly assigned DHA dwelling prior to age 14
- "*Mostly in DHA" sample:* includes only those "Ever in DHA" teens who spent a majority of ages 14–17[7] residing in a DHA dwelling
- *"Currently in DHA" sample:* includes only those "Mostly in DHA" teens who resided in a DHA dwelling throughout ages 14–17 (or at time of survey, if younger than 17)

The "ever in DHA" sample is most analogous to the sample analyzed in MTO. Most of the contextual exposure the "mostly in DHA" sample of "stayers" had experienced during ages 14–17 involved the quasi-randomly assigned neighborhood; this is not necessarily true in the "ever in DHA" sample since it some includes "movers" who selected out of the DHA-assigned location before the age 14–17 neighborhood exposure period under investigation. The "currently in DHA" sample encompasses teens from households who have remained in DHA for long periods prior to the time of observation as well as those whose families may have been assigned as recently as when the teen was age 13.

A further important feature of our natural experiment is the comparatively long exposures DHA households had to their assigned neighborhoods, due to the fact that the subsidy they received was attached to the site instead of being portable as in the case of a voucher. Our sample of households had a 6-year mean (5 median) DHA residential duration, approximately twice as long as reported for the MTO experimental group (mean = 2.7 years; median = 3.3 years). Recent work by Wodtke et al. (2011), Crowder and South (2011) and Moulton, Peck and Dillman (2014) stress the importance of taking into account the length of time children are exposed to particular neighborhood contexts, lest one underestimate the true effects that neighborhoods have on them.

[5]Of the post-1986 vintage tenants residing in conventional public housing developments at the time of the Denver Child Study interviews, 99 percent were originally placed in such; only one percent moved in from dispersed housing. Of the post-1986 vintage tenants residing in dispersed housing at that time, 94 percent were originally placed in such; six percent moved in from the conventional developments. Moreover, an unknown number of these transfers were involuntary, required by regulations after changes in family size or composition.

[6]Slightly more than one-third of all caregivers interviewed in the study were former DHA residents.

[7]Or, if the teen was younger than 18 at time of survey, a majority of years between age 14 and time of survey.

The use of natural experiments inevitably raises questions about the generality of results. We believe that our findings can fairly be generalized to low-income, Latino and African American families who apply for and remain on the waiting list long enough to obtain public housing. As such, it may not be fully generalizable to the population of minority families who obtain other subsidized rental housing (such as vouchers), and may not be to the larger population of minority families who qualify for housing assistance but do not receive it in the U.S. Nevertheless, it is similar to–yet considerably more general than–the populations forming the samples for the oft-cited MTO-based scholarly studies noted above because the DHA sample is not constrained to residents of severely disadvantaged public housing estates that were willing to participate in a social research project.

Data Collection in Denver

Denver Child Study Survey of Current and Former DHA Households

We developed and fielded during 2006–2008 the Denver Child Study, a telephone survey (conducted in person for about 20 percent of sample who had no landline phones) that collected retrospective and current information about the household, adults and children. Detailed information related to multiple domains of outcomes was gathered for all eligible children associated with each household. Each household's residential mobility history was obtained so it could be associated with neighborhood developmental context for children. Study eligibility criteria were established before the survey from DHA records and included: (1) presence of children in the home when they moved into DHA; (2) family remained in DHA housing for at least two years; and (3) family first entered DHA in 1987 or later (when DHA's current quasi-random assignment process came into operation); and (4) African American or Latino ethnicity of children identified.[8]

Attempts to recruit subjects for the study were made by mail and phone, in both English and Spanish when appropriate. Compensation for participation took the form of either cash or gift card. We estimate a participation rate of 56.5 percent, with most non-participation due to our inability to locate the household; less than 6 percent refused to participate once contacted. Our team successfully completed 710 interviews with the parents or primary caregivers of eligible households whose surveys subsequently passed our rigorous data verification and reliability processes. Details of sampling, participation rates, and profiles of eligible and participating households are available from the authors.

Teens analyzed as part of this study were (current or past) members of these 710 households who were ages 15–33 by the time of our survey and whose parents' were assigned by DHA

[8]These criteria yielded an initial sample of 4,323 current and former DHA residents. Respondent data obtained from the DHA database were updated using several DHA internal databases to verify current contact information. These data were cross-verified using an array of automated search engines (Anchor, Intellius, and Lexis-Nexis) as well as several Internet-based people search and telephone directories (e.g., Anywho). These additional search engines identified deceased residents (N=80 or 1.9 percent). Telephone screening and on-site canvassing by study interviewers identified households that did not meet study eligibility criteria (N=51 or 1.2 percent), households whose primary language was neither English nor Spanish (N=15 or 0.3 percent), and households that did not have working telephones (406 or 9.4 percent). Return mail from the Post Office accounted for 1,534 or 35.5 percent of the initial sample households, primarily comprised of former DHA residents. Another 804 households or 18.6 percent of the initial sample households had both return mail and non-working telephones. This reduced the number of "reachable" households in the final sample to 1,433.

before the given child reached age 14[9] (N=444 with information on all variables used in multivariate analyses in "ever in DHA" sample).

Our Denver Child Study survey collected information on a wide variety of parental/caregiver ("caregiver" hereafter) and household characteristics that we employed as controls; these are listed in Table 1. This included conventional information about caregiver national origin, disability status, fertility, cohabitation and residential mobility histories, and educational attainment and employment while the focal child was in high school.[10] Less conventionally, the survey asked respondents about whether since becoming a parent they had regularly used: a. alcohol; b. marijuana and/or other illegal drugs; if either, we coded this as a dummy. The survey also asked questions that permitted us to measure a series of stressful household events from which we created a "household economic stressors index" (scaled 0–5). Caregivers were asked whether and when they experienced any of the following events: a. Unemployed a month or more?; b. Have a major illness or injury?; c. Have too little money to buy enough food for your family?; d. Have your electricity, gas, or phone service cut off?; and e. Get evicted from your home? This index was incremented by one for each of the above circumstances experienced by the household while the subject was between ages 14–18. The survey also included the Center for Epidemiological Studies-Depression Scale (CES-D);[11] details are available from the authors. All of the above time-varying characteristics (with the exception of CES-D) were measured as an average for the period of the observed teen's ages 14–17).[12] We believe that this battery of characteristics adequately controls for the wide range of household contextual dimensions related to role modeling, teen supervision, parenting behavior, attitudes, norms, and economic resources that mold teens in ways that would affect their labor force outcomes.

Caregiver and household characteristics for our sample teens as portrayed in Table 1 clearly reflect their disadvantaged circumstances. Their mean income was $10,600; 45 percent were not employed full time; 33 percent had no high school diploma and 38 percent had only a high school diploma. Five percent of caregivers were disabled. Sample households often faced challenges: 13 percent of caregivers were admitted regular alcohol, marijuana and/or drug users; 25 percent exhibited symptoms of depression; and they faced on average 1.4 incidents of acute financial crisis and a third had no health insurance while the focal teenager was ages 14–17.

Characteristics of Teens Analyzed and Their Employment Outcomes

The *Denver Child Study* survey asked caregivers to supply information about all their children with whom they had lived in DHA public housing for at least one year. In this

[9]This criterion was imposed to insure that even the youngest children analyzed in this paper had at least a year of exposure to the quasi-randomly assigned neighborhood, the characteristics of which were used as predictors of teen employment outcomes.

[10]We also assessed caregiver gender; virtually all were female so it is not included as a covariate. The average interval between interview date age 18 for focal teens was 3 years (ranging from 0 to 12 years). While subject to recall bias, we would posit that caregivers would be able to remember if a child was working during high school years and generally how long; they would be more likely to have problems remembering teens' income, which we did not request.

[11]We use a dummy variable indicating whether the parent exhibited sub-clinical or clinical depressive symptomatology (score at least 16 on the CES-D scale); Radloff (1977).

[12]The depression scales was the exception, measured at time of survey. All other variables are measured annually, so values are averaged over the four years corresponding to focal teen's ages 14–17.

manner we collected detailed information about residential histories (including living outside of the parental and/or caregiver's home), health, exposure to violence, behaviors and activities, marital/fertility histories, education and (for older children), labor market outcomes during their teen years and early adulthood. The teen characteristics utilized as control variables and the employment outcomes we analyzed are listed in Table 1. These controls include gender and ethnicity (measured by dummy variables denoting joint gender-ethnic combinations), dummy variables denoting ages 15, 16 and 17 at time of survey, and whether they were the first-born child. Finally, we controlled for macroeconomic prospects by measuring the percentage change in U.S. Gross Domestic Product during the year the teen first worked (or age 18 if not worked).

In our analysis sample we have a slight over-representation of Latino males (32 percent) compared to the other gender-ethnic groups: Latinas comprise 26 percent, African-American females 24 percent, and African-American males 18 percent.[13] The average age of those whose teen employment outcomes we analyze was 20; one-quarter were under age 18 at time of survey.

We analyze two teen labor market outcomes for the period prior to turning age 18: (1) whether ever employed; (2) the number of hours worked weekly on average (including zero). We ascertain these outcomes on the basis of the *Denver Child Study* caregiver survey respondent's responses to the questions, "Were any of your children employed before age 18? If yes, on average how many hours per week did __[teen]__work before age 18?" Forty-four percent of our sampled teens worked prior to age 18. Sample teens worked 8.8 hours weekly, averaged across workers and non-workers. As noted in the introduction, though some employment as a teen typically provides valuable job experience, working more than 20 hours weekly has been observed to interfere with secondary school achievement. We thus conduct a supplemental analysis of whether the individual worked more than 20 hours weekly, on average, prior to age 18 (details are available from the author). Twenty-seven percent worked more than 20 hours per week.[14]

Characteristics of Neighborhoods Experienced during Ages 14–17

It is generally accepted that "neighborhood" has both objective "space" dimensions (i.e., economic, demographic, social indicators associated with geographies) and subjective "place" dimensions (i.e., the human experience of territory) (Fitzpatrick and LaGory, 2011). In order to measure context as comprehensively as possible, we obtained a wide variety of neighborhood data about both dimensions from three sources; each source provided information about a different geographic scale of neighborhood. We averaged the annual values of each neighborhood indicator that the teen experienced during ages 14–17 to obtain our measures of contextual exposure. Descriptive statistics are presented in Table 1. As amplified at the end of this section, our goal was to employ one or more reasonable proxy for each of the neighborhood effect mechanisms elucidated above. As in the case of time-varying household characteristics, all of our measures of neighborhood context were

[13]These statistics apply to the "ever in DHA" sample but are comparable in the "majority of high school in DHA sample" as well.
[14]We note that although a teen may legally obtain a work permit at age 14, a few caregivers reported that their children began working (presumably informally) at an earlier age.

averaged over the period when the focal teen was ages 14–17. The first neighborhood data source was the 1970, 1980, 1990 and 2000 decennial U.S. Census, where we used census tract geographic scale.[15]. We employed the *Neighborhood Change Data Base* (a Geolytics proprietary product) for this information because it adjusts data to account for potential changes in tract boundaries between decennial censuses. For estimates of non-census year data, we used linear interpolation or extrapolation. We gathered indicators that have been widely employed in prior research on neighborhood effects, including percentages of: households moving in during the prior year, female-headed households, families below the poverty line, unemployed adults, non-Latino, African American population, Latino population, foreign-born population, homes that are renter-occupied, homes built before 1940 and mean occupational prestige (based on the U.S. General Social Survey prestige score weighted by the observed proportional distribution of occupations of employees in the tract). Given high correlations among several of these variables, we conducted principal components analysis that consistently across the 1970–2000 censuses produced a single component comprised of the roughly equally weighted sum of census tract percentages of: poor, unemployed, renters, and female household heads. We call this our neighborhood social vulnerability score.

The second source was subjective indicators based on responses of the parents interviewed in our Denver Child Study.[16] For each neighborhood in which they lived while they were raising children, we asked the caregiver to respond to a battery of questions related to the location's assets and liabilities.[17] Respondents implicitly defined their neighborhood as they wished. From the responses we devised three variables (neighborhood social capital index, social problems index, and institutional resources scale) and two dichotomous measures of the presence of hospitals or health clinics and bad peer influences in the neighborhood.[18] The social capital index (range from 0–6) was incremented by one for each of the following respondent descriptions of people in the neighborhood who: could get together to solve neighborhood problems; would watch out for their children and property; knew them and their children by name; were individuals they and their children could look up to them; or could be counted on in times of trouble, and whether the respondent participated in any organizations located in the neighborhood (e.g., block clubs, tenant groups, religious organizations and the like). The neighborhood social problems index (range 0–5) was incremented by one for each of the following conditions: people selling drugs; gang activity; homes broken into by burglars; people being robbed or mugged; people getting beaten or raped. We used Item response theory (IRT) analysis to generate a latent factor score of neighborhood resources as assessed by the caregiver. Resources included parks, recreation centers, mentoring or counseling centers for children, and good police protection. Higher values indicate higher probability of neighborhood having these resources within the neighborhood. All the aforementioned variables proved reliable; details are available from

[15]Unfortunately, 2010 Census information was not yet available when these indicators were devised.
[16]Recent research has shown that such subjective information based on resident's perceptions of neighborhoods provide important additional explanatory power in modeling a variety of economic outcomes (Furtado, 2011).
[17]This similar to the oft-used approach to obtain subjective neighborhood indicators; see Muhajarine et al. (2008)
[18]This was operationalized in our model as the proportion of years during ages 14–17 when the youth was residing in a neighborhood where the parent had identified the presence of "many children or teens getting into trouble."

the authors. Respondents indicated whether hospitals or health clinics were located in the neighborhood; we coded a dummy variable indicating affirmative responses.[19]

The third source of neighborhood information was the Denver-based Piton Foundation's *Neighborhood Facts Database*, which provided small area-based, annually measured information culled from Denver administrative databases that are not provided by the Census. We employed violent crimes and property crimes reported to police per 1,000 population, and confirmed cases of child abuse and neglect per 1,000 children. These Piton Foundation data are aggregated to 77 named areas consisting of two census tracts, on average, and thus are measured at a larger spatial scale than our census-based data.[20]

Given the unusually large number of neighborhood indicators (15) we employ, the potential issue of multicollinearity must be addressed. As is clear from the Appendix table, there is a subset of indicators that, unsurprisingly, have large bivariate correlations in the range of .67–.80: social vulnerability, violent crime, property crime and child abuse. Occupational prestige, percent Latino and percent foreign-born are also strongly positively correlated. Nevertheless, our diagnostic tests revealed that none of these indicators evinced a Variance Inflation Factor (VIF) greater than 8.4 in any of our samples, well below the 10.0 threshold suggested by Kutner, Nachtsheim and Neter (2004). The only indicators with VIFs above the more conservative threshold of 5.0 were: percent Latino, social vulnerability, violent crime and occupational prestige. Given these few borderline VIFs, we conducted numerous exploratory tests of the robustness of the conclusions reported below by re-estimating our models with alternative subsets of neighborhood indicators.

Our neighborhood indicators above serve as proxies for the aforementioned causal processes as follows:

- *Socialization:* occupational prestige, percentage foreign-born population, negative peers (re: values, role models and peers); social capital (re: degree to which local socialization forces will be influential)
- *Networks:* social capital (re: local connections); occupational prestige (re: quality of resources local networks provide)
- *Social Disorder:* social problems; social vulnerability; rate of moving in during prior year (re: social control and collective efficacy); violent crime rate; child abuse rate
- *Exposure to Violence:* social problems; violent and property crime rates; child abuse rate

[19]All respondent-assessed neighborhood characteristics relate to a single residential address and thus do not vary unless the household moves. If the household moves while the focal teen is aged 14–17 there will be two or more subjective evaluations of these places constituting each indicator. Our summary indicator computes a weighted average of these assessments based on the number of years the teen lived there during the 14–17 period.

[20]We remind the reader that we have neighborhood variables measured at three distinct geographic scales: (presumably) small, respondent-defined neighborhoods, census tracts, and Piton neighborhoods (approximately two tracts in size. This means that there is little nesting of households in a classic multi-level data structure even at the largest scales. Neighborhoods are always changing, so even if two households were occupying the same neighborhood simultaneously there would be no duplication of neighborhood indicator values unless their children were of identical ages in the 14–17 period.

- *Competition:* occupational prestige
- *Stigmatization:* occupational prestige; percentage foreign-born population; social vulnerability
- *Physical Environment:* percentage of dwellings built before 1940
- *Institutional Resources:* institutional resources factor score, presence of hospitals and clinics

Creation of Analytical Databases

We spent considerable effort cleaning, reconciling and augmenting the survey data. When our audits revealed inconsistencies or omissions in the responses, we attempted to contact respondents again and seek clarifications. Information provided by respondents on their residential histories was cross-checked with residential location information contained in the DHA administrative databases and Lexis-Nexis files.

Once residential history information obtained on the survey was verified for accuracy, we geo-coded each address, using the U.S. Bureau of the Census' *American FactFinder* website utility. In cases where respondents could not recall specific addresses but only proximate cross-streets, we verified these locations using MapQuest and then identified the corresponding census tract using the aforementioned Census website showing tract boundaries. This procedure provided the census tract corresponding to each location in respondents' residential histories, which, in turn, permitted us to match each location to the aforementioned battery of neighborhood indicators for census tract neighborhoods. We were able to successfully link 92 percent of the residential locations identified by respondents.

We then transformed these data for households and neighborhoods into the format of a *child-year unit of observation*. We aggregated information across child-years 14–17 to obtain measures of adolescent developmental context, using only child-years subsequent to the parents' random assignment to a neighborhood by the DHA.[21]

Analytical Approach

We employ both standard and mixed-effects logistic regression models to estimate robustly the odds of working as a teen, based on time-invariant predictors and time-varying predictors measured as averages during (ages 14–17). Specifically, we first estimate a standard logit model employing robust standard errors to account for clustering of children in the same family.[22] As a robustness check we estimate a mixed-effects logit model specified as one level conditional on a set of family random effects $\boldsymbol{u_i}$:

$$\Pr y_{ij}=1\boldsymbol{u_i}=H(x_{ij}\beta+z_{ij}\boldsymbol{u_i})$$

[21]It also would have been interesting to explore measures of cumulative context since birth. Unfortunately, inadequate sample sizes for child-years subsequent to random assignment to DHA precluded this exploration.

[22]For the two logistic models we used Stata's LOGIT and XTMELOGIT algorithms. We do not need to worry about clustering at the neighborhood level here because children who live in the same neighborhood are experiencing a different value of the neighborhood indicator because they are experiencing such for different years of their lives and different calendar years.

where: H is the logistic cumulative distribution function, i = the number of families, j = the number of observations within each family, y_{ij} is the binary economic outcome, x_{ij} are the covariates and β their associated regression coefficients. Since this is a random intercept only model, z_{ij} is a scalar of 1. When the number of observations within each cluster (i.e., family) is small and unbalanced across clusters, as it is in our study, mixed-effects models likely provide less biased parameter estimates (Cheah, 2009). Unfortunately, they are considerably more sensitive to small sample sizes, often failing to converge and excluding variables they determine are perfectly predictive.

Our measure for weekly hours worked is highly positively skewed because 56 percent of the sample worked zero hours. We therefore employ the well-known Tobit estimation procedure (Tobin, 1958).[23]

Results

Estimated logit and mixed-effects logit odds ratios and standard errors for models predicting whether the teen ever worked ages 14–17 are presented in Tables 2 and 3, respectively, for all three samples of residential histories in DHA. To aid comparability across indicators, we present results for normalized continuous predictors. Overall, the models perform well: high chi-squared statistics and respectable pseudo R-squares in the .20–.24 range across the three samples. Results for the Tobit models of average weekly hours worked are presented in Table 4. They offer less explanatory power (pseudo R-squares in the .06 to .07 range) but still are highly significant overall.

Teen Characteristics, Household Context and Employment Outcomes

Consider first the significant individual- and family-level predictors. Teens who were younger at the time of our survey clearly were less likely to have worked, as would be expected. Compared to those 18 and older at time of survey, those 15 years and younger had 90 to 93 percent lower odds of ever working and on average they worked 25 to 27 fewer hours weekly, depending on the analysis sample. Compared to those 18 and older at time of survey, 16 year-olds had 65 to 71 percent lower odds of ever working and on average worked 10 to 12 fewer hours weekly.

Teens whose families experienced a one standard deviation-higher stressor index had 38 percent lower odds of being employed and would be predicted to work three to four hours less, on average. This could imply that, far from being a spur to more work, such stressful incidences may prove psychologically and/or physically debilitating to teen work effort.[24] This interpretation is reinforced by the finding that higher household income predicted greater chances of teens being employed and more hours of work. The stronger resource base associated with more economic stability among low-income families apparently supports the human capital of their teens in ways that enhances their employment prospects.

[23]The coefficient of a covariate in a Tobit model should be interpreted as the net effect of: (1) the change in the dependent variable for those with positive values, weighted by the probability of having such values; and (2) the change in the probability of having positive values, weighted by the expected value of the dependent variable when it is positive (McDonald and Moffit, 1980).

[24]We admit that causation may run in the opposite way; low-income households in which teens do not work may be more likely to experience economic stress.

Teen Neighborhood Context and Employment Outcomes

Given the focus of this special issue on neighborhood social mix, we conducted a preliminary exploration using only the subset of neighborhood indicators related to socioeconomic and demographic characteristics: social vulnerability (percentages of poverty, unemployment, renters and female-headed households), occupational prestige, and percentages of Latino, African American and foreign-born residents. Wald chi-squared tests revealed that only at marginal significance levels (0.05–0.07 depending on the sample) could the null hypothesis that all coefficients of the aforementioned variables were zero be rejected. This suggests that various aspects of social mix *alone* did not convincingly affect the employment prospects of our aggregate sample of low-income Latino and African American teens. (As shown below, however, a stronger impact was observed for African American teens).

A different conclusion emerged when we estimated our models with our holistic set of indicators. In this case, Wald chi-squared tests revealed that one could reject the null hypothesis that all coefficients of the neighborhood variables were zero at conventional significance levels (0.02–0.04 depending on the sample). In particular, three indicators proved to be robustly predictive across alternative analysis samples and our multicollinearity checks involving permutations of included neighborhood variables. Higher rates of property crime, child abuse and of older housing stock were associated with greater odds of teen employment A one standard deviation-higher neighborhood property crime rate experienced during ages 14–17 was associated with 76 to 109 percent higher odds of ever being employed as a teen, depending on sample. Teens experiencing a one standard deviation-higher neighborhood child abuse and neglect rate would be predicted to work 4.7 to 5.3 more hours weekly, depending on the analysis sample. Neighborhoods with a one standard deviation-higher percentage of pre-1940 housing stock were associated with 49 to 56 percent higher odds of ever working as a teen and about four more weekly hours of work. Before discussing these unexpected results, more insights can be gained by disaggregating by gender and ethnicity.

Ethnic and Gender Differences

It has been argued that intra-neighborhood causal mechanisms have efficacy only to the extent that people: (1) spend a substantial amount of time in the neighborhood; (2) are locally oriented in their social interactions; and (3) do not marshal sufficient resources to insulate themselves from these effects (South, 2001; Kling, Liebman and Katz, 2007; Pinkster, 2008; Galster, Andersson and Musterd, 2010; Sanbonmatsu et al., 2011; Sharkey and Faber, 2014). To explore this proposition, we stratified the core models, first according to gender, and then by ethnicity.[25] To maintain adequate subsample sizes we employ the "ever in DHA" sample results, with the same logit and Tobit estimation procedures employed across all strata as in the aggregate analyses to ensure comparability.[26] In overview, we find substantial heterogeneity in apparent neighborhood effects, consistent with the aforementioned theory and evidence. Indeed, only in rare cases were statistically

[25]In the full sample the Ns for these strata were as follows: 166 African Americans, 258 Latinos, 222 males, and 222 females.
[26]The mixed-effects logits did not converge for several samples and thus are not reported.

significant relationships in the aggregate sample replicated consistently across more than one stratum.

The aforementioned aggregate relationships between neighborhood crime rates and teen labor market outcomes were only strongly observed in the African American and male strata. Violent crime rates proved to be a consistent, statistically significant predictor for African Americans: a standard deviation increase in violent crime was associated with 83 percent lower odds of working and 9.7 fewer hours worked weekly, on average. For males the corresponding figure was 7.3 fewer hours worked weekly, on average. Violent crime was also associated with lower odds of working more than 20 hours weekly for both African American and male teens. The aggregate positive relationship between neighborhood property crime rates and ever working was strong only for the African American teen sample. A standard deviation increase in property crime was associated with over a six-fold increase in the odds of working and 8.6 more hours worked weekly, on average.

The positive associations between neighborhood pre-1940 vintage dwellings and teen labor force outcomes that emerged as significant in the aggregate models were almost exclusively produced from relationships emerging from the Latino stratum. For this group, a standard deviation increase in the percentage of older dwellings was associated with 109 percent higher odds of working and 7.1 more hours worked weekly, on average.

The aggregate positive relationship between neighborhood child abuse and neglect rates and hours worked manifested itself for females (7.9 more hours per standard deviation increase) and African Americans (14.3 more hours). This indicator also predicted substantially higher odds of African Americans ever working as teens and working more than 20 hours weekly.

Several additional neighborhood indicators proved predictive for particular groups. Prestige emerged as a statistically and economically significant predictor of fewer teen hours worked in two strata. A one standard deviation-higher neighborhood prestige score was associated with 7.6 fewer hours worked weekly by Latino teens and 8.0 fewer hours by male teens. Such an increase in prestige was also associated with substantially lower odds of working more than 20 hours weekly: 61 percent for Latinos and 54 percent for males. Two additional aspects of context proved important for African American teens. Access to hospitals and clinics was associated with: 94 percent higher odds of ever working before age 18, 154 percent higher odds of working more than 20 hours and 5.8 more hours worked weekly, on average. For males such access was associated with 4.0 more hours worked. African American teens residing during high school in a neighborhood with a one standard deviation higher social vulnerability score would be predicted to have 80 percent lower odds of ever working as teens and 10 fewer hours worked, on average.

Discussion

In overview, we find that several aspects of neighborhood context are statistically and substantively important predictors of employment outcomes for low-income, minority teens, though typically not identically for all groups. Employment outcomes for African American teens are especially strongly influenced by many dimensions of neighborhood context. Of

special relevance, some of these neighborhood indicators relate to socioeconomic composition and thus speak directly to the policy debate regarding "social mixing." Below we organize the discussion around thematic categories of neighborhood context and attempt to link findings with theories of neighborhood effects mechanisms articulated above.

Neighborhood Socioeconomic Composition

Two indices related to neighborhood social status proved predictive of teen employment outcomes in several strata: neighborhood social vulnerability and occupational prestige. Residing in a more socially vulnerable neighborhood was associated with unambiguously inferior teen employment prospects for African Americans: lower odds of being employed and fewer hours worked, though no effect on the odds of working 20 hours or more. This result is consistent with a longstanding literature on the pernicious employment effects of concentrated African American disadvantage (Wilson, 1987), which focuses on the socialization and network causal mechanisms. Residing in a higher prestige neighborhood was associated with more ambiguous outcomes for Latino and male teens: fewer hours of work but substantially lower odds of working more than 20 hours weekly. This latter result is consistent with the competition mechanism of neighborhood effects, suggesting that Latino male teens' economic prospects may be adversely affected by their inability to compete for local jobs with better-performing teens from higher-prestige local families. A more sanguine interpretation is also possible, however.

Both results can be understood from the perspective of the socialization and local networks mechanisms of neighborhood effects. Less socially vulnerable neighborhoods that surround their low-income, minority teens with higher prestige workers more likely expose these teens to norms and role models that encourage education with modest work experience in the short-term and high-wage employment (after educational credentialing) in the long-term. These contexts also likely provide access to networks of information about these productive educational and employment opportunities and the "soft skills" required to take full advantage of them. Our finding that higher prestige neighborhoods discourage Latino and male teens from working *more than 20 hours* (though not discourage them from working) is a salutary result consistent with strengthened short-term emphasis on education, given the evidence on the deleterious effects of working excessive hours on high school academic performance (Steinberg and Dornbusch, 1991;Steinberg, Fegley and Dornbusch, 1993; Warren, LePore and Mare, 2000; Sum et al., 2006; Mortimer, 2010).

These results and interpretations are also consistent with those produced by recent qualitative research on both the MTO and Gautreaux programs (as well as many prior statistical analyses).[27] Some low-income, minority MTO caregivers in advantaged (presumably, less-vulnerable, higher prestige than originally occupied) neighborhoods

[27]Although we note that the prior literature has a range of results on similarly-conceived "neighborhood disadvantage" variables, we stress that our results are not strictly comparable for two reasons. First, our score sums neighborhood percentages of: unemployment, poverty, female-headed households and renters; it does not include ethnic, racial, or nativity measures, as do most others. Second, our models control for a host of other neighborhood characteristics that are often associated with "disadvantaged neighborhoods" but for which other studies have no direct measures: notably crime, child abuse, institutional resources, bad peer influences, social problems, social capital, occupational prestige. Thus, other studies' "neighborhood disadvantage" variables serve as ambiguous proxies for a wide range of other attributes besides social status, and should not be used as precedents for results using our social vulnerability score.

stressed during interviews the value of adult role modeling of work habits for their teens and the "soft skill" enhancement that improved their employment prospects (Briggs, Popkin and Goering, 2010; Briggs et al, 2011). This mimics results from Gautreaux that showed how norms involving higher economic expectations in advantaged neighborhoods positively influenced lower-income African American teen in-movers (Rosenbaum, DeLuca and Tuck, 2005).

Neighborhood Safety

When interpreting impacts on teen employment outcomes, our results indicate that "neighborhood safety" should not be viewed as a homogeneous, uni-dimensional construct. On the contrary, we have found that property crime and child abuse indicators on the one hand, and the violent crime indicator on the other hand, appear to generate distinctive consequences. For low-income (especially male and African American) teens, living during high school in a neighborhood with higher violent crime rates seems to reduce their chances of employment and hours of work, but living in one with higher property crime and/or child abuse rates seems to have the opposite effect (especially for African Americans and females).

The observed inverse relationship between violent crime and teen employment chances is expected, though the underlying causal pathways may draw upon both social disorder and exposure to violence mechanisms. In violent neighborhoods there may be several factors related to actual or feared victimization: (1) higher incidences of teens being victimized and reacting in ways that render them less willing and/or able to secure employment; (2) greater fear among teens to seek employment in places and times that might make them more vulnerable to being victimized; and (3) greater reluctance among caregivers to allow teens to seek employment for fear that it might make them more vulnerable to being victimized.[28] We think that all these explanations are consistent with our finding of stronger effects among African American males, who are much more likely to be victimized.

The observed direct relationship between property crime rates and teen employment odds and hours (especially for African Americans and females) are unexpected and require further exploration. Several underlying causal pathways are plausible, however, which draw upon competition, exposure to violence, and socialization mechanisms. In neighborhoods with more property crime there may be higher incidences of teens' personal effects being targeted, which creates a stronger need to replace stolen or damaged goods that can create incentives to work. There might be increased competition from perpetrators of property crime involving the ostentatious display of personal consumption items, which may create incentives to work. Finally, there is potentially a spurious relationship being manifested: a positive correlation between property crime and non-residential land uses, which may serve as a proxy for locally available employment opportunities for teens (which we cannot measure in our models).

[28]There may also be a spurious relationship: fewer teen job opportunities within or nearby violent neighborhoods (which we cannot measure in our models).

The positive association between child abuse and neglect rates and teen employment, though also surprising, is plausibly related to a number of factors. In neighborhoods with higher child abuse and neglect rates there may be a normative structure that does not support educational achievement but instead emphasizes work. In such environs there also may be stronger incentives for teens to escape from unpleasant home environments via work. Our models show that such contexts yield substantially greater odds of working more than 20 hours weekly (especially for African American teens), likely to the detriment of teens' secondary school performance and long-term employment prospects. As such, child abuse rates may be the reverse of the process described above in the case of neighborhood occupational prestige. We note, however, that the child abuse-employment relationship may also be spurious. Such neighborhoods may be places of intensified scrutiny of low income families by welfare agency staff who are potential reporters of maltreatment (Cancian et al, 2010). Children there may not be subjected to greater incidences of maltreatment but rather there is greater likelihood of official *reporting* of such treatment when it occurs. The other activities of welfare agency staff may yield incidental benefits for teen employment in these neighborhoods.

Neighborhood Housing Stock, Resources and Institutions

The share of the neighborhood's housing stock that was built before 1940 produced an unexpected result. For the full sample (and especially Latinos) it was associated with greater odds of working and more hours worked as a teen. These results are inconsistent with the notion that older housing serves as a proxy for a less healthy environment for teenage development. Perhaps what is occurring is a spurious correlation with job accessibility, insofar as older, (typically heavily Latino-occupied) neighborhoods in Denver likely have a greater share of non-residential land uses and are more proximate to major employment centers, variables that we could not operationalize in our models, unfortunately.

Finally, we think it intriguing that spending more of one's high school years in a neighborhood well-served by a hospital or health clinic proved strongly predictive of all three teen employment measures for African Americans. This result is suggestive that, given the well-documented inferior health status and health insurance coverage of African American teens as a group, their young economic performance may crucially hinge on the local proximity of health care-giving institutions, especially in emergency situations. This is the only evidence providing support for the institutional resources mechanism of neighborhood effects.

Geographic Selection Bias Revisited

Recall that we argued above that it was informative to compare the range of estimates garnered from our three analysis samples, which consider different potential types of geographic selection post-initial assignment by DHA.[29] Comparison of Tables 2, 3 and 4 reveals that estimated neighborhood indicator parameters are not substantially different between the "ever in DHA," "currently in DHA" and "mostly in DHA (during high school)" samples. Moreover, there is no pattern of one sample producing consistently higher or lower

[29]In the case of our dichotomous outcome, estimates produced by two forms of logit estimators provide still another robustness check.

magnitudes of estimated neighborhood effects. This implies that relatively little systematic geographic selection bias was introduced by residential mobility or non-mobility subsequent to original assignment by DHA.

Policy Implications

Our study contributes to the formulation and reform of assisted housing and community development policy. Our findings suggest that well-formulated and targeted assisted housing and urban revitalization programs can yield substantial teen employment payoffs by changing their residential context, either by changing their current neighborhoods and/or by changing the neighborhoods in which they reside. Our study has pinpointed particular attributes of the residential environment that seem most predictive, thus giving a strategic guide to policymakers as to which directions and investments are likely to yield the greatest social gains.

Our results are particularly relevant for African American teens, whose prospects for employment appear to be strongly degraded by residence in socially vulnerable, violent neighborhoods that are bereft of medical care facilities. For them it seems clear that replacing such environments with more advantaged, “socially mixed” ones would be much preferable economically. For Latino teens the quantitative case for social mixing seems less compelling, at least for the outcomes investigated here. We recognize, however, the aforementioned findings regarding greater neighborhood occupational prestige suggesting that such contexts may help Latino teens focus on longer-term educational and employment performance by discouraging excessive hours of work.

Conclusions, Caveats, and Future Directions

Social scientists have struggled with the daunting methodological challenges of obtaining unbiased estimates of the impact of neighborhood experienced while a teen on young adult labor market outcomes, due primarily to parental geographic selection based on unobservables they may also influence teen outcomes. An innovative public housing program instituted by the Denver Housing Authority provides a unique opportunity to explore this issue because the DHA mimics a random assignment to neighborhood for families with children who apply for DHA housing. Our logistic and Tobit analyses found several statistically and economically significant neighborhood effects on the employment prospects of low-income, African American and Latino teens. For the sample as a whole, odds of teen employment and longer hours of work appear enhanced in neighborhoods with higher percentages of pre-1940 vintage housing, property crime rates and child abuse rates. The strength of these relationships was highly contingent on gender and ethnicity; such heterogeneous neighborhood effects are increasingly being observed (South, 2001; Kling, Liebman and Katz, 2007; Pinkster, 2008; Galster, Andersson and Musterd, 2010; Sanbonmatsu et al., 2011; Sharkey and Faber, 2014). Teen employment prospects of African Americans seemed especially degraded by residence in neighborhoods with higher social vulnerability and violent crime. We think that the bulk of these findings can be explained by the socialization, local networks, social disorder and exposure to violence mechanisms of neighborhood effects.

We urge circumspection in interpreting these results, inasmuch as these models make several simplifying assumptions about neighborhood effects and the measurement of neighborhood context (Galster, 2012). First, we measure *average* neighborhood conditions experienced during ages 14–17, thus potentially obscuring more extreme conditions that might be present during a few years that may have particularly potent impacts. Second, we do not investigate lagged or cumulative aspects of context, especially the potential durable impacts of early childhood neighborhood environments (Sampson, Sharkey, and Raudenbush, 2008; Musterd, Galster and Andersson, 2012). Third, we have not employed neighborhood indicators related to environmental pollution, place stigmatization or job access, due to unavailable information. Fourth, though our neighborhood measures are comprehensive compared to most neighborhood effects research, they do not provide direct measures of the causal processes that may link the distal environment to individual behaviors and outcomes. Though we have attempted to draw reasonable inferences about these processes, they are hardly definitive.

In a similar vein, we have not attempted to probe here potential intervening pathways in which neighborhood context may affect teens' exposure to violence, anti- and pro-social behaviors, nutrition, health, and schooling, which might reveal more about underlying causal mechanisms between the relationships we have observed between neighborhood and teen economic outcomes. These latter shortcomings will be addressed in future work through structural equation modeling.

A final set of limitations of our work relates to potential measurement errors. All data on households and teens were gleaned from surveys that had the potential for recall errors by respondents. Subjective assessments of neighborhoods by survey respondents were also subject to recall errors. Decennial census-based neighborhood indicators were interpolated, potentially masking rapidly tipping dynamic processes. Assuming that all such errors were random would imply that the statistical precision of our estimates would be degraded, though our estimated coefficients should not be biased.

Despite limitations, our results clearly imply that policymakers aiming to enhance economic opportunities for low-income, minority teens should be cognizant of neighborhood as an important developmental context. Early adult performance in the labor market is clearly influenced by more than personal or family characteristics of such teens, if the findings of this study can be generalized. The daunting policy challenge is encouraging the creation of and access to neighborhood environments that can be more developmentally friendly to the least-advantaged teens.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Appendix: Bivariate Correlations Among Neighborhood Indicators ("Ever in DHA" sample, N=444)

Key to Neighborhood Indicators (all measured as means experienced during ages 14–18)

Survey Based Subjective Indicators

1 Residing with bad peer influences

2 Social Capital index

3 Social Problems index

4 Hospital / Clinics present

5 Institutional Resources score

Census Tract Indicators

6 Social Vulnerability score

7 Percentage African American population

8 Percentage Latino population

9 Occupational Prestige score

10 Percentage Foreign-Born population

11 Percentage of Households moving in during prior year

12 Percentage of Dwellings built before 1940

Piton Neighborhood Indicators

13 Violent Crime rate

14 Property Crime rate

15 Child Abuse and Neglect rate

References

Annie E. Casey Foundation. Youth and Work: Restoring Teen and Young Adult Connections to Opportunity. Baltimore, MD: The Annie E. Casey Foundation; 2012.

Briggs X. Moving up versus moving out: researching and interpreting neighborhood effects in housing mobility programs. Housing Policy Debate. 1997; 8:195–234.

Briggs, X.; Cove, E.; Duarte, C.; Turner, MA. How does leaving high-poverty neighborhoods affect the employment prospects of low-income mothers and youth?. In: Newburger, H.; Birch, E.; Wachter, S., editors. Neighborhood and Life Chances: How Place Matters in Modern America. Philadelphia: University of Pennsylvania Press; 2011. p. 179-203.

Briggs X, Ferryman K, Popkin S, Rendon M. Why did the Moving to Opportunity experiment not get young people into better schools? Housing Policy Debate. 2008; 19(1):53–91.

Briggs, X.; Popkin, S.; Goering, J. Moving To Opportunity. NY: Oxford University Press; 2010.

Brooks-Gunn, J.; Duncan, G.; Aber, J., editors. Neighborhood poverty: vol. 1 Context and consequences for children. New York: Russell Sage Foundation; 1997.

Burdick-Will, J.; Ludwig, J.; Raudenbush, S.; Sampson, R.; Sanbonmatsu, L.; Sharkey, P. Converging evidence for neighborhood effects on children's test scores: An experimental, quasi-experimental, and observational comparison. Washington, DC: Brookings Institution; 2010.

Cancian, M.; Shook Slack, K.; Yang, M. The effect of family income on risk of child maltreatment. Madison, WI: Institute of Research on Poverty; 2010 Aug. Discussion Paper No. 1385-10

Center for Labor Market Studies. The Depression in the Teen Labor Market in the US and the Industrial Midwest in 2011. Boston: Center for Labor Market Studies, Northeastern University; 2012 Jan.

Cheah, B. Clustering standard errors for modeling multilevel data, Working paper. Columbia University; 2009. (https://sites.google.com/site/bancheah/)

Clampet-Lundquist S, Edin K, Kling J, Duncan G. Moving at-risk youth out of high-risk neighborhoods: Why girls fare better than boys. American Journal of Sociology. 2011; 166:1154–1189.

Clampet-Lundquist S, Massey D. Neighborhood effects on economic self-sufficiency: A reconsideration of the Moving To Opportunity experiment. American Journal of Sociology. 2008; 114:107–143.

Commission on the Skills of the American Workforce. America's Choice: High Skills or Low Wages!. Rochester, NY: National Center on Education and the Economy; 1990.

Crowder K, South S. Spatial and temporal dimensions of neighborhood effects on high school graduation. Social Science Research. 2011; 40:87–106. [PubMed: 21180398]

DeLuca S, Dayton E. Switching contexts: The effects of housing mobility and school choice programs on youth outcomes. Annual Review of Sociology. 2009; 35:457–491.

DeLuca S, Duncan G, Mendenhall R, Keels M. *Gautreaux* mothers and their children. Housing Policy Debate. 2010; 20:7–25.

Dietz R. The estimation of neighborhood effects in the social sciences. Social Science Research. 2002; 31:539–575.

Duncan, G.; Connell, J.; Klebanov, P. Conceptual and methodological issues in estimating causal effects of neighborhoods and family conditions on individual development. In: Brooks-Gunn, J.; Duncan, G.; Aber, J., editors. Neighborhood poverty: Vol. 1, Context and consequences for children. New York: Russell Sage Foundation; 1997. p. 219-250.

Duncan G, Raudenbush S. Assessing the effect of context in studies of child and youth development. Educational Psychology. 1999; 34:29–41.

Ellen, I.; Turner, M. Do neighborhoods matter and why?. In: Goering, J.; Feins, J., editors. Choosing a better life? Evaluating the Moving To Opportunity experiment. Washington, DC: Urban Institute Press; 2003. p. 313-338.

Ellwood, D. The Spatial Mismatch Hypothesis: Are There Teenage Jobs Missing in the Ghetto?. In: Freeman, R.; Holzer, H., editors. The Black Youth Employment Crisis. Chicago: University of Chicago Press; 1986. p. 147-187.

Fernandes-Alcantara, A. Youth and the Labor Force: Background and Trends. Washington, DC: Congressional Research Service; 2010 May.

Fitzpatrick, K.; Lagory, M. Unhealthy Places: The Ecology of Risk in the Urban Landscape. New York: Routledge; 2000.

Freeman, R.; Holzer, H., editors. The Black Youth Employment Crisis. Chicago: University of Chicago Press; 1986.

Freeman, R.; Wise, D., editors. The Youth Labor Market Problem: Its Nature, Causes, and Consequences. Chicago: University of Chicago Press; 1982a.

Freeman, R.; Wise, D. The Youth Labor Market Problem: Introduction. In: Freeman, R.; Wise, D., editors. The Youth Labor Market Problem: Its Nature, Causes, and Consequences. Chicago: University of Chicago Press; 1982b. p. 1-16.

Friedrichs, J. Do poor neighborhoods make their residents poorer? Context effects of poverty neighborhoods on their residents. In: Andress, H., editor. Empirical poverty research in a comparative perspective. Aldershot: Ashgate; 1998. p. 77-99.

Furtado B. Neighbourhoods in urban economics: Incorporating cognitively perceived urban space in economic models. Urban Studies. 2011; 48:2827–2848.

Galster, G. The mechanism(s) of neighborhood effects: Theory, evidence, and policy Implications. In: Van Ham, M.; Manley, D.; Bailey, N.; Simpson, L.; Maclennan, D., editors. Neighbourhood effects research: New perspectives. Dordrecht, NL: Springer; 2012. p. 23-56.

Galster G, Andersson R, Musterd S. Who is affected most by neighbourhood income mix? Urban Studies. 2010; 48:2915–2944.

Gennetian, L.; Ludwig, J.; Sanbonmatsu, L. An overview of Moving To Opportunity. In: Newburger, H.; Birch, E.; Wachter, S., editors. Neighborhood and Life Chances: How Place Matters in Modern America. Philadelphia: University of Pennsylvania Press; 2011. p. 163-178.

Gennetian L, Sciandra M, Sanbonmatsu L, Ludwig J, Katz L, Duncan G, Kling J, Kessler R. The Long-Term Effects of Moving to Opportunity on Youth Outcomes. Cityscape. 2012; 14:137–168.

Gephart, M. Neighborhoods and communities as contexts for development. In: Brooks-Gunn, J.; Duncan, G.; Aber, J., editors. Neighborhood poverty: Vol I Context and consequences for children. New York: Russell Sage Foundation; 1997. p. 1-43.

Ginther D, Haveman R, Wolfe B. Neighborhood attributes as determinants of children's outcomes. Journal of Human Resources. 2000; 35:603–642.

Ginther D, Haveman R, Wolfe B. The Spatial Mismatch Hypothesis: What Has the Evidence Shown? Urban Studies. 1991; 28:105–122.

Ihlanfeldt K. The Effect of Job Access on Black and White Youth Employment: A Cross-Sectional Analysis. Urban Studies. 1991; 28:255–265.

Ioannides Y, Loury L. Job information networks, neighborhood effects, and inequality. Journal of Economic Literature. 2004; 42:1056–1093.

Jencks, C.; Mayer, S. The social consequences of growing up in a poor neighborhood. In: Lynn, L.; McGeary, M., editors. Inner-city poverty in the United States. Washington, DC: National Academy Press; 1990. p. 111-186.

Kain J. The Spatial Mismatch Hypothesis: Three Decades Later. Housing Policy Debate. 1992; 3(2): 371–462.

Kling J, Liebman J, Katz L. Experimental analysis of neighborhood effects. Econometrica. 2007; 75:83–119.

Kutner, M.; Nachtsheim, C.; Neter, J. Applied Linear Regression Models. 4. New York: McGraw-Hill Irwin; 2004.

Leonard, J. Comments on: The Spatial Mismatch Hypothesis: Are There Teenage Jobs Missing in the Ghetto. In: Freeman, R.; Holzer, H., editors. The Black Youth Employment Crisis. Chicago: University of Chicago Press; 1986. p. 185-190.

Ludwig J. Moving to Opportunity: Guest editor's introduction. Cityscape. 2012; 14(2):1–28.

Manski, C. Identification problems in the social sciences. Cambridge, MA: Harvard University Press; 1995.

Manski C. Economic analysis of social interactions. Journal of Economic Perspectives. 2000; 14:115–136.

McDonald J, Moffit R. The Uses of Tobit Analysis. The Review of Economics and Statistics. 1980; 62(2):318–321.

Mortimer J. The benefits and risks of adolescent employment. The Prevention Researcher. 2010; 17:8–11. [PubMed: 20835367]

Moulton S, Peck L, Dillman K. Moving To Opportunity's impact on health and well-being among high-dosage participants. Housing Policy Debate. 2014; 24(2):415–445.

Muhajarine N, Labonte R, Williams A, Randall J. Person, perception, and place: What matters to health and quality of life. Social Indicators Research. 2008; 85:53–80.

Musterd S, Galster G, Andersson R. Temporal Dimensions and the Measurement of Neighbourhood Effects. Environment and Planning A. 2012; 44:605–627.

O'Regan K, Quigley J. Labor Market Access and Labor Market Outcomes for Urban Youth. Regional Science and Urban Economics. 1991; 21(2):277–293.

O'Regan K, Quigley J. Spatial effects upon employment outcomes. New England Economic Review, Federal Reserve Bank of Boston. 1996 May.(issue):41–64.

Orr, L.; Feins, J.; Jacob, R.; Beecroft, E.; Sanbonmatsu, L.; Katz, L.; Liebman, J.; Kling, J. Moving to Opportunity: Interim impacts evaluation. Washington, DC: U.S. Department of Housing and Urban Development; 2003.

Pinkster, F. Living in Concentrated Poverty. Department of Geography, Planning, and International Development Studies, University of Amsterdam; 2008. Unpublished PhD dissertation

Radloff L. The CES-D Scale—A Self-Report Depression Scale for Research in the General Population. Applied Psychological Measurement. 1977; 1(3):385–401.

Rosenbaum J. Changing the geography of opportunity by expanding residential choice: Lessons from the Gautreaux program. Housing Policy Debate. 1995; 6:231–269.

Rosenbaum, J.; DeLuca, S.; Tuck, T. New capabilities in new places: Low-income families in the suburbs. In: Briggs, X., editor. The Geography of Opportunity. Washington, DC: Brookings Institution Press; 2005. p. 150-175.

Rosenbaum J, Reynolds L, DeLuca S. How do places matter? The geography of opportunity, self-efficacy, and a look inside the black box of residential mobility. Housing Studies. 2002; 17:71–82.

Ruhm C. The extent and consequences of high school employment. Journal of Labor Research. 2005; 16:293–303.

Sampson, R. How do communities undergird or undermine human development? Relevant contexts and social mechanisms. In: Booth, A.; Crouter, A., editors. Does it take a village? Community effects on children, adolescents, and family. Mahwah, NJ: Lawrence Erlbaum Associates, Inc; 2001. p. 3-30.

Sampson R. Moving to inequality: Neighborhood effects and experiments meet social structure. American Journal of Sociology. 2008; 114:189–231.

Sampson R, Morenoff J, Gannon-Rowley T. Assessing 'neighborhood effects': Social processes and new directions in research. Annual Review of Sociology. 2002; 28:443–478.

Sampson R, Sharkey P, Raudenbush S. Durable Effects of Concentrated Disadvantage on Verbal Ability among African-American Children. Proceedings of the National Academy of Sciences. 2008; 105:931–969.

Sanbonmatsu, L.; Ludwig, J.; Katz, L.; Gennetian, L.; Duncan, G.; Kessler, R.; Adam, E.; McDade, T.; Lindau, S. Impacts of the Moving to Opportunity for Fair Housing Demonstration Program after 10 to 15 Years. Washington, DC: U.S. Department of Housing and Urban Development, Office of Policy Development and Research; 2011.

Sharkey P, Faber J. Where, when, why, and for whom do residential contexts matter? Moving away from the dichotomous understanding of neighborhood effects. Annual Review of Sociology. 2014 (forthcoming).

Smolensky E. Children in the vanguard of the U.S. welfare state. Journal of Economic Literature. 2007; 45:1011–1023.

South, S. Issues in the analysis of neighborhoods, families, and children. In: Booth, A.; Crouter, A., editors. Does It Take a Village? Community Effects on Children, Adolescents, and Family. Mahwah, NJ: Lawrence Erlbaum Associates, Inc; 2001. p. 87-94.

Steinberg L, Dornbusch S. Negative correlates of part-time employment during adolescence: replication and elaboration. Developmental Psychology. 1991; 27:304–313.

Steinberg L, Fegley S, Dornbusch S. Negative impact of part-time work on adolescent adjustment: evidence from a longitudinal study. Developmental Psychology. 1993; 29:171–180.

Sum, A.; Barnicle, T.; Khatiwada, I.; McLaughlin, J. Educational and Labor Market Outcomes for the Nation's Teens and Young Adults Since the Publication of America's Choice: A Critical Assessment. Rochester, NY: National Center on Education and the Economy; 2006.

Sum, A.; Gillis, D.; Palma, S. The Continued Crisis in Teen Unemployment in the US and Massachusetts. Boston: Center for Labor Market Studies, Northeastern University; 2012 Mar.

Symonds, W.; Schwartz, R.; Ferguson, R. Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century. Cambridge, MA: Report by the Pathways to Prosperity Project, Harvard Graduate School of Education, Harvard University; 2011.

Tienda, M. Poor people and poor places: Deciphering neighborhood effects on poverty outcomes. In: Haber, J., editor. Macro-micro linkages in sociology. Newbury Park, CA: Sage; 1991. p. 244-262.

Tobin, John. Estimation of Relationships for Limited Dependent Variables. Econometrica. 1958; 26:24–36.

Turner, M.; Comey, J.; Kuehn, D.; Nichols, A. Residential Mobility, High-Opportunity Neighborhoods, and Outcomes for Low-Income Families: Insights from the Moving to Opportunity Demonstration. Washington, DC: U.S. Department of Housing and Urban Development, Office of Policy Development and Research; 2012.

Van Kempen E. Poverty pockets and life chances. American Behavioral Scientist. 1997; 41:430–449.

Warren J, LePore P, Mare R. Employment During High School: Consequences for Students' Grades in Academic Courses. American Educational Research Journal. 2000; 37:943–969.

Wodtke G, Harding D, Elwert F. Neighborhood effects in temporal perspective: The impact of long-term exposure to concentrated disadvantage on high school graduation. American Sociological Review. 2011; 76:713–736. [PubMed: 22879678]

Table 1

Descriptive Statistics of Sampled Families, Youth, their Adolescent Neighborhoods and their Teen Outcomes

	Mean	Std. Dev.	Min	Max
Outcomes				
Ever worked prior to age 18	0.44	0.50	0	1
Ave. # hours worked weekly prior to age 18	8.80	11.62	0	42
Predictor Measures				
Child Characteristics				
Gender and ethnicity of child (omitted=African American male)				
Latina Female	0.26	0.44	0.0	1.0
Latino Male	0.32	0.47	0.0	1.0
African American Female	0.24	0.43	0.0	1.0
African American Male	0.18	0.39	0.0	1.0
First born in family (omitted=no)	0.39	0.49	0.0	1.0
Ave. # of siblings during HS	1.94	1.36	0.0	6.8
Age at time of survey	19.99	4.04	15.0	33.0
age 15	0.10	0.30	0.0	1.0
age 16	0.11	0.31	0.0	1.0
age 17	0.14	0.35	0.0	1.0
Caregiver and Household Characteristics				
Caregiver has depressive symptomatology (omitted=no)	0.25	0.43	0.0	1.0
Caregiver age at time of child's birth	24.86	7.15	13.4	62.9
Immigrant status (omitted=no)	0.14	0.35	0.0	1.0
Caregiver history of substance abuse (omitted=no)	0.13	0.33	0.0	1.0
Caregiver disability status (omitted=not disabled)	0.06	0.23	0.0	1.0
Caregiver educational attainment during HS (omitted=no degree)				
No H.S. diploma	0.33	0.47	0.0	1.0
H.S. diploma	0.38	0.49	0.0	1.0
Post H.S. technical certificate	0.16	0.37	0.0	1.0
College degree	0.13	0.33	0.0	1.0
Proportion of HS when two caregivers in household	0.33	0.45	0.0	1.0
Log of average household income during HS	2.03	2.96	−2.0	4.8
Caregiver not employed full-time during HS	0.45	0.50	0.0	1.0
Ave. household stressor scale during HS (range 0–5)	1.40	1.20	0.0	5.0
Proportion of HS when household had health insurance	0.77	0.42	0.0	1.0
Total # moves during HS	0.33	0.57	0.0	3.0
Macroeconomic Characteristics				
National GDP annual growth rate when child first worked	5.57	1.05	3.3	6.5
Neighborhood Characteristics				
Ave. prop. HS spent in neighborhood w/ bad peers	0.52	0.49	0.0	1.0

	Mean	Std. Dev.	Min	Max
Ave. social capital scale during HS (range 0–6)	3.64	1.58	0.0	6.0
Ave. social problems scale during HS (range 0–5)	2.08	1.86	0.0	6.0
Ave. social vulnerability scale during HS (range 0–400)	122.35	54.06	26.9	289.0
Ave. percent African American residents during HS	15.61	18.77	0.3	81.4
Ave. percent Latino residents during HS	55.08	21.18	5.3	91.9
Ave. occupational prestige score during HS (range (0–100)	36.96	3.24	31.4	47.2
Ave. percent foreign-born residents during HS	24.81	12.07	2.1	52.0
Ave. percent of residents who moved in preceding 12 months during HS	24.46	8.48	4.6	49.1
Ave. percent of HS living in neighborhood with hospitals and clinics	0.84	0.37	0.0	1.0
Ave. resource factor scale during HS	0.12	0.67	−1.7	0.9
Ave. percent of housing built before 1940 during HS	25.21	19.44	0.0	79.5
Ave. violent crime rate per 1,000 during HS	10.63	6.69	1.0	41.3
Ave. property crime rate per 1,000 during HS	55.73	33.02	9.9	162.7
Ave. child abuse and neglect rate per 1,000 during HS	10.13	6.23	1.9	35.5
Number of observations	444			

Note: “during HS” = average for ages 14–17 or ages 14 to age at time of survey if less than 17

Table 2

Logistic Regression Parameters for Ever Employed as Teen

Sample by Residential History in DHA during Teen Years	EVER IN DHA		CURRENTLY IN DHA		MOSTLY IN DHA	
Child Characteristics						
Latina Female	0.690	0.304	0.600	0.355	0.693	0.384
Latino Male	0.467	0.197	0.453	0.253	0.512	0.266
African American Female	0.520	0.174	0.388	0.197	0.456	0.212
First born in family (omitted=no)	1.367	0.354	1.586	0.480	1.562	0.462
Ave. # of siblings during HS	0.812	0.135	0.792	0.148	0.825	0.155
child age 15 at time of survey	0.094**	0.068	0.105**	0.085	0.094**	0.076
child age 16 at time of survey	0.291**	0.133	0.440	0.230	0.345*	0.179
child age 17 at time of survey	0.815	0.299	0.637	0.305	0.598	0.282
Caregiver and Household Characteristics						
Caregiver has depressive symptomatology (omitted=no)	1.193	0.386	1.347	0.486	1.307	0.461
Caregiver age at time of child's birth	0.813	0.142	0.782	0.158	0.792	0.155
Immigrant status (omitted=no)	0.869	0.335	0.907	0.370	0.867	0.349
Caregiver history of substance abuse (omitted=no)	0.930	0.380	0.818	0.338	0.760	0.314
Caregiver disability status (omitted=not disabled)	0.882	0.109	0.853	0.157	0.840	0.144
Caregiver had technical degree when child 1st worked (omitted=none)	0.754	0.341	0.539	0.295	0.452	0.238
Caregiver had HS diploma when child 1st worked (omitted=none)	0.967	0.307	1.013	0.343	0.917	0.312
Caregiver had college degree when child 1st worked (omitted=none)	0.794	0.373	0.778	0.382	0.756	0.360
Proportion of HS when two caregivers in household	0.859	0.113	0.963	0.148	0.960	0.144
Log of average household income during HS	1.812*	0.446	1.349	0.358	1.385	0.367
Caregiver availability to monitor child at least part-time during HS	1.635	0.764	0.837	0.421	0.944	0.479
Ave. household stressor scale during HS (range 0–5)	0.781	0.105	0.615**	0.114	0.623**	0.111
Proportion of HS when household had health insurance	1.101	0.144	1.078	0.151	1.062	0.147
Total # moves during HS	0.886	0.100	0.985	0.144	0.928	0.126
Macroeconomic Characteristics						
National GDP annual growth rate when child first worked	1.013	0.114	1.055	0.142	1.045	0.135

Sample by Residential History in DHA during Teen Years	EVER IN DHA		CURRENTLY IN DHA		MOSTLY IN DHA	
Neighborhood Characteristics						
Ave. prop. HS spent in neighborhood w/ bad peers	1.074	0.182	1.145	0.245	1.217	0.255
Ave. social capital scale during HS (range 0–6)	1.162	0.160	1.158	0.182	1.144	0.179
Ave. social problems scale during HS (range 0–5)	1.249	0.238	1.252	0.309	1.232	0.291
Ave. social vulnerability scale during HS (range 0–400)	0.785	0.239	0.552	0.219	0.593	0.221
Ave. percent African American residents during HS	0.740	0.159	0.836	0.260	0.856	0.246
Ave. percent Latino residents during HS	0.564	0.201	0.708	0.307	0.726	0.304
Ave. occupational prestige score during HS (range (0–100)	0.662	0.180	0.740	0.232	0.762	0.225
Ave. percent foreign-born residents during HS	1.058	0.256	0.885	0.256	0.880	0.251
Ave. percent of residents who moved in preceding 12 months during HS	1.168	0.204	1.316	0.301	1.346	0.298
Ave. percent of HS living in neighborhood with hospitals and clinics	1.276	0.180	1.033	0.191	1.143	0.201
Ave. resource factor scale during HS	0.805	0.185	1.165	0.333	1.020	0.285
Ave. percent of housing built before 1940 during HS	1.234	0.193	1.555*	0.329	1.491*	0.292
Ave. violent crime rate per 1,000 during HS	0.554	0.173	0.727	0.287	0.725	0.274
Ave. property crime rate per 1,000 during HS	1.775*	0.429	2.090*	0.600	1.776*	0.492
Ave. child abuse and neglect rate per 1,000 during HS	1.504*	0.296	1.410	0.315	1.475	0.327
Observations	444		339		352	
Log Likelihood	−244.5		−176.0		−185.4	
N clusters	272		218		226	
chi2	82.44		77.86		81.38	
p	0.0000398		0.000147		0.0000542	
Pseudo-R2	0.196		0.244		0.231	

Exponentiated coefficients; Robust SEs adjusted for clustering by CISID in 2nd column;

* p<0.05;

** p<.01:

*** p<.001

Table 3

Mixed-Effect Logit Parameters for Ever Employed as Teen

Sample by Residential History in DHA during Teen Years	EVER IN DHA		CURRENTLY IN DHA		MOSTLY IN DHA	
Child Characteristics						
Latina Female	0.51	(0.38)	0.54	(0.37)	0.62	(0.42)
Latino Male	0.36	(0.26)	0.40	(0.26)	0.44	(0.29)
African American Female	0.30*	(0.18)	0.30	(0.20)	0.34	(0.22)
First born in family (omitted=no)	1.81	(0.77)	1.93	(0.78)	1.98	(0.80)
Ave. # of siblings during HS	0.80	(0.21)	0.77	(0.18)	0.82	(0.19)
child age 15 at time of survey	0.032***	(0.033)	0.069**	(0.062)	0.059**	(0.053)
child age 16 at time of survey	0.14*	(0.11)	0.33	(0.24)	0.24	(0.18)
child age 17 at time of survey	0.57	(0.35)	0.52	(0.33)	0.48	(0.31)
Caregiver and Household Characteristics						
Caregiver has depressive symptomatology (omitted=no)	1.63	(0.96)	1.63	(0.83)	1.63	(0.84)
Caregiver age at time of child's birth	0.77	(0.21)	0.72	(0.18)	0.74	(0.18)
Immigrant status (omitted=no)	0.67	(0.50)	0.91	(0.55)	0.84	(0.52)
Caregiver history of substance abuse (omitted=no)	0.68	(0.49)	0.79	(0.48)	0.71	(0.44)
Caregiver disability status (omitted=not disabled)	0.76	(0.19)	0.77	(0.18)	0.76	(0.18)
Caregiver had technical degree when child 1st worked (omitted=none)	0.43	(0.34)	0.37	(0.27)	0.28	(0.22)
Caregiver had HS diploma when child 1st worked (omitted=none)	1.07	(0.63)	1.11	(0.54)	0.93	(0.46)
Caregiver had college degree when child 1st worked (omitted=none)	0.57	(0.47)	0.78	(0.55)	0.76	(0.55)
Proportion of HS when two caregivers in household	0.75	(0.18)	0.92	(0.19)	0.92	(0.20)
Log of average household income during HS	2.36*	(1.02)	1.39	(0.50)	1.50	(0.55)
Caregiver availability to monitor child at least part-time during HS	1.42	(1.17)	0.71	(0.53)	0.90	(0.66)
Ave. household stressor scale during HS (range 0–5)	0.53*	(0.15)	0.51*	(0.14)	0.48**	(0.13)
Proportion of HS when household had health insurance	1.20	(0.30)	1.05	(0.23)	1.04	(0.23)
Total # moves during HS	0.85	(0.17)	0.98	(0.19)	0.90	(0.18)
Macroeconomic Characteristics						
National GDP annual growth rate when child first worked	1.04	(0.20)	1.05	(0.20)	1.04	(0.20)

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Sample by Residential History in DHA during Teen Years	EVER IN DHA		CURRENTLY IN DHA		MOSTLY IN DHA	
Neighborhood Characteristics						
Ave. prop. HS spent in neighborhood w/ bad peers	1.09	(0.33)	1.14	(0.31)	1.24	(0.35)
Ave. social capital scale during HS (range 0–6)	1.36	(0.35)	1.30	(0.28)	1.29	(0.28)
Ave. social problems scale during HS (range 0–5)	1.49	(0.52)	1.37	(0.43)	1.36	(0.43)
Ave. social vulnerability scale during HS (range 0–400)	0.84	(0.48)	0.53	(0.27)	0.55	(0.29)
Ave. percent African American residents during HS	0.69	(0.28)	0.73	(0.30)	0.71	(0.30)
Ave. percent Latino residents during HS	0.39	(0.25)	0.58	(0.34)	0.56	(0.33)
Ave. occupational prestige score during HS (range (0–100)	0.47	(0.23)	0.61	(0.27)	0.60	(0.27)
Ave. percent foreign-born residents during HS	1.02	(0.43)	0.87	(0.34)	0.85	(0.33)
Ave. percent of residents who moved in preceding 12 months during HS	1.14	(0.36)	1.33	(0.40)	1.33	(0.41)
Ave. percent of HS living in neighborhood with hospitals and clinics	1.37	(0.33)	1.01	(0.24)	1.16	(0.27)
Ave. resource factor scale during HS	0.67	(0.28)	1.16	(0.43)	0.99	(0.37)
Ave. percent of housing built before 1940 during HS	1.82	(0.60)	1.90*	(0.59)	1.87*	(0.58)
Ave. violent crime rate per 1,000 during HS	0.24*	(0.14)	0.52	(0.25)	0.51	(0.25)
Ave. property crime rate per 1,000 during HS	2.87*	(1.44)	2.65*	(1.18)	2.29	(1.00)
Ave. child abuse and neglect rate per 1,000 during HS	2.24*	(0.90)	1.75	(0.61)	1.91	(0.68)
Observations	444		339		352	
Log Likelihood	−232.8		−172.9		−181.3	
chi2	31.44		32.21		31.76	
p	0.765		0.733		0.752	
Log Likelihood (basic logistic model)	−244.5		−176.0		−185.4	
chi_bar2 (XTME vs. Logistic)	23.25		6.123		8.201	
p for chi_bar2	0.0000007		0.00667		0.00209	

Exponentiated coefficients; Robust SEs in 2nd column;

* p<0.05;

** p<.01:

*** p<.001

Table 4

Tobit Model Parameters for Weekly Hours Worked as a Teen

Sample by Residential History in DHA during Teen Years	EVER IN DHA		CURRENTLY IN DHA		MOSTLY IN DHA	
Child Characteristics						
Latina Female	−5.170	3.898	−5.724	4.398	−5.181	4.419
Latino Male	−7.800*	3.961	−6.826	4.233	−6.703	4.262
African American Female	−6.115	3.543	−6.830	4.283	−6.542	4.247
First born in family (omitted=no)	3.035	2.547	3.668	2.704	4.052	2.737
Ave. # of siblings during HS	−1.370	1.320	−1.275	1.433	−0.799	1.457
child age 15 at time of survey	−27.024***	6.079	−24.877***	6.043	−25.932***	6.196
child age 16 at time of survey	−12.018*	4.676	−8.290	4.882	−10.211*	4.952
child age 17 at time of survey	−4.066	3.841	−8.127	4.416	−8.376	4.500
Caregiver and Household Characteristics						
Caregiver has depressive symptomatology (omitted=no)	0.795	2.876	1.505	3.178	1.577	3.231
Caregiver age at time of child's birth	−1.220	1.462	−1.348	1.558	−1.191	1.588
Immigrant status (omitted=no)	0.344	3.724	1.901	3.785	1.223	3.851
Caregiver history of substance abuse (omitted=no)	−0.993	3.568	−0.960	3.995	−2.285	4.067
Caregiver disability status (omitted=not disabled)	−1.052	1.228	−0.675	1.475	−0.894	1.477
Caregiver had technical degree when child 1st worked (omitted=none)	−1.932	3.741	−7.092	4.546	−8.832	4.618
Caregiver had HS diploma when child 1st worked (omitted=none)	0.617	2.863	0.576	2.971	−0.129	3.006
Caregiver had college degree when child 1st worked (omitted=none)	0.185	4.081	−0.217	4.311	−0.212	4.370
Proportion of HS when two caregivers in household	−0.933	1.218	−0.297	1.309	−0.272	1.326
Log of average household income during HS	6.210**	2.202	2.859	2.356	3.450	2.346
Caregiver availability to monitor child at least part-time during HS	5.236	4.256	−0.577	4.784	0.829	4.710
Ave. household stressor scale during HS (range 0–5)	−2.554*	1.270	−4.184**	1.536	−4.315**	1.527
Proportion of HS when household had health insurance	0.731	1.259	0.063	1.363	0.137	1.388
Total # moves during HS	−0.628	1.164	0.239	1.350	−0.243	1.335
Macroeconomic Characteristics						
National GDP annual growth rate when child first worked	0.742	1.180	1.305	1.310	1.132	1.331

Sample by Residential History in DHA during Teen Years	EVER IN DHA		CURRENTLY IN DHA		MOSTLY IN DHA	
Neighborhood Characteristics						
Ave. prop. HS spent in neighborhood w/ bad peers	2.083	1.517	1.714	1.708	2.446	1.731
Ave. social capital scale during HS (range 0–6)	0.830	1.295	0.604	1.334	0.649	1.352
Ave. social problems scale during HS (range 0–5)	0.584	1.711	0.360	1.920	0.008	1.917
Ave. social vulnerability scale during HS (range 0–400)	−3.729	2.880	−4.322	3.166	−3.923	3.230
Ave. percent African American residents during HS	−3.244	2.051	−1.859	2.439	−1.662	2.471
Ave. percent Latino residents during HS	−5.759	3.180	−2.545	3.555	−2.875	3.607
Ave. occupational prestige score during HS (range (0–100)	−5.536*	2.339	−3.253	2.568	−3.726	2.589
Ave. percent foreign-born residents during HS	0.468	2.241	−0.631	2.535	−0.845	2.561
Ave. percent of residents who moved in preceding 12 months during HS	1.825	1.674	3.210	1.889	3.189	1.941
Ave. percent of HS living in neighborhood with hospitals and clinics	2.379	1.291	0.101	1.530	0.784	1.496
Ave. resource factor scale during HS	−2.205	2.125	1.554	2.348	0.232	2.386
Ave. percent of housing built before 1940 during HS	2.666	1.421	3.995*	1.672	4.168*	1.693
Ave. violent crime rate per 1,000 during HS	−5.537*	2.553	−4.109	2.767	−4.497	2.825
Ave. property crime rate per 1,000 during HS	4.353	2.286	3.716	2.453	2.756	2.478
Ave. child abuse and neglect rate per 1,000 during HS	4.803*	1.992	4.723*	2.069	5.252*	2.125
constant	4.212	4.323	6.570	4.746	6.194	4.706
ancillary parameter	19.600***	1.138	18.307***	1.206	18.879***	1.229
Observations	442		337		350	
Log Likelihood	−981.167		−740.638		−767.437	
chi2	115.68		104.08		102.98	
p	0.000		0.000		0.000	
Pseudo-R2	0.056		0.066		0.063	

Standard errors in second column;

* p<0.05;

** p<.01:

*** p<.001

Table 5

Logistic Parameters for Ever Employed as Teen, by Gender and Ethnicity

Gender-Ethnic Strata within the "Ever in DHA" sample:	**Male**		**Female**		**African American**		**Latino**	
Child Characteristics								
Latina Female			1.637	0.824			1.350	0.435
Latino Male	0.196**	0.107						
African American Female					0.306	0.188		
First born in family (omitted=no)	1.322	0.617	1.315	0.458	2.235	1.317	1.032	0.396
Ave. # of siblings during HS	0.690	0.145	0.834	0.181	0.558	0.232	0.850	0.179
child age 15 at time of survey	0.033*	0.050	0.108*	0.104			0.294	0.253
child age 16 at time of survey	0.940	0.611	0.092**	0.076	0.033***	0.030	0.471	0.314
child age 17 at time of survey	0.627	0.339	1.105	0.667	1.013	0.834	0.915	0.484
Caregiver and Household Characteristics								
Caregiver has depressive symptomatology (omitted=no)	2.201	1.052	0.711	0.299	1.965	1.330	1.647	0.777
Caregiver age at time of child's birth	0.711	0.153	0.937	0.273	1.069	0.578	0.635*	0.139
Immigrant status (omitted=no)	2.609	1.377	0.268*	0.174	0.023**	0.031	1.119	0.480
Caregiver history of substance abuse (omitted=no)	0.583	0.298	0.964	0.597	0.417	0.278	1.742	1.006
Caregiver disability status (omitted=not disabled)	0.715*	0.119	1.052	0.180	1.113	0.287	0.916	0.154
Caregiver had technical degree when child 1st worked (omitted=none)	0.574	0.336	0.895	0.544	0.108	0.125	1.024	0.606
Caregiver had HS diploma when child 1st worked (omitted=none)	1.444	0.596	0.701	0.373	0.823	0.674	1.117	0.445
Caregiver had college degree when child 1st worked (omitted=none)	0.480	0.290	0.838	0.553	0.879	0.672	0.966	0.735
Proportion of HS when two caregivers in household	0.955	0.178	0.836	0.172	0.674	0.181	0.907	0.156
Log of average household income during HS	2.647**	0.948	1.287	0.501	5.864***	3.060	1.241	0.398
Caregiver availability to monitor child at least part-time during HS	3.236	2.336	0.772	0.557	5.988	6.339	0.916	0.559
Ave. household stressor scale during HS (range 0–5)	0.703	0.176	0.715	0.132	0.979	0.272	0.568*	0.131
Proportion of HS when household had health insurance	0.927	0.181	1.219	0.238	1.015	0.289	1.145	0.186
Total # moves during HS	0.727	0.156	0.852	0.135	0.796	0.182	0.941	0.143
Macroeconomic Characteristics								

Gender-Ethnic Strata within the "Ever in DHA" sample:	Male		Female		African American		Latino	
National GDP annual growth rate when child first worked	1.154	0.193	0.977	0.165	1.504	0.421	0.862	0.126
Neighborhood Characteristics								
Ave. prop. HS spent in neighborhood w/ bad peers	1.025	0.248	1.219	0.289	0.753	0.251	1.029	0.278
Ave. social capital scale during HS (range 0–6)	1.422	0.265	1.034	0.223	1.196	0.340	1.204	0.234
Ave. social problems scale during HS (range 0–5)	1.789	0.546	1.165	0.279	1.412	0.595	1.190	0.366
Ave. social vulnerability scale during HS (range 0–400)	0.754	0.341	0.619	0.262	0.204*	0.147	0.539	0.277
Ave. percent African American residents during HS	0.613	0.209	0.763	0.237	0.471	0.195	1.125	0.531
Ave. percent Latino residents during HS	0.641	0.339	0.503	0.257	0.318	0.246	0.554	0.292
Ave. occupational prestige score during HS (range (0–100)	0.528	0.194	0.609	0.283	0.434	0.273	0.516	0.185
Ave. percent foreign-born residents during HS	0.895	0.322	1.063	0.368	1.586	0.846	0.727	0.263
Ave. percent of residents who moved in preceding 12 months during HS	1.226	0.371	1.447	0.332	0.915	0.308	1.408	0.378
Ave. percent of HS living in neighborhood with hospitals and clinics	1.595	0.427	1.431	0.321	1.938*	0.588	0.927	0.198
Ave. resource factor scale during HS	0.937	0.314	0.585	0.206	1.035	0.500	0.859	0.265
Ave. percent of housing built before 1940 during HS	1.247	0.290	1.348	0.317	0.846	0.298	2.086**	0.513
Ave. violent crime rate per 1,000 during HS	0.404	0.196	0.477	0.227	0.169*	0.125	1.098	0.514
Ave. property crime rate per 1,000 during HS	1.620	0.500	2.025	0.737	7.435**	5.001	1.354	0.459
Ave. child abuse and neglect rate per 1,000 during HS	1.717*	0.447	1.728	0.612	8.706***	5.306	1.341	0.364
Observations	222		222		166		258	
Log Likelihood	−113.2		−113.3		−67.38		−140.3	
N clusters	171		166		102		158	
chi2	58.66		49.03		74.09		59.67	
p	0.00991		0.0724		0.000127		0.00785	
Pseudo-R2	0.260		0.249		0.414		0.200	

Exponentiated coefficients; Robust SEs adjusted for clustering by CISID in 2nd column;

* p<0.05;

** p<.01:

*** p<.001

Table 6

Tobit Parameters for Hours Worked as Teen, by Gender and Ethnicity

Gender-Ethnic Strata within the "Ever in DHA" sample:	**Male**		**Female**		**African American**		**Latino**	
Child Characteristics								
Latina Female			2.154	4.224			1.627	3.119
Latino Male	−14.338**	4.693						
African American Female					−6.052	3.283		
First born in family (omitted=no)	2.110	3.696	2.965	3.583	4.746	3.505	−0.782	3.512
Ave. # of siblings during HS	−2.703	1.849	−1.215	2.016	−4.674*	2.148	−0.728	1.735
child age 15 at time of survey	−31.348**	10.248	−25.949**	7.852	−163.718	0.000	−13.100	7.451
child age 16 at time of survey	0.121	6.612	−22.710**	7.222	−22.176**	6.760	−6.688	6.472
child age 17 at time of survey	−6.685	5.348	−0.435	5.703	−5.726	5.458	−3.179	5.395
Caregiver and Household Characteristics								
Caregiver has depressive symptomatology (omitted=no)	6.394	3.987	−5.734	4.273	0.993	4.517	3.965	3.957
Caregiver age at time of child's birth	−2.971	2.028	1.176	2.334	0.564	2.642	−3.969*	1.853
Immigrant status (omitted=no)	10.620*	5.034	−11.786*	5.777	−27.264*	11.863	3.164	4.322
Caregiver history of substance abuse (omitted=no)	−4.499	5.283	−0.295	4.748	−7.372	4.699	7.196	5.400
Caregiver disability status (omitted=not disabled)	−2.056	1.826	−0.045	1.697	−0.283	2.064	−0.429	1.591
Caregiver had technical degree when child 1st worked (omitted=none)	−5.546	5.590	1.507	5.357	−11.901	6.030	−0.489	5.037
Caregiver had HS diploma when child 1st worked (omitted=none)	2.640	3.907	−0.743	4.221	−4.781	4.863	3.122	3.565
Caregiver had college degree when child 1st worked (omitted=none)	−4.879	6.124	2.381	5.568	−0.387	5.396	2.994	6.762
Proportion of HS when two caregivers in household	−0.305	1.729	−0.904	1.774	−2.784	1.960	−0.509	1.631
Log of average household income during HS	9.663**	3.002	1.570	3.294	11.555**	3.525	2.116	2.927
Caregiver availability to monitor child at least part-time during HS	10.587	5.898	−2.570	6.126	13.256	7.000	−1.045	5.790
Ave. household stressor scale during HS (range 0–5)	−3.213	1.923	−3.383	1.752	−0.713	1.779	−4.643*	2.007
Proportion of HS when household had health insurance	−0.881	1.825	1.727	1.788	−0.575	1.936	1.074	1.687
Total # moves during HS	−1.580	1.801	−0.878	1.566	−1.293	1.652	0.446	1.514
Macroeconomic Characteristics								

Gender-Ethnic Strata within the "Ever in DHA" sample:	Male		Female		African American		Latino	
National GDP annual growth rate when child first worked	2.603	1.681	−0.093	1.661	3.150	1.789	−1.261	1.541
Neighborhood Characteristics								
Ave. prop. HS spent in neighborhood w/ bad peers	2.046	2.136	3.278	2.168	1.545	1.982	1.156	2.201
Ave. social capital scale during HS (range 0–6)	2.567	1.748	−0.946	2.008	−0.594	1.932	1.080	1.699
Ave. social problems scale during HS (range 0–5)	3.569	2.580	−0.766	2.303	0.385	2.357	0.306	2.562
Ave. social vulnerability scale during HS (range 0–400)	−2.295	4.160	−6.670	4.030	−9.993*	3.916	−7.068	4.897
Ave. percent African American residents during HS	−5.420	2.844	−3.638	3.136	−5.205	2.724	1.682	4.197
Ave. percent Latino residents during HS	−6.488	4.338	−7.348	4.855	−7.264	5.019	−4.950	4.499
Ave. occupational prestige score during HS (range (0–100)	−8.103*	3.126	−7.487	3.874	−6.646	4.011	−7.635*	3.049
Ave. percent foreign-born residents during HS	−0.160	3.256	0.366	3.094	3.863	3.629	−3.707	3.296
Ave. percent of residents who moved in preceding 12 months during HS	1.660	2.527	3.692	2.266	0.833	2.365	3.917	2.465
Ave. percent of HS living in neighborhood with hospitals and clinics	4.022*	1.882	2.713	1.859	5.784**	1.951	−1.385	1.850
Ave. resource factor scale during HS	−2.175	3.059	−2.519	3.106	−0.331	3.006	−1.070	2.921
Ave. percent of housing built before 1940 during HS	2.790	2.012	3.353	2.173	−0.687	2.112	7.130**	2.156
Ave. violent crime rate per 1,000 during HS	−7.543*	3.488	−6.453	4.115	−9.719**	3.609	0.419	4.224
Ave. property crime rate per 1,000 during HS	3.386	3.055	4.285	3.375	8.600*	3.844	2.023	3.062
Ave. child abuse and neglect rate per 1,000 during HS	3.829	2.496	7.902*	3.399	14.347***	3.458	3.270	2.545
constant	3.394	5.614	4.357	5.65	10.025	5.987	−1.641	5.452
ancillary parameter	18.657***	1.500	18.533***	1.541	15.480***	1.318	19.147***	1.485
Observations	220		222		184		258	
Log Likelihood	−494.824		−468.193		−390.178		−551.803	
chi2	74.73		76.55		122.4		70.31	
p	0.000		0.000		0.000		0.000	
Pseudo-R2	0.070		0.076		0.136		0.060	

Standard errors in second column;

* p<0.05;

** p<.01:

*** p<.001

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.0000														
2	−0.0279	1.0000													
3	0.6368*	−0.1607*	1.0000												
4	−0.0147	0.2097*	−0.0784	1.0000											
5	0.1154*	0.3064*	0.0616	0.3594*	1.0000										
6	0.2074*	−0.0026	0.2285*	0.1103*	0.1577*	1.0000									
7	0.0924*	0.0277	0.1169*	−0.0223	0.1407*	0.1344*	1.0000								
8	0.2394*	−0.0458	0.2036*	0.1442*	0.1010*	0.2362*	−0.4685*	1.0000							
9	−0.2214*	0.0572	−0.2261*	−0.0731	−0.0593	−0.4300*	−0.1013*	−0.5744*	1.0000						
10	0.1534*	−0.1125*	0.1370*	0.0459	−0.0511	−0.1340*	−0.2366*	0.7011*	−0.3380*	1.0000					
11	0.0171	−0.0452	0.0260	−0.0333	−0.0271	0.5316*	0.0339	−0.0596	−0.0274	−0.0474	1.0000				
12	0.0957*	0.0482	0.1325*	0.0665	0.1050*	0.1608*	−0.0178	0.1504*	0.2029*	0.0388	0.0455	1.0000			
13	0.1956*	−0.0450	0.2306*	0.0889*	0.0572	0.7997*	0.1651*	0.2116*	−0.4100*	−0.1157*	0.3791*	0.2309*	1.0000		
14	0.0791	0.0142	0.0307	0.1142*	0.0870*	0.6906*	0.1169*	0.0369	−0.1627*	−0.3020*	0.3868*	0.1803*	0.6839*	1.0000	
15	0.2023*	0.0395	0.2288*	0.0766	0.1230*	0.7308*	0.0807	0.0819	−0.1843*	−0.2186*	0.4512*	0.2290*	0.7452*	0.6722*	1.0000

*$p < .05$