**Neighborhood Disorder and Individual Economic Self-Sufficiency:**

**New Evidence from a Quasi-Experimental Study**

RUNNING HEAD: Neighborhood Disorder and Economic Self-Sufficiency

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**Abstract**

This paper draws on data from the Monitoring Mt. Laurel Study, a new survey-based study that enables us to compare residents living in an affordable housing project in a middle-class New Jersey suburb to a comparable group of non-residents. We test the hypothesis that living in this housing project improves a poor person's economic prospects relative to what they would have experienced in the absence of such housing, and that these improved prospects can be explained at least in part by reduced exposure to disorder and stressful life events. We find that residents in the Ethel Lawrence Homes are significantly less to experience disorder and negative life events and that this improvement in circumstances indirectly improves the likelihood of being employed, earnings, and the share of income from earnings. We find no relationship between residence in the housing project and the likelihood of using welfare.

William Julius Wilson's seminal book, *The Truly Disadvantaged* (1987), refocused social scientists on the importance of neighborhood context for explaining individual-level disparities, an idea that had been emphasized decades earlier by Chicago School sociologists but had fallen by the wayside as social scientists turned their attention to individual- and family-level determinants of human behavior. *The Truly Disadvantaged* argued convincingly for the harmful effects of living under conditions of concentrated poverty and stimulated a host of studies examining the relationship between neighborhood poverty and human behavior. Much of this early research merged survey and census data to assess relationships between neighborhood poverty and individual-level outcomes and was important for showing dramatic variations in poverty rates across neighborhoods, along with sharp differentials in violence, poor health, joblessness, and other undesirable conditions, as well as a statistical correlation between neighborhood disadvantage and various individual-level outcomes (Sampson, Morenoff & Gannon-Rowley 2002; Sampson 2003). While these observational studies showed strong associations between neighborhood ecology and a range of outcomes, they told us little about whether neighborhood conditions have a causal impact on behavior and well-being, or whether individuals with certain traits simply select into certain kinds of neighborhoods (Jencks & Mayer 1990; Tienda 1991).

More recent studies have employed experimental and quasi-experimental research designs to study neighborhood effects. The Gautreaux studies, for instance, followed a group of poor, Chicago residents who were given vouchers to relocate into non-segregated communities and found some evidence that individuals who moved into low-minority suburbs showed improved labor market outcomes relative to those who stayed behind in Chicago, and that their children demonstrated improved educational and labor market outcomes (Rubinowitz & Rosenbaum 2000; Popkin, Rosenbaum & Meaden 1993). Participants in the Gautreaux program were not randomly assigned to receive vouchers, however, so the possibility remained that the observed "effect" of moving to a low-minority community was explained instead by the movers' own characteristics and attributes. In response, the U.S. Department of Housing and Urban Development sponsored the first experimental study of neighborhood effects: the Moving to Opportunity (MTO) project. MTO offered vouchers to residents of public housing projects in five cities to move into non-poor neighborhoods, but this time researchers employed an experimental design to correct for selection bias, randomly assigning residents to one of three groups: a treatment

group that received vouchers to move to a low-poverty neighborhood, a group that received Section 8 vouchers but could move wherever they desired, and a control group that did not receive vouchers. The study featured a pre-post design that enabled researchers to collect data prior to the administration of vouchers and then at several follow-up points, and was seen as the first chance to apply the rigors of experimental research to Wilson's hypothesis.

Results from the MTO program suggest it was successful in moving people out of poor neighborhoods and that living in non-poor neighborhoods had positive effects on adult mental health, but that living in non-poor neighborhoods had little effect on participants' economic and physical well-being (Kling, Liebman & Katz 2007; Orr et al 2003). The bulk of this research seems to suggest that neighborhoods matter for some outcomes, but not all, and that the benefits accrue more to females than males (Sampson 2008). As we describe later in this paper, some have argued that the lack of expected findings, particularly with respect to adult economic self-sufficiency, are at least partly the result of design and implementation features of the MTO program (see Clampet-Lundquist & Massey 2008 for a review). The MTO program was designed to control for self-selection into treatment groups, but specific features of the program may have introduced other sources of selection bias. In addition, although the MTO data may provide estimates of the effects of moving to a non-poor neighborhood after receipt of a housing voucher, they are not as useful for measuring the effect of *living in* a low-poverty neighborhood. Moreover, there are certain features of the MTO design that make it difficult for researchers and practitioners to use the findings to make generalizations about neighborhood effects.

The present paper draws on data from the Monitoring Mt. Laurel Study, a new survey-based study that enables us to compare residents living in an affordable housing project in a middle-class New Jersey suburb to a comparable group of non-residents who applied to live in the project but were either not accepted or were still on the waiting list at the time the survey was administered, thus holding constant self-selection into the pool of people wishing to move into affordable suburban housing. The quasi-experimental design of the Mt. Laurel Study is well-suited for the study of neighborhood effects and overcomes some of the limitations of the MTO experiment. For instance, at the time of data collection, most residents had lived in the project for several years, some for as long as ten years. This means that sufficient time had elapsed to allow hypothesized cumulative

effects to emerge, thus enabling us to disentangle neighborhood effects from the effects of moving, which is inherently disruptive. Additionally, we had access to residents' and non-residents' initial applications to enter the project and we drew on these applications to estimate propensity scores to capture the likelihood of moving from the waiting list into the project. We use these propensity scores in multivariate models to control for other unmeasured factors that might influence entry into the project.

Using these new data, we test the hypothesis that living in an affordable housing project in a middle class suburb improves a poor person's economic prospects relative to what they would have experienced in the absence of such housing, and that these improved prospects can be explained at least in part by differences in respondents' exposure to disorder and stressful life events. We begin by reviewing theory and existing research on neighborhood poverty, neighborhood transfer programs, and economic self-sufficiency. We then offer a brief history of the Mt. Laurel housing project and its present configuration and move on to describe our data and measures and the results of a series of multivariate analyses of the relationship between housing project residence and individual self-sufficiency. We conclude with a discussion of our findings and their implications both for affordable housing policy and future research.

**Neighborhood Conditions and Economic Self-Sufficiency**

This paper tests the hypothesis that living in a middle-class, suburban housing project can translate into gains in economic self-sufficiency and that at least a portion of these gains can be explained by reductions in exposure to disorder and, thus, stressful life events. We present this hypothesized causal sequence in Figure 1.

FIGURE 1 ABOUT HERE

Why do neighborhood economic conditions affect one's exposure to disorder? Poor neighborhoods lack the social interactional processes that are crucial for community social control and thus are at greater risk for social disorganization. Robert Sampson and colleagues find that poor, unstable communities have lower rates of "collective efficacy," or shared expectations that neighbors will intervene to control their neighborhood, and that lower rates of collective efficacy in turn increase the level of violence in the community (Sampson, Raudenbush & Earls 1997; Sampson, Morenoff & Earls 1999). As a result, individuals living in poor communities are more

likely to witness violence and crime than their counterparts in non-poor communities. Members of the MTO treatment group reported, for example, that they felt safer in their neighborhoods and observed less crime and disorder than members of the control group (Katz, Kling & Liebman 2001).

Repeated exposure to disorder and violence may in turn increase an individual's likelihood of experiencing stressful life events. First, physical proximity to violence, drug use, and gang presence undoubtedly increases one's chances of being victimized in the form of burglary, robbery, or physical assault. Living in close proximity to violence and disorder also impacts the composition of one's social networks, such that residents have increased contact with people involved in illegal activity and less contact with positive role models, increasing their likelihood of dropping out of school, having an unplanned pregnancy, and becoming involved in illicit activity (Harding 2003; Kling, Ludwig, Katz 2005; Lindberg & Orr 2011). In short, residents of poor neighborhoods are embedded in a "tangle of pathology" (Clark 1965) that impacts their decision-making and bears on the number of stressful events they experience over time.

Moreover, living amongst chaos and disorder places the body in a state of heightened physiological arousal, which ultimately leads to heightened stress and anxiety. Prolonged exposure to disorder initiates the fight or flight response, stimulating the release of adrenaline, which over time heightens one's aggressiveness and impulsiveness and prompts risky behavior and poor decision-making (McEwan 1992; McEwan & Lasley 2002; Massey 2004). A person with these traits may in turn be more likely to self-medicate with drugs and alcohol, which can further heighten allostatic load and cause physical damage to the body (McEwan & Lasley 2002; Ross & Mirowsky 2001).

In sum, neighborhood poverty has a known impact on residents' exposure to violent activity and disorder. In turn, repeated exposure to these activities impacts a person's likelihood of becoming a victim by placing them in close physical proximity to violence and, through both social and physiological mechanisms, increasing their likelihood of becoming involved in behaviors that promote stress and anxiety.

Experiencing stressful life events influences economic self-sufficiency in several ways. First, it may directly affect the likelihood of holding a steady job, as workers preoccupied by issues of personal safety and well-being may find it difficult to focus on workplace responsibilities, and those out of work may find it hard to concentrate on the job search. Moreover, if people are fearful of leaving their homes at night, they may pass up the opportunity to take jobs that require night hours or that require them to commute through notoriously dangerous neighborhoods.

Living in stressful circumstances may also pose an indirect effect on individual self-sufficiency through physical and mental health. Residents of poor neighborhoods often have worse health outcomes than residents of non-poor neighborhoods and this relationship is generally mediated entirely by differences in exposure to stressful events (Ross & Mirowsky 2001; Boardman 2004; Casciano & Massey under review). Qualitative evidence from interviews with MTO participants further indicates that stress reduction is the primary reason for improved mental health outcomes in the treatment group (Kling, Liebman & Katz 2007; see also Popkin, Harris & Cunningham 2002).

Despite convincing theory linking neighborhood economic conditions to economic self-sufficiency, the empirical literature is mixed. Correlational and quasi-experimental studies generally point to a negative relationship between neighborhood poverty and individual economic self-sufficiency. Results from the Gatreaux project suggest that moving to neighborhoods with few black residents is associated with improved labor market outcomes and less time on welfare (Rosenbaum & Popkin 1991; Mendenhall, DeLuca & Duncan 2006). Osterman (1991) similarly finds neighborhood effects on welfare participation and Casciano and Massey (2008) show a strong association between neighborhood SES and welfare use and employment in a sample of new mothers.

Findings from the MTO study are more varied. As mentioned above, Kling, Liebman and Katz (2007) find that MTO participants who received vouchers to move to a low-poverty neighborhood fared no better on a battery of economic indicators at the four- to seven-year follow-up than the control group. Some suggest that particular features of the MTO design are responsible for this dearth of findings. For instance, since compliance was not mandatory, some participants assigned to the treatment group (47%) opted not to use their vouchers to

move out of their neighborhoods. In experimental studies, researchers typically compare all who were *assigned to* the treatment group to those who were assigned to other groups, irrespective of whether they actually complied with this assignment. If compliance is low, this "intent-to-treat" (ITT) effect may underestimate the impact of the treatment condition. To correct for this, researchers also calculate a treatment-on-the-treated (TOT) effect, which in the case of the MTO program is measured by dividing the ITT effect by the take-up rate of the treatment group (Orr et al 2003; Kling, Liebman & Katz 2007). The TOT effect is considered a better indicator of the real impact on the treatment group, even though it is considered a quasi-experimental rather than experimental approach.

Selective out-migration from non-poor neighborhoods may also undermine the detection of neighborhood effects. If participants moved into non-poor neighborhoods but only stayed for a short period of time, and we do not account for this in our models, then the ITT and even TOT estimates underestimate the true neighborhood effect and yield results that are biased by selective out-migration (Clampet-Lundquist & Massey 2008). Since the MTO program only required participants to stay in their new homes for one year, nearly 40 percent of those who had moved into low-poverty neighborhoods had moved out by the follow-up study. When Clampet-Lundquist & Massey account for length of time MTO participants spent in non-poor neighborhoods, they found it to be significantly associated with measures of adult self-sufficiency. On the other hand, Ludwig and colleagues (2008) contend that Clampet-Lundquist and Massey's analysis still does not get around issues of bias and may even introduce new forms of selection bias (see also Sampson 2008) and recommend an instrumental variable approach that draws on interactions between voucher assignment and treatment site as instruments for exposure to neighborhood poverty. This approach shows no association between treatment group status and measures of economic self-sufficiency.

Notwithstanding this debate, there are additional areas of concern that make it hard to use MTO data to make generalizations about neighborhood impacts. The MTO project moved residents in very poor neighborhoods to non-poor neighborhoods (defined as less than 10% poor), but did not mandate that participants move into low-minority neighborhoods. Thus, many participants in the treatment group moved to technically non-poor neighborhoods, but they still lived in segregated communities better characterized by their "entanglement with resource deprivation and disadvantage" (Sampson 2008: 200) than their economic

opportunities (Clampet-Lundquist & Massey 2008). Sampson (2008) further points out that the actual reductions in residential poverty rates were quite modest—participants moved from tracts that were 42% poor to tracts that were 37% poor. In short, many residents who moved out of non-poor neighborhoods did not find their new communities considerably better.

The bulk of the evidence suggests that people in poor communities are more likely to use welfare and have worse employment prospects than their counterparts in non-poor neighborhoods, though additional research is needed to sort out the causal nature of this relationship and the interactive effects of neighborhood poverty and segregation. In our study, we hypothesize that residents of an affordable housing project located in a middle class suburb will be less likely to use welfare and more likely to be employed and have greater earnings than otherwise comparable non-residents. We further hypothesize that this is because residents experience less disorder and stress than non-residents, which translates into economic gains. In the sections that follow, we provide overview of the Mt. Laurel case and describe our methods and findings.

**The Mt. Laurel Case**

Mt. Laurel Township is located about eight miles east of Camden, New Jersey, a severely depressed former manufacturing center that lies just across the Delaware River from Philadelphia. Until the Second World War Mt. Laurel was a small farming community, but afterward it grew into a Philadelphia suburb of around 40,000 residents, with extensive retail and commercial development and thousands of jobs attracted there because of its location at the intersection of major highways. In many ways, it represents a classic suburban community. According to data from the 2000 Census, it is predominantly white (88% of the population) and composed mostly of homeowners (84% of households) living in single family housing (72% of all housing units). A significant proportion of residents live in age-restricted (55+) condominium or townhouse developments.

In 1971 the NAACP filed suit against the Township of Mount Laurel, New Jersey on behalf of Ethel R. Lawrence and other low income plaintiffs. The suit challenged the township's restrictive zoning regulations, which effectively prevented the construction of affordable housing within the community and thus excluded poor families from residence. After a prolonged legal battle, the state Supreme Court in 1975 found for the plaintiffs

and articulated what has since come to be known as "the Mount Laurel Doctrine:" that municipalities throughout New Jersey have an affirmative obligation to meet their "fair share" of the regional demand for low income housing (Kirp, Dwyer, and Rosenthal 1995).

The favorable court decision (commonly known as Mt. Laurel I) did not immediately lead to the project's construction, however, as the township fought over what its "fair share" of low income units might be. In 1983 the court reaffirmed its earlier ruling in another decision (known as Mt. Laurel II) and ordered the township to permit the project to move forward (Haar 1996). Fair Share Housing Development, Inc., a nonprofit developer of affordable housing in South Jersey, began planning a development that came to be known as the Ethel Lawrence Homes.

Plans submitted to township authorities were subject to a long series of acrimonious hearings and public challenges, however, and it was not until April of 1997 that the Township Planning Board finally granted its approval, but not before a series of stormy public hearings attended by more than 500 angry citizens (Smothers 1997a, 1997b, 1997c). The Ethel R. Lawrence Homes were finally built on a 62 acre field and wooded site, adjacent to luxury, market-rate single family detached housing and a retirement community. The development opened in two phases, with 100 initial units in late 2000 and 40 other units early in 2004. It consists of one-, two-, and three-bedroom two-story townhouses that are 100% affordable to lower income households, defined as those with incomes below 80% of the regional median income, who pay no more than 30% of their incomes for rent and utilities. These criteria yield a remarkably broad range of "affordability," with units going to households having incomes that range from 10% to 80% of the median income, roughly $6,200 to $49,500 per year.

In 2000, Fair Share Housing Development began an affirmative marketing program in newspapers and local media, followed by three days during which applications were distributed to all who sought them. The applications were reviewed in the order in which they were returned within each category and evaluated with respect to several selection criteria, including third party verification of income; a five-year history of residence; and a search of public records for criminal, bankruptcy or landlord judgments. Those who met the entry criteria were interviewed separately to review the information in the file and, upon agreement to the terms of the lease,

were offered a spot in the housing complex. Fair Share repeated the application process in 2003, 2006, 2007 and 2010 in order to refresh the waiting list.

**Methodology**

This paper asks whether residents in a suburban affordable housing complex are more economically self-sufficient than a sample of comparable non-residents and whether exposure to stress and disorder mediate this relationship. To answer these questions, we draw on data from a survey of current and former residents of the Ethel Lawrence Homes and a comparison sample of individuals who applied but who, for one reason or another, remained on the waiting list at the time of the survey or had not been accepted into the project. We sought to interview all persons who currently reside in ELH and all former ELH residents for whom we could find a valid address. We also interviewed a sample of applicants who had not yet been admitted or had been rejected for whom we could find a recent address. The survey staff sent letters explaining the study and requesting participation to all potential respondents and then a staff of trained field interviewers followed up with phone calls or, if a phone number could not be identified, home visits. Interviewers administered an in-person, 60-minute questionnaire to all willing participants, either in participants' homes or at a neutral site of their choosing. The interviews were conducted between November 19, 2009 and March 3, 2010.

This method yielded a final sample of 116 residents and 108 non-residents. Of the 116 residents, five are former residents who have since moved out of the project. Not surprisingly, compliance was much higher among residents than non-residents—79 percent of current and former residents surveyed participated, compared to 30.3 percent of non-residents. Table A1 in Appendix A gives the breakdown of the reasons for non-compliance for each group. By far the most important reason for non-response among non-residents was the simple inability to find the respondent (45% of cases), in most cases because they had moved from the address listed on their application form. Among those non-residents who were located, the non-response rate was 55 percent.

Given that some members of our sample were selected to live in the housing project, while others were not (or have yet to be), it remains a possibility that the two groups differ on unmeasured characteristics that may

bear on the outcomes of interest. To control for this, we estimated a model predicting, for each participant in the study, the likelihood, or propensity, of being accepted into the Ethel Lawrence Homes and then include these propensity scores in our final models.[1] These models were estimated using data from participants' initial applications to the Ethel Lawrence Homes, which were archived at Fair Share Housing Development, located on-site at the Homes. We used them to create a database that included relevant data on all participants, including their age, household size and composition, relationship status, sex, income, and location and type of residence. In addition to these variables, the applications also included several variables that helped us measure their purported reasons for wanting to move, their actual motivation to enter the project, as indicated by their number on the first-come-first-served waiting list, and their access to family resources, as indicated by whether they were currently living with a family member. Descriptions of these variables and the results from the propensity score analysis are presented in Appendix B.

We used these scores to match the 116 residents in the sample to non-residents with comparable propensity scores, using nearest-neighbor matching within a caliper of .05. We matched with replacement since the distribution of propensity scores differed between groups, with non-residents having fewer cases at the upper-end of the score distribution (Dehejia & Wahba 2002). This method yielded a final sample of 51 non-residents, weighted such that each of the 116 residents in the sample has one, non-unique match. The mean propensity score for the sample of residents is identical to that of the weighted sample of non-residents, 0.59.

The questionnaire asked participants about the demographic composition of their households and solicited general background information about race, marital status, age, educational background, employment status, and income, as well as questions about public transit use, social contact, access to resources, exposure to neighborhood disorder, the experience of stressful life events, and health status. Table 1 compares basic individual and household characteristics of ELH residents and non-residents who responded to the survey. In general, residents do not appear to differ markedly from non-residents. The resident group has fewer whites and more identifying as belonging to another race (mostly Latinos). A greater share of residents is married or widowed and a smaller share is separated or divorced, though roughly the same proportion of both groups has

never been married. Residents appear to differ most from non-residents in terms of employment and earnings: more residents are working, their earnings are higher, and they receive a greater share of their income from work. Residents of the Ethel Lawrence Homes also tend to have somewhat smaller households and more females per household.

TABLE 1 ABOUT HERE

*Measures*

*Outcome measures*. We use four separate measures of economic self-sufficiency. Respondents were asked to provide the number of hours worked per week, pre-tax wages or salary, and frequency of payments (hourly, weekly, bi-weekly, monthly or yearly). When relevant, respondents were asked to give the same information if they held a second job. We used this information to calculate total *annual income from work*. On average, residents earned $19,687, compared to non-residents, who earned $12,912 (t=-2.950, p=.004). Income data were missing for ten non-resident cases; these cases were excluded from all analyses (to yield a sample size of 222). Respondents were also asked to report whether they *received income from the Temporary Assistance for Needy Families* (TANF) program in the 12 months preceding the interview. Roughly 5 percent of Ethel Lawrence residents and 14 percent of non-residents reported receiving TANF or "welfare" (t=2.300, p=.022). Respondents were also asked to indicate whether they were *currently working for pay* (even if payments were "off the books") at the time the questionnaire was administered. Two-thirds (67%) of residents were working for pay, compared to 51 percent of non-residents (t=-2.494, p=.013).

The questionnaire also included a question about other sources of income, including unemployment insurance, TANF, child support, alimony, pension, Social Security Disability Insurance, Social Security Survivor benefits, Social Security Retirement benefits, or income from other sources. Respondents were asked to indicate how much income they received from each of these sources in 2009 and how often they received it. We created a measure of income from other sources equal to the sum of annual earnings from each source. For each respondent, we calculated total annual income, equal to the sum of income from work and income from other sources. We then divided income from work by total annual income in order to create our final outcome measure,

*share of income from work*. On average, roughly 60 percent of residents' total annual income came from earnings, compared to 42 percent of non-residents' income (t=-2.985, p=.003).

*Neighborhood Disorder*. Respondents were asked a series of questions about their exposure to disorder and violence within their neighborhoods in the 12 months preceding the interview. Questions included exposure to homeless people on the streets, prostitutes, gangs, drug paraphernalia, drug dealing, people using drugs, public drinking, physical violence, and gunshots. Responses to these questions were categorical and specified whether the respondent never, rarely, sometimes, often, very often, or every day witnessed the events. Using these questions and following Massey et al. (2003), we constructed a Weighted Disorder Scale that weighted each item using the Wolfgang-Sellin Severity Score, thereby yielding an index that reflects not only the frequency with which different transgressions were witnessed but also the severity of the transgression itself (see Appendix C for details). The scale ranges from 0 to 209.

TABLE 2 ABOUT HERE

Table 2 shows the portion of respondents who reported witnessing each instance of disorder, by resident status, as well as residents' and non-residents' mean scores on the Weighted Disorder Scale. As can be seen, ELH residents and non-residents' experienced very different exposures to social disorder and violence. Residents were far less likely to have witnessed signs of disorder and violence than non-residents. Indeed, non-residents' mean weighted disorder score was nearly six times greater than residents' score (t =7.317, p=.000).

*Negative Life Events*. Respondents were also asked the number of times they or a member of their household had experienced certain negative events in the 12 months preceding the interview. These included serious illness, serious injury, death, unexpected pregnancy, arrest by police, sentencing to jail or prison, expulsion from school, loss of job, loss of home, robbery, and burglary. Responses ranged from 0 to 10; those who had experienced a particular event more than 10 times were top-coded at 10. Following Massey and Fischer (2006), we used the Holmes-Rahe Stress Score weights to construct a Stress-Weighted Life Events Scale (see

Appendix C for more detail). The scale ranges from 0 to 4,790. To reduce negative skew and improve the overall fit of the multivariate models, we use the natural log of the life events scale.[2]

TABLE 3 ABOUT HERE

Table 3 presents the mean number of times residents and non-residents experienced negative life events along with their mean scores on the Stress-Weighted Life Events Scale. ELH residents experienced slightly fewer negative life events than non-residents in the previous 12 months, 1.77 compared to 2.64 events, respectively ($t=1.720$, $p=.087$). The two groups differ by roughly .64 points on the logged Stress Scale ($t=1.922$, $p=.056$).

*Explanatory and Control Variables*. For each set of analyses, residential status is measured in two ways: as a binary indicator of whether a respondent lives in Ethel Lawrence Homes and as the number of years a respondent has lived in the project, with non-residents being coded as 0. We also control for a host of relevant covariates, including: sex (reference group = female), age (continuous), race (reference group = black), marital status (reference group = never married), and educational attainment (reference group = less than a high school degree or GED). We control for household composition by including two continuous measures: percent female in the household and number of children under 18. Lastly, to account for an individual's likelihood of selecting into the housing project, we include propensity score.

**Disorder, Stress, and Economic Self-Sufficiency**

Our hypothesis is that residence in ELH has a positive impact on economic self-sufficiency by reducing exposure to neighborhood disorder and, consequently, the experience of stressful life events. Thus, we begin by testing the relationship between ELH residence and the experience of stressful life events, conducting a formal test of whether this relationship is mediated by differences in exposure to neighborhood disorder. We then test whether exposure to disorder in turn impacts the four measures of self-sufficiency by increasing stressful experiences. To evaluate indirect effects, we use a bootstrapping method (n = 5,000 bootstrap resamples) described by Preacher and Hayes (2008). We report bias-corrected 95% confidence intervals and consider an

indirect effect significant if zero is not contained in the confidence interval. The results are reported in Table 4, where *a* represents the effect of the independent variable (IV) on the hypothesized mediating variable (M) and *b* is the effect of M on the dependent variable (DV), controlling for the IV. The total effect (*c*) of the IV on the DV consists of a direct effect (*c'*) of the IV on the DV and an indirect effect (*a*b*) of the IV on the DV through the hypothesized mediating variable.

Row 1a shows the results of an OLS regression predicting the impact of ELH residence on the experience of stressful life events, controlling for the covariates described above and testing for an indirect effect of exposure to disorder. The results suggest that living in the project is associated with a 38 point decline ($p<.01$) on the Weighted Disorder Scale (see column *a*) and, in turn, a one point increase on the disorder scale is associated with a .02 unit increase ($p<.01$) on the Logged Stress Scale (*b*). Overall, living in ELH is associated with a .756 point ($p<.05$) reduction on the stress scale (*c*), though this effect is indirect, mediated through residents' reduced exposure to neighborhood disorder (*a*b*). This indirect effect is significant, as indicated by the fact that zero does not fall within the confidence interval.

Rows 1b through 1e present estimates from tests of whether neighborhood disorder in turn impacts the four measures of economic self-sufficiency via its positive impact on stress. As we saw above, a one point increase on the disorder scale is associated with a .01 point increase on the stress scale. Exposure to disorder is inversely related to the odds of being employed; the total effect (*c*) is insignificant, possibly due to the relatively small sample size, but the indirect effect of disorder on employment through the experience of stressful events is significant (*a*b*). Disorder also appears to inversely affect income from earnings and the share of income from work. These relationships are strongly mediated through the increased experience of stressful life events (*a*b*), which is responsible for roughly 67 percent (-.036/-.054) of the total effect on income and 62 percent (.097/.157) of the total effect on share of income from work. Exposure to disorder does not appear to impact welfare use, either directly or indirectly.

Rows 2a through 2e show results from a similar set of analyses that substitutes the continuous measure "years in ELH" for the binary ELH residence measure. Row 2a suggests that each additional year of living in the

housing project is associated with a 3.6 point ($p<.01$) reduction on the Weighted Disorder Scale, which as we showed above is positively associated with the experience of stressful life events. Rows 2b through 2e show results that are nearly identical to the results discussed above. Exposure to disorder is negatively associated with the likelihood of being employed, as well as one's earnings and the share of income from earnings, and these relationships are mostly mediated by one's experience of stressful life events. Once again, exposure to disorder does not directly or indirectly impact the odds of using welfare.

**Explaining Differences between Mt. Laurel and MTO**

Why might the pattern of results be different for residents of the Ethel Lawrence Homes relative to those who participated in the MTO study? The mediating factors that we identify in our study—exposure to disorder and stressful events—might have operated similarly in the MTO treatment group but were uncontrolled in statistical models. After all, MTO authors point to qualitative evidence suggesting that members of the treatment group were exposed to less stress and neighborhood disorder than members of the control groups (Katz, Kling & Liebman 2001; Kling, Liebman & Katz 2007; Popkin, Harris & Cunningham 2002).

Another factor that separates the Ethel Lawrence Homes from the communities in which many MTO families settled is racial composition. As Clampet-Lundquist and Massey (2008) suggest, a community's racial composition is a significant predictor of access to jobs and other resources. Participants in the MTO treatment group by and large moved into neighborhoods that were still racially segregated. Mt. Laurel, in contrast, is a predominantly white community with a robust service industry, several office parks and higher-end retail stores, and geographic proximity to other similar communities. Put simply, opportunities for better-paying employment may be greater in a white, middle-class suburb like Mt. Laurel than in more segregated and disadvantaged communities.

In addition, the MTO program relocated very poor families with children who resided in public housing into less poor communities. This makes sense from a policy perspective, since the desired policy goal is to de-concentrate poverty. Yet, it also means that the MTO studies limit their assessment of neighborhood effects to a highly select—and statistically quite small—portion of the population: public housing residents (Sampson 2008).

It is possible that neighborhood effects on self-sufficiency are harder to detect in this group, since they presumably experience other barriers to employment that have little to do with neighborhood context. In contrast, the Ethel Lawrence Homes offers units at a range of affordability levels, with a portion of units going to all income groups ranging up to 80% of the town's median income. Quite plausibly, this heterogeneity in income could explain some of the difference between our findings and the MTO findings. Perhaps those Ethel Lawrence residents at the top end of the socioeconomic spectrum are the ones driving our results, while those at the bottom end do not share the advantages. To provide a crude test for this, we calculated predicted scores for the three measures shown to be connected to self-sufficiency in the analysis above—employment, earnings, and share of income from work—by education level and status (yes/no) as an Ethel Lawrence Homes resident. In this analysis, education level offers a rough proxy for one's socioeconomic status. The predictions include controls for all of the previously discussed covariates, as well as exposure to disorder and the experience of stressful events. The results are shown graphically in Figure 2.

At all levels of education and on all dependent variables, residents of the project appear to do better than non-residents. Nonetheless, economic gains tend to accrue mostly to residents with higher levels of education. Among those with at least a high school degree, residents are significantly more likely to be working for pay, have higher earnings, and a greater share of their income comes from work. The differences between residents and non-residents fail to reach significance on any of the measures for those with less than a high school degree. This could be a reflection of the small number of cases (there are only 23 people in the sample with less than a high school degree) or it could indicate that the benefits of living in Ethel Lawrence Homes tend to accrue most to those with the skills to take advantage of new opportunities.

FIGURE 2 ABOUT HERE

Of course, to create a group truly comparable to the MTO participants, we would need to base our analysis only on those study participants who were poor, had children, and previously resided in a housing project in an extremely poor, urban neighborhood. Our sample size is too small for this test, but the cursory results reported in Figure 2 suggest that all residents of the Ethel Lawrence Homes—irrespective of individual SES— are faring better employment-wise than their non-resident counterparts, though respondents with higher levels of

education are better able to translate their moves into economic progress. These findings suggest that housing policies that seek to develop affordable housing opportunities in middle-class suburbs and to relocate the urban poor into these communities can have tremendous benefits for individuals' economic self-sufficiency.

## Endnotes

1. Originally we sought to compute the propensity scores for residents and then compute the propensity scores of non-residents and seek to interview those that most closely matched, but given the difficulty of tracking down and interviewing non-residents and the resources at our disposal, in the end we just sought to compile roughly the same number of non-resident interviews and use the propensity scores as a statistical control in multivariate models.
2. Since some individuals had a score of 0, we added 1 to each score before taking the natural log.

**Tables**

Table 1. Selected social and economic characteristics of Ethel Lawrence residents and non-resident householders (weighted sample).

| Characteristic | Non-Residents | Residents | Sig. Diff.? |
|---|---|---|---|
| **Demographic Characteristics** | | | |
| Percent Female | 91.4 | 91.4 | |
| Average Age | 42.5 | 43.1 | |
| **Respondent Race** | | | |
| White | 27.5 | 9.5 | ** |
| Black | 68.1 | 67.2 | |
| Asian | 0.0 | 0.9 | |
| Other | 4.3 | 22.4 | ** |
| **Marital Status** | | | |
| Married or Cohabiting | 6.0 | 16.3 | * |
| Separated or Divorced | 44.0 | 23.3 | ** |
| Widowed | 2.6 | 10.3 | * |
| Never Married | 47.4 | 50.0 | |
| **Schooling** | | | |
| Currently enrolled | 15.5 | 19.1 | |
| Less than High School | 6.9 | 12.9 | |
| High School Graduate | 30.2 | 25.9 | |
| Some College | 51.7 | 50.0 | |
| College Graduate | 11.2 | 11.2 | |
| **Economic Characteristics** | | | |
| Working for Pay | 55.2 | 67.2 | + |
| Income from Work ($) | 12911.8 | 19686.8 | ** |
| Other Income ($) | 8110.5 | 6583.9 | |
| Total Income ($) | 21022.3 | 26270.7 | * |
| Share of Income from Work | 42.2 | 60.3 | ** |
| Welfare use | 12.9 | 5.2 | * |
| **Household Characteristics** | | | |
| Number of Persons | 3.3 | 2.6 | ** |
| Percentage Female | 60.2 | 71.0 | ** |
| Number of Children <18 | 1.0 | 0.9 | |
| **Average Propensity Score** | 0.6 | 0.6 | |
| **N** | 116 | 116 | |

** p<0.01; * p<0.05; ^ p<0.10, one-tailed test

Table 2. Whether respondent reported witnessing signs of disorder and violence within their neighborhoods in 2009.

| Sign of Disorder | Non-Residents | Residents | Sig. Diff? |
|---|---|---|---|
| Homeless people | 52.6 | 13.8 | ** |
| Prostitutes | 38.8 | 4.3 | ** |
| Gangs | 48.3 | 12.1 | ** |
| Drug Paraphernalia | 55.2 | 15.6 | ** |
| Selling of drugs | 51.7 | 13.8 | ** |
| Use of drugs | 46.6 | 19.0 | ** |
| Public drinking | 64.7 | 26.7 | ** |
| Physical violence | 65.5 | 22.4 | ** |
| Gunshots | 38.8 | 6.0 | ** |
| **Weighted Disorder Scale** | 54.6 | 9.3 | ** |

** p<0.01; * p<0.05; ^ p<0.10, one-tailed test

Table 3. Number of times negative life events were experienced in the past year within respondent's household.

| Negative Life Event | Non-Residents | Residents | Sig. Diff? |
|---|---|---|---|
| Serious illness | 1.06 | 0.78 | |
| Serious injury | 0.28 | 0.24 | |
| Death | 0.41 | 0.26 | |
| Unexpected pregnancy | 0.08 | 0.09 | |
| Arrest | 0.09 | 0.01 | * |
| Incarceration | 0.04 | 0.00 | * |
| Expelled from school | 0.03 | 0.01 | |
| Loss of job | 0.37 | 0.25 | |
| Loss of home | 0.05 | 0.02 | |
| Robbery | 0.06 | 0.01 | * |
| Burglary | 0.14 | 0.09 | |
| | | | |
| Total negative events | 2.62 | 1.77 | + |
| Weighted Stress Scale | 134.38 | 91.47 | + |
| **Natural log of scale** | 2.92 | 2.39 | |

** p<0.01; * p<0.05; ^ p<0.10, one-tailed test

Table 4. Mediation of the Effect of Ethel Lawrence residence (and Years in Ethel Lawrence) on Self-Sufficiency through Experience of Stressful Life Events and Exposure to Disorder (N=222).[a]

| | Independent Variable (IV) | Mediating Variable (M) | Dependent Variable (DV) | Model type | Effect of IV on M (*a*) | Effect of M on DV (*b*) | Total effects (*c*) | Direct effects (*c'*) | Indirect effect (*a*b*) | Bias-Corrected 95% CIs Lower | Bias-Corrected 95% CIs Upper | $R^2$/-2LL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1a | ELH residence | Exposure to disorder | Stressful life events | OLS | -37.851 (6.197)** | .017 (.004)** | -.756 (.355)* | -.097 (.368) | -0.659 | -1.029 | -0.343 | 0.26 |
| 1b[b] | Exposure to disorder | Stressful life events | Employment | Logit | .017 (.004)** | -.295 (.083)** | -.006 (.004) | -.002 (.004) | -0.005 | -0.009 | -0.002 | 221.56 |
| 1c | | | Income (in $1000s) | OLS | .017 (.004)** | -2.061 (.471)** | -.054 (.027)* | -.018 (.269) | -0.036 | -0.064 | -0.016 | 0.30 |
| 1d | | | Share inc. from work | OLS | .017 (.004)** | -5.589 (1.231)** | -.157 (.070)* | -.060 (.070) | -0.097 | -0.164 | -0.048 | 0.32 |
| 1e | | | Welfare use | Logit | .017 (.004)** | .123 (.149) | .007 (.006) | .005 (.006) | 0.002 | -0.008 | 0.018 | 99.30 |
| 2a | Years in ELH | Exposure to disorder | Stressful life events | OLS | -3.559 (.828)** | .017 (.004)** | -.081 (.046)+ | -.019 (.045) | -0.062 | -0.100 | -0.031 | 0.26 |
| 2b[c] | Exposure to disorder | Stressful life events | Employment | Logit | .017 (.004)** | -.299 (.083)** | -.006 (.004)+ | -.002 (.004) | -0.005 | -0.009 | -0.002 | 220.76 |
| 2c | | | Income (in $1000s) | OLS | .017 (.004)** | -2.038 (.465)** | -.054 (.025)* | -.018 (.026) | -0.035 | -0.063 | -0.016 | 0.32 |
| 2d | | | Share inc. from work | OLS | .017 (.004)** | -5.543 (1.224)** | -.166 (.067)* | -.070 (.068) | -0.096 | -0.163 | -0.047 | 0.32 |
| 2e | | | Welfare use | Logit | .017 (.004)** | .102 (.147) | .007 (.006) | .005 (.006) | 0.002 | -0.008 | 0.016 | 96.30 |

[a] Standard errors in parentheses; 5000 bootstrap samples; ** $p<0.01$; * $p<0.05$; + $p<0.10$, two tailed. All models include controls for age, race, marital status, educational attainment, percent female in household, number of children under 18, and propensity score.

[b] Models 1b-1e also include control for ELH Residence.

[c] Models 2b-2e also include control for Years in ELH.

Figure 1. Graphical representation of hypothesized link between ELH residence and self-sufficiency.

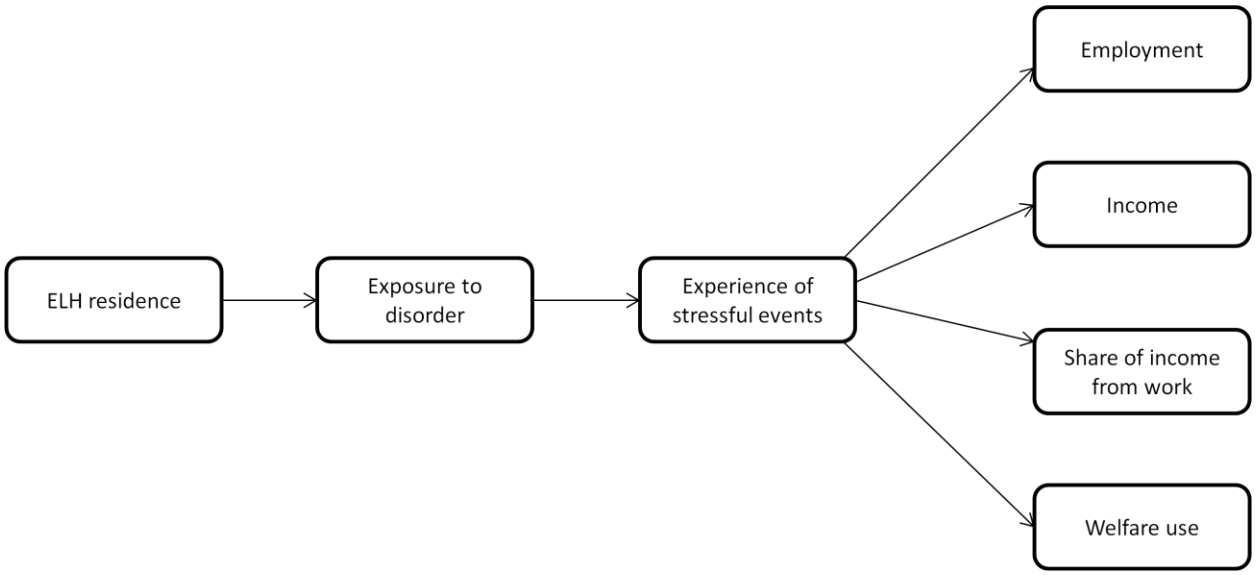
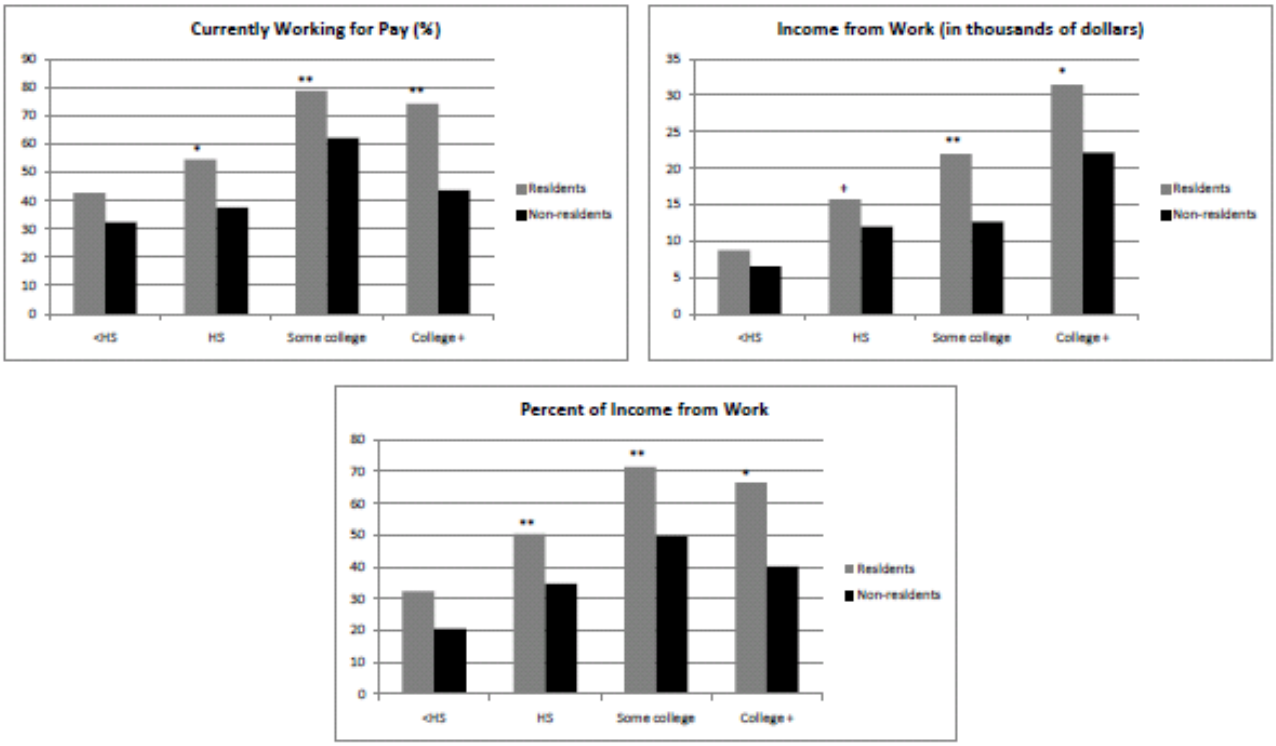


**Figure 2: Predicted scores based on final models, by education level[a] and resident status**




[a] Sample sizes for each education group are as follows: <H.S. = 23; H.S. = 61; Some college = 115; College+ = 23.
**p<.01; *p<.05; +p<.10, two-tailed test

**Appendix A: Response Rates**

Table A1. Response rates and reasons for non-response, by resident status.

| | | | | Reasons for non-response | | | |
|---|---|---|---|---|---|---|---|
| | Total attempted contacts | Participated | Response rate | Could not find | Refused | Other | Total |
| Residents | | | | | | | |
| Current residents | 138 | 111 | 80.4 | 1 | 26 | 0 | 27 |
| Former residents | 15 | 5 | 33.3 | 7 | 3 | 0 | 10 |
| All residents | 147 | 116 | 75.8 | 8 | 29 | 0 | 37 |
| Non-residents | 350 | 108 | 30.9 | 156 | 84 | 2 | 242 |

**Appendix B: Generating Propensity Scores**

To generate propensity scores for each applicant, we created a dependent variable equal to 1 if the participant had ever lived in the Ethel Lawrence Homes and equal to 0 otherwise. We used Stata's psmatch2 command to generate propensity scores from the following set of variables:

*Position on Waiting List.* All applicants to the Homes are placed on a waiting list in the order in which they submit their applications in-person. Hence, lower numbers on the waiting list are more favorable for entry into the Homes. An applicant's position on the waiting list could thus be considered an indicator of both the applicant's real likelihood of being selected to move into the project as well as his/her motivation for being selected, since more motivated applicants theoretically would submit their applications before less motivated residents. When management calls for a new round of applications, they begin a new waiting list, which means the applicants in our sampling frame were on one of five waiting lists: 2000; 2003; 2006; 2007; or 2010. Some waiting lists are much longer than others, which made it difficult to simply include applicants' waiting list number in the regression equation—a position of "200" on the waiting list may be more or less favorable depending on how long the actual list for that particular year is. Thus, for each of the five application rounds, we split the list into quartiles and then generated a set of dummy variables indicating in which quartile a given applicant falls. These dummies were included in the model (reference = Quartile 1). There were also a handful of applicants (roughly 2.6% of all cases) that could not be found on a waiting list. Their application files were discovered when we were going through the applications that were archived at the Fair Share Housing Development. These cases were added to the sampling frame, but not assigned a waiting list number. We assigned them a separate dummy indicating their status as "not assigned a waiting list number."

*Number of bedrooms requested at Ethel Lawrence Homes*. The Homes have 1-, 2- and 3-bedroom units. According to management, the 3-bedroom units are in largest demand, which means that a family requesting a 3-bedroom unit has a smaller probability of being selected to move in. We included a continuous variable, ranging from 1 to 3, indicating the number of bedrooms being requested

*Lives with a family member*. To gauge an applicant's access to family resources, we included a binary measure of whether he/she was living with a family member at the time they applied to the Homes.

*Female*. We included a dummy variable indicating whether the applicant was female.

*Relationship status*. We generated four dummy variables indicating an applicant's status: never married (reference group), married, divorced/separated/estranged, and widowed.

*Age*. Age is coded as a continuous variable.

*Has children*. We included a dummy variable indicating whether (yes = 1) the applicant listed children under 18 as potential residents on the application.

*Income*. Applicants were asked to self-report and provide documentation for their income, including non-wage income, like TANF or Social Security. Applicants who made it far enough in the application process also had their incomes verified by a Fair Share staff member. We drew on data from all available sources to create a measure of income at the time applicants applied to the Homes. For ease of interpretation, we standardized income for the propensity score analysis. For each case missing on

income, we imputed income to the mean annual income of other cases that shared the same relationship status, age, and sex. We include a variable in the model indicating whether a respondent's income was imputed (N=8).

*Neighborhood characteristics*. Applicants were required to give a current address on their applications. Some applicants provided P.O. Boxes; we assigned these applicants an address equal to the post office corresponding to this P.O. Box. We then geocoded these addresses and attached relevant characteristics of applicants' Census tracts. The final models included measures of percent black, percent Hispanic, percent vacant units, percent rental units, and percent below the federal poverty line.

*Reasons for applying to Ethel Lawrence Homes*. At the end of the application, applicants were asked to provide the reason they were applying to live in the project. Responses were open-ended and were used to create two dummy variables indicating residents' motivations for moving: housing-related needs (needs affordable housing, homeless, lease is up, needs more space, etc.); and reasons related to safety and opportunity (wants better school district, wants safer/better environment, wants a better life for family, etc.). We also created a dummy variable indicating whether respondents did not provide a response to this question. Lastly, we created an interaction variable between whether an applicant has children and whether they cited reasons related to safety and opportunity, under the assumption that applicants who have children and are concerned about safety issues may be particularly motivated to move.

Table B1 presents frequencies for each of these variables for all applicants included in our final sample. Table B2 presents the results from the propensity score analysis.

**Table B1. Means on key variables for applicants to Ethel Lawrence Homes at time of application.**

| | Non-Residents | | Residents |
|---|---|---|---|
| | Before Matching | After Matching | |
| Year applied | | | |
| 2000 | 41.7 | 50.9 | 47.4 |
| 2003 | 20.4 | 15.5 | 32.8 |
| 2006 | 5.6 | 3.5 | 6.9 |
| 2007 | 1.9 | 1.7 | 10.3 |
| 2010 | 30.6 | 28.5 | 2.6 |
| Position on Waiting List | | | |
| Quartile 1 | .17 | .40 | .30 |
| Quartile 2 | .29 | .18 | .19 |
| Quartile 3 | .25 | .21 | .22 |
| Quartile 4 | .29 | .16 | .17 |
| Not assigned a waiting list number | .04 | .09 | .15 |
| Number of BRs requested at ELH | 2.01 | 1.99 | 2.08 |
| Lives with a family member | .23 | .39 | .28 |
| Female | .87 | .91 | .90 |
| Relationship status | | | |
| Never married | .71 | .59 | .67 |
| Married | .07 | .10 | .13 |
| Divorced/separated/estranged | .19 | .27 | .19 |
| Widowed | .02 | .00 | .03 |
| Age | 37.2 | 36.8 | 36.4 |
| Has children | .64 | .70 | .73 |
| Income | 20,623.9 | 17,406.2 | 18,946.8 |
| Income imputed | .01 | .05 | .06 |
| Neighborhood characteristics | | | |
| % black | 32.1 | 31.9 | 32.4 |
| % Hispanic | 12.8 | 11.5 | 13.7 |
| % vacant units | 8.0 | 7.7 | 7.8 |
| % rental units | 34.0 | 32.1 | 34.1 |
| % poor | 13.6 | 12.6 | 13.8 |
| Reason for applying to ELH | | | |
| Housing issues | .41 | .56 | .53 |
| Safety and opportunity | .23 | .22 | .20 |
| Closer to important resources | | | |
| Did not provide a reason | .34 | .23 | .30 |
| N | 108 | 116 | 116 |

**Table B2. Coefficients from multivariate logistic regression predicting whether an applicant to the Ethel Lawrence Homes became a resident.**

| Explanatory Variable | B | SE |
|---|---|---|
| Position on Waiting List | | |
| Quartile 1 (reference) | -- | -- |
| Quartile 2 | -.746** | .266 |
| Quartile 3 | -.646* | .269 |
| Quartile 4 | -.944** | .273 |
| Not assigned a waiting list number | .797+ | .448 |
| Number of bedrooms requested at ELH | -.312 | .217 |
| Lives with a family member | -.048 | .232 |
| Female | .098 | .331 |
| Relationship status | | |
| Married (reference) | -- | -- |
| Never married | -.349 | .373 |
| Divorced/separated/estranged | -.168 | .416 |
| Widowed | -.003 | .709 |
| Age | -.003 | .009 |
| Has children | .681+ | .392 |
| Income (standardized) | -.149 | .098 |
| Income imputed | -.208 | .721 |
| Neighborhood characteristics | | |
| % black | .002 | .005 |
| % Hispanic | .004 | .010 |
| % vacant units | -.020 | .025 |
| % rental units | .001 | .007 |
| % poor | .005 | .018 |
| Reason for applying to ELH | | |
| Housing issues | .503+ | .265 |
| Safety and opportunity | .133 | .527 |
| Did not provide a reason | .192 | .301 |
| Interaction: “Has children” * “safety & opportunity” | -.425 | .573 |
| Intercept | .705 | .736 |
| Chi Squared | 36.23 | |
| N | 224 | |

**p<.01; *p<.05; +p<.10

**Appendix C**

Severity-Weighted Disorder Scale

Severity-weighted disorder scale = EiEj(Xij*(j-1)*Wi), where

i refers to 1 to 9 items on neighborhood disorder
j refers to 1 to 6 response categories on frequency witnessed
$X_{ij}$ = 1 if respondent picked response category j, 0 otherwise
$W_i$ = Wofgang-Sellin Severity Score for item i

The weights for each item are as follows:

| Item | Weight |
|---|---|
| Homeless people on the street | 0.3 |
| Prostitutes on the street | 2.1 |
| Gang members hanging out on the street | 1.1 |
| Drug paraphernalia on the street | 1.3 |
| People selling illegal drugs in public | 20.6 |
| People using illegal drugs in public | 6.5 |
| People drinking or drunk in public | 0.8 |
| Physical violence in public | 6.9 |
| Hearing the sound of gunshots | 2.1 |

Stress-Weighted Life Event Scale

Stress-Weighted Life Event Scale = $E_i$ ($F_i$ * $W_i$), where

i refers to 1 to 11 items on frequency of negative life events
$F_i$ = frequency reported by respondent for life event i
$W_i$ = Holmes-Rahe Stress Score

The weights for each item are as follows:

| Item | Weight |
|---|---|
| Serious illness | 49 |
| Serious injury | 53 |
| Death | 82 |
| Unexpected pregnancy | 40 |
| Arrest by police | 37 |
| Sentenced to jail or prison | 63 |
| Expelled from school | 26 |
| Loss of job | 47 |
| Loss of home | 30 |
| Robbery | 29 |
| Burglary | 23 |

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