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Does Urban Decay Harm the Poor?

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Abstract

Conventional wisdom suggests that urban revitalization can harm the poor, primarily by raising rents. It has also been argued that urban decline harms the poor by reducing job opportunities, the quality of local public services, and other neighborhood amenities. This seeming contradiction can be explained in a model incorporating moving costs and neighborhood quality change sufficiently large to change the rank-ordering of neighborhoods. Data from the American Housing Survey are used to estimate a discrete choice model identifying households' willingness-to-pay for neighborhood quality, using very basic proxies for quality. These willingness-to-pay estimates are then compared to the actual price changes that accompany observed changes in neighborhood quality. The results suggest that the correlation between neighborhood quality change and price changes is actually quite low, consistent with the theoretical notion that equilibrium price differentials are determined by the household with the least valuation for quality. The results imply that, in general, neighborhood revitalization is more favorable than neighborhood decline.

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1. Introduction

For at least two decades, social science has lamented the decline of the economically integrated neighborhood. The absence of higher-SES households from inner city neighborhoods has been blamed for a range of urban maladies, ranging from teen pregnancy and high school dropout rates to poor public services (Wilson 1987; Jencks and Mayer 1990; Ellen and Turner 1997; Vigdor 2006). The implication of much of this research is that urban decay, by contributing to reductions in quality of life, has a detrimental influence on those who remain in declining neighborhoods.

When the opposite of urban decline occurs, however, social scientists and community activists alike have often raised a completely different set of concerns. In revitalizing neighborhoods, the primary concern is that poor renter households will be harmed by rising prices (Schill and Nathan 1983; Marcuse 1986; LeGates and Hartman 1986; Atkinson 2000; Kennedy and Leonard 2001). From a naive perspective, it would thus appear that no neighborhood change is beneficial to the poor. Basic economic theory suggests, however, that these tales of the costs of urban decline and renewal are not contradictory, rather they both ignore potential countervailing benefits – urban decay reduces prices, and urban revitalization restores quality of life. Indeed, more recent evidence on gentrification suggests that the benefits exceed costs for the majority of affected households (Vigdor 2002; Braconi and Freeman 2004). The goal of this paper is to more formally ground these notions of costs and benefits in an economic model, and to empirically determine whether price changes associated with urban decay and revitalization are commensurate with the value that households place on neighborhood quality.

After a brief review of basic evidence on neighborhood dynamics in the United States, Section 3 presents a basic model of neighborhood choice, where neighborhoods vary in quality and housing prices adjust to reflect these quality differences. So long as individual preferences obey a simple single-crossing property, it is straightforward to show that the impact of neighborhood quality changes on the well-being of residents who remain in the declining neighborhood depends on both the magnitude of the change and the extent of frictions in mobility. When mobility is universally costless, declines in neighborhood quality have a broad negative impact that extends beyond the decaying neighborhood itself. When mobility is sufficiently costly for some group of agents, any large change in neighborhood quality, for better or worse, may have a negative impact on that group, particularly if they rent rather than own housing. Thus, theory suggests that urban decline is universally costly, while the impact of revitalization is ambiguous.

In practice, do equilibrium housing price changes in revitalizing neighborhoods render existing residents worse off? In order to answer this question, it is necessary both to measure households' willingness to pay for neighborhood quality and the impact of revitalization on prices. These two exercises are undertaken in Sections 4 and 5, utilizing longitudinal data on housing units derived from the metropolitan samples of the American Housing Survey (AHS). The analysis employs two proxy variables for neighborhood quality: a binary indicator for whether a survey enumerator noted abandoned housing within 300 feet of a sampled unit, and an indicator for whether the enumerator observed houses with bars on the windows within the same radius. Household valuations of neighborhood quality are derived from a discrete choice conditional logit model of the decisions made by sample respondents who moved into their housing unit within the past year. Results suggest that the typical household is willing to pay several hundred dollars per year to avoid low-quality neighborhoods. There is significant evidence of heterogeneity in this valuation.

The same AHS data are then used to determine the typical price changes associated with neighborhood decline and revitalization. Somewhat surprisingly, price movements show very little correlation with quality movements. Across the entire sample of three- to four-year intervals, price increases in revitalizing neighborhoods are generally 1% or 2% higher than those in declining neighborhoods. In some time periods, and in some metropolitan areas, the appearance of abandoned housing in a neighborhood actually correlates with stronger price increases. While puzzling in some respects, the general conclusion that marginal changes in neighborhood quality carry few implications for prices in a neighborhood is fully consistent with the theoretical model, which predicts that the equilibrium valuation of such marginal changes will be determined by neighborhood residents with the weakest tastes for neighborhood quality.

Section 6 offers concluding observations.

2. How widespread are decay and revitalization?

Social scientists have repeatedly documented the rise and decline of individual cities, and have similarly analyzed both the causes and consequences of metropolitan obsolescence. Histories of individual cities provide substantial insight into the factors that promote and retard decay (Glaeser 2003; Gyourko 2005; Glaeser 2005). Though there are a few noteworthy analyses of individual neighborhoods (e.g. Gans 1962), the importance of idiosyncratic factors in their growth and decline, coupled with the comparative absence of longitudinal data, render such research efforts difficult if not impossible.

The empirical analysis in this paper will focus on neighborhoods in one of eighteen US metropolitan areas included in a subset of the American Housing Survey's metropolitan files. While the set of included areas is not necessarily representative of the entire country, it does incorporate a number of cities that underwent notable declines in the late twentieth century (e.g. Detroit, Newark, Philadelphia), cities that grew consistently over the same time period (e.g. Los Angeles, Phoenix, Tampa), and some that declined through the early part of the sample period before beginning an urban renaissance (e.g. Boston, San Francisco).

In these MSAs, the AHS tracked two sets of housing units longitudinally, with one set observed in 1974, 1977 and 1981, and the second set observed in 1985, 1989 and 1993.[1] These longitudinal observations permit the construction of variables measuring decay and revitalization in individual neighborhoods. While AHS enumerators asked household respondents many subjective questions about neighborhood quality, the enumerators themselves recorded a set of observations on the area immediately surrounding each sampled housing unit – either on the same street or within 300 feet – during each survey wave.[2] Among the enumerator-coded variables is an indicator for whether there were abandoned housing units in the immediate vicinity of the sample unit. This variable will serve as the primary indicator of neighborhood decline in the empirical portion of this paper. Three additional enumerator-coded variables, also potentially indicative of decline, note whether nearby housing units have bars on their windows, whether the streets are in disrepair, and whether there is litter on the streets and sidewalks. These additional indicators are available only in the later AHS panel. While these indicators are binary in nature, and may therefore overly simplify a complex phenomenon, they are relatively

1 The second panel is available in only 11 of the 18 MSAs.
2 The "same street" criterion applied in 1974, 1977 and 1981; the "within 300 feet" criterion applied thereafter. As will be seen in Table 2, the result of this change is to reduce the frequency of observed changes in neighborhood quality.

objective in nature and thus less susceptible to reporting bias. Moreover, they are recorded relatively consistently throughout the waves of the survey.

Table 1 reports sample proportions for the four enumerator-coded neighborhood quality variables. Across all MSAs and all sample years, roughly 7% of all housing units were recorded as having abandoned housing nearby. In the later AHS panel, 12% of all households had nearby buildings with bars on the windows; two-thirds of these had more than one such building nearby. More than a quarter of all housing units were located on streets that were in some state of disrepair, and a quarter were within 300 feet of an accumulation of trash.

The cross-sectional statistics reported in Table 1 give little sense of the degree to which neighborhood quality changes over time. Table 2 provides basic information on the frequency of neighborhood transitions, defined as situations where enumerators record different values for an indicator in consecutive surveys. Given the overall frequency of neighborhood problems as recorded in Table 1, the frequency of transitions is quite high. The first two rows of Table 2 report the marginal and conditional probabilities of decline and improvement. Averaging across all time periods and MSAs, five percent of all neighborhoods witness the appearance of abandoned housing. Among neighborhoods that begin a time period with abandoned housing, more than 60% witness some improvement by the end of the period. This statistic is somewhat surprising, given the generally accepted notion that the renewal of urban neighborhoods is rare (see, for example, Berry 1985). Aside from the conclusion that renewal takes place in the majority of decayed neighborhoods over any three-to-four year time period, there are two alternative explanations. The first is that this quality measure is statistically noisy. Enumerators may not consistently evaluate whether in fact there is abandoned housing within a given area.

The second is that this form of "renewal" occurs when abandoned units are demolished, possibly to be replaced with vacant lots. Few would argue that such an occurrence truly constitutes revitalization. Additional evidence presented in Table 2 addresses these two alternative interpretations.

Changes in the coding of neighborhood quality indicators other than abandoned housing are similarly common across survey waves in the later AHS panel. According to enumerators, bars on windows appear in roughly 8% of neighborhoods at risk for them.[3] Street conditions worsen in 16% of all neighborhoods, and litter problems worsen in 13%.[4] The marginal probabilities of improvement in these conditions are comparable to the probabilities of decline, but the conditional probabilities are much higher. Between 50 and 65 percent of those neighborhoods at risk for improvement in neighborhood conditions actually experience them, regardless of the measure used. This evidence assuages concerns regarding the second alternative interpretation posed above – there is no obvious way that the removal of litter could be construed as a bad thing – but does little to address the first, as each of these measures is subject to similar concerns regarding statistical noise.

The remainder of Table 2 breaks down the decline and revitalization indicators by time period and year. To these extent that these indicators are informative, rather than simply reflecting statistical noise, they should provide evidence consistent with received wisdom on the varying fates of cities and changes in trends over time. For example, Detroit should be a location marked by decline more than revitalization.

3 Neighborhoods at risk for bars on windows include those with either no or exactly one building with bars at the beginning of the interval. Recall that two-thirds of housing units with barred windows nearby have more than one neighboring building adorned with them.

4 Neighborhoods at risk for worsening street or litter problems include those with at most minor problems at the beginning of the interval. Relatively few neighborhoods are coded as having major problems.

Generally speaking, these statistics offer at least some reassuring evidence that neighborhood change indicators are informative. The "net" increase in abandoned housing, computed as the difference between the probability of decline and revitalization, is highest in cities such as Detroit (4 percentage points) and Newark (2.2 percentage points), and comparatively low in Sun Belt cities (0.1 percentage points in Phoenix and Tampa). The appearance of bars on windows occurs more frequently in West Coast cities, but controlling for this regional effect, cities with more notorious crime problems do tend to witness bars on windows more often.

By contrast, street conditions appear to correlate poorly with popular notions of which cities rose and declined during the 1980s. Minneapolis, a city with little evidence of net decline by the abandoned housing or window bars criteria, looks quite bad in terms of street disrepair, as does Los Angeles. Streets improved on net in Philadelphia and Washington. Litter indicators likewise appear to correlate poorly with common notions of decline. The poor performance of the street repair and litter indicators may reflect the fact that these outcomes are more heavily influenced by public investments, rather than market outcomes. Cities on the decline might invest more heavily in civic improvement projects, for example. For this reason, the analyses that follow will focus on the more market-oriented indicators of decline and revitalization, abandoned housing and bars on windows.

In the end, this evidence ultimately cannot refute the notion that some portion of observed neighborhood transitions in the AHS are attributable to differences in enumerator coding rather than true changes in area characteristics. To be sure, there is also evidence that these coded transitions convey useful information. Nonetheless, the importance of this caveat will be reiterated at various points through the following analysis.

Neighborhoods undergoing transition are clearly not representative of the entire population. Table 3 reports basic summary statistics for households in neighborhoods observed in the AHS metro samples, classified by whether the neighborhood subsequently underwent decline, revitalization, or no change in status, according to indicators of abandoned housing or bars on windows. In the case of the bars on windows measure, neighborhoods undergoing transitions are further classified by whether that transition was rapid, a change of two coding categories in either direction, or moderate, signifying a change of one category in either direction.

Both declining and revitalizing neighborhoods are more disadvantaged than stable areas, according to a number of measures derived from AHS statistics on the households occupying sampled housing units. Areas undergoing transition have median incomes 10,000 1993 dollars lower than stable neighborhoods. Gross rents, which sum the amount paid directly to landlords with any tenant-paid utility costs, to adjust for situations where landlords pay these costs directly, are correspondingly lower as well. Transitioning neighborhoods have a higher proportion of black and female householders, slightly larger household sizes, and lower home ownership rates.

The *ex ante* differences between declining and revitalizing neighborhoods are generally more subtle than the differences between transitioning and stable areas. Along several dimensions, however, evidence suggests that low-quality neighborhoods about to undergo revitalization are slightly better off than higher quality neighborhoods about to undergo decline. Household incomes tend to be a bit higher, female-headed households are slightly less prevalent, and home ownership rates are slightly higher. These observations provide some reassurance that the neighborhood quality measures used in this analysis provide some informational content.

3. Theoretical model

3.1 Basic setup

Suppose households receive utility from housing h and neighborhood quality q.[5] Quality varies continuously in a set of $n \in [1,N]$ neighborhoods, and the supply of housing in each neighborhood is fixed.[6] The price of housing in neighborhood n=1 is normalized to equal unity, and the prices in all other neighborhoods vary to equilibrate supply and demand for housing in each neighborhood.[7] Households choose a location to maximize

(1) $\max_{h,n} U(h, q^n)$

subject to the budget constraint

(2) $p^n h \leq y$.

In this scenario, a marginal increase in a neighborhood's quality, other things equal, will increase households' willingness to pay for housing in that neighborhood, with the exact amount determined by the relation:

(3) $\left.\frac{\partial p}{\partial q}\right|_{U=\bar{U}} = \frac{\partial U /_{\partial q}\, p}{\partial U /_{\partial h}\, h}$,

where p without the n superscript denotes willingness to pay rather than a market equilibrium

5 The addition of a numeraire commodity to the model does not influence the basic logic behind the results. Readers accustomed to seeing numeraire commodities in models of this type might imagine that utility takes the Cobb-Douglas form, which makes the omission of a numeraire here completely inconsequential.
6 Allowing elastic housing supply does not change the basic outcome of the model.
7 It is conceivable that conditions of excess supply may exist in certain neighborhoods. Reductions in demand for a certain location are generally not accompanied by reductions in supply, at least in the short-to-medium term (Glaeser and Gyourko, 2005). The presence of safety and tenants' rights regulations in the housing market may lead some landlords to refrain from allowing tenants to occupy a housing unit rather than lease it at market rates. There may also be scenarios where housing remains vacant even when local rent levels effectively fall to zero.

price. In general, willingness to pay for neighborhood quality is high when the marginal utility is high relative to the marginal utility of housing, is lower for households that consume more housing, and is higher when housing prices are higher.

Suppose further that household preferences for neighborhood quality can be indexed by a single parameter α:

(4) $\frac{\partial^2 U}{\partial q \partial \alpha} > 0$.

It follows from (3) that households with a stronger preference for neighborhood quality will have a higher willingness to pay for that commodity, other things equal. Thus, the price mechanism will generally encourage the sorting of consumers with stronger tastes for quality (high-α types) into higher quality neighborhoods. In the spirit of Epple and Romano (1991), which defines equilibrium as a scenario where no household wishes to move and there is neither excess demand nor supply for residence in any neighborhood, necessary conditions for equilibrium in this model consist of the following:

a) Neighborhoods are perfectly stratified; that is if any preference types α_1 and α_2 reside in the same neighborhood, then all types on the interval $[\alpha_1, \alpha_2]$ also reside in that neighborhood.

b) Associated with each neighborhood $n \in [2,N]$ is a boundary type, B_n, who is exactly indifferent between neighborhoods n and n-1. With the normalization of prices in neighborhood 1 mentioned above, prices in the n-1 other neighborhoods are determined by these indifference constraints.

c) There is assortative matching between households and neighborhoods. Formally, if α_i is the highest value of α in neighborhood i and α_j is the highest value in neighborhood j, $q_i > q_j$ if $\alpha_i > \alpha_j$. Moreover, it is straightforward to show that $p_i > p_j$ as well.

3.2 Effect of urban decline, under assumptions

Figure 1 graphically depicts equilibrium in this context, in price-quality space. Neighborhoods are indexed in order of increasing quality; the relation between quality and price is determined by the indifference curves of boundary types. Price-quality combinations yielding higher utility are those towards the lower and right sides of the graph. In this figure, indifference curves have been plotted as straight lines for simplicity, an innocuous assumption since the measurement of quality is arbitrary. This discussion will also make the simplifying assumption that households' demand for housing is fixed, or at least relatively price insensitive. While this assumption is less innocuous than the first, relaxing it does not substantially alter the conclusions.

The weakest preference for neighborhood quality belongs to a household having the indifference curve marked B_1 – this household is completely indifferent to quality. Such a household naturally sorts into the neighborhood with lowest quality. All households with indifference curves steeper than B_1 but less steep than B_2 also sort into this lowest-quality neighborhood, paying the equilibrium price p_1. The household with indifference curve B_2 is exactly indifferent between (q_1, p_1) and (q_2, p_2).[8] Similarly, the household with indifference curve B_3 is indifferent between (q_2, p_2) and (q_3, p_3). Households with indifference curves steeper than B_2 but less steep than B_3 sort into neighborhood 2.

In this setup, it is straightforward to show that an exogenous decrease in one neighborhood's quality results in lower utility for all households who strictly prefer that neighborhood *or any neighborhood with higher quality*. Figure 2 illustrates the impact of such a

8 Note that given the assumption of a fixed supply of housing in each neighborhood, the identity of boundary households is determined by the distribution of preferences in the population.

shock. When quality in neighborhood 2 declines from q_2 to q_2', prices must decline in that neighborhood in order to maintain household B_2's indifference between neighborhoods 1 and 2. Note that for any resident of neighborhood 2 with indifference curves steeper than B_2, the shift from equilibrium point (q_2, p_2) to (q_2', p_2') leads to a decrease in utility.

The decline in q_2 breaks household B_3's indifference between neighborhoods 2 and 3. With a fixed housing supply in each neighborhood, equilibrium is restored through an increase in prices in neighborhood 3, brought about through a bidding-up process instigated by households with indifference curves only slightly less steep than B_3. This increase in p_3 breaks the indifference between neighborhoods 3 and 4 for household B_4, which in turn leads to an increase in p_4. Thus in a city with N neighborhoods arrayed in order of quality, a quality decline in neighborhood n leads to a price decrease in n and increases in the N - n neighborhoods with higher quality.

In this scenario, the projected impact of an exogenous increase in neighborhood quality is the simple reverse of the impact depicted in Figure 2. Prices increase in the improving neighborhood, however utility increases for all households in that neighborhood except the boundary household. Prices decline in neighborhoods with quality levels higher than the improving neighborhood.

3.3 Extensions: relaxing assumptions

The scenario displayed in Figure 2 and described above maintains certain severe assumptions: that the supply of housing is fixed in each neighborhood, and each households' demand is fixed. By neglecting potential wealth effects, the scenario also assumes that all households are renters and that housing is owned by absentee landlords. Finally, by assuming that households are freely able to arbitrage differences in living standards across neighborhoods, the scenario ignores the potential impact of moving costs. This section examines the consequences of relaxing each of these assumptions.

Allowing demand and supply to vary. When housing demand and supply vary, changes in neighborhood quality may also bring about changes in neighborhood capacity. Increases in quality, by raising prices, lead households to consume less housing and producers to supply more. Conversely, reductions in quality, which lower prices, will lead towards increases in per-household consumption of housing and lower supply. Changes in neighborhood quality should thus covary positively with population growth.

Relaxing the fixed demand and supply assumptions implies that the identity of boundary households is not necessarily fixed. In declining neighborhoods, reductions in population imply that the range of households located in the declining neighborhood will shrink: referring to Figure 2, the boundary household determining p_2' will have an indifference curve steeper than B_2. The boundary household determining p_3' will have an indifference curve less steep than B_3. The net impact will be to slightly raise p_2' and to lower p_3' (and by extension new equilibrium prices in all higher quality neighborhoods). The main welfare result from the basic analysis continues to hold: quality decline in neighborhood n harms all those in neighborhoods from n to N. Quality increases have the opposite effect.

Incorporating ownership. So long as quality changes are persistent, the asset value of houses in declining neighborhoods should reflect declines in rents. Residents of declining neighborhoods thus experience negative wealth effects in addition to negative impacts on consumption, magnifying the net impact of the decline. Wealth effects negate the impact of decline in neighborhood *n* on owners in areas ranked above *n*, however. For these households, the present value of the stream of rent increases brought about by flight from the declining neighborhood is exactly offset by increases in assets.

Introducing mobility costs. Note that in the scenario depicted in Figure 2, under assumptions maintained in section 3.2, there is no mobility in the transition from one equilibrium to another. Thus, introducing some forms of mobility costs – for example, costs that affect only a subset of the population – may have a minimal impact in this scenario. Universal mobility costs may retard price responses to neighborhood quality change, amplifying the effect of decline in the affected area and muting it elsewhere.

A more interesting scenario arises when mobility costs are substantial and a neighborhood undergoes a large change in quality. Figure 3 depicts a case where one neighborhood "leapfrogs" another, with the net impact of changing the rank order of neighborhoods by quality. Note that the modeled quality change is positive in this case: neighborhood 2 experiences an increase that leaves it ahead of neighborhood 3. In a frictionless world, much mobility between neighborhoods two and three would ensue. In the special case where the neighborhoods were of equal size, and supply and demand were fixed, the populations of the two areas would trade places. In the presence of mobility costs, some households may become "trapped" in their initial neighborhood. In Figure 3, residents of neighborhood 2 whose initial indifference curve traveled through the triangular shaded area are at risk for being made worse off by neighborhood improvement. This cone is bounded below by household B_2, and above by the household exactly indifferent between (q_2, p_2) and (q_2', p_2'). These households value the increase in neighborhood quality at or below the change in market price. They also at least weakly prefer (q_3', p_3') to (q_2, p_2). These households will suffer a net loss if their cost of switching from neighborhood 2 to neighborhood 3 exceeds the gain from relocating to a superior price/quantity combination.

In the presence of mobility costs, then, it is conceivable that both decay and revitalization could lead to reductions in utility for certain residents of urban neighborhoods. This scenario is most likely to apply to renters facing high mobility costs in areas undergoing particularly stark changes in neighborhood quality. These basic observations motivate the empirical work below. There are several basic questions to be addressed. How much are households with varying observable characteristics willing to pay for neighborhood quality? How much do prices change in neighborhoods that decline or revitalize? How do these price changes compare with willingness to pay? Is there any evidence that individuals become "trapped" in revitalizing areas, where price increases exceed their estimated willingness to pay for improved neighborhood quality?

4. The valuation of neighborhood quality

Suppose households i choosing among available housing units j have a utility function of the following form:

$$(5)\ U_{ij} = \alpha (Y_i - r_j) + \beta_i X_j + \varepsilon_{ij} \ ,$$

where Y_i represents the household's income, r_j indicates the rental price of the unit in question, and X_j is a vector of housing unit and neighborhood characteristics.[9] Note that the vector β is

9 Note that this formulation treats income as exogenous to location choice. Some models, such as the spatial mismatch hypothesis (Kain, 1968), suggest that income is a function of location. Indeed, Vigdor (2002) posits that improved job opportunities form one potential benefit of neighborhood revitalization. Recent evidence, much of it derived from randomized mobility experiments such as the Moving to Opportunity program, suggest

presumed to vary across households. The error term ε_{ij} represents an idiosyncratic household- and choice-specific shock to utility. When the error terms are independent and identically distributed across choice alternatives, following an extreme value distribution, and households systematically select the alternative that maximizes U_{ij}, the conditional logit procedure can be used to identify the parameters α and β.

In practice, the conditional logit models estimated in this section will impose considerable structure on the presumed parameter heterogeneity in equation (5). In some specifications, the coefficient vector β will be presumed equal for all households. Other specifications will adopt a standard random coefficients model, allowing most elements of β to be a linear function of observed household characteristics.

A common obstacle in consumer choice models of this type is the correlation of price with unobservable components of quality. In the presence of such a correlation, estimates of the coefficient on post-rent income, α, will be biased downwards: households will appear to frequently choose more expensive housing units with little to offer in terms of observed amenities. Ferreira (2005) offers a means of circumventing this bias, by introducing a situation where two households may face different prices for the same housing unit. The source of variation are amendments to California's constitution, which allow certain households to move while retaining the property tax bill associated with their previous residence. In models presented here, Ferreira's estimate of α will be imposed as a parameter restriction. Effectively, these models will assume that Ferreira's estimate is free of the bias typically associated with estimation of such parameters.[10]

that the effect of location choice on earnings is insignificant (Orr et al. 2003).

10 In practice, conditional logit estimates of this equation that do not impose the Ferreira constraint produce coefficients that are uniformly much closer to zero, consistent with the presence of omitted variable bias. Readers inclined to discount the importance of omitted variable bias may think of willingness-to-pay values

The relevant sample for the conditional logit estimates presented here consists of all renter households in our AHS samples who report having moved into a housing unit within the year prior to their interview. The choice set for each household is comprised of those AHS rental units in the respondent's MSA listed as vacant or having turned over in the past year. For purposes of analytical tractability, the choice set includes only a random sample of unchosen alternatives. Specifications control for the probability that a housing unit was included in the choice set, constraining the coefficient on this probability measure to equal one (McFadden 1978).

The vector X_j consists of housing unit characteristics and characteristics of the relevant AHS "zone." The AHS zone contains roughly 100,000 residents and can be mapped relatively reliably into Census geography. While coefficients on household characteristics, including income, cannot be identified in a conditional logit framework, interactions between household characteristics and housing unit characteristics can. These interactions operationalize the parameter heterogeneity implied in equation (5).

Table 4 presents selected coefficient estimates from conditional logit specifications. In addition to the variables listed here, each specification controls for a set of housing unit characteristics, including the number of bedrooms, whether the unit is detached, and a categorical control for the decade in which the unit was built. The first reported specification restricts the parameter β to be equal for all households in the sample, and also constrains the coefficient on annual gross rent to be equivalent to Ferreira's estimate. The coefficients suggest that, other things equal, households tend to avoid housing in neighborhoods with abandoned

derived from the constrained estimates to be lower bounds. As will be seen below, the lack of a strong association between neighborhood quality and price trajectories implies that this paper's substantive conclusions are not sensitive to the values generated by the willingness-to-pay exercise.

units, prefer housing in wealthier and more-educated areas, and areas with a lower proportion of nonwhite residents.

Table 5 uses the coefficient estimates provided in Table 4 to estimate households' marginal willingness to pay to avoid housing in neighborhoods with nearby abandoned units. These estimates are expressed on an annual basis, in 1993 dollars. As indicated in the first row, the coefficients in column (1) of Table 4 imply a willngess-to-pay of roughly $900 per year.

The second set of coefficient estimates in Table 4 corresponds to a fully-interacted version of the underlying model, where the valuation of each included housing unit characteristic is allowed to be a linear function of each included household characteristic. There is significant evidence of heterogeneity in the valuation of neighborhood quality. Among other things, the coefficients suggest that neighborhood quality is a normal good, as willingness to pay to avoid abandoned housing increases, albeit slightly, with income. More educated householders also display a tendency to avoid neighborhoods with abandoned housing, other things equal. Willingness to pay for this measure of neighborhood quality is lower among nonwhite householders, younger householders, and householders with children, other things equal.

Table 5 summarizes this information by listing estimated marginal-willingness-to-pay values for householders with varying observed characteristics. The degree of heterogeneity in willingness to pay is substantial: the value a relatively high-income white household is more than twice that of a more moderate income nonwhite household with similar family structure and education. The willingness-to-pay numbers are fairly substantial relative to income, equivalent to between 3 and 5% for each of the household types listed. Given the limited number of additional neighborhood characteristics included in the conditional logit specification, the abandoned housing measure is almost certainly standing in for a number of other neighborhood amenities, local public goods and services, or housing unit attributes. Bear in mind, however, that any such attributes loaded on to the abandoned housing measure must be orthogonal to average income and education levels in the unit's AHS zone.

The third and fourth specifications in Table 4 repeat this exercise, replacing the abandoned housing measure of neighborhood quality with the bars-on-windows measure. As shown in Table 5, column (3) indicates that willingness-to-pay to avoid neighborhoods where at least one nearby structure has bars on its windows averages $323 per annum in 1993 dollars. Once again, there is evidence of considerable heterogeneity in this measure. Neighborhood quality once again appears to be a normal good in specification (4). In contrast with previous coefficient estimates, the presence of children in a household appears to raise willingness to pay for neighborhood quality. This may reflect the more direct association between the neighborhood quality proxy used here and local crime. Estimates suggest that a high-income, relatively educated white householder will pay upwards of six times more than a moderate-income, less educated white householder of similar age and family structure.

Variation in results obtained using the two proxy measures raises questions regarding whether neighborhood quality can really be considered a scalar phenomenon, or whether there are independent dimensions of it. The final two columns of Table 4 explore this issue by controlling for both neighborhood quality proxy measures simultaneously. Relative to models that include only one measure, the willingness-to-pay estimates derived from this specification are muted, as shown in Table 5. In specifications imposing homogeneity, willingness to pay to avoid bars on windows has been reduced by more than one-third, while willingness to pay to avoid abandoned housing is slightly smaller. Thus, while these phenomena are clearly correlated with one another, evidence does suggest a distinct willingness-to-pay to avoid each attribute.[11] Specifications admitting heterogeneity produce similar conclusions.[12]

5. How do actual price changes compare with estimated valuations?

The theoretical model outlined in Section 3 above implies that marginal changes in neighborhood quality should lead to changes in rent that render the household with the lowest valuation of quality indifferent between the old and new rent and quality levels.[13] Table 6 presents statistics on observed price changes for housing units in declining, revitalizing, and stable neighborhoods, taking advantage of the longitudinal nature of the AHS metro samples. Table entries reflect the percent changes in inflation-adjusted rents for housing units by type of neighborhood, for the entire AHS sample, and by individual time period.[14]

There is one crucial caveat that bears stating at the outset. The enumerator-coded neighborhood quality proxy measures used in this analysis can be construed as measuring some underlying latent variable with error. When the proxy measure is first-differenced, as is necessary in measuring trends over time, the proportion of variance that can be attributed to this

11 Of course, to the extent these indicators measure the same underlying construct with error, and the errors are not perfectly correlated with one another, one would expect a similar pattern. So this should not be construed as a definitive rejection of unidimensionality in neighborhood quality.

12 Somewhat surprisingly, evidence suggests that some households may be willing to pay a premium for neighborhoods featuring window bars, conditional on abandoned housing. It is possible that some households find the presence of window bars reassuring, as their ultimate purpose is to provide security for the occupants of the building.

13 In reality, this prediction is somewhat complicated by the fact that reservation levels of utility for particular households may change over time. Increases in demand for housing relative to supply in a metro area, for example, may push all renter households to lower indifference curves. Put differently, comparing the change in observed prices to estimated valuations may give an inaccurate picture of the change in well-being caused by neighborhood transitions if prices are trending upwards or downwards in the remained of the metropolitan area. It is therefore more instructive to compare utility changes in neighborhoods exhibiting one type of trend to those experienced in neighborhoods exhibiting different trends. Table 6 facilitates this type of comparison.

14 Separate breakdowns by metropolitan area are available upon request. They are not printed here because samples of housing units in declining and revitalizing areas are quite small in many metro areas.

error increases. The willingness-to-pay measures estimated above are based on comparisons between neighborhoods coded differently by enumerators in the cross-section, which quite plausibly have very large average differences in latent quality. Because of exacerbated measurement error, neighborhoods coded as declining or revitalizing may in fact have much smaller average differences in the first-differenced latent quality measure. Comparing price changes to willingness-to-pay estimates might therefore provide a misleading signal of whether neighborhood quality changes have left households better off. As will be shown below, however, price changes in neighborhoods coded as declining or revitalizing are nearly identical, on average. So long as there is some informational component to the observed neighborhood quality variables, the issue of measurement error will thus not change the basic conclusion of this analysis.

The ideal price change measure would be the increase in the market value of a rental unit. In many cases, observed prices in the AHS cannot be reliably considered market rates. Examples include rent-controlled units, units where the tenant provides a good or service in lieu of rent, or instances where landlords offer below-market rates to friends or relatives. Table 6 thus provides two sets of price change estimates; one incorporating all units in the sample, and a second that excludes units that show evidence of non-market rental rates in the initial time period. Excluded from the second set of summary statistics are units with initial monthly gross rents below $100 in 1993 dollars, all rent-controlled units, and any unit where the tenant reported providing goods or services in lieu of rent.[15]

Perhaps surprisingly, there is little evidence in this table that rent increases in revitalizing

15 These criteria were chosen after a perusal of outliers in the distribution of changes in gross rent. Virtually all of these outliers are in the positive direction – it is very uncommon for a market-rate unit to revert to a rent-controlled unit, for example. Thus no effort has been made to exclude units that had unusual gross rent values in the final period.

areas are substantially higher than those in declining areas. In both types of transitioning neighborhoods, price changes tend to be steeper than in stable neighborhoods. When excluding potential outliers, rent increases net of inflation tend to be modest – averaging around one percent over a 3-4 year time period – in stable neighborhoods, regardless of the neighborhood quality proxy measure used. Price increases in neighborhoods where abandoned housing units appear tend to be higher, averaging 3.5% net of inflation. Neighborhoods where abandoned housing units disappear exhibit price increases between these two levels, higher than stable areas but lower than declining areas. Allowing potential outliers into the analysis raises the estimated mean price increases in all areas, but does not alter the general pattern.

There is more evidence of an impact of revitalization on rent appreciation when using the bars-on-windows criterion, but even this evidence is relatively weak. Rent increases in neighborhoods where bars disappear from windows are 2% higher than in areas where bars appear. This differential shrinks substantially when potential outliers are excluded from the analysis. In either case, transitioning neighborhoods once again exhibit stronger rent appreciation relative to stable neighborhoods.

Why is rent appreciation so strong in both declining and revitalizing areas? Recall from Table 3 that both declining and revitalizing areas tend to be disadvantaged relative to other neighborhoods, at least initially. There are potential explanations for higher relative price appreciation in disadvantaged areas on both the demand- and supply-side. On the demand side, the period between 1974 and 1993 witnessed a substantial amount of immigration from less developed countries; many immigrants located in neighborhoods with declining native populations (Cutler, Glaeser and Vigdor 2006). More generally, the income distribution has compressed substantially at the low end since the mid-1970s, which would presumably raise the market demand for inferior goods such as low-quality neighborhoods. On the supply side, new housing development in virtually every American city tends to be targeted towards more affluent households. The supply elasticity of high-quality neighborhoods is thus much greater than that of low-quality neighborhoods.

The mean price change estimates presented in Table 6 necessarily obscure substantial variation in the experiences of individual households in individual neighborhoods. Is there evidence that some households experience decreases in utility when their neighborhood revitalizes? Do households predicted to have a low willingness to pay for neighborhood quality display a propensity to exit when their neighborhood revitalizes? Do households predicted to highly value neighborhood quality tend to exit when neighborhoods decline? The remainder of the evidence presented here addresses these three questions.

For individuals that remain in the same housing unit between two AHS waves, it is possible to directly predict changes in utility. Table 7 reports the results of such an exercise, adopting the parameters estimated in column (6) of Table 4 as representative of household utility functions. Results are equivalent to the change in predicted value generated by this regression equation.[16] For reasons described above, these results should be viewed with a great deal of caution, as they are comparing willingness-to-pay estimates derived from cross-sectional data with price changes associated with statistically noisier indicators of neighborhood change. Bearing this caveat in mind, Table 7 reports the mean change in predicted value, by neighborhood quality trend, as well as the proportion of estimated utility changes that are

16 These predictions utilize potentially time-varying characteristics of households. Alternative sets of predictions, holding household characteristics constant and equal to their first-period values, produces similar conclusions.

positive, for renters in the second of the two AHS metro longitudinal datasets.

In general, the results of this analysis confirm the intuition generated by a simple comparison of willingness to pay to observed changes in rent. The highest mean changes in utility are experienced in revitalizing areas, the lowest in declining neighborhoods. Utility changes are comparatively modest in stable neighborhoods. In general, utility changes tend to be more positive in the latest time period covered in this analysis, between 1989 and 1993.

There is considerable heterogeneity in the utility changes predicted for individual households in the AHS sample, driven primarily by variation in rent changes for individual housing units. In stable neighborhoods, roughly 60% of all households have positive predicted changes in utility, averaging across both time periods and all available cities. In neighborhoods marked by the disappearance of abandoned housing, 80% of all households had positive predicted changes, while only 30% of households in areas where abandoned housing appeared had positive predicted changes. Using the bars-in-windows criteria produces somewhat less stark contrasts, but utility changes continue to be more reliably positive in revitalizing areas.

While it is not accurate to state that no households suffer decreases in utility in revitalizing neighborhoods, households forced to choose one of these three states of nature from behind a "veil of ignorance" would almost certainly choose revitalization if it appeared in their choice set. Neither stability nor decline offer any assurances against utility-decreasing increases in rent.

This analysis could be misleading if the set of individuals who remain in declining or revitalizing neighborhoods is not representative of the entire population in those areas. Revitalization may look positive, for example, because all those individuals with negative predicted utility changes exit the neighborhood. Tables 8 and 9 address this concern by analyzing mobility patterns among households initially located in neighborhoods that subsequently experienced decline or revitalization, respectively.

Table 8 presents coefficients derived from probit specifications that examine the propensity for AHS renter households to exit their residence between consecutive waves of the survey. The sample is restricted to households initially residing in neighborhoods at risk for decline, according to the abandoned housing criterion in the first specification and the bars on windows criterion in the second. The specifications control for a number of householder characteristics, an indicator for whether the neighborhood exhibits decline between survey waves, and interactions between the decline indicator and the various household characteristics. Coefficients on main householder effects are omitted from the table.[17]

Generally speaking, these specifications provide little in the way of consistent evidence. Interaction terms in the two specifications, which employ different definitions of neighborhood decline, are often of obvious sign. Of the sixteen interaction terms presented in the table, three attain some level of statistical significance. In all three cases, these statistically significant coefficients have opposite-sign counterparts in the alternative specification. The most appropriate conclusion to take away from this evidence is that there are no robust, strong associations between household characteristics and responses to neighborhood decline. It is interesting to note, however, that the three statistically significant coefficients all present evidence consistent with the willingness-to-pay exercise above. Households with children generally have lower willingness-to-pay to avoid abandoned housing, and those households are

17 The main effects reveal that female-headed households, nonwhite households, households with children present, married-couple households, and households headed by older, more educated, and higher-earning householders are less likely to move out of a rental unit between survey waves.

also relatively less likely to depart when abandoned housing appears in a neighborhood. Willingness-to-pay for neighborhood quality tends to rise with education, and more educated householders show a relatively high propensity to move out of neighborhoods when bars appear on windows. It thus appears that selective attrition from declining neighborhoods may lead to an understatement of the negative effects of decline in Table 7. But this evidence is far from strong.

Table 9 offers an analogous set of results, examining the propensity to move out between survey waves among those individuals in neighborhoods at risk for revitalization. The smaller sample sizes in these specifications reflect the smaller number of neighborhoods in this state at any one point in time. Once again, there is little evidence of any systematic pattern in these results. Of the sixteen displayed interaction terms, only one attains statistical significance. That result suggests that college-educated householders are more likely to exit low-quality neighborhoods when a sign of revitalization – the removal of bars on windows – is observed by a survey enumerator. There is little evidence, in particular, that those households with low willingness-to-pay for neighborhood quality show a disproportionate tendency to exit when quality increases.

To summarize the results of this exercise, there is little evidence of a strong price response to neighborhood revitalization. This is not necessarily a surprising result. Both declining and advancing neighborhoods are relatively low on the neighborhood quality spectrum, hence equilibrium price differentials between these types of neighborhoods should be determined by households with relatively low willingness-to-pay for quality. Pronounced price appreciation in both declining and revitalizing neighborhoods most likely reflects other market forces which operate independently of trends in any one small area.

6. Conclusions

Could a rational householder truly oppose both neighborhood decline and neighborhood improvement? The model developed in this paper identifies one scenario where both quality trends could leave a renter household worse off. When neighborhood quality increases far enough to "leapfrog" the quality in other neighborhoods, and residents with relatively low valuation of quality within that neighborhood face moving costs, the net impact on their utility may be negative. These households will be required to either pay the moving costs or a higher equilibrium price for housing in their existing neighborhoods, even though they place little value on the change in local conditions.

Empirical analysis of household location choice decisions shows that individuals do place a value on neighborhood quality, and there is significant evidence of heterogeneity in this valuation. The typical household will pay a sum on the order of $900 per annum, in 1993 dollars, to avoid residing in a housing unit with abandoned housing nearby. This amount increases by an additional $200 if the unit is also in close proximity to buildings where the windows have bars. Estimates imply that this willingness to pay is significantly lower for certain types of households, including those with low incomes, less-educated heads, or children present.

Households could be harmed by revitalization if associated price increases exceed their willingness-to-pay. Further evidence exploiting the longitudinal nature of the AHS reveals that such price increases are not the norm. On average, price escalation in revitalizing neighborhoods is roughly equivalent to the rate of appreciation observed in declining neighborhoods. This suggests that factors other than neighborhood quality trends play a dominant role in determining rent increases faced by households in low-quality neighborhoods. To be sure, evidence suggests that rent increases exceed household willingness-to-pay in some revitalizing areas, but this type of rent increase is no more likely to occur in revitalizing areas than in stable or declining ones.

The term "gentrification" has negative, even alarming, connotations in some urban areas. The evidence provided here suggests that those who fear neighborhood revitalization have made a basic error of attribution, by associating it with price increases that appear more strongly linked to other, albeit not fully identified, market forces.

References

Atkinson, R. (2000) "Measuring Gentrification and Displacement in Greater London." *Urban Studies* v.37 pp.149-65.

Berry, B. (1985) "Islands of Renewal in a Sea of Decay." in P.E. Peterson, ed., The New Urban Reality. Washington: Brookings Institution Press.

Braconi, F. and L. Freeman (2004) "Gentrification and Displacement in New York City." *Journal of the American Planning Association* v.70 pp.39-52.

Cutler, D.M., E.L. Glaeser and J.L. Vigdor (2006) "Is the Melting Pot Still Hot? Explaining the Resurgence of Immigrant Segregation." Unpublished manuscript.

Ellen, I.G. and M.A. Turner (1997) "Does Neighborhood Matter? Assessing Recent Evidence." *Housing Policy Debate* v.8 pp.833-866.

Epple, D. and T. Romer (1991) "Mobility and Redistribution." *Journal of Political Economy* v.99 pp.828-858.

Ferreira, F.V. (2004) "You Can Take It With You: Proposition 13 Tax Benefits, Residential Mobility, and Willingness to Pay for Housing Amenities." Unpublished manuscript, University of Pennsylvania, Wharton School, Real Estate Department.

Gans, H.J. (1962) *The Urban Villagers: Group and Class in the Life of Italian-Americans.* New York: Free Press of Glencoe.

Glaeser, E.L. (2005) "Urban Colossus: Why is New York America's Largest City?" NBER Working Paper #11398.

Glaeser, E.L. (2003) "Reinventing Boston: 1640-2003." NBER Working Paper #10166

Glaeser, E.L. and J.E. Gyourko (2005) "Urban Decline and Durable Housing" *Journal of Political Economy* v.113 pp.345-375.

Gyourko, J.E. (2005) "Looking Back to Look Forward: Learning from Philadelphia's 350 Years of Urban Development." *Brookings-Wharton Papers on Urban Affairs.*

Jencks, C. and S. Mayer (1990) "The Social Consequences of Growing Up in a Poor Neighborhood." In L. Lynn and M. McGreary, eds., *Inner-City Poverty in the United States*. Washington: National Academy Press.

Kain, J.F. (1968) "Housing Segregation, Negro Employment, and Metropolitan Decentralization." *Quarterly Journal of Economics* v.82 pp.175-197.

Kennedy, M. and P. Leonard (2001) "Dealing with Neighborhood Change: A Primer on Gentrification and Policy Choices." Discussion paper, Brookings Institution Center of Urban and Metropolitan Studies.

LeGates, R.T. and C. Hartman (1986) "The Anatomy of Displacement in the United States." In *Gentrification of the City*, N. Smith and P. Williams, eds. Boston: Allen and Unwin.

Marcuse, P. (1986) "Abandonment, Gentrification, and Displacement: The Linkages in New York City." In *Gentrification of the City*, N. Smith and P. Williams, eds. Boston: Allen and Unwin.

McFadden, D. (1978) "Modeling the Choice of Residential Location." in A. Karlqvist, L. Lundqvist, F. Snickars and J. Weibull, eds., *Spatial Interaction Theory and Planning Models*. Amsterdam: North-Holland.

Orr, L., J.D. Feins, R. Jacob, E. Beecroft, L. Sanbonmatsu, L.F. Katz, J.B. Liebman, and J.R. Kling (2003) *Moving to Opportunity: Interim Impacts Evaluation.* Washington: Department of Housing and Urban Development.

Schill, M.H. and R.P. Nathan (1983) *Revitalizing America's Cities: Neighborhood Reinvestment and Displacement*. Albany: SUNY Press.

Vigdor, J.L. (2006) "Peer Effects in Neighborhoods and Housing." in K.A. Dodge, T.J. Dishion and J.E. Lansford, eds., *Deviant Peer Influences in Programs for Youth: Problems and Solutions*. New York: Guilford Press.

Vigdor, J.L. (2002) "Does Gentrification Harm the Poor?" *Brookings-Wharton Papers on Urban Affairs* pp.133-173.

Wilson, W.J. (1987) *The Truly Disadvantaged*. Chicago: University of Chicago Press.

Table 1: Summary statistics for enumerator-coded neighborhood quality variables, AHS

Indicator	Sample proportion, all years and metro areas
Abandoned housing (on same street pre-1984; within 300 feet thereafter)	6.9%
Bars on windows of at least one building within 300 feet	12.1 (8.1% more than one)
Minor or major repairs needed to street within 300 feet	26.2 (3.4% major)
Minor or major accumulation of trash within 300 feet	25.3 (2.9% major)

Note: sample proportion calculations exclude observations coded “not applicable” or “not answered.”

Table 2: Neighborhood decline and revitalization in a set of American cities

	Percent of neighborhood/time period observations exhibiting decline based on:				Percent of neighborhood/time period observations exhibiting revitalization based on:			
	Abandoned housing	Bars on windows	Streets in disrepair	Litter	Abandoned housing	Bars on windows	Streets in disrepair	Litter
Marginal probability	4.8%	7.0%	15.5%	13.0%	3.90%	5.5%	17.1%	15.1%
Conditional probability	5.2	7.7	16	13.4	61.7	50.0	64.4	60.7
Marginal Probabilities:								
By time period								
1974-1977	5.9	---	---	---	4.4	---	---	---
1977-1981	4.7	---	---	---	4.5	---	---	---
1985-1989	3.7	8.1	16.7	14.8	2.2	5.5	17.5	15.7
1989-1993	2.4	5.1	17.6	13.5	2.8	5.5	16.3	14.1
By city								
Anaheim	1.4	---	---	---	1.3	---	---	---
Boston	5.7	3.4	15.0	10.9	4.1	1.9	21.9	15.9
Dallas	3.9	6.5	9.6	8.4	3.6	5.7	24.9	20.8
Detroit	10.3	7.8	22.2	13.7	6.3	7.8	21.2	13.1
Fort Worth	3.5	7.1	15.5	10.2	2.9	5.4	18.3	18.6
Los Angeles	4.1	17.4	25.2	27.7	5.8	11.0	11.1	15.1
Minneapolis	2.0	1.0	24.8	20.5	2.0	0.8	15.3	13.1
Newark	6.7	---	---	---	4.5	---	---	---
Orlando	4.3	---	---	---	3.9	---	---	---
Philadelphia	5.7	9.8	16.4	15.8	5.1	7.4	19.4	16.0
Phoenix	3.8	7.6	11.4	13.5	3.7	6.2	11.0	11.7
Pittsburgh	6.0	---	---	---	4.9	---	---	---
San Francisco	5.0	11.6	18.7	17.0	2.9	9.0	13.1	15.6
Spokane	2.9	---	---	---	3.8	---	---	---
Tacoma	4.4	---	---	---	3.6	---	---	---
Tampa	1.9	5.6	10.4	10.3	1.8	4.5	15.6	14.8
Washington	4.9	6.1	14.1	11.1	3.5	5.0	16.0	14.9
Wichita	3.0	---	---	---	3.6	---	---	---

Note: Indicators of decline and revitalization are based on enumerator-coded variables in the AHS. Prior to 1984, enumerators were instructed to code conditions in the area "on the same street" as the sample unit. After 1984, this definition changed to "within 300 feet." Marginal probabilities show the proportion of all housing units that transition from one state to another between survey waves. Conditional probabilities show the proportion of housing units with the potential to decline (revitalize) that actually decline (revitalize) between survey waves.

Table 3: A comparison of conditions in declining, revitalizing, and stable neighborhoods

Summary statistic	Initial value of statistic in neighborhoods exhibiting:							
	Increase in abandoned housing	No change in abandoned housing	Decrease in abandoned housing	Rapid increase in bars on windows	Moderate increase in bars on windows	No change in bars on windows	Moderate decrease in bars on windows	Rapid decrease in bars on windows
Median income (1993 dollars)	$26,370	$38,119	$27,496	$30,284	$30,820	$41,406	$32,877	$32,292
Median gross rent (1993 dollars)	$410	$509	$407	$509	$517	$590	$512	$498
Mean household size	2.88	2.78	2.92	2.63	2.65	2.55	2.58	2.54
Percent black	37.3	10.2	35.8	34.9	32.8	8.7	34.4	36.6
Percent female-headed households	23.6	10.7	19.3	22.3	22.3	12.5	21.0	22.3
Home ownership rate	43.6	60.4	47.8	42.0	45.6	56.6	46.5	43.8
N	9,101	171,508	7,406	2,253	3,534	43,800	2,764	1,641

Note: Abandoned housing statistics are based on observations from 1974, 1977, 1985, and 1989. Bars on windows statistics are based on observations from 1985 and 1989. A "rapid" decrease (increase) is defined as progressing from more than one (no) nearby house(s) with bars on windows to none (more than one). A "moderate" increase is defined as progressing from zero to one, or from one to more than one; moderate decreases are defined analogously. Statistics are based on the characteristics of households occupying AHS sample units.

Table 4: Conditional logit coefficient estimates

Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
Annual rent (in 1993 dollars)	-2.11	-2.11	-2.11	-2.11	-2.11	-2.11
Neighborhood has abandoned housing	-1905	-254.7	---	443.7	-1834	-413.4
	(1.433)	(5.785)		(3.799)	(0.831)	(7.139)
Nonwhite householder*abandoned housing	---	1231	---	---	---	1070
		(2.446)				(3.872)
Family income*abandoned housing	---	-0.06	---	---	---	-0.05
		($1.1*10^{-4}$)				($6.7*10^{-5}$)
Householder's age*abandoned housing	---	-7.76	---	---	---	-7.17
		(0.070)				(0.108)
Presence of children under 18*abandoned housing	---	700.1	---	---	---	757.4
		(2.407)				(2.794)
Householder has HS diploma*abandoned housing	---	-1102	---	---	---	-923.8
		(2.947)				(4.172)
Building with bars on window nearby	---	---	-683.5	443.7	-409.3	575.1
			(0.805)	(3.799)	(0.849)	(6.335)
Nonwhite householder*bars on window	---	---	---	740.1	---	595
				(1.494)		(2.552)
Family income*bars on window	---	---	---	-0.02	---	-0.01
				($4.8*10^{-5}$)		($4.6*10^{-5}$)
Householder's age*bars on window	---	---	---	-6.56	---	-6.26
				(0.069)		(0.097)
Presence of children under 18*bars on window	---	---	---	-147.9	---	-250.6
				(1.834)		(3.334)
Householder has HS diploma*bars on window	---	---	---	-876	---	-749.1
				(2.101)		(3.019)
Mean family income in zone	0.04	-0.03	0.03	-0.02	0.03	-0.02
	($5.7*10^{-5}$)	($2.3*10^{-4}$)	($4.8*10^{-5}$)	($2.1*10^{-4}$)	($4.8*10^{-5}$)	($1.8*10^{-4}$)
Percentage of adults w/ HS diploma in zone	8011	-2623	8158	-2768	7975	-2966
	(5.009)	(23.96)	(4.262)	(25.56)	(4.310)	(19.47)
Percent nonwhite in zone	-1656	-8381	-1701	-8847	-1451	-8609
	(1.805)	(10.05)	(1.705)	(9.322)	(1.566)	(11.10)
Structural characteristics controlled	Yes	Yes	Yes	Yes	Yes	Yes
Structural/household characteristic interactions	No	Yes	No	Yes	No	Yes
Zone/household characteristic interactions	No	Yes	No	Yes	No	Yes
Observations	403,671	403,671	403,671	403,671	403,671	403,671

Note: Unit of observation is the household/choice alternative. Estimates pool observations across six waves of AHS metro data, from 1974, 1977, 1981, 1985, 1989, and 1993.

Table 5: Implied marginal-willingness-to-pay (per year) for neighborhood quality, 1993 dollars

	Implied MWTP to avoid abandoned housing	Implied MWTP to avoid bars on windows
Column (1): abandoned housing,no heterogeneity	901.79	
Column(2): abandoned housing		
Age 30, income $30,000, white, no children, HS graduate	1533.14	
Age 30, income $60,000, white, no children, HS graduate	2314.02	
Age 30, income $30,000, white, no children, HS dropout	1011.61	
Age 30, income $30,000, nonwhite, no children, HS graduate	950.56	
Age 30, income $30,000, white, children, HS graduate	1201.81	
Age 60, income $30,000, white no children, HS graduate	1643.33	
Column(3): bars on windows, no heterogeneity		323.49
Column(4): bars on windows		
Age 30, income $30,000, white, no children, HS graduate		524.87
Age 30, income $60,000, white, no children, HS graduate		752.03
Age 30, income $30,000, white, no children, HS dropout		110.29
Age 30, income $30,000, nonwhite, no children, HS graduate		174.60
Age 30, income $30,000, white, children, HS graduate		594.86
Age 60, income $30,000, white no children, HS graduate		617.97
Column(5): both, no heterogeneity	868.14	193.73
Column(6): both		
Age 30, income $30,000, white, no children, HS graduate	1430.35	341.63
Age 30, income $60,000, white, no children, HS graduate	2126.04	512.00
Age 30, income $30,000, white, no children, HS dropout	993.15	-12.89
Age 30, income $30,000, nonwhite, no children, HS graduate	923.96	60.04
Age 30, income $30,000, white, children, HS graduate	1071.90	460.23
Age 60, income $30,000, white no children, HS graduate	1532.16	430.53

Table 6: Observed rent changes in declining, revitalizing, and stable neighborhoods

	Abandoned housing criterion			Bars on windows criterion		
	Declining	Revitalizing	Steady	Declining	Revitalizing	Steady
Panel A: including all observations						
All cities, all time periods	8.9%	4.8%	3.0%	9.1%	11.1%	5.8%
	3971	*2906*	*53175*	*1342*	*1068*	*13833*
1974-77	4.9	4.5	2.3	---	---	---
	2182	*1590*	*25316*			
1977-81	15.5	4	0.6	---	---	---
	1038	*795*	*12888*			
1985-89	7.8	14.3	8.2	9.2	12.7	7.9
	552	*303*	*9683*	*956*	*667*	*8915*
1989-1993	22	-3.8	2.4	8.7	8.6	1.9
	199	*218*	*5288*	*386*	*401*	*4918*
Panel B: Excluding potential outliers						
All cities, all time periods	3.5	1.8	1	6	6.2	1.5
	3703	*2794*	*50569*	*928*	*782*	*11859*
1974-77	2.8	2.8	1.3	---	---	---
	2157	*1574*	*25180*			
1977-81	1.4	-0.1	-0.3	---	---	---
	1016	*786*	*12784*			
1985-89	6.2	6.5	3.9	5.4	5.8	3.9
	404	*244*	*8056*	*653*	*494*	*7557*
1989-1993	22.1	-3.7	-2.1	7.6	7	-2.7
	126	*190*	*4549*	*275*	*288*	*4302*

Note: Potential outliers are units with a monthly gross rent below $100 in 1993 dollars, as well as units reported as being rent controlled in the initial period, as well as units where the tenant reported providing services in lieu of rent. Sample sizes appear in italics.

Table 7: Predicted changes in utility for "stayer" households

	Abandoned housing criterion			Bars on windows criterion		
	Declining	Revitalizing	Steady	Declining	Revitalizing	Steady
All cities, all periods						
Mean	-1946	2380	413	-225	835	383
Proportion positive	0.28	0.81	0.59	0.42	0.67	0.6
N	167	110	2925	332	264	2606
1985						
Mean	-1555	3224	-18	-271	589	-57
Proportion positive	0.31	0.86	0.51	0.39	0.65	0.51
N	*127*	*50*	*1840*	*243*	*152*	*1622*
1989						
Mean	-3189	1677	1144	-97	1169	1109
Proportion positive	0.18	0.77	0.73	0.52	0.7	0.74
N	*40*	*60*	*1085*	*89*	*112*	*984*

Note: Utility predictions are based on conditional logit models incorporating heterogeneity in the valuation of neighborhood quality attributes, and controlling for both abandoned housing and bars on windows. Utility comparisons are made only for renter households.

Table 8: Who exits declining neighborhoods?

Independent variable	Abandoned housing criterion	Bars on windows criterion
Declining neighborhood	0.393	-0.030
	(0.352)	(0.540)
Female householder*declining nbhd.	-0.074	-0.014
	(0.057)	(0.095)
Nonwhite householder*declining nbhd.	0.002	-0.034
	(0.053)	(0.086)
Children under 18 present*declining nbhd.	-0.112	0.151
	(0.057)	(0.102)
Married householder*declining nbhd.	-0.076	0.037
	(0.079)	(0.106)
Householder's age*declining nbhd.	0.001	0.006
	(0.002)	(0.003)
Householder a HS graduate*declining nbhd.	-0.034	0.427
	(0.065)	(0.103)
Householder a college grad.*declining nbhd.	-0.094	0.372
	(0.117)	(0.136)
ln(family income)*declining neighborhood	-0.042	-0.037
	(0.033)	(0.053)
N	44,290	47,856

Note: Table entries are probit coefficients, standard errors in parentheses. Sample consists of renter households observed in the 1985 and 1989 waves of the American Housing Survey metro data in neighborhoods at risk for decline. All specifications include main effects for each household characteristic listed.

Table 9: Who exits revitalizing neighborhoods?

	Abandoned housing criterion	Bars on windows criterion
Revitalizing neighborhood	-0.085 (0.600)	-0.121 (0.816)
Female householder*revitalizing nbhd.	0.033 (0.102)	-0.084 (0.141)
Nonwhite householder*revitalizing nbhd.	0.072 (0.097)	0.040 (0.133)
Children under 18 present*revitalizing nbhd.	-0.018 (0.103)	0.002 (0.161)
Married householder*revitalizing nbhd.	0.087 (0.158)	0.004 (0.168)
Householder’s age*revitalizing nbhd.	-0.004 (0.003)	0.006 (0.005)
Householder a HS graduate*revitalizing nbhd.	-0.014 (0.121)	0.105 (0.159)
Householder a college grad.*revitalizing nbhd.	-0.328 (0.250)	0.483 (0.208)
ln(family income)*revitalizing nbhd.	0.030 (0.057)	-0.025 (0.080)
N	3,467	1,681

Note: Table entries are probit coefficients, standard errors in parentheses. Sample consists of renter households observed in the 1985 and 1989 waves of the American Housing Survey metro data in neighborhoods at risk for revitalization. All specifications include main effects for each household characteristic listed.

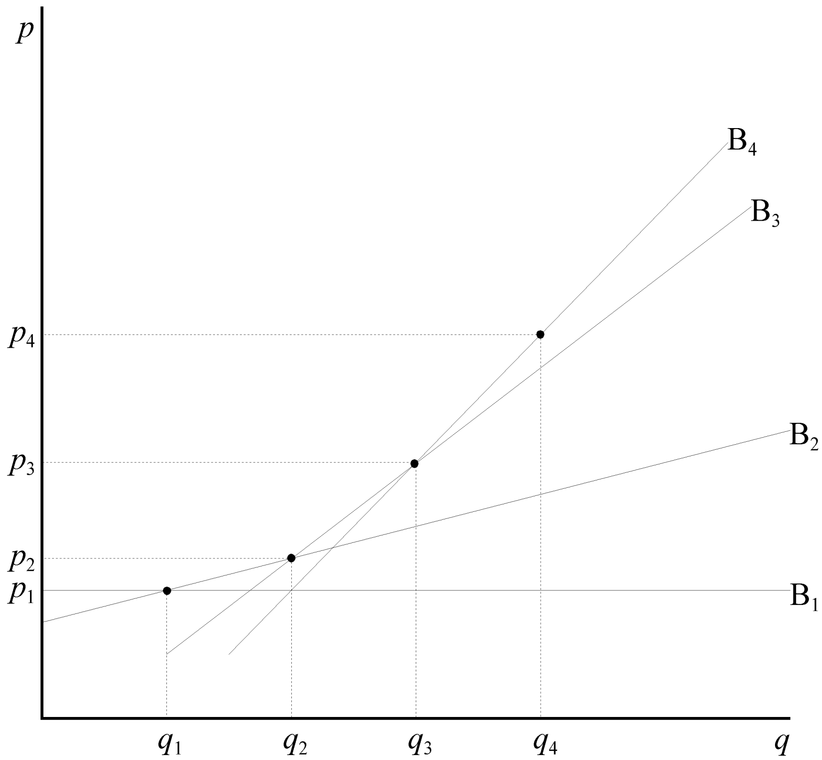

Figure 1: Equilibrium with four neighborhoods of varying quality.

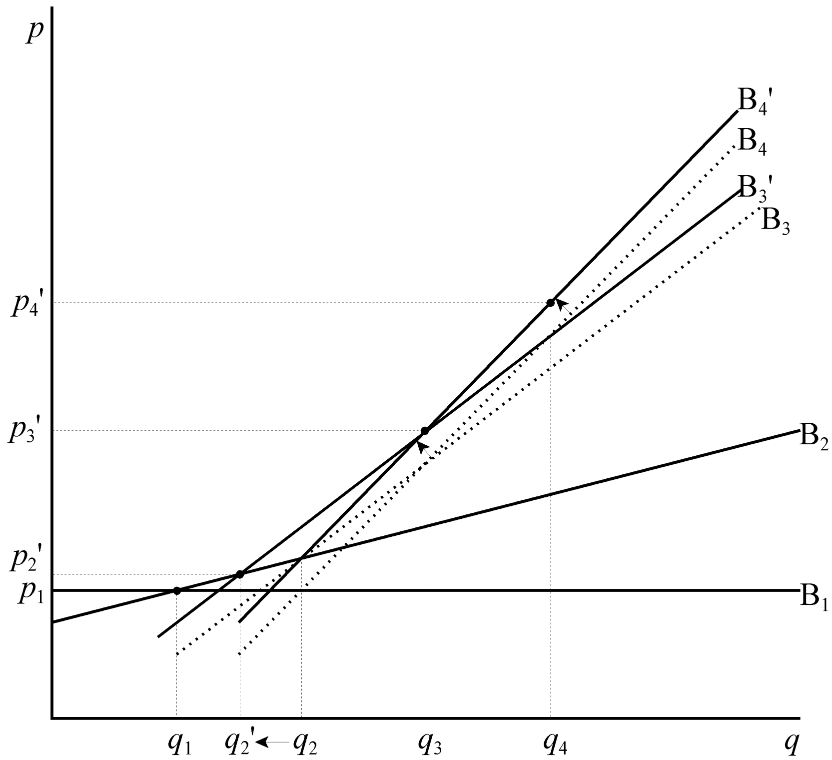

Figure 2: Transition to a new equilibrium following a decrease in quality in neighborhood 2.

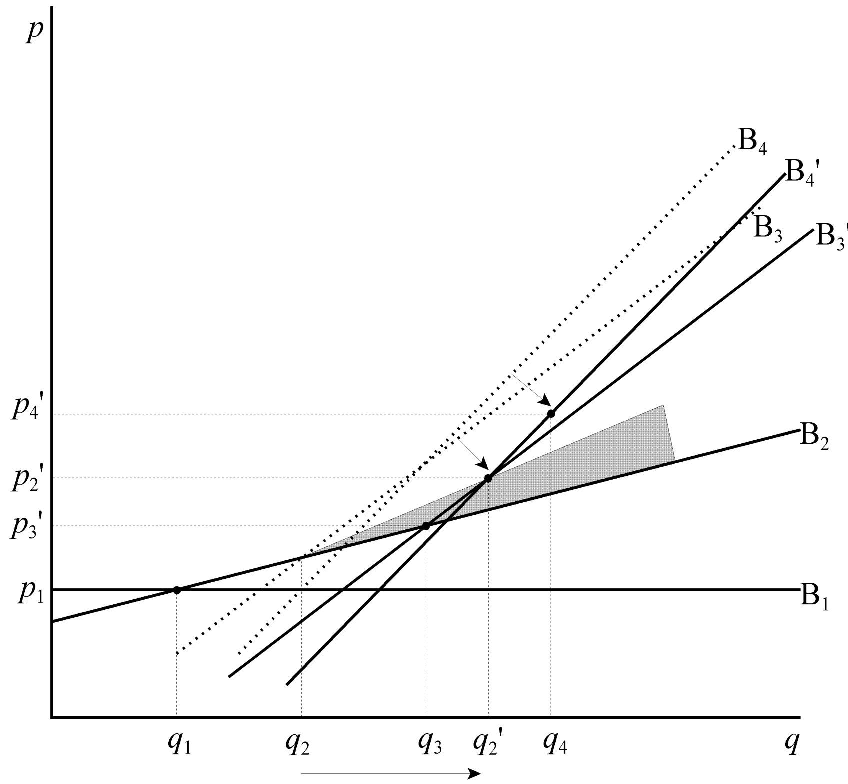

Figure 3: Transition to new equilibrium when neighborhood 2 “leapfrogs” neighborhood 3. Households with indifference curves initially falling in the shaded region are at risk for utility declines in the presence of mobility costs.