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How low income neighborhoods change: Entry, exit, and enhancement ☆

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ABSTRACT

This paper examines whether the economic gains experienced by low-income neighborhoods in the 1990s followed patterns of classic gentrification (as frequently assumed) — that is, through the in migration of higher income white, households, and out migration (or displacement) of the original lower income, usually minority residents, spurring racial transition in the process. Using the internal Census version of the American Housing Survey, we find no evidence of heightened displacement, even among the most vulnerable, original residents. While the entrance of higher income homeowners was an important source of income gains, so too was the selective exit of lower income homeowners. Original residents also experienced differential gains in income and reported greater increases in their satisfaction with their neighborhood than found in other low-income neighborhoods. Finally, gaining neighborhoods were able to avoid the losses of white households that non-gaining low income tracts experienced, and were thereby more racially stable rather than less.

1. Introduction

The 1990s were a decade of economic improvement for low-income neighborhoods. The number of high-poverty neighborhoods declined (Jargowsky, 2003), and the number of low-income neighborhoods experiencing a gain in average income greatly exceeded those experiencing a decline (Ellen and O'Regan, 2008). For many neighborhoods, the gains were sizable. But while this general pattern has been documented, there has been limited research on *how* these neighborhoods changed, through what channels, and with what consequences. In the absence of this research, some have at least implicitly assumed that these changes followed a pattern of classic gentrification — that is, neighborhoods changed because higher income, usually white, households moved into low-income, minority neighborhoods and displaced the original (lower income) residents, spurring racial transition in the process. This conventional story paints such neighborhood change as both disruptive to communities and harmful to original residents.

In this paper, we examine how well this story captures the experience of low-income neighborhoods that improved economically in the 1990s. By using the internal Census version of the American Housing Survey to study patterns of change in low-income neighborhoods in metropolitan areas, we aim to add some stylized facts to the discussion of displacement, neighborhood change and gentrification.

Specifically, we have three research questions focused on neighborhoods that gain economically. First, do we find evidence of displacement, particularly among those with fewest resources, renters and the poor? Second, what are the sources of neighborhood income change? Do increases in income come solely from the in-movement of higher income households, or do selective exit of lower income households and income gains among original residents also play a role? And finally, what other changes accompany neighborhood income gains? Do neighborhood conditions and racial composition change as they gain income? To shed light on these questions, we compare patterns of entry, exit, income gains among original residents, and other neighborhood changes in low-income neighborhoods that gained economically to those occurring in other (non-gaining) low-income neighborhoods.

In brief, our empirical findings suggest a different, and perhaps less negative, picture of low-income neighborhood gains in the 1990s than is commonly painted. We find no evidence of heightened displacement (proxied by exit rates), even among the most vulnerable, original residents, and even in the neighborhoods experiencing the largest gains. In terms of sources of income gains, as expected we find that the entrance of higher income households was an important source of income gains. But we also find evidence that selective outmigration of lower income homeowners contributed to neighborhood income growth, as did gains in income among original residents. As for other changes, we find that original renters remaining in gaining neighborhoods reported greater increases in satisfaction with their neighborhood than those remaining in other low-income

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neighborhoods. Finally, we do not find heightened racial transition in gaining tracts. Rather, in the 1990s, gaining neighborhoods were actually more racially stable and more able to avoid the losses of white households that non-gaining tracts experienced. Of course, each of these findings is based on averages; some individual neighborhoods naturally followed a different course.

2. Literature review

Most of the existing research on neighborhood economic change has been qualitative case studies of particular urban neighborhoods which are limited in their ability to provide a comprehensive picture of improving neighborhoods. The existing quantitative studies typically use aggregate, census tract level data to study the prevalence of net neighborhood changes and to examine which types of neighborhoods tend to gain. Very few studies actually examine the residential moves that underlie neighborhood change.

2.1. Exit decisions and displacement

The community development literature has long recognized that successful efforts to improve neighborhood conditions may not, in fact, benefit the original residents of the neighborhood, who may eventually be 'pushed out' by higher income households and the increased cost of housing. Displacement has been a particular concern in discussions of gentrifying neighborhoods (Schill and Nathan, 1983). Yet, the little systematic evidence that does exist uncovers no evidence of higher turnover rates (or displacement) of the poor resulting from neighborhood economic changes (Vigdor, 2002; Freeman and Braconi, 2004; and Freeman, 2005). These studies have some limits, however. Generally, they rely on very large geographic areas in measuring gentrification — thus one would expect their results to be attenuated. While Freeman (2005) is able to match households to census tracts, his analysis – like the others above – is restricted to the early 1990s, a time when the economy was relatively flat. At least in New York City, housing prices did not start their upward trajectory in most neighborhoods until around 1996 (Been et al., 2005).

One recent paper is able to address these issues. McKinnish et al. (2010) use confidential census data, which identifies the census tracts of the households in the 1990 and 2000 census. They find no evidence of displacement of non-white households and indeed they find evidence that a disproportionate number of black householders with no college education remain in gaining low-income neighborhoods. This is perhaps not surprising. At the same time that housing prices may increase in economically gaining neighborhoods, improvements in neighborhood conditions and services could make a neighborhood more inviting. By this reasoning, we might expect to see *fewer* households leaving neighborhoods that experience economic gains.

2.2. Selective entry and other sources of income gains

Most discussions of neighborhood change assume that gains are driven by the entry of wealthier households, and perhaps implicitly, the presumed displacement of lower income residents. Indeed, the terms gentrification, revitalization, and economic succession or change are often used interchangeably. Yet surprisingly little is known about neighborhood entry decisions and the role that they play in driving neighborhood economic change. Researchers have focused far more on exit decisions, and on measuring displacement.

There are a few exceptions. Crowder and South (2005) find that the rate of movement from higher-income to low-income neighborhoods increased for high-income (white) households during the 1980s and 1990s, a pattern they link to gentrification. Freeman (2005) compares the characteristics of PSID households moving into gentrifying neighborhoods with those moving into non-gentrifying, low-income neighborhoods. He finds that households moving into gentrifying neighborhoods are less likely to be poor and more likely to be white and college graduates, as compared to households moving into non-gentrifying, poor neighborhoods. He undertakes bivariate analysis only, so it is not clear whether these relationships would hold after controlling for other demographic characteristics, such as tenure status.

Finally, McKinnish et al. (2010) find that during the 1990s, white college graduates — who presumably have higher incomes, are more likely to move into gaining, low-income neighborhoods than they are to low-income neighborhoods that did not gain. Indeed, they argue that this in-migration of white college graduates is a distinguishing feature of gaining, low-income neighborhoods, implying that the in-migration drives the gain.

Few papers even acknowledge, much less examine, the possible contribution of income gains among original households who stay in the neighborhood. In Clay's (1979) study of 105 neighborhoods in 30 American cities, he explicitly distinguishes between what he calls 'incumbent upgrading' and gentrification. He finds that nearly half of improving neighborhoods in his sample were categorized as having done so through incumbent upgrading, suggesting such upgrading could be an important source of income gains. Furthermore, it is possible that both could contribute to change in the very same neighborhoods. McKinnish et al. (2010) offer some support of this possibility. Using a synthetic cohort analysis, they find suggestive evidence that black households with high school degrees living and staying in gaining, low-income neighborhoods experienced large increases in average income during the 1990s.

2.3. Demographic changes in upgrading neighborhoods and racial transition

Several studies offer evidence of demographic shifts accompanying neighborhood change. Crowder and South (2005), Freeman (2005), and McKinnish et al. (2010) all find that new households entering gaining neighborhoods are more likely to be white, than those entering other low-income neighborhoods. This is consistent with the pattern of racial transition that is often implicitly part of gentrification debates (Kirkland, 2008; Massey, 2002).

Other research, however, suggests that the racial composition of higher income entrants to gentrifying neighborhoods may be more varied. Bostic and Martin (2003) examine gaining neighborhoods during the 1970s and 1980s and find evidence that newly entering black homeowners played an important role in driving change, at least in the 1970s. In their case studies of four cities undergoing sizable gentrification, Kennedy and Leonard (2001) provide more recent evidence that higher income entrants to such neighborhoods are not all white. In each of their cities, higher-income white households are a critical part of the story, but so too are particular groups of higher-income minority entrants, with the groups varying by city.

In examining the extent of racial transition in gaining neighborhoods, the literature focuses nearly exclusively on the racial composition of the inmovers. But, whether racial transition occurs depends not only on the racial composition of the households moving into a neighborhood but also on the racial mix of those moving out. Thus, in our analysis, we consider the racial composition of both inmovers and outmovers.

3. Data

We rely on two sources of data for this work: longitudinal, housing unit/household level data from the American Housing Survey (AHS) and census tract data from the decennial census. We link these two data sets using the confidential internal version of the AHS, which identifies the census tract of each housing unit. (The publicly available

version of the AHS only identifies the metropolitan area and the 'zone' in which a housing unit is located, which includes a minimum of 100,000 people.)

3.1. The American Housing Survey

The national AHS data follows a nationally representative sample of housing units from 1985 through 2009. It surveys approximately 55,000 housing units every two years. While the AHS is a longitudinal survey of housing units, it also provides fairly detailed data on the occupants living in the unit at the time of the survey. We linked housing units across survey years from 1991 through 1999, permitting us to examine occupancy changes over the 1990s.[1]

While we cannot follow occupants who leave a unit, nor observe the neighborhoods from which new occupants arrive, we can identify when a new household moves into a unit and when original occupants leave. In fact, we are able to observe such turnover sequentially over four consecutive two-year survey windows. We know the income (and other characteristics) of households and can also observe changes in the characteristics of households who remain in a unit for at least two years. With the internal version of the AHS, we have census tract identifiers for each housing unit, which we use to link to decennial census data. This linked AHS provides far more insight into residential turnover and neighborhood change than the decennial census, which is limited to ten-year horizons and is not a panel. Moreover, the public use version of the decennial census does not reveal the census tract in which individual households are located.[2] Gaining access to the internal version of the AHS brings with it limits on disclosure, however. The Census Bureau is required to protect the confidentiality of respondent data, and thus reviews all results before they are made public and restricts publication when confidentiality could potentially be jeopardized. As such, it is not always possible to show the multiple versions of the analyses we conduct, though we can report whether the patterns are consistent.

The primary sample from which we draw data is an unbalanced panel of housing units from 1991 to 1999. In addition, in some instances it is particularly helpful to follow a balanced panel, following the same units over time. In creating a balanced panel, not only must a unit be in the sample the entire time period, but all of its relevant data must also be available in each survey period. Unfortunately, this second requirement leads to a considerable loss in sample size. To minimize the loss in sample, we have created two balanced panels, one that covers the first half of the decade from 1991 to 1995 and a second from 1995 to 1999.

Overall, our various samples include housing units in over 240 metropolitan areas. In a typical sample, our data include more than 13,000 households residing in low-income tracts. Slightly less than half of these housing units are located in neighborhoods that experienced gains in relative income from 1990 to 2000, and approximately thirty percent are located in neighborhoods that experienced large gains. (Appendix A provides the size of all samples reported in the tables.)

It is worth highlighting the differences between our data and approach and those of McKinnish et al. (2010), given the overall similarity of our research questions. As noted, they rely on the internal version of the Census, and create synthetic cohorts across two decennial years to estimate exit rates and income gains among original residents. In comparison, one of the key strengths of the internal AHS is its panel structure, which permits us to observe who actually leaves units. We can also directly observe changes in income for those who remain in place. Moreover, the frequency of the data permits us to observe changes over much shorter time periods, which is particularly important for renters, given their high rates of mobility. We are also able to examine renters and homeowners separately, and exploit survey questions about neighborhood conditions that are not collected by the decennial census. However, our household sample size is considerably smaller than that of the census data on which McKinnish et al. rely, and thus we are not able to conduct the stratified modeling their sample size supports.

3.2. Neighborhood change database

Census tract definitions and boundaries are not constant over time. To avoid confusing changes driven by shifts in geographic definitions with actual residential changes, we rely on the Neighborhood Change Database (NCDB), which uses constant census tract definitions. Constructed by Geolytics, in partnership with the Urban Institute, this data set links decennial census tract data from 1990 to census tracts as they were defined in the 2000 census. This permits us to examine how the economic fortunes of neighborhoods changed over the decade, with constant geographic units of analysis.

We eliminate from our sample census tracts that are very small (populations less than 200) and those with primarily institutionalized populations. Given our focus on economic gain, we only include tracts for which income is available for both 1990 and 2000. Finally, we limit the sample to census tracts that are within metropolitan areas.

3.3. Low-income neighborhoods and economic gain

Researchers use a wide range of measures to capture a neighborhood's economic status. Following several other studies in the literature, we rely on a relative measure of tract income: the ratio of average household income in the tract to that of the metropolitan area, to account for differences in the cost of living across metropolitan areas (Fogarty, 1977; Brueckner and Rosenthal, 2009; Rosenthal, 2008; and Ellen and O'Regan., 2008).[3] We then create quintiles of neighborhoods based on their relative income ratio in 1990. We consider the bottom two quintiles to be 'low-income' neighborhoods, and we limit our sample to housing units located in such low-income tracts.[4] The upper-bound cutoff for these neighborhoods is a relative income ratio of 0.85, a census tract with a mean household income that is 85% of the household income in the metropolitan area.

We measure the change in a neighborhood's economic status based on the percentage point change in a neighborhood's *relative* income ratio between 1990 and 2000, dividing neighborhoods into those that experience any gain from those that did not.[5] Among those that gain, we consider neighborhoods that experience a five percentage point increase in this ratio (or greater) over the decade as undergoing a large gain, and focus much of our analysis on this set of neighborhoods. We also replicate all of our analyses on the larger set of neighborhoods that experience any gains, and a subset of these neighborhoods that experience a very large gain, defined as a ten percentage point increase in their relative income, with very similar results.[6]

[1] Due to several years with large data omissions for the AHS variable identifying whether households remain in a unit, we have constructed our own means of identifying continuing households (relying on reported move-in date, birthdates of respondents, etc.).

[2] Further, the most detailed geographic information on household mobility provided in the decennial census is whether a household moved into its current housing unit within the previous year, three years or five years.

[3] We chose average rather than median household income because we are dealing with normalized tract boundaries, median incomes are themselves a result of a series of interpolations. Using average household income also permits us to calculate average MSA incomes with constant MSA definitions (based on county data).

[4] While we present results for these bottom two quintiles together, we have replicated our analyses on the lowest income quintile of neighborhoods separately, and results are qualitatively the same.

[5] We focus solely on changes in income to define gain in part to examine whether other changes associated with stereotypical gentrification typically occur with such income gains.

[6] We report empirical results primarily for neighborhoods with large gains.

Table 1A
1990 low income tract characteristics.

	Non gain	Gain	Large gain	Very large gain
Mean household income	$28,194	$25,572	$24,737	$23,865
Mean tract/MSA inc ratio	0.68	0.63	0.61	0.59
Poverty rate	20.2%	25.2%	27.2%	29.3%
% White	63.1%	61.4%	58.5%	55.6%
% Black	25.4%	26.1%	28.5%	31.1%
% Hispanic	14.4%	16.8%	17.4%	18.0%
% Foreign born	12.1%	11.6%	11.7%	11.7%
% College graduate	13.4%	11.7%	11.6%	11.4%
% Professional	13.8%	12.8%	12.7%	12.6%
% Under 18	25.0%	26.6%	26.8%	27.1%
% Married with kids	29.5%	29.3%	28.6%	27.6%
% Female headed household with kids	18.4%	19.8%	20.9%	22.4%
% Home owners	46.0%	47.5%	45.7%	43.7%
Vacancy rate	9.2%	10.4%	11.0%	11.7%
% Old housing (built before 1939)	37.6%	41.4%	42.1%	42.6%
% Live in same house 5 yrs prior	49.4%	51.2%	50.9%	50.5%
Number observations	10566	9735	6976	4916

Census tract data, NCDB database.

Table 1B
Change in characteristics of low income tracts, 1990–2000.

	Non gain	Gain	Large gain	Very large gain
Mean household income	−$739	$6141	$7375	$8665
Mean tract/MSA inc ratio	−0.07	0.09	0.12	0.15
Poverty rate	2.54%	−3.57%	−4.59%	−5.64%
% White	−7.65%	−3.60%	−2.78%	−2.13%
% Black	3.36%	0.66%	0.11%	−0.21%
% Hispanic	6.09%	4.20%	3.94%	3.53%
% Foreign born	4.58%	3.47%	3.32%	3.19%
% College Graduate	1.06%	3.83%	4.24%	4.74%
% Professional	1.09%	2.71%	2.99%	3.29%
% Under 18	1.10%	−0.13%	−0.33%	−0.51%
% Married with kids	−1.93%	−0.82%	−0.58%	−0.34%
% Female headed household with kids	2.50%	−0.51%	−1.08%	−1.71%
% Home owners	−1.20%	1.84%	2.40%	2.96%
Vacancy rate	−0.76%	−0.71%	−0.75%	−0.82%
% Old housing (built before 1939)	−3.14%	−3.86%	−3.95%	−3.96%
% Live in same house 5 yrs prior	−0.03%	0.41%	0.45%	0.44%
Number observations	10,566	9735	6976	4916

Numbers in table represent the difference between indicator in 1990 and in 2000 (e.g., poverty rate in 2000 − poverty rate in 1990), so show percentage point changes in indicators.

3.4. Descriptive statistics on low-income neighborhoods

Table 1A provides the 1990 descriptive characteristics of all low-income census tracts in metropolitan areas based on the NCDB data, weighted by tract population.[7] This table reveals some baseline differences between the low-income neighborhoods that subsequently experienced gains (of each magnitude) in income over the decade and those that did not gain. The average household income in tracts that experienced large gains was initially lower than in those that did not gain ($24,737 compared to $28,194), and poverty rates and non-white population shares were higher.[8] The large gain neighborhoods also had slightly higher vacancy rates, and a somewhat older housing stock.[9] The differences are all significant, and are even larger when considering neighborhoods that experienced very large gains. These differences also hold when we focus solely on the neighborhoods in the lowest income quintile (not broken out separately in Table 1A).[10] In sum, the low-income neighborhoods that gained in the 1990s generally started off with lower mean incomes and higher shares of minority residents.

Table 1B provides some suggestive evidence about differences in the changes that occurred in these types of low-income neighborhoods during the 1990s. The table shows that along with the gains in relative income that define them, gaining neighborhoods also experienced gains in absolute income, while non-gaining neighborhoods did not. Average household income increased by $7375 in large gain neighborhoods, a nominal increase of approximately thirty percent. Similarly, poverty rates actually increased by almost three percentage points in non-gaining tracts, while declining by almost five percentage points in tracts that saw large gains. Gaining neighborhoods also enjoyed improvements in other measures of socioeconomic status. While all neighborhoods experienced a slight increase in the share of households that are college graduates (and the share holding professional jobs), the increase was larger in gaining neighborhoods.[11] Differences in changes are also largest for neighborhoods that experienced the largest gains.

It is worth noting that, counter to the conventional wisdom, we find no evidence that gaining neighborhoods experienced more residential upheaval. The share of residents living in their housing units at least five years continues to be slightly higher in 2000 in gaining neighborhoods of all types than in non gaining neighborhoods (number calculated by authors).[12] The next sections examine the micro-household decisions to exit and enter neighborhoods to see if these patterns of stability hold and to learn more about underlying sources of economic changes.

4. Exit rates and displacement

As noted above, the chief concern about economic gain in neighborhoods is displacement of original residents. To explore the extent of displacement, we use the AHS data to calculate exit/turnover rates, or the share of households who leave their housing units over a survey window.[13] The term displacement of course connotes not just exit, but exit for a particular reason — a shock to housing costs or eviction/demolition. Unfortunately, we are unable to directly observe displacement with these data, but we use exit rates as a proxy for displacement. Table 2 presents unit exit rates for each two-year survey window in the 1990s. For this table we rely on the two balanced panels of housing units, which we can follow over time.[14] Additional analyses with alternative sampling frames show the same basic results.

[7] We have also created a comparable table for our sample of low-income neighborhoods with AHS units (weighted by the number of AHS units in the tract), and the general findings are extremely similar. Given the similarity and Census restrictions on releases, for ease we present the version of the table that uses publicly available data.

[8] These large gain neighborhoods have slightly higher income than the gentrifying neighborhoods in McKinnish et al., which have an average income in 1990 is $21,738.

[9] These starting characteristics are consistent with several factors that Rosenthal (2008) finds are correlated with neighborhood change.

[10] This is consistent with prior work, which relies on slightly different definitions of low income neighborhoods and a slightly different sample (Ellen and O'Regan, 2008).

[11] This is consistent with our comparisons of entrants and exiters, stayers and exiters using AHS data, Table 3 and 4.

[12] It is worth noting that this is not an actual measure of turnover; indeed, since the size of the housing stock can and does change in neighborhoods, this measure conflates turnover with growth.

[13] Of course, these are unit exit rates, not neighborhood exit rates. Some households who exit a unit may relocate within the same neighborhoods. Freeman (2005) provides some evidence that a smaller proportion of households, particularly poor households, may remain in gentrifying tracts compared to non gentrifying, once they exit their unit.

[14] Because we need two years of data on a unit in order to identify an exit (one year in which the occupant is in the sample, and another year in which the occupant is gone), one method for analyzing exit rates would be to create a series of panels, over each two year period. However, this raises disclosure issues at the Census. Alternatively, we can use one panel for the entire decade, and avoid most disclosure issues. However, that means that we need complete data for a unit for the entire decade for its inclusion. That approach limits our sample more than necessary. Instead, we have created two balanced panels of housing units, 1991–1995, and then 1995 to 2001.

Table 2
Exit rates in low income neighborhoods.

	Non gain	Lg gain
91–93	27.1%	25.5%
93–95	29.1%	26.2%
95–97	24.9%	23.8%
97–99	23.6%	21.5%
Only renters		
91–93	41.0%	38.1%
93–95	41.7%	39.6%
95–97	36.0%	34.9%
97–99	32.8%	31.3%
Only poor households		
91–93	30.2%	26.3%
93–95	28.9%	28.4%
95–97	27.9%	24.0%
97–99	27.1%	27.0%

The top panel of Table 2 compares exit rates for all units in low-income neighborhoods that experienced no gains over the decade to exit rates for all units in low-income neighborhoods that experienced large gains in relative income. A consistent story emerges: units located in large gain neighborhoods were slightly *less* likely to be vacated than units in non-gaining neighborhoods. We find the same pattern when examining all gaining neighborhoods, and those that experience very large gains. There is no suggestion here of higher exit rates, or displacement.

The concern with displacement is less about overall exits, however, but rather departures by those who may be less able to weather the additional costs of remaining in improving neighborhoods, such as renters and poor households. The next two panels of Table 2 consider these populations separately. Specifically, they show the share of all rental units and the share of all units initially occupied by poor households that were vacated during the specified two-year period. Looking at both groups, exit rates were quite similar in both sets of neighborhoods[15] but were consistently lower in tracts experiencing large gains over the decade. There is simply no evidence of displacement in these overall exit rates.

As noted in Tables 1A and 1B, populations in gaining and non gaining neighborhoods differed along a variety of socioeconomic dimensions, some of which may matter for exit rates. To control for these differences, we estimate a simple linear probability regression model of household turnover.[16] Specifically,

$$E_{inmt} = LgGain_{nm} + Y_n + H_{inmt} + LgGain^{*}Poor_{inmt} + LgGain^{*}Renter_{inmt} + MSA_m + \varepsilon_{inmt}. \quad (3)$$

In this model i indexes the household, n the neighborhood, t the time period and m the metropolitan area. E indicates whether a household exits the housing unit over the time period examined. LgGain is a dummy indicator of whether a neighborhood experienced a large gain income over the 1990s, and Y_n the ratio of tract income to the MSA. H includes a series of potentially relevant household characteristics measured at the start of the period (such as age, tenure status, race, poverty and the presence of children). LgGain*Poor and LgGain*Renter are interaction terms to test whether the exit rates of renters or the poor differ in large gain neighborhoods. We estimate models with and without MSA fixed effects. We run similar models for gain and very large gain, and separate cross sectional models, and results are qualitatively the same; Table 3 presents results for large gain, with the pooled model.

Table 3
Exit regressions 1991–1995 pooled.

	(1)	(2)	(3)
Large gain	−0.013**	−0.006	−0.004
	(0.005)	(0.007)	(0.008)
Tract/MSA income ratio		0.065***	0.065***
		(0.018)	(0.018)
Renter		0.171***	0.171***
		(0.006)	(0.006)
Age 40–60		−0.213***	−0.213***
		(0.005)	(0.005)
Age 60+		−0.267***	−0.267***
		(0.006)	(0.006)
Non white		0.031***	0.032***
		(0.005)	(0.006)
Children		−0.090***	−0.090***
		(0.005)	(0.005)
Poor		0.003	0.003
		(0.007)	(0.007)
LgGain*Poor		−0.003	−0.002
		(0.012)	(0.012)
LgGain*Renter		−0.000	0.000
		(0.010)	(0.010)
LgGain*Non white			−0.004
			0.009
Year 1993	0.019***	0.021***	0.021***
	(0.006)	(0.005)	(0.005)
Year 1995	−0.023***	−0.022***	−0.022***
	(0.006)	(0.005)	(0.005)
MSA FE	X	X	X
Constant	0.267***	0.282***	0.281***
	(0.004)	(0.015)	(0.015)
N	37113	37113	37113
R-sq	0.002	0.122	0.122

Standard errors clustered at the unit level.
*** p < .01, ** p < .05, * p < .10.

The first column of Table 3 provides the uncontrolled results. Without additional controls (although with MSA and year fixed effects), these results confirm the patterns in Table 2; exit rates were significantly lower in neighborhoods that experience large gains over the decade. While still negative, once household socioeconomic characteristics are included (column 2), the coefficient on large gain is no longer significant.[17] The coefficients on household characteristics are as expected; exit rates were higher for households that rent and minority households, and lower for older households and those with children, in all neighborhoods. The coefficients on the interaction terms were consistently insignificant, showing that exit rates were not elevated for renters or the poor in large gain neighborhoods. The final column presents this model with a third interaction term, large gain * minority, and this too is insignificant. Minorities were not more likely to exit a housing unit in neighborhoods experiencing large gains. Controlling for household characteristics, neighborhood income and even the metropolitan area does not change our key results: exit rates were no higher in neighborhoods of large gain — either overall or for those most vulnerable to displacement in such neighborhoods, the poor and renters. Note that this basic pattern holds true regardless of the threshold we use to identify neighborhoods that gain.[18]

Finally, since the key concern with displacement is about original residents of the neighborhood, we also estimate similar models that examine whether households who resided in large gain

[15] For confidentiality reasons, all non owner occupied units are included as rental units in Table 1B, including units for which no cash rent is paid. We have conducted this analysis on units with cash rents and the same general pattern holds — very similar exit rates overall. In one time period, rental exit rates are very slightly higher in large gain neighborhoods, but in the other years, and cumulatively, they are lower.

[16] We also estimated a logit model, which yielded essentially the same results.

[17] We have estimated many versions of this model, with additional controls and over additional years, for all definitions of gain. In some cases the gain variable remains significantly negative.

[18] We also estimated models that included both large gain and gain on the right-hand side, so that the comparison group was neighborhoods that did not gain, and the results were qualitatively the same.

neighborhoods in 1991 were more likely to move over the next two, four and six year periods, as compared to comparable households in non-gaining neighborhoods. We find the same results: original residents were no more likely (and in some cases, less likely) to leave units in large gain neighborhoods than those with no gains, and this holds for renters and for poor households.

Significantly, the absence of displacement is not explained by stable rents. When examining rents for rental units between 1991 and 1999, we find that over the decade, rents in gaining neighborhoods increased significantly more than in non-gaining neighborhoods. That is, living in gaining neighborhoods became more expensive for renters, on average, during the 1990s.

So we are left with a puzzle. As average incomes rose in many low income areas, rents rose too, and yet we see no evidence that original residents – even renters and poor households – exited these communities at elevated rates. One possible explanation is that original residents' incomes also rose, fully offsetting increases in rent. However, analysis of rent burdens shows this did not occur — rent burdens increased more in gaining neighborhoods. A second possible explanation is that as a neighborhood's average income increased, associated neighborhood services improved too, and residents were willing to pay more to enjoy this improved environment. We explore this possibility in Section 6.

5. Sources of neighborhood income change

Our second key question concerns the underlying sources of neighborhood income change. For a neighborhood's income to increase, at least one of three things must be true — new entrants to the neighborhood must have incomes higher than the neighborhood average (selective entry), households exiting the neighborhood must have incomes below the average (selective exit), and/or those remaining in the neighborhood must experience gains in income (incumbent upgrading). While the literature on gentrification has focused almost solely on the first as the source of gain, we will consider all three.[19]

5.1. Selective entry: do entrants have higher incomes?

We begin by focusing on new entrants to low-income neighborhoods — and how their incomes compare to those of the households already there. Table 4 includes evidence from the 1995 cross section of housing units.[20] Because the characteristics of households who reside in owner-occupied units differ noticeably from those in rental units, we present results separately by tenure status.[21] The first and third columns ('original residents') provide information on the mean income of the households who resided in these neighborhoods as of 1993, in each type of neighborhood. The next columns (new entrants), report the mean income of households who moved into housing units between 1993 and 1995 in each neighborhood type, deflated to 1993 dollars for comparability.[22]

Panel A of Table 4 shows that in both types of neighborhoods, homeowners moving into their units between 1993 and 1995 had higher (real) incomes, on average than those homeowners who resided in these neighborhoods in 1993. The mean household income

Table 4
Original residents versus new entrants (1993–1995).

	Non gain		Large gain	
	Original residents	New entrants	Original residents	New entrants
Panel A:				
Owners				
Mean household income	$36,626	$39,552	$34,573	$41,369
Mean household/tract income ratio	1.07	1.15	1.12	1.28
Panel B:				
Renters				
Mean household income	$21,785	$22,423	$21,294	$21,777
Mean household/tract income ratio	0.66	0.67	0.75	0.75

Original residents are those residing in tracts in 1993; 1993 income in 1993 dollars. New entrants moved into units between 1993 and 1995; 1995 income in 1993 dollars.

of new entrants moving into large gain neighborhoods was only slightly higher than that of new entrants moving into non-gaining tracts, $41,369 versus $39,552. However, because baseline average household incomes differed across neighborhood types to start, the difference in income between entrants and original residents was twice as large in large gain versus all gain neighborhoods, $6796 compared to $2926.[23] (This pattern holds for all of the years we analyze, but the differences were particularly large during the first half of the decade.)

As a more direct measure of whether the income of an entering household contributes to income gains in the particular tract the household enters, the second row of Panel A also reports the ratio of a household's income to the mean income of the tract it enters (as reported in the 1990 census), labeled 'mean household/tract income.'[24] This measure reveals that homeowners entering large gain neighborhoods had incomes that were on average 28% above the neighborhood average, a difference that was 16 percentage points higher than that for existing homeowners. This compares to an 8 percentage point difference in non-gaining tracts. All measures of income appear to confirm the stereotypical story of gentrification, with higher-income homeowners moving in and raising the average income in the neighborhood.

Panel B of Table 4 reveals that entering renters did not contribute to neighborhood gains. For both neighborhood types, new entrants to rental units had incomes that were very similar to those of renters already in the neighborhood.

These results are not surprising as we have selected neighborhoods that experienced large gains in income. Our objective here is in part to determine whether this influx of higher income homeowners was the *sole* source of income gains. Moreover, existing work has not been able to distinguish between homeowners and renters. In fact, it appears that in terms of inmovers, only homeowners contributed to neighborhood income gains.

5.2. Selective exit: do exiters have lower incomes?

While our analysis above finds little evidence of displacement, overall mobility rates were high enough that many households did in fact leave gaining neighborhoods during the 1990s. Here, we question whether the households who left typically had incomes that were lower than the neighborhood average and thereby contributed to an increase in mean neighborhood income.

[19] To capture all new entrants to these neighborhoods, including those entering new units, when analyzing entry decisions, we primarily focus on the unbalanced panel of all housing units — existing and new units, rather than our balanced panel.

[20] We selected 1995 because it is the mid-point of the decade and because separate analysis revealed that gaining neighborhoods began to experience real (and relative) gains around 1993. We have replicated this work for 1993, 1997 and 1999 and the patterns are highly similar. We note the few instances where they differ.

[21] Moreover, the higher turnover of renters means that while the typical census tract has more homeowners than renters, new entrants (and those leaving tracts) are heavily skewed towards renters. Simple comparisons of aggregated average incomes can be misleading.

[22] The CPI has been criticized for overstating inflation. As such, our comparisons likely understate differences in income over time.

[23] The same pattern is found when examining median income, although the differences are more pronounced. Differences are also more pronounced for neighborhoods experiencing very large gains.

[24] This is an imperfect measure. While a tract's average income is changing over time, we are relying on a constant measure for our numerator. Our AHS data suggest that real income did not exceed 1990 income until 1997, so this relative measure of income may be most useful prior to 1997.

Table 5
Original residents versus exiters (1993–1995).

	Non gain		Large gain	
	Original residents	Exiter	Original Residents	Exiter
Panel A:				
Owners				
Mean household income	$36,626	$37,481	$34,573	$29,610
Mean household/tract income ratio	1.07	1.07	1.12	0.95
Panel B:				
Renters				
Mean household income	$21,785	$23,623	$21,294	$23,065
Mean household/tract income ratio	0.66	0.71	0.75	0.78

Original residents are those residing in tracts in 1993.
Exiters are those original residents who exited between 1993 and 1995.
All incomes are from 1993.

To answer this question, Table 5 summarizes an analysis similar to Table 4, comparing the incomes of households who exited their neighborhoods between 1993 and 1995 to the incomes of the original residents, by neighborhood type. Panel A again focuses on homeowners. Contrasting neighborhood types, we see that homeowners exiting large gain neighborhoods had incomes that were considerably lower than those exiting non-gaining tracts. More importantly, we find that departing homeowners in large gain neighborhoods had lower incomes on average than the original homeowners in those tracts, thereby contributing to a rise in neighborhood income. (Indeed, the difference in incomes between original homeowners and those who exit is as large as with entering homeowners.) In non-gaining neighborhoods, the opposite was true: exiting homeowners had higher incomes on average than the original homeowners, hence lowering the neighborhood's average income. This pattern holds up until the 1997–1999 period. Thus, selective exit of *homeowners* appears to have contributed to neighborhood change.[25] By contrast, in Panel B, we find no evidence of selective exit among renters contributing to gains. Across both types of neighborhoods, the households exiting rental units had slightly higher incomes than the average rental household.[26]

5.3. Incumbent upgrading and relative contributions of sources of change

As previously noted, increases in neighborhood income need not come only through turnover. Residents who remain in the neighborhood may experience increases in income, also contributing to change.[27] To examine the extent to which increases in original residents' incomes contributed to neighborhood change, we use our balanced panel of housing units to directly compare the income of a household living in a housing unit in 1991 to the income of the household living in that same unit in 1995.[28] We divide units into four categories, based on whether or not they experienced turnover between 1991 and 1995, and whether they were rental or owner-occupied in 1991. This permits us to determine the average change in income associated with each of these four unit types, and to conduct a simple decomposition of income change. We then calculate the change in income for each of the four unit types, and determine the share of the average neighborhood income gain that came from each unit type. Table 6 provides results for large gain neighborhoods.

Table 6
Income decomposition for large gain neighborhoods.

	Owner		Renter	
	Turnover	Stayer	Turnover	Stayer
1991 mean income	$31,713	$35,436	$22,923	$20,826
1995 mean income	$39,681	$36,499	$23,855	$22,023
Change	$7968	$1063	$932	$1197
Share of change	71.4%	9.5%	8.4%	10.7%

Table 7
Sources of neighborhood income gain (1991–1995) no gain versus large gain.

	Owner				Renter	
	Turnover		Stay		Turnover	Stay
Ch Lg gain	$7968		$1063		$932	$1197
Ch non gain	($1232)		($1077)		($714)	$294
Diff in diff	$9200	**	$2140	*	$1646	$903

The income of the average owner-occupied housing unit that experienced turnover increased by almost $8000 over this four year period, accounting for just over 70% of the income gains over the first half of the decade. This confirms the importance of the in-movement of higher income homeowners for neighborhood that experience large gains, but also the importance of outmigration of lower income homeowners. However, turnover in owner-occupied units is not the sole source of change, with about 21% of the neighborhood gains achieved through income gains for original residents (homeowners and renters combined).[29]

To determine whether this source of change (incumbent upgrading) differs across neighborhood gain-status, Table 7 compares the gains in mean income for each of our four categories of units in large gain neighborhoods (row 1) to those in neighborhoods that did not gain (row 2). This permits us to test whether incumbent upgrading happens differentially in large gaining neighborhoods, a difference in difference comparison.

We do find evidence of differential incumbent upgrading for households who remain in large gain neighborhoods. As shown in the 'stayer' columns of Table 7, the homeowners who stayed in large gain neighborhoods experienced significantly larger increases in real income than households who stayed in non-gaining neighborhoods.[30] This incumbent upgrading occurred primarily during the first part of the decade. Renters who stayed in large gain neighborhoods also experienced larger increases than renters who stayed in non-gaining neighborhoods, but this difference was not statistically significant.

5.4. New construction and income gains

Tables 6 and 7 focused solely on units that existed from 1991 to 1995, ignoring additions to the housing stock. Yet over the course of a decade, new units are added in most neighborhoods. More relevant here, we find that such new construction was more common in neighborhoods that experienced large income gains. In 2000, according to NCDB data, more than 10% of housing units in large gain tracts were constructed in the past ten years, compared to just seven percent in non-gaining tracts. Moreover, the AHS shows

[25] This is consistent with several interpretations — including a greater retention of higher income owners in neighborhoods that are improving, or a differential loss of lower income owners perhaps as property values (and possibly property taxes) increase.
[26] AHS data suggests that higher income renters appear more mobile across the board, with higher exit rates than the poor or near poor, whether in low income neighborhoods or not.
[27] Note that this incumbent upgrading may arise from selective retention of households who, after experiencing gains in their income that might enable them to move elsewhere, choose to remain in neighborhoods that are otherwise experiencing gains.
[28] Separate analysis suggests that the differential growth in income across these neighborhood types occurred primarily in the first half of the decade.
[29] It also reveals that turnover in rental units did contribute to gains when considered over a slightly longer time horizon, Our earlier analysis, which finds no significant differences for renters, only considers two-year windows – and considers entrants and exiters separately – and therefore misses a small cumulative effect of income gains associated with rental units that turned over in gaining neighborhoods.
[30] Indeed, after adjusting for inflation, owners in non-gaining neighborhoods actually experienced a loss in real income.

marked differences across our neighborhood types in the characteristics of households moving into units newly constructed between 1991 and 1999. Homeowners who moved into newly constructed units in large gain neighborhoods had much higher incomes than homeowners that moved into existing units in those neighborhoods and homeowners that moved into newly constructed units in non-gaining neighborhoods.[31] So, in addition to the fact that gaining neighborhoods enjoyed more construction, the newly constructed units in gaining neighborhoods differentially attracted higher income households.

6. Associated neighborhood changes

Our final inquiry concerns the other changes that are associated with neighborhood income gains. First, we examine changes in neighborhood satisfaction; second, we consider patterns of racial transition.

6.1. Neighborhood satisfaction: did neighborhoods improve?

In Section 4, we report a set of analyses that consistently fail to uncover any evidence of displacement, despite increases in rents. One possible explanation is that as a neighborhood's average income increases, associated neighborhood services might improve, and there could be an increase in residents' satisfaction with the neighborhood. (Note that many observers highlight the dissatisfaction of original residents in the face of changes. Neighborworks America., 2005; Kennedy and Leonard, 2001.)

We use AHS data on reported neighborhood satisfaction to test this possibility. The AHS asks respondents to rate their satisfaction with the neighborhood in each survey round, on a scale of one to ten, permitting us to examine changes in satisfaction for households who remain in place. We find that satisfaction increased very slightly among stayers in the neighborhoods that experienced large gains (.01) compared to a decline among households staying in other low-income neighborhoods (−.21). While these changes are quite small, the difference is statistically significant. We also find slightly larger increases in reported satisfaction among rental households who stayed in place in gaining neighborhoods compared to those that stayed in place in non-gaining tracts, but the differences are no longer significant.[32] They are at least suggestive of heightened satisfaction, however, which may have played a role in retaining renter households, as neighborhood improvements compensated to some extent for increases in rent.[33]

6.2. Racial transition

Table 1B shows that on average, low-income neighborhoods became less white during the 1990s, even those that experienced income gains over the decade. Quite contrary to the stereotypical story of gentrification, that is, low-income gaining neighborhoods did not 'become more white,' at least not on average. Our exit regressions revealed that minority households were not more likely to exit units in neighborhoods experiencing large gains.

Given these findings, any perceptions of greater racial transition in gaining neighborhoods are incorrect on average. One possible explanation is that these perceptions are based on outdated patterns and have not been updated. Another explanation may lie in a focus on the racial composition of new entrants to gaining neighborhoods. Existing research has focused on the racial composition of new entrants; perhaps other observers similarly focus on the racial composition of inmovers, which is only one piece of the story.

[31] Newly constructed units are overwhelmingly owner-occupied in our sample.
[32] .22 and −.08 respectively.
[33] It is worth noting that while significant, the differences were small in magnitude.

Table 8
Racial composition of low income neighborhoods, 1993–1995.

	Non Gain			Large Gain		
	Original residents	New entrants	Exiter	Original residents	New entrants	Exiter
Panel A: Owners						
% Nonhispanic white	71.4	62.1	84.2	68.6	74.3	74.2
% Minority	28.6	37.9	15.8	31.4	25.7	25.9
Panel B: Renters						
% Nonhispanic white	52.2	48.5	55.1	46.2	47.1	50.9
% Minority	47.8	51.6	45.0	53.8	52.9	49.1

Table 8 compares the racial composition of original households in tracts to those of entering households 1993–1995, in large gain and non-gaining tracts, homeowners in the top panel and renters below.[34] We do see that homeowners entering gaining tracts were more likely to be white than those entering non-gaining tracts. More importantly, new entrants in tracts that experienced large gains were more likely to be white than the existing population, although only slightly for renters. 74% of entering homeowners were white compared to 69% of existing homeowners. To observers, in other words, the new residents moving into the neighborhood looked more white than existing residents. However, the residents who *left* these neighborhoods over the same two-year period were also more likely to be white than original residents, shown in the final column. Indeed, 74% of exiting homeowners were also white in that time period. Renters leaving units in gaining tracts were also more likely to be white than those entering, with the net effect of turnover over the time period contributing to a decline in the white population, even in gaining tracts. White residents simply appear to have been more mobile in low income neighborhoods that experienced gains in income.[35]

7. Conclusion

This paper uses a unique data source to provide new evidence on residential changes in low-income neighborhoods nationally during the 1990s. Five stylized facts are worth highlighting. First, we find no evidence of heightened exit rates for renters or for poor households, even among original residents. This holds true regardless of the time period or the length of elapsed time, and after controlling for other household characteristics and the individual metropolitan area. It also holds true for both the neighborhoods that experienced the largest economic gains economically and those that began the decade with the lowest incomes. The only evidence of heightened exit in gaining neighborhoods is for original homeowners. This type of selective exit has not been the focus in the gentrification discussion, and the normative implications are surely less certain.[36]

Second, we find that selective entry and exit among homeowners are both key drivers of neighborhood change. We find much smaller, and typically statistically insignificant differences between the incomes of new renters moving into neighborhoods and the incomes of those moving out.

Third, shedding light on a largely unexamined aspect of neighborhood change, we find some evidence that incumbent upgrading occurred differentially in gaining neighborhoods. Households staying in place experienced larger increases in income in gaining

[34] The census will not permit release of this analysis for neighborhoods with very large gain, but we find the same pattern.
[35] Indeed, in a separate analysis, we find that white households are simply more mobile, period.
[36] Of course, displacement is not simply about exiting a unit, it is about why the exit occurs. Unfortunately, we are not able to identify households after they leave a unit, to assess if a larger share of households exiting gaining tracts do so because of increased rents or eviction from their unit.

neighborhoods than in non-gaining neighborhoods; whether this arose from differential retention or endogenous increases in income is not clear. Such upgrading is not the primary source of changes in the neighborhood's average income, but it does account for approximately twenty percent of the income growth in gaining neighborhoods.

Fourth, we find that neighborhood satisfaction differentially increased in gaining neighborhoods, although the differences are quite small. This may be the important 'pull' to counter the increased costs of residing in these neighborhoods. However, larger amounts of new construction in gaining neighborhoods may have relieved some pressure on rents, and provided a new housing stock that differentially attracted higher income new residents. These last factors may have contributed to the lack of heightened turnover (at least on average) in gaining neighborhoods.

Finally, we find no evidence that the populations in gaining neighborhoods became more white in the course of change. While new entrants to such gaining neighborhoods were more likely to be white than those entering non-gaining neighborhoods, so too were those leaving these neighborhoods. The stereotypical story of white inmovers and minority outmovers, perhaps based more in the history of white flight, was not the typical experience in the 1990s. While gaining neighborhoods attracted a greater share of whites than other low-income neighborhoods, they did not actually gain white residents, as the stylized story of gentrification suggests.

In short, the picture our analyses paint of neighborhood change is one in which original residents are much less harmed than is typically assumed. They do not appear to be displaced in the course of change, they experience modest gains in income during the process, and they are more satisfied with their neighborhoods in the wake of the change. To be sure, some individual residents are undoubtedly hurt by neighborhood change; but in aggregate, the consequences of neighborhood change – at least as it occurred in the 1990s – do not appear to be as dire as many assume.

Appendix A. Sample sizes

	Non gain	Gain	Large gain	Total
1991–1995 panel				
No. of owners	2797	2470	1621	
No. of renters	3917	3187	2227	12,371
1995–1999 panel				
No. of owners	2922	2719	1800	
No. of renters	4357	3557	2460	13,555
1995 cross section				
No. of owners	2968	2724	1826	
No. of renters	4487	3681	2570	13,860

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