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NEIGHBORHOOD EFFECTS ON THE LONG-TERM WELL-BEING OF LOW-INCOME ADULTS

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Abstract

Nearly 9 million Americans live in extreme-poverty neighborhoods, places that also tend to be racially segregated and dangerous. Yet the effects on the well-being of residents of moving out of such communities into less-distressed areas remain uncertain. Using data from Moving to Opportunity, a unique randomized housing mobility experiment, we find that moving from a high-poverty to lower-poverty neighborhood leads to long-term (10 to 15 year) improvements in adult physical and mental health and subjective well-being, despite not affecting economic self-sufficiency. A 1 standard deviation decline in neighborhood poverty (13 percentage points) increases subjective well-being by an amount equal to the gap in subjective well-being between people whose annual incomes differ by $13,000, a large amount given that the average control group income is $20,000. Subjective well-being is more strongly affected by changes in neighborhood economic disadvantage than racial segregation, which is important because racial segregation has been declining since 1970 but income segregation has been increasing.

Nearly 9 million people in the United States live in “extreme-poverty” neighborhoods in which at least 40 percent of residents have incomes below the federal poverty threshold, which for 2011 equaled about $23,000 for a family of four (1, 2). Such neighborhoods also tend to be racially segregated with high rates of crime and disorder and low-quality public services (3). Studies dating back as far as the 17th century have shown that people living in distressed neighborhoods have greater criminal involvement and fare worse on educational, economic, and health outcomes than those living in less-distressed areas (3–6). These patterns have generated long-standing concern that distressed neighborhood environments might themselves adversely affect people’s lives and “doubly-disadvantage” their low-income residents.

But much uncertainty remains about the degree to which variation across neighborhoods in people’s outcomes reflects the independent causal effects of neighborhood environments per

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se instead of the propensity of different types of people to live in different areas. Even the most detailed data collection effort may be unable to measure adequately all of the individual- or family-level characteristics that influence both neighborhood selection and life outcomes. This type of "selection bias" can substantially distort non-experimental estimates of "neighborhood effects" (7). Yet determining the importance of changes in people's neighborhood environments for their life outcomes is a central issue for the social and medical sciences and social policy.

An understanding of the mechanisms through which neighborhood environments affect people's lives is a crucial issue for policy design. Much of the debate among researchers has focused on the relative importance of residential racial segregation versus economic segregation. Nearly 70 years ago Gunnar Myrdal argued that racial segregation enabled policymakers to reduce the quality of public services to blacks without harming whites (8), a concern echoed by the 1968 National Advisory Commission on Civil Disorders (the "Kerner Report") (9). Douglas Massey and Nancy Denton subsequently argued in their widely-cited 1993 book *American Apartheid* that "residential segregation has been instrumental in creating a structural niche within which a deleterious set of attitudes and behaviors – a culture of segregation – has arisen and flourished" *(10, p. 8)*.

In contrast, William Julius Wilson's landmark 1987 book *The Truly Disadvantaged* argued that the flight of black working- and middle-class families out of ghettos in the 1960s and 1970s was harmful to the families who remained behind not because of any increased racial segregation, but rather because this exodus removed "mainstream role models that help keep alive the perception that education is meaningful, that steady employment is a viable alternative to welfare, and that family stability is the norm, not the exception" *11, p.49*. Subsequent work has examined other pathways through which spatially-concentrated disadvantage might affect people's lives such as declines in "collective efficacy" – the willingness and ability of community residents to work together to support shared norms (3, 5).

Distinguishing the effects of changes in racial versus income segregation also helps answer the question of whether the problem of harmful neighborhood effects on disadvantaged populations is getting better or worse over time, given opposing recent trends in U.S. residential segregation by race and income. Specifically, racial segregation in America peaked in 1970 and has been declining over the past 40 years, to levels not seen since 1910 (12), whereas income segregation has been increasing since 1970 (13, 14.

This paper examines the long-term effects of moving into a less-distressed neighborhood environment on the well-being of low-income adults using new data from a unique, large-scale randomized social experiment – the U.S. Department of Housing and Urban Development's (HUD) Moving to Opportunity (MTO) demonstration. Via random lottery, MTO offered some public housing families but not others the chance to move into a less-distressed area (see supplementary materials section 1). MTO randomization generates large, persistent differences in neighborhood conditions across otherwise comparable groups of families and enables us to attribute differences in post-baseline outcomes across groups to the MTO-assisted moves.

Unlike many social experiments that follow people for short periods, we focus on long-term effects through in-person data collected 10–15 years after randomization. We have shown elsewhere that MTO moves have long-term beneficial effects on a narrow but important set of physical health measures, related to extreme obesity and diabetes (15). The implications for how neighborhoods affect the overall quality of the lives of participating families were not addressed in that work.

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In the current report, we use data from the MTO experiment to examine the long-term effects of moving to less distressed neighborhoods on broad measures of the well-being of low-income adults. We examine "objective" outcomes (economic self-sufficiency, physical health, and mental health) that have been the traditional focus of this literature. We also take a new approach in examining experimental neighborhood effects on a comprehensive measure of people's quality of life as they perceive it, using adult self-reports of subjective well-being (SWB). And we investigate the relative importance of racial segregation vs. income segregation in affecting the SWB of low-income adults.

The Moving to Opportunity experiment

From 1994 to 1998 MTO enrolled 4,604 low-income public housing families living in high-poverty neighborhoods within five U.S. cities: Baltimore, Boston, Chicago, Los Angeles, and New York. Families were randomized into three groups: i) the Low-Poverty Voucher (LPV) group, which received housing vouchers that subsidize private-market rents, but could only be used in census tracts with 1990 poverty rates below 10 percent; ii) the Traditional Voucher (TRV) group which received regular housing vouchers without any MTO relocation constraint; and iii) a control group which received no assistance through MTO. Some 48% of the adults assigned to the *LPV* group and 63% of those assigned to the *TRV* group managed to relocate using an MTO voucher (the MTO "compliance rate"). Because the effects of *LPV* and *TRV* assignment on neighborhood conditions converge over time, and to maximize statistical power, we initially present results that pool the two treatment groups together. (Separate estimates for the *LPV* and *TRV* groups are in tables S1-S4).

Data from baseline surveys collected from all MTO adults shows these families were quite economically disadvantaged when they applied for MTO (table 1). Most household heads were African-American or Hispanic females; fewer than 40% had completed high school. By far the most common reason applicants reported signing up for MTO was to get away from gangs and drugs, with around three-quarters reporting this as one of their top two reasons for wanting to move.

As one would expect from a properly-conducted random assignment, the distribution of baseline characteristics is balanced between the treatment and control groups. Among the 21 baseline characteristics reported in table 1 just two treatment-control differences are significant at $P<.10$ and none is significant at the $P<.05$ threshold. An F-test fails to reject the null hypothesis that treatment-control differences in the baseline variables shown in table 1 are jointly zero ($P=.462$).

Measures

To measure long-term effects of changing neighborhoods on adults in the MTO demonstration, the Institute for Social Research at the University of Michigan—under subcontract with our research team—collected in-person data from participants 10–15 years after random assignment (hereafter "long-term survey;" see supplementary materials section 2 for details). Interviewers were blinded to the MTO group assignments of participating families. The effective response rate for MTO adults was 90% and was similar across randomized MTO groups.

To measure the neighborhood conditions in which families were living during the follow-up study period, we linked address information for MTO adults to census tract-level data on population characteristics from the 1990 and 2000 decennial censuses and the 2005–09 American Community Surveys. Our main results focus on duration-weighted tract characteristics averaged over the entire post-randomization study period, since people's life

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outcomes may depend on cumulative exposure to neighborhood environments not just current neighborhood conditions (16). The long-term surveys also asked MTO participants to self-report on conditions of the neighborhoods and housing units in which they were living at the time.

To measure neighborhood effects on traditional "objective" measures of well-being, we construct summary indices of long-term adult outcomes in the domains of economic self-sufficiency, physical health, and mental health. We focus on adults in part because of our interest in well-being over the long term, which may not yet be evident for the MTO children. Our outcome indices are constructed from a set of individual outcomes that are re-scaled so that higher values represent "better" outcomes and then converted to Z-scores using the control group distribution. Aggregating outcomes improves statistical power to detect impacts and reduces risk of "false positives" from examining numerous outcomes (7). To reduce the risk of false positives due to data mining, we examine outcome indices that were pre-specified for the interim (5-year) MTO follow-up (7).

We also examine a self-reported measure of comprehensive subjective well-being (SWB)—the first time the effect of neighborhoods on SWB has been assessed in an experimental analysis. Our primary measure of SWB is based on responses to the following question from the General Social Survey (GSS) that we included on our long-term follow-up survey of MTO adults: "Taken all together, how would you say things are these days – would you say that you are very happy, pretty happy, or not too happy?" (17). This type of happiness question yields results similar to those from questions about general life satisfaction; both provide global retrospective assessments of how people think their lives are going and are increasingly used to assess public policy impacts (18). We use the same 3-point response scale as the GSS to benchmark MTO against national samples; tradeoffs with this scaling are discussed in the supplementary materials. Another reason we focus on adults is because more is known about measuring SWB of adults than youth (19). SWB was not included in the interim MTO survey but was added to the long-term survey to be one of the key summary measures of the net impacts on families from moving to a less-distressed neighborhood. MTO controls are slightly happier than adults in national surveys with similar socio-demographic characteristics (table S2).

Methods

We begin by presenting intention-to-treat (ITT) estimates that capture the effect of being offered the chance to use an MTO voucher to move into a different neighborhood. These estimates are calculated as the difference in average outcomes for families assigned to treatment versus those assigned to the control condition. ITT estimation assumes that randomization was carried out correctly, that there is no selective attrition in measuring outcomes across groups, and that MTO's effect on a given family is independent of the treatment status of other families.

We can also use the MTO experimental data to estimate the relationship between outcomes and some specific neighborhood attributes **W** as in equation (1). Ordinary least squares estimation of (1) may yield biased estimates because of possible correlation of **W** with unmeasured individual characteristics (ε) that influence both neighborhood selection and outcomes, Y. We instead use two-stage least squares to generate instrumental variables (IV) estimates, where in the first stage equation we use interactions of MTO random assignment and indicators for which MTO site families live in at baseline as instrumental variables to generate predicted values of **W** that are then substituted for the actual value in the second stage eq. (1) (7). The equation also includes a set of baseline characteristics, **X**including

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indicators for MTO demonstration site and numerous participant socio-demographic characteristics, to improve the precision of our estimates.

$$Y=\pi_0+\mathbf{W}\,\pi_1+\mathbf{X}\,\pi_2+\varepsilon \quad (1)$$

IV estimation of equation (1) essentially fits a "dose-response" model, and asks whether those treatment groups and sites that experience relatively larger gains in specific elements of **W** as a result of treatment assignment also experience relatively larger gains in the outcome of interest. This estimation approach assumes this is the only reason why the effect of treatment assignment on outcomes varies across randomized groups and demonstration sites. It also assumes the only pathway through which the instruments affect the outcomes of interest is by affecting the neighborhood measures included in equation (1). Given the large number of neighborhood attributes affected by MTO moves, this approach cannot isolate the effect of a specific attribute. We instead view any single variable used in **W** to be a summary measure of neighborhood environment (for example, tract poverty captures the effects of moving to an area with a lower poverty rate and other aspects of neighborhood economic disadvantage that co-vary with tract poverty).

In a model that relates Y to a single neighborhood measure W with the only covariates (**X**) being the indicators for the MTO cities, the IV estimation of equation (1) is equivalent to fitting a regression line through the 15 data points that correspond to the average values of Y and W for each of the three randomized MTO groups in the five demonstration sites relative to the site overall mean. Below we present several visual instrumental variables graphs that show the data and logic behind our IV estimates.

Results

Table 2 shows that MTO does indeed generate sizable and sustained differences in average neighborhood conditions of the individuals across randomly-assigned groups, despite the fact that only around half the adults assigned to treatment used a MTO voucher to relocate. One year after random assignment the average control group family is living in a census tract with a poverty rate of 50%, compared to 34% for the average family assigned to treatment (standard error of the difference ±0.7%). This difference in tract poverty across randomized groups narrows over time, mostly because tract poverty rates decline for controls over time. This decline is driven by control families increasingly moving into lower-poverty neighborhoods on their own, as opposed to their baseline neighborhoods gentrifying around them. Averaged over the entire study period, assignment to treatment reduces average tract poverty rates by 8.2 percentage points (standard error ±0.5%), or about one-fifth of the control group average of 40%. This is equal to about two-thirds of a standard deviation reduction in tract poverty in the national tract-poverty distribution.

Table 2 also shows that MTO had more modest effects on neighborhood racial composition. Assignment to treatment reduces the average neighborhood minority share experienced by participants over the study period by 4.6 percentage points (standard error ±0.6%), a small share of the control group's average of 88 percent, although there are larger treatment-control differences in this variable in some sites than others (the source of variation we use for our instrumental variables estimates; see supplementary materials section 3.3). Table 2 further indicates MTO generated sustained effects on neighborhood safety and other neighborhood social processes such as collective efficacy that are thought to be important in changing behavior (3, 5).

Because moving itself is part of the MTO treatment, which could have independent effects on people's life outcomes, it is important to keep in mind that the control group averaged

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2.165 moves over the study period (table 2). Treatment assignment increases the number of moves over 10–15 years by .584 (standard error ±.068).

Figure 1 shows that the opportunity to move through MTO had mixed (null to positive) long-term effects on objective measures of well-being of the type that have been the traditional focus of the neighborhood effects literature. ITT effects are not statistically significant on economic outcomes for adults in MTO households 10–15 years after random assignment. Effects on a broad index of physical health measures are in the direction of better health (ITT effect of +0.063 standard deviations, standard error ±.039) but are not quite statistically significant (P=.107; unless otherwise noted, all remaining statistical results come from t-tests). Effects on mental health are marginally significant (P=.084) in the direction of better health (ITT effect of +.070 standard deviations, standard error ±.041). The final bar of Figure 1 shows, though, that ITT effects are more strongly beneficial for SWB, with the offer to move to a less-disadvantaged area increasing SWB by +.098 standard deviations (standard error ±.039, P=.013).

Figure 2 shows the basic intuition behind our instrumental variables estimates, which try to distinguish between the effects on SWB of neighborhood economic disadvantage (as represented by tract poverty rate) versus racial segregation (as measured by tract share minority). The x-axis of Fig. 2A represents the average tract poverty rate MTO adults experience over the study period, while the y-axis represents SWB, both in standardized (Z-score) form. The data points are the average tract poverty and SWB for adults broken out by MTO randomized group and demonstration site. The slope of this line is essentially our IV estimate of the relationship between SWB and tract poverty. A 1 standard deviation decrease in tract poverty (a 13 percentage point change) is associated with increased SWB equal to .141 standard deviations (standard error ±.054, P=.0009; table S5).

The remaining panels of Figure 2 suggest that poverty concentration is more important than racial segregation in affecting the SWB of MTO adults. SWB does not have a statistically significant relationship with the minority composition of the tracts in which MTO families reside (P=.478), as illustrated by the relatively flat line in Fig. 2B. The size of the increase in SWB from a 1 standard deviation reduction in tract poverty nearly doubles once we control for tract minority share in the same model (from .141 to .261 standard deviations, standard error ±.093, P=.005; table S9), as seen by comparing Figs. 2A and 2C. In contrast, holding neighborhood poverty constant, a 1 standard deviation *decrease* in neighborhood minority share makes MTO adults if anything *worse off* -.279 standard deviations, standard error ±.169, P=.098), shown by the positive slope in Fig. 2D. The conclusion that a decline in neighborhood economic disadvantage has a more beneficial result for SWB than does a comparably-sized decline in neighborhood minority composition comes from the fact that we can reject the null hypothesis that the slopes illustrated by Figs. 2C and 2D are equal (P=.030; table S9).

Results are qualitatively similar if we estimate models that assume that outcomes are only affected by current neighborhood conditions, measured at the start of the survey period, May 2008 (tables S6, S10, Figs. S4-S7).

Discussion

To what extent does moving to a less distressed neighborhood environment affect people's well-being? In this paper we present results from a large-scale randomized social experiment (MTO) designed to address this question that has been of long-standing concern to the social and medical sciences and to policymakers. Random assignment in MTO overcomes concerns with selection bias by generating differences in the average neighborhood

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conditions experienced by otherwise comparable groups of people. MTO is unique in terms of the long duration of the follow-up data collection that has been carried out with participants spanning 10–15 years after randomization.

MTO has strong internal validity, but the MTO findings may not generalize to all U.S. families. Although the MTO sample is comparable to other urban minority samples in high-poverty urban areas that have been studied in this literature (20, 21), the sorts of families living in such extreme-poverty areas are very disadvantaged relative to other American adults. MTO was carried out during a time when concentrated poverty and crime rates were declining, and HUD's HOPE VI program was demolishing many public housing projects across the country. MTO's impacts also do not necessarily identify the effects of larger-scale mobility programs (22).

Keeping these caveats in mind, we find that over the long term (10–15 years) the chance to move to less distressed neighborhoods in MTO has no detectable long-term effects on adult economic self-sufficiency. In a previous paper we showed that MTO had important long-term effects on two particularly important physical health measures that predict long-term disease risk; namely extreme obesity and diabetes (15). We report here that MTO's impact on a broader index of physical health was in the same direction (towards improved health), but was not quite statistically significant, while we find a marginally significant beneficial impact of moving to a less distressed neighborhood on a broad index of mental health.

This mixed pattern of MTO impacts for traditional, objective measures of well-being echo what was found in the interim (5-year) follow up of MTO families (7, 23). These mixed results have been disappointing to many observers, in part because the Congressional legislation authorizing the MTO demonstration explicitly mentioned the goal of improving some outcomes that were unaffected (such as adult earnings). Similar mixed findings are apparent in recent quasi-experimental studies of other housing mobility programs (24–26). These mixed results have led influential observers like Yale Law School professor Robert Ellickson, who is generally sympathetic to the value of housing vouchers over project-based housing programs, to argue that *(27, p. 439)* "recently published studies have begun to destabilize the former consensus that a poor adult or child is significantly disadvantaged by residing among other poor people … the case for dismantling an entire poor neighborhood … is hardly so plain."

Yet the results reported here might lead to quite a different conclusion in that we find sizable positive effects of moving from a more-distressed to a less-distressed neighborhood on subjective well-being, a measure that represents a comprehensive assessment by the participants themselves of the extent to which their lives have been affected. Our results suggest that living in distressed neighborhoods has more important adverse impacts, and escaping from such neighborhoods more important positive effects, on the well-being of low-income adults than was revealed by previous experimental and quasi-experimental studies of neighborhood effects that focused on traditional measures of socioeconomic and health outcomes. Whether or not the MTO vouchers imposed additional locational constraints on families does not appear to matter much for the positive effects of such moves on well-being (table S4).

Although "happiness" has no natural metric, one can still interpret the magnitude of our results by noting that a 1 standard deviation reduction in neighborhood poverty (about 13 percentage points) is associated with an increase in SWB that is about two-thirds of the gap in SWB between U.S. blacks and whites [which is around one-quarter of a standard deviation in favor of whites (28)], and about equal to the remaining gap in SWB between families with annual incomes that differ by $13,000 after conditioning on a standard set of

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control variables that differ by income and affect happiness (supplementary materials sections 3.3). This is a large amount, equal to about two-thirds of the average income of MTO control group families in our long-term survey ($20,000).

Subject self-reports of SWB have the potential to provide an informative summary measure of the overall impact of neighborhood conditions on people's lives. Although SWB measures are being used with increased frequency in the social sciences and policy analysis, SWB has not been the focus of much previous "neighborhood effects" research. The proper interpretation of self-reports about SWB remains the topic of some debate. Previous studies show different measures of self-reported SWB to be correlated in expected ways with objective indicators of well-being such as life events, biological indicators (e.g., smiling frequency; brain activity), and reports from significant others about the person's happiness at both the individual and group levels (29, 30; supplemental materials section 2.3. We also corroborate our findings for SWB by examining the effects of MTO moves on related measures of psychological distress (table S4).

As noted in the introduction, it is also important for both science and policy to understand *why* changes in neighborhood environments affect the well-being of low-income adults. Isolating mechanisms with the MTO data is challenging and our statistical power to do so is somewhat limited. We focus on distinguishing the effects of residential income segregation versus racial segregation because this is a key scientific question, because different policies may be required to address segregation by income versus race, and because racial segregation has declined the last 40 years while income segregation has substantially increased.

Our results suggest that changes in neighborhood poverty are more important than racial segregation in affecting the SWB of low-income adults in MTO. (We interpret neighborhood poverty as a marker for a collection of correlated neighborhood characteristics across the neighborhoods in which the MTO families reside.) The supplementary materials show the same qualitative pattern holds for adult physical and mental health outcomes as well.

The rise in U.S. residential income segregation since 1970 raises the possibility that the problem of harmful neighborhood effects on people's well-being may be getting worse rather than better over time. Increased poverty concentration in America does not seem to be due simply to increases in overall income inequality (31). The average tract poverty rate for families in the bottom quintile of the U.S. income distribution increased over the past 40 years by about 2.4 percentage points (from 17.6% to 20.0%). If the results from our MTO sample generalize to other very low-income families, the increase in poverty concentration over the past 40 years reduced the well-being of the bottom quintile of the income distribution by an amount that may be equivalent to a decline in annual household income of about $1,400 (about 8%). If our estimates are correct, the $1,400 dollar-equivalent for the decline in well-being for families in the bottom quintile caused by increased poverty concentration from 1970–2007 is about equal in size to the total gain in real annual family income of $1,300 that the bottom quintile has experienced over roughly the past 40 years from $15,336 in 1969 to $16,622 in 2007 ((32), converted to 2009 dollars; see supplementary materials section 3.3).

Our findings are also germane to debates about the proper objectives for public policy. For example, one recent review of U.S. anti-poverty programs notes that their effectiveness depends "at least in part, on whether the programs do, in fact, reduce poverty" (*33 p. 12*. By that standard, MTO-type policy efforts to improve the neighborhood conditions of poor families would not be part of an effective anti-poverty strategy, as the program failed to

produce detectable impacts on family income (7, 23). But if the goal is the broader one of improving the well-being of poor families, then policies that seek to ameliorate the adverse effects of dangerous, distressed neighborhoods on poor families are worthy of careful consideration.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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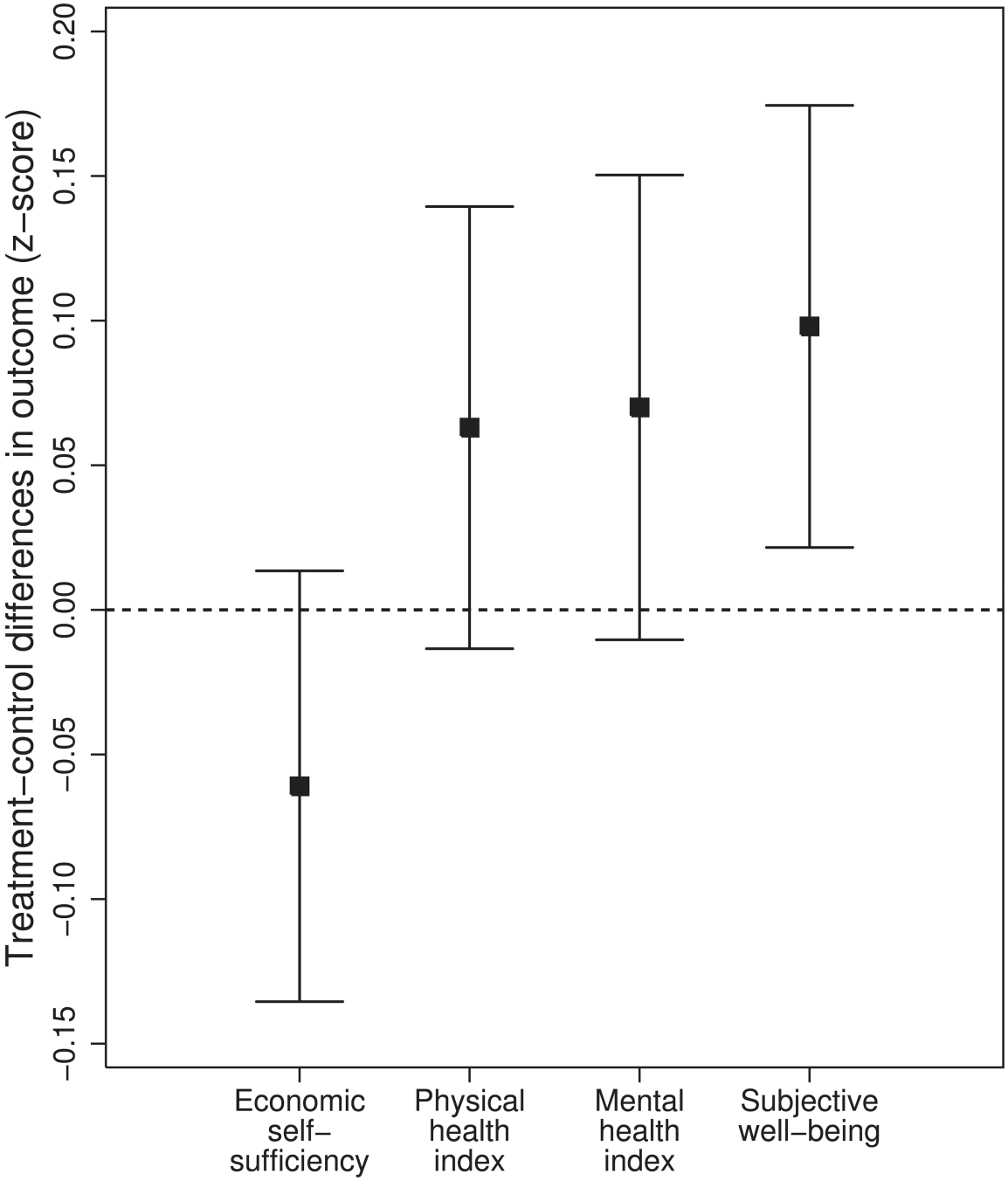

Fig. 1.

Impact on each outcome of assignment to the MTO treatment (voucher) groups for adults interviewed in long-term survey. The squares represent the intent-to-treat (ITT) estimate for the effect of being assigned to MTO treatment (pooling low-poverty and traditional voucher groups) rather than control, for the outcomes listed on the x-axis: economic self-sufficiency, physical health, mental health, and subjective well-being (see Table 2 note, and supplemental materials sections 1, 4, and 5). The box whiskers represent the 95th percent confidence interval around the estimates.

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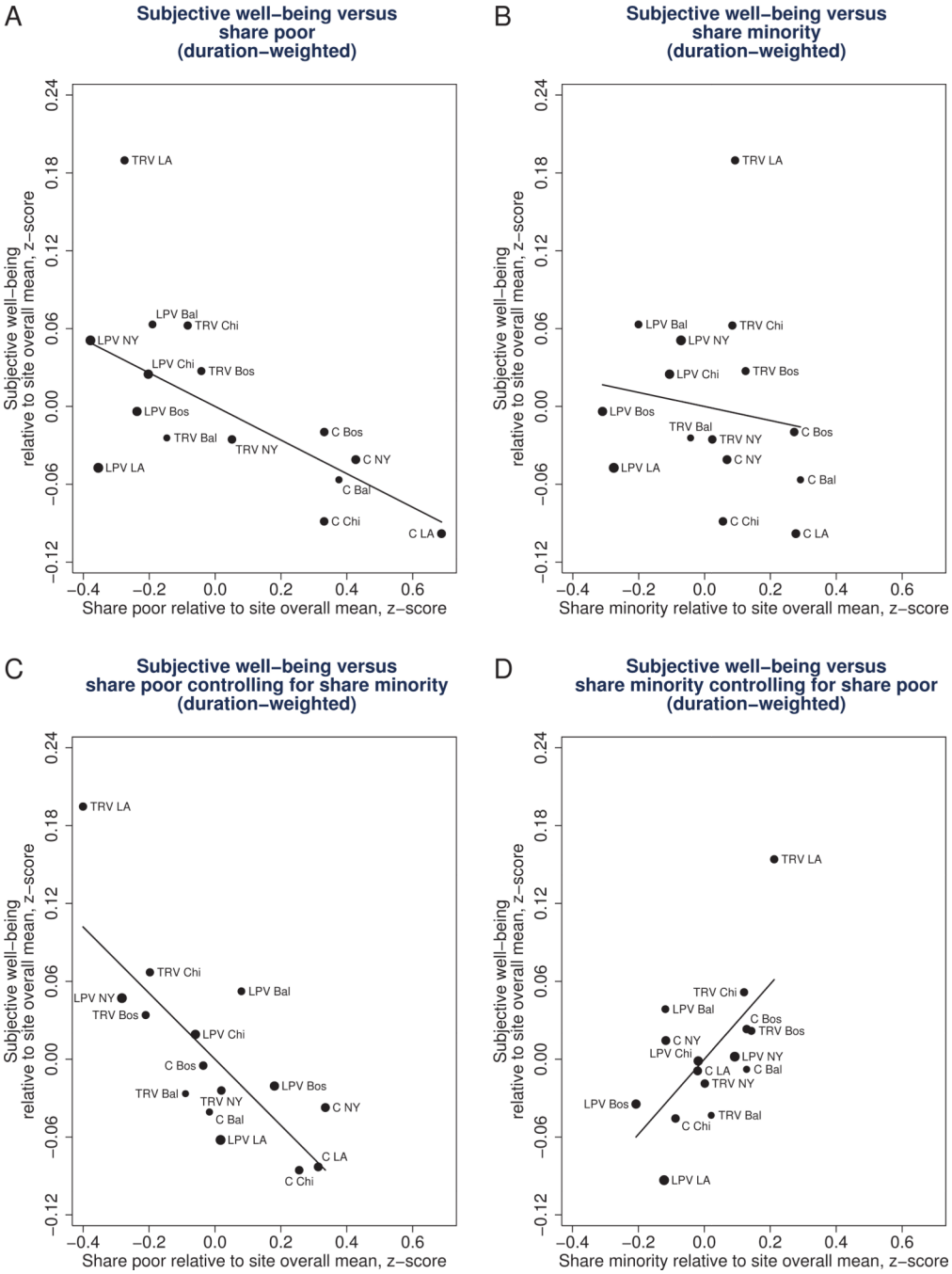

Fig. 2.

Instrumental variable estimation of the relationship between subjective well-being (SWB) and average (duration-weighted) tract poverty rate (panel A), tract share minority (panel B), tract poverty controlling for minority share (panel C), and tract minority share controlling for tract poverty (panel D). The y-axis is a 3-point happiness scale (1=not too happy, 2=pretty happy, 3=very happy) expressed in standard deviation units relative to the control group. Share poor is the fraction of census tract residents living below the poverty threshold. Share minority is the fraction of census tract residents who are members of racial or ethnic minority groups. Tract shares are linearly interpolated from the 1990 and 2000 decennial census and 2005–09 American Community Survey and are weighted by the time

respondents lived at each of their addresses from random assignment through May 2008. Share poor and minority are z-scores, standardized by the control group mean and standard deviation. The points represent the site (Bal = Baltimore, Bos = Boston, Chi = Chicago, LA = Los Angeles, NY = New York City) and treatment group (LPV = low-poverty voucher, TRV = traditional voucher, C = control group). The slope of the line is equivalent to a 2SLS estimate of the relationship between subjective well-being and the mediator shown in each panel, using interactions of indicators for MTO treatment group assignment and demonstration site as instruments for the mediator (controlling for site indicator main effects).

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Table 1

Baseline characteristics (1994–98) of adults interviewed as part of long-term survey (N=3,273), by randomized MTO treatment status. Mean values represent shares, except for age and income; missing values have been imputed (except income). Values are weighted to account for changes over time in treatment assignment likelihood and for the follow-up survey sampling design (see supplementary materials section 1).

	Control group mean	MTO treatment (voucher) groups mean
	N=1139	N=2134
Gender and age		
Female	0.978	0.984
Age as of December 31, 2007 (years)	44.5	44.6
Race and ethnicity		
African-American (any ethnicity)	0.660	0.640
Hispanic ethnicity (any race)	0.304	0.325
Other demographic characteristics		
Never married	0.637	0.623
Working	0.245	0.270
High school diploma	0.361	0.367
General Educational Development (GED)	0.199	0.169*
Receiving Aid to Families with Dependent Children (AFDC)	0.763	0.752
Household characteristics		
Household income (2009 dollars)	$12,438.64	$12,833.64
Site		
Baltimore	0.135	0.136
Boston	0.205	0.203
Chicago	0.205	0.206
Los Angeles	0.226	0.225
New York	0.229	0.229
Neighborhood characteristics		
Household member was crime victim in last six months	0.416	0.425
Very dissatisfied with neighborhood	0.467	0.478
Primary or Secondary Reason for Wanting to Move		
To get away from gangs and drugs	0.779	0.770
Better schools for children	0.481	0.516*
To get a bigger or better apartment	0.457	0.440
To get a job	0.069	0.058

*** = $P<.01$,

** = $P<.05$,

* = $P<.10$ on two-tailed t-test of difference between MTO treatment and control groups.

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Table 2

MTO effects on post-randomization housing and neighborhood conditions of adult participants interviewed in long-term survey. Table shows average outcomes for control group adults and intention-to-treat (ITT) contrast of outcomes for adults assigned to treatment (pooling the low-poverty and traditional voucher groups) rather than control. Housing and neighborhood conditions measured from long-term survey data and Census tract-level data interpolated from the 1990 and 2000 decennial censuses and the 2005–09 American Community Survey. ITT calculated using OLS regression controlling for baseline covariates, using weights (see Table 1 note, and supplemental materials sections 1 and 5).

		MTO treatment (voucher) groups vs. control		
	Control mean	ITT	SE	N
Census tract characteristics				
Share poor at different points in time				
1 year post-random assignment	0.499	−0.160***	(0.007)	3224
5 years post-random assignment	0.399	−0.089***	(0.007)	3208
10–15 years post-random assignment (May 2008)	0.311	−0.034***	(0.007)	3206
Share poor for all addresses since random assignment (duration-weighted)				
Share poor	0.396	−0.082***	(0.005)	3270
Share poor, z-score using U.S. tract poverty distribution	2.082	−0.666***	(0.041)	3270
Share poor, z-score using MTO control group tract poverty distribution	0.000	−0.653***	(0.040)	3270
Duration-weighted poverty rate is…				
Less than 20%	0.054	0.196***	(0.013)	3270
Less than 30%	0.242	0.237***	(0.018)	3270
Less than 40%	0.512	0.206***	(0.018)	3270
Share minority				
10–15 years post-random assignment (May 2008)	0.844	−0.024**	(0.009)	3206
All addresses since random assignment (duration-weighted)	0.880	−0.046***	(0.006)	3270
Residential mobility				
Number of moves after random assignment	2.165	0.584***	(0.068)	3273
Self-reports on long-term (10–15 year) follow-up				

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	Control mean	MTO treatment (voucher) groups vs. control		
		ITT	SE	N
surveys about neighborhood and housing conditions				
Feel unsafe during day	0.196	−0.039 **	(0.015)	3262
Number of housing problems (0–7)	2.051	−0.380 ***	(0.076)	3267
Likely or very likely to report kids spraying graffiti (collective efficacy)	0.589	0.064 ***	(0.020)	3255
One or more friends with college degree	0.532	0.049 **	(0.020)	3203

*** = $P<.01$,

** = $P<.05$,

* = $P<.10$ on two-tailed t-test.