

**Locational Constraint, Housing Counseling, and Successful Lease-up in a
Randomized Housing Voucher Experiment**

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Abstract

Federal policy tools that could affect the concentration of poverty in metropolitan areas have been much advocated, seldom implemented, and never analyzed. This paper estimates the impact of locational constraint and intensity of counseling services on participation by low-income families in the housing voucher program, using data from the Moving to Opportunity experiment. I find that constraining the voucher to low-poverty neighborhoods reduces lease-up by at least fourteen percentage points. More intense counseling services raise the lease-up rate, but not enough to overcome the effect of constraint.

1. Introduction

In sheer number of US households supported, tenant-based housing assistance has come to surpass both public housing and project-based private housing assistance. By April 2001, the Department of Housing and Urban Development (HUD) had funded more than 1.8 million voucher units under contracts with public housing authorities (HUD [29,L-7]).

Vouchers have grown for several reasons. They offer the assisted household locational choice. They generally cost substantially less than project-based alternatives (Shroder and Reiger [27]; HUD Office of Policy Development and Research [30]). Vouchers allow continued assistance to tenants of projects where project-based subsidies are no longer tenable, e.g., buildings are crime-ridden or impossible to rehabilitate at reasonable cost; owners refuse to renew their subsidy agreements, or have allowed deterioration below minimum standards. Finally, vouchers do not artificially concentrate poverty. Voucher families are located in lower concentrations of poverty than public or project-based private assisted housing (Newman and Schnare [23]; Khadduri, Shroder, and Steffen [13]; HUD Office of Policy Development and Research [31]).

But the critics of vouchers assert that they do not work in certain markets or for certain households (Maney and Crowley [20]; Dreier and Atlas [4], Subcommittee Staff Report [28]). For an individual low-income family, having a voucher available is not necessarily the same as being able to use it. To benefit, the family must enter into a lease with a private owner in conformity with program rules. These rules prohibit subsidizing units in substandard condition or for above-market rents, as determined by a local public housing authority, so lease-up may involve a fair amount of search. Some searches do not succeed; the Federal government could solve the severe housing problems of more families more quickly if policy makers knew how to raise lease-up rates.

Successful lease-up in low-poverty areas, in particular, has become a major theme of voucher program policy. Recent HUD administrations have condemned the potential saturation of high-poverty neighborhoods with voucher subsidies. Deconcentration efforts and outcomes have been adopted as indicators of sound management in the voucher management assessment program. HUD recently targeted increases in the Fair Market Rent schedule, which governs the level of housing subsidy, to metropolitan areas with high concentrations of voucher holders in certain neighborhoods. Housing counseling in major metropolitan markets with significant housing concentration has been specially funded in certain years. When vouchers have been used for the relocation of families living in the most distressed public and private project-based assistance, funds have been allocated to ensure that the families are fully informed about, and have some access to, housing units in the broader metropolitan area.

However, national deconcentration policy has attempted to operate through influence rather than prohibition. Policy makers have not adopted or permitted locational constraints that might, for example, make high-poverty areas off-limits to voucher holders. Even if they were intended to raise the voucher family's long-run well-being,

such constraints could reduce lease-up by making the program less adaptable to the family's own desires.

Locational constraints might have other motives than the well-being of the assisted family. They might be imposed to bar access to neighborhoods that perceive a threat from slum landlords and ill-behaving poor people. Again, such constraints might affect whether certain families lease units anywhere, and to date the Federal government has not sanctioned them either, despite arguments from influential policy makers, e.g., Jackson [8]. However, the effect of constraint on lease-up has never previously been measured.

Similarly, it is widely believed that lack of information about the larger metropolitan housing market and certain short-term barriers, like lack of transportation to conduct a search for suitable units, contribute to the concentration of the poor in the central cities of the US. Housing counseling programs to inform participants and help them overcome short-term barriers are an obvious response, but their impact on successful lease-up has also never been measured.

This paper sets out to fill these gaps through an analysis of successful lease-up in the Moving to Opportunity for Fair Housing (MTO) demonstration, which featured both constraint and counseling. MTO is designed as a rigorous evaluation of the long-term impacts of helping very low-income families with children to move from public and assisted housing in high-poverty inner-city neighborhoods to middle-class neighborhoods throughout five metropolitan areas.

The demonstration responds to a long line of research, with key contributions from Kain [10] and W. J. Wilson [33]. These authors have argued that a “spatial mismatch” between the opportunities of a suburbanizing society and the pool of urban minority labor was leading to a permanent underclass, isolated from American behavioral norms and thereby deprived of opportunity not only in the present generation but in future generations as well. MTO was directly triggered by the work of Rosenbaum [26] and his collaborators, who found that low-income black families from central-city Chicago who moved to the suburbs under a court-ordered intervention had better educational outcomes among children and employment outcomes among adults than their counterparts, who moved to white neighborhoods in the city itself.

In the demonstration, which is described more fully below, families were randomly assigned to receive one of two kinds of housing vouchers. In one case the voucher could be used only for a unit in a low-poverty (i.e., middle class) neighborhood, but the family had access to counseling and housing search assistance to help find an appropriate unit. This is the treatment or MTO group. In the other case the voucher could be used without geographical restriction, but no special help was available. This is the Section 8 comparison group.¹

¹ An additional control group did not receive access to a voucher, but this group is not analyzed in this paper. Section 8 of the U.S. Housing Act of 1937 authorizes both tenant-based and project-based subsidies for privately owned units; the comparison group in this demonstration were offered vouchers.

MTO affords a clear test of the impact of a locational constraint on the usability of vouchers for a significant segment of the population eligible for assistance, combined with a meaningful counseling element intended as compensation for the constraint. Because assignment to treatment was random, any correlation between membership in a treatment group and household characteristics, whether observed or unobserved, was also random and should not bias the correlation of treatment with outcome in large sample. Moreover, the extensive data collection at baseline in MTO allows us to control for many household characteristics directly.

Lease-up is an important experimental outcome for research reasons, quite apart from policy. Lease-up is one of the few outcomes actually known in the national sample, as preliminary information we have about “ultimate” outcomes on education, employment, earnings, arrests, depression, injury, asthma, welfare receipt, and the like is typically confined to samples from one or two sites.² Lease-up is critical to understanding other impacts, as MTO was not likely to have any substantive impact on families who received a voucher but did not make use of it. Those who lease up may be systematically different from those who do not, and these differences might affect the research findings.

Subsidized lease-up is a special case of intra-metropolitan mobility. A.G. Wilson [32] argued that past mobility research had contributed little to policy because it did not examine variables relevant to policy makers and because policy issues had been poorly articulated. Atkinson et al. [1] found that the availability of housing assistance, without any requirement that the family move, did somewhat increase the probability that a family would move out of its pre-subsidy unit but did not change the type of neighborhood the family chose to live in. Nelson and Edwards [22] reported that unassisted poor and minority households were more likely to move out of higher status neighborhoods and move into poorer ones; moreover, that “differences in mobility cannot be attributed to household characteristics alone and that residence in the poorest zones independently constrains mobility.” However, their data did not permit them to investigate the nature of such constraints. In this paper we will find that both household characteristics and variables potentially subject to policy influence help to explain neighborhood choice.

I find that a simple economic model captures much of the variation in lease-up rates in MTO, and that families who lease up differ systematically from those who do not. Many important differences are found in measures of aspiration and attitude that are seldom collected in mobility studies or in other survey contexts.

Several substantive policy findings emerge. I find that the MTO locational constraint, even with effective counseling, reduced the probability of lease-up by roughly

² See Katz, Kling, and Liebman [11]; Leventhal and Brooks-Gunn [16]; Ludwig, Duncan and Hirschfield [17]; Ludwig, Duncan, and Pinkston [18]; Ludwig, Ladd, and Duncan [19]; Hanratty, McLanahan, and Pettit [7]. Richardson [25] reports preliminary indications that the treatment did not raise employment but did raise earnings among the employed.

fourteen percentage points. The intensity of housing counseling markedly raises the lease-up rate, but not by enough to offset the effect of the constraint. Other household- and site-level variables also have fruitful policy implications.

The remainder of this paper takes the following form. In the second section, the lease-up problem is reviewed in the context of the program participation literature, with particular attention to the results of Kennedy and Finkel [12]. In the third section, the history and structure of the demonstration are described. In the fourth section, a simple economic model of lease-up is proposed, in which the household balances the expected benefit of searching for a new unit against the costs of search. The fifth section presents results of the analysis. The final section concludes.

2. Previous research

The lessons from studies of take-up in other means-tested programs are not easy to apply to Section 8 lease-ups. As in the welfare, food stamps, unemployment insurance, or supplemental security income programs, an applicant must apply for voucher program benefits on the basis of need, will face some opportunity cost in making the application, and may incur some “stigma” cost as well (Moffitt, [21]). However, there is no secondary step in the cash programs analogous to the lease-up step, wherein conditional on receiving a voucher the holder must find a unit in acceptable condition whose owner is willing to accept the family and its subsidy for his property.³

Take-up in employment and training programs has a long, not very theoretical, but useful literature. For example, Burstein, Roberts, and Wood [3] find that those with the fewest work limitations, best health, highest mental status, fewest transportation problems, and best attitude toward work are the most likely to participate in a return-to-work program for workers with disabilities, presumably because they anticipate the most benefit from a rehabilitation program and the least cost from attempting it.

The only significant quantitative study of voucher lease-up in the past decade was by Kennedy and Finkel [12], hereafter KF, who found an overall success rate of 80 percent.⁴ The differences between the data generating process for their study and this one are worth emphasizing:

- (a) KF looked at 33 large housing authorities constituting a representative sample of metropolitan areas, not just five of the largest;
- (b) a KF family could use its voucher to subsidize the rent in the unit occupied prior to program entry, if that unit met minimum housing standards, an option not available in MTO;

³ Analogies to other in-kind programs are possible. Food stamps must be accepted by a grocer, but in practice they nearly always are. Medicaid must be accepted by a health-care provider, but the problem is generally observed at one remove, as recipients adapt to unsuccessful physician search by overusing hospital emergency rooms.

⁴ A thorough update of this study by Meryl Finkel and Larry Buron of Abt Associates is not available to the public at this writing.

- (c) KF baseline data are less rich than those in MTO, especially in measures of attitude and aspiration;
- (d) MTO eligibility was limited to families with children and the KF sample was not;
- (e) MTO families were all previously assisted in high-poverty housing projects while the KF sample had no previous assistance;
- (f) the KF sample was not subject to locational constraints on the use of the voucher, and KF respondents received little housing counseling or search assistance;
- (g) overall, the KF overall rate of successful lease-up (80 percent) was much higher than in MTO (54 percent).

(Table 1 about here.)

The KF findings for 32 housing authorities⁵ are summarized in Table 1. Findings that are statistically significant at the 5 percent level are reported with either a positive or negative sign indicating the association of that variable with the probability of lease-up. Findings that are significant between the 5 and the 20 percent level receive the qualifier “(weak)”.

In general, the direction of the effects is intuitive. Factors operating to raise the net benefit of the subsidy tend to raise the lease-up probability, while factors tending to make search more difficult tend to lower it. Only one finding requires much elaboration. Research in the 1980s had shown that the effect of minority status on lease-up depends on metropolitan area. Representatives of the majority group in the local Section 8 sub-market lease-up more often than minorities in that sub-market. A Hispanic household is more likely to succeed in, say, San Antonio, where Hispanic voucher tenants outnumber non-Hispanics, than in Detroit, where they do not. A black household is more likely to succeed in, say, Birmingham than in Seattle. The “national average” minority effect is therefore not very meaningful.

Search intensity is clearly important. Eighteen percent of families who failed to lease up never actually visited a unit other than the one they lived in. The average number of units visited by families who leased in a new unit was 9; the average for those who failed to lease, but visited at least one other unit, was 12.⁶ The fourth section develops this idea of search as the essential determinant of outcome.

3. The MTO Demonstration

⁵ Kennedy and Finkel perform their analyses of New York City separately from the other cities, because of the special rigidity of the New York housing market and the nearly exclusive preference given to the homeless in that city during their study period. At the suggestion of a referee, I have used the KF results for success-by-moving only, because all MTO families had to move to use the program, rather than the results for success as a whole. The latter may be found at page D2 of [12].

⁶ The voucher offer is good for at least 60 days of search from the date of issuance. The housing authority has discretion to extend for up to another 60 days.

The demonstration was conducted between 1994 and 1998 in Baltimore, Boston, Chicago, Los Angeles, and New York. All participants were residents of very high-poverty central-city projects.

MTO was authorized under Section 152 of the Housing and Community Development Act of 1992, which directed HUD to:

assist very low-income families with children who reside in public housing or housing receiving project-based assistance⁷ under Section 8 of the Housing and Community Development Act of 1937 to move out of areas with high concentrations of persons living in poverty to areas with low concentrations of such persons.

Section 152 specified that the targeted public and assisted housing projects had to be in cities of at least 350,000 people located in metropolitan areas of at least 1,500,000 people, and required a report to Congress on the long-term housing, educational, and employment achievements of the assisted families relative to comparable families who had not received demonstration assistance. Demonstration assistance was to include not only housing subsidies for those families who found acceptable housing owned by willing landlords, but also housing search and counseling services provided by non-profit organizations.

HUD implemented this mandate through a demonstration design with three groups: a treatment group that could use assistance only in low-poverty neighborhoods but had access to counseling services; a Section 8 comparison group that received regular Section 8 certificates or vouchers with no special geographical restrictions or counseling; and an in-place control group, which could continue to receive project-based assistance. The target population for the demonstration consisted of very low-income families with children living in public and assisted housing projects located in census tracts in which, in 1990, the poverty rate exceeded 40 percent.⁸ Poverty among residents of the “low poverty” census tracts could not exceed 10 percent, a level slightly below the national average poverty rate both then and now. Census tracts with less than 10 percent poverty account for most of the land mass of major metropolitan areas in the US. The constraint was therefore substantial but not necessarily crippling for the home seeker.

Public housing authorities competed for selection into the demonstration, bringing with them non-profit organizations as partners to run the counseling/search assistance programs. The character of the programs varied by site, because of differences in market conditions, external funding, and the philosophies of the non-profits (Feins, Popkin, and McInnis [5]). More intense *housing* services might include preparing clients to practice presenting themselves to owners and managers, helping with housing information sources, helping with neighborhood selection, helping with budgeting for rent and

⁷ Section 8 covers assistance to low-income families not only through vouchers (the better-known program) but also through direct Federal contracts with private owners of apartment buildings, under which the government guarantees rents for specified numbers of low-income families.

⁸ This “high-poverty” threshold was borrowed from Jargowsky and Bane [9].

utilities, showing potential neighborhoods and units to clients, finding possible units for clients, and contacting landlords or managers for clients. More intense *social* services might include vocational training and education referral, help with child care, parenting and budget counseling, advocacy with the welfare system, free furniture, help with utility hookups, security deposits, or movers. More intense *follow-up* services involved adjustment to the new neighborhood: transportation and child care issues, landlord-tenant relations, problems with the new school system, the new welfare office, or the housing subsidy payment.

All participation in the demonstration was voluntary, and no resident lost tenure rights in her current project either for participating (and failing to lease up) or for not participating in the demonstration.⁹ Results of the experiment cannot be generalized to families that were eligible but did not volunteer. Heads of these households were somewhat more likely to have earned income and to be male (Goering et al., [6], 32).

Section 8 control households were expected to achieve lease-up at a higher rate than experimentals, because of the locational constraint in the treatment. Indeed, initial random assignment ratios were predicated on a lease-up rate of 20 percent in the treatment group and 80 percent in the control group, and were subsequently adjusted when the performance of treatment families turned out better and that of control families worse than these expectations.¹⁰

Families in the demonstration numbered 4610. Of these the in-place control group had no opportunity to lease up, as they were not offered voucher assistance. The analysis here is of 3048 families in the MTO and Section 8 comparison groups, who were offered such assistance. Abt Associates conducted random assignment and baseline data collection.

4. A Simple Economic Model of Lease-up

A family that moves from its former dwelling must first search for another place to stay. I assume that failure to lease up means the family stopped searching, because even a family with a very low probability of acceptance by landlords would find some unit at which it would be accepted with probability approaching one if it applied for a number of units approaching infinity; the housing markets in the five metro areas, although not infinite, are very large. Infinite search, however, would be irrational.

⁹ However, in a few cases residents had already received warning from the public housing authority of its intent to demolish the project in which they were living. If they believed these warnings, which proved accurate, these residents knew they would have to move in any case.

¹⁰ Assignment probabilities were set and reset to minimize the expected variance in the mean difference between assignment groups in “ultimate” outcomes, like education and employment, given a lower lease-up rate for the MTO group. If participation in the experiment would not affect ultimate outcomes of families that did not lease up, this criterion dictated that expected lease-ups in the experimental group should equal both expected lease-ups in the comparison group and total families in the control group. When the actual lease-up rate differed significantly from the expected rate, the investigators reset the assignment probability.

Search is a forward-looking act, and I assume that engagement in search depends on a calculation that the expected net benefits exceed the costs.

Let V_0 be the value of living in the current dwelling, and let V_A be the expected (pre-inspection) value of living in the next unit that the head of household will examine. The net benefit of change of abode is $V_A - V_0$, which may be thought of either as a dollar value or a subjective quantity. The probability that the household would actually be able to occupy the next unit that the head will examine, if the head chose to apply for it, is P . The expected net benefit of search is then $P(V_A - V_0)$. Against that quantity the household head must consider the cost of looking for, examining and applying for one more unit, C , which costs may be out-of-pocket, psychic, or both, but in any case are measured in the same units as the net benefit. The head will search (continue searching) only if

$$(1) P(V_A - V_0) - C > 0$$

If we have at our disposal variables clearly related to the probability of acceptance, the net benefit of moving, and the cost of search, then these variables should have predictive power in whether a family moves under the demonstration. I will use logit to determine whether this is true.

A more complex economic model would incorporate the effects of learning, which could change the subjective probability of acceptance, the net benefit of moving, and the costs of search. Similarly, a more complex model would consider whether a family stopped searching once it found a minimally acceptable new unit or continued searching in an effort to find a better one. This higher level of complexity would not be supported by the data available, nor is it required by this particular research.¹¹

Implementing the model requires maintained hypotheses about the success of survey research in eliciting attitudinal information that has behavioral content. The research team collected an unusually rich set of variables at baseline, to allow subsequent analysis to control for non-experimental sources of variation in outcomes.¹² Many such variables involve expectations, attitude and aspiration on the part of the household.¹³ Table 2 summarizes the variables proposed and the hypothesized direction of effect on lease-up.

(Table 2 about here.)

Indicators of the probability of being able to occupy the new unit. We are concerned here with whether the owner of the unit is likely to agree to lease it to the

¹¹ Kennedy and Finkel attempted a more complex analysis along these lines.

¹² Random assignment should always produce unbiased impact estimates, but these estimates will be less efficient than estimates corrected for known sources of non-experimental variation. Baseline covariates can also be used for subgroup analysis of outcomes.

¹³ On the behavioral content of elicited probabilities, see Barsky et al [2].

family holding a housing voucher. The following factors could be expected to affect the owner's decision-making process:

- Metropolitan area vacancy rate. The overall tightness of the rental housing market will affect any low-income family's ability to rent easily.
- Size of household. The stock available for rent to large families is small, and the market that serves them is disproportionately tight.
- Composition of household. Owners do not want troublesome tenants. Unfortunately, teens and young adults are more likely to cause trouble.
- Ethnicity. Past research indicates lower probability of successful lease-up among groups that are not in the racial/ethnic majority of the local Section 8 population. Householders belonging to the dominant local voucher population will find owners more accepting of them than non-members will. In this context the implication is that Hispanics in the demonstration will have a lower probability than blacks of being accepted by landlords.
- Elicited confidence in finding a unit. People who say they are "very sure" that they can find an acceptable unit should have a higher subjective probability of acceptance than those who do not.

Indicators of the net benefit of changing unit. The families in MTO differed from one another in the benefit they could expect from moving.

- Ties to current neighborhood. If the head has many of her friends in the immediate vicinity of her current apartment, or goes to church nearby, moving will mean a greater loss to her than otherwise.
- Discomfort with whites. The participants in MTO are nearly all black and Hispanic, living in heavily minority neighborhoods. Those who are uncomfortable with sending their children to largely white schools would feel less benefit from moving, at least in the experimental treatment, where many of the eligible neighborhoods are largely white.
- Satisfaction with current unit and current neighborhood. Those who are more satisfied with their current housing and current neighborhood will have less reason to move.
- Comfort with change. Those who are confident that they will enjoy living somewhere that they have never lived before will see more value in moving, as will those who "feel good" about the idea of moving.
- Preferred location. Those who would prefer to live elsewhere in the city, out in the suburbs, or out of the metropolitan area altogether, will have more reason to move than those who want to stay in the same neighborhood.
- In school. People get an education to change their lives, so a participant in the demonstration who is currently going to school should be more ready for other life changes than one who is not.
- Previously applied for Section 8 (in Boston). Even a person who expected to benefit from moving with assistance might not have applied for a voucher before the demonstration, because waiting lists in large central cities are usually either closed most of the year or quite long. Applying for subsidy in four of the sites was

something of an exercise in futility¹⁴, but Boston is an exception. The 64 housing authorities in the Boston area have 64 waiting lists, on one of which a motivated applicant might become lucky. With waiting lists more accessible in the Boston area, a previous application at that site should be a reliable indicator that the participant thought there would be net benefits to moving.¹⁵

The difference in rents between the prospective and current unit is *not* an element of this model. Participants in the demonstration could expect to pay 30 percent of adjusted income whether they moved or stayed, except that families with vouchers who choose to lease units that cost more than the local payment standard can make up the difference out of their own pockets. Thus, the option to pay more for preferred housing is inherent in the search decision.

Indicators of the cost of search. Participants differed in their out-of-pocket search costs, but also in the value of time spent searching for units, the physical strain of looking for a unit, and the emotional drain of looking for a unit and perhaps having an application turned down.

- Hourly wage. Economic theory holds that those who have higher wages have higher hourly costs for all non-work activities, including housing search.
- Hours of work per week. The head of household has a time constraint and work cuts into the time available for search.
- Receipt of disability income. If the household receives Supplemental Security Income, Social Security Disability Income or Survivors' benefits, it is more likely that either the head has a disability, making search more difficult, or that some other member of the household needs caring for, again cutting into the time available for search.
- Possession of car or license. Ownership of a car that runs should reduce the costs of search. Failing that, holding a valid driver's license should also reduce search costs if the head can occasionally borrow somebody else's car.
- Years in the metro area. The longer that the head has lived in the metropolitan area, the easier she should find the search process.
- Experimental treatment. Participants assigned to the MTO treatment could only use the assistance in low-poverty neighborhoods, which were both physically and socially distant from their point of origin.
- Intensity of counseling services. Feins and her colleagues¹⁶ rated the non-profit organizations in the demonstration on the intensity of services that they provided on a 45-point scale that recognized the range of content, the resource commitment, and the degree of staff intervention on behalf of clients in housing, social, and follow-up services. These ratings varied from 9 (Leadership Council, Chicago) to 41 (Beyond

¹⁴ Especially for families already receiving project-based assistance, who were generally disfavored in local voucher selection criteria.

¹⁵ Use of the variable "Previously applied (Boston only)" arises out of conversation with Jeff Kling. The variable "head attended school last week" was previously used in exploratory work by Feins, McInnis, and Popkin [5].

¹⁶ Personal communication from Judith Feins, October 2000. Feins is the MTO project director at Abt Associates.

Shelter and On Your Feet, Los Angeles). Higher intensity of services should have reduced the cost of search.

5. Data and Results

This paper analyzes the outcomes for 3,048 families for whom lease-up was an option: the 1,740 eligible participants in the experimental group (MTO) or the 1,308 eligible participants in the section 8 comparison group for whom sufficient data were present.¹⁷

Our model leads us to expect that a locational constraint on voucher use would reduce the lease-up rate, but that counseling services would raise that rate. The experimental intervention itself combines the locational restriction and the availability of counseling services, and the net effect is an empirical question. We begin by presenting the rate of lease-up in the MTO and Section 8 comparison groups by site, using both unadjusted and cohort-adjusted means from the experiment.

(Table 3 about here.)

Table 3 gives two tests of the proposition that the lease-up rates differ for experimental and control groups, by site. In the upper panel, the raw average lease-up rate is the outcome variable. We find that in Baltimore, Chicago, and Los Angeles, the intervention significantly reduced the lease-up rate. In Boston and New York, the effect on lease-up was insignificant.

The difficulty with using the raw outcome for this purpose is that the investigators changed the intake probabilities into the assignment groups over time: twice in Baltimore, thrice in Boston, Chicago, and Los Angeles, four times in New York. Cohort membership might non-randomly influence the outcome for two general reasons: the housing market might have changed, and the origin project might be different. Market effects would be felt by both groups, and the raw data seem to show a falling lease-up rate for both groups in Baltimore and Boston, and a rising rate for both groups in New York. Origin project is important because outreach for the experiment was conducted sequentially to targeted projects, and therefore cohort membership is associated with project residency. The particular project in which the family lives, in turn, might be associated with household characteristics.

Accordingly, the lower panel of Table 3 presents the same test on the mean of the cohort-weighted outcome. Let P_S be the fraction of the combined sample at a site (both experimentals and controls) who are cohort members -- that is, they were all randomly assigned during the period when a particular assignment ratio was in place. Let P_i be the

¹⁷ The dataset contains information on 4608 households, of whom 1439 were in-place controls. The number of remaining records with insufficient data to analyze was 121.

fraction of the treatment group at the site who are cohort members. The cohort-weighted outcome is the product of the raw outcome (lease-up=1, not leased=0) and P_S/P_i .¹⁸

We again find that the experimental treatment significantly reduced lease-up in Baltimore, Chicago, and Los Angeles, but had no effect in New York. In Boston we now see a reduction in lease-up that is of marginal significance.

In the absence of statistical evidence, we may suspect that the inner-city housing market contributes significantly to these impacts. Baltimore, Chicago, and Los Angeles all had loose inner-city rental markets during the period of the demonstration, while those in Boston and New York were relatively tight. However, household characteristics and the character of the counseling effort may also differ across sites. We can examine directly the effects of market conditions, counseling effort, and household characteristics and attitudes using multivariate logit.

Table 4 presents the results of that analysis in two initial panels: one for families assigned to the MTO experimental treatment, and one for families assigned to the standard Section 8 comparison group.

(Table 4 about here.)

Model performance is reasonably good. In the experimental group, where 48 percent leased up, the logit correctly predicts 65 percent of outcomes. In the Section 8 comparison group, 61 percent leased up, and the logit correctly predicts 70 percent of outcomes.

Probability of acceptance indicators all have the expected signs. Metro area vacancy rate and size of household are highly significant in both groups. Hispanic headship significantly reduces the success rate in the treatment group. The head's own subjective probability of successful search is significantly predictive of success in the control group. Holding size of household constant, replacing an adult family member with a pre-school child would significantly raise the probability of lease-up in the control group.

Net benefit indicators also perform predictably. The level of dissatisfaction with the origin neighborhood is strongly associated with lease-up in both groups, as is the fact of a previous application in Boston. Ties to church and friends strongly discourage lease-up by the controls. The level of comfort with having one's children in a nearly all-white school was a better predictor of success among experimentals (who would have faced the issue more often) than among controls.

¹⁸ For example, the first cohort in Baltimore consisted of 291 families, and there were 438 families in Baltimore in all, so $P_S=291/438=.664$. In this cohort, 210 were experimental, and the total number of experimental families in Baltimore was 250, so $P_i(\text{experimental})=210/250=.840$. The weight on an experimental family in the first cohort is $.664/.84=.791$, thereby correcting the overrepresentation of the treatment group in that cohort.

A significant difference between the groups is in the effect of the preferred distance from the origin neighborhood. Lease-up under MTO required a move out of the neighborhood while lease-up in the comparison group did not; thus, treatment group members who preferred to live in the suburbs or beyond had an advantage, while similarly ambitious members of the comparison group were disadvantaged in lease-up.¹⁹

Heads who were uncertain that they would like living in a completely new area, were notably less successful in the MTO group. Dissatisfaction with housing condition was significantly associated with successful lease-up in the control group. Directly elicited assessment of subjective benefit to moving (feeling “very good” about it) is also associated with lease-up in the control group. Contemporaneous enrollment in adult education is significantly associated with lease-up in the treatment group.

The *cost* indicators have more mixed results. Receipt of disability benefits and possession of a car, or at least a license, both have the expected signs and are significant in one or both groups. The intensity of counseling services is strongly associated with lease-up in the MTO group. Wage and hours per week, however, are completely insignificant.²⁰ Number of years in the metro area is highly significant, but with the wrong sign. This is suggestive of a more complex “psychological” model than I have proposed here.²¹

(Table 5 about here.)

The two groups are commingled in Table 5 to examine the comparative impact of the locational constraint, the intensity of counseling services, and the influence of unmeasured site-specific factors on success.²² As in Table 4, the model has reasonable predictive power. Of the 3048 participants, 53.8 percent leased up under the demonstration, while the model correctly predicts the outcome in 64.7 percent of outcomes.

In general, locational constraint overwhelms counseling intensity. The coefficient on Intensity of Counseling Services indicates that counseling would have to be raised 52 points above the mean to neutralize the effects of assignment to the treatment group. The intensity variable has a maximum theoretical value of 45 points.

Simulation using the coefficients in Table 5 indicates that a household with mean characteristics would have had a 62.3 percent probability of leasing up in the control

¹⁹ Focus group research tends to report that those who are most demanding about their housing are the least likely to lease up. (Popkin and Cunningham [24]).

²⁰ The underlying hypothesis, that households heads who work (about a fifth of the total) set a higher value on their time than those who do not, may be incorrect. Roughly three-quarters of the sample were receiving AFDC at random assignment, and might have had a reservation wage higher than available job offers.

²¹ Years in the apartment, years in the neighborhood, and age of the household head are not substitutes for years in the metro area. All have insignificant effects on lease-up.

²² A referee suggested this model would be simpler to interpret, rather than one with both site dummies and site-treatment interactions.

regime, with counseling services set at zero, but a 48.8 percent probability in the experimental regime, with counseling intensity set at 29.9, the experimental mean.

It does not follow that counseling intensity has little value. Suppose a family with mean characteristics was assigned to the experimental treatment. The same simulation predicts that if the treatment came with a service intensity one standard deviation above the mean, the family would have a 54.9 percent lease-up probability; with service intensity one standard deviation below the mean, the probability declines to 42.7 percent. The simulated probability of lease-up for a control family with mean characteristics but no counseling is 62.3 percent; the coefficient in table 5 implies that with counseling intensity equal to the treatment group mean this probability would rise to 77.8 percent. While this latter application is speculative, the evidence from this analysis is not that the counseling was ineffective but that the locational constraint was more powerful.

Unmeasured site-specific influences exhibit a statistically significant relationship with lease-up in Table 5 at just one site, Chicago. HUD publicly questioned the overall management capacity of the voucher program in Chicago and obliged the public housing authority to contract out its administration in December 1995, at which point 208 of the 651 Chicago families in the demonstration had already been randomly assigned. Participants entering the demonstration before December 1995 had an overall lease-up rate of .40; those entering from that date forward leased up at a .46 rate. The contractor asserts that it has had to overcome the persistent belief among landlords that the program would not pay subsidies on time, an alleged failing of the prior regime.

More broadly, Chicago high-rise family public housing projects have perhaps the worst reputation for violent crime in the US (Kotlowitz, [14]; Lemann, [15]). This reputation might have affected landlord willingness to enter into leases with families coming from those projects to a greater extent than in other sites.

7. Discussion

Vouchers have become the leading form of housing subsidy, but the allocation of assistance accomplishes nothing for families that do not use it, when it becomes available. For various reasons, policy makers have considered constraining the locations in which vouchers might be used but have hesitated to implement them, partly out of concern for the effect on lease-up. They have funded counseling efforts on a pilot basis to improve lease-up, especially outside of low-income neighborhoods, but have no rigorous evidence on their effectiveness.

The MTO experiment provides ample data to analyze the reasons for failure by families to lease up. A simple economic model of search appears to capture a substantial fraction of the variation in lease-up among families enrolled in the demonstration. Indicators of the probability of acceptance by an owner and the net benefit of moving from the current unit to another are strongly correlated with lease-up. Some indicators of search cost are also predictive.

These findings have significant policy implications. First, that locational constraints significantly reduce lease-up. Simulations based on the logit results indicate a success rate fourteen percentage points lower for the average MTO experimental household than for the Section 8 comparison, even with housing counseling services far more intense than voucher households presently receive outside of a demonstration. It is likely that any decisions by policy makers to constrain vouchers will significantly lower the take-up rate, whether the decision is to keep voucher holders out of poor neighborhoods (to protect the children from bad influences), out of working-class neighborhoods (to protect the neighborhood from tipping into poverty), or out of middle-class neighborhoods (to protect the residents from exposure to the risks associated with or perceived from poor families). Even where the motivation is to enhance the welfare of the assisted family, policy makers should be cautious about raising additional hurdles for very low-income families to leap over, as the promising early experimental results in ultimate outcomes (see the papers cited in footnote 2) have come at some cost to MTO families who did not lease up, but would have leased up in higher-poverty neighborhoods if they had had the chance.

Much of the “failure” of the voucher program reflects lack of motivation for search among some eligible families. For some households, locational constraints will reduce this motivation. We can apply this lesson outside of the voucher program.

Because project-based assistance is the extreme locational constraint – the assistance can be used in one unit only – it must have a high (unmeasured) failure rate if the assisted projects are not very widely distributed across neighborhoods, and they seldom are. When project-based subsidies are concentrated in just a few areas, many poor families will not apply for help. In rural areas and some urban sites, standard-quality subsidized housing may go begging, while one family after another from the local waiting list refuses to occupy it. The absence of the white non-hispanic poor from the big-city housing projects targeted by MTO is an eloquent silence.

The second most important finding for policy purposes is that the intensity of housing counseling services matters. Housing counseling in the demonstration was not cheap -- costs averaged \$3,077 per MTO lease-up (Goering et al., [6], 28)²³ -- but the logit coefficients suggest that a rise in service intensity from one standard deviation below the mean to one standard deviation above it raises the lease-up rate by twelve percentage points in the experimental group.

Third, the significant effects of possessing either an automobile and/or a license, and a proxy for disability, are suggestive about the targeting of counseling services, while the effect of being in school is suggestive about the targeting of vouchers themselves. For relatively low cost, counseling services can transport potential voucher holders to look for housing in promising areas, and they can direct special efforts to offset the costs of search for persons with a disability. Furnishing long-term transportation and other

²³ The cited cost is not adjusted for annual inflation, but most costs would have been incurred in 1995 and 1996.

supportive services would of course be more expensive. Public housing agencies can, if they choose, give priority for new subsidies to families where the head is currently enrolled in an educational program. The evidence from this demonstration is that such policies might raise the success rate.

Finally, the significant effect of “Chicago” deserves comment. Some unmeasured factor(s) would have caused a Chicago participant with mean characteristics to succeed with a probability seventeen percentage points below that of her counterpart in New York, a famously tight market. The leading candidates for the unmeasured factors are administrative incapacity in the Chicago voucher program, since resolved by contracting out, and the notorious reputation of Chicago high-rise public housing, which may be in the process of resolution through demolition and relocation. Both problems festered for years as the Federal government deferred to local sensibilities. The costs of such deference in lost opportunity to low-income families must have been substantial.

Two fruitful directions for further research should be noted. First, the model employed is both “simple” and “economic.” Economists who wished to go beyond the findings here could use a more complex model, incorporating feedback and learning, landlord acceptance functions, and public housing authority review processes.

“Psychological” models might also complement this research. Metro vacancy rates and household size – standard features of an economic model – have some power to explain lease-up, but “satisfaction,” “uncertainty,” and “discomfort” measures often have more predictive power at the individual level than standard economic indicators like the hourly wage. These measures are often not collected in surveys, but the benefits from obtaining indicators of individual preferences are apparent here. The counter-intuitive effect of “years in the metro area,” which ought to raise lease-up (by reducing the cost of search) but seems instead to lower it, might suggest some habituation mechanism outside the ordinary boundaries of economics. Katz, Kling, and Liebman [11] report a counter-intuitive (to economists) gender asymmetry in Boston: “behavior problems among boys are positively related to take-up, problems among girls are negatively related to take-up.”

Second, lease-up is systematically related to the expected benefit of search. *Ceteris paribus*, those who expected the greatest benefit from moving were those most likely to move. It is reasonable to assume that those who expected no net benefit would not even have applied to enter the demonstration. Accordingly, the impact of the demonstration on ultimate outcomes (education, employment, earnings, arrests, health, dependency) represents the benefit of better neighborhoods for the subgroup of low income families who think they will be better off in them, and the impact will be concentrated among those who not only think they will benefit but find landlords who consider them acceptable risks. MTO is not designed to generalize to a larger population, but the policy relevance of a demonstration that moved poor people to suburban locations against their will and imposed them on property owners who did not want to rent to them would be limited, even if such a demonstration were constitutional.

Past research on neighborhood effect may have been based on broader samples, but produced estimates susceptible to substantial selection bias. We see in MTO that uncontrolled outcome comparisons between movers and stayers would often be biased. Outside of the experimental setting, most empirical researchers do not work with data on attitude and aspiration similar to MTO's, and the bias would be difficult to correct. With this experiment we will have a chance to evaluate without bias the benefit of moving out of high poverty to those who want to move and are willing to keep searching until they succeed.

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Table 1: Summary of Kennedy/Finkel Findings

Success by moving of 1050 households (the national sample, excluding New York City)

<u>Variable</u>	<u>Effect</u>
Minority	+ (weak: see text)
Elderly	-
Disability	-
Working	- (weak)
Not a couple, no children	- (weak)
Doubled up in another's home	+
Homeless	+
Prefers to stay in current unit	-
Pre-program gross rent/maximum potential rent subsidy	+ (weak)
Income less than \$100/month	+
Number of bedrooms required under occupancy rules	-
(This effect was captured in several variables, with all signs significantly negative.)	
FMR/income	+
Access to car	+
Want better housing (as opposed to lower rent)	+

Source: Kennedy and Finkel (1994), D27.

Table 2: Variable Definitions and Descriptive Statistics

	Predicted Effect	Mean	Std. Dev.	Min.	Max.	Comment
Outcome: Leased Up		0.54	0.5	0	1	
Probability indicators						
Metro area vacancy rate	+	6.75	1.57	4	9.7	From Census Bureau; calendar year of random assignment
Size of household	-	3.67	1.47	1	11	
Number of school-age children	+	1.62	1.24	0	7	
Number of pre-school children	+	0.88	0.93	0	6	
Hispanic head	-	0.27	0.44	0	1	Missing coded as 0
Uncertainty about finding an apartment (1=Very Sure, 5=Very Unsure)	-	1.94	1.05	1	5	Missing coded as 3
Net benefit indicators						
Uncertainty about liking a new neighborhood (same scale as above)	-	1.8	1.01	1	5	Missing coded as 3
Usual church is within 15 minutes of origin project	-	0.3	0.46	0	1	Missing coded as 0
Has many friends in neighborhood	-	0.11	0.32	0	1	Missing coded as 0
Comfort with children in nearly all-white school (-1=bad,very bad; 0=good, not sure;1=very good)	+	0.063	0.47	-1	1	Missing coded as 0
Housing condition (1=excellent or good, 2=fair, 3=poor)	+	1.99	0.73	1	3	Missing coded as 2
Dissatisfaction with neighborhood (2=Very dissat., 1=Dissat., 0=other answer)	+	1.18	0.86	0	2	Missing coded as 0
Feel very good about moving	+	0.82	0.38	0	1	
Preferred distance from origin (0=Same nbhd,1=same city, 2=area suburbs, 3=Out of metro area)	+	1.52	0.88	0	3	
Head attended school last week	+	0.0991	0.3	0	1	Missing coded as 0
Previously applied (Boston only)	+	0.11	0.31	0	1	
Cost indicators						
Hourly wage	-	1.83	3.46	0	30	Top-coded; missing set at 0
Weekly hours of work	-	7.82	14.55	0	60	Top-coded; missing set at 0
SSI/SSDI/SS Survivor benefits	-	0.21	0.41	0	1	Missing set at 0
Car or license (0=No car or license, 1=license only, 2=Owns car that runs)	+	0.53	0.77	0	2	Missing set at 0
Years in metro area	+	23.89	11.73	0	76	
MTO Treatment Group	-	.571	.495	0	1	
Intensity of Counseling Services	+	17.08	16.57	0	41	Set at 0 for all comp group members
Statistical Controls						
Baltimore		.144		0	1	
Boston		.207		0	1	
Chicago		.214		0	1	
Los Angeles		.192		0	1	
N		3048 (1740 MTO, 1308 control)				

Table 3: Effects of the intervention on lease-up

Raw Outcome					
	Baltimore	Boston	Chicago	Los Angeles	New York
MTO Mean	.58	.46	.34	.64	.48
Lease-up Rate (N)	(250)	(363)	(452)	(307)	(368)
Comparison Group Mean	.72	.48	.67	.76	.50
Lease-up Rate (N)	(188)	(269)	(199)	(278)	(374)
t-statistic	-3.04	-0.51	-7.97	-3.12	-0.52
p-value	.003	.61	.000	.002	.60

(Small differences between the first two rows and the equivalent tables in Goering et al. (1999, 14-17) are caused by deletion of observations with many explanatory variables missing, for consistency with the logit presented in Table 4.)

Cohort-Weighted Outcome					
	Baltimore	Boston	Chicago	Los Angeles	New York
MTO Mean	.54	.44	.35	.64	.49
Lease-up Rate					
Comparison Group Mean	.77	.51	.67	.78	.48
Lease-up Rate					
t-statistic	-4.10	-1.52	-7.57	-3.23	0.15
p-value	.000	.13	.000	.001	.88

Table 4: Logistic Regression: Dependent Variable=1 if family leases up

	MTO Experimental group		Comp group	
	Coefficient	Std error	Coefficient	Std error
Probability of acceptance indicators				
Metro area vacancy rate	0.247***	0.073	0.533***	0.103
Size of household	-0.258***	0.082	-0.245***	0.091
Number of school-age children	0.108	0.081	0.148	0.101
Number of pre-school children	0.084	0.095	0.423***	0.109
Hispanic head	-0.387***	0.143	-0.214	0.160
Uncertainty about finding an apartment	-0.056	0.058	-0.153**	0.071
Net benefit indicators				
Uncertainty about liking a new neighborhood	-0.194***	0.062	-0.121	0.077
Belongs to a church within 15 minutes of origin project	-0.045	0.117	-0.438***	0.136
Has many friends in neighborhood	-0.066	0.162	-0.405**	0.203
Comfort with children in nearly all-white school	0.243**	0.113	0.120	0.137
Housing condition	0.091	0.074	0.209**	0.092
Dissatisfaction with neighborhood	0.176***	0.066	0.184**	0.080
Feel very good about moving	0.140	0.145	0.465***	0.175
Preferred distance from origin	0.181***	0.061	-0.153**	0.074
Head attended school last week	0.407**	0.180	0.219	0.221
Previously applied (Boston only)	0.657***	0.224	0.607**	0.273
Cost indicators				
Hourly wage	0.013	0.026	-0.015	0.028
Weekly hours of work	-0.008	0.006	0.001	0.007
SSI/SSDI/SS Survivor benefits	-0.322**	0.132	-0.304*	0.160
Car or license	0.161**	0.075	0.082	0.091
Years in metro area	-0.011**	0.005	-0.013**	0.006
Intensity of Counseling Services	0.030**	0.012		
Controls				
Baltimore	-0.504*	0.265	-0.282	0.301
Boston	-0.162	0.236	-0.227	0.245
Chicago	-0.818**	0.350	-0.749**	0.357
Los Angeles	-0.429	0.296	0.040	0.316
Constant	-1.629**	0.646	-2.268***	0.675
N	1740		1308	

***, **, * Significant at 1 percent, 5 percent, and 10 percent levels, respectively.

Reference group	New York MTO	New York comp
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Table 5: Logistic Regression: Dependent Variable=1 if family leases up

	Combined sample	
	Coefficient	Std error
Probability of acceptance indicators		
Metro area vacancy rate	.305***	.057
Size of household	-.250***	.060
Number of school-age children	.127*	.067
Number of pre-school children	.228***	.070
Hispanic head	-.270***	.105
Uncertainty about finding an apartment	-.082*	.044
Net benefit indicators		
Uncertainty about liking a new neighborhood	-.167***	.047
Belongs to a church within 15 minutes of origin project	-.227***	.087
Has many friends in neighborhood	-.201	.124
Comfort with children in nearly all-white school	.189**	.086
Housing condition	.121**	.056
Dissatisfaction with neighborhood	.176***	.050
Feel very good about moving	.268**	.110
Preferred distance from origin	.042	.364
Head attended school last week	.346**	.137
Previously applied (Boston only)	.606***	.171
Cost indicators		
Hourly wage	.006	.019
Weekly hours of work	-.004	.004
SSI/SSDI/SS Survivor benefits	-.283***	.100
Car or license	.135**	.057
Years in metro area	-.011***	.004
Assigned to MTO	-1.302***	.251
Intensity of Counseling Services	.025***	.008
Controls		
Baltimore	-.260	.193
Boston	-.178	.161
Chicago	-.707***	.228
Los Angeles	-.069	.206
Constant	-.756*	.052
N	3048	

***, **, * Significant at 1 percent, 5 percent, and 10 percent levels, respectively.

Reference group New York comp