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What Interventions Work Best for Families who Experience Homelessness? Impact Estimates from the Family Options Study

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Abstract

What housing and service interventions work best to reduce homelessness for families in the U.S.? The Family Options Study randomly assigned 2,282 families recruited in homeless shelters across 12 sites to priority access to one of three active interventions or to usual care in their communities. The interventions were long-term rent subsidies, short-term rent subsidies, and transitional housing in supervised programs with intensive psychosocial services. In two waves of follow-up data collected 20 and 37 months later, priority access to long-term rent subsidies reduced homelessness and food insecurity and improved other aspects of adult and child well-being relative to usual care, at a cost 9 percent higher. The other interventions had little effect. The study provides support for the view that homelessness for most families is an economic problem that long-term rent subsidies resolve and does not support the view that families must address psychosocial problems to succeed in housing. It has implications for focusing government resources on this important social problem.

INTRODUCTION

According to the Annual Homeless Assessment Reports to Congress (AHAR), nearly 150,000 families with children (481,410 people) experienced sheltered homelessness during a 12-month period ending September 2016 (HUD, 2017). This number has grown by 13 percent since 2007 when the U.S. Department of Housing and Urban Development (HUD) began tracking homelessness. Families now represent about one-third (34 percent) of people who experience sheltered homelessness (HUD, 2017, 12-month estimate). In fiscal year 2015, the federal government spent \$5 billion on targeted homeless assistance programs (USICH, 2015), and an additional roughly \$50 billion on long-term rent subsidies provided to low-income families in the Housing Choice Voucher program, public housing, and other HUD-funded programs (CBO, 2015). Thus, understanding how to best serve families experiencing homelessness and how to serve them efficiently are important policy goals.

This paper presents findings from the Family Options Study; a 12-site randomized trial that tested three alternative housing and services interventions aimed at resolving homelessness for families. The interventions provided priority access to particular types of programs: (1) long-term rent subsidies; (2) short-term rent subsidies; and (3) project-based transitional housing. The study compares priority access to these three types of programs with assignment to a usual care group that did not receive priority access to any type of program. The study provides the first rigorous evidence about the relative effects of alternative housing and services programs on five sets of outcomes: housing stability; family preservation; adult well-being; child well-being; and self-sufficiency. The study also provides estimates of costs of emergency shelter and the programs offered in the three interventions and the costs of all programs the families used during the three-year follow-up period. The complete set of study findings and all details about the methodology can be found in Gubits et al. (2015) and Gubits et al. (2016), the technical reports submitted to HUD that analyzed short-term findings 20 months after random assignment, and longer-term findings 37 months after random assignment. This paper summarizes and compares the 20-month and three-year impact findings and examines changes in outcomes between the two follow-up points for families who did not receive any special offer of assistance.

The contributions of this paper are several. To our knowledge, the study is the first large-scale evaluation to use random assignment to investigate the effects of alternative types of assistance for families who experience homelessness. As such, the study provides the first robust causal evidence about which types of assistance work best to reduce homelessness and improve other aspects of families' lives. The evidence of intervention effects is enriched with findings on the relative costs of the interventions. The study also offers unprecedented information about families' use of housing and services assistance after an episode of homelessness and about family outcomes in a wide range of domains over three subsequent years.

Compared to usual care, long-term rent subsidies sharply reduced homelessness and increased housing stability along with radiating benefits for other domains of family well-being at a cost 9 percent higher over 37 months. Short-term subsidies and transitional housing each had little impact, but short-term subsidies cost 9 percent less than usual care,

so would be preferred if long-term subsidies cannot be made available. The study findings pertain to 12 communities from all regions in the U.S. Although this was not a nationally representative set of communities, the study nonetheless improves on prior research that has focused on single communities or single programs.

APPROACHES TO ASSISTING FAMILIES EXPERIENCING HOMELESSNESS

The interventions included in the Family Options Study reflect different implicit theories about the nature of family homelessness and the approaches best suited to address the problem. Proponents make different predictions about the effects of the interventions.

The first approach is long-term rent subsidies that pay the difference between 30 percent of families' incomes and their housing costs. Subsidies can be place-based (e.g., public housing, project-based Section 8) or tenant-based (Housing Choice Vouchers) that allow recipients to rent conventional private market housing. The long-term rent subsidies in this study were primarily the latter. Subsidies can be renewed indefinitely, as long as families remain eligible and follow program rules such as paying their share of the rent for housing that passes a housing quality inspection. The long-term subsidies are typically accompanied by limited help to find housing but no other dedicated services. The theory behind this approach is that family homelessness is an economic problem that rent subsidies can address (e.g., O'Flaherty, 1996). The theory posits that stabilizing families with rent subsidies reduces stress, allows more family income to be spent on goods other than housing, and provides a base for families to address other problems using services generally available in their communities. Proponents thus expect rent subsidies to reduce homelessness and other measures of residential instability. Prior observational studies have shown consistent links between rates of homelessness in different geographic areas and rents, with less consistent links for poverty and unemployment (see review by Hanratty, 2017). Studies of rates across geographic locales are hampered by uneven accuracy of counts of people experiencing homelessness, but studies modeling changes within select communities over time (Glynn & Fox, 2017) or using community or state fixed effects over time also find links between rent levels and homeless rates (Hanratty, 2017) and between poverty and homeless rates in jurisdictions with a right to shelter, where the accuracy of counts may be higher (Hanratty, 2017).

There is some evidence that long-term rent subsidies can prevent and end homelessness. A previous experimental study found that offering housing vouchers to families receiving welfare prevented homelessness (Wood, Turnham, & Mills, 2008), and observational studies suggest that long-term rent subsidies can prevent homelessness (Shinn, 1992), end homelessness (Culhane, 1992; Wong, Culhane, & Kuhn, 1997; Zlotnick, Robertson, & Lahiff, 1999), and promote residential stability (Shinn et al., 1998). Long-term rent subsidies are not typically part of the homeless services system, so families in homeless shelters do not ordinarily have immediate access to this form of assistance unless they are already on waiting lists.¹ Some observers have questioned whether, given the personal challenges they

¹Housing assistance is not an entitlement—only about a quarter of eligible households receive federal housing assistance (CBO, 2015). About a quarter of public housing authorities have some prioritization of families experiencing homelessness on their housing assistance waiting lists (Dunton et al., 2014).

face, families experiencing homelessness are able to use mainstream housing assistance successfully (Dunton et al., 2014). On the other hand, economic theory suggests that poorer households have stronger incentives to use long-term rent subsidies such as vouchers because they receive greater benefit. Consistent with this theory, previous national research found success rates for voucher use were higher among the lowest-income households (Finkel & Buron, 2001).

Past research has also shown associations of family homelessness with some of the other outcomes we study, including adult well-being (Bassuk et al., 1998; Chambers et al., 2014; Park, Metraux, & Culhane, 2010; Schuster, Park, & Frisman, 2011; Weinreb et al., 2006), family separations (Barrow & Lawinski, 2009; Burt et al., 1999; Cowal et al., 2002; Culhane et al., 2003; Park et al., 2004) and child well-being (Buckner, 2008). There is less evidence that rent subsidies will alter these outcomes, although adult and child well-being improve over time when families are restored to housing (Samuels et al., 2015; Shinn et al., 2008; Shinn et al., 2015). Thus it is possible that rent subsidies would have benefits for the additional outcomes studied. Reductions in rent could provide money for other needs and increase food security.

Finally, long-term rent subsidies have been shown to cause at least temporary reductions in work effort among families receiving welfare (Mills et al., 2006).² A study in Chicago that took advantage of an allocation of long-term rent subsidies (housing choice vouchers) by lottery found a persistent reduction in employment by working-age people (Jacob & Ludwig 2012). It is likely that this effect on work effort would extend to families experiencing homelessness. The subsidies reduce the need to work and, because 30 percent of income must be paid towards rent, the subsidy imposes a marginal tax rate on earnings that could discourage work.

The second approach, short-term rent subsidies as a part of rapid re-housing programs, offered rent subsidies lasting from several months up to 18 months for housing in the private market. Short-term rental assistance is one of the tools rapid re-housing programs use in their crisis response to homelessness. Other components of rapid re-housing are case management, supportive services, and other short-term financial assistance. At the time of the study, families who received short-term rent subsidies had to be re-certified (typically on the basis of both income and progress on a case plan) every three months for continued receipt of assistance. Participants received low-intensity case management that focused on increasing self-sufficiency. Proponents of short-term rent subsidies believe that the role of the homeless services system is to help families overcome whatever income shock or other crisis that precipitated homelessness. Most families who become homeless have only one fairly brief episode of homelessness (Culhane et al., 2007). The goal of rapid re-housing is to accelerate families' return to conventional housing, with the minimum intervention necessary so as to serve the largest number of households. Proponents' predictions are much the same as for long-term subsidies, with a focus on rapid exits from homelessness and reduced use of the homeless assistance system. Previous non-experimental studies of families receiving short-term rent subsidies provided in rapid re-housing programs have

²Mills et al. (2006) found no reduction in work effort by three years after random assignment.

focused on residential outcomes. Few households return to shelter during one or two years following the end of the rent subsidy (Byrne et al., 2016; Finkel et al., 2016) but households move frequently (Finkel et al., 2016). Without well-matched comparison groups it is hard to know what would have happened had the same households not received short-term rent subsidies. The short-term rent subsidies tested in the study were funded by the federal Homelessness Prevention and Rapid Re-Housing Program (HPRP) as part of the American Reinvestment and Recovery Act of 2009 but were based on earlier models implemented by some localities (Burt, Pearson, & Montgomery, 2005). These short-term subsidies continue to be offered as a component of rapid re-housing programs that operate with funding from HUD's Continuum of Care (CoC) and Emergency Solutions Grant (ESG) programs, the U.S. Department of Veteran's Affairs Supportive Services for Veteran Families (SSVF) program, and other sources. The federal government spent approximately \$525 million on rapid re-housing assistance in 2015, with a majority of that amount going toward short-term rent subsidies.³

The third approach is transitional housing—temporary, supervised housing provided with intensive case management lasting up to two years. The theoretical rationale for transitional housing is that families who experience homelessness face a number of challenges that must be addressed in order to lay the foundation for later housing stability. Acting on this rationale, transitional housing programs assess family needs and provide services to address housing placement, self-sufficiency, employment and training, life skills, mental and physical health, parenting, child advocacy, and substance abuse.⁴ The transitional housing approach to homelessness has been used in the United States for nearly 30 years (Burt, 2006). Proponents expect transitional housing to improve adult well-being and family self-sufficiency and thereby reduce homelessness and improve additional outcomes such as family preservation and child well-being. There is little rigorous evidence regarding these possible effects. Previous studies of transitional housing often describe the success of program graduates without comparison groups for gauging what would have happened in the absence of the program, making it difficult to know what contribution the intervention made (e.g., Burt, 2010). Further, a prior longitudinal study of a Critical Time Intervention involving housing and services for families found that all families who had been sampled in homeless shelters showed improvements in maternal mental health and child behavior problems irrespective of intervention. In that study, families in both intervention and usual care groups had access to affordable housing in the community, but families in the intervention group left shelters more quickly; the intervention made no additional difference for mothers over time (Samuels et al., 2015) but led to better school attendance and reduced behavior problems for children (Shinn et al., 2015). Transitional housing is funded by the federal government through HUD's CoC Program and by other government and private

³The \$525 million represents \$279 million spent on HUD rapid re-housing programs and roughly two-thirds of the \$373 million spent on the Supportive Services for Veteran Families (SSVF) program by the U.S. Department of Veterans Affairs (with the other third spent on homelessness prevention). In FY2015, the SSVF program expended 60 percent of its temporary financial assistance to short-term rent subsidies. Other uses included security deposits, utility fees and deposits, transportation, moving costs, and other expenditures (U.S. Department of Veterans Affairs, 2016). We assume that programs funded by other federal sources devote a similar percentage to short-term rent subsidies.

⁴Another type of intervention, permanent supportive housing, combines the intensive services of transitional housing with a long-term rent subsidy. This type of program is typically offered to persons and families with disabilities. Although no offers of permanent supportive housing were provided by the study, families' use of this type of program after random assignment was measured.

sources. In fiscal year 2015, the CoC Program dedicated \$172 million for transitional housing.

STUDY DESIGN AND IMPLEMENTATION

The Family Options Study randomly assigned families to one of four assignment groups: long-term rent subsidies, short-term rent subsidies, project-based transitional housing,⁵ or usual care, which consisted of whatever combination of services families found in their communities with whatever help they could secure. Families were recruited to the study from emergency shelters and needed to have stayed in shelter for at least a week and have a child age 15 or younger with them in shelter to be eligible for the study.⁶ Families who were assigned to one of the three active interventions were provided priority access to that intervention. Priority access meant that a slot in a specified program was reserved for the family and no waiting was required. Families assigned to usual care initially continued to stay in shelters, which provide relatively intensive case management services. Some families assigned to usual care then found their way into a variety of programs, including each of the three interventions. The usual care condition shows how the homeless services system works in these communities in the absence of priority access to specific types of programs.

The study was not a demonstration in which researchers designed and implemented new interventions with high fidelity to an ideal model. Rather, the study partnered with 148 existing programs in 12 communities with diverse demographics and housing and labor markets in all regions of the United States: Alameda County, California; Atlanta, Georgia; Baltimore, Maryland; Boston, Massachusetts; Bridgeport and New Haven, Connecticut; Denver, Colorado; Honolulu, Hawaii; Kansas City, Missouri; Louisville, Kentucky; Minneapolis, Minnesota; Phoenix, Arizona; and Salt Lake City, Utah. Thus, the study documents the experimental outcomes of these different approaches, as actually implemented in communities across the United States.

We would have liked to have had every option available to every family at random assignment. However, all three active interventions were offered in only nine of the sites (Atlanta and Baltimore did not offer the long-term subsidy intervention, Boston did not offer project-based transitional housing, and Minneapolis had few transitional housing slots). Even in cases where an intervention was offered at a site, the availability of openings in the programs fluctuated. An intervention was considered open to a family only if at least one provider of the given intervention type had an open slot. Further, some programs had eligibility requirements for the families they would serve, and we did not want to send families to programs that would turn them down. Therefore, the study asked families questions to determine whether they appeared to meet the eligibility criteria specified by each program that had an opening at the time a family enrolled in the study. Project-based transitional housing excluded the most families and long-term rent subsidies the fewest. All families were eligible for usual care, by definition.⁷

⁵To differentiate transitional housing from short-term rent subsidies, the study did not refer families to “transition in place” transitional housing programs that allow families to take over the lease at the end of the program. The project-based transitional housing programs provided housing in supervised facilities managed by the programs.

⁶The study was approved by Institutional Review Boards at Abt Associates and Vanderbilt University.

After screening, we randomized families among the interventions for which there was at least one program with an opening for which they appeared eligible and the usual care group. Due to a combination of availability and eligibility, only 474 families had all four randomization arms available to them, 1,544 families had three randomization options, and 264 families had two randomization options. Families without at least one option in addition to usual care were not enrolled in the study. All analyses are conducted pairwise, contrasting an active intervention with usual care.⁸ Only families who were eligible for the active intervention in a pairwise comparison are included in the comparison. Hence, each comparison can be thought of as an experiment between two well-matched groups that differ only in the group to which they were assigned. This creates three pairwise experiments with different but largely overlapping groups of usual care families in their control groups.

Families assigned to a particular type of program were not required to take it up. Families in each group could and did find their way into a variety of programs. The pairwise impact sample for a particular impact comparison includes all families who were given priority access offers of the intervention, along with comparable usual care families, regardless of the programs that families actually took up.

METHODS

Data Sources

The study enrolled 2,282 families from September 2010 to January 2012. Only 13 families declined study enrollment, but 183 were deemed ineligible for the study after the screening described above. The analysis relies on several sources of data:

- *Baseline survey* just prior to random assignment (N= 2,282 family heads, response rate = 100 percent).
- *First follow-up survey* completed a median of 20 months after random assignment (2012 to 2013, N = 1,857 family heads, response rate = 81.4 percent).
- *Second follow-up survey* completed a median of 37 months after random assignment (2014, N = 1,784 family heads, response rate = 78.2 percent).
- *Program use database* with information about use of various types of homeless and housing programs. Constructed from Homeless Management Information Systems (HMIS) records, HUD administrative records, enrollment verification information collected from program providers, follow-up survey responses, and responses to brief tracking surveys administered six, 12, and 27 months after random assignment.
- *Quarterly wage records* from the National Directory of New Hires available for all family heads in the 11th through 14th calendar quarters after random assignment.

⁷Additional details about study implementation and recruitment can be found in Gubits et al. (2013).

⁸The technical reports also compare interventions with each other, including only families eligible for both (Gubits et al., 2015 and Gubits et al., 2016).

- *Program cost data* collected from 99 of the 148 study partner programs.⁹ Data were collected on housing or shelter (rental assistance, facility operating costs, property value or lease expenses), supportive services, administrative and overhead costs, and in-kind and partner costs.

The baseline survey collected information on family composition, demographic characteristics, housing stability, history of homelessness, employment, income, and health. The follow-up surveys were similarly comprehensive, containing items on housing situation, family composition, physical health, behavioral health, employment, family income, food security, and child well-being for up to two randomly selected focal children in the family. A total of 2,020 family heads (88.5 percent of the original sample) completed at least one of the follow-up surveys and 1,621 family heads (71.0 percent) completed both surveys.

Outcome Measures

The study measured outcomes in the domains of housing stability, family preservation, adult well-being, child well-being, and family self-sufficiency. We pre-selected 18 outcomes, three or four from each domain for presentation in the executive summary of technical reports and in this paper, to avoid cherry-picking of possibly spurious statistically significant findings. Most measures were reported by family heads and refer to the period immediately before the follow-up surveys (usually the last month or last six months). The outcomes thus capture intermediate and longer-term outcomes rather than the experiences of families while they were leaving shelters.

Measures of housing stability are (1) at least one night homeless or doubled up in the past six months, (2) any stay in emergency shelter in months 7 to 18 and months 21 to 32 after random assignment, (3) number of places lived in the past six months, and (4) at least one night homeless or doubled up in the past six months or any stay in emergency shelter in the past 12 months. The measure of homeless or doubled up combines two survey items. Homeless was defined in the survey item to include living in a homeless shelter, in a place not typically used for sleeping, such as on the street, in a car, in an abandoned building, or in a bus or train station, or temporarily in an institution because the respondent had nowhere else to go. Although use of transitional housing is included in the federal definition of homelessness, it was explicitly excluded in the survey item because the study considered transitional housing an intervention rather than an outcome. Doubling up was defined as “living with a friend or relative because you could not find or afford a place of your own.” Any stay in emergency shelter in the most recent 12-month period for which we had data for all respondents (months seven to 18 for the first follow-up survey and months 21 to 32 for the second follow-up survey) was based on the constructed program use database.¹⁰ The fourth measure of homelessness or doubling up (by self-report in the six months before the survey) or stays in shelter for the reference period of 12 months before the follow-up survey

⁹The programs selected for cost data collection were the ones with the highest number of referrals from the study within each site-assignment group cell. Therefore, the programs where cost data were collected represent the bulk of priority access offers (100 percent of acceptances at long-term rent subsidy programs, more than 85 percent of acceptances at short-term rent subsidy and transitional housing programs) of priority access offers. More than 90 percent of families assigned to usual care were initially enrolled from the emergency shelters from which cost data were collected.

¹⁰HMIS records were the original source for 90 percent of the emergency shelter stays in the program use database.

(primarily by administrative data) was selected as the primary, confirmatory outcome for the study on which the overall effectiveness of an intervention is to be judged.¹¹

Two of the three measures of family preservation are any separations in the past six months from individuals present with the family in the shelter, either (1) a child or (2) a spouse or partner. The third measure is lack of reunification of any child who was separated from the family at the time of study enrollment. Children considered were those named at baseline in response to a question about the names of “your own children who are part of your family but are not living with you right now in [NAME OF SHELTER].” Spouse/partner separations are assessed only for the quarter of respondent family heads who had a spouse or partner with them in shelter at baseline, and child reunifications pertain only to the fifth of respondent families with a baseline child separation.

Measures of adult well-being include (1) health in the last 30 days rated as fair or poor on a five-point rating scale, (2) psychological distress measured using the six-item Kessler-6 Psychological Distress Scale for the past 30 days (Kessler et al., 2003), and (3) alcohol dependence or drug abuse in the past six months, coded as any affirmative answer to the four-item Rapid Alcohol Problems Screen (RAPS-4) (Cherpitel, 2000) or to six items from the Drug Abuse Screening Test (DAST-10) (Skinner, 1982). A fourth adult well-being measure, experienced intimate partner violence in the past six months, is based on an affirmative answer to the question, “In the last 6 months, have you ever been physically abused or threatened with violence by a person who you were romantically involved with, such as a spouse, boy/girlfriend, or partner?”

Measures of child well-being, reported by parents, include (1) the number of schools the child attended since random assignment, (2) the number of days absent from school in the past month or—if the survey occurred during the summer—in the most recent month the child was in school (for school age-children only), (3) the percentage of children in fair or poor health on a five-point rating scale identical to adult health, and (4) the total problems score (across four sub-domains) on the Strengths and Difficulties Questionnaire (SDQ, with a reference period of the past six months) standardized relative to published U.S. national norms for children’s age and gender (YouthInMind, 2014).

Measures of self-sufficiency include (1) whether the family head did any work for pay in the week before the follow-up survey, (2) total family income in the most recent calendar year, and (3) food security in the past 30 days. For the income question, the respondent was asked to include “you and all the people in your family” and “money from your main job, work on the side, welfare, SSI, SSDI, help from your family and friends, child support, alimony, and any other money income received by you or any other household member.”¹² Food security in the last 30 days is based on six items in the U.S. Department of Agriculture short-form

¹¹The study designated a single confirmatory outcome for the impact analyses conducted for each follow-up wave. The motivation for designating a confirmatory outcome is based on considerations of multiple comparisons, that is, the problem of interpreting individual statistical tests when a large number of tests are conducted. Under the same motivation, we also pre-specified the 18 outcomes shown in Tables 3 to 6 out of the more than 70 outcomes examined for impacts.

¹²Respondents who did not offer exact amounts were asked a series of questions to identify their income category: \$0 to \$5,000, \$5,000 to \$10,000, \$10,000 to \$15,000, \$15,000 to \$20,000, \$20,000 to \$30,000, or \$30,000 or more. Incomes were then imputed based on category response. Those in the \$0 to \$5,000, \$20,000 to \$30,000, and \$30,000 or more categories were imputed to have the

metric for food insecurity (Nord, Andrews, & Carlesen, 2005). Additional detail on all measures is available in Gubits et al. (2016).

Estimation

This paper presents estimates of the impacts of priority access to each of three active interventions compared to usual care at each of the survey follow-up points. For each experimental contrast, the study team estimated impacts for the sample of families who either were assigned to the active intervention or could have been assigned to the intervention but were assigned to usual care instead. The team estimated impacts using a regression model of the following form:

$$Y_i = \alpha_{q,UC} + T_{q,i} \beta_{q,UC} + X_i \gamma_{q,UC} + \sum_{k=1}^{13} I_{k,i} \delta_{k,q,UC} + e_i$$

where Y_i represents a particular outcome (either binary or continuous) for family head or child i . $T_{q,i}$ is an indicator variable that equals 1 if family i was assigned to intervention q and 0 if family i was assigned to usual care. X_i is a vector of background characteristics of family i measured at baseline and $I_{k,i}$ is an indicator variable for site k for family i (i.e., site fixed effects).¹³ The model assumes a mean-zero, i.i.d. residual e_i . $\alpha_{q,UC}$, $\beta_{q,UC}$, $\gamma_{q,UC}$, and $\delta_{q,UC}$ are parameters estimated in the model for the contrast of intervention q versus usual care. The key parameter is $\beta_{q,UC}$, which is the estimated *intention-to-treat*, or ITT, impact on outcome Y . The ITT impact is the average effect of being offered priority access to intervention q rather than usual care. The average effect is taken over all the families in the contrast, regardless of whether families offered priority access to intervention q actually participated in that intervention. We estimate the impact model using least squares (with survey non-response weights, described below) and heteroskedasticity-consistent standard errors.¹⁴

To understand whether impacts differ for different types of families, the team constructed two indices from baseline characteristics: (1) housing barriers, such as lack of money to pay rent and (2) psychosocial challenges, such as experience of intimate partner violence.^{15,16} We then examine whether each of these indices affects impact magnitudes. The regression

median income of those who provided an exact amount in these intervals. Those in other intervals were imputed as the midpoint of the interval. About a fifth of annual income outcomes were imputed based on income category responses (21.8 percent at 20 months and 21.4 percent at 37 months).

¹³Technically $I_{k,i}$ represents the site-by-random-assignment-ratio regime k for family i . Of the 12 sites, 10 had a single set of random assignment probabilities during the 15-month study enrollment period. The remaining two sites changed random assignment probabilities a single time each, creating 14 site-by-random-assignment-ratio regimes. The equation includes 13 indicator variables and omits one. These fixed effects are included so that the impact estimate is based on a set of 14 experimentally-balanced within-site comparisons.

¹⁴Most of the outcomes we examine are binary. Judkins and Porter (2016) show that ordinary least squares performs well with binary outcomes down to sample sizes much smaller than found in this study. Therefore, we use least squares for both continuous and binary outcomes.

¹⁵The housing barriers index is a count of up to 15 potential barriers that family heads reported were either a small or large problem in finding housing. The potential barriers are: not enough income to pay rent, inability to pay a security deposit or first/last month's rent, not currently employed, poor credit history, lack of transportation to look for housing, no reference from past landlords, past eviction, no rent history at all, recently moved to a community and no local rent history, problems with past landlords, three or more children in the household, racial discrimination, past lease violations, someone in the household less than 21 years old, and teenagers in the household.

model is modified by adding the index, removing the baseline characteristics that form the index from the X_i vector, and interacting the index with the $T_{q,i}$ indicator variable. The test of statistical significance for the coefficient on the interaction term serves as the test for moderation of impacts by the housing barriers and psychosocial challenges indices.

Each experimental contrast has assignment groups that were well-matched at randomization. We found little evidence of differential attrition at the two follow-up points (Gubits et al., 2015 and Gubits et al., 2016).¹⁷ Nonetheless, following an analysis plan published before follow-up data were available (Gubits et al., 2012), all analyses use weights for survey nonresponse.¹⁸ The analysis of child outcomes uses analytic weights that are the product of the family nonresponse weight and the inverse probability of being selected as a focal child. The standard errors of impacts on child outcomes are adjusted for clustering of children within families.

In addition to estimating impacts at the two follow-up points, we also compare the magnitude of the impacts at the two time points. The test used to determine whether impact magnitudes differ between the two time points has relatively low statistical power, however. This test is described in Appendix B, as is a separate test used for descriptive analysis of change between follow-up points in the usual care group.¹⁹

Cost Analysis

The program cost data are used to calculate site-level average monthly costs for four program types: long-term rent subsidy, short-term rent subsidy, project-based transitional housing, and emergency shelter.²⁰ These costs are then combined with the observed number of months each family used each type of program (as recorded in the study program use

¹⁶The psychosocial challenges index is a count of up to nine potential challenges. The potential challenges are: domestic violence by spouse or partner as an adult, poor or fair health, in foster care or institution as child, PTSD symptoms, psychological distress, disability that limits or prevents work, substance abuse problem, child with disability, and past felony.

¹⁷See Table A1 in the online appendix for full-sample balance tests of baseline characteristics. Two of the three comparisons have no systematic differences in baseline characteristics. The third comparison, short-term rent subsidies versus usual care, shows a statistically significant difference in an omnibus test of characteristics, with a p -value of .044. However, differences in characteristics of the groups are relatively small. We interpret the statistically significant difference between groups as an imbalance due to chance, rather than to any problem with the random assignment mechanism. Tables A2 and A3 show baseline characteristics in the two survey respondent samples weighted to adjust for survey nonresponse. Balance between assignment groups is similar to that found in the full study sample. Out of a combined 180 statistical tests of difference at the two follow-up points, 19 are statistically significant at the .10 level, and 17 of 19 are present in the full sample. So differential attrition does not appear to materially exacerbate the chance imbalance that exists between groups. All appendices are available at the end of this article as it appears in JPAM online. Go to the publisher's website and use the search engine to locate the article at <http://onlinelibrary.wiley.com>.

¹⁸Separate weights were generated for each assignment group of each contrast at each time point. To construct the non-response weights, we regressed a dummy variable for survey response on a large number of characteristics measured at baseline to generate a propensity to respond for each survey measurement point. We then divided each intervention group into quintiles based on this propensity. In the follow-up analysis, the weight for each family in that group in the contrast is the total number of families in the quintile at study entry divided by the number of such families who responded at follow-up. The use of these weights allows the 20-month and 37-month follow-up samples to match the characteristics of the full baseline sample on factors used to generate propensity to respond.

¹⁹All appendices are available at the end of this article as it appears in JPAM online. Go to the publisher's website and use the search engine to locate the article at <http://onlinelibrary.wiley.com>.

²⁰Cost data for long-term rent subsidy were collected directly from family-level administrative data. Cost data for short-term rent subsidy, transitional housing, and emergency shelter were collected from study programs. Per-family costs for these program types are calculated as total program costs divided by the number of families the program served—that is costs are not specific to study participant families, but rather are average costs for programs' typical clientele. Program staff did not typically know which of the families they served were study participants. Site-level averages for each program type are weighted by the number of study families served by the program so that the site-level per-family monthly costs for each program type represent average costs of serving a study family for a month through a particular program type at a study site.

data). We multiply the monthly cost estimates by the observed number of months a family used each program type during the follow-up period and sum across all types. This provides an estimate of the costs for a single family during the follow-up period. Then we average over families within one side of an experimental contrast to estimate the average cost of program use for the assignment group during the entire follow-up period for the 37-month survey respondent sample. For each experimental contrast, we compare the average cost of all program use.

In order to estimate costs at programs from which no data were collected, this approach requires two additional assumptions. First, the cost for a month of assistance at a non-study program at a site is assumed to equal the average monthly cost of study programs of the same type at that site. For example, the estimated per-family monthly cost for non-study transitional housing programs in Boston is assumed to be the average per-family monthly cost of the study transitional housing programs in Boston. Second, cost data for public housing, project-based vouchers/Section 8 projects, and permanent supportive housing programs were not collected as part of the study (as these were not alternatives to which families were assigned). So, within a given site, the costs of public housing and of project-based vouchers/Section 8 projects are assumed to be the same as those of subsidies offered to the long-term rent subsidy group and the costs of permanent supportive housing are assumed to be the same as those of study transitional housing programs.²¹

RESULTS

Baseline Characteristics of Families

Family characteristics of the full study sample at baseline (shown in Table 1) are similar to those of homeless families in national samples, as reflected in the Annual Homeless Assessment Report to Congress (HUD, 2017). The typical study family consisted of a mother (median age of 29) with one or two children. About one-quarter of family heads (27.4 percent) had a spouse or partner with them in shelter, and an additional one-tenth (10.3 percent) had a partner living elsewhere. Most family heads had not worked in the week before randomization (82.9 percent) and median annual household income was \$7,410, far too low to afford housing in the private rental market. Three-fifths of family heads (63.0 percent) had been homeless previously, and nearly one-third had symptoms of either post-traumatic stress disorder (PTSD) (22.4 percent) or psychological distress (21.8 percent). Almost half (49.0 percent) had experienced intimate partner violence as an adult. The families had 4,558 children with them in shelter, an average of 2.0 per family. As in national samples, children tended to be young: 50.5 percent of families had an infant or toddler younger than 3. Nearly a quarter of the sample (24.0 percent) had a child living elsewhere, but only 0.7 percent reported a child in foster care. As in other studies of homelessness, minorities were heavily represented, with sample composition varying by site. Overall, 40.9 percent were African American, non-Hispanic; 20.4 percent White, non-Hispanic; 20.2 percent Hispanic; 7.2 percent Asian/Pacific Islander, non-Hispanic; and 11.2 percent mixed, non-Hispanic.

²¹Additional details about the cost study are provided in Appendix C. All appendices are available at the end of this article as it appears in JPAM online. Go to the publisher's website and use the search engine to locate the article at <http://onlinelibrary.wiley.com>.

Program Usage

Families in all intervention groups used a variety of programs over the three-year follow-up period. Among all usual care families, that is families given no preferential access to one of the study's active interventions, 21.4 percent used short-term rent subsidies, 30.3 percent used transitional housing, and 36.8 percent used some form of long-term rent subsidy at some point during the three-year follow-up period. Even so, against this usual care norm, families that received priority access to a particular intervention type were substantially more likely to use that intervention. Moreover, those families used their assigned programs earlier and (for transitional housing and long-term subsidies) longer. In particular, 88.4 percent of the families assigned to long-term subsidies used long-term subsidies, 58.5 percent of families assigned to short-term rent subsidies used this type of subsidy, and 53.2 percent of families assigned to transitional housing used a transitional housing program during the follow-up period. At least some of the lower take-up of short-term subsidies and transitional housing, compared to long-term subsidies, is due to the preferences of the families. Qualitative interviews with families found that some in the short-term subsidies group were reluctant to use these subsidies because of their short-term nature. Some in the transitional housing group perceived the fixed locations of the facilities to be far from their schools, work, and support systems or to be in bad neighborhoods (Fisher et al., 2014).

Table 2 provides the proportions of families within each experimental contrast that ever used each type of program as of the two follow-up points. The differences between groups in the mixes of program use are the direct result of random assignment and lead to the impact estimates shown below in Tables 4 through 6. The cells with shading in the table highlight the key contrasts that the experiment was intended to maximize. In most cases, the proportion who ever used a particular program type is only slightly higher by the second follow-up point than it was by the first follow-up point. The interventions were intended to be used for different lengths of time. Families who took up offers of long-term subsidies used them for a mean of 31.0 months by the 37-month follow-up point. Comparable figures for short-term rent subsidies and transitional housing are 8.0 and 14.4 months.^{22, 23}

Outcomes with Usual Care

Table 3 shows the pre-selected outcomes at the first and second follow-up points for families assigned to usual care. The usual care outcomes serve as the counterfactuals for those of the active intervention assignment groups at the two time points. The usual care outcomes generally improve from the 20-month follow-up to the 37-month follow-up point. At 20 months, 58.9 percent of usual care families were in their own place of residence; by 37 months this figure had increased to 72.7 percent. Nevertheless, many families were still not faring well three years after entering shelter. One in six had stayed in emergency shelter in months 21 to 32 after random assignment (the last month for which we had data for all

²²Of those in the short-term rent subsidy group who ever used this subsidy, 92 percent used the subsidy for at least three months. Of those in the transitional housing group who ever used transitional housing (intended to be a longer intervention than short-term subsidies), 77 percent used it for six or more months.

²³Appendix Table D1 shows contemporaneous program use for the respondent samples at the two follow-up points. Appendix Figure D1 shows program use in each month for the first 32 months after random assignment (the time period for which full information is available for the 37-month respondent sample). All appendices are available at the end of this article as it appears in JPAM online. Go to the publisher's website and use the search engine to locate the article at <http://onlinelibrary.wiley.com>.

families), more than a third had recently been homeless or doubled up in the same unit with another family because they could not find or afford a place of their own, nearly two-fifths had experienced an emergency shelter stay in the past year or been homeless or doubled up in the past half-year, and on average families had lived in 1.6 places in the six months prior to follow-up. All of these figures represent improvements over the 20-month survey time point, when nearly half of families reported being homeless or doubled up in the past six months or were recorded as being in shelter during the past 12 months.

Family separations were frequent: one in six families had been separated from a child who was with them in the initial shelter, two in five family heads had been separated from a spouse or partner present at that point, and only a third of families who had children living elsewhere during the initial shelter stay had been reunified three years after shelter entry. Rates of separation and reunification at 20 months and 37 months following random assignment did not differ.

One in 10 respondents experienced intimate partner violence in the six months prior to the 37-month follow-up. Three in 10 reported having poor or fair physical health and one in 10 gave responses indicating alcohol dependence or drug abuse within the past six months, a modest improvement from 20 months. The other adult well-being measures are similar for the two time points.

Many children displayed elevated behavioral problems, with an average scale score 0.6 standard deviations above a normative U.S. sample at both time points. Many fewer children than parents were in poor or fair health. Levels of absences at both the 20- and 37-month follow-up points are about one per month (5 percent of a normal 20 to 22 day school period). Children attended two schools on average over the 37-month follow-up period.²⁴

Lack of employment, food insecurity, and deep poverty remained prevalent three years after randomization: a little less than two-fifths of respondents had worked for pay within the past week; almost half of families were food insecure; and the average household income of \$12,099 was well below the family poverty line. Nevertheless, the figures on recent work and income represent significant improvements over the same measures at 20 months after randomization.

Impacts at Two Follow-Up Points

Tables 4 through 6 show the main results of the study, the impacts of priority access to each of the three active interventions relative to usual care, at the time of the 20-month and 37-month follow-up surveys. These impact estimates are all regression-adjusted for chance imbalances in baseline characteristics. The usual care sample in each comparison includes only the subset of usual care families who were eligible for the specified intervention, so the usual care values in each comparison vary slightly from the values in Table 3.

²⁴Unlike other measures, number of schools attended refers to the entire period since random assignment, so the significant increase from the 20- to the 37-month follow-up survey is an artifact of the longer reporting period.

Table 4 shows the impact of a priority access to a long-term rent subsidy compared to usual care for families eligible for such subsidies. Relative to usual care, offers of long-term rent subsidies improved every measure of housing stability dramatically at both follow-up points and also had some impact in each of the other domains examined.

With respect to housing stability, the offer of a long-term rent subsidy almost halved use of emergency shelters in months seven to 18 and more than halved self-reported homelessness and doubling up at the 20-month follow-up point. The offer of a long-term rent subsidy reduced use of emergency shelters in months 21 to 32 after random assignment by more than three-quarters, and reduced self-reported homelessness or doubling up by more than half at the three-year follow-up. Residential stability increased as well, with families living in 0.37 fewer places in the past six months on average at the 20-month point and 0.25 fewer places in the past six months at the three-year point, compared to those in usual care. The size of the impact for shelter stays and for self-reported homelessness and doubling up is significantly lower at the longer term follow-up, not because of any backsliding in the group offered long-term subsidies but because the usual care comparison group became more stable, as noted earlier.

With respect to family preservation, the offer of a long-term rent subsidy reduced the share of families with recent parent-child separations by two-fifths at 20 months,²⁵ but increased partner separations by two-fifths (for the subset of families with a partner present in shelter at study enrollment) at the three-year follow-up. The impact of long-term rent subsidies on partner separations was significantly larger at the later time point. There was no significant effect on child reunifications (for the subset of families with a child who was not present in shelter) at either point in time.

Turning to adult well-being, offers of long-term rent subsidies reduced experiences of intimate partner violence by more than one-half (6.8 percentage points) at 20 months and by more than one-third (4.0 percentage points) at 37 months. They also reduced psychological distress at both time points, and self-reported alcohol dependence or drug abuse by a quarter (4.5 percentage points) at 20 months only.²⁶ There was no impact on self-reported physical health.

Children in families offered long-term rent subsidies also fared better than comparable children in usual care, with fewer schools attended at both time points (note that the measure is for the entire period since random assignment, so the later result subsumes the earlier one), fewer absences from school in the last month at the 20-month follow-up only, and behavior problem scores two-tenths of a standard deviation lower at the three-year follow-up only. No significant impacts were observed for child health.

²⁵The offer of a long-term rent subsidy also reduced the proportion of families with a foster care placement in the past six months at the 20-month point (not shown) from 5.0 percent to 1.9 percent, a 62 percent reduction.

²⁶We note that there is a baseline difference of 3.3 percentage points for self-reported alcohol dependence or drug abuse in the 20-month respondent sample for this comparison. Even though baseline substance abuse is controlled for in the impact regression, the baseline difference raises the possibility that the measured reduction in substance abuse from the long-term rent subsidy offer found at 20 months may be spurious.

Finally, with respect to self-sufficiency, families offered long-term rent subsidies were less likely to have worked for pay in the week before the survey (a reduction of about a fifth or 5.6 percentage points) at 20 months only, but were about 10 percentage points more likely to be food secure at both time points. There was no intervention impact on family income at either time.²⁷

The study's other two interventions had little impact. Table 5 shows no evidence that an offer of a short-term rent subsidy improved housing stability relative to usual care at either examined point in time. The only three significant impacts among 18 pre-selected outcomes at the 20-month follow-up were a reduction in school absences for children, an increase of a little more than \$1,000 in family income, and an increase of 6.3 percentage points in families who were food secure. None of these impacts were evident at 37 months, but there was one new impact, a reduction of two-tenths of a standard deviation in child behavior problems. The disappearance of the effect on income is the only significant change in impacts between the two follow-up periods.

Table 6 shows that an offer of transitional housing reduced emergency shelter usage in months seven to 18 after study enrollment by 9.0 percentage points (35 percent), and again in months 21 to 32 by 6.0 percentage points (40 percent). Some families given priority access to transitional housing were still in transitional housing programs during both periods. Other measures of homelessness were affected at 20 months only, and effects did not extend to the other four outcome domains at either time. The absence of transitional housing impacts on adult well-being and self-sufficiency is particularly notable given the intervention model of offering psychosocial services that target outcomes in these domains.

Moderation of Impacts

Although on average families given priority access to short-term rent subsidies and transitional housing did no better than families assigned to usual care, we also considered whether certain types of families benefitted from the interventions more than other types of families. For example, do families facing more challenges benefit more from the intensive psychosocial services in transitional housing? And do short-term rent subsidies help stabilize families with fewer barriers to securing housing? To address these questions, we examined statistical interactions of two indices of family difficulties measured at the start of the study—housing barriers such as lack of money to pay rent and psychosocial challenges such as experience of intimate partner violence—with program assignment (in each contrast) as predictors of outcomes. Descriptive information on the prevalence of each barrier and challenge that make up the indices and tests of differential effects at 20 months and 37 months are provided in Appendix E.²⁸ With two indices, three contrasts with usual care, 18 outcomes, and two time points, this yielded 216 tests, of which 14 reached statistical

²⁷Quarterly wage data available from the National Directory of New Hires for all families from the 11th through the 14th quarters after the quarter of random assignment provide additional evidence about intervention effects on work effort. These data show that, relative to usual care, priority access to long-term rent subsidies reduced the proportion of family heads with any employment during this period (a one-year period approximately centered on the 37-month follow-up point) from 57.5 percent to 52.0 percent but had no effect on average earnings across all families (including non-earners) during the period.

²⁸These results are shown in Tables E1 to E5. All appendices are available at the end of this article as it appears in JPAM online. Go to the publisher's website and use the search engine to locate the article at <http://onlinelibrary.wiley.com>.

significance at $p < .10$, or fewer than would be expected by chance. The results show no particular pattern, and only one finding of significance (of 108) was replicated across the two time points. The statistical power is low for these tests of differential effects of interventions for families with different characteristics. Nonetheless, we conclude that the average effects across all families provide the best guidance for policy and practice regardless of families' levels of challenges or housing barriers.

Cost Estimates

The relative cost of the interventions is also an important policy consideration. The estimates of costs of program use per month align with expectations based on the differing approaches to assisting families used by the different interventions. Per-family monthly program costs were lowest for short-term rent subsidies (\$880), somewhat higher for long-term rent subsidies (\$1,172) and highest for transitional housing (\$2,706) and emergency shelters (\$4,819).

As shown above in Table 2, families in all intervention arms used a variety of programs. Figure 1 shows the cumulative costs of all types of programs used over the entire follow-up period for families in each pairwise comparison sample. Each band in each stacked bar reflects the estimated monthly cost of a particular program type multiplied by the number of months families used that type of program, averaged across families in the specified group.

The cost estimates show clearly that usual care was far from no treatment. Families given no special offer used housing and service programs costing about \$41,000 over 37 months. Costs for families offered long-term rent subsidies were only about 9 percent more. The increased housing stability experienced by families offered the long-term rent subsidy coincides with less use of costly emergency shelters and transitional housing programs frequently relied on by usual care families. Thus, the cost of long-term subsidies for families offered that type of program was partially offset by less use of costly emergency shelters and transitional housing programs relative to usual care families. However, at the three-year point, costs for the long-term rent subsidies group were increasing faster than for the comparable usual care families, suggesting that the difference in cost would widen in the future.²⁹ Priority access to short-term rent subsidies was about 9 percent less costly than usual care because it led to less use of costly transitional housing. And priority access to transitional housing cost about 4 percent more than the programs used by comparable families with no special offer.

DISCUSSION

The Family Options Study delivers rigorous evidence about the effects of offering homeless families priority access to particular interventions and about what happens to families who

²⁹In the month of the second follow-up survey response, few families were using costly shelter programs and average monthly costs in the long-term rent subsidy and usual care groups were 2 percent of the entire period since random assignment. The average monthly cost for the long-term rent subsidy group at this point was 16 percent higher than that for the usual care group. This differential may continue to grow. If the last-observed differential of 16 percent remains constant for another three years, the total average cost for the long-term rent subsidy group for the first six years after random assignment would be 12 percent more than that of comparable usual care families.

enter homeless shelters if they receive no priority access to any particular type of program. Hence, it provides guidance for intervention options that government policymakers might want to pursue—particularly which type of program for homeless families to emphasize and expand in terms of funding. Key strengths of the study include its experimental design and the robust survey response rates of 81 percent at 20 months and 78 percent at the 37-month follow-up. The 12 sites were purposively (rather than randomly) selected, and therefore the results are formally valid only for those communities. However, the demographic and geographical diversity of the 12 sites should allow for a broader interpretation of results. The study of 148 programs implemented around the country provides evidence about how interventions actually work, not simply what might work if a demonstration project could be scaled up.

A key limitation is that we are unable to isolate the effects of a particular program type on those families who actually use the program compared with equivalent families who do not use the program. Evidence from such treatment-on-treated (TOT) effects would have high value for the homeless assistance field, not because any federal or local policy action could actually create such a contrast for the population of families who experience homelessness, but because efforts to improve a particular intervention model need to be based on knowledge of what participating in that model actually does for families compared with families who are not participating. (In Appendix F, we discuss an assumption of TOT estimation that does not appear to be met in this study.)³⁰

Another limitation is that with a sample of 2,282 families divided among four assignment groups, the study has limited statistical power to produce evidence to answer important policy questions about which type of assistance works best for subgroups of families who experience homelessness. The study did not find evidence of differential effects for families with varying levels of psychosocial challenges or housing barriers at baseline. Although the study produces little evidence of beneficial effects from policy emphases of short-term rent subsidies or transitional housing, we cannot rule out that these interventions had beneficial effects for some types of families.

We also have limited statistical power to detect differences in the size of the impacts at the two points in time. In general, the pattern of experimental impacts observed at 20 months was sustained at 37 months for all the intervention types, even though the group assigned to usual care was gradually stabilizing. How long impacts will be sustained is unknown.

To summarize our findings, compared to usual care, long-term rent subsidies led to large reductions in housing instability along with radiating benefits for other domains of family well-being. These benefits came at a 9 percent higher cost over 37 months. Short-term subsidies and transitional housing each had little impact, but short-term subsidies cost 9 percent less than usual care, and so would be preferred if long-term subsidies cannot be made available.

³⁰All appendices are available at the end of this article as it appears in JPAM online. Go to the publisher's website and use the search engine to locate the article at <http://onlinelibrary.wiley.com>.

The study also shows that families recruited in homeless shelters who are offered no special intervention use a variety of expensive housing and service programs, costing about \$41,000 over the next 37 months. In particular, almost 37 percent found their way into some form of long-term subsidy over the next three years but not as swiftly as those given priority access to that form of assistance. Three years after random assignment, 73 percent of usual care families were in a place of their own. They gradually improved on many measures, whether due to improvements in the economy from 2010 to 2014, the programs they participated in, their stabilization in housing, maturation, or natural rebound from the nadir represented by entering a homeless shelter. This result is consistent with improvements over time in mental health found by Samuels et al. (2015), where most families had access to long-term rent subsidies. Nevertheless, three years after shelter entry, many families who received usual care in the Family Options Study continued to experience housing instability, average incomes were well below levels that would allow families' access to the private rental market without subsidies, and almost half of families remained food insecure.

Families offered long-term rent subsidies, usually in the form of Housing Choice Vouchers, were able to find housing and lease up at high rates—higher than in other studies of voucher use where families already had an alternative place to live (Finkel & Buron, 2001). Most retained their long-term rent subsidies over the following three years. Offers of priority access to long-term rent subsidies in comparison to usual care led to positive impacts on 11 of the 18 pre-selected outcomes shown in Table 2 at 20 months and nine of 18 at 37 months, with most positive changes evident at both time points. The strongest, most consistent impacts were in the housing stability domain where the gradual diminution of impacts over time resulted from improvement in the usual care control group rather than a decline for the subsidy group. Findings that long-term rent subsidies end homelessness and promote stability are consistent with earlier observational studies (Culhane, 1992; Shinn et al., 1998; Wong, Culhane, & Kuhn, 1997; Zlotnick, Robertson, & Lahiff, 1999). More novel is evidence that positive effects extended to child separations at 20 months and to adult well-being, child-well-being, and self-sufficiency at both points in time. In particular, priority access to long-term rent subsidies reduced psychological distress and domestic violence at both points in time. Thus, factors that can sometimes lead to homelessness were reduced by providing long-term rent subsidies.

There was one negative effect of offers of long-term rent subsidies, a six percentage point reduction in the proportion working for pay in the week of the survey at 20 months and a six percentage point reduction in the proportion with earnings in quarters 11 through 14 after random assignment (as sourced from administrative data). This finding is consistent with economic theory and studies by Jacob and Ludwig (2012) and Mills et al. (2006).

The salutary effects of long-term subsidies come at some cost—about 9 percent more than the cost of housing and service programs used by usual care families over the full 37-month period. This differential cost is likely to rise over time.

By contrast, priority access to short-term rent subsidies and transitional housing each had little or no effect relative to usual care for comparable families. Families in deep poverty may need more sustained rent assistance to attain long-term stability. Supplemental analyses

show that housing instability at the follow-up points was common among families who used short-term subsidies and imply that at least 42 percent of these families were unable to stay in their homes after their subsidies ended (Gubits et al., 2015 and Gubits et al., 2016). Future research might test the impacts of medium-term subsidies—for example, ones that lasted until all children reached school age—or shallower subsidies of indefinite term.

The results from the Family Options Study support the view that homelessness for families is an economic problem that access to long-term rent subsidies can alleviate. It shows that priority access to short-term rent subsidies is insufficient to do so. Families succeeded in using long-term subsidies in a variety of rental markets, and access to those subsidies provided radiating benefits for multiple aspects of family well-being and across three years of follow-up. There is no support in the study for the countervailing view that families must address psychosocial problems in a supervised setting such as a transitional housing program before succeeding in conventional housing. The third option studied, short-term rent subsidies, led to comparable results to usual care at a 9 percent lower cost. Thus, if it is not feasible to give immediate access to long-term rent subsidies to families experiencing homelessness, then, on the basis of cost, short-term rent subsidies would be preferred to other interventions in common use.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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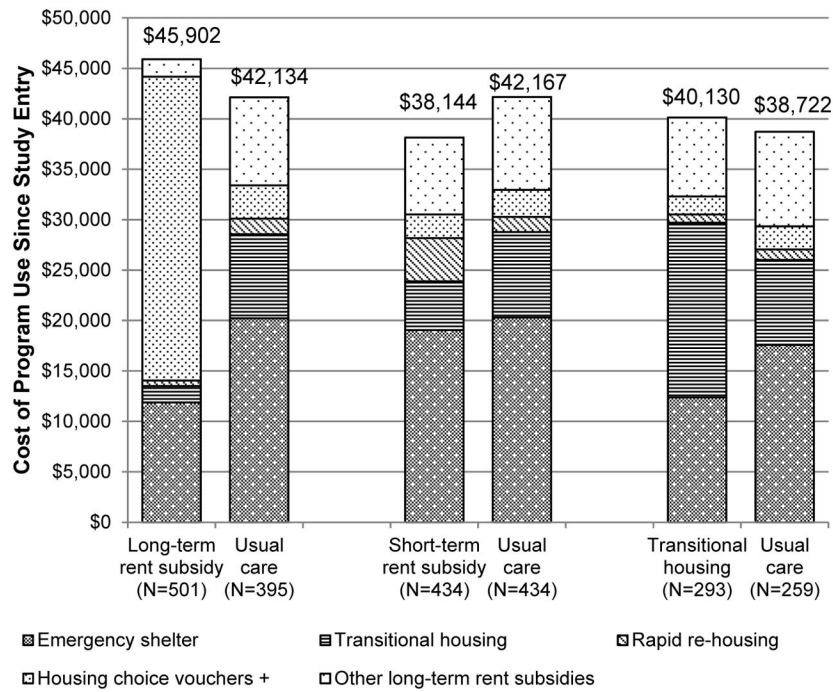


Figure 1. Cumulative Costs of Program Usage Over 37 Months for Each Housing Intervention Assignment Compared to Usual Care Condition (Stacked Bars).

Sources: Family Options Study cost data and program use data. U.S. Department of Housing and Urban Development Public and Indian Housing Information Center, Tenant Rental Assistance Certification System, and Financial Data Schedule records.

Notes: “Housing choice vouchers +” assistance is housing choice vouchers plus site-specific programs offered to families assigned to LTRS group in Connecticut and Honolulu. Other long-term rent subsidies include permanent supportive housing, public housing, and project-based vouchers/Section 8 projects. Bars represent cost of all program use from random assignment to the month of the 37-month follow-up survey response for an average family in the assignment group within the pairwise comparison (in the 37-month respondent sample). Dollar figures are weighted for survey nonresponse to represent full comparison sample. Cost estimates assume a site-specific average cost per month based on the Family Options Study cost data and HUD administrative data. All costs measured in 2013 dollars.

Table 1

Characteristics of study family heads and families at baseline.

Characteristic	Percent of family heads/families (unless otherwise noted)
Age of family head ^a at RA	
Less than 21 years old	8.2
21–24 years	19.2
25–29 years	24.0
30–34 years	18.5
35–44 years	22.3
45 years and older	7.8
Median age of family head	29.0 years
Adult respondent is female	91.8
Spouse or partner in shelter	27.4
Male adult respondent with no female wife/partner present	3.8
Total family income during the past year	
20th percentile	\$2,880
50th percentile (median)	\$7,410
80th percentile	\$15,000
No work past 1 week	82.9
No work past 2 years	30.4
Previous episode of homelessness in life	63.0
Adult respondent has disability that limits or prevents work	21.6
Post-traumatic stress disorder (PTSD) symptoms	22.4
Psychological distress	21.8
Domestic violence by spouse or partner as an adult	49.0
Substance abuse problem	20.9
Number of children present in shelter	
1 child	43.5
2 children	30.1
3 children	15.2
4 or more children	11.2
At least one child younger than age 3	50.5
Have family members not present in shelter	
Spouse/partner not with family in shelter	10.3
At least one child under age 18 not with family in shelter	24.0
Race/ethnicity	
Black/African American, not Hispanic	40.9
White, not Hispanic	20.4

Characteristic	Percent of family heads/families (unless otherwise noted)
Hispanic	20.2
Asian/Pacific Islander, not Hispanic	7.2
Mixed, not Hispanic	11.2

Sources: Family Options Study baseline survey.

Notes:

^aFor families headed by couples, the study team requested that the woman fill out the baseline survey. Sample size is 2,282 (full sample).

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Program use from random assignment to first/second follow-up survey for all experimental contrasts.

Table 2

Type of Housing Assistance	Percent of families who ever used program type from RA to 20-month/37-month follow-up survey ^a												
	Long-term rent subsidy (LTRS) vs. Usual Care (UC)			Short-term rent subsidy (STRS) vs. Usual Care			Transitional housing (TH) vs. Usual Care			By 37-month survey			
	By 20-month survey	UC	LTRS	By 37-month survey	UC	STRS	By 20-month survey	UC	TH	By 37-month survey	UC	TH	UC
Housing choice vouchers + ^b	83.2	10.2	83.2	12.7	7.9	9.8	12.2	5.3	6.7	9.6	10.6		
Short-term rent subsidies	12.0	22.3	11.7	23.8	57.0	59.8	23.5	10.8	15.4	14.9	18.4		
Transitional housing	6.1	21.4	7.4	28.9	18.6	23.2	27.5	54.0	29.3	53.0	34.5		
Permanent supportive housing	1.7	6.7	3.0	10.7	6.0	9.8	11.7	5.6	7.9	11.0	11.6		
Public housing	0.9	8.2	1.6	10.3	5.2	10.7	9.8	4.8	5.3	8.3	8.5		
Project-based vouchers/Section 8 projects	1.0	3.2	1.5	6.1	3.6	5.6	6.3	5.0	6.1	6.2	7.2		
Any form of long-term rent subsidy ^c	86.2	28.1	88.4	37.9	22.5	35.4	37.9	19.8	24.8	33.0	34.7		
Emergency shelter ^d	84.3	86.8	84.5	89.3	88.1	90.1	89.6	83.0	88.5	83.6	89.4		
No use of homeless or housing programs ^e	5.7	26.4	5.1	23.8	12.8	27.4	23.9	21.5	31.2	18.3	26.9		
N	530	415	501	395	455	434	434	294	262	293	259		

Source: Family Options Study program use data.

Notes: RA is random assignment. 20-month/37-month percentages are based on 20-month/37-month respondent sample. Percentages are regression-adjusted, controlling for site and randomization ratio, and are weighted for survey nonresponse to represent full comparison sample. Shading indicates the key contrasts that the experiment was intended to maximize.

^a Percentages do not sum to 100 percent because some families use more than one program type during the follow-up period.

^b Housing choice vouchers +⁺ assistance is housing choice vouchers plus site-specific programs offered to families assigned to LTRS group in Connecticut and Honolulu.

^c Any form of long-term rent subsidy includes housing choice vouchers +, permanent supportive housing, public housing, and project-based vouchers/Section 8 projects. Percentages eliminate double-counting for families who used more than one of these program types.

^d All families were in emergency shelter at random assignment. Percentages less than 100 percent for ever used emergency shelter are due to missing data on shelter use.

^e No use of homeless or housing programs (ever used) indicates no use of the first six program types in this table during any of the follow-up period and no use of emergency shelter after the first six months after RA.

Table 3

Usual care group: Outcome means at 20 and 37 months after random assignment.

Domain Outcome	At 20 Months		At 37 Months		Difference in Means
	N	Mean (SE)	N	Mean (SE)	
Housing Stability					
At least one night homeless or doubled up (past 6 mo.) or in shelter (past 12 mo.) (%)	578	49.0 (2.1)	556	38.6 (2.1)	-10.4 <i>***</i>
At least one night homeless or doubled up in past 6 months (%)	578	40.2 (2.0)	556	34.9 (2.0)	-5.4 <i>**</i>
Number of places lived in past 6 months	576	1.76 (0.05)	556	1.59 (0.05)	-0.17 <i>***</i>
Any stay in emergency shelter in months 7 to 18/months 21 to 32 after RA (%)	578	26.8 (1.84)	556	17.3 (1.60)	-9.5 <i>***</i>
Family Preservation					
Family has at least one child separated in past 6 months (%)	572	15.4 (1.5)	545	16.7 (1.6)	1.3
Spouse/partner separated in past 6 months, of those with spouse/partner present at RA (%) [limited base]	161	36.5 (3.8)	151	38.1 (4.0)	1.6
Family has no child reunified, of those families with at least one child absent at RA (%) [limited base]	119	72.9 (4.1)	107	66.3 (4.6)	-6.5
Adult Well-being					
Health in past 30 days was poor or fair (%)	578	31.5 (1.9)	555	31.4 (2.0)	-0.1
Psychological Distress ^a	577	7.65 (0.25)	554	7.20 (0.26)	-0.44
Alcohol dependence or drug abuse (%) ^b	576	14.5 (1.5)	554	11.3 (1.3)	-3.2 <i>*</i>
Experienced intimate partner violence in past 6 months (%)	577	11.6 (1.3)	553	10.5 (1.3)	-1.1
Child Well-being					
Number of schools attended since RA ^c	597	1.96 (0.04)	655	2.10 (0.05)	0.14 <i>***</i>
Child care or school absences in last month (ages 5 to 17 years) ^d	463	0.97 (0.05)	176	1.06 (0.09)	0.09
Poor or fair health (%)	816	4.6 (0.7)	743	5.9 (0.9)	1.3
Behavior problems ^e	688	0.58 (0.05)	709	0.59 (0.07)	0.01
Self-sufficiency					
Work for pay in week before survey (%)	578	31.3 (1.9)	556	37.0 (2.0)	5.7 <i>**</i>
Total family income (\$)	562	9,067 (343)	536	12,099 (502)	3,033 <i>***</i>

Domain Outcome	At 20 Months		At 37 Months		Difference in Means
	N	Mean (SE)	N	Mean (SE)	
Household is food secure (%)	578	54.1 2.1	556	53.2 2.1	-0.9

Sources: Family Options Study 20-month and 37-month follow-up surveys and program use data.

Notes: 20-month/37-month means are based on 20-month/37-month respondent sample. Means are weighted for survey nonresponse to represent usual care group. Standard errors in parentheses.

^a Psychological distress is measured with the Kessler-6 (K6) scale and ranges from 0 to 24, with higher scores indicating greater distress.

^b Measures evidence of alcohol dependence or drug abuse using responses to the Rapid Alcohol Problems Screen (RAPS-4) and six items from the Drug Abuse Screening Test (DAST-10).

^c Number of schools is outcome is topcoded at four or more schools.

^d Absences outcome is defined as follows: 0 means no absences in last month; 1 means one to two absences; 2 means three to five absences; 3 means six or more absences. At 37 months, this parent-reported outcome was collected from only the first 38 percent of parents surveyed due to an error in data collection.

^e Behavior problems outcome is measured as the standardized Total Difficulties score from the Strengths and Difficulties Questionnaire (SDQ).

^f 20-month and 37-month mean values are significantly different from each other at the .10/.05/.01 levels, respectively, using a two-tailed t-test.

Table 4
 Long-term rent subsidy (LTRS) versus usual care (UC), impacts at 20 and 37 months after random assignment.

Domain Outcome	At 20 Months				At 37 Months			
	LTRS	UC	ITT Impact Estimate (SE)	LTRS	UC	ITT Impact Estimate (SE)	Difference in Impact	
Housing Stability								
At least one night homeless or doubled up (past 6 mo.) or in shelter (past 12 mo.) (%)	20.2	48.6	-28.4 (3.1) ***	16.9	38.1	-21.2 (3.0) ***	7.2	7
At least one night homeless or doubled up in past 6 months (%)	15.9	41.0	-25.1 (3.0) ***	15.8	34.0	-18.2 (2.9) ***	6.8	7
Number of places lived in past 6 months	1.42	1.78	-0.37 (0.08) ***	1.34	1.58	-0.25(0.07) ***	0.12	
Any stay in emergency shelter in months 7 to 18/months 21 to 32 after RA (%)	12.1	26.8	-14.8 (2.57) ***	4.4	18.8	-14.4 (2.26) ***	0.3	
Family Preservation								
Family has at least one child separated in past 6 months (%)	9.8	16.9	-7.0 (2.4) ***	13.5	16.9	-3.3 (2.6)	3.7	
Spouse/partner separated in past 6 months, of those with spouse/partner present at RA (%) [limited base]	34.8	33.9	0.9 (6.5)	47.8	34.3	13.4 (6.5) **	12.5	7
Family has no child reunified, of those families with at least one child absent at RA (%) [limited base]	64.7	69.7	-4.9	55.9	62.7	-6.8(8.0)	-1.8	
Adult Well-being								
Health in past 30 days was poor or fair (%)	31.4	31.4	0.0 (2.9)	32.2	29.1	3.1 (2.9)	3.1	
Psychological Distress ^a	6.65	7.63	-0.99 (0.34) ***	6.69	7.42	-0.73 (0.38) *	0.26	
Alcohol dependence or drug abuse (%) ^b	12.2	16.7	-4.5 (2.4) *	12.3	14.4	-2.1 (2.4)	2.4	
Experienced intimate partner violence in past 6 months (%)	5.5	12.2	-6.8 (2.0) ***	7.8	11.8	-4.0 (2.2) *	2.8	
Child Well-being								
Number of schools attended since RA ^c	1.73	1.94	-0.21 (0.06) ***	1.88	2.04	-0.15 (0.07) **	0.06	
Child care or school absences in last month (ages 5 to 17 years) ^d	0.83	1.04	-0.20 (0.09) **	0.93	1.01	-0.08 (0.13)	0.13	
Poor or fair health (%)	5.2	4.7	0.5(1.4)	7.9	5.9	2.0(1.8)	1.5	
Behavior problems ^e	0.47	0.59	-0.12 (0.09)	0.44	0.67	-0.23 (0.10) **	-0.11	
Self-sufficiency								

Domain Outcome	At 20 Months			At 37 Months			
	LTRS	UC	ITT Impact Estimate (SE)	LTRS	UC	ITT Impact Estimate (SE)	Difference in Impact
Work for pay in week before survey (%)	24.0	29.6	-5.6 (2.9) *	35.7	36.6	-0.9 (3.2)	4.7
Total family income (\$)	8,532	8,967	-436 (488)	10,933	11,816	-883 (689)	-447
Household is food secure (%)	63.3	53.1	10.2 (3.3) ***	61.1	51.5	9.6 (3.5) ***	-0.6
Number of families	530	415		501	395		

Sources: Family Options Study 20-month and 37-month follow-up surveys and program use data.

Notes: RA is random assignment. ITT is "Intention-to-treat." 20-month/37-month means and impacts are based on 20-month/37-month respondent sample. Means and impact estimates are regression-adjusted for baseline characteristics and are weighted for survey nonresponse to represent full comparison sample. Standard errors in parentheses.

*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test.

††††† 20-month and 37-month impact estimates are significantly different from each other at the .10/.05/.01 levels, respectively, using a two-tailed t-test.

^a Psychological distress is measured with the Kessler-6 (K6) scale and ranges from 0 to 24, with higher scores indicating greater distress.

^b Measures evidence of alcohol dependence or drug abuse using responses to the Rapid Alcohol Problems Screen (RAPS-4) and 6 items from the Drug Abuse Screening Test (DAST-10).

^c Number of schools is outcome is topcoded at four or more schools.

^d Absences outcome is defined as follows: 0 means no absences in last month; 1 means one to two absences; 2 means three to five absences; 3 means six or more absences. At 37 months, this parent-reported outcome was collected from only the first 38 percent of parents surveyed due to an error in data collection.

^e Behavior problems outcome is measured as the standardized Total Difficulties score from the Strengths and Difficulties Questionnaire (SDQ).

Table 5

Short-term rent subsidy (STRS) versus usual care (UC), impacts at 20 and 37 months after random assignment.

Domain Outcome	At 20 Months			At 37 Months			Difference in Impact
	STRS	UC	ITT Impact Estimate (SE)	STRS	UC	ITT Impact Estimate (SE)	
Housing Stability							
At least one night homeless or doubled up (past 6 mo.) or in shelter (past 12 mo.) (%)	46.0	50.6	-4.6 (3.6)	39.7	37.8	1.9 (3.6)	6.5
At least one night homeless or doubled up in past 6 months (%)	38.2	41.1	-3.0 (3.5)	35.5	33.7	1.8 (3.5)	4.8
Number of places lived in past 6 months	1.67	1.77	-0.09 (0.08)	1.61	1.58	0.03 (0.07)	0.12
Any stay in emergency shelter in months 7 to 18/months 21 to 32 after RA (%)	25.4	27.8	-2.4 (3.08)	16.2	18.8	-2.6 (2.88)	-0.2
Family Preservation							
Family has at least one child separated in past 6 months (%)	14.2	16.3	-2.1 (2.5)	15.3	15.8	-0.5 (2.6)	1.6
Spouse/partner separated in past 6 months, of those with spouse/partner present at RA (%) [limited base]	46.1	37.1	9.0 (6.5)	44.8	36.2	8.6 (7.2)	-0.4
Family has no child reunified, of those families with at least one child absent at RA (%) [limited base]	66.5	72.5	-6.1 (7.3)	65.0	68.4	-3.4 (7.4)	2.7
Adult Well-being							
Health in past 30 days was poor or fair (%)	28.6	32.3	-3.7 (3.1)	31.5	30.2	1.3 (3.1)	5.0
Psychological Distress ^a	7.02	7.48	-0.45 (0.37)	6.74	6.90	-0.16 (0.39)	0.30
Alcohol dependence or drug abuse (%) ^b	11.3	14.4	-3.2 (2.4)	9.3	11.1	-1.7 (2.2)	1.4
Experienced intimate partner violence in past 6 months (%)	11.4	12.4	-1.0 (2.3)	7.6	9.2	-1.6 (2.0)	-0.6
Child Well-being							
Number of schools attended since RA ^c	1.93	1.98	-0.05 (0.07)	2.14	2.12	0.02 (0.07)	0.07
Child care or school absences in last month (ages 5 to 17 years) ^d	0.81	0.98	-0.17 (0.09)	0.82	1.01	-0.19 (0.14)	-0.02
Poor or fair health (%)	4.6	4.7	-0.1 (1.3)	5.5	6.1	-0.6 (1.6)	-0.5
Behavior problems ^e	0.45	0.59	-0.13 (0.10)	0.38	0.58	-0.20 (0.10)	-0.07

Domain Outcome	At 20 Months			At 37 Months			Difference in Impact
	STRS	UC	ITT Impact Estimate (SE)	STRS	UC	ITT Impact Estimate (SE)	
Self-sufficiency							
Work for pay in week before survey (%)	34.5	34.7	-0.2 (3.3)	39.6	39.1	0.5 (3.4)	0.7
Total family income (\$)	10,213	9,062	1,151 (503) **	11,837	12,343	-505 (725)	-1,657 ††
Household is food secure (%)	61.9	55.7	6.3 (3.5) *	59.8	55.6	4.2 (3.6)	-2.1
Number of families	455	451		434	434		

Sources: Family Options Study 20-month and 37-month follow-up surveys and program use data.

Notes: RA is random assignment. ITT is "Intention-to-treat." 20-month/37-month means and impacts are based on 20-month/37-month respondent sample. Means and impact estimates are regression-adjusted for baseline characteristics and are weighted for survey nonresponse to represent full comparison sample. Standard errors in parentheses.

*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test.

††††† 20-month and 37-month impact estimates are significantly different from each other at the .10/.05/.01 levels, respectively, using a two-tailed t-test.

^a Psychological distress is measured with the Kessler-6 (K6) scale and ranges from 0 to 24, with higher scores indicating greater distress.

^b Measures evidence of alcohol dependence or drug abuse using responses to the Rapid Alcohol Problems Screen (RAPS-4) and 6 items from the Drug Abuse Screening Test (DAST-10).

^c Number of schools is outcome is topcoded at four or more schools.

^d Absences outcome is defined as follows: 0 means no absences in last month; 1 means one to two absences; 2 means three to five absences; 3 means six or more absences. At 37 months, this parent-reported outcome was collected from only the first 38 percent of parents surveyed due to an error in data collection.

^e Behavior problems outcome is measured as the standardized Total Difficulties score from the Strengths and Difficulties Questionnaire (SDQ).

Table 6

Transitional housing (TH) versus usual care (UC), impacts at 20 and 37 months after random assignment.

Domain Outcome	At 20 Months				At 37 Months				Difference in Impact
	TH	UC	ITT Impact Estimate (SE)	TH	UC	ITT Impact Estimate (SE)	TH	UC	
Housing Stability									
At least one night homeless or doubled up (past 6 mo.) or in shelter (past 12 mo.) (%)	41.9	50.7	-8.8 (4.4) **	40.5	40.2	0.3 (4.7)			9.1
At least one night homeless or doubled up in past 6 months (%)	37.2	41.8	-4.6 (4.3)	37.7	37.5	0.2 (4.7)			4.8
Number of places lived in past 6 months	1.75	1.84	-0.09 (0.11)	1.59	1.63	-0.03 (0.09)			0.06
Any stay in emergency shelter in months 7 to 18/months 21 to 32 after RA (%)	16.7	25.8	-9.0 (3.62) **	9.1	15.1	-6.0 (2.92) **			3.1
Family Preservation									
Family has at least one child separated in past 6 months (%)	14.1	14.7	-0.6 (3.1)	20.9	18.9	2.0 (3.5)			2.6
Spouse/partner separated in past 6 months, of those with spouse/partner present at RA (%) [limited base]	30.7	29.6	1.1 (7.9)	38.9	27.1	11.7 (7.8)			10.7
Family has no child reunified, of those families with at least one child absent at RA (%) [limited base]	70.5	72.5	-2.1 (9.9)	59.4	55.3	4.1 (11.3)			6.2
Adult Well-being									
Health in past 30 days was poor or fair (%)	33.9	32.0	1.9 (4.0)	32.1	32.8	-0.7 (4.1)			-2.6
Psychological Distress ^a	7.94	7.86	0.08 (0.50)	6.75	6.83	-0.07 (0.45)			-0.16
Alcohol dependence or drug abuse (%) ^b	14.5	14.8	-0.2 (3.0)	13.4	10.6	2.8 (2.8)			3.0
Experienced intimate partner violence in past 6 months (%)	9.4	10.6	-1.2 (2.8)	7.5	8.5	-1.1 (2.4)			0.2
Child Well-being									
Number of schools attended since RA ^c	1.90	1.97	-0.07 (0.09)	2.16	2.10	0.06 (0.09)			0.13
Child care or school absences in last month (ages 5 to 17 years) ^d	0.89	0.86	0.02 (0.11)	0.95	1.14	-0.19 (0.15)			-0.22
Poor or fair health (%)	6.0	3.4	2.5 (2.0)	5.9	5.9	0.0 (2.2)			-2.5
Behavior problems ^e	0.49	0.62	-0.13 (0.11)	0.53	0.59	-0.06 (0.12)			0.07

Domain Outcome	At 20 Months				At 37 Months				Difference in Impact
	TH	UC	ITT Impact Estimate (SE)	TH	UC	ITT Impact Estimate (SE)	TH	UC	
Self-sufficiency									
Work for pay in week before survey (%)	36.0	32.8	3.2 (4.1)	38.3	37.7	0.6 (4.1)			-2.6
Total family income (\$)	10,773	9,964	809 (728)	12,987	13,178	-191 (1038)			-1,000
Household is food secure (%)	53.6	56.6	-2.9 (4.4)	54.0	52.1	1.9 (4.6)			4.9
Number of families	294	262		293	259				

Sources: Family Options Study 20-month and 37-month follow-up surveys and program use data.

Notes: RA is random assignment. ITT is "Intention-to-treat." 20-month/37-month means and impacts are based on 20-month/37-month respondent sample. Means and impact estimates are regression-adjusted for baseline characteristics and are weighted for survey nonresponse to represent full comparison sample. Standard errors in parentheses.

*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test.

††† 20-month and 37-month impact estimates are significantly different from each other at the .10/.05/.01 levels, respectively, using a two-tailed t-test.

^a Psychological distress is measured with the Kessler-6 (K6) scale and ranges from 0 to 24, with higher scores indicating greater distress.

^b Measures evidence of alcohol dependence or drug abuse using responses to the Rapid Alcohol Problems Screen (RAPS-4) and 6 items from the Drug Abuse Screening Test (DAST-10).

^c Number of schools is outcome is topcoded at four or more schools.

^d Absences outcome is defined as follows: 0 means no absences in last month; 1 means one to two absences; 2 means three to five absences; 3 means six or more absences. At 37 months, this parent-reported outcome was collected from only the first 38 percent of parents surveyed due to an error in data collection.

^e Behavior problems outcome is measured as the standardized Total Difficulties score from the Strengths and Difficulties Questionnaire (SDQ).