

Fund More, Serve More, Save More: Moving to Work and Cost-Effectiveness

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Abstract

Moving to Work (MTW) is a U.S. Department of Housing and Urban Development (HUD) demonstration that gives selected public housing agencies (PHAs) greater flexibility with their spending and the ability to provide innovative housing assistance to low-income households. This article examines the impact of MTW on cost-effectiveness, measured as the total funding PHAs receive from HUD for public housing and housing choice vouchers divided by the number of households assisted by these programs. We use 15 years of historical data, from 2003 through 2017, to measure pre- and post-MTW trends for PHAs that joined or left MTW during the period. We also compare trends for MTW PHAs to traditional PHAs of comparable size during the same period. We find that MTW status has no significant impact on cost per assisted household. Although MTW status is associated with an increase in HUD funding, the agencies use this funding to assist more households, resulting in no significant change in cost-effectiveness. We find no evidence that MTW agencies maintain their cost-effectiveness by shifting their program mix, reducing housing quality or affordability, or serving different households. We also find that MTW agencies experienced a large increase in dollars per household held in reserves while serving roughly the same number of assisted households per dollar of HUD funding as before joining the demonstration. Our analysis does not explore the mechanisms by which this increase occurred, although it can be inferred that MTW agencies were able to realize some cost efficiencies in areas other than household assistance.

Introduction

More than 3 million households receive housing assistance through HUD's public housing and Housing Choice Voucher (HCV) programs.¹ Current funding, however, is sufficient to serve only one in five eligible households (Sally et al., 2018). The Moving to Work (MTW) demonstration aims to make these programs more cost-effective by easing regulations, encouraging innovation, and providing greater flexibility to the local agencies that administer them.

Cost-effectiveness is not the only goal of MTW, however, and there is a risk that the greater flexibility MTW provides reduces efficiency by allowing public housing agencies (PHAs) to use HUD funds for purposes other than rental assistance and capital improvements. In fact, most empirical studies of the demonstration show that MTW agencies spend more per assisted household than traditional PHAs and use a lower proportion of their annual budgets on direct housing assistance (Buron et al., 2017; Fischer, 2011; GAO, 2018). These studies, however, do not account for spending levels before agencies joined the MTW demonstration, and thus do not establish whether this difference is caused by the MTW demonstration.

This article provides an analysis of the impact of MTW on cost-effectiveness. We measure cost-effectiveness within a PHA as the cost, in dollars received from HUD, per assisted household. Our analysis overcomes the challenges of earlier studies by examining changes in cost-effectiveness within PHAs that joined or left the MTW demonstration. To this end, we use a fixed-effects model that estimates the effect of MTW on cost per assisted household relative to their expected trajectory if they had not joined the demonstration. PHA fixed effects account for differences between MTW and traditional PHAs in size, location, and other factors not associated with the MTW demonstration that predate our analysis. We also control for changes in local rental costs and public-sector wages in the PHAs' service area that are known to affect the costs of housing assistance. The analysis relies on HUD administrative data from 2003 to 2017. To better understand how, if at all, MTW status affects cost-effectiveness, we create separate estimates of the effect of MTW status on PHAs' annual funding from HUD and on the number of households that PHAs assist with that funding. These estimates seek to isolate the impact of MTW status on funding and households served from other factors that may influence these outcomes.

We find that MTW status has no significant impact on cost per assisted household when compared with traditional PHAs of similar size.² PHAs do receive significantly more funding after joining the demonstration (an estimated 11-percent increase in annual HUD funding), but they use this money to serve significantly more households (an estimated 10-percent increase in assisted households). We also find that MTW status is associated with statistically significant increases in the amount of funding PHAs hold in operating reserves of approximately \$840 per assisted household. This finding suggests that MTW agencies are able to serve the same number of households per dollar

¹ Data accessed through HUD's Picture of Subsidized Households, <https://www.huduser.gov/portal/datasets/assths.html>

² Excluding small PHAs provides a more accurate comparison because there are many traditional PHAs that serve significantly fewer households than the smallest MTW PHA, and these small PHAs have different trends for HUD funding and assisted households during the analysis period compared with MTW PHAs and larger traditional PHAs.

of HUD funding while also saving money in reserves for future developments and other uses.³ We find no evidence that MTW agencies maintain their cost-effectiveness by shifting their program mix, reducing housing quality or affordability, or serving different households.

This article summarizes a longer report, *The Impact of the Moving to Work Demonstration on the Per Household Costs of Federal Housing Assistance* (Stacy et al., 2020), published earlier this year, that includes a more comprehensive discussion of the methodology, comparison group selection, and additional sensitivity analyses.

Background

Enacted by Congress in 1996, the Moving to Work (MTW) demonstration allowed designated public housing agencies (PHAs) greater regulatory and funding flexibility to test innovations in housing assistance. MTW agencies can apply for waivers from program regulations to test innovations that meet one or more of the demonstration's three statutory objectives: reducing costs and increasing cost-effectiveness, promoting employment and economic self-sufficiency, and increasing housing choices for low-income families. MTW agencies are also given greater flexibility in their use of funds from the two largest housing assistance programs: public housing and housing choice vouchers (HCVs).

Traditional PHAs are funded for discrete activities through a set of clearly defined formulas, with strict specifications about how they can use their funding. Each year, they receive separate funding allocations from HUD for HCV Housing Assistance Payments (HAP) and administrative fees, public housing operations, and public housing capital improvements. With some exceptions, funds cannot be used for anything other than the designated purposes, and programs must be administered according to federal guidelines.

In contrast, each MTW agency is provided with fund flexibility and has its own funding agreement with HUD that provides a base funding for public housing and HCVs each year, with an inflation adjustment. As long as agencies remain compliant with the requirement to serve “substantially the same” number of households as they assisted before joining MTW, their funding does not go up if they serve more households or go down if they serve fewer households. HUD funding for programs other than public housing and HCVs are not funded in this way and are not eligible for fund flexibility.

Fund flexibility allows MTW agencies to apply fungibility to the HCV program, public housing operations, and public housing capital funding streams. This feature allows MTW agencies to, for example, use HCV program funds to build or preserve affordable housing or use their public housing and voucher funds to leverage other funding sources for housing development or preservation (Levy, Edmonds, and Long, this volume). MTW agencies report their spending on public housing, HCVs, and local, non-traditional (LNT—described later) assistance collectively as MTW program spending, and the fungible funding used for these activities is often referred to as the MTW fund. It is important to note, however, that not every MTW agency administers public housing.

³ There appears to be no impact of MTW on spending on administrative costs per household and tenant services per household, but there is too much variation within and between PHAs to measure these impacts with precision.

The other mechanism not available to traditional PHAs is waiver authority. Waiver authority means that MTW agencies may be allowed by HUD to waive parts of the U.S. Housing Act of 1937 (as amended) to implement innovations intended to achieve one of the three statutory objectives. Through waiver authority, MTW agencies can also offer LNT assistance. LNT programs may provide a rental subsidy through a third-party, homeownership subsidies, affordable housing development, or service provision. MTW agencies still must abide by statutory requirements and regulatory requirements for which they do not have a waiver.

Findings from Prior Research

Previous studies have found that MTW agencies spend more per assisted household than traditional PHAs, but these studies do not account for other factors that may drive spending differences. The most rigorous prior studies have compared MTW agencies' and traditional PHAs' per household spending on specific aspects of providing housing assistance. These comparisons included program administration, housing assistance payments, public housing operations, and operating reserves, rather than looking at either total PHA expenditures or total HUD spending per assisted household (Buron et al., 2017; GAO, 2018). These studies show that MTW agencies spend more per assisted household on specific activities than traditional PHAs, but that these differences diminish after accounting for differing housing and labor costs in the markets where MTW agencies and traditional PHAs operate. This finding suggests that observable differences in spending may be caused by differences between MTW and traditional PHAs that are unrelated to the MTW demonstration itself. For example, MTW agencies tend to be larger than traditional PHAs and are more likely to be in areas with high housing and labor costs (Galvez, Gourevitch, and Docter, forthcoming). Tighter housing markets and higher local wages have been shown to increase the costs per household in the HCV program (Finkel and Buron, 2001; Turnham et al., 2015). Additionally, many MTW agencies, such as the Housing Authority of the City of Pittsburgh and the Chicago Housing Authority, entered the demonstration with a large stock of aging public housing developments, which studies have shown are more expensive to maintain or repair (Stockard et al., 2003).

Administrative Costs and Reserves

The MTW demonstration was expected to create efficiencies in program administration costs because MTW agencies have fewer administrative requirements. Recent studies by Abt Associates and the U.S. Government Accountability Office (GAO), however, have shown that MTW agencies spend more per household on administrative costs than similar traditional PHAs. Abt Associates compared per-household costs between MTW and traditional PHAs by matching each MTW PHA to three to five traditional PHAs that were most similar based on the number of HCV and public housing units, fair market rents, poverty rates, area income, and unemployment. The results of the comparison showed that, in 2014, the average MTW agency spent \$163 more per assisted household on administrative costs in the HCV program than the average comparable traditional PHA (Buron et al., 2017). The report notes, however, that the difference in costs was driven primarily by a few MTW agencies that used their funding flexibility to spend administrative funds on resident services. Nearly one-half (15 of 35) of MTW agencies had lower administrative costs per assisted household than their comparison traditional PHAs (Buron et al., 2017).

The GAO (2018) constructed a comparison group of traditional PHAs that were as similar as possible to MTW agencies based on several household, financial, and geographic characteristics.⁴ Rather than looking at a single year, the GAO report compared median costs per household between MTW agencies and the matched comparison group between 2009 and 2015.⁵ GAO estimated that the median per household administrative expenditure was \$922 for MTW agencies and \$642 for traditional PHAs. GAO's estimate of administrative costs includes median spending of \$37 per HCV household on resident services for MTW agencies, compared with a median of \$0 for traditional PHAs (GAO, 2018).

There is evidence, however, of MTW agencies using their flexibility to increase cost-effectiveness in some areas and improve processes or services in others. An analysis of MTW agencies' annual administrative plans found that most agencies use their flexibility to scale back the frequency of annual housing quality inspections or income recertifications (Galvez, Simington, and Treskon, 2017).⁶ Likewise, although implementing policy changes does incur short-term costs such as those associated with updating forms and software, training staff, and educating residents, it may result in long-term efficiencies (Khadduri et al., 2014). Moreover, MTW PHAs may use savings generated from reduced regulations to shift how administrative staff spend their time rather than reduce overall staffing. Officials from several MTW agencies reported that staff were still spending as much time with residents as before their agency joined the demonstration, but the relationship had shifted from one of "auditor or investigator to one of mentor or advocate" (Abravanel et al., 2004).

MTW agencies can also use their flexibility to place more money into reserves, which they can use to invest in affordable housing development or preservation, or as a "rainy-day fund" in case of future funding shortfalls. The GAO's 2018 report estimated that, as of June 2017, the 39 MTW agencies had a total of \$808 million in HCV reserves—more than all the 2,116 traditional PHAs that administer the HCV program combined (\$737 million) (GAO, 2018). This finding may indicate MTW agencies are not using as much of their annual funding for direct housing assistance, but it can give them advantages over traditional PHAs in completing deals to build or preserve affordable housing (Abravanel et al., 2004; Levy, Edmonds, and Long, this volume). Abt Associates conducted a survey of PHAs as part of its MTW evaluation and found that MTW agencies preserved significantly more affordable housing units than traditional PHAs (Burton et al., 2017).

HAP and Public Housing Operations

The largest budget item for most agencies is HAP—the money paid from the PHA to the landlords. For traditional PHAs, this funding must be used to provide rental subsidies to landlords in the HCV program. MTW agencies have the flexibility to shift HAP funds into the public housing operating or capital funds programs, build up reserves, or develop new types of assistance. They

⁴ GAO used a sophisticated statistical method called genetic matching to identify one traditional PHA most similar to each MTW agency on 12 variables, including 4 household characteristics, 4 financial characteristics, and 4 location measures (GAO, 2018).

⁵ Although GAO used multiple years of data, they pooled the years together and did not undertake an analysis of changes pre- and post-entry into the MTW demonstration.

⁶ Income recertification is the process through which a PHA determines a family's income for purposes of setting the total tenant payment toward rent. Housing quality inspections are required to ensure that tenant- and project-based housing vouchers are used to house families in units that meet HUD housing quality standards.

can also adjust the amount of subsidy that households in the HCV program receive or provide financial incentives to landlords to participate in the program. The Center on Budget Policies and Priorities (CBPP) estimated that, in 2010, MTW agencies left 16 percent of their HAP funds unused compared with 4 percent for traditional PHAs (Fischer, 2015). This analysis was unable to account for HCV funds used to assist households in local, non-traditional (LNT) or public housing programs, however, nor did it control for other differences that could have contributed to lower usage rates at MTW agencies. The GAO report found that the median rental payment subsidy was about 25 percent higher at MTW agencies than for comparable agencies—\$8,295 per household for MTW agencies and \$6,629 per household for the comparison group (GAO, 2018). The 2017 Abt Associates report, however, found no statistically significant differences in HAP costs between MTW and traditional PHAs after adjusting for the fair market rent in the service area of each PHA (Burton et al., 2017).

Program administration and the provision of public housing are funded and frequently examined collectively as public housing operations. Capital improvements are funded separately, however, and have received less research attention. In part because of differences in funding formulas, CBPP estimated that, in 2010, MTW agencies received almost \$3,000 more per unit for public housing operations than traditional agencies (Fischer, 2015). This estimate, however, did not account for variations between PHAs in local housing or labor markets. The GAO report, which did attempt to control for some of these differences, found that MTW agencies spent about \$1,600 more per unit per year on public housing operations than traditional agencies (GAO, 2018). The Abt Associates report found no statistically significant differences in per unit public housing operations costs between MTW and traditional PHAs after accounting for differences in local wages (Burton et al., 2017).

Some research suggests that MTW agencies' funding for public housing tends to be more predictable, and potentially more generous, than it is for traditional PHAs. For example, CBPP found that the funding formula for public housing operating costs used for 11 MTW agencies accounts for \$260 million in additional funding compared with the formula used to fund traditional PHAs (Fischer, 2015). In years of reduced appropriations, funding for traditional PHAs were reduced, but MTW agencies were still funded based on their MTW funding agreement for both their HCV and public housing programs.⁷ By contrast, traditional PHAs are funded according to a formula that accounts for local housing costs, past usage of HUD funds, and current obligations. HUD then prorates each traditional PHA's funding levels to adjust for changes in total funding levels from Congress.

Limitations of Prior Research

Prior studies that examined the relationship between MTW status and cost-effectiveness show that MTW agencies spend more per household than traditional PHAs. This study accepts these findings and poses the question: Is participation in the MTW demonstration the cause of these higher costs?

⁷ For more information, see Title 24—Housing and Urban Development (2017) §982.503, Payment Standard Amount and Schedule, PIH Notice 2008-15(HA) "Implementation of the Federal Fiscal Year 2008 Funding Provisions for the Housing Choice HCV Program," Notice PIH 2009-13(HA) "Implementation of the Federal Fiscal Year 2009 Funding Provisions for the Housing Choice HCV Program," and PIH Notice 2012-9 "Implementation of the Federal Fiscal Year 2012 Funding Provisions for the Housing Choice HCV Program."

Earlier studies could not answer this question because they could not effectively identify the effect of MTW on agencies. The studies conducted by Abt Associates (Burton et al., 2017) and the GAO (2018) did not control for unobserved differences that existed before MTW agencies joined the demonstration. They also did not examine how cost-effectiveness or spending at agencies changed after they joined the demonstration. Additionally, these studies were unable to account for shifts in spending between public housing and HCVs or to LNT housing programs. Our research overcomes these limitations.

Research Approach

This analysis uses 15 years of administrative data to estimate the impact of the MTW demonstration on cost-effectiveness at PHAs. We measure cost-effectiveness within a PHA as the cost, in dollars received from HUD, per assisted household. This measure is defined to cover all households assisted with MTW funds, including through local, non-traditional (LNT) programs. It is therefore not affected if an MTW agency shifts funds from one program to another. The analysis uses many more years of data than previous studies, tracking changes in MTW agencies and traditional PHAs from 2003 to 2017. With this additional data, the analysis is also able to examine costs per household at MTW agencies both before and after joining MTW. The analysis compares changes in costs that occur when agencies join MTW with changes at traditional PHAs over the same years. It separately examines trends in funding and in the number of assisted households at PHAs before and after they join MTW. The study also investigates whether changes in the mix of program types, housing quality, or affordability explain changes in the average cost per assisted household.

Research Questions

What is the effect of MTW status on HUD cost per assisted household?

The first research question asks what effect participating in the MTW demonstration has on the per household cost of housing assistance. The answer quantifies the impact of MTW status on the number of dollars spent by HUD per household assisted by a PHA. We then separately determine the impact of MTW status on HUD funding levels, and the number of assisted households PHAs serve, to understand why MTW status is having its observed effect on the cost per assisted household.

Do changes in program mix, housing quality and affordability, or the characteristics of assisted households explain the effect of MTW status on HUD costs per assisted household?

Our second research question tests whether the estimated impact of MTW status on HUD funding, households served, and cost per household changes after controlling for differences between MTW and traditional PHAs in three areas: the mix of public housing, tenant-based, and project-based vouchers in their portfolio; housing affordability and quality; and targeting of assistance to households that may be costlier to serve. Each of these factors is accounted for in a separate model. Each model tests a different mechanism through which cost per household could change.

Does MTW status affect agencies' total per-household operating and housing assistance spending or per-household spending on program administration, tenant services, or operating reserves?

Our third research question examines how MTW status affects spending by PHAs. We examine both total per-household spending and spending on specific components of housing assistance. This contrasts with the first two research questions, which focus on HUD funding per assisted household. Differences in expenditure levels between MTW and traditional PHAs have been well documented. Because this is the first study to examine how cost-effectiveness changes when an agency joins the MTW demonstration, this research question offers the opportunity to provide context to the spending differences described in prior research.

Sample

Ideally, we would examine the full history of the MTW demonstration, but data limitations precluded this possibility. After extensive research and collaboration with HUD, we set 2003 as the initial year for analyzing administrative data. This was the first full calendar year for which HUD could provide voucher management data. This voucher data was needed to differentiate between HCV households and households assisted by special purpose vouchers.

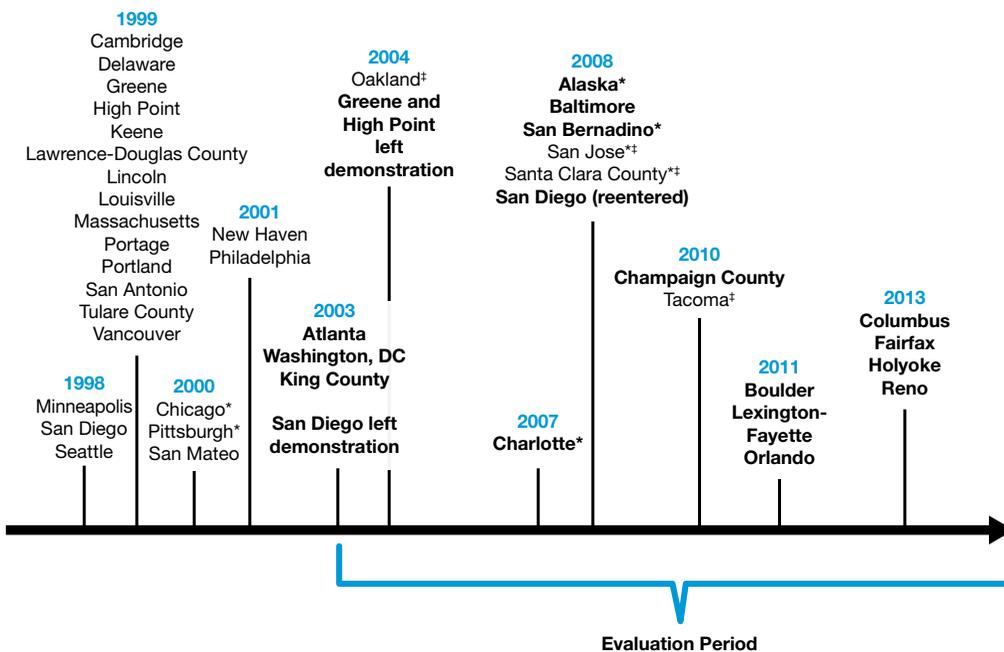
Our statistical models, therefore, include the 15-year period from 2003 through 2017, during which 17 new PHAs entered the demonstration, two PHAs left, and one agency (San Diego Housing Commission) exited and re-entered (exhibit 1).⁸ Each agency's date of entry into MTW is defined as the date that their first MTW agreement was executed.⁹ Exits are defined based on the date on which the MTW agreement was terminated. The analysis period includes both the increased investments from the 2009 stimulus package and the deep cuts created by sequestration. Because our analysis begins with 2003, we do not estimate how MTW status affects the cost per household for PHAs that joined prior to 2003. This analysis excludes some of the largest MTW agencies such as the Chicago Housing Authority, the Cambridge Housing Authority, Home Forward (Portland, OR), the Housing Authority of the City of Pittsburgh, the Minneapolis Public Housing Authority, and the Seattle Housing Authority.

⁸ Descriptive statistics for these PHAs appear in appendix exhibit C of Stacy et al. (2020). The Housing Authority of the County of Santa Clara manages all housing programs for the Housing Authority of the City of San Jose, therefore, we treat them as a single agency in our analysis.

⁹ In the case of the San Diego Housing Commission's reentry into MTW, we use the date that their 2008 MTW agreement was executed for reentry.

Exhibit 1

Timeline of Moving to Work Agreements And Evaluation Period (Evaluation Sample In Bold)



* PHAs selected by Congress, not through a competitive process

† Impact analyses do not include Oakland Housing Authority, Tacoma Housing Authority, Housing Authority of the County of Santa Clara, or Housing Authority of the City of San Jose because of incomplete data on households in public housing. The 18 public housing agencies included in the impact analyses are Alaska, Atlanta, Baltimore City, Boulder, Champaign, Charlotte, District of Columbia, Columbus (GA), Fairfax County, Greene, High Point (NC), Holyoke, King County, Lexington-Fayette Urban County, Orlando, Reno, San Bernardino, and San Diego. The event study regression includes only 12 public housing agencies due to data limitations (see Exhibit B5 in Stacy et al., 2020).

Notes: The graphic shows the evaluation period and the year that agencies signed their MTW agreement. Agencies included in our analysis are in bold.

Source: Documents retrieved from HUD's Moving to Work (MTW) portal (<https://www.hud.gov/mtw>)

The comparison group is comprised of large traditional PHAs—those with more than 750 assisted households. Our analysis assumes that MTW agencies were similar to the comparison PHAs, or at least followed similar trends, prior to joining the demonstration. Even before joining, however, future MTW agencies tended to be larger and have higher costs per household than other traditional PHAs. The smallest agency that joined MTW during the study period (after 2003) assisted an average of 938 households in 2003. The average cost per household among these pre-MTW agencies was \$8,500 in 2003. Although the average cost per household among agencies that did not join MTW was \$5,925, the average cost per household within the comparison group of large agencies was \$7,148. Additional analysis in Stacy et al. (2020) also shows that cost per assisted household fell among traditional PHAs between 2003 and 2017, with larger declines among PHAs with 750 or fewer assisted households.

Data Collection and Assembly

This study relies on three HUD administrative datasets: (1) the Financial Data Schedule (FDS) to track HUD funding and public housing agency (PHA) costs, (2) the Office of Public and Indian Housing (PIH) Information Center (PIC) to track the number of households in public housing and the characteristics of households in public housing and the voucher program, and (3) the Voucher Management System (VMS) data to track the number of households with vouchers. Data from the Decennial Census (Census), American Community Surveys (ACS), and the Bureau of Labor Statistics (BLS) provide information such as local wages and housing and utility costs. The Public Housing Assessment System (PHAS) provides data on public housing quality. We also include HUD data on the number of households assisted by MTW agencies through LNT programs that are not captured in PIC data. Additional information on the data used in this study can be found in Stacy et al. (2020).

We merged data from PIC, VMS, LNT, and FDS with regional wage data from BLS and regional demographic data from the census and ACS to construct a balanced panel dataset—a dataset with every PHA in every year—of 3,726 PHAs and 55,890 observations. PHAs that do not appear at least once in PIC and at least once in FDS are excluded, as are PHAs for which either county wage or local rent data were unavailable.¹⁰

After constructing this initial dataset, we made several adjustments to account for missing or incomplete data. These processes are described in detail in the “sample construction” section of Stacy et al. (2020). Data issues were present in both MTW and traditional PHAs, particularly in the early years of our analysis, and may represent early challenges PHAs faced in reporting to HUD. We filled in for missing, zero, and “bad” data points from PIC, VMS, and FDS using nearest-neighbor interpolation and extrapolation.¹¹

After adjusting for missing and incomplete data, we constructed measures of the number of assisted households, total HUD funding, and cost per assisted household. For consistency, we converted the FDS data from fiscal to calendar year by using a weighted average of the two fiscal years that overlap each calendar year. Because data from the 2018 fiscal year were not available for all agencies, we used 2017 fiscal year data for calendar year 2017.

Finally, we excluded the 19 PHAs that entered the MTW demonstration before 2003 and remained in the program through the observation period. For all our analyses, we compare MTW agencies only with traditional PHAs that had at least 750 assisted households in 2003. Excluding smaller agencies, and those with only 1 year of reliable public housing, voucher, or financial data, reduces the sample to 727 PHAs—18 MTW agencies and 709 traditional PHAs—and 10,905 observations.

¹⁰ PHAs only appear in PIC or VMS when public housing or HCV households are reported. PHAs may appear in FDS to report funding streams other than those for public housing operations, public housing capital improvements, and HCVs.

¹¹ Linear interpolation produced less plausible values, including some negative values in the earlier part of the sample period.

Defining Outcome Measures and Controls

This study defines cost-effectiveness as “cost per household,” or the total funding PHAs receive from HUD each year for public housing and HCV programs divided by the number of households assisted by these programs. This measure was selected as the most comprehensive measure of cost per household because it includes all funding sources that are eligible for MTW fund flexibility, and all households assisted through this funding, including households assisted through local, non-traditional MTW programs. It also allows for a more direct comparison of cost-effectiveness between MTW and traditional agencies than looking at expenditures because MTW agencies report expenditures differently than traditional PHAs.

Our measure of HUD funding includes HUD PHA operating grants and capital grants for public capital funds, HUD PHA operating grants for public housing operating funds, and HUD PHA operating grants for the Housing Choice Voucher (HCV) program (exhibit 2). All funding data is collected from the FDS, adjusted from fiscal year to calendar year, and converted from nominal dollars to 2015 dollars using the Consumer Price Index for all Urban Consumers (CPI-U). (See exhibit C2 in Stacy et al., 2020, for details on calculations using FDS data.)

Exhibit 2

Variables For Analysis And Data Sources (1 of 2)

Variable Description	Data Source	Definition / Notes
Outcome Measures		
HUD Funding	FDS	HUD PHA operating grants and capital grants for public capital funds, plus HUD PHA operating grants for public housing operating funds, plus HUD PHA operating grants for the HCV fund
Assisted Households	PIC, VMS, LNT data	Total households assisted through public housing, the HCV program (excluding special purpose vouchers), and LNT programs
Cost per Assisted Household	FDS, PIC, VMS, LNT data	HUD funding/Assisted households
Treatment Variable		
MTW Status	Annual Reports, MTW agreements	The treatment variable is equal to one for agencies for years in which they are a part of the MTW demonstration and zero for years in which they are not. If an agency has MTW status for part of a year, the value is a fraction based on the number of months remaining in the calendar year when the agency’s MTW agreement is executed. For example, if an agency signs the MTW agreement in September, then MTW status = .25 in the year the agreement was signed because three months, or .25 of a year, remain in the calendar year.

Exhibit 2

Variables For Analysis And Data Sources (2 of 2)

Variable Description	Data Source	Definition / Notes
Internal (Endogenous) Cost Drivers		
Percent of Households Using Tenant-Based Vouchers (TBVs)	VMS	Number of assisted households with TBVs/total assisted households
Percent of Households Using Project-Based Vouchers (PBV)	VMS, PIC	Number of assisted households with PBVs/total assisted households
Percent of Households in Public Housing (PH)	VMS, PIC	Number of assisted households in PH/total assisted households
Quality of Public Housing	PHAS	Physical Assessment Subsystem (PASS) score
Affordability (Median Rent Burden)	PIC	Median of (total family contribution ^b x 12 / total annual income) for new households
Household Size	PIC	Average number of individuals in new households
Median Income	PIC	Median annual total income of new households
High Need Households	PIC	Percent of new, assisted households in which the household head is 62 or older, the household head is disabled, or any other member of the household is disabled.
Cost Components		
Administrative Costs	FDS	Total operating administrative expenses
Tenant Services Spending	FDS	Total tenant services expenses
Operating Reserves	FDS	Following the formula ^a outlined in PIH notice 2011-055
Total Operating and Housing Assistance Spending	FDS	Total operating expenditures from the public housing, HCV, or the MTW funds plus total housing assistance payments from the HCV and MTW funds.
External Cost Drivers		
Average Wage of Local Government Employees	BLS	Average wage of local government employees in the county with the most households assisted by a given MTW agency or traditional PHA reported in PIC in 2003.
Median Rent in Service Area	ACS	Population weighted median rent in each year based on the census tracts of residents reported in PIC

^a The sum of FDS line items 111 Cash Unrestricted, 114 Cash Tenant Security Deposits, 120 Total Receivables, 131 Investments Unrestricted, 142 Prepaid Expenses and Other Assets, 144 Inter-program – due from, and 145 Assets Held for Sale, minus the difference between line 310 Total Current Liabilities and line 343 Current Portion of Long-term Debt-capital Projects.

^b For MTW agencies, the family contribution toward rent variable is constructed by HUD and includes the family's contribution toward utilities when applicable. This variable is not included in the standard PIC data and was provided by HUD for the purposes of this study. To calculate the annual family contribution toward rent for non-MTW agencies, we multiply the monthly contribution toward rent as reported in PIC by 12 and divide this by the total household adjusted income in PIC.

Sources: Administrative data from the U.S. Department of Housing and Urban Development (HUD) include the Financial Data Schedule (FDS), the Office of Public and Indian Housing Information Center (PIC), the Voucher Management System (VMS), and the Public Housing Assessment System (PHAS); Public use data include the Decennial Census (Census), American Community Surveys (ACS), and the Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages; Local, non-traditional (LNT) data was provided by the HUD Moving to Work (MTW) office and calculated based on data reported by agencies on form 50900; New households are identified using action code flags in PIC.

We count the number of assisted households as the sum of those served through public housing, HCVs, and, for MTW agencies, through LNT programs. To do so, we combine public housing data from PIC, voucher data from VMS, and LNT data calculated by HUD from agency reporting. This calculation includes households assisted through LNT programs that are funded using MTW fund flexibility; it excludes households assisted through HUD special purpose voucher programs (such as the Family Unification Program or HUD-VASH) that are not covered by MTW agreements and not funded through public housing operating, public housing capital, or the traditional HCV funding streams.

To answer the second research question, we use data from PIC, VMS, and PHAS to examine internal cost drivers (exhibit 2). Type of housing assistance is measured by calculating the percent of assisted households in (1) public housing, (2) tenant-based vouchers, and (3) project-based vouchers. Housing quality is measured by the most recent physical assessment subsystem (PASS) score from PHAS.¹² Housing affordability is measured as the percent of household income that the median assisted household spends on housing. To assess whether MTW agencies are assisting households that are costlier to serve, we use three metrics: (1) the median income, as a percent of the area median income (AMI), of newly admitted households, (2) the percent of newly admitted households with an elderly head of household, disabled head of household, or disabled family member, and (3) average household size. We calculate these variables directly from PIC data.

To estimate the effect of MTW on spending, we examine total expenditure per household and three additional cost components (exhibit 2). Total per household operating and housing assistance spending is calculated by adding total operating expenditures associated with public housing, the HCV program, or the MTW fund to total housing assistance payments associated with the HCV program or the MTW fund, then dividing by the number of assisted households. It includes all reported public housing operations, maintenance and administration spending, and all reported spending on the administration of HCVs and LNT vouchers and units. It does not include capital expenditures, transfers, depreciation, or accounting costs such as bad debts. We calculate administrative costs and tenant services by totaling these spending categories from the funds associated with HCV and public housing operations for traditional agencies, and for MTW agencies with the MTW funds. Additionally, we calculate operating reserves based upon the guidance provided in PIH notice 2011-055. The specific FDS line items we use appear in Stacy et al. (2020; appendix C, exhibit C2).

Our estimation methods account for pre-existing differences between agencies, but we include two cost drivers that change over time: median rent and local public sector wages. Prior research has shown that local housing costs and wages impact per household costs of providing housing assistance (Finkel and Buron, 2001; Turnham et al., 2015). We measure housing costs with median rent, as reported in the Census/ACS. We measure wages using the Bureau of Labor Statistics (BLS)-reported, county-level annual average pay in local government (all industries). Counties are mapped to PHAs based on household-level county variables in the PIC. Each county in the United States is assigned to the PHA that serves the most households in the area. State-level data are used where county-level data are incomplete or missing. The service area of each PHA is defined here

¹² This score measures the housing quality of all the public housing units that the PHA manages. We do not have a comparable measure of housing quality in the HCV program.

based on where residents live, as reported in PIC. We retrieved local rental costs at the tract level from the National Historical Geographic Information System (NHGIS) (Manson et al., 2018); for each PHA, we take a weighted average based on the number of assisted households in each tract in 2003. We retrieved local wages by county; we assign each PHA the wage rate corresponding to the county in which it assisted the most households in 2003.

Estimation Methods

We use fixed-effects models to estimate the impact of participating in the MTW demonstration on cost per household and other outcomes. Fixed effects for each PHA control for urbanity, rurality, and other time-invariant characteristics, including factors that may make a PHA more or less likely to join the MTW demonstration. These fixed effects also control for the average mix of tenant-based vouchers, project-based vouchers, and public housing administered by the PHA. The models also include two control variables to capture factors that change over time that may affect the costs of providing housing assistance: (1) median rent, and (2) the local public sector wages in the service area of each PHA.

Estimation Method for Research Question 1: What is the effect of MTW status on cost per assisted household?

To determine the impact of the MTW demonstration on cost per household, we estimate the following fixed effects panel regression model:

$$Outcome_{it} = \beta * MTW_{it} + \gamma * ExternalCostDrivers_{it} + \lambda_t + \alpha_i + \epsilon_{it} \quad (1)$$

That is, each of our outcome variables for PHA i in year t (the natural log of HUD funding, the natural log of assisted households, the natural log of cost per assisted household) is a function of MTW status, external drivers of cost—median rent and local public sector wages ($ExternalCostDrivers_{it}$), year fixed effects (λ_t), PHA fixed effects (α_i), and an idiosyncratic residual (ϵ_{it}), clustered at the PHA level and robust to arbitrary forms of misspecification. MTW_{it} equals 1 for PHA i in year t if the agency is an MTW agency in that year as defined by having a signed agreement; in the year that the agreement is signed, we set MTW_{it} equal to the fraction of the year remaining at the date of the second (HUD or PHA) signature. Variables measured in dollars and households are log-transformed before they enter the equation; this step accounts for the skewness of their distributions and produces estimates of the MTW effect in percentage terms. The measure of cost per household is also log-transformed before entering the equation.

The coefficient β approximates the percentage change in average cost per household associated with entering the MTW demonstration (a coefficient of 0.1 indicates a 10-percent change). A positive and significant estimated value for β implies a higher cost per household. We also use equation 1 to estimate the impact of MTW status on the amount of funding a PHA gets from HUD and on the number of assisted households it serves.

Understanding the Timing of Changes in Cost per Household

To better understand the timing of MTW's impact on cost per assisted household, we use an event-study regression to isolate the impact of the MTW demonstration in the year in which the MTW agreement was executed, 1 year after joining the demonstration, 2 years after, and then all other years after joining the demonstration. In this model, we also estimate whether the trends at MTW agencies were diverging from trends in traditional PHAs in the years before they signed the MTW agreement. The event study model takes the following form:

$$\text{Outcome}_{it} = \delta_1 D_{i(t+2)} + \delta_2 D_{i(t+1)} + \delta_3 D_{it} + \delta_4 D_{i(t-1)} + \delta_5 D_{i(t-2)} + \delta_6 \text{MTW}_{i(t+3)} + \gamma * \text{Controls}_{it} + \lambda_t + \alpha_i + \epsilon_{it} \quad (2)$$

Here, we replace the indicator for MTW status with a series of dummy variables $D_{i(t+2)}$ to $D_{i(t-2)}$ indicating 2 years before, 1 year before, the year of, the year after, and 2 years or more after a PHA's first MTW agreement is executed. The variable $\text{MTW}_{i(t+3)}$ is equal to 1 for MTW agencies beginning in the third year after entry into the demonstration. That is, it estimates long term effects. Again, the model includes external drivers of cost (Controls_{it}), year fixed effects (λ_t), PHA fixed effects (α_i), and an idiosyncratic residual (ϵ_{it}) clustered at the PHA level and robust to arbitrary forms of misspecification.

Estimation Method for Research Question 2: Do changes in program mix, housing quality and affordability, or the characteristics of assisted households explain the effect of MTW status on HUD costs per assisted household?

To explore whether internal cost drivers, including program mix, housing quality and affordability, and the characteristics of assisted households, explain the relationship between MTW status and per household cost, we separately add each set of internal cost drivers to the main model shown previously:

$$\text{Outcome}_{it} = \beta^* * \text{MTW}_{it} + \delta_1 * \text{InternalCostDrivers}_{it} + \gamma * \text{ExternalCostDrivers}_{it} + \lambda_t + \alpha_i + \epsilon_{it} \quad (3)$$

where the outcome measure is the natural log of cost per assisted household. Here, the primary outcome measure is a function of a set of PHA factors, external cost drivers, year fixed effects (λ_t), PHA fixed effects (α_i), and an idiosyncratic residual (ϵ_{it}) clustered at the PHA level and robust to arbitrary forms of misspecification. Of interest here is whether and how the coefficient on MTW status changes once these endogenous characteristics are included. If the effect disappears, this finding suggests that changes in cost per household related to MTW status may be due to changes in program mix, housing quality and affordability, and household characteristics, rather than simply due to serving fewer or more of the same households at the same quality level.

To determine how changes within the PHA affect costs, we include three sets of internal cost drivers. The first set of cost drivers—the percent of total households funded with tenant-based vouchers and the percent of total households funded with project-based vouchers (omitting the percent of households in public housing as the reference group)—explores program mix. The second set—median rent burden and public housing physical inspection scores—explore affordability and quality. The third set of cost drivers—household income, household size, and

the share of households with an elderly household head or disabled household head or family member—relate to the ability of PHAs to reach households that may require more resources to serve. To explore each mechanism separately, we isolate each set of cost drivers in a distinct model.

The MTW effect (β') estimated in this way can be interpreted as the change in cost per household *beyond, or that is not driven by, changes in the internal cost drivers included in the regression*. We then test whether the estimated impact of MTW has changed when these factors are added to the model (whether $\beta' = \beta$). If the value of coefficient β is not the same with the internal cost drivers added to the model, we can conclude that changes in program mix explain at least some of the differences, or the lack of a difference, between MTW agencies and traditional PHAs, in cost per household.

Estimation Method for Research Question 3: Does MTW status affect agencies' total per household operating and housing assistance spending, or per household spending on program administration, tenant services, or operating reserves?

To investigate how MTW status affects per household spending on specific spending categories, we estimate equation 1 with four left-hand-side measures: (1) total expenditures per assisted household, (2) administrative costs per assisted household, (3) spending on tenant services per assisted household, and (4) changes in operating reserves per assisted household. We take the natural log of total per household operating and housing assistance and per household spending on program administration before they enter the model. Because tenant services are frequently zero, and reserve balances can be negative, we do not take the natural log of these measures; instead, we estimate a linear relationship on dollars per household.

Here, the estimated coefficients represent (1) the approximate percentage change in total per household spending, (2) the approximate percentage change in per household administrative costs, (3) the dollar value of increased (or decreased) per household spending on tenant services, and (4) the dollar value of increased (or decreased) reserve balances per assisted household.

Findings

Estimates of the effect of MTW on cost per household, HUD funding, and the number of assisted households appear in exhibit 3. These estimates approximate the percentage change attributable to MTW.¹³ We find no statistically significant relationship between MTW status and cost per assisted household. More specifically, controlling for baseline characteristics, national trends, and exogenous cost drivers, our statistical analysis shows that MTW status is associated only with a small and statistically insignificant increase in cost per assisted household of 1.3 percent (exhibit 3).

This lack of impact on cost per household results from increases in both the level of HUD funding and the number of assisted households for agencies after they join MTW. PHAs receive, on average, 11 percent more funding from HUD after joining the MTW demonstration and assist 10 percent more households (exhibit 3). Because these effects are of a similar size, they have offsetting impacts on our primary outcome variable of cost per assisted household.

¹³ Because outcome measures entered the regression in log form, percentage change is calculated by exponentiating the coefficient and subtracting 1. For example, the coefficient for HUD funding is 0.106, and the estimated percentage change is $(e^{0.106}) - 1 = 0.112$ or 11 percent.

Exhibit 3

The Effect of Moving to Work on HUD Cost per Assisted Household, HUD Funding, and Number of Assisted Households

	HUD Cost per Assisted Household	HUD Funding	Assisted Households
Impact of MTW	0.013 (0.030)	0.106*** (0.024)	0.092*** (0.028)
Control Variables			
Area Median Rent	0.298*** (0.071)	0.144** (0.060)	-0.154*** (0.047)
Government Wage	0.048* (0.026)	0.023 (0.026)	-0.025 (0.020)
Number of PHAs	727	727	727
Adjusted Within R-Squared	0.096	0.083	0.039
Observations	10,905	10,905	10,905

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

MTW = Moving to Work. PHA = public housing agencies.

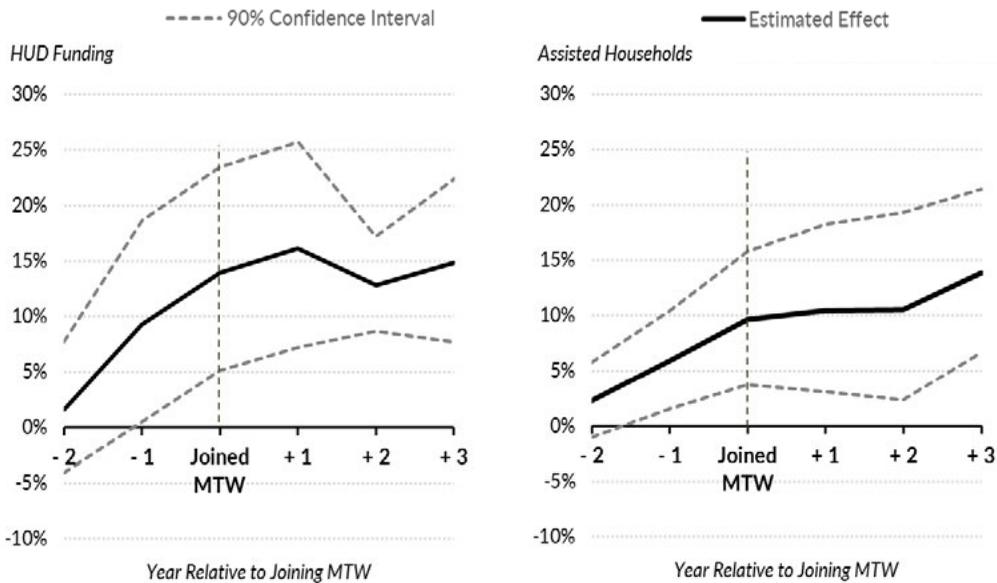
Notes: Standard errors (listed in parentheses) are heteroskedastic robust and clustered at the PHA level. Data cover 2003-2017. Regressions include only agencies with at least 750 households and exclude agencies that joined MTW before 2003. Impact analyses do not include Oakland Housing Authority, Tacoma Housing Authority, Housing Authority of the County of Santa Clara, and Housing Authority of the City of San Jose because of incomplete data on households in public housing. Regression includes year and PHA fixed effects. Cost per assisted household, HUD funding, assisted households, area median rent, and government wages enter the regression in logged form.

Sources: Urban Institute Analysis of HUD Office of Public and Indian Housing Information Center (PIC), Financial Data Schedule (FDS), and Voucher Management System (VMS) data

To better understand the timing of MTW's impact on cost per assisted household, we used an event-study regression to estimate the impact of the MTW demonstration by year. Using this framework, we find no significant differences in cost-effectiveness in any year before or after joining the MTW demonstration. We also estimated the effect of MTW by year for HUD funding and households assisted (exhibit 4). HUD funding begins to rise the year before PHAs officially enter the MTW demonstration (although this effect is not statistically significant at $\alpha=0.1$), and it continues to rise after the agency joins MTW, with the largest increase 1 year after joining. The number of assisted households served by the PHA also increases 1 year before joining the demonstration (statistically significant at $\alpha=0.1$) and continues to rise after joining but more smoothly than funding, which peaks the year after joining. Full results from the event-study models appear in Stacy et al. (2020).

Exhibit 4

The Effect of the Moving to Work Demonstration on HUD Funding and Number of Assisted Households (Percent Change)



MTW = Moving to Work.

Notes: Vertical dotted line and “Year joined MTW” represent the year in which PHAs execute their first MTW contract. The solid line represents the point estimate, and the dashed lines on either side of this estimate represent the 90-percent confidence interval. Estimates are converted from log form to percent change. Regressions include only agencies with at least 750 households and exclude agencies that joined MTW before 2005 or after 2015, because they need to have 2 years of data prior to joining MTW and 3 years of data after joining enter this equation. Impact analyses do not include Oakland Housing Authority, Tacoma Housing Authority, Housing Authority of the County of Santa Clara, and Housing Authority of the City of San Jose because of incomplete data on households in public housing. All regressions include year and PHA fixed effects. Median rent and government wages are included as control variables. HUD cost per household, area median rent, and government wages enter the regression in logged form.

Sources: Urban Institute Analysis of HUD Office of Public and Indian Housing Information Center (PIC), Financial Data Schedule (FDS), and Voucher Management System (VMS) data

The increase in the number of assisted households the year before PHAs sign their MTW agreement is both a surprising empirical fact and a potential cause of bias to our main regression model.

One way to address this bias is to estimate agency-specific long-term trends within the regression model. As shown in Stacy et al. (2020), estimates using this type of model find no relationship between MTW status and cost per assisted household. These models also confirm the findings from the event-study regression and imply that increases in HUD funding and the number of assisted households are part of longer-term trends that predate entry into the MTW demonstration.

Effect of the MTW Demonstration Controlling for Program Mix, Housing Quality and Affordability, and Household Characteristics

Accounting for changes in (1) program mix, (2) housing quality and affordability, and (3) household characteristics does not alter our primary finding of no significant relationship between MTW status and cost per assisted household (exhibit 5). We reach this conclusion by comparing the numbers in the top row (Impact of MTW) in columns 2, 3, and 4 of exhibit 5 with the number in column 1.

Estimates in columns 2, 3, and 4 show the change in cost per household *that is not driven by changes in the internal cost drivers included in the regression*. Looking at the result in column 2 (program mix), we see that after controlling for changes in program mix, joining the MTW demonstration is associated with a statistically insignificant 0.8-percent increase in costs per assisted household. The difference between this estimate and the estimated effect in the original model (column 1) can be interpreted as the impact of MTW on cost-effectiveness through the mechanism of changes in program mix. The difference here, 0.5 percent, is small and not statistically significant. The estimated impact of MTW on cost-effectiveness changes only 0.2 percent after accounting for housing affordability and quality (column 3) and only 0.1 percent after accounting for the characteristics of assisted households (column 4). Again, these differences are small and not statistically significant. In other words, MTW agencies are not maintaining their cost-effectiveness by shifting their portfolio to lower-cost assistance programs, offering lower quality or less affordable housing assistance, or providing assistance to households with fewer needs.

Exhibit 5

The Effect of Moving to Work on HUD Cost per Assisted Household Controlling for Program Mix, Quality and Affordability, and Household Demographics

	Main Regression	Controlling for:		
		Program Mix	Housing Quality and Affordability	Household Characteristics
Impact of MTW	0.013 (0.030)	0.008 (0.025)	0.015 (0.031)	0.014 (0.029)
Percent tenant-based HCV holder	-	0.613*** (0.075)	-	-
Percent project-based HCV holder	-	0.643*** (0.107)	-	-
Quality of public housing	-	-	-0.001 (0.001)	-
Affordability (median rent burden)	-	-	-0.007** (0.003)	-
Median income (new residents)	-	-	-	-0.040*** (0.011)
High need households (new residents)	-	-	-	0.000 (0.000)
Household size (new residents)	-	-	-	0.018** (0.008)
Control Variables	YES	YES	YES	YES
Observations	10,905	10,905	8,775	10,905

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

HCV = Housing Choice Voucher. MTW = Moving to Work.

Notes: There is no statistically significant difference between the four coefficients for the impact of MTW status on cost per household. Standard errors (listed in parentheses) are heteroskedastic robust and clustered at the PHA level. Regressions include only agencies with at least 750 households and exclude agencies that joined MTW before 2003. Impact analyses do not include Oakland Housing Authority, Tacoma Housing Authority, Housing Authority of the County of Santa Clara, and Housing Authority of the City of San Jose because of incomplete data on households in public housing. Regression includes year and PHA fixed effects. Median rent and government wages are included as control variables. Cost per assisted household, HUD funding, assisted households, area median rent, and government wages enter the regression in logged form. Regression (3) only includes PHAs with public housing units.

Sources: Urban Institute Analysis of HUD Office of Public and Indian Housing Information Center (PIC), Financial Data Schedule (FDS), and Voucher Management System (VMS) data

Effect of the MTW Demonstration on per Household Spending by PHAs

Finding no impact of MTW status on our preferred measure of cost-effectiveness, we turn to focus on spending categories highlighted in prior research. We find that MTW status is not associated with an increase in PHAs' total operating and housing assistance spending per assisted household. Our model estimates a change in total spending of only 0.3 percent (exhibit 6, column 1). Variation in spending on administrative costs and tenant services, both between agencies and within agencies over time, limit the precision of the model and prevent us from drawing strong conclusions. The standard error for the model of administrative costs (exhibit 6, column 2) implies a 90-percent confidence margin of error of roughly 17 percent. With an estimated effect of 0.137, or about 15 percent, we cannot rule out the possibility that MTW has no effect on administrative costs. Similarly, a 90-percent confidence margin of error for the tenant services model (exhibit 6, column 3) prevents us from drawing conclusions. It implies that MTW may lead spending on tenant services to fall by 20 percent or increase by more than two-thirds.

In contrast, we find a statistically significant impact of MTW status on operating reserves. We estimate that MTW increases the funds that agencies hold in operating reserves by about \$840 per assisted household (exhibit 6, column 4). In the first year of our study period, 2003, the average future-MTW agency held \$473 in operating reserves per household. Taken together, the estimated increase in reserves combined with no estimated impact on cost per household (exhibit 3) implies that MTW agencies are able to find some efficiencies that allow them to build up their operating reserves while serving roughly the same number of assisted households per dollar of HUD funding as they did before joining MTW.

Exhibit 6

The Effect of Moving to Work on per Household Total Spending, Administrative Costs, Tenant Services Spending, and Operating Reserves

	Total Spending (Operating and Housing Assistance) per Assisted Household	Administrative Costs per Assisted Household	Tenant Services Spending per Assisted Household	Operating Reserves per Assisted Household
Impact of MTW	0.003 (0.048)	0.137 (0.098)	22.4 (25.0)	839*** (197)
Median Rent	0.061 (0.146)	0.073 (0.091)	17.3 (24.7)	96.9 (170)
Government Wage	0.111 (0.080)	0.060 (0.048)	-21.5 (18.8)	114 (119)
Observations	10,905	10,905	10,905	10,905

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

MTW = Moving to Work.

Notes: Standard errors are heteroskedastic robust and clustered at the public housing agency (PHA) level and listed in parentheses. Regressions exclude agencies that joined MTW before 2003 and agencies that had fewer than 750 assisted households in 2003. Impact analyses do not include Oakland Housing Authority, Tacoma Housing Authority, Housing Authority of the County of Santa Clara, or Housing Authority of the City of San Jose because of incomplete data on households in public housing. All regressions include year and PHA fixed effects. Total expenditures per assisted household, administrative costs per assisted household, median rent, and government wage enter our regression equation in natural log form, tenant services spending per assisted households and operating reserves enter our regression equation non-transformed. We turn all zero values to 0.0001 before taking the natural log. The natural logs of median rent and government wages are included as control variables.

Sources: Urban Institute Analysis of HUD Office of Public and Indian Housing Information Center (PIC), Financial Data Schedule (FDS), and Voucher Management System (VMS) data

Robustness Checks

We use a series of alternative models and samples to examine the strength of our results. To better understand how the population of traditional PHAs in our sample impacts our estimates, we performed a sensitivity analysis using alternative thresholds for the minimum number of assisted households for PHAs in our comparison group. As soon as the smallest agencies—those with 150 or fewer assisted households—were removed from the sample, the relationship between MTW status and cost per household became statistically insignificant at the $\alpha=0.1$ level (Stacy et al., 2020, Exhibits B1 and B2). We also constructed two comparison groups using propensity scores. Estimating equation 1 using these two alternative comparison groups reaffirms the main results (Stacy et al., 2020, Exhibit B4). Next, to confirm that our treatment of the underlying data did not impact our results, we examined an alternative method for addressing missing data (multiple imputations). Because LNT assistance may be less expensive, we explored weighting schemes for families served through LNT assistance. These analyses also show that MTW has no impact on cost per household but is associated with a greater number of households served and greater levels of funding received (Stacy et al., 2020, Exhibit B4). Finally, we examined an alternative model in which we relaxed the assumption of parallel trends for MTW and traditional PHAs and allowed each PHA its own specific, long-term, linear time trend (Stacy et al., 2020, Appendix B). Estimates from the model with PHA-specific time trends reaffirm that MTW-status is not associated with change in cost per assisted household. The inclusion of PHA-specific time trends, however, reduces the estimated relationships between MTW status and both funding and the number of assisted households to near zero (Stacy et al., 2020, Exhibit B4).

Discussion

This study provides new insights into the relationship between MTW status and cost-effectiveness and opens doors for other avenues of research. First, it shows that MTW agencies had higher costs, as measured by HUD funding per assisted household, than traditional PHAs before they joined the demonstration. Thus, the higher costs observed at MTW agencies in prior studies are probably driven by differences in the costs unaffected by MTW status, such as labor and housing costs, and not because of the regulatory or financial flexibility offered by the demonstration.

Second, although MTW status is not associated with a change in the per household costs of rental assistance, it is associated with both an increase in HUD funding and an increase in assisted households. Surprisingly, agencies began assisting more households the year before they joined the demonstration. This finding may be part of a longer-term trend at agencies that would go on to join the MTW demonstration. Alternatively, agencies may have changed their behavior in anticipation of MTW status. MTW agencies are funded based on the number of households they were assisting when they joined the demonstration. Thus, agencies could increase the base funding in their MTW contracts by increasing the number of assisted households they served in the year before they joined MTW. Additional qualitative data collection with MTW agency staff would be useful to determine if they were intentionally serving more households in anticipation of their MTW contracts. In addition, we find evidence of an adjustment period where cost per assisted household increases slightly 1 year after PHAs join the demonstration, although the trend is not statistically significant.

Third, although MTW status did not affect the overall costs to HUD of providing rental assistance, it did allow agencies to significantly increase the amount of money held in reserves. Interviews with a sample of MTW agencies suggest that reserves can be useful in financing the construction or preservation of affordable housing, re-affirming prior research (Levy, Edmonds, and Long, this volume). Furthermore, holding additional reserves may allow MTW agencies greater access to financing or lower interest rates when they seek to acquire or develop additional housing units. The increase in reserves could be a sign that MTW agencies are reducing their capital outlays in the short term and building reserves to fund larger capital projects in later years. Supporters of MTW may cite this as evidence that MTW improves the financial position of agencies, thereby helping them to preserve or increase the stock of affordable housing in the community while maintaining the same level of cost per household. Detractors may argue that the money MTW agencies hold in reserves would be better spent assisting more households through rental subsidies.

Given that agencies increased their reserves while serving roughly the same number of households per dollar, we should infer that they found some cost efficiencies. MTW agencies, however, did not shift their portfolio to lower-cost assistance programs, offer lower quality or less affordable housing assistance, or provide assistance to households with fewer needs as a result of joining the demonstration. Further exploration is warranted to determine where these efficiencies arise.

It is important to note that we only examine MTW-eligible funding and therefore do not assess whether MTW status affects how much funding PHAs receive from other programs. For example, MTW status might help PHAs receive more funding because they can use their flexibility to hire grant writers or because they can leverage funding to receive additional loans or grants from public or private funders. This factor may be what enables them to build their operating reserves without reducing their cost-effectiveness. Conversely, traditional PHAs may be able to use other funding opportunities to pay for the enhanced services or development activities that MTW agencies pay for with their funding flexibility.

Finally, our findings may inform thinking about how to strike the right balance between federal regulation and local control. The finding that MTW status does not significantly impact cost-effectiveness could be taken as evidence that strict regulation of PHAs is not necessary to manage costs, at least among high-performing agencies. Conversely, our finding of no impact of MTW may reflect a lack of contrast in the regulatory environment between MTW and traditional PHAs. During our analysis period, 2003 to 2017, HUD was establishing more uniform standards and monitoring for MTW agencies while also relaxing certain regulatory requirements for traditional PHAs.

Limitations

Lack of random assignment to MTW status limits our ability to estimate the causal impact of the demonstration. PHAs were chosen for MTW through selection processes that shifted from year-to-year before becoming more standardized in the later years of the demonstration. In some years, PHAs self-selected into the demonstration by applying to join. PHAs that applied for the MTW demonstration may be systematically different in unobservable and unaccounted-for ways from agencies that did not try to join the demonstration. For instance, they may have leadership with high levels of motivation to improve their agencies.

Data availability constrains the analysis in three important ways. First, the analysis only includes agencies that joined or exited the MTW demonstration since 2003, and for whom there are enough years of accurate data. It therefore excludes the first agencies to join MTW, some of which have been singled out by critics of the demonstration for not using enough of their budget on housing assistance (Fischer, 2015). It also excludes some of the largest MTW agencies and agencies with the most ambitious MTW activities, such as the Chicago Housing Authority, Home Forward (Portland, OR), and the Cambridge Housing Authority. We do not know how including these agencies would affect our results. Second, inconsistent data reduces the accuracy and precision of our estimates. Reliance on imputing missing and incomplete data adds uncertainty to our estimates. Third, FDS data do not fully differentiate between spending on public housing, vouchers, or LNT assistance at MTW agencies and do not allow us to track the flow of funds across accounts.

Conclusion

The MTW agencies we studied received higher levels of HUD funding after joining the demonstration and increased the total number of assisted households served, resulting in no significant change in overall cost per household. These agencies also experienced a large increase in dollars per household held in reserves, suggesting that they were able to increase their savings while still serving roughly the same number of assisted households per dollar of HUD funding as before joining the demonstration. We did not find any evidence that this increase in efficiency was caused by agencies shifting their portfolios to lower-cost assistance programs, offering lower quality or less affordable housing assistance, or providing assistance to households with fewer needs.

Future studies should examine cost-effectiveness in tandem with self-sufficiency or housing choice to determine the overall effect of the MTW demonstration on its three statutory objectives. Future studies should also estimate the relationship between MTW status and the number of affordable units within the service area of each PHA to determine whether MTW agencies use their reserves to build more affordable housing than other similar agencies.

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References

Abravanel, Martin, Robin Smith, Margery Turner, Elizabeth Cove, Laura Harris, and Carlos Manjarrez. 2004. *Testing Public Housing Deregulation: A Summary Assessment of HUD's 'Moving to Work' Demonstration*. Washington, DC: Urban Institute.

Buron, Larry, Melissa Vandawalker, Tyler Morrill, Jill Khadduri, and Jeffrey Lubel. 2017. *Testing Performance Measures for the MTW Program*. Cambridge, MA and Bethesda, MD: Abt Associates.

Finkel, Meryl, and Larry Buron. 2001. *Study on Section 8 HCV Success Rates: Volume I: Quantitative Study of Success Rates in Metropolitan Areas*. Cambridge, MA: Abt Associates.

Fischer, Will. 2015. *HUD Seeks Significant Improvements to "Moving to Work" Demonstration, But Additional Changes Needed*. Washington, DC: Center on Budget and Policy Priorities.

———. 2011. *Expansion of HUD's 'Moving-to-Work' Demonstration is Not Justified: Other Approaches Would Promote Demonstration's Goals More Effectively*. Washington, DC: Center on Budget and Policy Priorities.

Galvez, Martha, Ruth Gourevitch, and Benny Docter. Forthcoming. *A Picture of Moving to Work Agencies' Housing Assistance*. Washington, DC: U.S. Department of Housing and Urban Development.

Galvez, Martha, Jasmine Simington, and Mark Treskon. 2017. *Moving to Work and Neighborhood Opportunity: A Scan of Mobility Initiatives by Moving to Work Public Housing Authorities*. Metropolitan Housing and Communities Brief. Washington, DC: Urban Institute.

Khadduri, Jill, Melissa Vandawalker, Rebecca Cohen, Jeffrey Lubell, Larry Buron, Lesley Freiman, and Eliza Kean. 2014. *Innovations in the Moving to Work Program*. Cambridge, MA: Abt Associates. December. https://www.abtassociates.com/sites/default/files/migrated_files/b8bd4434-4303-408e-b696-874f821e66ea.pdf.

Levy, Diane, Leiha Edmonds, and David Long. 2020. *MTW Agencies' Use of Funding Flexibility*. *Cityscape* 22 (3): 29.

Manson, Steven, Jonathan Schroeder, David Van Riper, and Steven Ruggles. 2018. "IPUMS National Historical Geographic Information System: Version 13.0 Database." Minneapolis: University of Minnesota. <http://doi.org/10.18128/D050.V13.0>.

Scally, Corianne, Samantha Batko, Susan J. Popkin, and Nicole DuBois. 2018. *The Case for More, Not Less: Shortfalls in Federal Housing Assistance and Gaps in Evidence for Proposed Policy Changes*. Washington, DC: Urban Institute. <https://www.urban.org/research/publication/case-more-not-less-shortfalls-federal-housing-assistance-and-gaps-evidence-proposed-policy-changes>.

Stacy, Christina P., Josh Leopold, Daniel Teles, Ruth Gourevitch, Alyse D. Oneto, Yipeng Su, and Matthew Gerken. 2020. *The Impact of the Moving to Work Demonstration on the Per Household Costs of Federal Housing Assistance*. Washington, DC: Urban Institute.

Stockard, J. G., G. A. Byrne, K. Day, G. A. Maneval, L. A. Nielsen, and K. James. 2003. *Public Housing Operating Cost Study*. Cambridge, MA: Harvard University Graduate School of Design.

Turnham, Jennifer, Meryl Finkel, Larry Buron, Melissa Vandawalker, Bulbul Kaul, Kevin Hathaway, and Chris Kubacki. 2015. *Housing Choice HCV Program: Administrative Fee Study, Final Report*. https://www.huduser.gov/portal/publications/pdf/AdminFeeStudy_2015.pdf.

U.S. Government Accountability Office (GAO). 2018. *Improvements Needed to Better Monitor the Moving to Work Demonstration, Including Effects on Tenants: GAO-18-150*. <https://www.gao.gov/assets/690/689583.pdf>.