Analysis of Earnings, Credit and Debt Outcomes of Family Self-Sufficiency (FSS) Programs in Lynn and Cambridge, Massachusetts

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This paper is an excerpt of the full report, which includes methodological appendices, and is available at http://www.abtassociates.com/CompassFSS
## Contents

Executive Summary .......................................................................................................................... ii

1. Introduction ................................................................................................................................ 1
   1.1 Compass’s Program Model for FSS ...................................................................................... 2
   1.2 Literature Review and Program Context ............................................................................... 3
       1.2.1 The Housing Choice Voucher Program ...................................................................... 3
       1.2.2 Housing-Based Self-Sufficiency Programs .................................................................. 4
       1.2.3 Broader Universe of Employment Programs ............................................................. 6
       1.2.4 Programs to Help Individuals Build Assets, Improve Their Credit, and Pay Down Debt .......................................................... 7
       1.2.5 Compass’s Unique Approach ...................................................................................... 8
   1.3 Structure of this Report .......................................................................................................... 9

2. Compass FSS Participant Experiences: Characteristics and Changes over Time .......... 10
   2.1 Data and Methodology ....................................................................................................... 10
   2.2 Demographic Characteristics of Compass FSS Participants ........................................... 11
   2.3 Changes in Earnings and Benefits Receipt for Compass FSS Participants .................... 12

3. Effect of Compass FSS on Earnings and Cash Benefits Receipt: Quasi-Experimental Findings............................................................................................................................. 14
   3.1 Data Sources and Quasi-Experimental Design ................................................................. 14
       3.1.1 Data Sources and Panel Construction ........................................................................ 14
   3.2 Impact Analysis .................................................................................................................. 19
   3.3 Impact of Compass on Earnings and Public Benefits Receipt .......................................... 21

4. Comparison of FICO® Scores and Debt Changes Experienced by Compass FSS Participants and a Comparison Group ............................................................................................................. 24
   4.1 Data and Methodology ....................................................................................................... 24
       4.1.1 Data Sources ................................................................................................................ 25
       4.1.2 Experian Comparison Dataset Selection .................................................................... 27
   4.2 Baseline Characteristics of Compass FSS Participants and Comparison Group Members .......................................................................................... 28
   4.3 Comparison of Changes in FICO® Scores ....................................................................... 30
       4.3.1 Difference in Changes in Credit Score between Compass and Comparison Groups .......................................................... 32
   4.4 Difference in Changes in Debt between Compass and Comparison Group ................. 33

5. Conclusion and Questions for Future Research ................................................................. 36

References ..................................................................................................................................... 37
Executive Summary

Overview
This report documents the results of our evaluation of the quantitative outcomes of Family Self-Sufficiency (FSS) programs administered by Compass Working Capital (Compass) in Lynn and Cambridge, Massachusetts in partnership with public housing agencies in those cities. It is an abbreviated version of a full report, which includes additional detail and methodological appendices (Geyer et al 2017) available at http://www.abtassociates.com/CompassFSS. Using administrative data provided by HUD, we compared the change over time in earnings and welfare and Social Security income for Compass FSS participants to those of a matched comparison group. We also compared changes over time in FICO® Scores and debt levels for Compass FSS participants to changes in similar metrics for a comparison group provided by the Experian credit bureau.

In brief, we found that Compass FSS participants performed substantially better than the comparison groups in terms of: (a) growth in earnings, (b) reductions in welfare income, (c) growth in FICO® Scores; and (d) reductions in credit card and derogatory debt.

To the best of our knowledge, this is only the third evaluation of a local FSS program to compare earnings outcomes for FSS participants to those of a matched comparison group, and the first to study credit and debt outcomes in this manner. It is also the first evaluation of a full FSS program to find statistically significant differences between the performance of FSS participants and an applicable comparison group.

Key Findings:

- **Earnings.** Participation in Compass FSS was associated with an average gain in annual household earnings of $6,305 between the 4th quarter of 2010 and the 1st quarter of 2016.

- **Welfare Income.** Participation in Compass FSS was associated with a decline of $496 in annual household welfare payments over this time period, but this finding is difficult to interpret given state time limits.

- **Credit Scores and Debt.** On each of the following measures, Compass FSS participants performed significantly better than a comparison group of low-income households in the same census tracts, used to provide benchmarks:
  - Among Compass FSS participants who entered the program with a FICO® Score, the average score rose from 616.9 to 639.9, an increase of 23.0 points (3.7 percent).
  - The share of Compass FSS participants who had a FICO® Score increased by 7 percentage points, rising from 91 to 98 percent.
  - The share of Compass FSS participants with a prime FICO® Score (above 660) rose by 14 percentage points, from 23 to 37 percent.
  - Compass FSS participants experienced an average decrease in total derogatory debt of $764 and an average decrease in credit card debt of $655.
EXECUTIVE SUMMARY

What did we study?

With funding from the Oak Foundation and HUD’s Office of Policy Development and Research (PDR), Abt Associates conducted an evaluation of selected quantitative outcomes of Compass’s FSS programs in Lynn and Cambridge, Massachusetts. Compass is an asset-building nonprofit organization based in Boston, Massachusetts, that works with public housing agencies and private owners in southern New England to administer FSS programs for households participating in U.S. Department of Housing and Urban Development (HUD) rental assistance programs.

FSS is a HUD program established by Congress in 1990 that seeks to help participants in three HUD rental assistance programs (the Housing Choice Voucher, Public Housing and Project-based Section 8 programs) make progress toward economic security. FSS works to achieve these goals by combining stable affordable rental housing with: (a) case management or coaching to help participants identify and achieve their goals and (b) an escrow savings account that increases in value as participants’ earnings and rent contributions rise.

Compass began administering the FSS program in Lynn in October 2010 and began administering the FSS program in Cambridge in November 2012. Our study of earnings and public benefits receipt focuses on the experience of 269 households with Housing Choice Vouchers who enrolled in either the Lynn or Cambridge FSS program between October 2010 and March 2015.\(^1\) Our study of credit and debt includes additional FSS participants served by Compass in Lynn (for a total of 280 individuals) who live in public housing or have a voucher from another housing agency.

In addition to the traditional FSS program requirements and components, Compass’s implementation of FSS includes several innovative features:

- A strong focus on helping clients build financial capability, pay down high-interest debt, build savings, and improve their budgeting and FICO\(^\text{®}\) Scores, complementing the asset-building that occurs through the FSS escrow accounts;
- A coaching model for case management that emphasizes participant-driven interaction and goal-setting;
- A program-wide goal of growing the FSS program enrollment rate to 20 percent.\(^2\) Compass seeks to achieve this outcome through marketing and outreach strategies, including a postcard marketing campaign that taps into and builds upon families’ aspirations for themselves and their children;

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\(^1\) This is the sample we used for our descriptive analysis of earnings and cash benefit amounts of Compass FSS participants. For the impact analysis on earnings and cash benefits amounts, we used a somewhat smaller sample (173 households) to ensure comparability with the comparison group members’ data availability and patterns of participation in the Housing Choice Voucher programs.

\(^2\) Compass calculates this performance target based on an estimate of the number of non-elderly non-disabled households in each PHA. This calculation is used solely to set Compass’s performance targets for enrollment. Like all FSS programs, the Compass FSS program is open to all households, including households with heads that are elderly or persons with disabilities.
EXECUTIVE SUMMARY

- A public-private partnership model, supported by philanthropy. While most FSS programs are run entirely by PHAs, the Compass FSS programs are run by Compass (i.e., a nonprofit that specializes in financial coaching and asset-building programs) in partnership with the public housing agencies; and,

- At the Cambridge Housing Authority, an escrow account that is less generous than in a typical FSS program, providing an escrow equal to half of the traditional amount. The Cambridge escrow model also eliminates the normal cap on escrow accumulation for households with incomes between 50 and 80 percent of the area median income (AMI). The agency has been able to make these changes because it participates in the Moving to Work demonstration program.

We did not examine the amount of savings accumulated by FSS participants in their escrow accounts, but plan to report on that in a subsequent report as part of an analysis of costs and benefits.

**What methodology did we use?**

Our report is based entirely on an analysis of administrative data provided by HUD, Compass, and the Experian credit bureau. We conducted two main analyses:

- Using HUD administrative data, we conducted a quasi-experimental analysis of the impact of Compass FSS on the earnings and benefits use of Housing Choice Voucher holder households by comparing the experiences of households enrolled in the Compass FSS program to those of a comparison group of voucher-holders in other Massachusetts, Connecticut, and Rhode Island PHAs during the same period. We matched this comparison group to Compass FSS participants using propensity scores designed to match for likelihood of choosing to enroll in the Compass FSS program.

- Using data provided by Compass and the Experian credit bureau, we analyzed changes in the FICO® Scores and debt of Compass FSS participants, comparing the changes experienced by Compass FSS participants to those of a comparison group of individuals with similar demographic, credit, debt, and income characteristics in the same census tracts during the same period provided by Experian.

We also include descriptive statistics of changes over time for Compass FSS participants on these measures.

**What did we find?**

The following is a summary of our principal findings. All findings described in this section are statistically significant (p<.05):

3 To facilitate presentation of our findings on earnings and public benefits receipt in this executive summary, we have combined the results of our descriptive and comparative analyses. These analyses cover somewhat different samples of Compass participants over somewhat different time periods for technical reasons described in the report. Please see the full report for details on the separate findings of each analysis.
EXECUTIVE SUMMARY

Earnings:

- On average, the annual household earnings of Compass FSS participants rose from $21,320 at enrollment to $27,923 at the time of the most recent income certification available in our dataset. This reflects an average of 38 months between enrollment in FSS and the end of the data period.

- More than 40 percent of Compass FSS participants experienced gains in household earnings equal to or greater than the average gain of $6,603, but 37.5 percent of participating households had either no earnings growth or a decline in earnings.

- Average increases in annual household earnings were highest for Compass FSS participants that started out in the bottom two quintiles of earnings as of the time of enrollment into FSS.

- Based on our comparison of earnings growth for Compass FSS participants and that of a matched comparison group, we estimate that participation in Compass FSS led to an average gain of $6,305 in annual household earnings.

- Roughly half of the estimated impact of Compass FSS on household earnings is attributable to changes in earnings of heads of household with the remaining impact attributable to other earners in the household. We estimate that participation in Compass FSS led to an average gain of $3,084 in annual earnings of the head of household, which is the individual with whom Compass works in the FSS program. Participation in Compass FSS is also associated with an increase during the analysis period in the proportion of households with one or more earners who are not head of household. Many of these additional earners appear to be students or other adult children.

Welfare, SSI, Pension and Social Security Income:

- On average, annual household income from welfare declined by 27 percent among Compass FSS participants, falling from $789 to $575. The welfare measure used for this report includes benefits from the Temporary Assistance for Needy Families (TANF) program and payments from state, local, or tribal programs for financial or medical assistance.

- Based on our comparison of welfare income changes for Compass FSS participants and that of a matched comparison group, we estimate that participation in Compass FSS was associated with a decline of $496 in annual household welfare payments.

- Because only a small share of Compass FSS participants had welfare income at baseline (12 percent in the sample used for the comparative analysis) and because Massachusetts limits receipt of TANF funds to a two-year period every five years (though with certain exceptions), we recommend interpreting the welfare findings with caution.
• On average, annual household income from SSI, pension, and Social Security rose by 17 percent among Compass FSS participants, increasing from $1,500 to $1,761. In our comparative analysis, however, we did not find a statistically significant impact on this outcome associated with participation in Compass FSS.

FICO® Scores:

• Compass FSS participants with FICO® Scores at the time of entry into the program experienced modest, but significant increases in scores —an average increase in FICO® Score of 23 points (3.7 percent), compared with only 3.9 points (0.6 percent) among the comparison households.

• The share of Compass FSS participants with a FICO® Score also increased, rising by 7 percentage points between enrollment and the latest data available. This was a significant difference from the change experienced by the comparison group: a decline of 1 percentage point. Compass participants who "gained" a FICO® Score had an average score of 636.8 as of the most recent available credit report, a good score (though not quite at prime level). By contrast, the average score among individuals in the comparison group who gained a FICO® Score during the follow-up period was 555.0.

• The share of Compass FSS participants with a prime FICO® Score (above 660) rose from 23 to 37 percent, compared with an increase of 2 percentage points in the comparison group.

Debt:

• Compass participants saw an average decrease in total derogatory debt of $764, while comparison group members saw an increase of $554. Furthermore, the share of Compass participants with any debt that is derogatory declined 11 percentage points, from 65 percent to 54 percent, while comparison group members saw an increase in the share with derogatory debt (moving from 61 percent to 66 percent).

• Compass participants decreased credit card debt by an average of $654.52, while the comparison group’s average credit card debt remained flat.

What do the results mean?
The results on earnings, credit and debt are all highly positive, suggesting that the Compass FSS program is helping participants make progress in all of these areas. The findings on welfare income receipt are also positive but more difficult to interpret given that most Compass FSS participants did not receive any welfare income during the study period and the likely influence of Massachusetts’ time limits.

Despite FSS’ 25-year history, there have been relatively few rigorous evaluations of its effects. To the best of our knowledge, this is only the third evaluation of a local FSS program to compare earnings outcomes for FSS participants to those of a matched comparison group, and the first study to examine
credit and debt outcomes. It is also the first evaluation of a full FSS program to find statistically significant differences between the performance of FSS participants and an applicable comparison group. Both of the prior evaluations studied local FSS programs that utilized service delivery approaches that were very different from that of Compass.

Two national studies commissioned by HUD described earnings gains for FSS participants but did not include data for comparison groups (Ficke and Piesse 2004; De Silva et al. 2011). A third HUD-commissioned study – a randomized controlled trial of a convenience sample of large FSS programs in the U.S. – is currently underway with initial interim results expected later in 2017.

Because of the significant differences between the FSS program and other programs designed to boost earnings, there is no ready standard to use as a benchmark for assessing Compass’s earnings results. However, there are benchmarks for assessing the results on credit and debt. A recently completed evaluation of financial coaching programs in Miami and New York City found no statistically significant impact on FICO® Scores in one program and an impact of 12 to 53 points in the other (Theodos et al. 2015, 129-130). The Compass FSS results are within the range reported for the program with an impact. While the other evaluation focused on somewhat different measures of debt, in general, the debt results for Compass FSS participants are as good as or better than those of the other programs. Note, however, that this other evaluation used random assignment, a more rigorous methodology than we were able to use here.

**Conclusion**

This evaluation confirms that an FSS program can achieve successful outcomes for participants in terms of earnings, credit and debt. Further research is needed to determine the extent to which other FSS programs report similar results and what program characteristics are associated with positive outcomes.

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4 The other two are studies of programs in New York City and Denver. The New York City study examined a newly expanded FSS program that appears to have undergone several changes in approach during its initial years (Nuñez, Verma, and Yang 2015). The Denver study focused on a limited population of intensively treated individuals enrolled in a special homeownership program in addition to either FSS or Denver’s Resident Opportunities and Self-Sufficiency program (Santiago, Galster, and Smith 2017). A third study used regression techniques to study outcomes for FSS participants in Rockford, Illinois (Anthony 2005).
INTRODUCTION

1. Introduction

This report documents the results of our evaluation of the quantitative outcomes of Family Self-Sufficiency (FSS) programs administered by Compass Working Capital (Compass) in Lynn and Cambridge, Massachusetts in partnership with the Lynn Housing Authority and Neighborhood Development (LHAND) and the Cambridge Housing Authority. It is an abbreviated version of a full report, which includes additional detail and methodological appendices (Geyer et al 2017), available at http://www.abtassociates.com/CompassFSS. Compass, an asset-building nonprofit organization based in Boston, Massachusetts, works with public housing agencies (PHAs) and private owners in southern New England to administer FSS programs for households participating in HUD rental assistance programs.

FSS is a program of the U.S. Department of Housing and Urban Development (HUD) designed to help housing assistance recipients increase their earnings and build savings in order to make progress toward economic security. The standard FSS program has three main components: (1) stable affordable rental housing; (2) case management or coaching to help families set and achieve their goals; and (3) an escrow account that increases in value as participants’ earnings and rent contributions increase. As discussed in more detail below, Compass’s implementation of FSS includes a number of unique features—in particular, an emphasis on client-driven financial coaching.

With funding from Oak Foundation and HUD’s Office of Policy Development and Research (PDR), Abt Associates has conducted an evaluation of selected outcomes of the Cambridge and Lynn FSS programs. In this report, we provide the results of two sets of analyses assessing the effects of the Compass FSS programs:

- **Earnings and benefits use.** To assess the effectiveness of Compass’s FSS programs in helping participants increase their earnings and related changes in public benefits use, we have conducted a quasi-experimental impact analysis that compares the change in household earnings and cash benefit amounts of Compass participants who have a Housing Choice

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5 These programs are true public-private partnerships in the sense that they succeed only through their joint efforts, but Compass has the lead responsibility for helping participants achieve their goals. In this report we refer to “Compass FSS programs” and “Compass FSS households” for simplicity.

6 Appendices in the full report include: Detailed Data and Matching Methodology for Earnings and Benefits Quasi-Experimental Analysis; Imputation in Data Records; Census Tract Characteristics; Full Regression Results; Treatment Effect Regression Coefficients; and Changes in Unadjusted Means for Compass FSS Participants and Comparison Group.

7 Though Lynn and Cambridge are the locations included in this evaluation because they are the sites of the longest running Compass FSS programs (launching in October 2010 and November 2012, respectively), Compass also currently provides its FSS program in other southern New England cities. These include Boston (in partnership with Metropolitan Boston Housing Partnership) and Gloucester, Massachusetts; Willimantic, Connecticut (in partnership with the Caleb Group); and multi-family developments in Springfield and Cambridge, Massachusetts, and North Kingstown and Providence, Rhode Island (the latter in partnership with Preservation of Affordable Housing).
INTRODUCTION

Voucher with those of a propensity score–matched comparison group of voucher holders in other Massachusetts, Connecticut, and Rhode Island PHAs during the same period.

- **Credit score and debt.** To assess the impacts of Compass’s program on changes in participants’ credit scores and debt, we compare the changes in FICO® Score and debt of Compass participants over time with the changes experienced by a stratified comparison group of individuals in the same census tracts during the same period provided by the Experian credit bureau. The FSS sample for this analysis includes Housing Choice Voucher holders in Lynn and Cambridge plus a small number of public housing residents in Lynn.

Since most of the families enrolled in Compass’s FSS programs have not yet reached the end of the five-year term of program participation, we have not included a detailed analysis of Compass’s graduation rates. We also do not examine the level of accrued savings through the escrow account; we plan to examine escrowed savings in a subsequent analysis.

In the remainder of this chapter, we describe Compass’s FSS program model, summarize the research literature that provides the context for this report, and provide an outline of this report.

### 1.1 Compass’s Program Model for FSS

Like traditional FSS programs, the Compass FSS programs provide clients receiving housing assistance with (a) the ability to build escrowed savings based on increased rent paid as a result of increased earnings following enrollment in the program and (b) one-on-one coaching to encourage and support participants in increasing their earnings and achieving other individually identified goals. Families join the programs voluntarily and must continue to meet with their FSS financial coach periodically to remain in the FSS program. A family’s participation in FSS (or withdrawal or graduation from FSS) has no impact on the family’s level of housing assistance. To graduate from the FSS program (and receive the full amount accrued in escrow savings), participants must be employed, all household members must have been free of TANF assistance for at least one year, and participants must have achieved the participant-specific goals outlined in their individual training and services plans.

The Compass FSS programs satisfy those traditional FSS program requirements. In addition, its programs are innovative in five primary respects:

1. Compass’s programs have a strong focus on helping clients build financial capability, pay down high-interest debt, build savings, and improve their budgeting and credit scores, complementing the asset building that occurs through the FSS escrow accounts.

2. Compass uses a coaching model that emphasizes participant-driven interaction (as opposed to a more traditional case management model in which the case manager more actively guides the participant).

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8 All FSS programs provide case management or coaching to help participants identify goals and overcome barriers to achieving them. The form of this interaction can vary substantially, however, from one local program to another.
3. The programs represent public-private partnerships supported substantially by philanthropy. While most FSS programs are run entirely by PHAs, the Compass FSS programs are run by a nonprofit that specializes in financial coaching and asset-building programs, in partnership with the public housing agencies in Lynn and Cambridge.

4. Compass seeks to enroll a greater share of the eligible population than is typical for FSS programs, aiming for an enrollment equal to at least 20 percent of the number of non-elderly non-disabled households in each site where Compass operates an FSS program. Compass achieves a high level of enrollment through its marketing and outreach strategies, including a postcard campaign that taps into and builds on families’ aspirations for themselves and their children.

5. Compass uses a traditional calculation of FSS escrow in its Lynn FSS program, but it uses a variation on the traditional calculation in its Cambridge FSS program. Participants in Cambridge typically receive half of the traditional escrow amount. The Cambridge escrow model also eliminates the normal cap on escrow accumulation for households with incomes between 50 and 80 percent of the area median income (AMI).

This evaluation builds on a previous descriptive evaluation conducted for Compass by Brandeis University (Kimbrel and Venner 2014), following the first two years of operation of the Compass FSS programs. That evaluation provided a qualitative analysis of the components of Compass’s FSS program model, including Compass’s outreach and marketing approach for reaching a large base of participants, the relationship-building necessary for a nonprofit organization to work effectively with a public housing authority or other housing partner, and the role of Compass’s financial education workshops.

1.2 Literature Review and Program Context

This evaluation has several relevant contexts that we briefly discuss in turn: (1) the Housing Choice Voucher Program; (2) prior efforts to help individuals receiving HUD rental assistance make progress towards self-sufficiency; (3) the broader universe of employment programs; (4) prior efforts to help individuals build assets, improve their credit, and pay down debt; and (5) the unique circumstances of Compass’s FSS program.

1.2.1 The Housing Choice Voucher Program

Our analysis of changes in earnings and public benefits amounts focuses on Compass FSS participants in the Housing Choice Voucher (HCV) program. There are reasons to think that HCVs could either promote or hinder recipients’ work effort. On the one hand, we know that households with HCVs tend to be more residentially stable than households without HCVs (Mills et al. 2006).

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9 These numbers are used for benchmarking only. Households may participate in FSS regardless of the age or disability status of the head of household. As of April 2017, Compass had met this benchmark in Lynn, its longest running program, and was 80 percent of the way toward this benchmark in Cambridge.

10 Cambridge Housing Authority is allowed to modify the FSS escrow formula because of its status as a Moving to Work (MTW) PHA. Contributing 50 percent of the increase in rent resulting from increased earnings to an escrow account rather than the standard 100 percent helps to reduce the financial costs of FSS for the Cambridge Housing Authority. We did not have a large enough sample to test whether this program variation may have contributed to different outcomes at the Cambridge and Lynn sites.
INTRODUCTION

Because it’s likely to be difficult to focus on getting and keeping a job when you’re worried about where to sleep at night, the stability provided by an HCV might have a positive effect on employment and earnings. HCVs also provide families with the flexibility to move closer to a new work location, which again might have a positive effect on employment and earnings. On the other hand, participants in the HCV program pay 30 percent of their income for rent, so if they earn more, their contribution to rent will rise; this could potentially act as a marginal tax that discourages increasing earnings. As with any government subsidy, receipt of the HCV subsidy could also reduce the incentive that HCV holders have to increase employment and earnings because they can achieve a minimum standard of living at a lower level of work effort than unassisted households can.

A number of high-quality studies have found that receipt of rental assistance leads to a small initial reduction in earnings that fades over time (Mills et al. 2006; Newman, Holupka, and Harkness 2009; Carlson et al. 2009). Though the reason is unclear, one potential explanation is that after an initial dislocation associated with receiving a voucher (perhaps related to moving), the benefits and drawbacks of rental assistance for work offset each other. Other studies have found more persistent negative effects. For example, a study of voucher recipients in Chicago found an initial decline in earnings that did not dissipate over time (Jacob and Ludwig 2012), and a recent study of homeless families who received immediate access to HCVs found reductions in work effort under some (but not all) measures relative to other families who were left to find their own way out of emergency shelter (Gubits et al. 2016).

These studies indicate that rental assistance alone does not promote earnings and employment.

1.2.2 Housing-Based Self-Sufficiency Programs

In light of concerns about the potential of rental assistance to suppress employment and earnings, a number of self-sufficiency efforts have been undertaken to help residents of subsidized housing increase their earnings. The best known is the Jobs Plus demonstration, a saturation initiative targeted at public housing residents designed to engage all working-age adults in a housing development-wide effort to boost employment. The demonstration, conducted in the late 1990s to early 2000s, combines financial incentives to work through changes in rent policy; employment services (such as job search, job referrals, and career counseling); and a program component called “community support for work” that involved encouraging residents to support one another’s work effort in various ways.

An evaluation by MDRC of the initial Jobs Plus demonstration found significant gains in earnings and employment among residents in the three developments that implemented the program robustly as compared with residents of similar developments that did not (Bloom, Riccio and Verma, 2005). These gains were not seen in the two sites that did not robustly implement the demonstration. A sixth site left the demonstration early. Despite the site variation, the results still showed earnings gains for residents of the six developments overall relative to residents of comparison developments. The Jobs

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11 These studies were focused on rental assistance participants generally, rather than the subset enrolled in a self-sufficiency program.

12 The rent policies in Jobs Plus generally sought to provide a financial incentive for increased earnings. Different sites used different approaches, including policies that kept rents flat until families’ earnings reached a certain level and policies that charged a lower share of income for rent.
Plus initiative has been implemented several times since the early demonstration, with the most recent implementation consisting of HUD funding for 24 new Jobs Plus sites in fiscal years 2014-2016.

Though Jobs Plus is better known in the research literature, FSS is by far the larger program, currently serving more than 71,000 households total in more than 1,000 local FSS programs around the United States. Based on a series of research demonstrations conducted in the 1980s – Operation Bootstrap (Blomquist, Ellen, and Bell 1994), Project Self-Sufficiency (Smith 1988), and the Gateway Transitional Families Program (Rohe and Kleit 1997) – the FSS program was authorized by Congress in the Cranston-Gonzalez National Affordable Housing Act of 1990. FSS combines the stability of HUD-assisted rental housing with (a) case management or coaching to help participants set and achieve goals and make progress toward economic security and (b) an escrow account that grows as participants’ earnings grow. The escrow account functions both as an asset-building mechanism and as a financial incentive for participants to increase their earnings.

HUD has commissioned two major longitudinal studies of FSS, both of which showed significant earnings gains for FSS participants, but neither of which had a control group or random assignment (Ficke and Piesse 2004; De Silva, Wijewardena, Wood, and Kaul 2011). HUD has commissioned a randomized controlled trial of a convenience sample of large FSS programs that MDRC is currently conducting, with interim results expected later in 2017.

There have been a number of evaluations of local FSS programs. The most rigorous evaluation was a randomized controlled trial conducted by MDRC of an FSS expansion that New York City undertook for purposes of testing FSS, both alone and in conjunction with a conditional cash transfer (CCT) program (Nuñez, Verma and Yang, 2015). Though neither FSS alone nor the FSS + CCT models produced earnings gains for the full sample, the results suggested there may have been an impact on particular outcomes and for some specific subgroups. Both FSS and FSS + CCT, for example, significantly increased the share of households working 30 or more hours per week. The FSS + CCT model also produced significant gains in employment and earnings among households not working at baseline; results for such families were consistently better for the FSS-only group than for the control group, but the difference was not statistically significant.

13 Although direct comparisons can be difficult, FSS is also likely to be less expensive on a per-household basis than Jobs Plus since FSS funding focuses only on case management or coaching (as opposed to the provision of job training and other direct services) and the escrow represents a contingent rather than a guaranteed expenditure.

14 The estimate of the number of FSS participants is based on the information included in the Congressional Justifications accompanying HUD’s FY 2017 budget request (https://portal.hud.gov/hudportal/documents/huddoc?id=7-Family_Self-Suff.pdf). The estimate of the number of PHAs with FSS programs is based on Abt’s analysis of data in HUD’s PIC system and reflects programs enrolling FSS participants between mid-2007 and mid-2010. Both numbers fluctuate from year to year.

15 In addition, Rohe and Kleit (1999) conducted an early assessment of FSS and Olsen et. al. (2005) conducted an analysis of administrative data which found that FSS had a positive effect on earnings.

16 See also Santiago, Galster, and Smith (2017); Holgate et. al. (2016); Anthony (2005); and Gibson (2002).
1.2.3 Broader Universe of Employment Programs

A third context for this evaluation is the universe of employment programs. There is no direct analogue to FSS in the broader literature on employment programs that can serve as a benchmark for our evaluation of the Compass FSS program, but the literature does help us identify some of the relevant issues at play. We know from the literature, for example, that clearly-communicated financial incentives matter (Hamilton 2012; Martinson and Hamilton 2011). Such incentives can include, for example, the disregard of increased earnings in calculating program benefits as well as wage supplements. The financial incentive in the FSS program, however, is unusual in that it is significant delayed incentive. Unlike an earnings disregard, which leads to immediate benefits, the FSS escrow leads to the accumulation of funds in an escrow account that the family generally accesses upon graduation from the program.\(^{17}\) Final receipt of escrow funds is also contingent on successful graduation from the program (although participants may access some of the escrowed funds on an interim basis under certain conditions). One question is whether a delayed and contingent incentive such as the FSS escrow account can provide sufficient financial incentive to support increased work. We can’t separate out the effects of the escrow account from the broader supports provided by Compass through its coaching, but a finding of significant positive effects on earnings would at least suggest that the delayed and contingent nature of the FSS escrow account does not make it an ineffective incentive.

Much of the employment literature is focused on interventions directed at helping families who receive federal welfare payments. This literature does not provide a comparable benchmark for this study, since only a small share of Compass participants received welfare payments and the average earnings of Compass participants at enrollment substantially exceeded those of the typical welfare program participant. In other cases, the job search assistance literature focuses on participants receiving unemployment insurance. In any event, those studies generally found only small gains in earnings that were not sufficient to lift families out of poverty (Hamilton 2012; Martinson and Hamilton 2011).\(^{18}\)

Recent literature suggests that a Career Pathways workforce development model and programs that supplement low-wage work can be effective in boosting earnings, but neither approach is directly comparable to the Compass FSS program (Fein 2012; Werner, Dun Rappaport, Bagnell Stuart, and Lewis 2013; Strawn 2011; Maguire et al. 2010; Zeidenberg, Cho and Jenkins 2010).

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\(^{17}\) While FSS participants receive the full balance of their escrow accounts if and when they graduate, they may also receive some funds prior to graduation through interim disbursements from the escrow account. These are withdrawals that the program provider allows for expenses that help participants achieve their goals. Examples of such expenses include paying for education or purchasing or repairing a vehicle to get to work.

\(^{18}\) There are some studies that focus on a somewhat similar population in older parts of the job search assistance literature; however, these were for multi-component or bundled initiatives that have a mismatch with the features of the Compass FSS program along several dimensions. For example, some studies focused on participants who received welfare payments or who received unemployment insurance payments, together with job search assistance and peer job search clubs and included enforcement mechanisms that could result in benefits reductions for participants (Gueron and Pauly 1991; Freedman et al. 2000).
INTRODUCTION

1.2.4 Programs to Help Individuals Build Assets, Improve Their Credit, and Pay Down Debt

While the contingent and delayed receipt of funds from the FSS escrow account raises questions about whether it is an effective incentive for increased earnings, it has the clear benefit of helping participants who graduate from the program to accumulate assets.\(^\text{19}\) Research shows that assets can benefit families in a number of ways. Assets provide families with financial security, preventing them from falling into poverty when faced with unexpected expenses, such as job loss, broken down cars needed to get to work, or emergency medical bills. People can also use assets to invest in themselves and their families by pursuing further education or training to increase wages and job satisfaction, starting a business, putting a down payment on a home, or saving for their children’s education. Finally, the hope and confidence that successful asset-building instills in a family can both enhance their well-being and motivate them to set, pursue, and achieve long-term goals (Sherraden 1992; Boguslaw et al. 2013; McKernan and Sherraden 2008).

There are a number of other social programs designed to help low-income households build assets. The most thoroughly researched asset-building program is the Individual Development Account (IDA) program, which provides participants with a financial match to encourage greater savings. The IDA program is different from FSS in incenting increased savings rather than increased earnings. But it does have some parallels to FSS in the sense of providing a deferred benefit, rather than an immediate cash benefit. (IDA benefits are deferred in the sense that families cannot access their matched funds right away, but must wait until they are ready to make a qualifying purchase, such as homeownership or post-secondary education.) Notwithstanding the deferred benefits, evidence suggests that IDAs can be effective in encouraging savings while the program is in operation (Mills et al. 2016; 2008). Effects on secondary impacts like homeownership, however, appear to diminish or disappear over the long-term (Grinstein-Weiss et al. 2012).

Though all FSS programs include the FSS escrow account and thus function as asset-building programs, the Compass FSS program places a particular emphasis on asset-building as a core element of its program. Among other things, Compass has integrated financial coaching into its basic program model, coaching participants on how to improve their credit scores, pay down debt, budget, build savings, and access mainstream financial products, in addition to the more standard FSS focus on helping residents overcome barriers to increased earnings.\(^\text{20}\) Because of Compass’s focus on financial coaching, we examine the extent to which Compass FSS participants experience increases in FICO® Scores and reductions in debt as compared with individuals with similar characteristics.

While we are unaware of any direct analogues to FSS in the context of employment programs, we believe that Compass’s coaching on credit and debt can be compared with other financial coaching programs on these metrics. One of the most useful comparisons comes from a randomized controlled trial by the Urban Institute of financial coaching programs in Miami (Branches) and New York City.

---

\(^{19}\) Participants only receive the balance of their escrow savings accounts if they successfully graduate from the FSS program.

\(^{20}\) Though there are other FSS programs that offer coaching on credit and debt to FSS participants, we are not aware of any other FSS program that integrates these services as holistically and comprehensively into its FSS program as the Compass FSS program does.
INTRODUCTION

That study found that financial coaching produced a range of positive outcomes, including increases in savings and reductions in perceived financial stress. With respect to credit scores, it detected no statistically significant impact of coaching on credit scores at the Branches site but a significant impact at the Financial Clinic. The researchers estimate the impact on credit scores of those who received financial coaching at the Financial Clinic was 33 points, with a wide confidence interval of 20 points, for an estimated impact range of 12 to 53 points. At neither site did researchers find an increase in the proportion of clients with a credit score. The study found reductions in total debt at Branches but not the Financial Clinic, and reductions in the total balance 90 to 180 days delinquent at the Financial Clinic but not Branches. The study found no impact on most other measures of debt and delinquency (Theodos et al. 2015, 129-130).

The Economic Mobility Corporation (Mobility), using a quasi-experimental design, examined credit score as an outcome of Financial Opportunity Center (FOC) participation. Overall, the outcomes of the treatment group were not statistically greater than those of the matched comparison group, but Mobility found positive and significant effects on credit following FOC participation when it examined results separately by credit status at program entry. Specifically, those participants who did not have a credit score at the outset were 9.3 percentage points more likely to have gained one after two years. Among those who had a score and a “thick credit file” at the outset, FOC participants were 13.8 percentage points more likely to have a prime credit score after two years (Roder 2016, 43-44).

1.2.5 Compass’s Unique Approach

The final context to consider is Compass’s unique approach to implementing FSS in Cambridge and Lynn. As described above, the Compass program model is unique in a number of important ways, including and especially the fact that Compass incorporates financial coaching into its FSS program to a much greater extent than other FSS programs.

This evaluation did not include a qualitative assessment of Compass’s implementation, but we know from other evaluative work we are doing with Compass that it exhibits a number of characteristics of high-performing organizations that could contribute to the quality of its FSS program. These include:

- A learning culture – Compass regularly reviews data on the outcomes of its programs to determine whether it should be adjusting its approach;
- A reliance on evidence-based practices – this is particularly evident in its use of participant-driven coaching and its adaptation of insights from behavioral economics to enhance its FSS marketing campaign; and
- An emphasis on hiring quality staff, providing structured training and ongoing professional development, and the regular sharing and vetting of challenges among staff.

We note these points because the quality of a program’s implementation is likely an important factor in determining its success. Our evaluation here is not of FSS generally, but of the FSS programs run by Compass in partnership with the housing agencies in Lynn and Cambridge. The Compass FSS programs possess unique programmatic features, including a focus on financial coaching; unique structural features, such as administration of the coaching by a nonprofit organization (Compass itself) working in partnership with the PHA; and a strong organizational culture.
We are unable to separately determine the extent to which the results of this evaluation are driven by Compass’s program model versus its organizational culture and capacity. Until proven otherwise, it is reasonable to assume the results reflect a combination of all of these factors.

1.3 Structure of this Report

In each of the three subsequent chapters, we report on the outcomes of the Compass FSS programs in Lynn and Cambridge. Chapter 2 describes the demographic characteristics of the households participating in the Compass FSS programs at the Lynn and Cambridge sites. Chapter 3 presents results from the quasi-experimental impact evaluation of earnings and benefits amounts, contrasting the outcomes of the FSS participants to a matched comparison group of other households in the HCV program. Chapter 4 presents results for FICO® Scores and debt, contrasting the outcomes of the FSS participants to those experienced by a comparison group of low-income households with similar demographic, credit, debt, and income characteristics in the same census tracts during the same period.
This chapter describes the demographics of the Compass FSS participants with Housing Choice Vouchers in Cambridge and Lynn and their experiences in terms of earnings, cash benefits received, FICO® Score, and debt at enrollment and over time. These descriptive analyses provide context for the impact and comparative analyses in Chapters 3 and 4.

Section 2.1 describes the data sources and methodology used in the descriptive analyses reported in this chapter. Section 2.2 describes the demographic characteristics of the Compass FSS participants in Lynn and Cambridge. Finally, Section 2.3 presents descriptive statistics on changes in earnings levels and benefits receipt from the time of participants’ enrollment in FSS until the most recent income recertification available in our dataset, which includes recertifications through March 2016.

2.1 Data and Methodology

The descriptions of FSS participant characteristics and of their changes in earnings and public benefits use that we summarize in this section – as well as data we use for the impact analysis we describe in Chapter 3 – are based on HUD data from the PIH Information Center (PIC) entered by housing authorities for PIC module Form HUD-50058.21 For both, only participants who enrolled in FSS prior to March 2015 are included in our analysis, to ensure at least one full year of follow-up data is available.

Compass began administering the FSS program in Lynn in October 2010 and in Cambridge in November 2012. Therefore, we identify Compass FSS participants by noting their FSS participant flag in the PIC records. The PIC dataset also includes information about earnings, demographics, and household composition.22 We converted the Form 50058 records from PIC into a longitudinal dataset with quarterly data points for values including annual earnings and benefits receipt. In these analyses, we have included only participants with enrollments through March 2015 in order to allow for at least one year of follow-up data. In total, the descriptive data cover 269 Compass FSS participants with HCVs: 118 from Lynn and 151 from Cambridge. Imputed values derived from nearest available

21 The data shown for each time period represent the most recent data transmitted to HUD’s PIC data system as of that date for each household participating in FSS. For example, the data reported for March 2016 represent the most recent PIC record on file for that household through March 31, 2016. Some of those data points may be the results of reexaminations of income by the Lynn or Cambridge PHA in March 2016, but others may reflect reexaminations from previous months, depending on the date of that household’s annual reexamination and whether the PHA requires HCV holders to report increases in income that occur in between annual reexamination dates. (Lynn has this requirement for interim reexaminations, but Cambridge does not.)

22 Many MTW housing agencies, including Cambridge Housing Authority, do not submit to HUD the FSS addendum data needed to determine FSS participation from PIC transaction records. Accordingly, in order to generate the dates of entry and exit into the FSS program that were essential for our analysis, the Cambridge Housing Authority provided supplemental entry and exit information about its own FSS participants to HUD, which included these supplemental data points in the data we received.
records are employed to fill in for missing records or data that are not available because households have left the HCV program.\textsuperscript{23}

### 2.2 Demographic Characteristics of Compass FSS Participants

The demographics and household composition of Compass FSS participants vary somewhat by site. The overwhelming majority of heads of household, both overall and by site, are female, under age 65, and do not have a disability (Exhibit 2-1). Overall, the majority of the Compass FSS household heads (56 percent) are Black/African American and more than a third (37 percent) are Hispanic/Latino. The race/ethnicity of heads of household vary between Lynn and Cambridge (in Lynn, with a majority of Latino/Hispanic household heads in Lynn and a majority of Black/African American households heads in Cambridge).

#### Exhibit 2-1. Compass FSS Participants: Head of Household Demographics at Baseline

<table>
<thead>
<tr>
<th>Race</th>
<th>(N=269)</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>40.9%</td>
</tr>
<tr>
<td>Black/African American</td>
<td>56.1%</td>
</tr>
<tr>
<td>Asian</td>
<td>5.6%</td>
</tr>
<tr>
<td>Native American</td>
<td>0.7%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>(N=269)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic/Latino</td>
<td>36.8%</td>
</tr>
<tr>
<td>Non-Hispanic</td>
<td>63.2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>(N=269)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Age (yrs)</td>
<td>41.2</td>
</tr>
<tr>
<td>Age 65+</td>
<td>0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Disability</th>
<th>(N=269)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disabled</td>
<td>4.8%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender</th>
<th>(N=269)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>90.3%</td>
</tr>
<tr>
<td>Male</td>
<td>9.7%</td>
</tr>
</tbody>
</table>


NOTE: Baseline is defined as the date of enrollment in FSS for each household.

In some cases, participants left the FSS program (through graduation, voluntary drop-off, or termination) or left housing assistance during the study period. The baseline demographic and income characteristic tables presented in this chapter describe all enrollees in the Compass FSS program between October 2010 and March 2015 (allowing for at least one year of follow-up data after enrollment). Where participants have left FSS, graduated, or been terminated from the FSS program, follow-up data are available so long as the households retain HCVs in the same PHA where they enrolled in Compass FSS. During the study period, 11.5 percent of Compass FSS-enrolled households graduated from the program, 13.8 percent left the FSS program without graduating (including 3.7 percent who left HCV or the housing authority without graduating), and 74.7 percent remained in the FSS program through at least March 2016. Because FSS participants generally have five years to

\textsuperscript{23} Imputed values are equal to the value of the nearest available record.
complete their FSS contracts of participation – and may request an additional two years, if needed – we have not conducted a substantive analysis of Compass’s graduation rates.

For Compass FSS participants, single-adult households are more common than households with more than one adult (Exhibit 2-2). Compass FSS households are also most often have children under age 18 (78 percent had at least one child).

Exhibit 2-2. Compass FSS Participants: Household Composition at Baseline

<table>
<thead>
<tr>
<th></th>
<th>Compass FSS (N=269)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
</tr>
<tr>
<td>Number of adults</td>
<td>1.6</td>
</tr>
<tr>
<td>Number of children</td>
<td>1.7</td>
</tr>
<tr>
<td>Total number of household members</td>
<td>3.3</td>
</tr>
<tr>
<td>Households with more than one adult</td>
<td>40.9%</td>
</tr>
<tr>
<td>Households with any children</td>
<td>78.1%</td>
</tr>
</tbody>
</table>

SOURCE: HUD PIC 50058 data for HCV recipients, October 2010-March 2016. NOTE: Baseline is defined as the date of enrollment in FSS for each household.

2.3 Changes in Earnings and Benefits Receipt for Compass FSS Participants

On average, Compass FSS participants have made substantial progress in increasing their household earnings and reducing their income from welfare. The most recent annual earnings estimate for households participating in Compass FSS in our dataset (reflecting income recertifications through March 2016) averaged $27,923 for participants who enrolled in FSS prior to March 2015. This is more than 30 percent higher than at baseline, which was $21,320 (Exhibit 2-3).

Annual income from welfare for Compass FSS households decreased from an average of $789 at baseline to an average of $575 as of March 2016, a decline of almost one-third. The welfare measure includes benefits from the Temporary Assistance for Needy Families (TANF) program and payments from state, local, or tribal programs for financial or medical assistance. Social Security Disability Income (SSDI), Supplemental Security Income (SSI), old age Social Security, and pensions income increased by 17 percent. “Other income” – which includes child support payments, medical reimbursements, Indian trusts receipt, Unemployment Insurance benefits, and other nonwage income – decreased by about 27 percent.
Exhibit 2-3. Compass FSS Participants: Changes over Time in Average Annual Earnings and Benefits Receipt of Households

<table>
<thead>
<tr>
<th></th>
<th>Enrollment</th>
<th>1st Quarter 2016</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings</td>
<td>$21,320</td>
<td>$27,923</td>
<td>31%</td>
</tr>
<tr>
<td>Welfare</td>
<td>$789</td>
<td>$575</td>
<td>-27%</td>
</tr>
<tr>
<td>SSDI, SSI, Pension, and Social Security</td>
<td>$1,500</td>
<td>$1,761</td>
<td>17%</td>
</tr>
<tr>
<td>Other income</td>
<td>$2,499</td>
<td>$1,826</td>
<td>-27%</td>
</tr>
<tr>
<td>Total</td>
<td>$26,108</td>
<td>$32,085</td>
<td>23%</td>
</tr>
</tbody>
</table>

NOTE: The enrollment columns of this table show household income by source as of the date of enrollment into FSS. Data in the 1st Quarter 2016 columns represent the most recent income recertification available in the PIC dataset as of March 31, 2016. This table uses imputed values for households that exited the HCV program prior to Q1 2016.

In Massachusetts, a family may not receive TANF for more than two years (except under certain circumstances) and then may apply again after five years without TANF. This policy makes the changes in welfare income difficult to interpret. A further complication is the fact that participation in benefits programs is relatively uncommon among Compass FSS participants. Just under 15 percent of Compass FSS participants in Lynn and Cambridge received any welfare income at enrollment (Exhibit 2-4). By the end of our follow-up period, the share who received welfare income fell to 9.3 percent, a statistically significant change.

SSI, pensions, and Social Security income were also relatively uncommon for Compass FSS participants and did not change substantively. Nearly a third (30.9 percent) received other income benefits or payments at baseline. This fell somewhat to 24.2 percent by the end of the study period.

Exhibit 2-4. Compass FSS Participants: Share Receiving Income from Benefits

<table>
<thead>
<tr>
<th></th>
<th>Enrollment</th>
<th>1st Quarter 2016</th>
<th>Change (percentage pts)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welfare</td>
<td>14.9%</td>
<td>9.3%</td>
<td>-5.6</td>
<td>0.0189**</td>
</tr>
<tr>
<td>SSDI, SSI, Pensions, and Social Security</td>
<td>13.0%</td>
<td>14.5%</td>
<td>1.5</td>
<td>0.3182</td>
</tr>
<tr>
<td>Other Income</td>
<td>30.9%</td>
<td>24.2%</td>
<td>-6.7</td>
<td>0.0019***</td>
</tr>
</tbody>
</table>

NOTE: The enrollment column of this table shows percent with household income source as of households’ dates of enrollment in FSS. Data in the 1st Quarter 2016 column represents the most recent income recertification available in the PIC dataset as of March 31, 2016. This table uses imputed data for households that exited the HCV program prior to Q1 2016.  
* / ** / *** indicates earnings statistically different from baseline earnings at the 10, 5, and 1 percent levels, respectively.

This analysis focuses on changes in individual components of income, rather than changes in total household income. Total income can be an ambiguous indicator of economic security, given that increases in earnings may mean a decrease in eligibility for certain income benefits and that some benefits are time-limited. Change in earnings—which increased about 30 percent in each site—is a more direct measure of progress or setbacks toward clients’ FSS goals.
3. Effect of Compass FSS on Earnings and Cash Benefits Receipt: Quasi-Experimental Findings

This chapter summarizes the findings of a quasi-experimental analysis of changes in earnings and public benefits receipt for Compass FSS participants with Housing Choice Vouchers (HCV) in Lynn and Cambridge. More precisely, it addresses the following research question about earnings and benefits:

*What is the effect of Compass’s FSS programs on households who would decide to participate in a Compass FSS program if it were offered to them?*

For this analysis, we study households who enrolled at any point between the start of the Compass FSS programs in the two housing authorities (October 2010 in Lynn and November 2012 in Cambridge) and March 2015 (which allows for at least one year of follow-up data). Our analysis sample is smaller (N=173) than the number of households described in the previous chapter (N=279) because we only examine households for whom we have more complete outcome data (see Section 3.1.1).

To determine the impact of the Compass FSS programs, we compared the earnings and benefits receipt of these households (“participants”) with the earnings and benefits receipt of comparable households participating in other HCV programs in similar urban settings.

Section 3.1 describes the data sources and quasi-experimental design, including the construction of the comparison group. Section 3.2 defines the outcomes that we studied, and explains the regression method we used to estimate impacts. Finally, Section 3.3 presents the impact estimates.

### 3.1 Data Sources and Quasi-Experimental Design

FSS is a voluntary program for housing assistance recipients, and their motivation to participate may affect changes in earnings and benefits receipt that occur during their participation. Therefore, the HCV households in Lynn and Cambridge who do not choose to participate in a Compass FSS program are not a suitable group for comparison. Instead, the comparison group should comprise households who would decide to participate in a Compass FSS program if it were offered to them. Ideally, such a comparison group would be created through random assignment of households that have expressed a willingness to participate in FSS. That approach was not available to us. Instead, we use a quasi-experimental design, selecting a comparison group that is comparable to the Compass FSS participants with respect to (1) HCV participation, (2) propensity to join Compass FSS if it were available to them, based on demographic and baseline income sources, and (3) local labor market opportunities. In the following subsections, we describe the data sources for the quasi-experimental impact analysis and how we selected comparable households.

#### 3.1.1 Data Sources and Panel Construction

Like the descriptive analysis in Chapter 2, the quasi-experimental impact analysis uses data from HUD’s PIC dataset from module Form HUD-50058 that was provided to the study team by HUD. Unlike in Chapter 2, we used an expanded dataset that includes all households using HCVs in all
PHAs in Massachusetts, Rhode Island, and Connecticut that had a HUD-50058 record between July 1, 2007 and March 31, 2016.\textsuperscript{24}

The PIC dataset does not offer information about households prior to their participation in the HCV program, nor does it follow households if they leave the HCV program. We also do not have data explaining why they entered or exited the HCV program. To create a longitudinal dataset, we impute earnings and benefits receipt for missing time periods as equal to the closest observed earnings and benefits receipt. As noted above, because our data are limited to records reported to HUD while households are in the HCV program, we exclude all households from this analysis that have more than 5 continuous quarters of imputed data after January 2011.\textsuperscript{25} Thus, our estimates will exclude any highly successful Compass FSS households that graduated from the FSS program and left the voucher program as well as any unsuccessful FSS household that left the HCV program without graduating from FSS. Similarly among the comparison group, our estimates exclude households who left the HCV program, which may include households who made progress toward economic security as well as those who did not.

In this section, we briefly describe the selection of comparison HCV programs in southern New England where HCV householders are likely to experience similar employment opportunities as households in the Lynn and Cambridge programs. We then present the method of selecting specific households from those comparison HCV programs.

**Selecting Comparison PHAs**

To identify comparison PHAs, we first studied which cities and towns best resemble Lynn and Cambridge. Geographic selection is important, because the employment opportunities and employment support opportunities such as public transportation and childcare options vary across cities. While it is impossible to fully control for the impact of place (e.g., local neighborhood amenities, local housing market, and regional job market) on Compass FSS participants, our approach at least ensures that the HCV holders included in the comparison sample live in census tracts comparable to those occupied by HCV holders in Lynn and Cambridge along observable dimensions.

For PHAs in Massachusetts, Connecticut, and Rhode Island, we evaluated the characteristics of the census tracts in which HCV households for each housing authority live using census tract characteristics from the 2010 U.S. Census. We first weighted these characteristics based on how many voucher households live in a census tract and then standardized these data according to the means and standard deviations of these characteristics across all PHAs. Using these standardized characteristics, we generated a “distance” metric against which the average voucher household census

\textsuperscript{24} Most Compass FSS participants are in an HCV program rather than a public housing program. In order to limit the volume of data and avoid the added level of complexity of performing the propensity score matching for two different program types, only HCV program participants are included in the Compass FSS and comparison group samples.

\textsuperscript{25} In the descriptive analysis covered in Chapter 2, we focus on a larger sample of FSS participants, including all participants regardless of their entry and exit dates in the HCV records.
tract in one housing authority can be compared with the average voucher household census tract in another housing authority.

In addition to applying this measure of the similarity of other PHAs to the Cambridge and Lynn PHAs, we excluded PHAs where more than 5 percent (as of 2014) of non-elderly, non-disabled households were in an FSS program. We selected the 20 most comparable PHA service areas separately for Lynn and for Cambridge. After consulting HUD field offices about the PHAs that passed these tests, we narrowed the list further by excluding statewide PHAs and PHAs that are run by independent nonprofit organizations, as these may be different in important ways from the Cambridge and Lynn PHAs. The remaining list of housing authorities included 15 matches for Lynn and 18 for Cambridge, with some overlap between the two lists, and yielded 21,105 possible comparison households to consider in our analysis who do not have outside-of-sample imputations in and after 2011.

The Lynn and Cambridge PHA operating areas are similar to the selected comparison PHA operating areas on many characteristics. The main differences are that the Lynn and Cambridge areas are slightly more racially diverse, and they have slightly lower overall employment rates but slightly higher average earnings. (Census tract characteristics are detailed in Appendix C of the full report).

Selecting the Earnings and Benefit Comparison Group Members (Propensity Score Matching)

The research question motivating the earnings and benefit analysis asks what effect the Compass FSS would have on households most likely to sign up for a Compass FSS program if it were available to them. Therefore, we needed a process to identify such households. Fortunately, we find informative clues by looking at the households in Lynn and Cambridge. Compass’s FSS program implementation began in late 2010, but we can distinguish households that participate in the program between 2011 and 2015 from households that do not participate in the program over that same period using pre-2011 data for both types of households.

26 Including only PHAs with relatively small FSS programs allows better modeling of comparison group members. In PHAs with large FSS programs (or FSS programs serving a relatively high percentage of the target population), many of the households who would otherwise be good candidates for the comparison group may be participating in another FSS program. Our analysis limits them from the comparison group in order to estimate the absolute effects of the Compass FSS programs rather than the relative effects between the Compass FSS programs and other FSS programs.

27 Out-of-sample imputations refer to cases where data are missing because of likely exits from the HCV program. A household is out-of-sample when there is a record of an exit from HCV (even if there is a subsequent record of re-entry) and where one could infer a likely exit from HCV because there is no record for 5 or more quarters, indicating the possible absence of an annual recertification.

28 The Compass FSS households in Lynn and Cambridge enrolled at various times, and thus by studying outcomes in the first quarter of 2016, we are averaging the program’s effects over a duration that varies from 1 to 6 years (the average duration in our sample as of the first quarter of 2016 is 2.9 years). Unfortunately, there is no method using propensity scores to divide the treatment group into cohorts defined by time. Using the household characteristics in the data, there appears to be no discernable difference between households that joined in one year versus another year. Therefore, no propensity score
Modeling the propensity of Cambridge and Lynn HCV participants to enroll in Compass FSS

Compared with Lynn and Cambridge households who did not participate in the Compass FSS programs at some point between 2011 and 2015, households in the Compass FSS programs were younger, were less likely to have a disability, had more children, and had higher earnings, higher non-welfare sources of non-earnings income (“other income”), lower amounts of Social Security income, and lower total income after adjustments.

Because Compass FSS program participants are distinguishable from non-participants in Lynn and Cambridge, it is feasible to estimate a propensity score model for program participation. The propensity score model “scores” each household on its likelihood of joining a Compass FSS program if it were available to them. In the analysis sample of Compass FSS participants, we excluded households who enrolled in FSS prior to 2011 and households with out-of-sample imputations for any quarter between 2011 and 2015. The remaining Compass FSS households are 95 households in Cambridge and 78 households in Lynn who joined a Compass FSS program at some point between January 2011 and March 2015.

We used a logit propensity score model to estimate the probability that a household joins a Compass FSS program. The estimates show that the covariates do, in fact, have predictive power in determining participation—that is, the model successfully predicts that the Cambridge and Lynn households who joined a Compass FSS program were more likely to do so than households in Cambridge and Lynn who did not join a Compass FSS program.

Applying the propensity score model to choose comparison households

We used the estimates from the propensity score model to generate propensity scores for all of the HCV households in the selected comparison PHAs (these scores represent the predicted propensity of a model to predict when a household would join in one year versus another (at least, within the period from 2011 to 2015).

Of the Lynn and Cambridge households with any FSS records after December 31, 2010, we excluded 112 from the sample because of out-of-sample imputations in any quarter between 2011 and 2015. Another 35 households were excluded because their FSS enrollment date was prior to the start of 2011. A further 25 were excluded because their FSS enrollment date was after March 2015. In contrast, Chapter 2 presents descriptive data on Compass participant experiences with earnings and benefits receipt that do not exclude participants who entered FSS between October 1, 2010, and December 32, 2010, and that do allow imputation following enrollment. For the quasi-experimental impact analysis, it is necessary to limit out-of-sample imputation to ensure comparability between Compass and comparison groups; however, including those with missing data in the descriptive analysis allows for a fuller, more nuanced picture of Compass participant experiences unrestricted by the need to ensure a robust conclusion.

As mentioned in Section 3.1, we exclude households with outside-of-sample imputations in and after 2011. We also exclude households who joined the Compass FSS program in late 2010 when the program began in Lynn, because there are only a small number of households (fewer than 20) and because of timing issues. Because the program began in late 2010, the majority of the participants’ baseline year leading up to joining the program is 2010 rather than 2009.

We estimated the logit model separately for Lynn and for Cambridge, because Lynn and Cambridge FSS participants would be matched to comparison PHAs that are good matches for their city.
EFFECT OF COMPASS FSS ON EARNINGS AND BENEFITS

these households to enroll in Compass FSS if it had been offered to them). For each Compass FSS household, we selected three comparison households from the comparison PHAs (with a separate list for Lynn FSS participants and Cambridge FSS participants) whose propensity scores most closely match those of Compass FSS households.\(^{32}\) This exercise resulted in a comparison group of households that matches the treatment groups’ distribution of propensity scores exactly.

Exhibit 3-1 shows mean household characteristics for the Compass and comparison group households, as well as households excluded from the comparison. The selected comparison households are similar to the Compass FSS households with respect to all characteristics that are most associated with future earnings.\(^{33}\) None of the baseline means for the 15 variables we determined to be predictive of future earnings is statistically different (at \(p<.10\)) between the Compass FSS and comparison group households.\(^{34}\) Furthermore, the Compass FSS households and comparison group households are statistically different, with respect to most characteristics, from households in comparison PHAs who were excluded from the study sample on the basis of their propensity scores.

Exhibit 3-1. Comparison of Compass FSS Households, Comparison Households, and Excluded Households in the Selected Comparison PHAs

<table>
<thead>
<tr>
<th></th>
<th>Compass FSS</th>
<th>Comparison</th>
<th>Excluded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age in Dec 2010</td>
<td>40.44 (9.14)</td>
<td>39.93 (9.38)</td>
<td>.608</td>
</tr>
<tr>
<td>Head of household had disability at time of enrollment</td>
<td>2% (0.15)</td>
<td>3% (0.17)</td>
<td>.659</td>
</tr>
<tr>
<td>Years in voucher program as of Dec 2010</td>
<td>7.62 (5.46)</td>
<td>7.82 (5.23)</td>
<td>.727</td>
</tr>
<tr>
<td>Number of children &lt; age 5, Q4 2010</td>
<td>0.32 (0.60)</td>
<td>0.31 (0.55)</td>
<td>.770</td>
</tr>
<tr>
<td>Number of children age 5-18, Q4 2010</td>
<td>1.18 (1.00)</td>
<td>1.37 (1.13)</td>
<td>.105</td>
</tr>
<tr>
<td>Number of adults, Q4 2010</td>
<td>1.49 (0.77)</td>
<td>1.42 (0.68)</td>
<td>.396</td>
</tr>
<tr>
<td>Annual earnings in Q4 2010</td>
<td>$20,103 ($16,029)</td>
<td>$18,926 ($15,960)</td>
<td>.494</td>
</tr>
</tbody>
</table>

\(^{32}\) Comparison household selection is done “without replacement,” and thus the ordering of the comparison households in the dataset matters. We randomly sort the comparison households prior to selection by generating a random number for each one, and sorting on those random numbers.

\(^{33}\) We identified these characteristics through a separate regression of the HCV households in our dataset.

\(^{34}\) Differences in means on a number of variables, however, including welfare income, are close to being statistically significant. We discuss the baseline values for welfare income and welfare receipt in the context of interpreting our impact findings in Section 3.2.
### Change in earnings from Dec 2009 to Dec 2010

<table>
<thead>
<tr>
<th></th>
<th>Compass FSS</th>
<th>Comparison</th>
<th>Excluded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (Stdev)</td>
<td>$367 ($11,034)</td>
<td>$755 ($9,956)</td>
<td>.732</td>
</tr>
<tr>
<td>p-Value</td>
<td></td>
<td></td>
<td>$-226 ($6,998)</td>
</tr>
</tbody>
</table>

### Change in earnings from Dec 2008 to Dec 2010

<table>
<thead>
<tr>
<th></th>
<th>Compass FSS</th>
<th>Comparison</th>
<th>Excluded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (Stdev)</td>
<td>$1,348 ($13,055)</td>
<td>$104 ($12,790)</td>
<td>.297</td>
</tr>
<tr>
<td>p-Value</td>
<td></td>
<td></td>
<td>$-546 ($8,849)</td>
</tr>
</tbody>
</table>

### Change in earnings from Dec 2007 to Dec 2010

<table>
<thead>
<tr>
<th></th>
<th>Compass FSS</th>
<th>Comparison</th>
<th>Excluded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (Stdev)</td>
<td>$705 ($14,624)</td>
<td>$844 ($13,907)</td>
<td>.313</td>
</tr>
<tr>
<td>p-Value</td>
<td></td>
<td></td>
<td>$-711 ($9,735)</td>
</tr>
</tbody>
</table>

### Annual welfare receipt in Q4 2010

<table>
<thead>
<tr>
<th></th>
<th>Compass FSS</th>
<th>Comparison</th>
<th>Excluded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (Stdev)</td>
<td>$687 ($1979)</td>
<td>$1,055 ($2,493)</td>
<td>.129</td>
</tr>
<tr>
<td>p-Value</td>
<td></td>
<td></td>
<td>$2,137 ($3,956)</td>
</tr>
</tbody>
</table>

### Annual other non-wage income in Q4 2010

<table>
<thead>
<tr>
<th></th>
<th>Compass FSS</th>
<th>Comparison</th>
<th>Excluded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (Stdev)</td>
<td>$3,049 ($6,421)</td>
<td>$4,043 ($6,786)</td>
<td>.166</td>
</tr>
<tr>
<td>p-Value</td>
<td></td>
<td></td>
<td>$2,183 ($4,694)</td>
</tr>
</tbody>
</table>

### Annual Social Security income in Q4 2010

<table>
<thead>
<tr>
<th></th>
<th>Compass FSS</th>
<th>Comparison</th>
<th>Excluded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (Stdev)</td>
<td>$764 ($3,334)</td>
<td>$945 ($2,773)</td>
<td>.583</td>
</tr>
<tr>
<td>p-Value</td>
<td></td>
<td></td>
<td>$6,384 ($6,701)</td>
</tr>
</tbody>
</table>

### Annual adjusted income Q4 2010

<table>
<thead>
<tr>
<th></th>
<th>Compass FSS</th>
<th>Comparison</th>
<th>Excluded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (Stdev)</td>
<td>$23,052 ($13,792)</td>
<td>$20,835 ($12,449)</td>
<td>.117</td>
</tr>
<tr>
<td>p-Value</td>
<td></td>
<td></td>
<td>$14,185 ($9,610)</td>
</tr>
</tbody>
</table>

### Welfare receipt at baseline

<table>
<thead>
<tr>
<th></th>
<th>Compass FSS</th>
<th>Comparison</th>
<th>Excluded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (Stdev)</td>
<td>12% (0.32)</td>
<td>17% (0.37)</td>
<td>.181</td>
</tr>
<tr>
<td>p-Value</td>
<td></td>
<td></td>
<td>43% (0.50)</td>
</tr>
</tbody>
</table>

| N              | 173         | 519        | 16,701   |

**Source:** HUD PIC 50058 data for HCV participants in MA, CT, and RI public housing agencies, July 2007-March 2016.

*/**/*** indicates earnings statistically different from baseline earnings at the 10, 5, and 1 percent levels, respectively.

In summary, our methodology selected comparison households who live in similar types of neighborhoods as the Compass FSS households, have the same likelihood of joining a Compass FSS program if it were available to them, and are similar on most characteristics most predictive of future earnings growth (i.e., the characteristics in Exhibit 3-1). In Section 3.2, we analyze whether earnings and public benefits receipt at the end of the study period differ among Compass FSS households and comparison households.

### 3.2 Impact Analysis

Controlling for baseline characteristics, we compare earnings and public benefits receipt among Compass FSS households with the earnings and public benefits receipt of the households in the earnings and benefits comparison group. We analyze several outcome measures that describe household earnings and benefits receipt:

- **Most recent earnings.** Annual earnings as of the first quarter of 2016 based on the most recent earnings estimate in the PIC data.

- **Average annual earnings.** The average annual earnings reported by the household between January 2011 and the first quarter of 2016.

- **Most recent welfare.** Annual welfare income as of the first quarter of 2016, based on the most recent earnings estimate in the PIC data.
• **Average annual welfare.** The average annual welfare income reported by the household between January 2011 and the first quarter of 2016.

• **Most recent Social Security and pension income.** SSI, SSDI, or Social Security old age income and annual pension income as of the first quarter of 2016, based on the most recent earnings estimate in the PIC data.

• **Average annual Social Security and pension incomes.** The average SSI, SSDI, Social Security, and pension income reported by the household between January 2011 and the first quarter of 2016.

• **Most recent other income.** Annual other income as of the first quarter of 2016, based on the most recent earnings estimate in the PIC data. The “other income” category, as defined by HUD on Form 50058 for households receiving rental subsidies, includes child support, medical reimbursement, Indian trusts receipt, Unemployment Insurance benefits, and income from other nonwage sources.

• **Average annual other income.** The average annual other income reported by the household between January 2011 and the first quarter of 2016.

We analyze two versions of each outcome variable: the **most recent** annual amount and the **average** annual amount over the course of the analysis period. The average measure helps to smooth out variations over time in a volatile measure such as earnings. It also provides a window into what happens in between the baseline and most recent estimates of income receipt. This measure is especially important for welfare, as TANF (the main welfare program) is time limited: standard eligible recipients can receive up to 24 months of benefits every 5 years (there are exceptions for those with health problems, domestic violence, or pregnancy).

As of December 2010, the average earnings of households who joined Compass FSS between January 2011 and March 2015 was $20,103. By early 2016, their average earnings had increased to $29,088. By contrast, the average earnings of the comparison group increased by a much smaller amount, from $18,926 to $22,876. These are the unadjusted means, prior to controlling for any differences in baseline characteristics.

The purpose of this analysis is to study how much of the Compass FSS households’ increase in earnings since December 2010 is attributable to Compass FSS. To do so, we compare this increase with earnings trends in the comparison group using a model that controls for household characteristics as of December 2010. For this comparison, we estimate a linear regression of the treatment indicator variable (FSS; in Equation 1) and control variables (X; in Equation 1) on outcomes (Y; in Equation 1). For control variables, we use the characteristics which we selected because they significantly predict future earnings when looking at just the comparison group (as explained in Section 3.1. The list of characteristics is included in Appendix D of the full report).

\[ Y_i = \alpha + \delta FSS_i + \beta X_i + \epsilon_i \]  

Exhibit 3-2 (on page 22) summarizes the results of our analysis and the estimated impact of participation in the Compass FSS program. The first column, “Impact”, shows the estimated impact of Compass FSS participation, i.e., the average change in the outcome variable since baseline (the final quarter of 2010) that is attributable to participation in the Compass FSS program, while
controlling for the baseline variables (see Equation 1). The second column, “p value”, indicates the probability that the impact is equal to zero. P values less than .10 indicate statistically significant impact estimates. The third column shows the expected average outcome if a household were to participate in the Compass FSS program, whereas the last column shows the expected average outcome if the household were not to participate. For example, we estimate that, after applying the control variables, the average annual earnings of a household participating in Compass FSS would be $29,135 by the first quarter of 2016 (first row), whereas the average annual earnings of a similar household not participating in the Compass FSS program would be $22,830.

### 3.3 Impact of Compass on Earnings and Public Benefits Receipt

We find that, controlling for covariates, households in the Compass FSS programs in Lynn and Cambridge had two statistically significant differences in outcomes compared with the households in the comparison group.

#### Impact on Gains in Earnings

The analysis finds that participation in the Compass FSS program led to an estimated gain in annual household earnings that was $6,305 larger than the gain the average household would have experienced had it not participated in Compass FSS (first row).

If we look instead at average annual earnings over the entire study period (second row), the analysis finds that Compass FSS is associated with a gain in earnings that was $3,631 larger than the gain the average household would have experienced had it not participated in Compass FSS. To the extent that Compass participants make progress in increasing their earnings over time, one would expect that the gain in average annual earnings would be lower than the difference between baseline and most recent earnings. The impact on average annual earnings may also be lower than the impact on recent earnings because some households might have first invested time in education or job training programs before scaling up their work effort. The increases in earnings measures associated with Compass FSS are statistically significant ($p<.001$).

We have analyzed earnings at the household level, rather than the individual level, and some households include more than one earner. Compass households have less of a disincentive to add earners than households who do not participate in an FSS program. While there was no significant difference in the number of earners per household between the Compass and comparison households at baseline, there was a significant difference at the end of the analysis period. In 28 percent of Compass households there was at least one earner at the end of the analysis period who was not head of household, compared to 13 percent for comparison households. However, these additional earners do not explain all of the positive impact of Compass on household income. Looking only at earnings of the head of household, Compass had an impact of $3,084 and $2,210 on earnings gains and average earnings over the study period ($p=.008$ and $.002$, respectively).

#### Impact on Welfare Receipt

We find that Compass FSS is associated with lower household welfare amounts. Participation in the Compass FSS program was associated with a $496 or a $761 reduction in average household welfare benefit amount, depending on which of the two measures is used, most recent or average annual welfare income.
EFFECT OF COMPASS FSS ON EARNINGS AND BENEFITS

Welfare receipt is constrained by statutory time limits, which makes it difficult to study and interpret changes over time. We thus urge a measure of caution in interpreting the welfare results. The need for caution is reinforced by the fact that the propensity model does not completely balance the Compass FSS households and the comparison group samples based on welfare eligibility during the study period. As shown in Exhibit 3-1, at baseline, 12 percent of Compass FSS participants received any welfare, as did 17 percent of the comparison group households. At the end of the study period, 10.4 percent of Compass FSS participants received welfare, as compared with 20 percent in the comparison group (not shown).

Compass FSS participation has no detectable effect on household levels of SSI, SSDI, and Social Security income, pension income, or other income. The “other income” category includes child support, medical reimbursement, Indian trusts receipt, Unemployment Insurance benefits, and income from other nonwage sources.

### Exhibit 3-2. Impact of Compass FSS Program on Earnings and Public Benefits Receipt

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Impact (Standard Error)</th>
<th>p-Value</th>
<th>Expected Outcome If in Compass FSS Program</th>
<th>Expected Outcome If Not in Compass FSS Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most recent</td>
<td>$6,305 ($1,371)</td>
<td>&lt;.001***</td>
<td>$29,135</td>
<td>$22,830</td>
</tr>
<tr>
<td>Average annual</td>
<td>$3,631 ($724)</td>
<td>&lt;.001***</td>
<td>$23,522</td>
<td>$19,891</td>
</tr>
<tr>
<td>Welfare</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most recent</td>
<td>−$496 ($171)</td>
<td>.004***</td>
<td>$642</td>
<td>$1,138</td>
</tr>
<tr>
<td>Average annual</td>
<td>−$761 ($130)</td>
<td>&lt;.001***</td>
<td>$929</td>
<td>$1,690</td>
</tr>
<tr>
<td>SSI, SSDI, Social Security, and Pension Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most recent</td>
<td>−$247 ($289)</td>
<td>.393</td>
<td>$1,600</td>
<td>$1,847</td>
</tr>
<tr>
<td>Average annual</td>
<td>−$190 ($180)</td>
<td>.293</td>
<td>$1,307</td>
<td>$1,497</td>
</tr>
<tr>
<td>Other Income</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Most recent</td>
<td>$193 ($306)</td>
<td>.531</td>
<td>$1,893</td>
<td>$1,700</td>
</tr>
<tr>
<td>Average annual</td>
<td>−$19 ($213)</td>
<td>.931</td>
<td>$2,357</td>
<td>$2,375</td>
</tr>
</tbody>
</table>

*a* The impact is equal to the change in outcome measure since baseline that is attributable to enrolling in the Compass FSS program.

*b* The means presented in this table are regression-adjusted means. That is, they are the average outcome that the full sample (Compass FSS + Comparison) would have if it were in Compass, and the average outcome that the full sample (Compass FSS + Comparison) would have if it were not in Compass. These regression-adjusted means are our primary focus, rather than the unadjusted means mentioned earlier in this text, because they are more representative of the impact of participation in Compass on the whole analysis sample.

**Notes:** There are 173 in the treatment group and 519 in the control group. Sample weights are used so that the effective sample size in the control group is 173, the same as the treatment group. ***/*** indicate *p* values less than 0.1, 0.05, and 0.01, respectively.

### Limitations of Analysis
These estimates could be biased upwards or downwards due to a range of factors. The estimates could be biased upward due to selection bias; households that anticipate a rise in income have a larger financial incentive to join FSS than households who do not anticipate a rise in income, and households who choose to sign up for the FSS program may be more focused on improving their financial situation, a priori. Our approach rests on removing selection bias using control variables and propensity score matching. Still, our results may be biased in either a downwards or upwards direction due to the exclusion of households that left the HCV program at least one year before the end of the study period.
This chapter examines the extent to which the FICO® Scores and debt levels of Compass FSS participants with Housing Choice Vouchers (HCV) in Lynn and Cambridge change over time, and how any changes compare with changes in a comparison group provided by the Experian credit bureau. Specifically, this analysis addresses the following research question:

*How do changes over time in credit scores and debt profiles for Compass’s FSS participants compare with changes in credit scores and debt profiles for other households with similar characteristics during the same period?*

For this analysis, we studied participants in the Compass FSS programs in Cambridge or Lynn at any point between December 2010 and June 2015, including:

- Those with HCVs in Cambridge and Lynn;
- Those living in LHAND public housing; and
- Lynn residents who received HCVs through the Massachusetts Boston Housing Partnership (MBHP).

We contrast the changes in FICO® Score and debt (including total debt and types of debt) for these Compass FSS participants with the changes experienced by individuals with certain similar characteristics during the same time periods (credit and debt comparison group).

In the following sections, we describe the data sources and methodology (Section 4.1), the experiences of the two groups at baseline (Section 4.2), and the similarities and differences between the two groups. We then report the changes in FICO® Scores (Section 4.3) and debt levels (Section 4.4) experienced by each group. For this analysis, we explore the differences between those changes, a “difference in difference” comparison that might reflect the effect of participating in the Compass FSS program.

Because the credit and debt comparison group does not consist of individuals participating in the HCV or public housing programs and we do not control for a broader range of baseline characteristics, we do not describe this analysis as quasi-experimental and do not use the term “impact” to describe the difference between the changes we observe in the Compass and comparison groups. We do believe, however, that the comparison group provides a useful benchmark for assessing the progress made by Compass FSS participants.

### 4.1 Data and Methodology

To provide context for interpreting the changes over time in the FICO® Scores and debt levels of Compass FSS participants, we sought a comparison group of individuals similar to those participants to suggest how FICO® Scores and debt levels would have changed over time in the absence of the Compass program.

Ideally, we would have created the credit and debt comparison group by obtaining FICO® Score data for heads of household in HCV programs who are not enrolled in a Compass FSS program. However,
because of the expense required to obtain consent and the potential refusal of people not participating in FSS to permit the study team to pull their credit reports, this option was not feasible. Instead, the Experian credit bureau offered to support this research by giving us annual longitudinal, de-identified data on randomly selected people who met criteria that we specified. Experian provided a comparison group of consumers in the same census tracts with similar ranges of credit, debt, and demographic characteristics over time periods similar to those during which Compass FSS participants were in the FSS program. The comparison group differs from the Compass FSS participants in that the vast majority do not receive rental housing assistance through the HCV or public housing program, and in that the vast majority have likely not chosen or sought to participate in a program that offers to help them improve their financial situation.

This section describes (1) the data sources used for this analysis and (2) how we selected the comparison group for whom Experian provided data.

4.1.1 Data Sources

For the analysis of changes in FICO® score and debt, we use two data sources.

Compass FSS Participant Data

For Compass FSS participants, we received data gathered by Compass Working Capital on its participants in Lynn and Cambridge. These data include FICO® Scores and debt information pulled by Compass with participants’ consent upon initial enrollment in FSS pre-program workshops and for semi-annual appointments with Compass financial coaches. The source of these data was the Experian credit bureau, but it was processed and provided to Compass by Kroll Factual Data, using its Bureau Express® tool to pull credit reports. Financial coaches entered these data into report fields in the Compass case management system. When transmitting these data to the Abt study team, Compass provided its decision rules for how financial coaches entered data into the case management system.

These data start with the first enrollees in the Compass FSS programs (October 2010) and continue through June 2015, when Compass moved to a new system that uses data from a different credit bureau and processor. To ensure data comparability over time, we made June 2015 the end point for the comparison between Compass FSS participants and the comparison group. Consent forms signed by participants permitted credit bureau data entered into the case management system to be used in program evaluation, but did not include permission to obtain additional historical or future credit and debt data and use it for an evaluation.

The analysis covers 280 Compass participants who had at least one year of follow-up data available for analysis. In order to persist in the Compass FSS administrative dataset, FSS participants had to

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35 The numbers of Compass FSS participants included in the earnings and public benefits receipt analyses described in Chapter 3 and the credit and debt analyses in this chapter vary for several reasons, including differences in time periods of data availability and types of participants included. The HUD PIC dataset provided to the study team for analysis of earnings and benefits runs through March 2016, whereas the Compass FSS administrative dataset based on Experian credit reports runs through June 2015. In addition, the earnings and benefits analysis includes only households in the Cambridge and Lynn HCV programs, whereas the credit and debt analysis includes households in the Cambridge and Lynn HCV programs, plus
remain in the program following enrollment. Those who exited the program, either actively or 
passively (by not meeting with their financial coach) or who left housing assistance prior to one 
year following enrollment were not included in the analysis. In total, there are four people who initially 
enrolled in Compass FSS prior to June 2014 but had no data following their initial enrollment and so were not included in this analysis. Participants who left the program after accumulating one year or more of follow-up data are included in this analysis even if they subsequently left the Compass FSS program, were terminated from the Compass FSS program, or left the housing authority entirely.

**Comparison Group Data**

For the comparison group, Compass and Abt worked with the Experian credit bureau, which provided data as comparable as possible to the Compass-processed data, in an annual longitudinal file. These data were pulled in annual cohorts designed to roughly match enrollment in a Compass FSS program (for those included in the Compass analysis dataset). The first comparison group cohort data starts in December 2010 and the final annual data pull is in December 2014. The selection of the comparison group is described below.

**Comparability of data**

There are some differences between the Experian data variables themselves and the ones in Compass’s system tracked for its FSS participants, primarily because Compass received the initial data from a third-party provider, which did some processing and labeling for simplicity, and because Compass financial coaches combined some of those variables (e.g., specific types of debt) into a smaller number of fields that are most useful for tracking participant progress and providing financial coaching. The FICO® credit scores included in the Compass and comparison group data sources are fully comparable. For individual debt categories (e.g., auto loan debt), Compass’s system combines non-derogatory and derogatory debt, and it is not possible to separate these categories. For some debt categories, the Experian database used to create the comparison group offers only non-derogatory debt as an available variable. Thus, it is impossible to develop an apples-to-apples comparison of changes in some debt categories between the two samples (e.g., auto debt and student debt; and Compass has also constructed an “other debt” category that cannot be appropriately matched with Experian data).

In this report, we have included these non-comparable categories in descriptive tables only, to help describe and understand the components of debt within each of the samples (but not to compare directly between the two). For total debt and credit card debt, we combined derogatory debt with non-derogatory debt for comparability between the Compass and Experian datasets, and both data sources have a variable for total derogatory debt (though, given that the data processed by Kroll provided some proprietary summarizing, there still may be some subtle differences in which debt is included in derogatory debt for each category).

those in Lynn public housing programs and a handful of participants residing in Lynn who receive their housing assistance from MBHP but participate in the Compass FSS program.
4.1.2 Experian Comparison Dataset Selection

A random selection of people in the United States would not be comparable to participants in the Compass FSS programs, who are low-income households receiving housing subsidies, mostly women, and geographically concentrated in Lynn and Cambridge, Massachusetts. Instead, based on our analysis of the characteristics of the 280 participants in the Compass FSS program for whom we had at least one year of follow-up data, we provided Experian with guidelines for selecting a subset of the U.S. population from which to randomly draw comparison households.

The first guideline was to select households who reside in the same census tracts as the Compass households. Although this guideline creates an opportunity for the comparison sample to include some of the Compass households, we concluded that this “contamination” would be minimal because Lynn and Cambridge are large cities and the majority of low-income households do not receive housing subsidies. The second set of criteria was to focus only on women who are not married, are under the age of 50, and do not have mortgage debt. Within the group who meet these geographic and demographic selection criteria, we specified the following additional selection criteria:

1. Select 12 percent who do not have FICO® Scores at baseline and whose baseline earnings and income levels fall between $0 and the 75th percentile earnings and income levels of Compass participants who did not have FICO® Scores.

2. Next, select 22 percent who have FICO® Scores at baseline below the 25th percentile of FICO® Scores of Compass participants, and who have baseline earnings and income levels between $0 and the 75th percentile earnings and income levels of Compass participants whose FICO® Scores are in this first quartile.

3. Next, select 22 percent who have FICO® Scores at baseline between the 25th and 50th percentiles of FICO® Scores of Compass participants, and who have baseline earnings and income levels between $0 and the 75th percentile earnings and income levels of Compass participants whose FICO® Scores are in this second quartile.

4. Next, select 22 percent who have FICO® Scores at baseline between the 50th and 75th percentiles of FICO® Scores of Compass participants, and who have baseline earnings and income levels between $0 and the 75th percentile earnings and income levels of Compass participants whose FICO® Scores are in this third quartile.

5. Next, select 22 percent who have FICO® Scores at baseline above the 75th percentiles of FICO® Scores of Compass participants, and who have baseline earnings and income levels between $0 and the 75th percentile earnings and income levels of Compass participants whose FICO® Scores are in this fourth quartile.

Finally, because Compass FSS participants join the program at various points in time throughout the study period, we asked Experian to draw up a similarly “stacked” longitudinal dataset. Specifically, 25 percent of the selected individuals were selected based on their December 2010 credit, income, and earnings levels and were followed for 4 years; 25 percent based on their December 2011 levels.

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Credit bureaus do not receive direct information on consumer earnings or income; however, Experian produces consumer earnings and income estimates that correlate with earnings and income by applying a proprietary model that makes use of known information in the consumer’s credit and debt profile.
and followed for 3 years; 25 percent based on their December 2012 levels and followed for 2 years; and 25 percent based on their December 2013 levels and followed for 1 year.

Though the resulting sample of comparison households is roughly comparable to the Compass sample, there were some differences owing to constraints in selection criteria and processes. To further increase comparability, we use sample weights to make the individuals selected by Experian for the comparison group more equivalent to the Compass FSS households on baseline variables—specifically, credit score and credit card debt, which are relatively unambiguous indicators of financial health and access to credit and other services. To do this, we non-parametrically characterized the joint distribution of Compass FSS participants’ FICO® Scores and credit card debts using 100 bins. For each bin, we assigned a weight to Experian households equal to the proportion of Compass FSS participants in that bin divided by the proportion of comparison group participants in that bin. As a result, the weighted distribution of comparison group households’ FICO® Scores and credit card debt at baseline looks nearly identical to that of the Compass FSS participants’. In the next section we show the extent to which the resulting weighted comparison group is comparable to the Compass FSS participant sample.

4.2 Baseline Characteristics of Compass FSS Participants and Comparison Group Members

As just described, the members of the comparison group were chosen to mirror the characteristics of Compass FSS participants at baseline as closely as possible given the available information, and then weighted to further increase the precision of the match. “Baseline” dates are the dates that Compass FSS participants enrolled in the FSS program and that comparison group members entered the sample (selected to mirror Compass FSS enrollment dates). Exhibit 4-1 shows baseline demographic characteristics and average FICO® Score and debt baseline levels. All numbers provided in this analysis are weighted sample numbers. Almost all (93 percent) of the heads of households participating in Compass FSS are female, and the vast majority (79 percent) are under the age of 50. Almost three-quarters (71 percent) are unmarried. Given that there was no opportunity to match Compass participants one-to-one to Experian participants and there was a compelling need to keep selection criteria relatively simple, we used these baseline characteristics (female and unmarried) to restrict the sample. While this results in an imperfect comparison on demographic characteristics, it allowed for stratification in ranges of credit scores, total debt, and estimated income.
Exhibit 4-1. Compass FSS Participants versus Comparison Group: Average Credit, Debt, and Earnings Characteristics at Baseline

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Compass</th>
<th>N</th>
<th>Comparison Group</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>280</td>
<td>93.2%</td>
<td>1,936</td>
<td>100%</td>
<td>.000***</td>
</tr>
<tr>
<td>Married</td>
<td>280</td>
<td>28.9%</td>
<td>1,936</td>
<td>0%</td>
<td>.000***</td>
</tr>
<tr>
<td>Over age 50</td>
<td>280</td>
<td>20.1%</td>
<td>1,936</td>
<td>0%</td>
<td>.000***</td>
</tr>
<tr>
<td>FICO® Score</td>
<td>253</td>
<td>616.9</td>
<td>1,525</td>
<td>611.7</td>
<td>.344</td>
</tr>
<tr>
<td>No FICO® score</td>
<td>280</td>
<td>9.3%</td>
<td>1,936</td>
<td>8.5%</td>
<td>.674</td>
</tr>
<tr>
<td>Estimated annual earnings</td>
<td>280</td>
<td>$22,753</td>
<td>1,936</td>
<td>$26,982</td>
<td>.000***</td>
</tr>
<tr>
<td>Total debt</td>
<td>279</td>
<td>$15,081</td>
<td>1,898</td>
<td>$9,218</td>
<td>.000***</td>
</tr>
<tr>
<td>Credit card debt</td>
<td>279</td>
<td>$3,267</td>
<td>1,898</td>
<td>$2,640</td>
<td>.014**</td>
</tr>
<tr>
<td>Derogatory debt</td>
<td>279</td>
<td>$3,322</td>
<td>1,898</td>
<td>$2,993</td>
<td>.422</td>
</tr>
</tbody>
</table>


NOTE: Ns vary where debt and FICO® Score information is missing. Additionally, in order to prevent debt averages skewed by outliers, we excluded from all debt analysis (but not the analysis of FICO® Score) any households that held mortgages during the analysis period. This included 1 individual (0.4 percent) in the Compass sample and 40 (2 percent) in the comparison group sample. None in either sample had any mortgage debt at baseline.

* / ** / *** indicates statistically different from baseline at the 10, 5, and 1 percent levels, respectively.

In Exhibit 4-1, we show the average baseline levels for the Compass FSS participants and the comparison group for FICO® Score, total debt (non-derogatory and derogatory), credit card debt, and total derogatory debt, as well as the percentage of each sample with no FICO® Score at baseline. This exhibit also includes a statistical test as to whether differences between the two samples are greater than differences that might occur randomly. We have also included estimated annual earnings in this table. The debt measures include comparable debt components between the Compass and comparison group samples.

There are some differences at baseline in characteristics between the two samples, resulting from limitations on sample stratification and weighting (all numbers provided in these exhibits are based on a weighted sample). Compass participants, for instance, held an average of almost two-thirds more debt overall ($15,081 versus $9,218) and about 20 percent more credit card debt ($3,267 versus $2,640) than did members of the comparison group. The p-values for the difference in total debt between the two groups are below .05, indicating that there is a statistically significant difference between the two samples on this characteristic.

However, the key outcome variables of FICO® Score and derogatory debt level are fairly comparable between the two samples at baseline, with the Compass FSS participants and the comparison group members averaging FICO® Scores of 617 and 612 and derogatory debt levels of $3,322 and $2,993, respectively. For neither of these measures is the difference between the two samples statistically significant (at either p<.05 or p<.1). At baseline, 9.3 percent of Compass FSS participants have no FICO® Score, compared with 8.5 percent of comparison group members. This difference is not statistically significant.
As shown in Exhibit 4-2, examining the 25th, 50th (median), and 75th percentiles of the FICO® Score, debt, and income characteristics at baseline provides additional context. Between the two groups, FICO® Score remains comparable when examining the quartiles; the medians (605 and 604, respectively) are virtually identical; and the distributions of the two groups’ FICO® Scores are similar.

Compass FSS participants have a higher mean total debt ($15,081) than do comparison group members ($9,218; see Exhibit 4-1), and the Compass group’s median is somewhat higher than the comparison group’s ($7,690 vs. $6,190; Exhibit 4-2). The distribution is roughly similar.

The mean total derogatory debt between the two groups is roughly similar at baseline (see Exhibit 4-1), as is the distribution within groups. In addition, most Compass FSS participants have derogatory debt at baseline (Exhibit 4-2, median=$774) that is well below the Compass mean of $3,322 (see Exhibit 4-1), and the same is true for comparison group members. This suggests that in both samples, a relatively small proportion of households with very high derogatory debt skew the mean upwards.

Earnings (for the comparison group, these are estimated by Experian based on other characteristics) show some differences in distribution beyond what we see with the means. The Compass group’s earnings have a lower median ($23,090 compared to $28,000 in the comparison group) and skew more widely than the comparison group’s. One-quarter of Compass participants have baseline earnings below $8,554, which is substantially lower than the comparison group’s bottom quartile of $23,000. This suggests that, at baseline, a substantial share of Compass FSS participants were living well below the poverty level whereas comparison group members may not have been. On the whole, while the samples are somewhat similar, the Compass FSS participants have higher debt levels and lower earnings levels at baseline.

Exhibit 4-2. Compass FSS Participants versus Comparison Group: Credit, Debt, and Income Characteristics at Baseline, by Percentile

<table>
<thead>
<tr>
<th></th>
<th>Compass</th>
<th>Comparison Group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>25th Percentile</td>
<td>50th Percentile</td>
</tr>
<tr>
<td>FICO® Score</td>
<td>556</td>
<td>605</td>
</tr>
<tr>
<td>Estimated earnings</td>
<td>$8,554</td>
<td>$23,090</td>
</tr>
<tr>
<td>Total debt</td>
<td>$2,351</td>
<td>$7,690</td>
</tr>
<tr>
<td>Credit card debt</td>
<td>$0</td>
<td>$1,180</td>
</tr>
<tr>
<td>Derogatory debt</td>
<td>$0</td>
<td>$774</td>
</tr>
</tbody>
</table>


4.3 Comparison of Changes in FICO® Scores

This section describes changes in FICO® Scores between baseline and endline for Compass FSS participants and for comparison group households. The endline date is the most recent available FICO® Score as of June 2015 for Compass FSS participants and December 2014 for all comparison group members. FICO® Scores can vary in multiple meaningful ways. Individuals may have a high or
a low score, which has an effect on credit and interest rates available to them. Some have no FICO® Score calculated at all because of a thin credit file, which limits their access to credit substantially.

Exhibit 4-3 outlines the changes in FICO® Score from baseline to endline for Compass FSS participants and comparison group members who lacked a FICO® Score at baseline. Notably, Compass participants with no FICO® Score at baseline were very likely (81 percent) to have a score at endline, whereas comparison group members who had no FICO® Score at baseline were most likely not to have one at endline either (44 percent). Furthermore, Compass participants who gained a score from baseline to endline had substantially higher average scores (637) than members in the comparison group who gained a score from baseline to endline (555). In all, the share of Compass FSS participants with a FICO® Score increased from 91 percent at baseline to 98 percent at endline, but the share of individuals in the comparison group with a FICO® Score stayed roughly the same.

Exhibit 4-3. Compass FSS Participants versus Comparison Group: Members without Credit Scores at Baseline

<table>
<thead>
<tr>
<th>Compass FSS</th>
<th>At baseline, 9.3 percent of Compass FSS participants had no FICO® Score.</th>
<th>Of those who had no FICO® Score at baseline 80.8% had gained one at endline.</th>
<th>Those participants who “gained” a FICO® Score had an average score of 636.8 at endline.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison Group</td>
<td>At baseline, 8.5 percent of comparison group members had no FICO® Score.</td>
<td>Of those who had no FICO® Score at baseline 43.5% had gained one at endline.</td>
<td>Those participants who “gained” a FICO® Score had an average score of 555.0 at endline.</td>
</tr>
</tbody>
</table>

NOTE: FICO® Score percentages are out of N=280 for Compass and N=1936 for the comparison group.

We also examined the extent to which Compass FSS participants and comparison group members were able to achieve scores that are high enough to access certain types of credit products. Though there is some variation in how lenders use credit scores to assess risk, a score of 660 is often used as a cutoff for prime credit and some mortgage programs (e.g., Massachusetts Boston Housing Partnership’s ONE Mortgage program) have required a score of 660 or above for potential borrowers to be approved for a loan.

As shown in Exhibit 4-4, at baseline, 22 percent of Compass FSS participants had FICO® Scores of 660 or more. More than 90 percent of Compass participants who had a score of 660 or above at baseline maintained a score at this level through endline. Another 16 percent did not have this score at baseline but attained a score at this level by endline. At endline, more than one-third (37 percent) of Compass FSS participants had a score of 660 or above.

Though the same proportion of comparison group members possessed a score at or greater than 660 at baseline, less than three-quarters (73 percent) of comparison group members who had a score of 660

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37 For example, FDIC has included a FICO score of 660 or below as one trigger for defining a borrower as subprime; see https://www.fdic.gov/about/comein/background.html.
or above at baseline maintained a score at this level through endline. Comparison group members were only half as likely (8 percent) as Compass participants to attain a score at this level between baseline and endline (a statistically significant difference between the groups (p<.01)). The proportion of the comparison group with this score remained largely unchanged at endline, at 24 percent; that difference between the samples also is statistically detectable (p<.01).

The difference in experiences between the Compass FSS participants and comparison group members is consistent with the hypothesis that participation in Compass may help participants gain a FICO® Score if they don’t have one and also help participants maintain, gain, or increase a FICO® Score beyond this threshold level.

Exhibit 4-4. Compass FSS Participants versus Comparison Group: Share Who Gain, Lose, and Maintain a “Threshold” FICO® Score between Baseline and Endline

<table>
<thead>
<tr>
<th></th>
<th>Compass</th>
<th>N</th>
<th>Comparison Group</th>
<th>N</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>660 or above at baseline</td>
<td>22.5%</td>
<td>280</td>
<td>21.7%</td>
<td>1936</td>
<td>.762</td>
</tr>
<tr>
<td>660 or above at endline</td>
<td>36.8%</td>
<td>280</td>
<td>24.0%</td>
<td>1936</td>
<td>.000***</td>
</tr>
<tr>
<td>660 or above at both baseline and endline</td>
<td>20.4%</td>
<td>280</td>
<td>15.9%</td>
<td>1936</td>
<td>.058*</td>
</tr>
<tr>
<td>Attained a FICO® Score of 660 or above between baseline and endlinea</td>
<td>16.4%</td>
<td>280</td>
<td>8.1%</td>
<td>1936</td>
<td>.000***</td>
</tr>
<tr>
<td>Lost a FICO® Score of 660 or above between baseline and endlineb</td>
<td>2.1%</td>
<td>280</td>
<td>5.8%</td>
<td>1936</td>
<td>.010**</td>
</tr>
</tbody>
</table>


a Includes increasing score to ≥660 or moving from no score to a score of ≥660.
b Includes decreasing score to <660 or moving from a score of ≥660 to no score.

*/**/*** indicates statistically different changes from baseline at the 10, 5, and 1 percent levels, respectively.

4.3.1 Difference in Changes in Credit Score between Compass and Comparison Groups

In this section, we compare the changes in FICO® Scores experienced by Compass FSS participants between baseline and endline with the changes over a similar time period experienced by comparison group members. (This type of analysis is called “difference in difference.”) To understand whether the Compass FSS participants experienced gains that outpaced those of the comparison group, we have employed a test of statistical likelihood that the average differences in gains or losses between the two groups are meaningfully different from zero. In other words, we examined whether there is reason to believe that the changes experienced by Compass FSS participants are different from the changes experienced by the comparison group in ways that cannot easily be explained by random variation.

In examining these results, it is important to remember that the two samples have similar characteristics at baseline but also have some differences. In addition, Compass FSS participants all participate in housing assistance programs, whereas comparison group members are unlikely to have housing assistance. These caveats aside, the similarities in the comparison group at baseline and that we are comparing the changes between baseline and endline dates rather than the raw characteristics of the two samples suggest some meaningful differences between the two groups’ progress over roughly comparable periods of time.
Exhibit 4-5 shows the difference in difference for three of the primary outcomes related to credit scores: change in FICO® Score for those households who start with a score, change in the percentage who have a FICO® Score, and change in the percentage who have a FICO® Score above 660. On all three outcomes, the Compass FSS participants performed better than the comparison group members, and all three of these differences in differences between the Compass FSS participants and the comparison group members are highly statistically significant ($p<.01$).

### Exhibit 4-5. Compass FSS Participants versus Comparison Group: Average Change in Credit Score Statistics between Baseline and Endline

<table>
<thead>
<tr>
<th></th>
<th>Compass</th>
<th>Comparison Group</th>
<th>p-Value for Difference in Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Endline</td>
<td>Change</td>
</tr>
<tr>
<td>FICO® Score</td>
<td>616.9</td>
<td>639.9</td>
<td>23.0</td>
</tr>
<tr>
<td>With a FICO® Score</td>
<td>91%</td>
<td>98%</td>
<td>7 pp</td>
</tr>
<tr>
<td>With FICO® Score above 660</td>
<td>23%</td>
<td>37%</td>
<td>14 pp</td>
</tr>
</tbody>
</table>


*/**/*** indicates statistically differences from baseline or statistically significant different changes from baseline at the 10, 5, and 1 percent levels, respectively.

### 4.4 Difference in Changes in Debt between Compass and Comparison Group

In this section, we compare the change in debt levels for Compass FSS participants between baseline and endline versus the changes experienced by comparison group members over a similar time period (the difference in difference). We have employed a test of statistical likelihood that the average differences in gains or losses between the two groups are meaningfully different from zero.

As noted above, it is important to remember that the two samples have similar characteristics but also have differences along some measures. In addition, Compass FSS participants all participate in housing assistance programs and may have differences in motivation (Compass FSS participants chose to participate in a voluntary program), whereas most (or even all) comparison group members do not receive housing assistance and have not specifically elected to participate in FSS. These caveats aside, the similarities between the Compass FSS participants and the comparison group members at baseline and that we are comparing the change between baseline and endline rather than the raw characteristics at a point in time suggest the comparison between the two groups is a meaningful one.

### Difference in Difference by Debt Categories

As shown in Exhibit 4-6 (page 35), total debt increased for both groups, but the Compass FSS households only experienced about a third of the increase that the comparison group members did ($1,570 versus $5,226). This distinction is particularly notable as a proportion of baseline debt.
Though the total debt of Compass households increased by about 10 percent (from $15,081), the total debt of the comparison group members increased by 57 percent (from $9,218). Part of this disparity can be attributed to the markedly different levels that the groups started with—and potentially a regression to the mean. Still, the distinction is suggestive of a decline in the rate at which Compass FSS participants take on new debt. The change in total debt for each group is statistically significant at least at the $p<.05$ level. The difference in difference between the two groups is significant at the $p<.01$ level, which means that the Compass households experienced a smaller increase in debt than the comparison group members did. The decline in the proportion of households who hold any debt at all is not statistically significant for either group, and the difference in difference between the two groups is not statistically significant.

Compass FSS participants experienced an average decrease in total derogatory debt of $764, whereas comparison group members saw an increase of $554, both of which are statistically significant differences at least at the $p<.05$ level, and the difference in difference between the two was highly statistically significant ($p<.01$). Furthermore, the share of households with any debt that is derogatory declined 11 percentage points, from 65 percent to 54 percent among Compass households. Comparison group members saw a slight increase in the share with derogatory debt (from 61 percent to 66 percent). On this measure, Compass households saw what appears to be real progress in eliminating derogatory debt, both on their own and as compared with the progress of the comparison group ($p<.01$).

Although the endline credit card debt of Compass FSS participants is similar to that of the comparison group members, the Compass households started with higher levels of credit card debt and experienced a decrease in average credit card debt of $655, whereas comparison group members’ average credit card debt remained essentially flat. The difference between the changes experienced by the two groups is highly statistically significant ($p<.01$). The share of Compass households with any credit card debt increased slightly between baseline and endline (4 percentage points), whereas the share of comparison group members with any credit card debt decreased by 8 percentage points. The difference in this change between the two groups is highly statistically significant ($p<.01$).

Credit card debt can be a major pitfall for individuals, but going from zero to non-zero credit card debt also might indicate that a household has gained access to credit that it did not have previously.
### Exhibit 4-6. Compass FSS Participants versus Comparison Group: Average Change in Comparable Debt Statistics between Baseline and Endline

<table>
<thead>
<tr>
<th></th>
<th>Compass</th>
<th>Comparison Group</th>
<th>p-Value for Difference in Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
<td>Endline</td>
<td>Change</td>
</tr>
<tr>
<td>Credit card debt</td>
<td>$3,267.59</td>
<td>$2,613</td>
<td>−$655</td>
</tr>
<tr>
<td><strong>With credit card debt</strong></td>
<td>75%</td>
<td>79%</td>
<td>4 pp</td>
</tr>
<tr>
<td>Total debt</td>
<td>$15,081</td>
<td>$16,651</td>
<td>$1,570</td>
</tr>
<tr>
<td><strong>With any debt</strong></td>
<td>96%</td>
<td>97%</td>
<td>1 pp</td>
</tr>
<tr>
<td>Total debt that is derogatory</td>
<td>$3,322</td>
<td>$2,558</td>
<td>−$763.80</td>
</tr>
<tr>
<td><strong>With any derogatory debt</strong></td>
<td>65%</td>
<td>54%</td>
<td>−11 pp</td>
</tr>
</tbody>
</table>

**SOURCE:** Compass Working Capital administrative data, October 2010-June 2015. Experian credit bureau comparison sample credit report data, December 2010-December 2014.

**NOTE:** Credit card debt and total debt include the sum of both derogatory and non-derogatory debt for these categories.

*/**/*** indicates statistically different from baseline or statistically different changes from baseline at the 10, 5, and 1 percent levels, respectively.

Overall, Compass participants have seen notable and statistically significant gains in average FICO® Score and reductions in key types of debt (credit card and derogatory debt) as compared to the experience of the comparison group. Though there is some baseline variation between Compass FSS participants and comparison group members (including differences in estimated baseline earnings, baseline total debt, and the fact that Compass FSS participants receive housing assistance and chose to participate in the Compass FSS program), they are similar at baseline on other key factors (including FICO® Score, credit card debt, derogatory debt, and earnings).

While this comparison does not allow us to conclude definitively that the differences in change in credit and debt experienced between the Compass FSS participants and the comparison group over the study period are a result of Compass FSS program alone, the two groups’ substantially different experiences since baseline suggests that the Compass FSS program helped participants increase credit and reduce key types of debt.
As detailed in this report, we found that Compass FSS participants performed substantially better than the comparison groups in terms of: (a) growth in earnings, (b) reductions in welfare income, (c) growth in FICO® Scores; and (d) reductions in credit card and derogatory debt. Our results suggest that FSS can be an effective platform for helping participants in subsidized housing programs to make progress toward economic security. They also prompt a number of follow-up questions that would benefit from future research.

We outline below three sets of follow-up questions that may be of interest to Compass, HUD or the broader field:

First, what are the characteristics of a successful FSS program? FSS is a flexible program model, and other local FSS programs are likely to vary from Compass in both their programmatic approach and organizational characteristics. Are there certain programmatic approaches to working with FSS participants – such as financial coaching – that lead to more or less earnings growth and improvements in credit and debt outcomes? Are there particular organizational practices – for example, certain hiring criteria or standards, nature and frequency of on-the-job training, organizational culture, etc. – that lead to stronger or weaker outcomes for participants?

Second, what are the long-term outcomes for Compass FSS participants? The standard FSS contract of participation is for five years, with the possibility of an extension for up to two additional years. Our study tracked participants’ earnings growth over an average of 40 months. Do the earnings of Compass FSS households continue to increase over the remaining course of their participation in FSS? Do participants maintain their higher earnings after the conclusion of the program, and for how long? Do comparison households eventually catch up? Do Compass FSS participants maintain their higher credit scores, and to what extent do they benefit from the higher scores? These questions could be addressed when more participants complete the Compass FSS program.

Finally, what effect, if any, does FSS have on non-participating members of the FSS-participant households? We found that the earnings growth of households participating in FSS reflected a combination of earnings growth for the head of household and the earnings of other household members. We also found that the average number of earners in Compass households increased modestly over time. Who are these other earners? Are they adult children? Significant others or spouses? Did FSS have an effect on the earnings of these other household members and on the household composition itself and, if so, through what mechanism(s)? To the extent FSS encourages the addition of other adults, what effects does this have on such outcomes as household income and assets, the likelihood of leaving subsidized housing, or the presence of two parents in the household? Does FSS have positive spillover effects on children – for example, by enhancing their long-term earnings and financial well-being prospects?

We will be preparing an exploratory look at the costs and benefits of Compass’s FSS program. In addition, the pending MDRC study of large FSS programs should help shed light on the outcomes of certain other FSS programs. We hope other researchers extend this research with a deeper look into other local implementations of this promising program.


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