

APPENDIX TABLES AND MATERIALS

This appendix includes supplementary tables as well as material describing:

1. Boston Youth Credit Building Initiative Intervention and Experimental Design
2. Construction of Measures using Administrative Credit Report Data
3. Construction of Measures using Self-Reported Survey Data
4. Focus Group Analysis
5. Mediation Analysis
6. Robustness checks

1. Boston Youth Credit Building Initiative (BYCBI) Intervention and Experimental Design

The BYCBI was developed by the Boston Mayor’s Office of Financial Empowerment (OFE) and implemented by Working Credit NFP over the course of one year from March/April of 2016 through March/April of 2017. OFE recruited participants for the study during the two months prior to the start of the program, targeting low-income young adults, age 18-29, who were currently working or in a workforce development program. Most of the study participants were recruited from various organizations at a pre-arranged meeting where the program was explained in a five-minute presentation and application forms were distributed. Additional individuals were also recruited by OFE directly via a marketing campaign.

A. The BYCBI Intervention

The goal of the program was to help individuals build strong credit scores by increasing their knowledge of credit building, supplying them with credit building and saving products, and providing individualized advice through coaching over the course of one year. The treatment included the following program components:

Financial literacy workshop. A one-hour session was delivered at or near the individual’s worksite, or as part of a mandatory staff meeting or a previously-scheduled training. The content focused on the information contained in a credit report, how the credit reporting system works, the consequences of having no or poor credit, and how to use different financial products to improve one’s credit score. In addition to making payments on time, specific rules of thumb were given such as keeping one to four open lines of credit, having a mix of installment and revolving credit, having a sufficient amount of available credit for emergencies, and keeping the utilization ratio for each line of credit below 30 percent. At the end of the workshop, participants were urged to sign up for a one-on-one coaching session with a credit building counselor, either immediately after the workshop or at a later date.

One-on-one coaching. The initial coaching session was a one-hour in-person meeting that included a review of the participant’s credit report and the development of an individualized budget and credit action plan focused on increasing the participant’s credit score. The plan was put on paper during the session and also emailed to the participant afterwards. The counselor also assessed the participant’s eligibility for the CW-3™ product. If eligible, the counselor enrolled

the participant immediately. If not yet eligible, the participant received clear direction about what he/she needed to do to qualify. Regardless of whether a person was enrolled in the CW-3 product, the counselor continued to support participants with credit coaching following the first appointment. At a minimum, the counselor pulled individual credit reports at six-month intervals and shared the results, along with additional credit building guidance, in person or by email.

Enrollment in CW-3™ matched savings account. The CW-3™ product is a “locked” savings account where the individual opens a 12-month \$300 Installment loan but does not take the loan proceeds; instead they are kept by the lender in an account until the loan is paid off. The individual makes 12 monthly payments of \$26 that is reported by the lender to the credit bureaus, building a positive track record for the participant. At the end of the loan term, the individual has accumulated \$300 in savings as well as an improved credit score. There is no risk of delinquency or default. If an individual fails to make a loan payment, Working Credit pays off the loan with the money from the “locked” savings account. To be eligible to enroll in the CW-3™ product the counselor must confirm that (1) the individual has a budget that shows they can afford to save \$26 per month and (2) that taking the product would be the best way to increase the individual’s credit score aside from other possible courses of action such as paying down debt.

2. Experimental Design

To evaluate the impact of the BYCBI, we compared the outcomes of randomly selected individuals in the treatment group to those in the control group over time. Since the number of individuals applying for the program exceeded the number ultimately selected for participation, we were able to randomly assign participation in the program so that those individuals who applied but were not randomly selected to participate were used as a control group for the evaluation. Individuals in both the treatment and control groups received a \$150 financial incentive to participate in the study for one year. The control group received a \$25 gift card when notified that they were not selected for the program and a \$125 incentive for completing the post-survey. The treatment group received \$150 at the end of the program after completing the post-survey.

Working Credit’s program is typically delivered to a group of employees within a large firm where individuals have both a steady income for the duration of the program as well as regular and strong attachment to their employer, which helps ensure a high take-up rate. However, large firms serve only a small share of the low-income young adult population targeted for this intervention. In addition, there was interest in delivering the BYCBI to individuals in the context of a workforce development program to pilot the use of such interventions under the new WIOA requirements. As a result, it was necessary to cast a wider net for recruitment, with a total of 18 different organizations participating in the study (see Table A1). While these educational and community-based organizations serve low-income young adults, they do not conform to the typical Working Credit delivery model. To account for this, we categorized organizations as “typical,” “near-typical,” and “atypical” based on having: (1) regular/strong contact with individuals, and (2) an employment tenure that covered the duration of the BYCBI.

A total of 171 individuals were recruited from “typical” or “near-typical” organizations, accounting for roughly half (53 percent) of the sample. The remainder were recruited from “atypical” organizations, primarily from a local community college. Although somewhat complicated, this recruitment method allowed us to test the delivery model of the program. Due to concerns about fairness, we were required to randomize individuals into both treatment and control groups within each organization. This had the advantage of ensuring that program impacts were not driven by a particular site, given the different settings in which the program was delivered. Yet it also created the opportunity for cross-contamination among the control group, since many of these organizations are small, and individuals in the treatment and control groups could interact with one another. As such, our estimates may be biased downward, as individuals randomized into receiving no treatment may have been unintentionally exposed to treatment through peer relationships. However, we think that this is unlikely. During our focus group discussions, we did not receive any indication that information was shared across the treatment and control groups, although we did not ask about cross-contamination directly.

As part of the application process, individuals supplied information to assess their basic eligibility, which required that they be at least 18 years of age and currently working or enrolled in a workforce development program. Individuals also were required to provide a written request to perform the baseline credit check as well as for subsequent credit pulls at 6, 12, and 18 months. Of the 300 individuals eligible to participate in the study, we randomly assigned applicants to one of the following two groups:

- Treatment Group: This group of 150 individuals were assigned to receive the financial workshop and the one-on-one coaching. They were also offered the CW-3™ product if they were eligible based on the criteria discussion above.
- Control Group: This group of 150 individuals received no intervention at all.

We also stratified our random assignment by age (18-24 versus 25-29), race (African-American versus non-African-American), and gender (male versus female) to test for heterogeneity in treatment effects, which have been shown to be important (Kaiser and Menkhoff 2017). For example, consistent with human capital theory, previous studies in the literature (Taylor 2011) have reported a negative relationship between financial capability and age. However, this relationship between score and age does not hold uniformly across racial and ethnic groups. Among African-American and Hispanic adults, growing older does not make them more likely to obtain a credit score, because these groups are less likely to participate in the mainstream economy as they age (Brevoort, Grimm, and Kambara 2015). Finally, a gender gap in financial literacy has been treated as a stylized fact in the literature (Lusardi and Mitchell 2014), which may also translate into gender differences in program impacts across individuals in the treatment group.

While we chose to stratify our sample by the characteristics discussed above, the distribution of the remaining demographic factors across the treatment and control groups was left to chance, as is the case with random assignment. The treatment and control groups were roughly equivalent across almost all other observable characteristics, including ethnicity, employment tenure, marital status, household size, number of children, health insurance, homeowner status,

household income, and confidence in their ability to save \$26 per month for the CW-3™ product (see Table 1). The only significant differences at baseline were that the treatment group had a higher share of individuals who were Asian and a lower share of individuals with just “some college.” We note that having two statistically significant differences at the $p < 0.10$ level would be expected by random chance when testing 15 different categories of characteristics. As such, given the randomization design, we do not expect these small differences to affect the program outcomes we observe across the treatment and control groups.

Despite having applied for the program, only two-thirds (67 percent) of the individuals assigned to the treatment group attended at least the workshop or one coaching session. We call these individuals “study compliers” because they complied with the requirements of the program after being assigned to treatment. In contrast, the remaining one-third of the individuals assigned to the treatment group did not participate at all, choosing not to attend the workshop nor sign up for any coaching sessions. We call these individuals “study non-compliers,” because despite being assigned to receive the program, they did not comply with the requirements and chose not to participate. This is not uncommon among randomized control treatment studies of financial coaching programs where half to two-thirds of individuals drop out even when services are offered for free (Theodos et al. 2015).

As one can imagine, it is typically lower-income and underserved populations that have “second thoughts” after applying and choose not to participate (Rothwell and Han 2010). In our study, the non-compliers were about one year younger on average and one-third less likely to have a college degree (see Table A2). In addition, non-compliers were twice as likely to have children, suggesting that perhaps scheduling constraints made it difficult to attend the workshop sessions, even though several make-up sessions were held. Despite having longer tenure with their employers, they were less likely to have employer-provided health insurance. Finally, non-compliers were more likely to have been recruited from an atypical organization and less likely to indicate that they would be able to save \$26 per month.

We should emphasize that our study non-compliers did not receive any services whatsoever—they applied and then failed to show up at the first workshop. Under the standard Working Credit model, individuals usually apply to the program after the workshop, which typically yields a participation rate of over 90 percent. Indeed, of those in the study treatment group who attended a workshop, 96 percent signed up for the one-on-one coaching, suggesting that policymakers might be able to boost take-up rates using this alternative approach. However, because of the high positive correlation between those who attended the workshop and those who received coaching, we cannot disentangle the impacts of these two program components.

2. Construction of Measures using Administrative Credit Report Data

All of the measures from the administrative credit report data were collected by Working Credit from TransUnion and shared with the authors under a sub-contract data use agreement as the evaluator for the program.

Credit Score and Rating

The credit score is as reported on the individuals' credit report using the FICO4 credit score based on reporting by TransUnion. Based on the individual's credit score, we determined their credit rating based on the following established standard ranges used by Working Credit when coaching participants:

Credit Score	Rating	Percent of People	Impact
300-600	Poor (Subprime)	17%	Credit applicants may be required to pay a fee or deposit, and applicants with this rating may not be approved for credit at all.
601-660	Fair (Nonprime)	20.2%	Applicants with scores in this range are considered to be subprime borrowers.
661-780	Good (Prime)	39.7%	Applicants with scores here are likely to receive better than average rates from lenders.
780 and above	Excellent (Superprime)	19.9%	Applicants with scores in this range are at the top of the list for the best rates from lenders.

Source: Credit Builders Alliance

Predicting Credit Scores from "Thin" Credit Files

About one-third of the individuals in both the treatment and control groups have no credit score at baseline. However, not all individuals without a credit score are completely lacking a credit record. According to the CFPB, consumers with limited credit histories can be placed into two groups. The first group is comprised of consumers without NCRA credit records. They refer to this group as "credit invisibles." The second group includes consumers who, while they have NCRA credit records, they are considered "unscorable," meaning they have a "thin" file, mostly due to accounts that have become inactive. This latter group is the population that was studied in the Vantage report accessed by the link that you provided above. Vantage found that the unscorables "are in many ways very similar to conventional credit users" but there was also a "marked disparity in the amounts of revolving credit extended to each group, with the traditionally unscorable group receiving significantly less credit than traditionally scoreable peers."

The majority (71.2) of the individuals in our sample with no credit score are in fact invisibles, meaning they have no credit record whatsoever. This is likely because they are young adults from low income households, who have not had any experience with credit. Thus, for 74 of the 104 individuals without a credit score we have no prior data to be able to predict their score because they have no credit record on file.

Yet the remaining 30 percent or so are unscorables who do have some credit history. Rather than assign a score of zero or drop the unscorables entirely from the sample, we used a Heckman selection correction model to predict a score for those with thin credit profiles (e.g. the unscorables). To do this, we used the baseline information in our data including payment history on an old trade line, a public record, or an external collection that can be used to determine their credit worthiness using a model developed by VantageScore, one of the industry leaders in credit scoring models.

Among those individuals with a credit score before the start of the program, the average score was roughly 660, with no significant difference between the treatment and control groups. We also followed industry guidelines to predict a score for those with “thin” credit files (VantageScore, 2016) using a Heckman selection correction model, which yielded a slightly lower average score of about 650—again with no significant difference between the treatment and control groups. This method allows us to categorize most of the individuals in our sample (N=226) into the typical credit ratings prior to the start of the program, with the majority of individuals falling into the “Fair” to “Good” range.

Factors Affecting Credit Score

Working Credit also collected measures related to the factors affecting an individual’s credit score including the number and types of open lines of credit, whether the individual had a car loan and the interest rate on that loan, and whether the individual had a student loan and the amount of student loan debt. Working Credit also reported the utilization ratio, the amount of available credit, the number of lines of credit that are currently delinquent (30 days currently past due), the number of current outstanding negatives (collections, chargeoffs, judgements), and whether the individual had a history of 30-day delinquency or a history of sustained on-time payments.

3. Construction of Measures using Self-Reported Survey Data

All individuals in the treatment and control groups were asked to complete both a pre-and post-program survey that captured their current financial situation as well as their knowledge and behaviors related to credit building. Individuals were asked to complete the pre-survey when they applied for the program and were given a small monetary incentive (e.g., a \$5 gift card plus a raffle to win one of 10 iPads) to incentivize completion. The post-survey was deployed via email to both the treatment and control groups, and completion was required to receive the final installment of the \$150 financial incentive for participating in the program.

Surprisingly, individuals in the treatment group who responded to the survey exhibited characteristics that indicate they were less positively selected compared to survey responders in the control group, setting a high bar for detecting improvements over time. Treatment responders were more likely to have only a high school diploma, receive health insurance through Medicaid, and rent rather than own their home (see Table A3). Note that the direction of the bias goes against the detection of program impacts for the survey responders in the treatment versus the control groups. Nonetheless, we control for both demographic characteristics and baseline outcome measures to minimize the bias.

Questions on the pre- and post-survey regarding one's financial situation, behaviors, knowledge, and self-efficacy come from the "Keys to Your Financial Future Pre-Training Assessment" developed by the Annie E. Casey Foundation for their Opportunity Passport Program.¹ All summary measures that were constructed from the individual questions were converted to z-scores with a mean of zero and a standard deviation of one to be able to compare magnitudes across domains. See below for a listing of questions and responses for each component.

Financial Situation

To get a more complete picture of their financial situation, individuals were asked about events that had happened over the past year that are not typically covered by a credit report (see Table A4). This included if they were in a credit counseling or debt management program, if a cell phone or utility company were holding a deposit, if their wages had been garnished, if their utilities been disconnected, if their car had been repossessed, if they had been evicted, if they had been foreclosed upon, if they have been contacted by collection agencies contacting about unsettled claims, and if they were in bankruptcy or in process of bankruptcy.

Financial Behaviors

Individuals were asked to indicate how often they engaged in particular financial habits over the past three months (e.g. 0 times, 1-3 times, 4 or more times). From this set of questions, we constructed two measures of financial behaviors scaled them so that they each fell between 0 and 1 (see Table A5). We constructed a mainstream financial habits measure by summing the answers to five questions related to using direct deposit, depositing money into a savings or checking account, paying a bill using online bill pay, and using a credit card. We constructed an alternative financial habits measure by summing the answers to five questions related to borrowing money from a friend, using a payday lender, using a pawn shop, and using a check cashing service.

Financial Knowledge

Individuals were asked to respond "true" or "false" to a series of 18 questions related to budgeting, saving, borrowing, and use of credit—including what is reported on a credit report

¹ See <http://www.aecf.org/work/child-welfare/jim-casey-youth-opportunities-initiative/the-keys-to-your-financial-future-curriculum/> for more information.

and how that information is used.² From this set of questions we constructed a measure for each individual equal to the percent right as well as a dummy variable indicating whether they achieved a score of at least 75 percent (see Table A6).

Financial Self-Efficacy

Individuals were asked to rate a series of questions related to their confidence and concerns using a Likert scale (1=Strongly Disagree, 2=Disagree, 3= Agree, and 4= Strongly Agree).³ From this set of questions we constructed several measures of financial capability and scaled them so that they each fell between 0 and 1 (see Table A7).

First, we created a confidence in financial knowledge score by summing the answers to four questions related to understanding how to build assets, use credit, read a credit report, and make a budget, and then divided by the total number of possible points (16).

Second, we created a confidence in financial skills score by summing the answers to four questions related to feeling confident about managing finances, feeling comfortable making financial decisions, feeling they have all the skills to plan for their financial future, and feeling that they have the skills needed to succeed, and then divided by the total number of possible points (16).

Third, we created a concern about financial situation score by summing the answers to three questions related to concern over student debt, concern over meeting expenses, and being satisfied with their saving, and then divided by the total number of possible points (12).

Finally, we created an overall self-efficacy score that can be thought of as a summary across the first three domains. Although there are several widely accepted psychological measures of general self-efficacy, no reliable and valid measure specific to financial behavior exists (Dietz, Carrozza, & Ritchey, 2003). We follow Lown (2011) and measure self-efficacy using a combination of the statements discussed above that measure an individual's confidence in their ability and knowledge to manage their finances as well as their satisfaction with their ability to save. Specifically, our self-efficacy measure is constructed by summing the answers to five questions related to feeling confident about managing finances, feeling they have the skills to succeed, feeling they have the resources to plan for the future, being satisfied with their saving, and knowing where to get help. We then divided by the total number of possible points (20).

Focus Group Analysis

We held two sets of focus groups, at the beginning and at the end of the program, separately for individuals in the treatment and the control group. The first set of focus groups were held in May 2016, shortly after the treatment group had participated in the workshop and the initial one-on-one coaching provided by Working Credit. The goal was to get an early assessment of how the program was going, as well as to uncover additional insights about take-up among the treatment group. In addition, we wanted to learn more about the barriers faced by individuals in both the

² See Part C of the survey entitled "Tell us About Your Views on Money and Finances."

³ See Part D of the survey entitled "Tell Us About Your Concerns."

treatment and control groups when it came to accessing and building credit. The second set of focus groups was held in May 2017, just after the program had ended, with the aim of developing a better understanding of the program’s overall impacts and mechanisms.

Each group was composed of five to seven young adults selected at random from the treatment and the control groups. Individuals were offered a modest financial incentive (a \$50 gift card) to encourage participation and compensate individuals for their time. Focus group members were fairly representative of the full cohort in terms of observable characteristics such as age, gender, race, and type of organization from which they were recruited. Comparing their credit histories and baseline survey responses, there was no evidence that focus group members had more difficult or extreme financial circumstances compared to the full study sample. If anything, focus group members were slightly more highly educated and slightly less likely to be experiencing problems with credit. We attempted to recruit the same individuals for both sets of focus groups, but only half were able to attend both sessions, so we recruited additional members with similar demographic characteristics as replacements.

All focus group sessions were transcribed and coded using NVivo software. Using standard methods, we initially coded the responses into major categories of information using open coding. These included obvious categories such as: Financial situation, Credit mistakes, Feelings about using credit, Strategies for using credit, Skills needed, Lack of knowledge, Impact on future plans.

From this initial open coding, we identified several open coding categories to focus on (e.g., “core” phenomenon) and then went back to the data and created categories around these core phenomena consisting of causal conditions (what factors caused the core phenomenon), strategies (actions taken in response to the core phenomenon), contextual and intervening conditions (broad and specific situational factors that influence the strategies), and consequences (outcomes from using the strategies). These categories were further refined and expanded in an iterative process as we conducted additional interviews to arrive at a final coding structure (see Table A8).

5. Analysis Methods

ITT and TOT Estimates

Because participation is randomly assigned, we obtain causal estimates using a simple comparison of means on the outcome of interest. This Intent to Treat (ITT) estimate measures the impact of offering the program on the outcome. In many cases, this is the policy-relevant estimate because program administrators often want to account for program take-up in assessing the degree to which financial coaching could improve outcomes among the pool applicants, not just those who choose to participate (e.g., study compliers). Note that although covariates are not necessary to derive unbiased impact estimates when treatment is randomly assigned (Bloom, 2006), we also use a regression framework to include baseline characteristics, including pre-program measures of outcomes, to improve the precision of our estimates (see Table A9):

$$Y_{it} = \alpha_1 + \pi_1 TREAT_i + \beta_1 Y_{i0} + \gamma_1 X_{i0} + \mu_{itl} \quad (1)$$

where Y_{it} is the post-program outcome for individual i during post-randomization period t , $TREAT_i$ is a dummy variable indicating the individual received an offer to participate, Y_{i0} is the pre-program measure of the same outcome, X_{i0} is a set of pre-existing baseline characteristics collected when the individual applied to the program, and μ_{it} is a stochastic error term.

Nonetheless, because not all individuals accept the offer, the ITT estimate will understate the effects of the program for those youth who choose to participate. As such, we also provide Treatment-on-the-Treated (TOT) estimates, which assess the program's impact, independent of the take-up rate. Under the usual relevance and exogeneity assumptions for instrumental variables, this latter set of effects can be recovered from the experimental data. We perform this estimation through a two-stage least squares strategy, in which random assignment ($TREAT_i$) is an instrument for actual participation (P_{it}), and P'_{it} is the predicted probability of participation from equation (2):

$$P_{it} = \alpha_2 + \pi_2 TREAT_i + \beta_2 Y_{i0} + \gamma_2 X_{i0} + \mu_{it2} \quad (2)$$

$$Y_{it} = \alpha_3 + \pi_3 P'_{it} + \beta_3 Y_{i0} + \gamma_3 X_{i0} + \mu_{it3} \quad (3)$$

If all individuals respond the same way to the program (i.e., if treatment effects are constant across youth), then equations (2) and (3) also yield an estimate of the average treatment effect (ATE) across this population of low-income young adults. Given that treatment effects are likely to be heterogeneous across young adults, then the coefficient π_3 estimates the local average treatment effect (LATE)—the effect of participation on those who comply with random assignment. As long as there is no control crossover (no always-takers) in this setting, π_3 provides an estimate of the treatment-on-the-treated.

Mediation Analysis

Finally, we explore the program's mechanisms by conducting a mediation analysis that relates individual outcomes such as the credit score and the use of alternative financial services to our two components of financial literacy: financial knowledge and self-efficacy. In the case of assessing the effectiveness of the BYCBI program, we theorize that there could be both a direct and indirect effect. The direct effect of the program could arise from the compliers simply following the advice of the coach, which would directly improve their credit score. However, the literature also suggests two potential indirect effects that could also be at work. The first is that attending the financial workshop increases financial knowledge, which would help individuals in the treatment make better financial decisions and improve their credit scores. The second is that the financial coaching increases self-efficacy to address one's own financial situation, which would also help individuals make better financial decisions and improve their credit scores.

To conduct the mediation analysis, we draw on the model developed in Preacher and Hayes (2008) and further described in Zhao, Lynch, and Chen (2010). Using this model, the only requirement to establish mediation is that the indirect effect ($a \times b$) in the following equation is significant:

$$c' = (a \times b) + c \quad (4)$$

where c' = total effect, $(a \times b)$ = indirect path, and c = direct path.

Although it is not necessary for there to be a statistically significant direct effect, c , to be mediated, the presence of the direct effect c can inform theorizing about other mediators. For example, if the direct path c and the indirect path $(a \times b)$ are both significant and of the same sign, the c' will also have the same sign, reflecting complementary mediation. As discussed earlier, we would expect to observe complementary mediation for both the indirect effects of financial knowledge and self-efficacy on credit score if both the indirect path $(a \times b)$ and the direct path c are significant (Zhao, Lynch, and Chen 2010). Similarly, because both the direct and indirect effects on the use of alternative financial services is likely to be negative, we would again expect to see complementary mediation for that outcome as well.

To assess the indirect effects using this framework, we use the following system of Structural Equation Models (SEM) to estimate both the direct and indirect effect parameters simultaneously:

$$M_{it} = \alpha_4 + \pi_4 TREAT_i + \eta_4 M_{i0} + \gamma_4 X_{i0} + \mu_{it4} \quad (5)$$

$$Y_{it} = \alpha_5 + \pi_5 TREAT_i + \eta_5 M_{it} + \beta_5 Y_{i0} + \gamma_5 X_{i0} + \mu_{it5} \quad (6)$$

where M_{it} = mediating variable (e.g., financial knowledge or financial self-efficacy). We then perform a bootstrap test of the indirect effects, as described in Preacher and Hayes (2008).

Studying these indirect channels is important in understanding the mechanisms driving the observed improvements in credit scores among the treatment group. If it's the case that the program improves either financial knowledge or self-efficacy or both, then this might explain why we continue to see improvements in credit scores even after the program ends at 12 months. Note that this part of the evaluation is more exploratory in nature—because although the treatment and control groups were randomly selected, those who chose to respond to the post-survey were not, even when offered a financial incentive of \$150 to participate. However, we feel that this analysis is still informative, if only suggestive, as to how the program achieves better credit outcomes for those who participate.

In addition, we can also contrast these two indirect effects to test whether they are equal in size as measured by the degree to which each accounts for the effect of X on Y. Of course, contrasts represent comparisons of indirect effects only insofar as the mediators are themselves uncorrelated. We measure improvements in both financial knowledge and self-efficacy by comparing the pre- and post-survey responses using separately scored scales composed of multiple and dissimilar items. This has the advantage of ensuring that our measurement of these mediators is distinct from the dependent variable (e.g., credit score) as well as each other. However, it might still be the case that financial knowledge and self-efficacy are positively correlated to some degree.

6. Robustness checks

Individuals with a Credit File versus Individuals with a Credit Score at Baseline

We show the impact of the program on credit scores for both individuals initially with credit files (e.g., including predicted scores for unscorables N=226) as well as individuals initially with credit scores (e.g., excluding anyone with a zero score at baseline N=196) in Figure 3. In terms of boosting credit scores among those who initially had a credit file at baseline, the treatment group showed significant improvements relative to the control group—again largely driven by the compliers. Figure 3 shows a simple comparison of mean credit scores at six-month intervals for the control group versus the treatment group, as well as a separate line for treatment compliers. Panel A shows that for the sample of individuals with a credit file (N=226), the mean credit score for the treatment group increased significantly by 18 points during the first six months of the program, largely led by a rapid improvement of 22 points among the treatment compliers. The compliers continued to show steady improvements through the six months after the program ended, resulting in a mean score of 687 at the 18-month mark. These gains were large enough to significantly increase the mean score of the entire treatment group by 20 points relative to the control group, demonstrating that the program effects are large enough to show improvements among the population of young low-income adults whom the city intended to treat. Based on the trajectory of score improvements over time, it appears that the impact of the program is greatest during the first six months, when participants receive the information from the workshop as well as their first coaching session to establish an individualized plan. When we limit the sample to just those individuals who initially had a credit score—not just a credit file—before the start of the program, the gains are much smaller, and relative improvements are detected only among those who complied with the program (see Panel B of Figure 3). By the 18-month mark, six months after the program’s end, the mean credit score of compliers in the treatment group who initially had a score outpaced the control group by 25 points.”

We then provide regression estimates of these effects at the 18-month mark. Credit scores were 26.4 points higher among the treatment group versus the control group and 37.6 points higher among the compliers versus the control group (see Panel B of Table 3). We find similar but smaller impacts among the compliers when we limit the sample to those who initially had a credit score at baseline (see Table A10).

Assessing the Take-up and Impact of the CW-3™ Product

How many of the individuals made use of the CW-3™ secure loan product to help them build credit? Recall that the product was only offered to compliers in the treatment group who met the following criteria: (1) had fewer than three open revolving accounts or no installment account, (2) could afford to save \$26 per month, and (3) were not currently past due on any account. Of the 101 program compliers, roughly half (53) were offered the program, of whom 60 percent decided to take it up. Those who were offered the CW-3™ product were more likely to be from a typical organization, have a high school degree, be a Medicaid recipient, and not have children (see Table A11). Compared to those who were offered the CW-3™ product, those who chose to make use of it were more likely to be Hispanic and to have children. Females, those with a

bachelor's degree, and individuals who did not own a home were less likely to take up the product when it was offered to them. Individuals in the latter two groups may not have wanted to take out another loan using the CW-3™ because they already had student loans or were planning to apply for a mortgage—both of which might make one reluctant to take on more debt. However, the gender difference is notable and might reflect the emergence of a gap in credit building among males versus females.

How much of the program's impact can be attributed to the use of the CW-3™ product versus just the workshop and financial counseling? Interestingly, Table 6 shows that among the compliers, just being offered the CW-3™ product can account for virtually all the gains in terms of access to credit as well as improving credit scores. This suggests that the product was well-targeted toward those who would benefit from it the most: largely, invisibles with no credit file and unscorables with thin credit files. However, because the use of the product was not randomly assigned, nor entirely at the discretion of the individual, we cannot distinguish the impact of the product from the characteristics of those to whom it was offered.

Table A1. Recruitment from Organizations: Number of Applicants

	Age of Population	Employment/ Duration	Program	Regular / Strong Contact?	Number of Applicants	
					Original	Share of Total
					(4)	(5)
Typical Organizations						
BEST Corp Hospitality Training Center	21-28	Year round		Yes	10	3.1%
Boston Housing Authority	26-27	Year round		Yes	5	1.6%
BPHC	23-29	Year round		Yes	6	1.9%
Catholic Charities	24-27	Year round		Yes	5	1.6%
OFE Boston	21-29	Year round		Yes	15	4.7%
ROCA	23-30	Year round		Yes	14	4.4%
YearUp	19-27	Year round		Yes	59	18.6%
Near-Typical Organizations						
Boston Day & Evening Academy	24-27	School year		Yes	2	0.6%
CityYear	19-27	6 months		Yes	18	5.7%
LISC Americorps	23-29	6 months		Yes	6	1.9%
Hyde Park YCD	20-26	6 months		Yes	3	0.9%
Madison Park Housing Development	18-24	School year		Yes	20	6.3%
Not-Typical Organizations						
Boston Cares	22-27	No formal program		No	3	0.9%
Roxbury Community College	18-29	School year		No	60	18.9%
Roxbury YouthWorks	25-28	Year round		No	2	0.6%
Youth Employment & Engagement	19-29	6 months		No	29	9.1%
TOTAL						
Total Number of Applicants					315	100%
Eligible Organizations					114	36%
Near-Eligible Organizations					49	16%
Not-Eligible Organizations					152	48%

Note: Number of applicants = applicants recruited prior to random assignment. Applicants as share of total = Applicants (Treatments + Controls) for a given organization / Total Applicants across all organizations.

Source: Authors' calculations based on data supplied by the Boston Mayor's Office of Financial Empowerment.

Table A2. Baseline Demographic Characteristics: Compliers v Non-Compliers in the Treatment Group

	Treatment Group				Difference (3)
	Compliers		Non-Compliers		
	(1)	(2)	(1)	(2)	
Type of Organization					
Typical	41.6%	(0.049)	28.6%	(0.065)	13.0
Near-Typical	16.8%	(0.037)	12.2%	(0.047)	4.6
Atypical	41.6%	(0.049)	59.2%	(0.071)	-17.6 **
Age					
Mean	24.02	(0.307)	22.86	(0.424)	1.2 **
18-24	55.4%	(0.050)	71.4%	(0.065)	-16.0 *
25-30	44.6%	(0.050)	28.6%	(0.065)	16.0 *
Gender					
Female	59.4%	(0.049)	57.1%	(0.071)	2.3
Race					
African American/Black	46.5%	(0.050)	44.9%	(0.072)	1.6
American Indian / Native Alaskan	2.0%	(0.014)	0.0%	0.000	2.0
Asian/Hawaiin/Pacific Islander	11.9%	(0.032)	16.3%	(0.053)	-4.4
Caucasian / White	8.8%	(0.039)	10.2%	(0.044)	-1.4
Two or more races	10.9%	(0.031)	10.2%	(0.044)	0.7
Other	20.8%	(0.041)	18.4%	(0.060)	2.3
Ethnicity					
Hispanic	21.8%	(0.041)	30.6%	(0.067)	-8.8
Veteran status					
Veteran	0.0%	(0.000)	0.0%	(0.000)	0.0
Marital status					
Married	5.0%	(0.022)	0.0%	(0.000)	5.0
Household size					
Number	2.97	(0.151)	2.82	(0.162)	0.2
Number of children					
Has any children	12.9%	(0.033)	26.5%	(0.064)	-13.7 **
Education					
Less than a high school diploma	5.9%	(0.024)	12.2%	(0.047)	-6.3
High school diploma or GED	23.8%	(0.043)	36.7%	(0.070)	-13.0
Some college	20.8%	(0.041)	26.5%	(0.064)	-5.7
Associate's degree	3.0%	(0.017)	4.1%	(0.029)	-1.1
Bachelor's degree	38.6%	(0.049)	12.2%	(0.047)	26.4 ***
Advanced or professional degree	6.9%	(0.025)	0.0%	0.000	6.9
Not reported	0.0%	0.000	8.2%	(0.040)	-8.2
Employment tenure					
Less than one year	70.3%	(0.046)	53.1%	(0.072)	17.2 **
One to two years	16.8%	(0.037)	16.3%	(0.053)	0.5
Two to five years	9.9%	(0.030)	18.4%	(0.056)	-8.5
More than five years	1.0%	(0.010)	4.1%	(0.029)	-3.1
Not reported	2.0%	(0.014)	8.2%	(0.040)	-6.2 *
Health insurance					
Private plan, through employer	36.6%	(0.048)	14.3%	(0.051)	22.3 **
Medicaid (MassHealth)	41.6%	(0.049)	49.0%	(0.072)	-7.4
Other	15.8%	(0.037)	26.5%	(0.064)	-10.7
None	3.0%	(0.017)	8.2%	(0.040)	-5.2
Not reported	3.0%	(0.017)	2.0%	(0.020)	0.9
Homeowner status					
Own	6.9%	(0.025)	4.1%	(0.029)	2.8
Household income					
Above \$71,991	10.9%	(0.031)	8.2%	(0.040)	2.7
Can save \$26 per month					
Yes	97.0%	(0.017)	89.8%	(0.044)	7.2 *
Number of observations	101		49		52

Note: Compliers refer to those that have at least attended a workshop or one-on-one coaching session. Non-compliers have completed neither. ***Significance at the 1% level. **Significance at the 5% level. *Significance at the 10% level.

Source: Authors' calculations based on data supplied by the Boston Mayor's Office of Financial Empowerment.

Table A3. Baseline Demographic Characteristics: Treatment v Control Group Survey Responders

	Treatment Group		Control Group		Difference
	(1)		(2)		(3)
Type of Organization					
Typical	39.6%	(0.050)	35.7%	(0.049)	3.9
Near-Typical	15.6%	(0.037)	17.3%	(0.038)	-1.7
Atypical	44.8%	(0.051)	46.9%	(0.051)	-2.1
Age					
Mean	24.29	(0.319)	24.31	(0.260)	0.0
18-24	53.1%	(0.051)	51.0%	(0.051)	2.1
25-30	46.9%	(0.051)	49.0%	(0.051)	-2.1
Gender					
Female	64.6%	(0.049)	71.4%	(0.046)	-6.8
Race					
African American/Black	43.8%	(0.051)	45.9%	(0.051)	-2.2
American Indian / Native Alaskan	2.1%	(0.015)	1.0%	(0.010)	1.1
Asian/Hawaiin/Pacific Islander	9.6%	(0.022)	5.1%	(0.064)	4.5 *
Caucasian / White	21.9%	(0.042)	27.6%	(0.045)	-5.7
Two or more races	10.9%	(0.043)	13.4%	(0.017)	-2.5
Other	12.5%	(0.034)	7.1%	(0.026)	5.4
Ethnicity					
Hispanic	25.0%	(0.044)	27.6%	(0.045)	-2.6
Veteran status					
Veteran	0.0%	(0.000)	2.0%	(0.014)	-2.0
Marital status					
Married	5.2%	(0.023)	6.1%	(0.024)	-0.9
Household size					
Number	2.93	(0.137)	2.90	(0.155)	0.0
Children					
Has any children	14.3%	(0.036)	14.6%	(0.036)	-0.3
Education					
Less than a high school diploma	1.0%	(0.010)	6.1%	(0.024)	-5.1
High school diploma or GED	27.1%	(0.046)	13.3%	(0.034)	13.8 **
Some college	19.8%	(0.041)	36.7%	(0.049)	-16.9 **
Associate's degree	3.1%	(0.018)	1.0%	(0.010)	2.1
Bachelor's degree	41.7%	(0.051)	32.7%	(0.048)	9.0
Advanced or professional degree	6.3%	(0.025)	8.2%	(0.028)	-1.9
Not reported	0.0%	(0.000)	0.0%	(0.000)	0.0
Employment tenure					
Less than one year	67.7%	(0.048)	58.2%	(0.050)	9.5
One to two years	15.6%	(0.037)	17.3%	(0.038)	-1.7
Two to five years	13.5%	(0.035)	15.3%	(0.037)	-1.8
More than five years	1.0%	(0.010)	4.1%	(0.020)	-3.0
Not reported	2.1%	(0.015)	5.1%	(0.022)	-3.0
Health insurance					
Private plan, through employer	37.5%	(0.050)	38.8%	(0.049)	-1.3
Medicaid (MassHealth)	40.6%	(0.050)	27.6%	(0.045)	13.1 *
Other	15.6%	(0.037)	25.8%	(0.045)	-10.2 *
None	3.1%	(0.018)	2.0%	(0.014)	1.1
Not reported	3.1%	(0.018)	4.1%	(0.020)	-1.0
Homeowner status					
Own	3.1%	(0.018)	9.2%	(0.029)	-6.1 *
Household income					
Above \$71,991	11.5%	(0.033)	12.2%	(0.033)	-0.8
Can save \$26 per month					
Yes	96.9%	(0.018)	98.0%	(0.014)	-1.1
Number of observations					
	96		98		-2

Note: ***Significance at the 1% level. **Significance at the 5% level. *Significance at the 10% level.

Source: Authors' calculations based on data supplied by the Boston Mayor's Office of Financial Empowerment.

Table A4. Financial Situation: Comparison of Treatment and Control Groups at 12 Months

	Control Group	Treatment Group			Differences (Percentage Point)	
		All	Study Compliers	Study Non-compliers	All - Control	Study Compliers - Study Non Compliers
Number	150	150	101	49		
<u>Percent Responding Yes in Each Group</u>						
Have a checking account	84.7%	87.3%	93.1%	75.5%	2.7	17.6 **
Have a savings account	73.2%	63.5%	67.7%	55.1%	-9.6 *	12.6 *
Set aside money regularly for saving	49.3%	43.3%	43.6%	42.9%	-6.0	0.7
Participate in employer 401K or 403B	20.0%	21.3%	19.8%	24.5%	1.3	-4.7
Collection agencies contacting about unsettled claims	20.1%	19.3%	22.8%	12.2%	-0.8	10.5 *
Cell phone company holding a deposit	12.0%	12.0%	10.9%	14.3%	0.0	-3.4
Utilities been disconnected in past year or in danger of disconnection	10.7%	8.0%	9.9%	4.1%	-2.7	5.8
Wages been garnished in past year	7.3%	8.7%	8.9%	8.2%	1.3	0.7
Utility company holding a deposit	5.3%	6.0%	5.0%	8.2%	0.7	-3.2
In credit counseling or debt management plan or working with one	4.0%	3.3%	3.0%	4.1%	-0.7	-1.1
Been evicted in past year or in process of eviction	4.0%	1.3%	0.0%	4.1%	-2.7	-4.1
Car been repossessed in past year or in danger of repossession	3.3%	1.3%	1.0%	2.0%	-2.0	-1.1
In bankruptcy or in process of bankruptcy	2.0%	0.0%	0.0%	0.0%	-2.0	0.0
Foreclosure started or in danger of foreclosure	0.7%	0.7%	0.0%	2.0%	0.0	-2.0
Filed a tax return last year	80.7%	66.0%	69.3%	59.2%	-14.7 **	10.1 *
Have one or more credit cards	49.3%	46.0%	50.5%	36.7%	-3.3	13.8 *
If you don't have a credit card, ever had one	24.8%	21.3%	18.8%	26.5%	-3.5	-7.7 *
Will be applying for a mortgage or car loan in next three months	8.7%	8.0%	7.9%	8.2%	-0.7	-0.2

Notes: Compliers refer to those that have at least attended a workshop or one-on-one coaching session. Non-compliers have completed neither. **Indicates significance at the 5% level and *indicates significance at the 10% level.

Source: Authors' calculations based on data supplied by the Boston Mayor's Office of Financial Empowerment.

Table A5. Financial Behaviors: Comparison of Treatment and Control Groups at 12 Months

	Control Group	Treatment Group			Difference (Percentage Point)	
		All	Study Compliers	Study Non-compliers	All - Control	Study Compliers - Study Non Compliers
Number	150	150	101	49		
<u>Percent Responding More than Four Times</u>						
<u>Mainstream Financial Services</u>						
Used direct deposit.	62.7%	54.0%	57.4%	46.9%	-8.7	10.5 *
Deposited money into a savings or checking account.	58.0%	59.3%	57.4%	63.3%	1.3	-5.8
Paid a bill using online bill pay.	40.7%	38.9%	39.0%	38.8%	-1.7	0.2
Used a credit card.	32.7%	34.7%	40.6%	22.5%	2.0	18.1 *
<u>Alternative Financial Services</u>						
Used a payday lender.	0.7%	0.7%	0.0%	2.0%	0.0	-2.0
Used a pawn shop.	1.3%	1.3%	1.0%	2.0%	0.0	-1.1
Borrowed money from a friend.	3.3%	4.0%	3.0%	6.3%	0.7	-3.3
Used a check cashing service.	13.3%	13.3%	10.9%	18.4%	0.0	-7.5 *

Notes: Compliers refer to those that have at least attended a workshop or one-on-one coaching session. Non-compliers have completed neither. **Indicates significance at the 5% level and *indicates significance at the 10% level.

Source: Authors' calculations based on data supplied by the Boston Mayor's Office of Financial Empowerment.

Table A6. Financial Knowledge: Comparison of Treatment and Control Groups at 12 Months

	ANSWER KEY	Control Group	Treatment Group			Difference (Percentage Points)	
			All	Study Compliers	Study Non-compliers	All - Control	Study Compliers- Study Non Compliers
Number		150	150	101	49		
Percent Responding True in Each Group							
Vision and goals have nothing to do with managing your money.	FALSE	8.7%	12.7%	6.9%	24.5%	4.0	-17.6 **
Contingency planning is thinking about what could go wrong and making alternative plans.	TRUE	89.3%	82.7%	86.1%	75.5%	-6.6	10.6
An asset is something you own that always increases in value.	FALSE	65.1%	61.3%	63.4%	57.1%	-3.8	6.2
Saving is setting aside money now for use at some future time.	TRUE	96.0%	95.3%	99.0%	87.8%	-0.7	11.3 **
Having positive credit reports, high credit scores and affordable credit are productive assets	TRUE	96.0%	90.7%	92.1%	87.8%	-5.3	4.3
A credit report is a document that contains only some of your bill paying history.	TRUE	43.3%	41.3%	40.6%	42.9%	-2.0	-2.3
You have the right to get your credit reports from each of the credit reporting agencies each year.	TRUE	92.7%	88.0%	90.1%	83.7%	-4.7	6.4
Credit reports are completely accurate; you never need to check for mistakes.	FALSE	6.0%	14.7%	10.9%	22.5%	8.7 **	-11.6 *
A poor credit history can prevent you from getting insurance coverage, an apartment, or a job.	TRUE	83.3%	86.0%	88.1%	81.6%	2.7	6.5
If you are under 18 and have a credit report, you may have been the victim of identity theft.	TRUE	61.3%	64.0%	61.4%	69.4%	2.7	-8.0
Credit is money you owe.	FALSE	48.7%	46.7%	43.6%	53.1%	-2.0	-9.5
When you use credit, you are obligating future income.	TRUE	68.0%	64.0%	67.3%	57.1%	-4.0	10.2
Your credit score is calculated from your income, your assets, your age, and where you live.	FALSE	33.3%	32.0%	28.7%	38.8%	-1.3	-10.1
There is nothing you can do to change your credit score.	FALSE	3.3%	8.7%	6.9%	12.2%	5.3	-5.3
Using direct deposit for your paycheck can save you money and time.	TRUE	91.3%	88.7%	92.1%	81.6%	-2.7	10.5 *
A bank or credit union with FDIC or NCUA insurance means the money in your account is insured.	TRUE	69.3%	72.0%	77.2%	61.2%	2.7	16.0 **
If you bounce checks, you could be listed in a database that may keep you from opening accounts.	TRUE	74.7%	67.3%	69.3%	63.3%	-7.3	6.0
The best ways to find money to save in your budget is to cut spending or increase income.	TRUE	90.0%	90.0%	92.1%	85.7%	0.0	6.4

Notes: Compliers refer to those that have at least attended a workshop or one-on-one coaching session. Non-compliers have completed neither. **Indicates significance at the 5% level and *indicates significance at the 10% level.

Source: Authors' calculations based on data supplied by the Boston Mayor's Office of Financial Empowerment.

Table A7. Financial Self-Efficacy: Comparison of Treatment and Control Groups at 12 Months

	Control Group	Treatment Group		Difference	
		All	Compliers	Treatment-Control	Compliers-Control
Number responding to the post-survey	98	96	85		
<u>Percent Responding Agree or Strongly Agree in Each Group</u>					
<u>Confidence in skills and resources</u>					
I feel confident about managing my money and personal finances.	65.3%	83.3%	83.5%	18.0 ***	18.2 ***
I am comfortable making financial decisions.	67.3%	85.4%	85.9%	18.1 ***	18.5 ***
I have the skills to plan for my financial future.	56.1%	85.4%	87.1%	29.3 ***	30.9 ***
I feel I have all the resources I need to succeed with my goals.	39.8%	59.4%	61.2%	19.6 ***	21.4 ***
<u>Confidence in level of understanding</u>					
I know how to build assets.	31.6%	54.2%	54.1%	22.5 ***	22.5 ***
I understand how credit works.	58.2%	87.5%	89.4%	29.3 ***	31.2 ***
I can read a credit report.	50.0%	85.4%	87.1%	35.4 ***	37.1 ***
I know how to make a budget.	71.4%	83.3%	85.9%	11.9 **	14.5 **
I know where to get help with money matters.	44.9%	74.0%	75.3%	29.1 ***	30.4 ***
<u>Concerns regarding financial situation</u>					
I worry about being able to pay monthly living expenses once I am on my own.	46.9%	42.7%	41.2%	-4.2	-5.8
I feel concern about how much money I will owe after college.	55.1%	49.0%	47.1%	-6.1	-8.0
I am satisfied with the amount of money I am able to save.	31.6%	39.6%	40.0%	8.0	8.4
Average: Confidence measures	2.3	3.1	3.2	0.8 ***	0.9 ***
Average: Knowledge measures	2.6	3.8	3.9	1.3 ***	1.4 ***
Average: Concern measures	1.3	1.3	1.3	0.0	-0.1
Measure of Self-Efficacy	0.48	0.68	0.69	0.2 ***	0.2 ***

Notes: Compliers refer to those that have at least attended a workshop or one-on-one coaching session. Non-compliers have completed neither. ***Indicates significance at the 1% level, **indicates significance at the 5% level, and *indicates significance at the 10% level.

Source: Authors' calculations based on data supplied by the Boston Mayor's Office of Financial Empowerment.

Table A8. Focus Group Nodes Clustered by Word Similarity

	Dealing with credit/has strategy for dealing with credit	Dealing with credit/demonstrates understanding of credit or financial planning	Dealing with credit/overwhelmed by paying off debt	Dealing with credit/try to only use credit when I have the money to pay it off	Feelings about finances and credit/feel hopeless	Feelings about finances and credit/I am good at managing my cash and credit	Feelings about finances and credit/worried about new debt commitments due to past experience	Need additional skills/don't know how to plan	Need additional skills/don't trust myself with credit card	Need additional skills/have credit but still do not understand it	Need additional skills/need additional skills to manage money or credit	Need additional skills/need additional skills to set/fin financial goals	Need additional skills/never learned about credit before	Need additional skills/never received	Need additional skills/not able to budget	Need additional skills/worried about developing or continuing bad habits	
Dealing with credit/has strategy for dealing with credit	1.00																
Dealing with credit/demonstrates understanding of credit or financial planning	0.75	1.00															
Dealing with credit/overwhelmed by paying off debt	0.46	0.38	1.00														
Dealing with credit/try to only use credit when I have the money to pay it off	0.43	0.44	0.29	1.00													
Feelings about finances and credit/feel hopeless	0.43	0.27	0.26	0.23	1.00												
Feelings about finances and credit/I am good at managing my cash and credit	0.38	0.38	0.21	0.23	0.18	1.00											
Feelings about finances and credit/worried about new debt commitments due to past experience	0.64	0.33	0.29	0.32	0.39	0.30	1.00										
Need additional skills/don't know how to plan	0.38	0.24	0.24	0.16	0.16	0.12	0.27	0.25	1.00								
Need additional skills/don't trust myself with credit card	0.58	0.37	0.28	0.38	0.45	0.23	0.47	0.33	0.31	1.00							
Need additional skills/have credit but still do not understand it	0.38	0.25	0.25	0.30	0.41	0.20	0.31	0.24	0.25	0.41	1.00						
Need additional skills/need additional skills to manage money or credit	0.41	0.32	0.39	0.23	0.23	0.25	0.24	0.75	0.27	0.26	0.30	1.00					
Need additional skills/need additional skills to set/fin financial goals	0.45	0.34	0.38	0.27	0.32	0.30	0.30	0.75	0.23	0.34	0.30	0.95	1.00				
Need additional skills/never learned about credit before	0.41	0.34	0.42	0.30	0.32	0.28	0.27	0.75	0.26	0.27	0.32	0.74	0.75	1.00			
Need additional skills/never received	0.56	0.42	0.43	0.30	0.42	0.29	0.38	0.75	0.39	0.44	0.42	0.75	0.75	0.92	1.00		
Need additional skills/not able to budget	0.40	0.24	0.35	0.34	0.46	0.23	0.34	0.19	0.21	0.33	0.34	0.22	0.27	0.29	0.37	1.00	
Need additional skills/worried about developing or continuing bad habits	0.39	0.34	0.35	0.31	0.29	0.26	0.25	0.87	0.25	0.30	0.21	0.75	0.75	0.70	0.72	0.14	1.00

Source: Authors' calculations based on data supplied by the Boston Mayor's Office of Financial Empowerment.

Table A9. Regression Estimates of BYCBI Impact on Credit Score: All Individuals with a Credit File - 18 Months

	ITT	TOT
	(1)	(2)
Treatment dummy	26.405 ** (12.380)	37.6 *** (13.191)
Credit score at baseline	0.889 *** (0.045)	0.802 *** (0.093)
Age	-2.412 ** (1.220)	-2.485 (1.997)
Male	-11.189 (15.371)	-10.755 (14.328)
Black	-12.364 (23.590)	-11.387 (16.863)
Hispanic	-8.357 (28.629)	-9.692 (24.822)
Married	27.897 * (16.604)	25.227 (27.759)
Children	-7.239 (20.636)	-6.023 (18.128)
Household size	-7.313 (20.636)	-7.609 (4.735)
High school degree	-36.584 (24.946)	-40.403 (27.743)
Some college	-1.383 (17.403)	-7.815 (26.597)
Associate's degree	15.735 (29.397)	13.080 (42.202)
Bachelor's degree	29.961 (19.279)	23.655 (29.937)
Advanced degree	41.391 * (21.845)	33.052 (37.040)
Tenure with employer less than one year	0.604 (12.434)	-0.856 (13.402)
Employer provided healthcare	-7.546 (12.578)	-8.784 (16.336)
Household income above median (\$71,992)	4.247 (13.791)	6.042 (20.888)
Own home	16.397 (21.304)	15.829 (42.309)
Able to save \$26	0.055 (22.953)	-3.024 (34.459)
Recruited from "atypical" organization	1.442 (11.208)	2.963 (13.528)
Constant	181.969 (62.857)	206.723 (90.731)
Number of observations	226	226
R-squared	0.428	0.428

Note: Standard errors in parentheses.

Source: Authors' calculations based on data provided by Working Credit.

Table A10. Regression Estimates of BYCBI Impact on Credit Scores and Ratings: ITT and TOT Estimates - 18 Months

	All individuals with credit file		All individuals with credit score	
	(1)	(2)	(3)	(4)
<u>Treatment versus Control Group: ITT Estimates</u>				
Mean credit score	24.226 (13.022)	* 26.405 (12.380)	** 6.158 (9.002)	8.843 (8.415)
<u>Credit rating:</u>				
Poor: credit score >=300 and <=600	-0.021 (0.047)	-0.029 (0.043)	-0.024 (0.047)	-0.030 (0.044)
Fair: credit score >=601 and <=660	0.020 (0.055)	0.032 (0.052)	0.057 (0.043)	0.062 (0.039)
Good: credit score >=661 and <=780	0.078 (0.045)	* 0.081 (0.042)	* 0.011 (0.056)	0.030 (0.053)
Excellent: credit score >=780	-0.014 (0.028)	-0.031 (0.033)	-0.034 (0.033)	-0.031 (0.033)
<u>Compliers versus Control Group: TOT Estimates</u>				
Mean credit score	39.343 (13.702)	** 37.554 (13.191)	** 24.267 -8.758	** 20.252 -9.388
<u>Credit rating:</u>				
Poor: credit score >=300 and <=600	-0.087 (0.053)	* -0.090 (0.050)	* -0.062 (0.050)	-0.055 (0.053)
Fair: credit score >=601 and <=660	-0.001 (0.050)	-0.028 (0.048)	-0.020 (0.045)	0.001 (0.048)
Good: credit score >=661 and <=780	0.121 (0.060)	** 0.130 (0.058)	** 0.151 (0.059)	** 0.129 (0.061)
Excellent: credit score >=780	-0.009 (0.031)	0.005 (0.029)	0.005 (0.029)	-0.009 (0.031)
Includes controls for baseline measures of outcomes	Yes	Yes	Yes	Yes
Includes controls for demographic characteristics	No	Yes	No	Yes
Number of observations	226	226	196	196

Note: Each entry is the estimated coefficient on the treatment dummy. Credit score outcomes are estimated using OLS. Other outcomes are estimated as probabilities using probit regressions where the coefficients are reported as marginal effects. Controls for demographic characteristics include age, gender, race, ethnicity, marital status, presence of children, household size, education, employment tenure, health insurance, household income, homeownership, ability to save \$26 per month, type of organization that the individual was recruited from. TOT estimates are from a two-stage least squares regression in which random assignment is an instrument for actual participation (compliance). Standard errors in parentheses. ***indicates significance at the 1% level, **Indicates significance at the 5% level and *indicates significance at the 10% level.

Source: Authors' calculations based on data provided by Working Credit.

Table A11. Baseline Demographic Characteristics: Compliers v CW3 Recipients in the Treatment Group

	Treatment Group						
	Compliers		Offered CW3		Took up CW3		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Type of Organization							
Typical	41.6%	(0.049)	50.9%	(0.069)	**	53.1%	(0.090)
Near-Typical	16.8%	(0.037)	13.2%	(0.047)		12.5%	(0.059)
Atypical	41.6%	(0.049)	35.8%	(0.067)		34.4%	(0.085)
Age							
Mean	24.02	(0.307)	23.151	(0.422)		22.97	(0.576)
18-24	55.4%	(0.050)	67.9%	(0.065)		71.9%	(0.081)
25-30	44.6%	(0.050)	32.1%	(0.065)		28.1%	(0.081)
Gender							
Female	59.4%	(0.049)	52.8%	(0.069)		37.5%	(0.087) **
Race							
African American/Black	46.5%	(0.050)	43.4%	(0.069)		43.8%	(0.089)
American Indian / Native Alaskan	2.0%	(0.014)	1.9%	(0.019)		3.1%	(0.031)
Asian/Hawaiian/Pacific Islander	11.9%	(0.032)	13.2%	(0.047)		9.4%	(0.052)
Caucasian / White	8.8%	(0.039)	18.9%	(0.054)		15.6%	(0.065)
Two or more races	10.9%	(0.031)	11.3%	(0.044)		15.6%	(0.065)
Other	20.8%	(0.041)	30.2%	(0.064)	**	40.6%	(0.088) **
Ethnicity							
Hispanic	21.8%	(0.041)	26.4%	(0.061)		34.4%	(0.085) *
Marital status							
Married	5.0%	(0.022)	3.8%	(0.026)		3.1%	(0.031)
Household size							
Number	2.97	(0.151)	2.981	(0.208)		2.94	(0.258)
Number of children							
Has any children	12.9%	(0.033)	7.5%	(0.037)	*	12.5%	(0.059) *
Education							
Less than a high school diploma	5.9%	(0.024)	7.5%	(0.037)		9.4%	(0.052)
High school diploma or GED	23.8%	(0.043)	35.8%	(0.067)	**	40.6%	(0.088)
Some college	20.8%	(0.041)	32.1%	(0.065)		37.5%	(0.087)
Associate's degree	3.0%	(0.017)	0.0%	0.000		0.0%	0.000
Bachelor's degree	38.6%	(0.049)	20.8%	(0.056)		9.4%	(0.052) **
Advanced or professional degree	6.9%	(0.025)	1.9%	(0.019)		0.0%	0.000
Not reported	0.0%	0.000	0.0%	0.000		0.0%	0.000
Employment tenure							
Less than one year	70.3%	(0.046)	69.8%	(0.064)		65.6%	(0.085)
One to two years	16.8%	(0.037)	18.9%	(0.054)		25.0%	(0.078)
Two to five years	9.9%	(0.030)	9.4%	(0.041)		6.3%	(0.043)
More than five years	1.0%	(0.010)	0.0%	0.000		0.0%	0.000
Not reported*	2.0%	(0.014)	1.9%	(0.019)		3.1%	(0.031)
Health insurance							
Private plan, through employer	36.6%	(0.048)	24.5%	(0.060)		18.8%	(0.070)
Medicaid (MassHealth)	41.6%	(0.049)	50.9%	(0.069)	*	59.4%	(0.088)
Other	15.8%	(0.037)	15.1%	(0.050)		15.6%	(0.065)
None	3.0%	(0.017)	3.8%	(0.026)		3.1%	(0.031)
Not reported	3.0%	(0.017)	5.7%	(0.032)		3.1%	(0.031)
Homeowner status							
Own	6.9%	(0.025)	9.4%	(0.041)		3.1%	(0.031) **
Household income							
Above \$71,991	10.9%	(0.031)	5.7%	(0.032)		3.1%	(0.031)
Can save \$26 per month							
Yes	97.0%	(0.017)	96.2%	(0.026)		100.0%	0.000 *
Number of individuals	101		53		32		

Note: Compliers refer to those that have at least attended a workshop or one-on-one coaching session. Significance is calculated based on comparisons of compliers versus those offered the CW-3 product and those offered the CW-3 product versus those who took it up. ***Significance at the 1% level. **Significance at the 5% level. *Significance at the 10% level.

Source: Authors' calculations based on data supplied by the Office of Financial Empowerment.