THE EFFECTIVENESS OF PRE-PURCHASE HOMEOWNERSHIP COUNSELING AND FINANCIAL MANAGEMENT SKILLS

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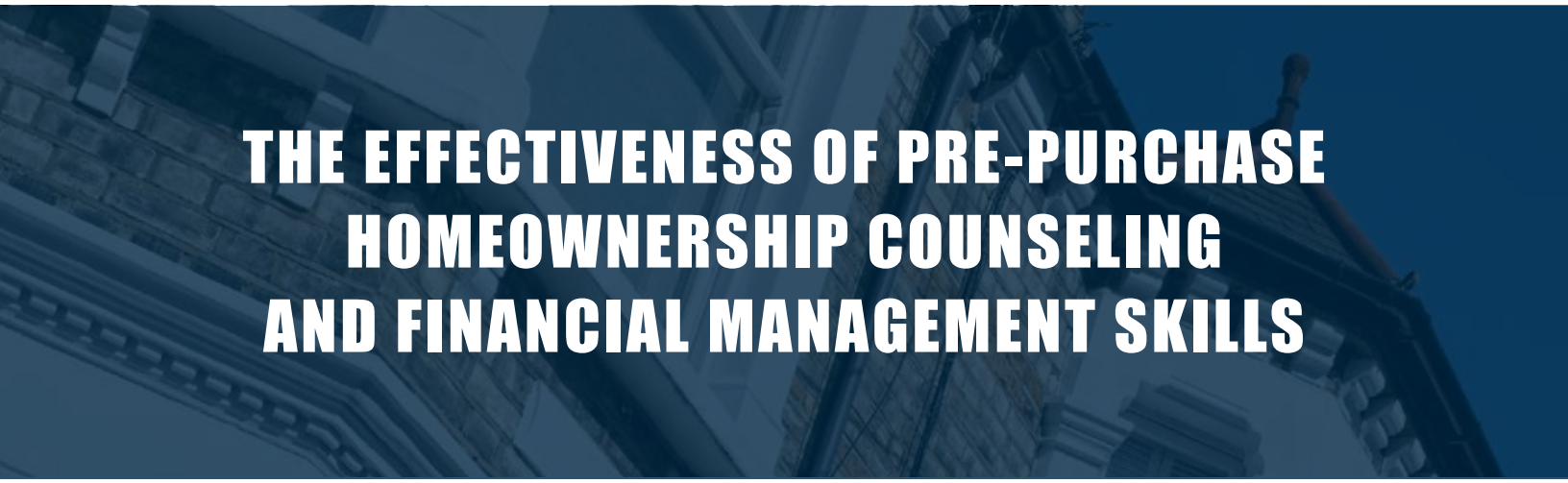

THE EFFECTIVENESS OF PRE-PURCHASE HOMEOWNERSHIP COUNSELING AND FINANCIAL MANAGEMENT SKILLS

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ABSTRACT

Homeownership remains a cherished goal for many people. However, developments in mortgage products and drastic changes in the housing market have made the realization of becoming a homeowner more challenging. Fortunately, homeownership counseling is available to help navigate prospective homebuyers in their quest. But the effectiveness of such counseling over time continues to be contemplated. Previous studies have made important strides in our understanding of the value of homeownership counseling, but more work is needed. More specifically, homeownership education and counseling have never been rigorously evaluated through a randomized field experiment.

This study is based on a long-term (five-year) effort undertaken by the Federal Reserve Bank of Philadelphia on the effectiveness of pre-purchase homeownership and financial management skills counseling. The study is structured to address the concerns raised about previous efforts. In particular, the study employs an *experimental design*, with study participants randomly assigned to a control or a treatment group. Participants completed a baseline survey and were tracked for four years after receiving initial assistance by means of an annual survey, which also tracks participants' life changes over time. To assist in the analysis, additional information was obtained annually to track changes in the participants' creditworthiness. The study considers the influence of counseling on credit scores, total debt, and delinquencies in payments.

INTRODUCTION

Homeownership represents many things to many people. For some, it is the focal point of the family unit, the place where cherished memories are enjoyed, from raising children to celebrating special family occasions. For others, it represents the foundation of their financial investments and serves as the basis for accumulating potential wealth in the future. Yet for many, particularly those with low and moderate incomes, it is the elusive linchpin of the American dream. However, their path to homeownership has been aided by the passage of various legislation, such as the Fair Housing Act of 1968, the Equal Credit Opportunity Act of 1974, and the Community Reinvestment Act of 1977.

Notwithstanding the backing of legislative support, perhaps the major barrier to the benefits of homeownership for many with low and moderate incomes is past credit problems, which are often aggravated by deficient financial management skills. In addition, many people are intimidated by the mortgage-lending process, stemming from their lack of knowledge of its inner workings. This has been made more daunting by drastic changes in the mortgage market. With the advent of subprime lending and its rapid growth, the possibility of buying a house became a reality for many individuals who previously had little hope of homeownership. However, this newfound opportunity resulted in difficulties for some, and their home-buying decisions were further complicated by the emergence of mortgage products with features such as interest-only payments, adjustable rates, no down payments, and no or low documentation.[1]

Housing Counseling Industry

Many people maintain that homeownership counseling is available to navigate a number of the aforementioned impediments. Homeownership counseling provides training to clients to instill knowledge and skills needed to be a successful homeowner. Thus, homeownership counseling can have short-term and long-term benefits. While homeownership is a laudable goal, it might not be suitable for everyone. In the short run, homeownership counseling can help prospective homebuyers determine whether purchasing a house is financially prudent and assist them in qualifying for a mortgage. This might avert a situation that occurred in the recent downturn in the housing market in which many homebuyers were ill-prepared for homeownership. In the long run, homeownership counseling can provide a continuum of services that

[1] While these products were prevalent during 2007, many are no longer relevant today. Moreover, Congress established the Consumer Financial Protection Bureau (CFPB) through the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) to enforce federal consumer financial protection laws; devise rules to protect consumers from unfair, deceptive, or abusive acts or practices; and to provide consumers with the information they need to make the financial decisions they believe are the best for themselves and their families.

Among the recent actions taken by the CFPB are rules that eliminate "no-doc" loans and that ensure lenders will consider whether borrowers are actually able to repay a mortgage.

lead up to and include sustainable homeownership, stable neighborhoods, and fewer foreclosures.

In fact, a special industry has grown up around homeownership counseling. Nonprofits and other organizations/institutions are offering services associated with homeownership counseling, and the Department of Housing and Urban Development (HUD) is taking a stronger role in setting standards to oversee the process of administering homeownership counseling services. HUD has provided more than $40 million in housing counseling grants to national, regional, and local organizations that offer counseling services. Moreover, the Dodd-Frank Wall Street Reform and Consumer Protection Act established an Office of Housing Counseling in HUD.

Goals of Housing Counseling

There are several goals that are shared by clients, providers, funders, and policymakers. They are:

- A knowledge of budgeting
- A better understanding of managing credit
- Ways to make informed decisions about pursuing homeownership

Moreover, for some prospective homebuyers, the participation in homeownership counseling is mandated by their prospective lender. But the effectiveness of such counseling over time continues to be contemplated. Previous studies have made important strides in understanding the value of homeownership counseling, but more work is still needed. More specifically two researchers who are familiar with studies on the subject have observed that "homeownership education and counseling have never been rigorously evaluated through a randomized field experiment" (Collins and O'Rourke 2011).

This study was undertaken and structured to address the concerns that have been raised about previous efforts. In particular, the study employs an *experimental design*[2] and follows participants for several years after they have received counseling.

The most pressing challenge is to build upon prior studies and to add to our knowledge of the long-term effects of financial counseling on consumer credit behavior with the ultimate goal of homeownership and improving general financial management skills.

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[2] By "experimental design," we mean that the participants in the study are randomly assigned to either a treatment group or a control group, and only those in the treatment group receive the intervention (in our case, one-on-one counseling).

PRIOR STUDIES AND RESEARCH CONCERNS

In pre-purchase homeownership counseling, prospective homebuyers are furnished with knowledge and assessment skills: whether they are financially ready to buy, what to consider when making a purchase, how to manage their mortgage and other finances, how to maintain a home and prepare for major home repairs, and how to avoid unscrupulous lenders when refinancing. However, the findings of studies have been mixed on the effectiveness of pre-purchase homeownership counseling and credit counseling on subsequent financial behavior. Two studies found counseling to be effectual, while others have determined either that there was no effect on later loan performance or that positive subsequent performance was likely due to other factors.

A study by Hirad and Zorn (2001) used data on 40,000 participants from Freddie Mac's Affordable Gold Loans program to assess the effectiveness of pre-purchase homeownership counseling. The Affordable Gold Loans program was devised to give borrowers who earned 100 percent or less of the median income the opportunity to become homeowners. Freddie Mac stipulated that at least one qualifying borrower for each Affordable Gold Loan it purchased must receive pre-purchase homeownership counseling. The delivery mode of the counseling (classroom, home study, one on one, or other) was to be determined by the lenders. However, some borrowers were considered to be a lower risk and were not compelled to receive counseling. Thus, some of the participants in the program received counseling while others did not. The authors analyzed the performance of participants who were assessed 18 months after counseling compared with a group that did not receive counseling. They arrive at a comparison group by first matching the mean delinquency rate of those who were exempt from the counseling requirement with those who were receiving counseling. While risk characteristics still might be present among the two groups, the authors used a "two-step process to account for both observed and unobserved differences in borrower risk."[3] They found that homeownership counseling significantly reduced the delinquency rates of borrowers. More specifically, they showed that borrowers with individual counseling averaged a 34 percent lower 90-day delinquency rate, while borrowers who received classroom and home study counseling had 26 percent and 21 percent lower rates, respectively.

Hirad and Zorn acknowledged that there are some caveats associated with their study. They pointed out that their study was not a true experiment in which participants were randomly assigned to a treatment or control group. In order to compensate, they attempted to "control for both observed and unobserved differences in the risk characteristics of borrowers."[4] However, they recognized that they were "unlikely to be entirely successful … and borrower self-selection may account for some of the benefits attributed to homeownership counseling (e.g., 'moti-

[3] Hirad and Zorn (2001), p. 9.

[4] Hirad and Zorn (2001), p. 15.

vated' borrowers disproportionately may choose classroom and individual counseling)."[5]

Quercia and Spader (2008) conducted another study that focused on the impact of homeownership counseling on the prepayment and default behavior of mortgage borrowers. They used loans originated between 1999 and 2003 that were part of the Community Advantage Program (CAP) for the Home Loan Secondary Market and that contained a homeownership education and counseling (HEC) component. The authors observed the performance of the loans through the first quarter of 2006. The HEC provision could be delivered through classroom instruction, individual counseling, home study, or telephone counseling. Although the initial intent of HEC was to "reduce default risk," the curriculum also provided borrowers with the ability to assess the relative costs and potential benefits of alternative mortgage products. This is valuable information to use when making the initial decision on a mortgage as well as considering whether to refinance and under what terms. The authors used a "competing risks model of mortgage prepayment and default" and found that "HEC programs based on classroom instruction and individual counseling improve a borrower's exercise of the mortgage prepayment option, but that programs based on home study or telephone counseling did not affect borrower behavior."[6] Moreover, Quercia and Spader found "no evidence that HEC completion reduces default."[7]

A third study by Agarwal, et al. (2009) focused on the impact of counseling mandates by the state of Illinois for a select group of "high-risk" mortgage applicants in 10 Chicago zip codes. Those mortgage applicants who were deemed "high-risk" and who sought to acquire or refinance a property in the designated zip codes were required to "submit loan offers from state-licensed lenders to be reviewed by HUD-certified loan counselors"[8] and to receive financial advice.

The authors constructed a "control group of neighbors similar to the treated zip codes in pre-pilot demographic variables, foreclosure rates, and location to conduct a difference-in-differences analysis."[9] They observed that "mandatory counseling limited both the demand for new mortgages and the supply of credit, and hampered real estate market activity in the treated areas."[10] Moreover, the declines in mortgage activity most often affected "low-credit-quality" borrowers — the very segment targeted by the legislation. Although the authors' analysis revealed that mortgage default rates for the counseled borrowers were lower than those for the comparison group, they deduced that the legislation "provided an incentive for lenders to screen out lower-quality borrowers in order to protect themselves from possible legal and regulatory action."[11] Thus, the authors concluded that they found "more evidence in support of the effectiveness of the oversight threat than information per se."[12]

Birkenmaier and Tyuse (2005) conducted a study of homebuyer education that had a different emphasis than most recent studies. Instead of focusing on loan performance, they emphasized the effects of homebuyer education on credit scores. The authors assessed the effects of a 45-minute counseling program on credit scoring on the credit scores of 2013 homebuyers. They compared the credit scores of the participants one year after receiving the counseling with their baseline credit scores and found no statistically significant difference. This finding might have

[5] Ibid.

[6] Quercia and Spader (2008), p. 304.

[7] Ibid, p. 324.

[8] Agarwal, et al. (2009), p. 2.

[9] Ibid.

[10] Ibid, p. 3. More specifically, the legislation resulted in up to a "60 [percent] drop in the number of applications, a 40 [percent] decline in the number of active lenders, and a 20 [percent] decline in the number of originated mortgages."

[11] Ibid.

[12] Ibid.

been expected given the short time frame. The study was also plagued with an attrition rate of 26 percent from baseline to follow-up. Furthermore, the study did not have a comparison group and thus was unable to produce any causal estimates.

However, it is noteworthy that the authors discussed the desirability of an experimental design with random assignment of participants, but they were unable to obtain permission from their cooperating agency and sponsoring university to carry out such an approach.

While the aforementioned studies are instructive, they underscore the difficulty in conducting research on the impact of homeownership counseling. Such a study can take two basic types of research formats. One approach is to study past data. This entails examining information that has already been compiled on individuals who have completed a counseling program. Using existing data has an advantage: Individuals can be selected to join a study (or a test group) from a large pool of program participants. However, since this approach is not a true experiment, it could be more difficult to identify an appropriate comparison group (i.e., a group of individuals who have similar characteristics but do not receive the program treatment) whose outcomes would be compared with those of the test group. Thus, in the absence of a true experiment, the issue of sample-selection bias is a major concern. The reliance on past data could raise other research issues. It is possible that key information may not have been collected or not collected in the appropriate format. Moreover, it may not be possible to verify that those in the test group received the same materials on homeownership and/or counseling in a consistent manner.[13]

Another approach is to collect the necessary data first-hand from the test (treatment) and control groups at the beginning of the study and at its conclusion, as well as at periodic intervals in between until the end of the study. This "forward-looking" method has the potential to address the shortcomings associated with studying past data. This approach is more desirable, and even preferable, if it is undertaken using an experimental design. In fact, several reviews of studies assessing the impact of homeownership counseling have pointed to a number of possible stumbling blocks in carrying out a statistically sound investigation. The most often mentioned challenges include the lack of long-term data on individuals who have been counseled, the consistency in delivering the counseling, and the study design; see Quercia and Wachter (1996), Mallach (2001), Hornburg (2004), and the U.S. Government Accountability Office (GAO) (2011). While the authors of these reviews discuss a variety of issues from different vantage points, they generally agree that an experimental design that randomly assigns participants to either a treatment or control group tends to diminish the issue of "selection bias" and provides the best opportunity to isolate the effects of counseling on consumers' homebuying and credit behavior. This approach is used in this study.

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[13] For a survey of studies on homeownership counseling options and their limitations, see Mallach (2001), Hornburg (2004), and Quercia and Wachter (1996).

DATA AND METHODOLOGY

Data

The data in this study are drawn from a database developed in a long-term (five-year) project undertaken by the Federal Reserve Bank of Philadelphia on pre-purchase homeownership and financial management skills counseling. Only *first-time homebuyers* were included in the project. As a consequence, some restrictions on eligibility to participate in the project were imposed. An individual *could not* do any of the following:

- Already be a homeowner
- Currently be under an agreement to purchase a home
- Previously have applied for a mortgage
- Receive any services from the participating counseling agency in the project in past 12 months
- Participate with any lender, agency, or program that required that they receive pre-purchase counseling

The project employed an *experimental design*, with study participants who were randomly assigned to a control group or a treatment group.

The control group received a two-hour pre-purchase workshop and no other services. The treatment group received the two-hour workshop as well as one-on-one counseling. During the basic two-hour workshop, participants received information in a classroom setting on the following topics: preparing for homeownership (advantages, drawbacks, and affordability); shopping for a house (determining priorities, finding a realtor, comparison shopping, home inspection, and appraisals); shopping for a mortgage; applying for the mortgage; and closing/settlement. While study participants assigned to the control group also received a workbook that contained additional information, no further discussion occurred about any participant's personal situation during the workshop. However, those randomly assigned to the treatment group received individual guidance concerning budgeting and their homebuying endeavor during their one-on-one counseling sessions and any other educational services offered by the participating counseling agency as needed to become mortgage ready. The decision for additional services was made either solely by the participant or with the consultation of a counselor. Twenty-nine percent of the treatment participants who received one-on-one counseling opted to use extra counseling services. Among the workshops that participants joined were Keys to Homeownership, Budgeting, Understanding Your Credit Report, and Debt Repayment.

Participants were tracked for four years after receiving their initial assistance. Moreover, credit reports and credit scores were obtained annually to track changes in the participants' creditworthiness. In addition, information was collected about study participants and household members via annual follow-

up surveys to track life changes over time.[14]

The Philadelphia Fed's project was conducted with the assistance of Clarifi, a nonprofit counseling agency, and Abt Associates, a consulting firm. Clarifi was charged with recruiting study participants and providing free homebuyer workshops and one-on-one counseling services. Abt Associates had the responsibility of implementing the study design, tracking study participants over time, and conducting baseline and annual surveys of the participants. The recruitment of participants started in March 2007, and 898 participants were enrolled.

Service Delivery and Other Controls

Since the majority of earlier studies rely on counseling data that were previously collected, concerns arose over ensuring that the counseling was delivered in a consistent manner (e.g., topics covered, intervention mode — classroom, telephone, or one on one, and any follow-up). This study directly addresses this consistency issue in a number of ways. All of the two-hour workshops that were offered to all participants at the outset of the project covered the same material and were conducted by the same representatives from Clarifi. Equally as important, Abt Associates conducted an all-day training workshop with the counselors from Clarifi who provided one-on-one counseling sessions. Prior to the workshop, Abt prepared a counseling manual that specified the topics to be covered during the sessions and the manner in which they were to be presented. The content and the counseling procedures were quite similar to those used by Clarifi at the time. Nonetheless, in order for this approach to be successful, all the counselors were required to accept the procedures. Fortunately, the counselors understood the importance of following procedures to ensure consistency and credible results; thus, they were quick to acquiesce.

Profile of Participants

During the enrollment process, study participants filled out a baseline questionnaire. The profile of the participants presented in this report is derived from those questionnaires.[15]

The following charts contain information on key demographic characteristics of the 898 study participants when they enrolled. The characteristics are those of the primary study enrollee and pertain to age, education, race, ethnicity, marital status, total number in the household, number in the household younger than 18, number of co-purchasers, earnings per month, and banking products held.

As with any long-term study involving individuals, attrition is always a concern. This study is no different. Table B1 in Appendix B details the attrition that took place in this study.

Age. Nearly half (47.6 percent) of the participants in the study were younger than 35 years of age. Figure 1 shows that the treatment group had a little more in this category than the control group.

Gender. The gender composition for the two participant groups was quite similar. As Figure 2 shows, the treatment group had roughly 70 percent females and 30 percent males, while the breakdown for the control group was 66 percent and 34 percent, respectively.

Education. Roughly two-thirds of those in the study had some college or more, of which 28.4 percent were college graduates (including graduate school). As re-

[14] Various demographic characteristics of participants and their household composition, such as age, education, race, ethnicity, marital status, total number in the household, number in the household younger than 18, number of co-purchasers, earnings per month, and banking products held (e.g., a checking account, savings account, 401(k), IRA, money market account, or certificate of deposit), were collected.

[15] The participants in the study were not drawn from a specific population, but their characteristics are similar to the population in low-and moderate-income census tracts in Philadelphia County. For a comparison, see Table A1 in Appendix A.

flected in Figure 3, the treatment group had slightly more (one-tenth of a percentage point), and the control group had slightly less (one-tenth of a percentage point).

Race. African Americans were the most prominent group in the racial makeup of the study participants, according to Figure 4. They comprised 78.1 percent of the total study sample and 78.2 and 78.0 percent of the

FIGURE 1
Age

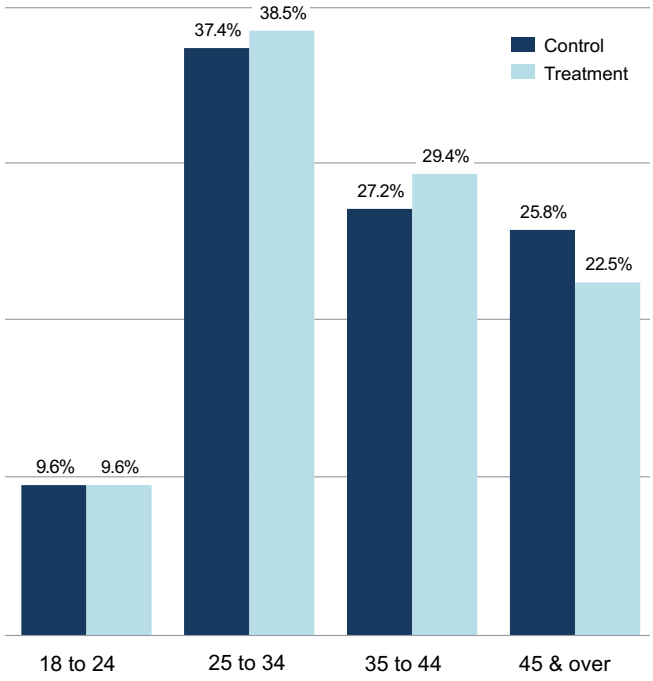


FIGURE 2
Gender

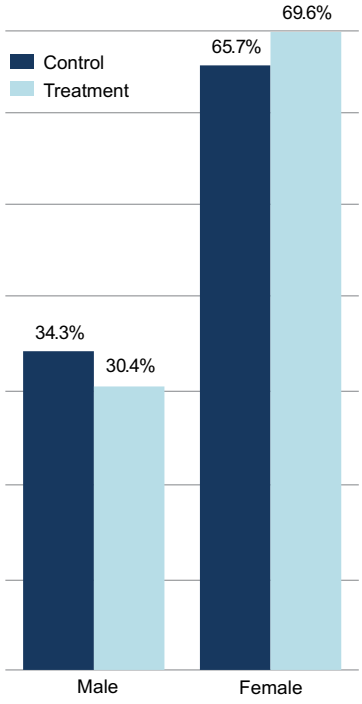


FIGURE 3
Education

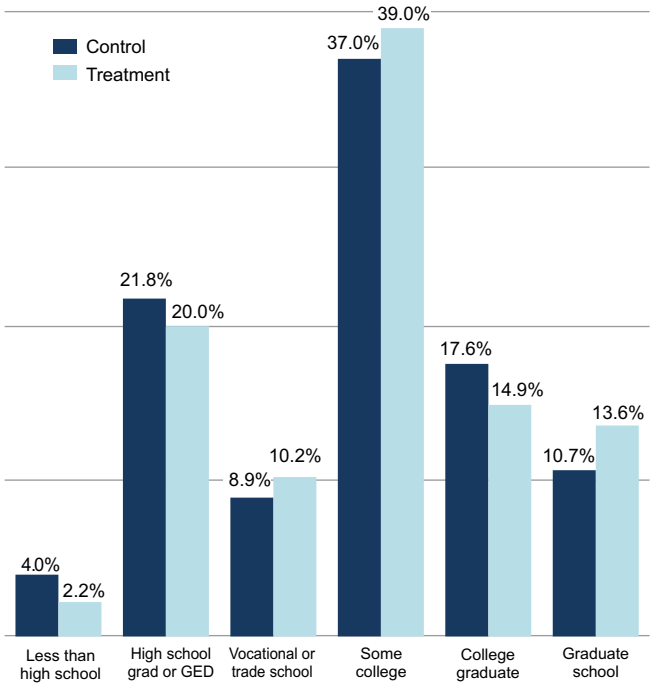


FIGURE 4
Race

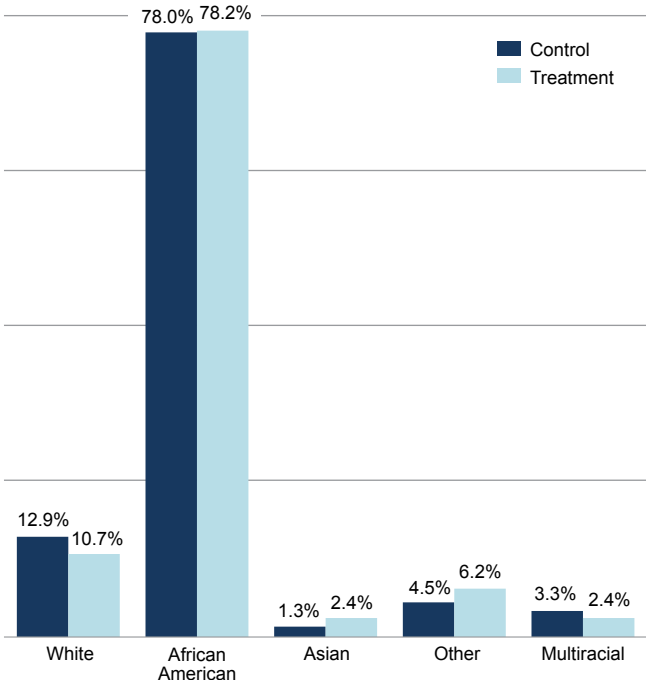


FIGURE 5
Ethnicity

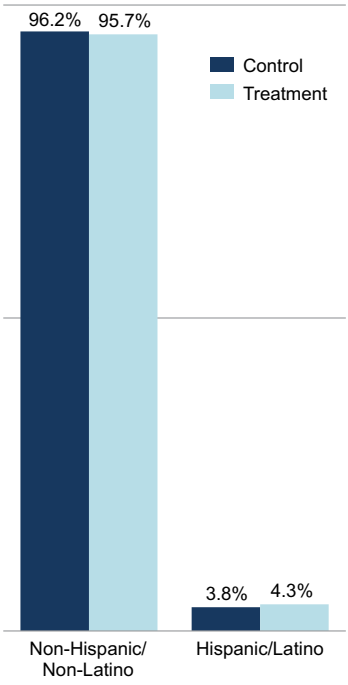
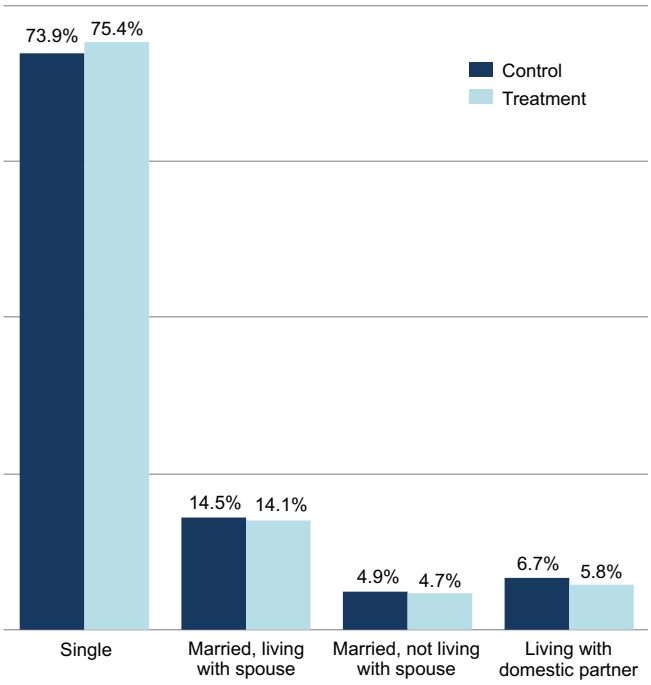


FIGURE 6
Marital Status



treatment and control groups, respectively. Whites accounted for 11.4 percent of all participants.

Ethnicity. While the vast majority of the study sample was non-Hispanic/non-Latino (Figure 5), the Hispanic/Latino group represented 4 percent of all participants.

Marital Status. Approximately three-fourths of the participants in the study were single, while 14.3 percent were married and living with their spouse. Figure 6 shows that the marital status of those in the treatment and control groups closely mirrored these percentages.

Total Number in Household and Number Younger Than 18. Figure 7A shows that nearly 70 percent of those in the study had one, two, or three members in their household. In Figure 7B, less than 50 percent did not have a household member younger than 18.

Number of Co-Purchasers. According to Figure 8, most study participants (nearly 80 percent) were planning to purchase a home without the assistance of another person. However, about 20 percent of those in the study will have one or more co-purchasers.

Earnings Per Month. In the overall study sample, roughly 60 percent had gross earnings of $2,999 or less per month. Figure 9 indicates that the earnings per month in both the treatment and control groups reflected this percentage. In this category, slightly more than 50 percent had gross monthly earnings between $1,000 and $2,999. Nearly 6 percent of the participants earned $5,000 or more per month.

Banking Products. The study participants held a variety of financial products. Figure 10 indicates that nearly 90 percent of them had a checking account, and about 70 percent had a savings account. Nearly half of the participants had a retirement account,

FIGURE 7A
Total Household Members

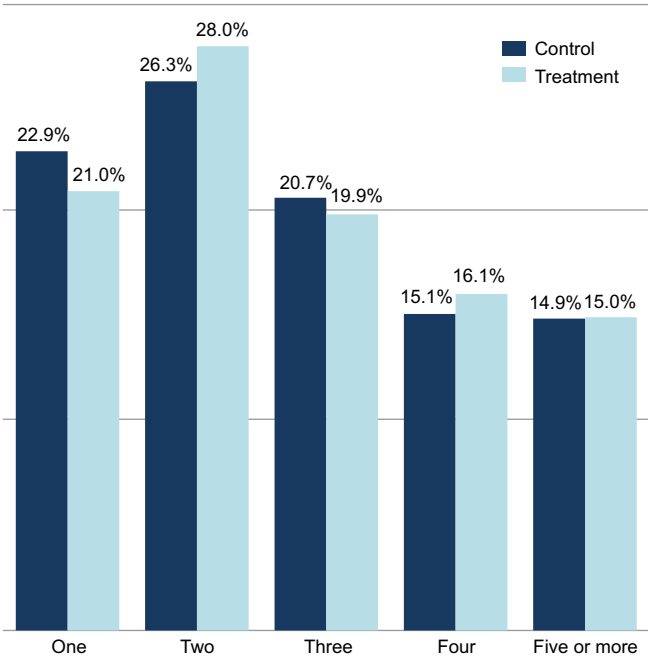


FIGURE 7B
Total Household Members Younger Than 18

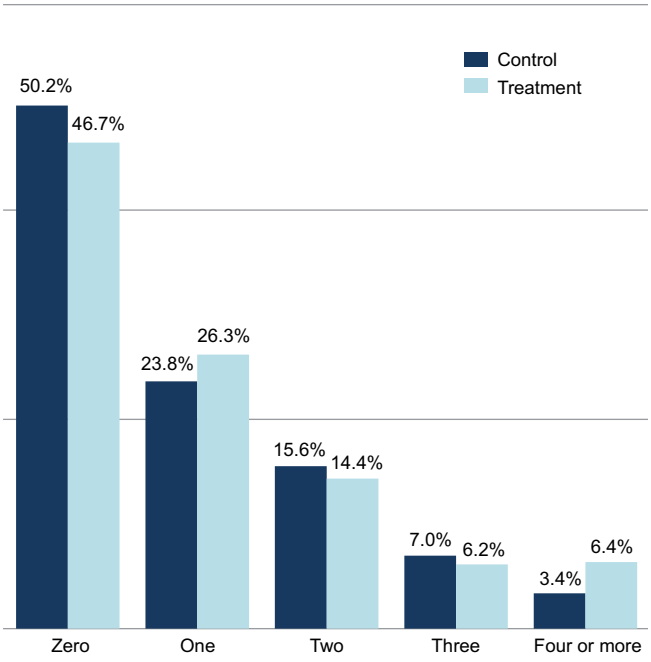


FIGURE 8
Number of Co-Purchasers

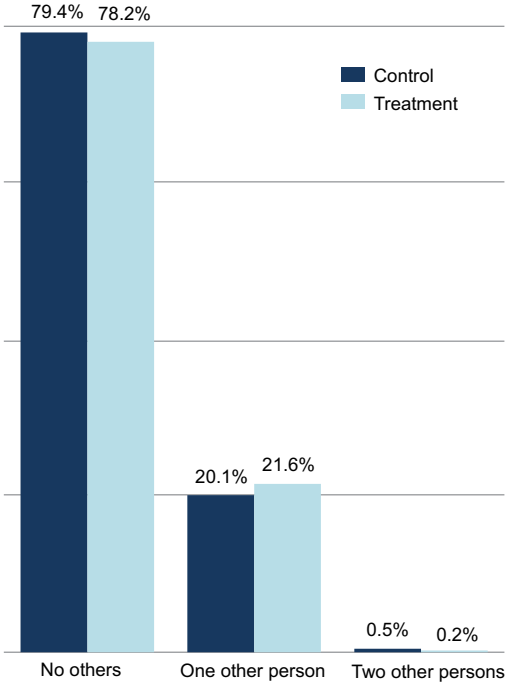


FIGURE 9
Earnings Per Month

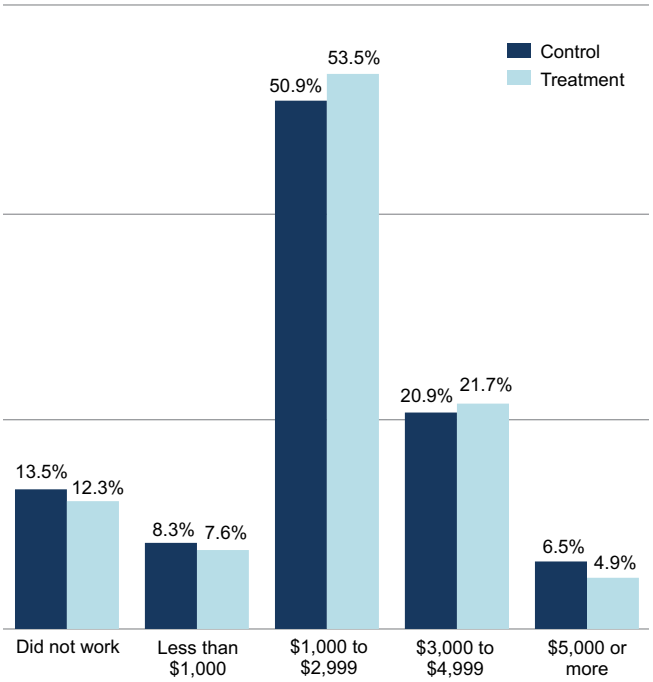
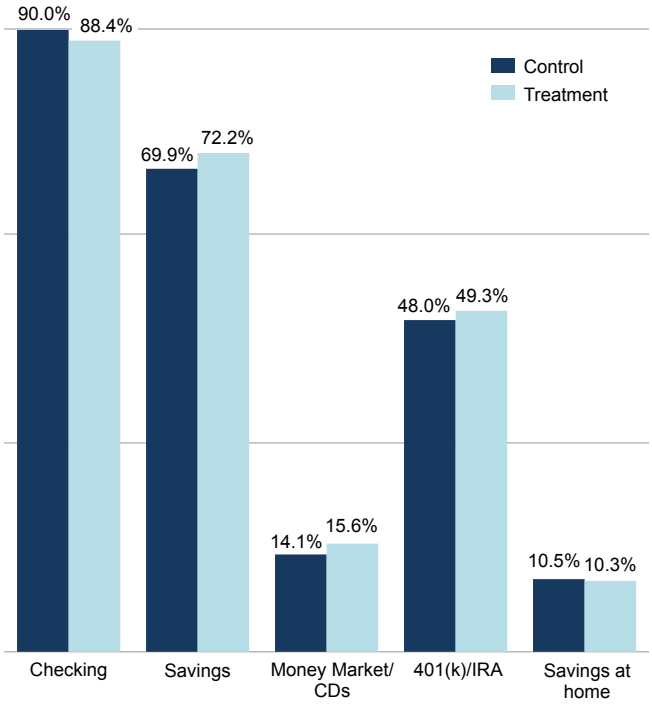


FIGURE 10
Banking Products



such as a 401(k) or an IRA, while nearly 15 percent of those taking part in the study had a money market account or a certificate of deposit.

Outcome of Random Assignment

The random assignment feature[16] of an experimental design is crucial to guard against "voluntary or self-selection bias," which can compromise the results of an analysis. Moreover, those in the treatment and control groups should be alike in all major respects. Therefore, after those in the treatment group receive the "treatment" being studied, any difference in the behavior of the two groups might be attributed to the treatment under investigation. In order to assess whether the random assignment of participants in the Philadelphia Fed's project achieved its desired result, a statistical test was conducted. More specifically, for each characteristic, a statistical test of difference was conducted between treatment cases and control cases in their distribution across the specified response categories (see Appendix C). Overall, no statistically significant treatment–control difference was found. As a result of these chi-square tests, we were confident that the random assignment was successful in producing two study groups that were comparable with their baseline characteristics.

Methodology

Traditionally, credit history is the dominant reason for the rejection of low- and moderate-income applicants for mortgages. For many lenders, the first item of concern when evaluating a mortgage application is the individual's credit score. Pre-purchase homeownership counseling can have an immediate impact on prospective homebuyers by improving their creditworthiness through better money management skills. These skills enable them to qualify for a mortgage and have a subsequent impact on the choice and terms associated with a mortgage, as well as successful payment of their mortgage. For many individuals seeking homeownership, without adequate enhancement of the former, the latter might not take place. We focus here on the efficacy of the former. While we consider loan performance, we focus more specifically on the influence of counseling on financial behavioral outcomes, such as credit scores, total debt, and delinquencies in payments.

We employ a widely used approach known as "difference in differences." For example, consider the credit score variable, which we will denote "S." We want to determine if participation in the one-on-one counseling had an effect on credit scores. Denote by time 0, $T_{0,}$ the point of the treatment (counseling) and by time 1, $T_{1,}$ the time of the assessment four years later. Define an indicator, C, to be "on" if the participant received the one-on-one counseling and "off," if not, which will be denoted C=1 for on and C=0 for off. The natural departure point might be to compare the credit scores of the C=1 group with those of the C=0 group at the time of assessment. By

[16] For the data used in this study, a random number generator was used to randomly assign study participants to either the treatment or control group.

"comparing the group," we will now focus on the average result for the group, which we denote E[S] for the "expected value." The starting point might then be the simple difference at the time of the assessment,

$$E[S|C=1 \text{ at } T_1] - E[S|C=0 \text{ at } T_1].$$

Among the problems with this naïve calculation is that, first, it does not consider other differences between the groups of participants that might explain the differences in credit scores, and second, it is not the levels (of scores) that are of interest in any event; rather, the interest lies in the changes. The first of these might be characteristics, such as income, marital status, etc. The point of the study is to assess the effect of counseling on the scores. What is of interest for each group is the change in the score from the time of the counseling to the time of the assessment. For those who received the one-on-one counseling, this would be

$$\Delta E[S|C=1] = E[S|C=1 \text{ at } T_1] - E[S|C=1 \text{ at } T_0],$$

where the symbol Δ means "change." The preceding is simply the amount by which the average credit scores of those who had the one-on-one counseling changed from the time of the counseling to the time of the assessment. Finally, to assess the impact of the one-on-one counseling on credit scores, we compare the results for the treated individuals, that is, those who had C=1, with the control individuals, or those who had C=0. This difference in the changed scores would be

$$\Delta E[S|C=1] - \Delta E[S|C=0] = \{E[S|C=1 \text{ at } T_1] - E[S|C=1 \text{ at } T_0]\} - \{E[S|C=0 \text{ at } T_1] - E[S|C=0 \text{ at } T_0]\}.$$

This is known as the difference in differences. This sort of analysis is the subject of vast contemporary literature, both theoretical and empirical. In sum, the difference in differences tells us whether the change in credit score for the treatment group differed from the change in credit score for the control group. If so, since we've controlled for other differences between the two groups of individuals via random assignment, we will attribute any such differences to the treatment itself, namely, the one-on-one counseling.

RESULTS

The relevant comparison of the impact of counseling with the various outcomes considered in this study involves the influence of the one-on-one counseling received by the treatment group participants on the outcome under consideration relative to the behavioral change in the particular outcome by the control group. The participants in the initial enrollment of the study were randomly assigned between treatment and control groups. This controls for self-selection bias. After taking into account the attrition rate during the four years, 425 participants (or 95 percent of those) assigned to the treatment group remained in the study. However, not everyone in the treatment group participated in the one-on-one counseling.[17] Thus, we first consider the change in credit scores between those treatment participants with one-on-one counseling and the change in credit scores among the remaining control participants.[18] For this comparison, we required that the participants in the control group and the treatment participants with one-on-one counseling have credit scores in all five waves of the study.[19] This resulted in 318 participants in the control group and 202 participants in the treatment group with one-on-one counseling. The latter represents 62 percent of all treatment participants who completed the final year follow-up survey. However, as previously discussed, the two groups should be quite similar in various key aspects in order to have confidence that the difference in differences is due primarily to the one-on-one counseling. Although the entire group of treatment participants was not used in this comparison, the initial average credit scores of the two groups are quite similar; however, some of the initial average values of other characteristics are not as similar as the credit scores.

In order to obtain an equal number of control participants who have similar initial average values in other key characteristics, we relied on a procedure known as propensity score matching. This procedure selects an equal number of participants (202) from the control group as the number of treatment group participants with one-on-one counseling who meet the criterion of similar characteristics initially between the two groups.[20] Table 1 shows the results. In Table 1, the change in average credit scores for the treatment group participants who received one-on-one counseling was a 16.2 point gain, which was statistically significant. Those in the control group had an 8.5 point gain (statistically significant) or a differ-

[17] Those in the treatment group who did not have one-on-one counseling had characteristics similar to those treatment participants with one-on-one counseling.

[18] As a general rule, credit scores range from 300 to 850, where: 750–850=Excellent; 660–749=Good; 620–659=Fair; 619 or less=Poor.

[19] Those participants with fewer than five credit scores have similar characteristics to those participants with five credit scores, except the former group have fewer banking products and slightly less education.

[20] The key characteristics include credit scores, debt levels, age, income, gender, race, and marital status.

TABLE 1

Difference-in-Differences Estimates of Credit Score: Propensity Score Matching Pairs

	N	Baseline	Final	Difference	P-Value
Control	202	614.0	622.5	8.5	0.093*
Treatment with one-on-one	202	605.9	622.1	16.2	0.001***
Difference-in-differences				7.7	0.214

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

ence in differences of 7.7 (no significant difference).[21] In a companion comparison, we further break down the control group and treatment group with one-on-one counseling into non-homeowners and those who eventually became homeowners. The results are presented in Table 2. The average credit score of treatment non-homeowners with one-on-one counseling increased 16.3 points (statistically significant), while control non-homeowners had a credit score increase of 8.6 points (no statistical significance), or a difference in differences of 7.7 (no significant difference). Similarly, the change in the mean credit score for treatment homeowners with one-on-one counseling was an increase of 16.1 points (statistically significant) relative to the 8.3 point (no significant difference) rise in the mean credit score of control homeowners, yielding a difference in differences of 7.8 (no statistical significance).[22] Thus, one-on-one counseling had a positive effect on the credit scores of both eventual homeowners and non-homeowners, with a relatively greater impact on treatment homeowners with one-on-one counseling.

A similar approach is used to assess the impact of counseling on the change in total debt balances of study participants' trade lines,[23] using the propensity matching pairs. In addition, we separated the change in the debt of participants in the control group and treatment group with one-on-one counseling into non-homeowners and those who eventually became homeowners. The results are in Table 3. The debt balances of non-homeowners in both the control and treatment groups with one-on-one counseling increased, with a larger increase ($1,742) in the latter group. The finding for homeowners is different and more dramatic. Total debt balances for control homeowners decreased by $1,447, while the total debt for treatment homeowners with one-on-one counseling decreased by $3,109 (statistically significant). This resulted in an absolute difference in differences between treatment with one-on-one counseling and control participants of $1,662.

[21] The credit scores used in this analysis are from Experian. While the baseline credit score is self-explanatory, the final credit score needs some explanation. For non-homeowners in both the treatment and control groups, the final credit score is the one in the fifth year of the study. The final credit score for those homeowners in both the treatment and control groups is somewhat different than for non-homeowners. For all homeowners in both treatment and control groups, their credit scores decline after they obtain their mortgage. This is probably due to acquiring additional credit or an increased use of current credit to finance expenditures for home remodeling or the purchase of home furnishings. A primary function of pre-purchase homeownership counseling and money management skills is to improve a prospective homebuyer's creditworthiness (especially their credit scores) so that they can qualify for a mortgage, and by assessing the effective impact of counseling on their credit score, the final credit score for the calculation should be the most recent credit score preceding their obtaining a mortgage. This is the rule used in the calculations in this study.

[22] There were no homeowners in the baseline. The credit scores in the table represent the credit scores of those who eventually became homeowners.

[23] Trade lines include installment accounts that are accounts in which the payment amount and number of payments are fixed, such as an auto loan and revolving accounts, which are charge accounts with a credit limit and a monthly minimum payment (such as bank credit cards and department credit cards). This comparison does not include mortgage loans for participants who became homeowners.

TABLE 2

Difference-in-Differences Estimates of Credit Score by Homeownership Status: Propensity Matching Pairs

	ELI	N	Baseline	Final	Difference	P-Value
Non-homeowners	Control	150	595.1	603.7	8.6	0.194
	Treatment with one-on-one	141	592.2	608.5	16.3	0.010***
	Difference-in-differences				7.7	0.281
Homeowners	Control	52	668.3	676.6	8.3	0.101
	Treatment with one-on-one	61	637.4	653.5	16.1	0.004***
	Difference-in-differences				7.8	0.229

*** p < 0.01, ** p < 0.05, * p < 0.10

TABLE 3

Difference-in-Differences Estimates of Total Debt by Homeownership Status: Propensity Matching Pairs

	ELI	N	Baseline	Final	Difference	P-Value
Non-homeowners	Control	150	33,125	33,520	396	0.883
	Treatment with one-on-one	141	35,360	37,498	2,138	0.449
	Difference-in-differences				1,742	0.844
Homeowners	Control	52	37,563	36,116	-1,447	0.502
	Treatment with one-on-one	61	40,610	37,501	-3,109	0.057*
	Difference-in-differences				1,662	0.118

*** p < 0.01, ** p < 0.05, * p < 0.10

Another area of interest is the delinquent payments on financial obligations. Table 4 shows the change in delinquent payments by study participants who were 30, 60, or 90 days late. Control non-homeowners reduced their average delinquent payments in one of the three categories (90 days past due), while treatment non-homeowners with one-on-one counseling reduced their delinquent payments in all three categories. Moreover, the difference in differences between the two groups was statistically significant in both the 30 days and 60 days past due categories.

Control participants who became homeowners reduced their delinquent payments in the 30-day and 90-day categories, while the treatment participants with one-on-one counseling who eventually became homeowners reduced their delinquent payments in all three categories. Furthermore, the difference in differences between treatment and control homeowners was statistically significant in the 30-day, 60-day and 90-day categories. Thus, treatment participants with one-on-one counseling who became homeowners generally fare better in reducing late payments than their control counterparts.

Additional Information on Participants Who Became Homeowners

Number of Eventual Homeowners. As indicated in the previous analysis, when we compare the number of treatment participants with one-on-one counseling and a sample of control counterparts obtained by propensity score matching, there were more treatment participants with one-on-one counseling who eventually became homeowners compared with their control counterparts. There were 61 homeowners out of 202 treatment participants with one-on-one counseling (or 30.2 percent) and 52 homeowners out of 202 control participants (or 25.7 percent). These 113 homeowners will be used as the basis for the information in the following five sections.

TABLE 4

Difference-in-Differences Estimates of Delinquent Payments by Homeownership Status: Propensity Matching Pairs

		ELI	N	Baseline	Final	Difference	P-Value
Non-homeowners	30 days past due	Control	150	5.5	5.6	0.2	0.812
		Treatment with one-on-one	141	5.7	3.5	-2.2	0.001***
		Difference-in-differences				2.4	0.019**
	60 days past due	Control	150	3.7	3.8	0.1	0.877
		Treatment with one-on-one	141	4.4	4.1	-0.3	0.571
		Difference-in-differences				0.4	0.001***
	90 days past due†	Control	148	8.5	7.4	-1.1	0.392
		Treatment with one-on-one	138	10.2	9.1	-1.1	0.425
		Difference-in-differences				0.0	0.921
Homeowners	30 days past due	Control	52	4.1	3.4	-0.7	0.092*
		Treatment with one-on-one	61	6.3	4.8	-1.5	0.003***
		Difference-in-differences				0.8	0.076*
	60 days past due	Control	52	2.9	2.8	0.0	0.923
		Treatment with one-on-one	61	4.0	3.5	-0.6	0.276
		Difference-in-differences				0.6	0.001***
	90 days past due†	Control	52	5.0	4.8	-0.2	0.887
		Treatment with one-on-one	60	8.1	7.2	-0.9	0.237
		Difference-in-differences				0.7	0.003***

***p < 0.01, **p < 0.05, *p < 0.10
†Excludes outlier

Type of Home Purchased. The majority of participants who became homeowners purchased either a single-family house or a townhouse/row house (Table 5). The percentages for treatment participants with one-on-one counseling are 38 and 51, respectively; the percentages for control participants are 31 and 56, respectively.

Timing of Home Purchase. Control participants compared with treatment participants with one-on-one counseling tended to purchase their home rather early in the study period; namely, 23.1 percent of control participants made a purchase between one and six months from the start of the study, while only 18 percent of treatment participants with one-on-one

TABLE 5

Type of Home Purchased: Propensity Matching Pairs

Type of Residence	Control		Treatment with One-on-One	
	N	Percent	N	Percent
Single-family home	16	30.8	23	37.7
Townhouse or row home	29	55.8	31	50.8
An apartment unit in a multifamily house, such as a condominium or co-op	3	5.8	1	1.6
A multifamily home with two or more apartments	4	7.7	6	9.8

counseling made a purchase during the same time frame (Figure 11). Conversely, 24.6 percent of treatment participants with one-on-one counseling purchased a home between 25 months and three years from the start of the study as compared with 11.5 percent of control participants.

Home Purchase Price. The average home purchase price of treatment participants with one-on-one counseling and control participants was $144,890 and $158,202, respectively.

Type of Mortgage. Of the participants who had a mortgage, nearly all of them (both control and treatment with one-on-one counseling) had a 30-year fixed-rate mortgage.[24] The average interest rate for treatment participants with one-on-one counseling and control participants was 5.56 percent and 5.53 percent, respectively.

Mortgage Payments. Both treatment participants with one-on-one counseling and control participants usually paid their mortgages in a timely manner (see Table 6).

FIGURE 11

Time Between Start of Study and Home Purchase: Propensity Matching Pairs

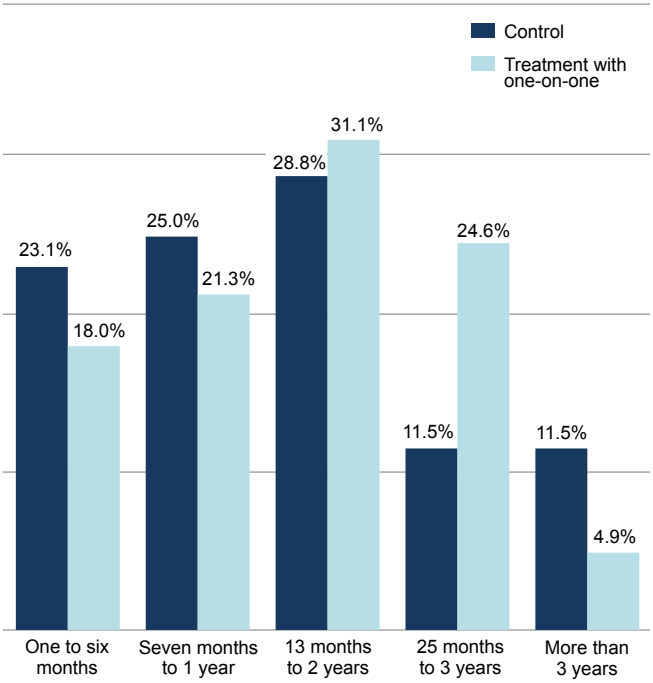


TABLE 6

Mortgage Delinquency Two Waves After Home Purchase: Propensity Matching Pairs

		N	Final	P-Value
30 days past due	Control	44	0.3	
	Treatment with one-on-one	53	0.9	
	Difference-in-differences		0.6	0.005***
60 days past due	Control	44	0.2	
	Treatment with one-on-one	53	0.2	
	Difference-in-differences		0.0	0.327
90 days past due†	Control	44	0.0	
	Treatment with one-on-one	53	0.7	
	Difference-in-differences		0.7	0.001***

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

†Excludes outlier

[24] Two participants did not have a mortgage.

CONCLUSIONS

The analysis here shows that a two-hour pre-purchase homeownership workshop and one-on-one pre-purchase counseling improved the study participants' financial creditworthiness as they prepared to qualify for a home mortgage. However, the benefits from pre-purchase homeowner counseling and money management assistance for the treatment participants who received one-on-one counseling were generally greater in terms of credit scores, total debt, and various delinquency days on payments relative to control participants. Both treatment participants with one-on-one counseling and control participants who became homeowners tended to pay their mortgages in a timely manner overall.

Moreover, this study makes a major improvement on previous research by using an experimental design with participants (only first-time homebuyers) randomly assigned to a treatment or control group. This allows us to directly counter "selection bias" on the part of study participants. Furthermore, the participants are observed for four years after they receive assistance. In addition to monitoring their credit profile by obtaining their credit reports and credit scores each year, we surveyed the participants annually to obtain critical information on them and their household members to track life changes over time. We also implemented certain safeguards to ensure the consistency of the counseling and other assistance provided to the participants.[25]

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[25] Given the homeownership counseling's rich database, two additional areas of analysis will be pursued. The first will focus on the issue of individuals with thin or no credit files. Lenders are reluctant to extend credit to those in this category since they don't have a credit score to gauge their creditworthiness. Nonetheless, there are some who maintain that there may be those in this group who are creditworthy despite not having a credit score. Our database has some participants who initially had thin or no credit files and subsequently qualified for credit scores. We will investigate their situations.

We will also examine if any of the homebuyers in the study "move-to-opportunity," and, in the process, improve their overall well-being (i.e., move to a lower poverty area, lower crime area, and/or an area with better education, or lower unemployment). While the earlier governmental "move-to-opportunity" demonstrations involved participants who were offered rental assistant vouchers to observe their movement decision, or lack thereof, to a more improved environment, the movements of homebuyer participants in our study are strictly voluntary without any inducements.

APPENDIX A

TABLE A1
Demographic Comparison

HOC Study: All Participants		2005–2009 ACS: LMI Census Tracts		2008Q1 Equifax CCP: LMI Census Tracts[a]	
Age	Percent	Age	Percent	Age[b]	Percent
18 to 24	9.6	20 to 24	15.0	23 to 24	7.7
25 to 34	38.0	25 to 34	31.0	25 to 34	33.7
35 to 44	28.3	35 to 44	27.0	35 to 44	27.6
45 and older	24.2	45 to 54	27.0	45 to 56	31.0
Gender	Percent	Gender	Percent		
Male	32.3	Male	46.1		
Female	67.7	Female	53.9		
Education	Percent	Education[c]	Percent		
Less than high school	3.1	Less than high school	25.3		
High school grad or GED	20.9	High school grad or GED	39.1		
Vocational or trade school	9.6	Associate's degree	5.3		
Some college	38.0	Some college	16.1		
College graduate	16.3	College graduate	9.4		
Graduate school	12.1	Graduate school	4.9		
Race	Percent	Race	Percent		
White	11.8	White	31.2		
African American	78.1	African American	53.2		
Asian	1.9	Asian	5.6		
Other	5.4	Other	8.2		
Multiracial	2.9	Multiracial	1.9		
Ethnicity	Percent	Ethnicity	Percent		
Hispanic/Latino	4.1	Hispanic/Latino	13.6		
Non-Hispanic/Non-Latino	95.9	Non-Hispanic/Non-Latino	86.4		
Marital Status	Percent	Marital Status	Percent		
Single	74.7	Single	67.9		
Married, living with spouse	14.3	Married	27.4		
Married, not living with spouse	4.8	Married, separated	4.6		
Living with domestic partner	6.3				

TABLE CONTINUED ON PAGE 24 ➔

HOC Study: All Participants		2005–2009 ACS: LMI Census Tracts		2008Q1 Equifax CCP: LMI Census Tracts	
Earnings Last Month	Percent	Annual Earnings[e]	Percent		
Did not work	12.9				
Less than $1,000	8.0	Less than $10,000	2.8		
$1,000 to $2,999	52.2	$10,000 to $34,999	49.0		
$3,000 to $4,999	21.3	$35,000 to $64,999	38.0		
$5,000 or more	5.7	$65,000 or more	10.3		
	Mean		Mean		Mean
Household members	2.85		2.75		
Household members under 18	0.96		0.76		
Credit score	603.7				586.0[f]
Age	36.9				38.2
Total debt	28,353				12,843

[a] The Federal Reserve Bank of New York Consumer Credit Panel/Equifax
[b] Among population 20 to 54 years of age
[c] Among population 23 to 56 years, which represents the 5th and 95th percentiles of age for participants in the homeownership counseling study
[d] Among population 25 years and over
[e] Among population 16 years and over
[f] Equifax Risk Score

APPENDIX B

TABLE B1

48-Month Follow-Up Response Rates by Study Group

	Total	Treatment	Control
48-month follow-up completed	632	329	303
Original sample	898	449	449
Response rate (using original sample)	70.4%	73.3%	67.5%
Available sample	838	425	413
Response rate (using available sample)	75.4%	77.4%	73.4%

In total, 60 sample members dropped out of the study (24 sample members dropped out during the 12-month follow-up, 23 sample members dropped out during the 24-month follow-up, and 13 dropped out during the 36-month follow-up). Those sample members who dropped out either decided to no longer participate or were deceased.

TABLE C1a
Statistical Test of Difference

Table of Age			
Age	Control	Treatment	Total
18–24	43	42	85
	4.79	4.68	9.47
	50.59	49.41	
	9.58	9.35	
25–34	168	174	342
	18.71	19.38	38.09
	49.12	50.88	
	37.42	38.75	
35–44	122	132	254
	13.59	14.7	28.29
	48.03	51.97	
	27.17	29.4	
45 and older	116	101	217
	12.92	11.25	24.17
	53.46	46.54	
	25.84	22.49	
Total	449	449	898
	50	50	100

Frequency, Percent, Row %, Col. %

TABLE C1b
Statistics for Table of Age

Statistic	DF	Value	Prob.
Chi-Square	3	1.5476	0.6713
Likelihood Ratio Chi-Square	3	1.5485	0.6711
Mantel-Haenszel Chi-Square	1	0.4496	0.5025
Phi Coefficient		0.0415	
Contingency Coefficient		0.0415	
Cramer's V		0.0415	

DF=degrees of freedom

TABLE C1c

Fisher's Exact Test	
Table Probability (P)	1.75E-04
Pr <= P	0.6731

Sample size=898

TABLE C2a

Statistical Test of Difference

Table of Education			
Education	Control	Treatment	Total
1–High school diploma, GED, or less	116	100	216
	12.92	11.14	24.06
	53.7	46.3	
	25.84	22.27	
2–Certification from vocational, technical, trade	40	46	86
	4.45	5.12	9.57
	46.51	53.49	
	8.91	10.24	
3–Some college	166	175	341
	18.49	19.49	37.98
	48.68	51.32	
	36.97	38.98	
4–College graduate	79	67	146
	8.8	7.46	16.26
	54.11	45.89	
	17.59	14.92	
5–Grad school	48	61	109
	5.35	6.79	12.14
	44.04	55.96	
	10.69	13.59	
Total	449	449	898
	50	50	100

Frequency, Percent, Row %, Col. %

TABLE C2b

Statistics for Table of Education

Statistic	DF	Value	Prob.
Chi-Square	4	4.3781	0.3572
Likelihood Ratio Chi-Square	4	4.3844	0.3565
Mantel-Haenszel Chi-Square	1	1.0615	0.3029
Phi Coefficient		0.0698	
Contingency Coefficient		0.0697	
Cramer's V		0.0698	

TABLE C2c

Fisher's Exact Test	
Table Probability (P)	4.30E-06
Pr <= P	0.3585

Sample size=898

TABLE C3a

Statistical Test of Difference

Table of Race			
Race	Control	Treatment	Total
1–White	57	45	102
	6.35	5.01	11.36
	55.88	44.12	
	12.69	10.02	
2–African American	350	351	701
	38.98	39.09	78.07
	49.93	50.07	
	77.95	78.17	
3–Asian	6	11	17
	0.67	1.22	1.89
	35.29	64.71	
	1.34	2.45	
4–Multiracial	15	11	26
	1.67	1.22	2.89
	57.69	42.31	
	3.34	2.45	
5–Other	20	28	48
	2.23	3.12	5.35
	41.67	58.33	
	4.45	6.24	
6–Missing	1	3	4
	0.11	0.33	0.44
	25	75	
	0.22	0.67	
Total	449	449	898
	50	50	100

Frequency, Percent, Row %, Col. %

TABLE C3b

Statistics for Table of Race

Statistic	DF	Value	Prob.
Chi-Square	5	5.8325	0.3229
Likelihood Ratio Chi-Square	5	5.9129	0.3148
Mantel-Haenszel Chi-Square	1	2.3952	0.1217
Phi Coefficient		0.0806	
Contingency Coefficient		0.0803	
Cramer's V		0.0806	

TABLE C3c

Fisher's Exact Test	
Table Probability (P)	7.15E-06
Pr <= P	0.3345

Sample size=898

TABLE C4a

Statistical Test of Difference

Table of Ethnicity			
Ethnicity	Control	Treatment	Total
Yes	17	19	36
	1.89	2.12	4.01
	47.22	52.78	
	3.79	4.23	
No	426	423	849
	47.44	47.1	94.54
	50.18	49.82	
	94.88	94.21	
Missing	6	7	13
	0.67	0.78	1.45
	46.15	53.85	
	1.34	1.56	
Total	449	449	898
	50	50	100

Frequency, Percent, Row %, Col. %

TABLE C4b

Statistics for Table of Ethnicity

Statistic	DF	Value	Prob.
Chi-Square	2	0.1986	0.9055
Likelihood Ratio Chi-Square	2	0.1988	0.9054
Mantel-Haenszel Chi-Square	1	0.0373	0.8469
Phi Coefficient		0.0149	
Contingency Coefficient		0.0149	
Cramer's V		0.0149	

TABLE C4c

Fisher's Exact Test	
Table Probability (P)	0.0268
Pr <= P	0.8893

Sample size=898

TABLE C5a
Statistical Test of Difference

Table of Marital Status			
Marital Status	Control	Treatment	Total
Single	332	337	669
	36.97	37.53	74.5
	49.63	50.37	
	73.94	75.06	
Married, living with spouse	65	63	128
	7.24	7.02	14.26
	50.78	49.22	
	14.48	14.03	
Married, not living with spouse	22	21	43
	2.45	2.34	4.79
	51.16	48.84	
	4.9	4.68	
Living with domestic partner	30	26	56
	3.34	2.9	6.24
	53.57	46.43	
	6.68	5.79	
Missing	0	2	2
	0	0.22	0.22
	0	100	
	0	0.45	
Total	449	449	898
	50	50	100

Frequency, Percent, Row %, Col. %

TABLE C5b
Statistics for Table of Marital Status

Statistic	DF	Value	Prob.
Chi-Square	4	2.3776	0.6667
Likelihood Ratio Chi-Square	4	3.1504	0.533
Mantel-Haenszel Chi-Square	1	0	1
Phi Coefficient		0.0515	
Contingency Coefficient		0.0514	
Cramer's V		0.0515	

TABLE C5c

Fisher's Exact Test	
Table Probability (P)	2.17E-04
Pr <= P	0.7856

Sample size=898

TABLE C6a

Statistical Test of Difference

Table of Household Size			
HH	Control	Treatment	Total
1	103	94	197
	11.47	10.47	21.94
	52.28	47.72	
	22.94	20.94	
2	118	125	243
	13.14	13.92	27.06
	48.56	51.44	
	26.28	27.84	
3	93	89	182
	10.36	9.91	20.27
	51.1	48.9	
	20.71	19.82	
4	68	72	140
	7.57	8.02	15.59
	48.57	51.43	
	15.14	16.04	
5 or more	67	69	136
	7.46	7.68	15.14
	49.26	50.74	
	14.92	15.37	
Total	449	449	898
	50	50	100

Frequency, Percent, Row %, Col. %

TABLE C6b

Statistics for Table of Household Size

Statistic	DF	Value	Prob.
Chi-Square	4	0.8444	0.9324
Likelihood Ratio Chi-Square	4	0.8446	0.9324
Mantel-Haenszel Chi-Square	1	0.2174	0.641
Phi Coefficient		0.0307	
Contingency Coefficient		0.0307	
Cramer's V		0.0307	

TABLE C6c

Fisher's Exact Test	
Table Probability (P)	1.95E-05
Pr <= P	0.9329

Sample size=898

TABLE C7a

Statistical Test of Difference

Table of Household Members Under Age 18			
HHLs18	Control	Treatment	Total
0	222	204	426
	24.72	22.72	47.44
	52.11	47.89	
	49.44	45.43	
1	105	115	220
	11.69	12.81	24.5
	47.73	52.27	
	23.39	25.61	
2	69	63	132
	7.68	7.02	14.7
	52.27	47.73	
	15.37	14.03	
3	31	27	58
	3.45	3.01	6.46
	53.45	46.55	
	6.9	6.01	
4 or more	22	40	62
	2.45	4.45	6.9
	35.48	64.52	
	4.9	8.91	
Total	449	449	898
	50	50	100

Frequency, Percent, Row %, Col. %

TABLE C7b

Statistics for Table of Household Members Under Age 18

Statistic	DF	Value	Prob.
Chi-Square	4	6.9895	0.1364
Likelihood Ratio Chi-Square	4	7.0662	0.1324
Mantel-Haenszel Chi-Square	1	2.4929	0.1144
Phi Coefficient		0.0882	
Contingency Coefficient		0.0879	
Cramer's V		0.0882	

TABLE C7c

Fisher's Exact Test	
Table Probability (P)	1.75E-06
Pr <= P	0.1358

Sample size=898

TABLE C8a

Statistical Test of Difference

Table of Co-Purchasers			
Co-Purchasers	Control	Treatment	Total
1–None	351	341	692
	39.09	37.97	77.06
	50.72	49.28	
	78.17	75.95	
2–One or More	91	95	186
	10.13	10.58	20.71
	48.92	51.08	
	20.27	21.16	
3–Missing	7	13	20
	0.78	1.45	2.23
	35	65	
	1.56	2.9	
Total	449	449	898
	50	50	100

Frequency, Percent, Row %, Col. %

TABLE C8b

Statistics for Table of Co-Purchasers

Statistic	DF	Value	Prob.
Chi-Square	2	2.0305	0.3623
Likelihood Ratio Chi-Square	2	2.0586	0.3573
Mantel-Haenszel Chi-Square	1	1.2228	0.2688
Phi Coefficient		0.0476	
Contingency Coefficient		0.0475	
Cramer's V		0.0476	

TABLE C8c

Fisher's Exact Test	
Table Probability (P)	0.0044
Pr <= P	0.3594

Sample size=898

TABLE C9a
Statistical Test of Difference

Table of Earnings			
Earnings	Control	Treatment	Total
1–Less than $1,000	39	36	75
	4.34	4.01	8.35
	52	48	
	8.69	8.02	
2–$1,000 to $2,999	227	239	466
	25.28	26.61	51.89
	48.71	51.29	
	50.56	53.23	
3–$3,000 to $4,999	93	97	190
	10.36	10.8	21.16
	48.95	51.05	
	20.71	21.6	
4–$5,000 or more	29	22	51
	3.23	2.45	5.68
	56.86	43.14	
	6.46	4.9	
Missing	61	55	116
	6.79	6.12	12.91
	52.59	47.41	
	13.59	12.25	
Total	449	449	898
	50	50	100

Frequency, Percent, Row %, Col. %

TABLE C9b
Statistics for Table of Earnings

Statistic	DF	Value	Prob.
Chi-Square	4	1.7844	0.7753
Likelihood Ratio Chi-Square	4	1.7876	0.7747
Mantel-Haenszel Chi-Square	1	0.5393	0.4627
Phi Coefficient		0.0446	
Contingency Coefficient		0.0445	
Cramer's V		0.0446	

TABLE C9c

Fisher's Exact Test	
Table Probability (P)	2.51E-05
Pr <= P	0.7786

Sample size=898

TABLE C10a

Statistical Test of Difference

Table of Checking Accounts			
Checking Accounts	Control	Treatment	Total
Yes	403	397	800
	44.88	44.21	89.09
	50.38	49.63	
	89.76	88.42	
No	45	52	97
	5.01	5.79	10.8
	46.39	53.61	
	10.02	11.58	
Missing	1	0	1
	0.11	0	0.11
	100	0	
	0.22	0	
Total	449	449	898
	50	50	100

Frequency, Percent, Row %, Col. %

TABLE C10b

Statistics for Table of Checking Accounts

Statistic	DF	Value	Prob.
Chi-Square	2	1.5502	0.4607
Likelihood Ratio Chi-Square	2	1.9369	0.3797
Mantel-Haenszel Chi-Square	1	0.0067	0.9347
Phi Coefficient		0.0415	
Contingency Coefficient		0.0415	
Cramer's V		0.0415	

WARNING: 33% of the cells have expected counts less than 5. Chi-square may not be a valid test.

TABLE C10c

Fisher's Exact Test	
Table Probability (P)	0.0326
Pr <= P	0.5191

Sample size=898

TABLE C11a

Statistical Test of Difference

Table of Savings Accounts			
Savings Accounts	Control	Treatment	Total
Yes	313	324	637
	34.86	36.08	70.94
	49.14	50.86	
	69.71	72.16	
No	135	125	260
	15.03	13.92	28.95
	51.92	48.08	
	30.07	27.84	
Missing	1	0	1
	0.11	0	0.11
	100	0	
	0.22	0	
Total	449	449	898
	50	50	100

Frequency, Percent, Row %, Col. %

TABLE C11b

Statistics for Table of Savings Accounts

Statistic	DF	Value	Prob.
Chi-Square	2	1.5746	0.4551
Likelihood Ratio Chi-Square	2	1.961	0.3751
Mantel-Haenszel Chi-Square	1	1.3263	0.2495
Phi Coefficient		0.0419	
Contingency Coefficient		0.0418	
Cramer's V		0.0419	

WARNING: 33% of the cells have expected counts less than 5. Chi-square may not be a valid test.

TABLE C11c

Fisher's Exact Test	
Table Probability (P)	0.022
Pr <= P	0.4624

Sample size=898

TABLE C12a

Statistical Test of Difference

Table of Money Market Accounts, Mutual Funds, etc.			
	Control	Treatment	Total
Yes	63	70	133
	7.02	7.8	14.82
	47.37	52.63	
	14.03	15.59	
No	385	378	763
	42.87	42.09	84.96
	50.46	49.54	
	85.75	84.19	
Missing	1	1	2
	0.11	0.11	0.22
	50	50	
	0.22	0.22	
Total	449	449	898
	50	50	100

Frequency, Percent, Row %, Col. %

TABLE C12b

Statistics for Table of Money Market Accounts, Mutual Funds, etc.

Statistic	DF	Value	Prob.
Chi-Square	2	0.4326	0.8055
Likelihood Ratio Chi-Square	2	0.4328	0.8054
Mantel-Haenszel Chi-Square	1	0.2274	0.6335
Phi Coefficient		0.0219	
Contingency Coefficient		0.0219	
Cramer's V		0.0219	

WARNING: 33% of the cells have expected counts less than 5. Chi-square may not be a valid test.

TABLE C12c

Fisher's Exact Test	
Table Probability (P)	0.0302
Pr <= P	0.7863

Sample size=898

TABLE C13a

Statistical Test of Difference

Table of Retirement Accounts			
Retirement Accounts	Control	Treatment	Total
Yes	215	221	436
	23.94	24.61	48.55
	49.31	50.69	
	47.88	49.22	
No	233	227	460
	25.95	25.28	51.23
	50.65	49.35	
	51.89	50.56	
Don't know	0	1	1
	0	0.11	0.11
	0	100	
	0	0.22	
Missing	1	0	1
	0.11	0	0.11
	100	0	
	0.22	0	
Total	449	449	898
	50	50	100

Frequency, Percent, Row %, Col. %

TABLE C13b

Statistics for Table of Retirement Accounts

Statistic	DF	Value	Prob.
Chi-Square	3	2.1608	0.5397
Likelihood Ratio Chi-Square	3	2.9334	0.402
Mantel-Haenszel Chi-Square	1	0.1521	0.6965
Phi Coefficient		0.0491	
Contingency Coefficient		0.049	
Cramer's V		0.0491	

WARNING: 50% of the cells have expected counts less than 5. Chi-square may not be a valid test.

TABLE C13c

Fisher's Exact Test	
Table Probability (P)	0.0123
Pr <= P	0.7134

Sample size=898

TABLE C14a

Statistical Test of Difference

Table of Savings			
Savings	Control	Treatment	Total
Yes	47	46	93
	5.23	5.12	10.35
	50.54	49.46	
	10.47	10.24	
No	400	402	802
	44.54	44.77	89.31
	49.88	50.12	
	89.09	89.53	
Missing	2	1	3
	0.22	0.11	0.33
	66.67	33.33	
	0.45	0.22	
Total	449	449	898
	50	50	100

Frequency, Percent, Row %, Col. %

TABLE C14b

Statistics for Table of Savings

Statistic	DF	Value	Prob.
Chi-Square	2	0.3491	0.8398
Likelihood Ratio Chi-Square	2	0.3555	0.8371
Mantel-Haenszel Chi-Square	1	0.1535	0.6952
Phi Coefficient		0.0197	
Contingency Coefficient		0.0197	
Cramer's V		0.0197	

WARNING: 33% of the cells have expected counts less than 5. Chi-square may not be a valid test.

TABLE C14c

Fisher's Exact Test	
Table Probability (P)	0.0325
Pr <= P	0.9349

Sample size=898

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