Program Recertification Costs: Evidence from SNAP

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Abstract

We document low rates of recertification for the Supplemental Nutritional Assistance Program (SNAP) which we attribute to procedural issues associated with the recertification process. We find that current recipients – who must complete a recertification interview by the end of their recertification month – are 19 percent less likely to recertify when assigned an interview date at the end rather than at the beginning of the month. The results persist when conditioning on eligibility and are larger for long-term recipients and households with children, suggesting hassle costs associated with later interview dates worsen targeting efficiency both in terms of eligibility and need.

Research documents low rates of enrollment among eligible recipients across a wide variety of programs, often citing under-awareness of program availability and eligibility rules as key barriers to take-up (Chetty, Friedman and Saez, 2013; Dahl, Løken and Mogstad, 2014). Several recent interventions demonstrate that informing likely-eligible individuals about program access leads to significant increases in enrollment (Armour, 2018; Barr and Turner, 2018; Bhargava and Manoli, 2015; Finkelstein and Notowidigdo, 2018; Goldin, Homonoff and Tucker-Ray, 2017). Similarly, automatic enrollment has been highly effective at increasing program participation (Madrian and Shea, 2001). In this paper, we turn our attention away from initial enrollment and toward another potential barrier to participation: program recertification.

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To ensure program integrity, recipients of all means-tested programs must document continued eligibility for the program through a periodic recertification process. For example, recipients of the Supplemental Nutrition Assistance Program (SNAP), the largest nutritional assistance program in the United States, must submit income documentation and complete a caseworker interview by the end of their certification period, usually every six to twelve months. Recertification failure often occurs despite maintained eligibility: a large fraction of recertification cases fail to recertify, but rejoin a short period later or "churn" (Mills et al., 2014). SNAP churn has costs for both recipients and program administrators: eligible cases lose essential benefits, while administrative budgets are stretched due to additional workload associated with churn.

The low rate of recertification success among likely-eligible recipients is somewhat surprising even in spite of the existing literature on barriers to initial program enrollment. For example, awareness of a program's availability is a key issue for program enrollment, but not for recertification. Similarly, individuals who have already applied for a program at least once are likely to have a better understanding of their eligibility and the application process than first time enrollees. Lastly, current participants have demonstrated a past preference for participation, while eligible but unenrolled individuals may have purposely chosen not to participate in the program for a variety of reasons such as stigma (Currie and Grogger, 2001). However, research from behavioral economics suggests that even small application costs can lead to large decreases in program participation (Bertrand, Mullainathan and Shafir, 2004; Mullainathan and Shafir, 2013).[1] This paper estimates the impact of administrative burden by determining the effect of one seemingly trivial component of the recertification process on recertification success: the initial recertification interview date assignment.

To successfully recertify for CalFresh (California's SNAP program), recipients must complete a recertification interview by the end of the calendar month in which their certification period ends. While recipients may reschedule their interview for any point during the month, the CalFresh office assigns each case an initial interview date that is included in an appointment letter in their recertification packet. Specifically, these initial interview dates are *randomly assigned* across recipients

[1] A related literature in the field of public administration demonstrates several instances in which administrative burden, conceptualized as a combination of learning, psychological, and compliance costs associated with interactions with government programs (Moynihan, Herd and Harvey, 2014), impacts program participation (Heinrich, 2015; Herd et al., Forthcoming).

with the same recertification month and staggered throughout the month to smooth caseworker workloads. Regardless of the assigned interview date, all recipients must complete the recertification process by the end of the calendar month. This means that recipients who are assigned a date at the start of the calendar month, and do not reschedule, have more than four weeks to complete their recertification requirements post-interview (such as compiling income documentation or rescheduling a missed interview), while others have as little as a few days.

To determine the effect of interview date on recertification and subsequent outcomes, we analyze a unique administrative data set from the San Francisco CalFresh office on the universe of recertification cases (roughly 41,000 cases) from November 2014 to November 2016. The data set contains information on recertification date, interview dates and outcomes (both initial and rescheduled), recertification outcome, and subsequent CalFresh reapplications for those who fail to recertify. This data allows us to examine how the timing of the administrative process can affect both recertification and churn rates by comparing outcomes for those who were randomly assigned to early versus late initial interview dates.

First, we document an extremely high rate of recertification failure: only 48 percent of all cases successfully recertify.[2] Using quarterly wage data from the Employment Development Department (EDD), we estimate that the vast majority of recertification cases are income-eligible, suggesting that most cases that fail recertification do so for reasons other than changes to eligibility. Consistent with this finding, we observe high rates of churn: almost half of cases that fail recertification successfully reapply for the program within the next 90 days with many re-entering the program within the first month after the recertification deadline.

Turning to the effects of interview assignment, our results demonstrate that the randomly assigned interview date has a large and significant impact on recertification success. We estimate that a one-day delay in the assigned interview date decreases the chances of successfully recertifying by one third of a percentage point. In other words, a case that has an initial interview on the 28th day of the month is 9.0 percentage points less likely to recertify than a case that has an initial interview scheduled on the first of the month – a 19 percent decrease in recertification success.

Using data on subsequent reapplications to CalFresh in the 90 days post-recertification, we then

[2]High rates of recertification failure are not unique to the SNAP program. For example, the Department of Education reported that in 2015, 57 percent of student loan borrowers who were enrolled in an income-driven repayment plan failed to recertify, experiencing large increases in their monthly loan payments.

consider the effect of interview date assignment on churn and longer-term discontinuances. We find that interview date assignment affects the churn rate in the opposite direction as the recertification rate. Each one-day delay in the interview date leads to a 0.30 percentage point increase in the likelihood of churning within 90 days of the end of the recertification period – an increase of 8.4 percentage points when comparing cases assigned to an interview at the end of the recertification month versus the first of the month (a 35 percent increase). Additionally, the likelihood of an eligible case being discontinued for more than 90 days increases by 0.05 percentage points per interview day, an increase of 1.3 percentage points over the month (a 5 percent increase). These estimates are consistent with recent research demonstrating the effect of administrative hurdles on SNAP enrollment (Ganong and Liebman, 2018).[3]

The large negative impact of late interview date assignments on recertification is particularly surprising given that households can reschedule their appointment for any time during the recertification month. However, we find that only 3 percent of cases reschedule their interview prior to the assigned date. We estimate that roughly two thirds of the effect of interview assignment on recertification can be explained by differences in interview completion, reiterating that the most of the effect is likely due to procedural issues, rather than differences in eligibility. However, we find that interview assignment does not decrease the likelihood of completing the *first* scheduled interview, suggesting that failure to complete an interview by the recertification deadline is likely driven by having fewer days to reschedule a missed interview rather than differences in decision-making ability at different points of the calendar month (Carvalho, Meier and Wang, 2016). Additionally, we find suggestive evidence that participation in a voluntary text messaging program partially mitigates the effect of interview assignment on recertification success.

Taken together, our results suggest that shifting all interview assignments earlier in the recertification process would have a large impact on recertification outcomes. For example, shifting the interview process two-weeks forward would lead to 85,000 fewer churn cases and 15,000 fewer discontinued, but likely-eligible cases each year in California alone. Additionally, the decrease in administrative costs of processing these would-be churn cases more than outweighs the increase in

[3] A related literature shows that shorter certification periods are associated with lower SNAP enrollment (Currie and Grogger, 2001; Kabbani and Wilde, 2003; Ribar, Edelhoch and Liu, 2008; Ganong and Liebman, 2018). In a slightly different context, Hastings and Shapiro (2018) use these certification periods as an exogenous source of variation in timing of exit from the SNAP program.

costs of associated with the increase in benefits paid out to these same cases.

Our results contribute to a growing literature detailing instances in which administrative hassles lead to low rates of program participation (Sunstein, 2018). For example, increased application costs associated with local program office closures lead to significant decreases in participation in government programs such as WIC and disability insurance (Rossin-Slater, 2013; Deshpande and Li, 2017). Conversely, automatic enrollment, pre-population of application forms, and other types of application assistance significantly increase take-up of retirement savings programs, student financial aid, and nutritional assistance programs (Madrian and Shea, 2001; Bettinger et al., 2012; Finkelstein and Notowidigdo, 2018). A smaller literature on program recertification shows that reminders and flexibility in the recertification process can lead to higher rates of participation. For example, Castleman and Page (2016) find that text reminders to college freshman increase rates of FAFSA renewal. In the context of SNAP, Ganong and Liebman (2018) show that state waivers allowing for recertification interviews to take place over the phone as opposed to face-to-face are associated with increases in participation.

Our results also contribute to a literature examining the relationship between hassle costs associated with program participation and targeting efficiency. While standard models suggest that these application costs improve targeting efficiency (Nichols and Zeckhauser, 1982), behavioral models suggest that these costs are more likely to lead to failed recertification for the neediest households (Deshpande and Li, 2017). To determine whether delaying the assigned interview date improves targeting efficiency, we consider the effect of the initial interview date assignment on recertification, churn, and long-term discontinuances by subgroup. Our results suggest that the effect of interview date on recertification is largest for households with children and those who have received CalFresh benefits for 5 or more years. These results are consistent with a behavioral model of targeting efficiency in which application costs screen out *more* needy households.[4]

This paper is organized as follows. Section I reviews the institutional background on SNAP recertification and churn. Section II describes the CalFresh recertification process and interview random assignment. Section III describes the data sources used in the empirical analysis. Section IV presents estimates of the impact of initial interview date assignment on recertification and

[4]These results are also consistent with findings from Currie and Grogger (2001) who find that single-parent families are disproportionately affected by shorter recertification periods.

subsequent outcomes. Section V discusses possible mechanisms. Section VI estimates costs and benefit losses associated with later interview date assignments. Section VII concludes.

I. Institutional Background

The Supplemental Nutritional Assistance Program (SNAP) is the largest nutritional assistance program in the United States, serving over 42 million individuals at an annual cost of $69 billion (Congressional Budget Office, 2018). The program provides monthly food vouchers to low-income households via Electronic Benefits Transfer (EBT) cards with an average monthly benefit of $126 per person (CBPP, 2018). The program is federally funded but administered by the states who are responsible for determining eligibility and distributing benefits.

SNAP is a means-tested program meaning that all recipients are subject to income eligibility requirements determined by the state.[5] To ensure that individuals receiving SNAP remain eligible for program benefits, recipients must complete a recertification process at the end of each certification period. Certification periods are typically between six and twelve months long, though the exact length varies by state and household composition.[6] Additionally, Able-Bodied Adults Without Dependents (ABAWD) may be subject to work requirements to maintain eligibility.[7]

To successfully recertify, households must complete the following three steps in any order by the end of the recertification period. First, households must fill out and submit a recertification application. This form elicits detailed information on household composition, income, and expenses to determine eligibility and benefit amount. Second, households must complete a scheduled interview – either in-person or over the phone – with a SNAP caseworker. Finally, households must submit documents (e.g., pay stubs) to verify income and other household circumstances described in the

[5] In California, eligibility requirements are based on two income tests: gross household income must be below 200% of the federal poverty line (FPL) and net income must be below 100% FPL. However, many households are only subject to the gross income test including those with only 1-2 member or recipients of other means-tested programs such as Temporary Assistance for Needy Families (TANF) or Medicaid. Additionally, elderly or disabled individuals are also subject to slightly less restrictive eligibility requirements.

[6] For example, households in which all residents are either elderly or disabled may receive a longer certification period of up to 24 months, though the state agency must have contact with the household at least once every twelve months. Conversely, households with "unstable" circumstances who are determined to likely to become ineligible in the near future may be assigned to certification periods as short as one month.

[7] ABAWDs, defined as individuals between the ages of 18 to 49 who are unemployed but not disabled and who do not have any dependent children, are limited to three months of eligibility in any given 36-month period or subject to work requirements. Importantly for this paper, all counties in California operated under a waiver of the ABAWD work requirements for the duration of our study period.

recertification application.

While the goal of the recertification process is to ensure program integrity, an unintended consequence of this requirement is that eligible households may fail to complete one or more of the recertification steps above leading to temporary or longer-term discontinuation of benefits. A recent USDA report estimated the proportion of SNAP households who exit the program but successfully rejoined within the next four months and found a churn rate between 17 and 28 percent across six states (Mills et al., 2014). The study also found that the vast majority of program churn – roughly three quarters or more in five of the six states studied – occurred during months in which households were required to recertify for the program or submit interim reporting. The study concluded that high rates of churn were largely due to procedural issues with the administration of SNAP, especially those concerning the recertification process.

Program churn carries substantial costs for both program administrators and recipients. Participants lose benefits for the days between the end of the certification period and the date of successful reapplication – a household of four could lose up to $200 in benefits each week. Additionally, Mills et al. (2014) estimates that the administrative costs associated with cases that churn, such as increased caseworker contact hours, are up to twice as large as for cases that successfully recertify.[8]

II. CalFresh Recertification and Interview Assignment Process

CalFresh – California's SNAP program – serves over two million households at an annual cost of seven billion dollars. The majority of CalFresh recipients must recertify for the program every twelve months.[9] Households must submit the recertification application, along with accompanying income verification, and complete an interview with a CalFresh caseworker.

The timing of the recertification process is as follows. Consider a case whose certification period ends in June 2016. All certification periods end at the end of a calendar month so in our example, recertification must be complete by June 30, 2016. The recertification process begins with a Notice of Expiration of Certification (CF-377.2) which is generated and sent to all households 45 days

[8] In San Francisco's SNAP offices, for example, an internal study estimated that 12 percent of all case work is spent processing churn cases.

[9] Additionally, most households in California must complete a shorter semi-annual recertification application called the SAR-7. Unlike the annual recertification, this interim reporting requirement does not include a caseworker interview, hence we focus only on annual recertification cases in this paper.

before the end of the certification period (on May 15, 2016 in our example). This notice informs households that the end of their certification period is approaching, briefly details the recertification steps, and informs them that they will be receiving a detailed recertification packet and interview assignment in the mail.[10] Households that have opted in to receive text or email updates also receive a communication within the next few days informing them that their certification period is ending. Case workers then assign each case an initial interview date to take place within the first four weeks of June. Around the third week of May, case workers send out the Recertification, Reauthorization, and Renewal (RRR) packets.[11] These packets contain the recertification form (CF-37), an interview appointment letter (CF-29C), and several other unrelated forms (such as voter registration forms).[12] The appointment letter contains information on the initial interview date assignment, the time of day (either morning or afternoon), and whether the appointment is a phone or in-person interview.[13] The letter also provides information on how to reschedule the interview if the assigned time or date is inconvenient for the recipient. Recipients may reschedule their interview or complete an on-demand walk-in interview at the CalFresh offices at any time during the recertification month. If an interview is missed or not completed, households receive a notice of missed interview (CF-386) and a voicemail instructing them to contact a case worker to reschedule their interview before the end of their certification period.

In San Francisco, the county in which our study takes place, program administrators *randomly assign* a the initial interview date which is included in the appointment letter, staggering the interviews throughout the recertification month to smooth caseworker administrative burden. The interview assignment process is as follows. Caseworkers are given the full list of CalFresh cases whose certification period ends in the following month. These cases are then grouped by case language and

[10] See Appendix Figure 1-3 for an example of this form and other forms used in the CalFresh recertification process.

[11] Almost three quarters of the packets in our sample were sent between the 17th and 23rd of the month prior to the end of the certification period. While there is no formal policy regarding the order in which these packets are sent out, discussions with CalFresh caseworkers suggested that packets for cases assigned to early interview dates were distributed earlier than those with later interview dates – indeed, our data reveals that cases assigned to interview dates in the first two weeks of the month were sent their packet an average of 2.5 days earlier than cases assigned to interviews in the third and fourth weeks (see Appendix Figure 4 for a distribution of sent dates for early versus late interview dates). While these differences are small, we include specifications that control for packet sent date.

[12] Households must provide detailed information on the income and expenses for all household members, along with income verification, for the calendar month prior to the end of the certification period (May 2016 in our example). See http://www.cdss.ca.gov/cdssweb/entres/forms/English/CF37.pdf for a copy of the Recertification, Reauthorization, and Renewal form.

[13] Cases that provided a phone number on the initial CalFresh application or subsequent case updates are assigned phone interviews; all other cases are assigned an in-person interview at the local CalFresh office.

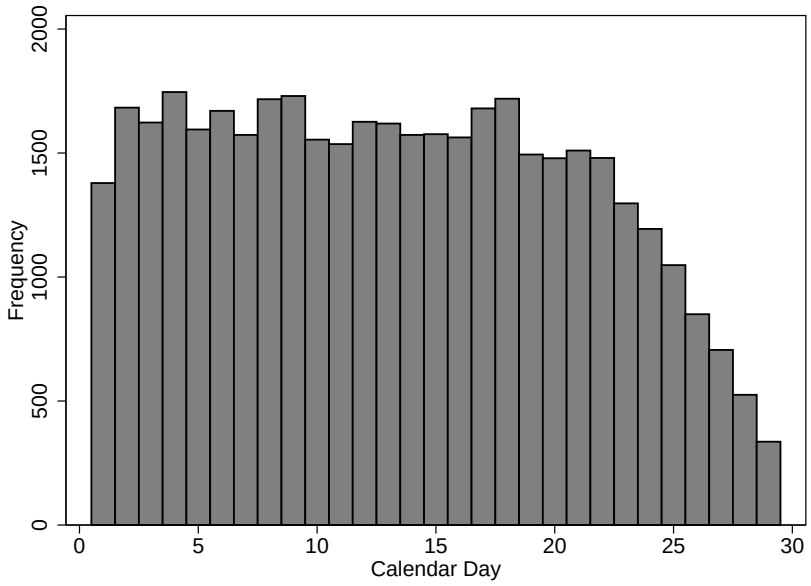


Figure 1: Distribution of initial interview day across the calendar month

appointment type (phone or in-person).[14] Cases are then sorted within group by Case ID number and, subsequently, caseworkers repeatedly append the list of available interview dates[15] to cases until all cases are assigned an initial interview date.[16]

Figure 1 presents a graph of the distribution of initial interview dates for the recertification cases in our study population (described in Section III). The distribution is approximately uniform across the first three weeks of the month with fewer interviews scheduled after the 23rd of the month. This is largely due to the fact that interviews were not scheduled after the 24th during the first few months of our study period, but also partly due to a larger number of holidays falling at the end of the calendar month.

Regardless of when a case's initial interview is scheduled, all households must complete the

[14]The San Francisco CalFresh office offers interviews in six languages: English, Spanish, Chinese (Cantonese and Mandarin), Vietnamese, Tagalog, and Russian. Unsupported languages are included in the "English" group.

[15]The list of available interview dates excludes weekends, holidays, and the last two days of the calendar month with fewer interviews scheduled on the first day of the month to address increased call volumes associated with discontinuation of benefits. In-person interviews do not meet on Fridays. Lastly, the list adjusts for non-major language (Vietnamese, Tagalog, and Russian) caseworker availability.

[16]In three months of our study period, the interview process deviated slightly from the process described above. Specifically, rather than repeatedly appending the list of dates to the list of sorted Case IDs (which yields no correlation between interview day and Case ID), from June to September of 2015, cases with low ID numbers were assigned early interview dates while cases cases with high ID numbers were assigned to the later dates. While Case ID is not a meaningful variable in and of itself, it is correlated with the date on which the case first joined the CalFresh program; therefore, our regressions control for a rank ordering of Case ID. The inclusion of this variable or, alternatively, the exclusion of these months does not substantively alter our results.

recertification process by the last day of the calendar month of their certification period. While interviews can be rescheduled for any time within the recertification month, only 3 percent of households reschedule their interview prior to the randomly assigned interview date. Therefore, most households that are assigned an initial interview date at the beginning of the month have over four weeks post-interview to complete the process – for example, to reschedule a missed interview, fix errors in the recertification application, or gather valid income verification – while cases that are assigned an interview at the end of the month may only have a few days.

III. Data

Our sample population is comprised of the universe of CalFresh cases in San Francisco County scheduled for recertification between November 2014 and November 2016.[17] The core sample of recertification packets includes 45,952 recertification events for 34,360 unique households. The data include the case's recertification month and the date the recertification packet was sent which are then are merged with data on whether or not recertification was successful or whether the case was discontinued from the program. We then combine our sample with data containing information on all interviews scheduled with the CalFresh office, including both interviews initially assigned by the CalFresh office as well as interviews that were rescheduled by the program participant. Importantly, the data set also includes the date on which the interview was scheduled, allowing us to determine the randomly assigned initial interview date. The data include the date and time of all scheduled interviews and whether the interview was successfully completed. We also obtain data on all walk-in appointments, as cases can complete an on-demand interview by visiting a CalFresh office. CalFresh administrators do not record submission of income verification documents nor do they systematically document submission of the recertification forms.

We exclude recertification cases that were inconsistent with administrative guidelines for scheduling interviews. For example, we exclude cases that were sent a recertification packet but were not assigned a caseworker interview,[18] as well as cases in which the first interview was assigned in the

[17] We focus on households that are current CalFresh recipients but that are not currently receiving CalWorks, California's TANF program. We make this data restriction since the recertification interview assignment process differs for those cases in order to better align the recertification process for the two programs.

[18] The majority of these (roughly 1,800) cases occurred during the first six months of our sample period during a time when recertification interviews were waived for households in which all adults are elderly or disabled without income (http://www.cdss.ca.gov/lettersnotices/EntRes/getinfo/acl/2013/13-58.pdf).

recertification month or before the 13th of the month prior to the end of the recertification month.[19] We also drop cases that were not conducted in one of the three major case languages in San Francisco (English, Spanish, and Chinese), since the interview assignment process is constrained by staff availability for non-major languages. Finally, we exclude a small number of cases whose interviews were scheduled less than seven days after the recertification packets were sent. This leaves us with a final sample to 41,082 recertification cases across 31,174 unique households.

To examine the effect of initial interview date assignment on post-recertification outcomes, we merge our sample to data on all subsequent CalFresh applications through May 2017. This supplementary data allows us to follow all recertification cases in our sample for at least six months after the end of the recertification period. From this data, we are able to determine whether a household that failed recertification rejoined the program within the following months (i.e., churned), or if the recertification process ended in a longer-term discontinuance from the program.[20]

To estimate whether each case met the income requirements for recertification, we use administrative data from the Employment Development Department (EDD). This data set contains individual wage earnings information in each quarter provided by employers for all individuals associated with a CalFresh case.[21]

We obtain detailed demographic data on the case and the head of household. These data include information that is required as part of the initial CalFresh application process and is updated through prior recertifications or semi-annual reporting such as household size, number or children, and zip code. The data also contains information from administrative sources on each case's CalFresh participation history including the number of days the household had been on SNAP, the initial enrollment date, and the current monthly benefit amount. The data also include optional information about the head of household including date of birth, gender, ethnicity, homelessness status, and citizenship status; however, since these questions are voluntary, we observe non-response

[19] Recertification interviews occur in the recertification month, but are typically scheduled around the 15th of the prior month. Deviations from this schedule suggest that the interview assignment may not have followed the typical random assignment process.

[20] We do not have data on Inter County Transfers (ICTs), i.e., cases that are discontinued in San Francisco, but successfully reapply to CalFresh in a different county. However, calculations from the California Department of Social Services (CDSS) suggest that only 2 percent of cases that exit CalFresh in San Francisco in a recertification month appear on CalFresh in a different county the following month.

[21] CalFresh caseworkers have access to this data source, but the data is provided with a lag and so EDD data is not used as part of the recertification intake process to assess eligibility.

of up to 10 percent for certain demographics (see Table 1 for exact numbers).[22]

Lastly, we collected data on receipt of text and email communications sent to households that opted in to this voluntary program. While these communications were used throughout our study period, San Francisco only began collecting individual-level data on texts and email for recertification cases due in October 2015 and after.

IV. Results

A. Descriptive Statistics

i. Demographics and Randomization Checks

Table 1 presents summary statistics of the demographics of our study population. Since our study focuses on the county of San Francisco – a large, urban city – a few characteristics of our population are worth comparing to the population of SNAP households nationwide. First, the average size of the households in our population is somewhat smaller than the average SNAP household – 1.6 people versus the national average of 2.0 people. Relatedly, just under one third of households in our sample had any children, while 43 percent of SNAP households have at least one child nationwide. San Francisco SNAP households are more racially diverse (with an especially high proportion of Asian heads of household), more likely to be headed by a non-US citizen, and more likely to receive the maximum SNAP benefit than SNAP households nationwide (FNS, FY2015).

Columns 2 and 3 of Table 1 present means of the same demographic characteristics for cases with early initial interview dates (between the 1st and 13th of the month) versus late interview dates (between the 14th and 29th of the month), respectively. The average demographic make-up of households initially assigned to early versus later interview dates are quite similar. Column 4 presents results from a test for equality of means between these groups and shows that the differences for most characteristics are small and statistically insignificant, suggesting that interview date assignment was not correlated with observed case demographics. Two exceptions are citizenship and long-term CalFresh receipt – cases assigned to interview dates later in the month were slightly more likely to be US citizens and long-term CalFresh recipients than those assigned to earlier dates;

[22] Additionally, unlike with the case characteristics, these head of household characteristics may not be up to date for cases that have received CalFresh for several years.

Table 1: Demographic Characteristics by Interview Assignment

	Full Sample	Early Interview (1st to 13th)	Late Interview (13th to 29th)	prob>F
	(1)	(2)	(3)	(4)
Case Characteristics				
Household Size	1.55	1.55	1.56	0.887
Any Children (%)	32.1	32.2	32.0	0.647
Non-English Speaking (%)	30.7	30.9	30.5	0.344
Max CalFresh Benefits (%)	63.2	63.0	63.3	0.525
CalFresh 5+ Years (%)	25.0	24.4	25.5	0.007
Head of Household Demographics				
Female (%)	46.4	46.2	46.6	0.406
Age	42.2	42.2	42.2	0.509
US Citizen (%)	75.9	75.4	76.4	0.038
Non-White (%)	78.9	78.9	79.0	0.741
Homeless (%)	16.7	16.6	16.8	0.728
N	41,082	21,650	19,432	

Test for equality of means between cases with early versus late initial interview assignment.
Data on head of household characteristics is missing for a portion of our data.
Reported means exclude cases with missing data. The number of cases with missing data for each demographic is listed in parentheses: female (798), age (3,929), citizenship (4,060), and ethnicity (3,241).

however, these differences disappear when controlling for the randomization characteristics (month, interview type, case language, and case ID order).

ii. Recertification Outcomes

Table 2 presents summary statistics on various outcomes related to the recertification process. We observe a very high rate of recertification failure – only 48 percent of cases successfully recertified. While this may suggest that half of the cases were no longer eligible for CalFresh, data on post-recertification outcomes suggests that this might not be the case for at least a portion of our cases. We find that over half of cases that fail recertification reapply for CalFresh within the next 90 days and that the vast majority of these reapplications (93 percent) are approved, yielding a 90-day churn rate of 46 percent. In other words, roughly one quarter of the cases in our sample failed recertification, but were deemed eligible for the program within the following months.

Nonetheless, it may be that CalFresh recipients experience high levels of income volatility, which could lead to high rates of recertification failure followed by subsequent successful reapplications shortly after exiting the program. However, Figure 2 provides some evidence against a story in

Table 2: Summary Statistics of Recertification Outcomes

	Full Sample
Recertified	48.3
Completed Caseworker Interview	76.3
Reapplied	25.5
Churned	23.6
Long-term Discontinued	28.2
N	41,082
Households	31,174

This table reports the percent of the sample population completing each outcome.
"Reapplied" refers to cases that failed recertification, but reapplied
for the program within the next 90 days.
"Churn" refers to cases that failed recertification, but successfully
re-entered the program within the next 90 days.
"Long-term discontinuance" refers to cases that failed recertification
and did not reenter the program for the next 90 days.

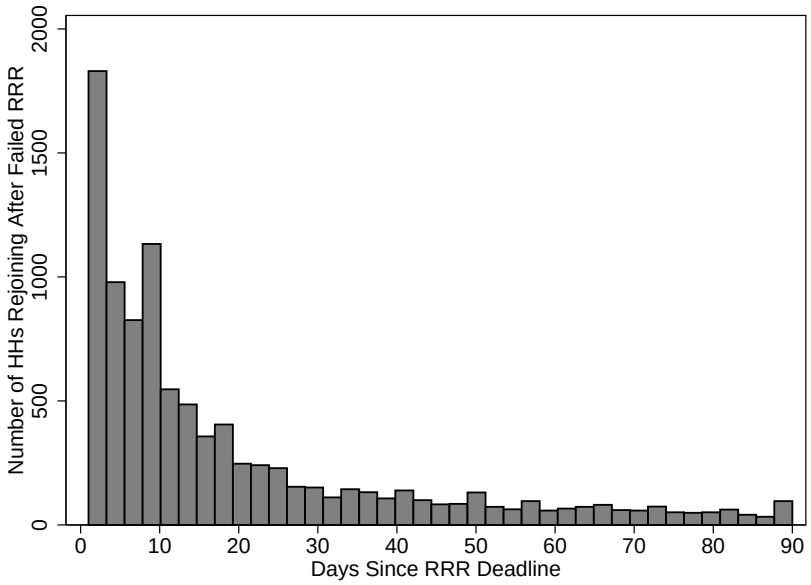
which fluctuating eligibility is the main driver of the high observed churn rate. This figure shows that 78 percent of cases that churn within 90 days of recertification do so within the first month, many within the first week.

While it is possible that these cases were ineligible for CalFresh in their recertification month but became eligible again in the following weeks, a potentially more plausible story is that these cases failed recertification due to procedural issues such as by failing to complete a caseworker interview or to submit sufficient income verification by the recertification deadline. For example, the data suggests that only 76 percent of recertification cases successfully completed a caseworker interview. Section IV.C provides additional evidence that suggests that a substantial fraction of the 28 percent of cases that fail to recertify and remain off the program for 90 or more days ("long-term discontinuances") may have maintained program eligibility, once again pointing to the potential that procedural issues may have impacted the recertification success of many of the cases in our sample.

B. Effect of Interview Assignment on Recertification

The statistics in Table 2 show that recertification success rates are very low, with one possible explanation being that elements of the administrative process of recertification may be difficult for participants to complete. This section looks at the effect of one of the components of the recertification process – the initially assigned interview date – to determine its effect on recertification

Figure 2: Number of Churn Cases by Days since Recertification Deadline



success.

Figure 1 plots the relationship between recertification success rate and initial interview day assignment. Cases assigned to an initial interview on the first or second of the month have a recertification rate of 51 percent, while cases assigned to interview dates on the last two possible assignment dates have only a 44 percent recertification rate. The figure suggests that this gap in recertification success is not solely driven by cases assigned to interviews at the very end of the month, but rather there is an approximately linear downward trend in the probability of recertifying.

We use the following econometric model to estimate the impact of initial interview day assignment on recertification:

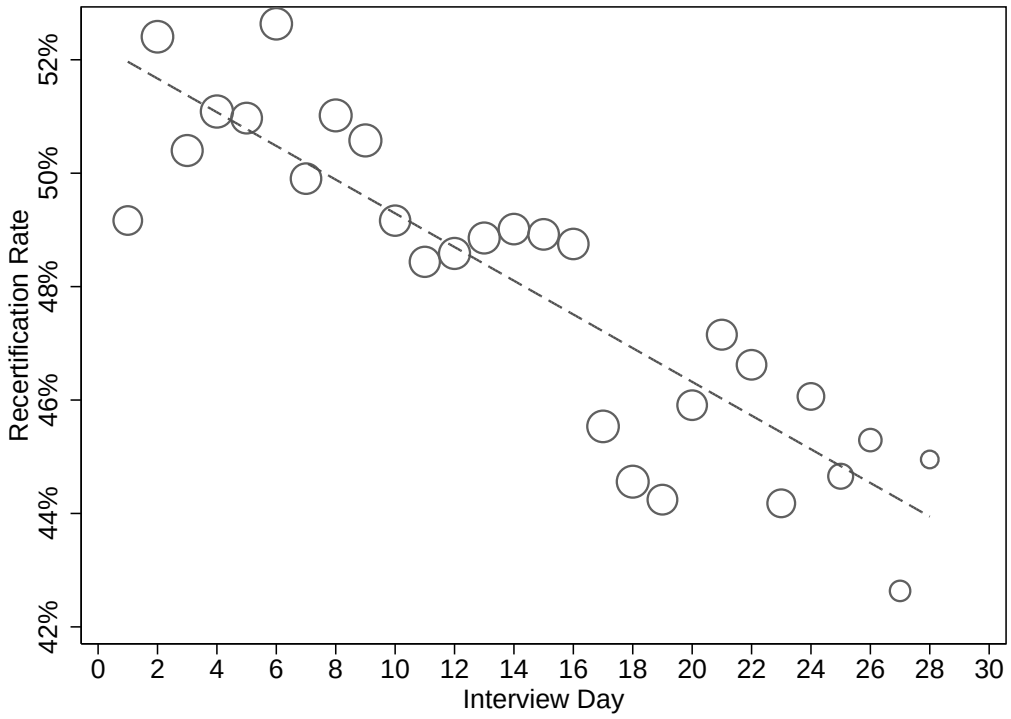
$$Y_{it} = \alpha + \gamma InterviewDay_{it} + \beta x_i + \theta z_i + \delta_t + \varepsilon_{it} \tag{1}$$

where Y_{it} is an indicator for whether a case successfully recertified, $InterviewDay_{it}$ is the randomly assigned interview calendar day, x_i is a vector of case characteristics used in the randomization process, z_i is a vector of demographic characteristics, and δ_t are recertification month fixed effects.[23]

Table 3 presents the results of this specification. Column 1 reports the slope estimate for the

[23]Case characteristics are case language, interview type (in-person versus phone), and a rank ordering of Case ID. Demographic controls include household-level characteristics such as household size, children, homeless status, number of years since initial CalFresh application, as well as head-of-household characteristics such as sex, age, race, and citizenship.

Figure 3: Recertification Success by Initial Interview Day



Note: The size of the circles indicate the relative number of observations per calendar day. The dashed line is a linear best fit from regressing an indicator for recertification success on the assigned interview day.

Table 3: Effect of Interview Date Assignment on Recertification Success

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Interview Day	-0.300***	-0.352***	-0.346***	-0.321***	-0.427***	-0.282***	
	(0.033)	(0.033)	(0.032)	(0.031)	(0.115)	(0.036)	
Interview Week 2							-1.21**
							(0.613)
Interview Week 3							-3.72***
							(0.623)
Interview Week 4							-6.80***
							(0.721)
RRR Month FE		X	X	X	X	X	X
Case Controls			X	X	X	X	X
Demographics				X	X	X	X
Household FE					X		
Sent Date						X	
Mean of DV	48.3	48.3	48.3	48.3	48.3	48.3	48.3
N	41,082	41,082	41,082	41,082	41,082	41,082	40,745

Standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Outcome: indicator for successfully recertifying. Means and coefficients scaled by 100.
Case controls are case language, interview type (phone vs in-person) and case ID rank.
Demographic controls are household size, any children, homeless, and time since initial SNAP application as well as household head's gender, age category, and ethnicity.

bivariate regression shown in Figure 1. The point estimate implies that a one-day delay in the initially assigned interview reduces the likelihood of recertifying by 0.30 percentage points. Column 2 includes recertification month fixed effects and column 3 adds case characteristics used in the interview randomization process (e.g., case language); the inclusion of these controls increases our coefficient of interest to -0.35 percentage points. Column 4 – our preferred specification – includes additional household demographic controls and finds that a one-day delay in the initially assigned interview reduces the likelihood of recertifying by 0.32 percentage points. This implies that a case that is assigned an initial interview on the 28th of the month is 9.0 percentage points less likely to recertify than a case assigned an interview on the first of the month – a 19 percent decline in recertification success off the mean.

We perform a few additional robustness checks on our specification. Almost 10,000 cases had multiple recertifications during our sample period. Since initial interview assignment is independent across years, we can identify the effect of interview assignment on recertification within case by including household fixed effects. Column 5 reports these results and shows that the inclusion of these fixed effects imply a slightly more pronounced relationship between initial interview day assignment and recertification success: each one-day delay in assigned interview leads to a 0.43 percentage point decrease in the likelihood of recertifying. While it is encouraging that our estimates are robust to the inclusion of these additional controls, it is important to note that to that appear twice in our data set, a case must have eventually successfully recertified. Therefore, these estimates should not necessarily be interpreted as the effect of interview assignment for the overall population.

As mentioned in Section II, we observe a correlation between interview assignment and the recertification packet sent date: cases with assigned interviews in the first half of the recertification month receive their recertification packets an average of 2.5 days earlier than those with interview dates assigned in the second half of the month. Column 6 controls for the day on which the recertification packet was sent to the household and shows only a small decrease in the effect of interview assignment relative to column 4. [24].

Lastly, to account for potential non-linearities in the effect of interview day on recertification success, column 7 presents results from the following specification:

[24]Since the packet sent date was not separately randomly assigned from the interview date, we do not include it in our main specification

$$Y_{iwt} = \alpha + \sum_{w=2}^{4} \theta_w InterviewWeek_{iwt} + \beta x_i + \gamma z_i + \delta_t + \varepsilon_{iwt} \quad (2)$$

where $InterviewWeek_{iwt}$ indicates that household i in recertification month t was assigned an initial interview in calendar week w where $w \epsilon \{2, 3, 4\}$.[25] The results confirm that the likelihood of recertifying monotonically decreases with interview date assignment. Cases with initial interviews in the second, third, and fourth weeks of the month are 1.2, 3.7, and 6.8 percentage points less likely to recertify relative to cases with initial interviews in the first week of the month. These estimates are not only statistically significantly different from the recertification rate of those with initial interviews in the first week, but they are also significantly different from each other.

C. Targeting Efficiency by Eligibility

The results in Table 3 shows that later interview date assignments lead to large decreases in the likelihood of recertification. However, our interpretation of these results for policy depends on whether those who fail to recertify due to later interview assignments are actually ineligible for benefits. Put differently, is interview day assignment serving as an effective targeting mechanism or is it removing eligible households from the program? Kleven and Kopczuk (2011) suggest that when there is incomplete information about a participant's eligibility for a program, application complexity can serve as an important screening device to reduce false awards (type II errors) which may be justified even when this complexity contributes to incomplete take-up among eligible recipients (type I errors). While CalFresh caseworkers have access to payroll data from some large employers at the time of intake, this source is not verified upon receipt so cannot be used without verifying that income independently. Therefore, additional program "complexity" – defined in our scenario as later initial interview dates – could serve as an efficient screening mechanism.

In this section, we estimate the effect of the assigned interview date on recertification by our estimate of eligibility. This analysis is similar in spirit to Deshpande and Li (2017) who estimate the change in targeting efficiency associated with Social Security Administration office closures. They find that office closures, which increase the cost of disability program application, lead to fewer disability applications (10 percent), but an even larger decrease in enrollment (16 percent),

[25] This specification excludes the 335 recertification cases that were assigned an initial interview date on the 29th. Including them in the fourth interview week does not qualitatively change our results.

suggesting that office closures disproportionately discourage applications from individuals who would have been accepted to the program had they applied. A key issue when estimating targeting efficiency in initial program applications is that researchers do not have data on the population of potential applicants, only those who actually apply. In contrast, in our setting, we know the entire population of potential recertifiers. Therefore, we can estimate eligibility of all cases that are up for recertification to determine the effect of assigned interview date on targeting efficiency.

To estimate eligibility of the cases in our sample, we use quarterly wage earnings data from the Employment Development Department (EDD). As mentioned in Section I, to qualify for CalFresh, all households must have gross income below 200 percent FPL in the month prior to the recertification month.[26] Table 4 shows that the vast majority of cases in our sample appear eligible for the CalFresh program. Specifically, column 1 shows that 94 percent of recertification cases have average monthly wage earnings below the CalFresh gross income limit in the recertification quarter. One main limitation of using this data to estimate eligibility is that it only includes wage income, but not other types of income, such as self-employment income.[27] Because of this data limitation, we calculate two more conservative measures of eligibility: the proportion of cases with wage earnings below 130 percent FPL and the proportion of cases with no wage earnings at all. We find that 87 percent of cases have earnings below 130 percent FPL and two thirds of the sample has no wage income at all.[28]

Columns 2 through 4 repeat these estimates for cases that recertified, churned within 90 days, and were discontinued from the program for 90 days or more, respectively. We find very high eligibility rates among cases that recertified (98 percent). Eligibility estimates for cases that churned are slightly lower, but quite similar to those that recertified. However, what is most surprising are

[26] The CalFresh gross income limits as on October 1, 2016 are available here: http://www.cdss.ca.gov/foodstamps/res/pdf/PUB464Eng.pdf. While a portion of our sample is also subject to a net income test, this test does not apply to households with less than three members (85 percent of our sample). Additionally, due to the high rent in San Francisco, the net income test is less likely to be binding as a result of these earnings disregards.

[27] Data on current CalFresh recipients in San Francisco suggests that only 3 percent of cases report self-employment income.

[28] Two other data issues are worth noting. First, our wage data is quarterly while the income verification period is monthly; therefore, we approximate monthly earnings by assuming constant income throughout the quarter of recertification. As a result, cases with large income fluctuations in the quarter of recertification will be miscategorized. However, at least for the 66 percent of cases with no wage earnings, these differences should not impact our estimates. Second, if a case's household composition has changed since their semi-annual recertification, we may over- or underestimate eligibility, depending on if the case gained or lost a household member. As a conservative test, we recalculate our eligibility estimates assuming that all cases lost a household member. We find that this assumption has only a small effect on our eligibility estimates – 92 percent of cases appear eligible.

Table 4: Eligibility Estimates by Recertification Outcome

	Full Sample	Recertified	Churned	Long-term Discontinued
	(1)	(2)	(3)	(4)
Eligibility Estimates				
Wage Earnings $<$ 200% FPL	94.0	97.5	96.3	86.0
Wage Earnings $<$ 130% FPL	86.9	92.1	90.0	75.2
No Wage Earnings	65.6	68.6	68.3	58.0
N	41,082	19,835	9,702	11,545

Source: Employment Development Department quarterly wage earnings data.
CalFresh gross income limits require cases to have household income below 200% FPL.
Eligibility estimates include only wage earnings data.

the eligibility estimates for the long-term discontinued group. Of the 28 percent of cases that were discontinued and did not churn, 86 percent have average monthly wage earnings below the program's income limit in the recertification quarter and 58 percent have no wage earnings at all. Due to the high rates of eligibility among cases that did not recertify, the type I error rate (i.e., the likelihood that a case fails recertification in spite of being eligible) is quite high: 46.8 percent of cases that fail to recertify appear eligible. In contrast, the type II error rate (i.e., the likelihood that a case successfully recertifies in spite of being ineligible) is rather low: only 1.4 percent of cases appear ineligible but successfully recertify.[29]

Table 5 uses the econometric model in equation (1) and eligibility estimates from row 1 of Table 4 to estimate the effect of interview date assignment on type I and type II errors. As may be expected from the high eligibility rate, the effect of interview day assignment on the type I error rate is nearly the exact mirror of the effect on recertification success in Table 3: a one-day delay in initial interview assignment leads to a 0.34 percentage point increase in the likelihood of a type I error. However, column 2 shows that later interview dates also lead to a small but significant reduction in type II errors: the likelihood that a case successfully recertifies in spite of appearing ineligible decreases by 0.02 percentage points per interview day delay. Taken together, while the increase in failed recertifications among cases that appear eligible is an order of magnitude larger than the reduction in successful recertifications among cases that appear ineligible, the results still present a trade-off between the two types of errors.

[29]It is also important to point out differences in the verification of type I versus type II by CalFresh caseworkers. Specifically, caseworkers are not able to approve cases that appear eligible, but fail to submit income verification or complete an interview; however, they are able to investigate cases whose income verification documentation is at odds with earnings estimates of third-party reporting. Therefore, it is quite possible that we are overestimating the

Table 5: Effect of Interview Date Assignment on Type I and Type II Errors

	Eligible but Failed Recert (Type I Error)	Ineligible but Recertified (Type II Error)
	(1)	(2)
Interview Day	0.342***	-0.018**
	(0.032)	(0.008)
Mean of DV	46.8	1.4
Observations	41,082	41,082

Standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Outcome: indicator for being income-eligible for CalFresh, but failing recertification (column 1); and income-ineligible, but successfully recertifying (column 2).
Means and coefficients scaled by 100.
Controls: case language, interview type, case ID rank, household size, any children, homeless, and time since initial application, and household head's sex, age, and ethnicity.

D. Reapplications, Churn, and Long-term Discontinuance

The costs of recertification failure induced by interview date assignment depend on if and when the cases that failed recertification rejoin the program. This section uses data on applications to CalFresh in the months following recertification to determine the effect of interview date assignment on post-recertification outcomes. Table 6 presents the results from the model described in equation 1. Columns 1 through 3 present estimates of the effect of interview day assignment on reapplications, application approvals, and long-term discontinuances. Columns 4 through 6 present these same outcomes, but condition the outcome on our estimate of recertification eligibility from column 1 of Table 4.

Column 1 presents estimates of the impact of interview day assignment on the likelihood of reapplying within 90 days of the recertification deadline. These are cases that fail to recertify, but reapply for the program within a few months of being denied. The results show that for each one-day delay in the initial interview date, cases are 0.30 percentage points more likely to reapply for CalFresh within 90 days. Given that Table 3 shows that a one-day delay in initial interview assignment decreases the likelihood of recertifying by 0.32 percentage points, this suggests that the majority of households that fail recertification due to interview date assignment reapply shortly thereafter. Additionally, the majority of these reapplications were successful. Column 2 considers the effect of interview date assignment on whether a case churned. We find that the 90-day churn

prevalence of type II errors.

Table 6: Effect of Interview Assignment on Reapplications, Churn, and Long-term Discontinuances.

	Full			Eligible Households		
	Reapply	Churn	Discontinued (90+)	Reapply	Churn	Discontinued (90+)
	(1)	(2)	(3)	(4)	(5)	(6)
Interview Day	0.303***	0.299***	0.024	0.300***	0.294***	0.047*
	(0.029)	(0.028)	(0.029)	(0.029)	(0.028)	(0.027)
Mean of DV	25.5	23.6	28.1	24.3	22.7	24.1
Observations	41,082	41,082	41,082	41,082	41,082	41,082

Standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Outcome: indicator for failing recertification and reapplying (columns 1), failing recertification and churning (columns 2), or failing recertification and not rejoining the program (columns 3) within the 90 days after the recertification deadline.
Columns 4-6 replicate the outcomes in columns 1-3, but condition on having wage earnings below 200% FPL.
Means and coefficients scaled by 100.
Controls: case language, interview type, case ID rank, household size, any children, homeless, and time since initial application, and household head's sex, age, and ethnicity.

rate also increases by 0.30 percentage points per interview day delay. In other words, cases assigned an initial interview day on the 28th are 8.4 percentage points more likely to churn than a case with an interview day on the first of the month – a 35 percent increase. Columns 4 and 5 repeat these analyses but condition the outcome of interest on whether a case appeared eligible for recertification and show that the results are unchanged.

While the results above show that the CalFresh program experiences a very high reapplication rate in the months after recertification, just over half of cases that failed recertification do not reapply for the program within the next 90 days. More importantly, Table 4 shows that the majority of these cases appear to have maintained eligibility for the program. Eligible cases that fail recertification and do not reapply – either due to confusion about their own eligibility or due to the costs associated with the reapplication process – may miss out on substantial benefits (roughly two thirds of our sample receives the maximum monthly benefit of $194 per person). Column 3 considers the effect of interview date assignment on long-term discontinuances from the program. We find that interview date assignment had a small but insignificant effect on long-term discontinuances. However, when we condition on eligibility in column 6, we find slightly larger and statistically significant effects: each interview day delay leads to a 0.05 percentage point increase in the likelihood of being discontinued from the program for 90 days or more in spite of appearing eligible at recertification. This suggests that cases that appear to be recertification-eligible that are assigned to an initial interview date

on the first of the month are 1.3 percentage points less likely than a similar case assigned to an interview on the 28th to fail recertification and remain off the program for at least three months – a 5.5 percent decrease.

E. Targeting Efficiency by Case Characteristics

Section IV.C suggests that assignment to later interview dates worsens targeting efficiency based on eligibility: the rate of recertification failure among eligible cases increases with assigned interview day delay with only a small corresponding decrease in the rate of recertification success among ineligible cases. A second and related question is whether earlier interview date assignments improve or exacerbate targeting efficiency based on other demographic characteristics associated with higher marginal utility from recertification. In this section, we estimate the effect of the assigned interview date on recertification, churn, and long-term discontinuances by case characteristics that are likely to be associated with need.

Nichols and Zeckhauser (1982) present a model in which hassles associated with program application (or in our case, recertification) can improve program targeting by screening out high-ability individuals or those with lower marginal utility from program benefits (who may be either eligible or ineligible) since these individuals have a higher opportunity cost of time. Alatas et al. (2016) finds empirical support for this theory: in-person application for a conditional cash transfer program in Indonesia led to better targeting efficiency relative to automatic enrollment. Closely related to our context, Finkelstein and Notowidigdo (2018) find that information about application assistance for SNAP increased take-up, but reduced targeting efficiency – enrollees receiving application assistance were more likely to receive lower monthly benefits and were in better health than those in the control group. In contrast, (Deshpande and Li, 2017) present an alternative version of the model Nichols and Zeckhauser (1982) in which application costs are negatively correlated with ability. They show that if application costs are related to cognitive costs, rather than time costs, then the results reverse and application costs worsen targeting efficiency. They also find empirical evidence to support this alternative model in the context of application for disability insurance: program office closures lead to disproportionately large decreases in applications from low-education applicants and those with moderately severe conditions. These findings are consistent with literature from behavioral economics which suggests that poverty or other forms of scarcity increase cognitive load leading to

difficulties making financial decisions (Bertrand, Mullainathan and Shafir, 2004; Mullainathan and Shafir, 2013).

We estimate targeting properties associated with interview date assignment by interacting $InterviewDay$ from equation (1) with case characteristics plausibly associated with need. Specifically, our model takes the following form:

$$Y_{it} = \alpha + \gamma InterviewDay_{it} * CaseCharacteristic_{it} + \eta InterviewDay_{it} + \mu CaseCharacteristic_{it} + \beta x_i + \theta z_i + \delta_t + \varepsilon_{it} \quad (3)$$

where Y_{it} is one of our three main outcomes of interest (indicators for successful recertification, 90-day churn, or eligible but long-term discontinued), $InterviewDay_{it}$ is the randomly assigned interview calendar day, $CaseCharacteristic_{it}$ is a characteristic of the recertification case associated with targeting efficiency (including presence of children, long-term SNAP receipt, language, and benefit amount),[30] x_i is a vector of case characteristics used in the randomization process, z_i is a vector of additional demographic characteristics, and δ_t are recertification month fixed effects.

Table 7 presents the results of this analysis separately by case characteristic subgroup for each of the three outcomes of interest in panels A through C. Results in column 1, panel A show that the effects of interview date assignment on recertification success are almost twice as large for households with children versus those without children. Specifically, for each one-day delay in interview day assignment, households with children are 0.46 percentage points less likely to recertify, while households without children are only 0.26 percentage points less likely to recertify. Panels B and C show that, for cases with children and without, the majority of the cases that failed recertification due to later interview assignments resulted in churn, rather than long-term discontinuance from the program. We find similar effects for cases that have been on CalFresh for more than 5 years – the effect of later interview assignments on recertification success for long-term CalFresh recipients is roughly 50 percent larger than for cases that have received CalFresh for fewer than 5 years. The direction of the point estimates suggest that interview assignment has a larger impact on cases that

[30] We focus on these characteristics since they are provided through administrative records or are required components of the application and the semi-annual recertification process; in contrast, characteristics of the head of household are provided voluntarily leading to un-updated and frequently incomplete data. These characteristics are estimated based on information provided to the CalFresh offices as of the last reporting period (most likely at the semi-annual reporting period six months prior to the recertification month).

Table 7: Effect of Interview Assignment on Recertification Outcomes by Subgroup

Subgroup:	Any Children	Long-term SNAP	ESL	Max Benefit
	(1)	(2)	(3)	(4)
Panel A: Outcome = Recertified				
Interview Day	-0.255***	-0.283***	-0.301***	-0.356***
	(0.037)	(0.036)	(0.037)	(0.050)
DayXSubgroup	-0.206***	-0.146**	-0.067	0.055
	(0.065)	(0.068)	(0.065)	(0.062)
Panel B: Outcome = Churned 90 Days				
Interview Day	0.230***	0.264***	0.255***	0.359***
	(0.034)	(0.033)	(0.035)	(0.043)
DayXSubgroup	0.212***	0.128**	0.141**	-0.098*
	(0.058)	(0.061)	(0.056)	(0.055)
Panel C: Outcome = Discontinued 90+				
Interview Day	0.024	0.019	0.045	-0.002
	(0.036)	(0.035)	(0.036)	(0.044)
DayXSubgroup	-0.006	0.018	-0.074	0.043
	(0.056)	(0.057)	(0.055)	(0.056)
N	41,082	41,082	41,082	41,082
Number HHs	31,174	31,174	31,174	31,174

Standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Outcome: indicator successfully recertifying (Panel A), churning within 90 days (Panel B) or failing recertification and not rejoining the program for at least 90 days (Panel C).
Subgroups: indicator for any children (column 1), received CalFresh for 5+ years (column 2), case language is not English (column 3), case received the maximum benefit amount (column 4).
Controls: case language, interview type, case ID rank, household size, any children, homeless, and time since initial application, and household head's sex, age, and ethnicity.
Means and coefficients scaled by 100.

report a primary language other than English (column 3), though we cannot statistically distinguish the effect of interview day on recertification success for English-speaking versus non-English speaking households. We also see no differences in the effect of interview assignment on recertification success by whether or not the household was receiving the maximum monthly benefit amount available – results that stand in contrast to those found in Finkelstein and Notowidigdo (2018) – though we observe a marginally significant decrease in the likelihood of churning.[31]

V. Mechanisms

A. Interview Completion

One pathway by which interview assignment impacts recertification success is through interview completion. Cases with earlier interview date assignments may be more likely to complete their initial appointment for a variety of reasons. For example, they may be more likely to remember their appointment date if the appointment is scheduled closer to the receipt of their recertification packet. Alternatively, research shows cognitive ability and decision-making worsens when individuals are cash-poor (Spears, 2011; Mani et al., 2013) and exhibit cognitive biases, such as present bias, just before payday relative to just after (Carvalho, Meier and Wang, 2016). Since the early interview dates take place at the beginning of the calendar month – a time when many individuals receive their paycheck – it may be the case that households are more able to complete their first interview if it is scheduled on a date shortly after payday. Alternatively, cases that miss their initial interview appointment may have time to reschedule for another date before the end of the certification period if their original interview date was early in the month, while cases with later assignments may be unable to find an alternative interview date before the recertification deadline. This second mechanism would suggest that assignment date would impact the likelihood of completing *any* interview, but would not necessarily have an impact on completion of the *first* interview.

To investigate these two possible mechanisms, Table 8 estimates the effect of initial interview date assignment on the likelihood of completing the first interview assignment and the likelihood

[31] While Finkelstein and Notowidigdo (2018) test a very different type of intervention, the differences across our two studies may also be driven by the fact that their sample included a large fraction of households who were only eligible for the minimum benefit of $16 per person, while the average benefit amount in our sample among those who did not receive the maximum amount is still quite high with few households (less than 5 percent) receiving the minimum benefit amount.

Table 8: Effects of Interview Assignment on Interview Completion.

	First Interview	Any Interview
	(1)	(2)
Interview Day	0.042*	-0.215***
	(0.025)	(0.022)
Mean of DV	66.8	76.3
Observations	41,082	41,082

Standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Outcome: indicator successfully completing the first scheduled interview (column 1) and successfully completing the any interview by the recertification deadline (column 2).
Controls: case language, interview type, case ID rank, household size, any children, homeless, and time since initial application, and household head's sex, age, and ethnicity.
Means and coefficients scaled by 100.

of completing any interview before the recertification deadline.[32] Column 1 shows a marginally significant positive effect of interview day assignment on completing the first interview. In contrast, column 2 shows that a one-day delay in interview assignment is associated with a 0.22 percentage point decrease in completing any interview by the recertification deadline. So while cases assigned to late interviews are no more likely to miss their initial interview (and, in fact, are slightly more likely to complete their first interview), our results on completion of any interview suggest that the ability to reschedule a missed appointment may play a significant role in completing this step of the recertification process.

It is important to note that while the effects of interview assignment on recertification success can be partially explained by interview completion, they cannot explain the whole story. Table 8 shows that a one-day interview delay is associated with a 0.22 percentage point decrease in completing an interview, while Table 3 shows a 0.32 percentage point decrease in recertification success. While we do not have data on income verification or submission of the recertification application, our results suggest that just under a third of the effect of interview day assignment on recertification is due to failure of one of these other components of the recertification process.

[32]For most cases, the first appointment is their initial interview assignment. However, for the three percent of cases that rescheduled their interview prior to the initially scheduled date, this outcome considers that rescheduled appointment instead.

B. Text and Email Reminders

One potential mechanism through which early interview assignments may affect recertification outcomes is by serving as a reminder to households that the end of their certification period is approaching. A large literature in behavioral economics has explored how reminders can be effective in "nudging" individuals to overcome biases such as inertia and procrastination. For example, Castleman and Page (2016) find that text reminders about the need to renew financial aid lead to an increase in FAFSA renewals.

In our context, households who are up for recertification may put off starting the recertification process until closer to the end of the certification period or may have forgotten that they need to recertify altogether. While all cases are sent their recertification packets well in advance of the period end, households who do not review the materials carefully may miss key deadlines. For these households, assigned interview appointments may serve as a reminder about the process with earlier appointments allowing for more time to complete the recertification steps (such as rescheduling a missed interview or collecting income verification documents). Importantly, these appointments serve as a reminder regardless of the outcome of the interview – successful interviews involve taking a call from a Calfresh case worker while missed interviews result in a voicemail and a notice of missed interview (CF-386) in the mail.

As mentioned in Section II, CalFresh recipients have the option of signing up to receive text and email communications from the program office about their case status. These communications included a reminder about the certification renewal process by notifying cases that recertification applications had been sent to the case's address.[33] In order to receive these communications, households needed to voluntarily sign up for the program and provide a valid phone number or email address. Just under one third of cases signed up to receive at least one of the two types of communications with 24 percent enrolling in text communications and 18 percent enrolling in email communications. Households that signed up for these communications were more likely to be younger, childless, and English-speaking (potentially characteristics associated with less need), but

[33]Specifically, text communications state: "Case <#>: Your CalFresh Renewal packet has been mailed. To avoid stopping your benefits please complete the forms or contact your county worker right away." Email communications state: "Case <#>: This is <County Agency>. This is a reminder that your Certification period will end on <month/day/year>. If you want to keep getting your benefits without a break; you must also complete an interview with the county and turn in any proof of income, expenses, or other information before the end of your certification period listed above."

Table 9: Effect of Interview Assignment on Recertification by Communication Alert

	(1)	(2)
Interview Day	-0.372***	-0.336***
	(0.044)	(0.042)
Interview Day X Text	0.122	
	(0.090)	
Interview Day X Email		-0.039
		(0.100)
Observations	23,448	23,448

Standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
"Text" and "Email" are indicators for participating in the voluntary text or email program, respectively.
Outcome: indicator for successfully recertifying. Means and coefficients scaled by 100.
Controls: case language, interview type, case ID rank, household size, any children,
homeless, and time since initial application, and household head's sex, age, and ethnicity.

also are more likely to be homeless and receiving the maximum benefit amount.

While participation in the program is voluntary with far from universal take-up, we investigate the importance of reminders by estimating the effect of interview assignment date on recertification for those who did and did not receive these communications separately. If cases with early interview dates are more likely to recertify only because they are reminded about the process earlier (either through earlier completed interviews or voicemails from their caseworker about a missed interview), then text and email reminders should moderate the influence of interview day assignment on recertification success. We estimate an alternative version of the model in equation (1) that interacts text or email participation with interview day to determine whether interview assignment impacts recertification even for those receiving these additional reminders.

Table 9 presents results for those who receive text communications or email communication. Column 1 shows that interview date assignment has a smaller impact on cases that opted in to receive text messages. Specifically, cases that sign up to receive text reminders are 0.37 percentage points less likely to recertify for each one-day delay in interview date assignment versus 0.25 percentage points for those who received text communications, though this difference is not statistically significant. While this evidence is at least directionally consistent with the reminder story described above, it suggests that early interview dates impact recertification success through channels other than reminders as well. We do not find any significant differences in the effect of interview date assignment for cases that opt to receive email communications versus those who do not.

C. Learning

While many cases have experience with the recertification process, cases that are new to CalFresh may be less aware of the timing of the process or the difficulty involved in completing the various recertification steps. Earlier interview assignments may be particularly important for inexperienced cases since interview appointments may provide information that the deadline is approaching or because caseworkers convey helpful information about the steps necessary for recertification that may only be useful if the recipient has sufficient time before the end of the certification period. If inexperience with recertification is driving our estimates, we would expect that the effect of interview assignment should attenuate as households learn to navigate the recertification process over time.

To explore this hypothesis, we exploit the panel structure of our data to determine if experience with the program mitigates the effect of interview assignment on recertification. Since our data set spans two years of recertification cases, we observe two recertifications for many cases in our sample. Specifically, we are interested in cases that experience both their first and second recertification during our study period. Since initial interview date assignment in the first recertification period is independent of assignment in the second period, we are able to compare the effect of interview assignment on the outcome of a household's first recertification experience (when many parts of the process may be unfamiliar) to its effect on the second recertification.

Table 10 considers the 1,209 cases who experience both their first and second recertification process during our study period.[34] Columns 1 and 2 estimate the effect of interview day on recertification success separately for the first and second recertifications, respectively. In contrast to the learning hypothesis described above, the estimates show that the effect of interview date assignment on recertification success is nearly identical in magnitude for the first and second recertification, though the estimates are imprecise.

[34]Note that for a household to be observed twice in our data, the household needs to have successfully completed its first recertification or churned shortly after failing recertification. While this selection criteria could lead to a subsample of cases with very high rates of recertification success for the first recertification, that does not prove to be the case: only 62 percent of this sample successfully completed their first recertification compared to a success rate of 50 percent for the second recertification.

Table 10: Effect of Interview Assignment on First vs. Second Recertification

	First Recertification	Second Recertification
	(1)	(2)
Interview Day	-0.227	-0.252
	(0.198)	(0.175)
DV Mean	61.9	50.0
Observations	1,209	1,209

Standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Outcome: indicator for successfully recertifying. Means and coefficients scaled by 100.
Controls: case language, interview type, case ID rank, household size, any children, homeless, and time since initial application, and household head's sex, age, and ethnicity.
Sample limited to the 1,205 households who experienced their first and second recertification during our sample period.

VI. Costs

Recertification failure induced by later interview assignment is associated with several costs. While it is difficult to quantify certain costs, such as costs associated with stress for discontinued households, this section attempts to measure several of the financial costs associated with later interview assignments.

For participants, even cases that quickly reapply for and are approved by the program incur costs in the form of prorated benefits and potentially delayed receipt as well as administrative costs associated with completing a new, lengthier application. This loss of benefits is even larger for eligible households that fail recertification and do not reapply for the program.

On the side of program administrators, cases that fail recertification but reapply shortly after create additional administrative costs associated with processing new applications that are more in-depth than the recertification forms. Additionally, unlike with initial program applications, caseworkers must attempt to contact all recertification cases. This means that the program incurs administrative costs for all recertification cases regardless of application success. (Mills et al., 2014) estimates that the administrative burden associated with cases that churn, is twice as large as cases that successfully recertify costing program administrators an additional $80 for each cases that churns.

To measure the cost of lost benefits to households that failed recertification, we estimate equation (1) for two additional outcomes: the number of days of missed benefits and the foregone dollar amount associated with those days. Specifically, we follow households for 90 days post-recertification

to determine the number of prorated benefit days. Households that successfully recertified or are estimated to be ineligible have zero missed benefit days. For churners, this outcome is defined as the number of days between the end of their recertification period and the date on which their reapplication was approved. For likely eligible households that failed recertification but did not churn (i.e., long-term discontinued cases), we define this outcome variable to be the maximum number of days in our look-back period (90 days), though in reality, these households potentially remain off benefits for much longer. Our estimate of prorated benefit dollars scales the number of missed benefit days by the household's monthly benefit amount in the month prior to recertification failure.

Table 11 presents our estimates of the effect of interview date assignment on the number of prorated days and lost benefit amounts. Columns 1 and 2 show that a one-day delay in assigned interview date leads to an average loss of 0.06 days or 54 cents per household. Note that these estimates are the average losses across all recertification cases, and not just those that failed recertification. Columns 3 and 4 repeat the analysis, but focus only on benefit losses for cases that churned within 90 days. The estimates suggest that roughly one quarter (15 cents per case per interview day) of the prorated benefits accrue to churners.

To demonstrate the magnitude of these effects, consider a policy in which the interview process was shifted two weeks earlier. If we extrapolate these findings to the two million annual CalFresh recertification cases statewide, this policy would result in 85,000 fewer churners, 15,000 fewer long-term discontinued cases, and an increase in total benefits issued of $15 million, with $4 million accruing to churners.[35]

On the side of program administrators, earlier assignments reduce administrative costs associated with processing reapplications to the program. To estimate the administrative costs associated with later interview assignments, we use our estimates of the effect of interview assignment on churn from Table 6 coupled with estimates of administrative costs per churn case from Mills et al. (2014). Pairing these estimates suggests that a one-day interview delay leads to an increase in administrative costs of 24 cents per case. Taken together with the estimates from column 4, this suggests that the costs of providing additional benefits to households that would have churned are more than fully offset

[35] All counties in California (and many other states across the country) require participants to complete their recertification interview in the last calendar month of the certification period with many counties in California following the same interview assignment process as San Francisco.

Table 11: Effect of Interview Assignment on Prorated Benefit Days and Dollar Amounts

	Full Sample		Churners	
	# Days Lost	$ Lost	# Days Lost	$ Lost
	(1)	(2)	(3)	(4)
Interview Day	0.056**	0.538***	0.013	0.145**
	(0.024)	(0.198)	(0.009)	(0.073)
DV Mean	26.37	180.04	4.65	34.87
Observations	41,082	41,077	41,082	41,076

Standard errors clustered at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.
Outcome: number of days (columns 1 & 3) and dollar amounts (columns 2 & 4) of missed benefits within 90 days of recertification deadline among cases with wage income below 200% FPL.
Columns 1 & 2 consider missed benefits for both cases that churn and cases that are long-term discontinued, while columns 3 & 4 consider on cases that churn within 90 days.
Controls: case language, interview type, case ID rank, household size, any children, homeless, and time since initial application, and household head's sex, age, and ethnicity.
Means and coefficients scaled by 100.

by a decrease in administrative costs associated with processing churn applications.

V. Conclusion

In this paper, we demonstrate that administrative burden associated with the SNAP recertification process leads to significantly lower rates of recertification success. Cases that are randomly assigned to initial interview dates at the beginning of the recertification month are 19 percent more likely to recertify than cases assigned to interviews at the end of the month. Our estimates are unchanged when conditioning on likely eligibility for the program. Such large differences in recertification success are particularly surprising given the ease with which cases may reschedule their assigned date. We find that the vast majority of the cases who fail recertification as a result of interview assignment successfully reapply for the program within the 90 days post-recertification, though we also find a small but significant effect of interview assignment on the likelihood of remaining off the program for over 90 days despite maintained eligibility.

One simple policy implication resulting from our analysis is to shift the period in which case-worker interviews take place earlier in the recertification process. Extrapolating our results to the two million annual recertification cases in California suggests that shifting the interview period two weeks earlier would lead to 85,000 fewer cases that churn each year, increasing the amount of benefits distributed to eligible households and relieving stress associated with prorated and delayed benefits.

Additionally, the decrease in administrative costs associated with cases that churn more than offset the increase in costs of increased benefit distribution for these cases. While current federal law requires that SNAP recipients must complete a caseworker interview to recertify, the scheduling and timing of these interviews is at the discretion of the counties meaning that our suggested policy could be implemented without a waiver or a regulation change.[36]

More generally, we document very low rates of overall recertification success despite high rates of estimated eligibility. Sunstein (2018) details the overwhelming amount of paperwork burden associated with government programs, pointing out that while some amount of administrative burden is necessary to ensure program integrity, excess "sludge" prevents individuals from accessing these programs (Thaler, 2018). Our results suggest that relaxing the recertification requirements – for example, lengthening recertification periods or waiving interview requirements for likely-eligible households – could lead to large decreases in type I errors.

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Appendix Figure 1: Notice of Expiration of Certification



NOTICE OF ACTION
Food Stamps Termination

COUNTY OF SAN FRANCISCO

STATE OF CALIFORNIA
HEALTH AND HUMAN SERVICES AGENCY
CALIFORNIA DEPARTMENT OF SOCIAL SERVICES

Notice Date : 05/17/2016
Case Name [redacted]
Case Number [redacted]
Worker Name : Food Assistance
Worker Number : VBNK
Telephone : (415) 558-1001
Worker Hours : 8:00 AM- 12:00 PM, 12:00 PM - 5:00 PM
24Hour Information :
Address : 1235 Mission ST
San Francisco CA 94103-2705

[redacted]
San Francisco, [redacted]

Questions? Ask your Worker.

State Hearing: If you think this action is wrong, you can ask for a state hearing. The back of this page tells how. Your benefits may not be changed if you ask for a hearing before this action takes place.

1. Your CalFresh Certification period will end on 06/30/2016.

2. If you want to keep getting your benefits without a break; you must file an application no later than the 15th day of the last month of the certification period. You must also complete an interview with the county, and turn in any proof of income, expenses, or other information before the end of your certification period listed above.

3. If you have a one-month or two-month certification period, contact your worker for when your application needs to be turned in.

4. You will get a separate letter with an interview appointment date and time. Call your worker right away if you do not get the appointment letter within 10 days of this notice. Your appointment letter will tell you if you have a phone interview or if you have to come into the office for your interview.

Appendix Figure 2: Recertification Appointment



STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY CALIFORNIA DEPARTMENT OF SOCIAL SERVICES

CALFRESH RECERTIFICATION APPOINTMENT LETTER

[redacted]
San Francisco [redacted]

Date: 05/18/2016
Case Number: [redacted]
Case Name: [redacted]
Worker Name: Food Assistance
Worker Number: VBNK
Worker Telephone: (415) 558-1001
Address: 1235 Mission ST
San Francisco CA 94103-2705

You were notified that your CalFresh certification period ends on 06/30/2016 (MM/DD/CCYY). You need an interview to keep getting CalFresh benefits. This is your appointment letter for your interview.

☒ You have a telephone CalFresh recertification interview appointment. **If you prefer to be interviewed in person, please call the county at the number above for an appointment.**

APPOINTMENT DATE:	APPOINTMENT TIME:
06/01/2016	8:00 AM - 12:30 PM
YOUR PHONE NUMBER: [redacted]	ALTERNATIVE PHONE NUMBER: [redacted]

We will call you at the number provided above. If the number is not correct, you must call us and provide a number where you can be reached for your interview. It is very important that we are able to reach you. You may also want to provide an alternative phone number where you can be reached. County phone numbers may be blocked. If your phone does not accept blocked numbers, you may miss the phone call for your telephone interview, and your benefits may be delayed. If you miss your scheduled interview you will have to reschedule your interview. Call the county at the number above or go to the office address listed above to reschedule your interview.

☐ You have a face-to-face CalFresh recertification interview appointment.

APPOINTMENT DATE:	APPOINTMENT TIME:		
COUNTY OFFICE NAME:			
COUNTY OFFICE ADDRESS:	CITY:	STATE:	ZIP CODE:

Letter

Appendix Figure 3: Missed Interview Letter

COUNTY OF SAN FRANCISCO

STATE OF CALIFORNIA
HEALTH AND HUMAN SERVICES AGENCY
CALIFORNIA DEPARTMENT OF SOCIAL SERVICES

[redacted]
[redacted]
San Francisco, [redacted]

Notice Date	: 06/01/2016
Case Name	: [redacted]
Case Number	[redacted]
Worker Name	: Food Assistance
Worker Number	: VBNK
Telephone	: (415) 558-1001
Worker Hours	: 8:00 AM- 12:00 PM, 12:00 PM - 5:00 PM
24Hour Information	:
Address	: 1235 Mission ST San Francisco CA 94103-2705

Questions? Ask your Worker.

State Hearing: If you think this action is wrong, you can ask for a hearing. The back of this page tells how. Your benefits may not be changed if you ask for a hearing before this action takes place.

You were scheduled for an interview on 06/01/2016, but you did not keep this appointment. If you still want CalFresh benefits, please contact your worker to schedule another interview.

You must complete your interview with us by 06/30/2016.

You must be interviewed in order for us to determine your eligibility for CalFresh benefits. If you do not complete an interview, you will not be able to get CalFresh benefits.

If you have any questions or want more information, please contact your worker.

Appendix Figure 4: Recertification Packet Sent Day by Early vs. Late Interview Assignment

