# ENGAGING PROVIDERS AND CLIENTS

## Using Behavioral Economics to Increase On-Time Child Care Subsidy Renewals

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BIAS BEHAVIORAL INTERVENTIONS TO ADVANCE SELF SUFFICIENCY

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# OVERVIEW

The Behavioral Interventions to Advance Self-Sufficiency (BIAS) project is the first major opportunity to use a behavioral economics lens to examine programs that serve poor and vulnerable families in the United States. Sponsored by the Office of Planning, Research and Evaluation of the Administration for Children and Families in the U.S. Department of Health and Human Services, and led by MDRC, the project applies behavioral insights to social service programs and policies to learn how behavioral science can be used to deliver programs more effectively and improve the well-being of low-income children, adults, and families.

This report presents findings from a study designed in partnership with the Oklahoma Department of Human Services (DHS) to increase the number of clients who renew their child care subsidy on time. Only about one-third of an estimated 39,000 child care subsidy cases that are eligible for renewal each year in Oklahoma are renewed by the state's deadline. If a client fails to renew on time, DHS ceases payments to providers on behalf of the client. Providers can then require their clients to pay the amount of the subsidy in addition to any copayments. If clients do not pay the full cost of child care, providers may temporarily withhold services or clients may lose their place in the child care facility. On-time renewals, therefore, ensure consistent child care for families, stable payment for providers, and a reduced administrative burden for DHS.

The BIAS team diagnosed factors that might inhibit on-time renewal and designed three interventions for improvement: (1) a "provider intervention," which gave child care providers more information about their clients' renewal deadlines and prompted them to send reminders about and help clients with renewal; (2) a "client intervention," which used early and clear communication to clarify the renewal process and continued follow-up communication; and (3) a "combined intervention," which included both the client and provider interventions.

The interventions were tested in a randomized controlled trial including more than 9,000 clients who were randomly assigned to a client-only group (clients who received the client intervention but whose providers did not receive the provider intervention); a provider-only group (clients who did not receive the client intervention but whose providers received the provider intervention); a combined intervention group (clients who received the client intervention *and* whose providers received the provider intervention); and a control group (clients who were not exposed to any intervention on either the client or provider side).

### Key Findings

- The evidence suggests that the *provider intervention* helped clients renew on time, at an estimated cost of $1.10 per provider per month, or approximately $29,724 per year if extended to all providers in Oklahoma.
- The *client intervention,* which cost about $1.00 per client, did not appear to improve on-time renewal, but it may have helped clients renew by the end of a 30-day grace period following the renewal deadline.
- Combining the client and provider interventions did not appear to be more effective than either intervention alone.

These findings suggest that behavioral strategies designed for staff who work directly with clients may be a fruitful area for future research.

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The Authors

# EXECUTIVE SUMMARY

The Behavioral Interventions to Advance Self-Sufficiency (BIAS) project, sponsored by the Office of Planning, Research and Evaluation of the Administration for Children and Families (ACF) in the U.S. Department of Health and Human Services, is the first major opportunity to use a behavioral economics lens to examine programs that serve low-income families in the United States. Led by MDRC, the project applies behavioral insights to issues related to the operations, implementation, and efficacy of selected social service programs and policies, with the ultimate goal of learning how tools from behavioral science can be used to improve the well-being of low-income children, adults, and families.

This report presents findings from a study designed in partnership with the Oklahoma Department of Human Services (DHS) to increase the number of clients who renew their child care subsidy by their renewal deadline. The BIAS team and DHS designed three interventions to try to increase on-time renewals: one for DHS child care subsidy clients, one for child care providers who serve DHS clients, and one that combines the client and provider interventions. This pilot is the only BIAS study to date to evaluate an intervention designed for staff, in this case child care providers.

## BIAS Diagnosis and Design Process

The BIAS team used a method called "behavioral diagnosis and design" to identify potential behavioral obstacles — or "bottlenecks" — related to on-time child care subsidy renewal.[1] The behavioral diagnosis and design process comprises four phases:

1. *Define:* The project team defines the problem in a way that is precise enough to be testable.
2. *Diagnose:* The team collects both qualitative and quantitative data to identify factors that may be causing the problem.
3. *Design:* The team suggests theories based on behavioral research about why bottlenecks are occurring and uses behavioral insights to develop an intervention (or multiple interventions).
4. *Test:* The team evaluates the behavioral intervention using rigorous scientific methods.[2]

The BIAS team applied this process to the child care subsidy renewal process in Oklahoma and developed low-cost, behaviorally informed materials and processes intended to improve the renewal process and, as a result, increase the rate of on-time renewals.

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1 ideas42, an early partner in the BIAS project, developed a methodology called "behavioral diagnosis and design" for applying insights from behavioral economics to improve program outcomes. The process presented in this document, also called behavioral diagnosis and design, is a version that has been refined for the BIAS project. For a more detailed description of behavioral diagnosis and design, see Lashawn Richburg-Hayes, Caitlin Anzelone, Nadine Dechausay, Saugato Datta, Alexandra Fiorillo, Louis Potok, Matthew Darling, and John Balz, *Behavioral Economics and Social Policy: Designing Innovative Solutions for Programs Supported by the Administration for Children and Families*, OPRE Report 2014-16a (Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2014).

2 Under the BIAS project, behavioral interventions are tested using a random assignment design, where some portion of a given sample (the program group) is eligible to receive the intervention and the rest (the control group) continue with business as usual (the status quo). Randomized controlled trials are widely considered to be the most rigorous form of impact evaluation and the most accurate way to detect the impact of an intervention.

## Define

DHS identified increasing on-time renewal rates — renewal by the deadline — as a key goal. Data from previous years suggest that about 39,000 child care subsidy cases are eligible for renewal each year in Oklahoma. Before the study began, data from Oklahoma suggested that only one-third are renewed on time. If a client fails to renew on time, DHS stops submitting payments to providers on behalf of the client. Consequently, providers may require their clients to pay the amount of the subsidy in addition to any copayments the clients had been making previously. If clients fail to pay the full cost of child care, providers may temporarily withhold services or clients may lose their place in the child care facility. DHS does provide a 30-day grace period, described below, before a case is closed. However, when clients' cases are closed because they do not renew during the grace period, and their cases are reopened afterwards, DHS must reenter them into the system as new clients, a more intensive process that also requires DHS workers to reinterview them.[3] On-time renewals, therefore, ensure consistent child care for families, stable payment for providers, and a reduced administrative burden for DHS.

## Diagnose

The BIAS team learned about the renewal process from multiple perspectives through interviews with DHS leaders and administrators, workers and supervisors at county offices and at a call center, child care center providers (where services are provided at a facility), child care home providers (where services are offered in a family home), and DHS clients at DHS offices.[4]

About 45 days before a client's renewal deadline, DHS mails the client a renewal notice indicating that benefits will end unless the client provides DHS with updated information. Clients must then apply for renewal online, over the phone, or in person at their local DHS office. Clients must also submit documentation to verify their eligibility, including verification of their most recent 30 days of pay and a schedule showing work, school, and training commitments. If a client has not renewed 10 days before the deadline, then DHS sends a closure notice to the client and to the client's provider, stating that the client's benefits will end on the renewal date. DHS provides a 30-day grace period after the deadline, during which clients can still submit renewal applications before a case is closed. If a client is approved for renewal during this time, DHS will pay the providers retroactively for any service provided. Clients who do not renew by the end of the grace period must reapply as new clients, and the provider will not receive payment for any services rendered during the grace period. Providers may continue to offer care, but are under no obligation to do so. Child care providers receive no other information from DHS about their clients' renewal status, nor are they required to complete any paperwork during the renewal process.

The team identified four potential factors that could hinder on-time renewal rates: (1) the process and deadline are unclear to clients; (2) clients face challenges submitting the required documentation; (3) the renewal deadline is not reinforced; and (4) the renewal process does not communicate a sense of urgency. Figure ES.1 presents a timeline that illustrates the renewal process from the client's perspective, and potential bottlenecks reflecting points when the client might drop out of the process.

## Design

Based on findings from the behavioral diagnosis and design process, the BIAS team and Oklahoma DHS created three interventions to address the hypothesized behavioral bottlenecks: a client intervention, a provider intervention, and a combined intervention that included both the client and provider interventions.

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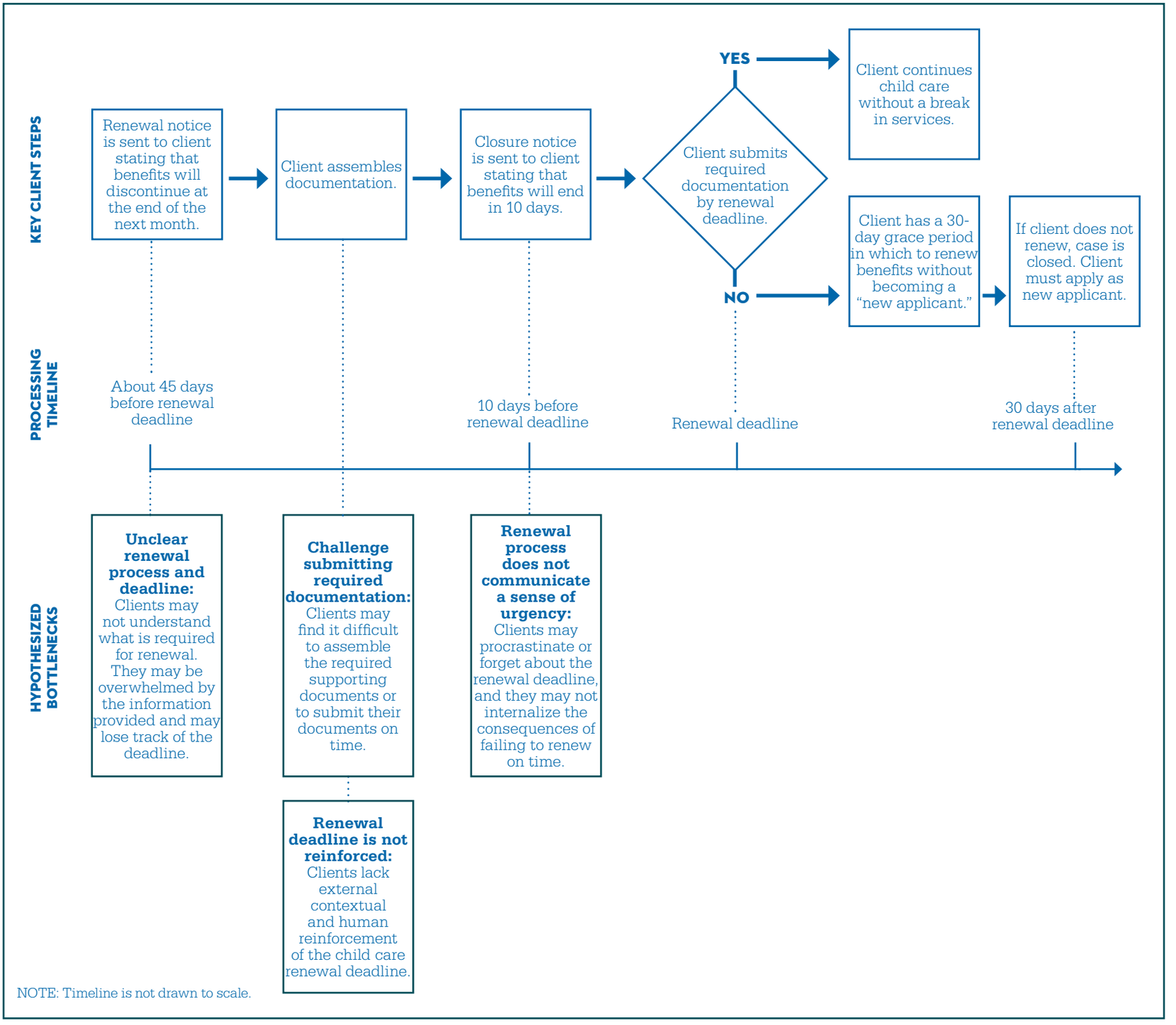
3 See www.okdhs.org/programsandservices/cc/asst/docs/faq.htm.

4 All interviews were informal, and the same question was not asked of more than nine people. The number of client interviews was limited because many clients call DHS on the phone with questions about the renewal process, or visit the DHS website, instead of going into DHS offices. Consequently, DHS workers who regularly work with clients and assist them with renewals provided most of the perspective on challenges that clients face during the renewal process.

## FIGURE ES.1
## TIMELINE OF KEY CLIENT STEPS AND HYPOTHESIZED BOTTLENECKS IN THE CHILD CARE SUBSIDY RENEWAL PROCESS

### OKLAHOMA DEPARTMENT OF HUMAN SERVICES




NOTE: Timeline is not drawn to scale.

The client intervention used two main strategies: (1) early and clear communication to clarify the renewal process; and (2) continued follow-up communication. The BIAS team created an early-alert postcard to send to clients 60 days before the renewal deadline (which is 15 days before DHS sends its standard renewal notice). The postcards encouraged clients to begin preparatory steps necessary for on-time renewal. Additionally, the team redesigned the existing renewal notice with simpler language, clearer instructions, and an emphasis on the consequences of not renewing on time. Finally, the team sent out a late-reminder postcard using language expressing an increased urgency about the deadline. This postcard was mailed to clients 20 days before the renewal deadline.

The provider intervention also used two main strategies: (1) it gave child care providers more information about their clients' renewal deadlines, and (2) it prompted providers to remind clients about renewal and help them through the process. The BIAS team created materials for the providers that supplied information about the renewal process and requirements, and alerted them as to which of their clients had subsidies that were up for renewal. Providers received a mailing at the beginning of each month that included a list of clients whose subsidies were due for renewal in two months and a separate list of clients whose subsidies were due for renewal in one month. Providers were asked to advise these clients to start collecting renewal documents in a specially created envelope, with a renewal timeline printed on it, that the BIAS team had designed and distributed to providers. Finally, providers received a list of clients whose cases were due for renewal 20 days before the deadline and were asked to tell those clients to call DHS immediately.

## Findings

The evaluation used a randomized controlled trial that created four research groups (three program groups and one control group) of clients:

1. Client-only group: clients who received the client intervention but whose providers did not receive the provider intervention
2. Provider-only group: clients whose providers received the provider intervention but who themselves did not receive the client intervention
3. Combined intervention group: clients who received the client intervention and whose providers received the provider intervention
4. Control group: neither clients nor providers received any intervention (status quo)

Table ES.1 shows the estimated impacts of the client, provider, and combined interventions relative to the control condition. The findings suggest that *the provider intervention was most effective at helping clients renew on time*. The first panel compares the provider-only group outcomes with the control group outcomes. It shows that the provider intervention increased the percentage of clients in the provider-only group who renewed before closure notices were sent by an estimated 2.9 percentage points (statistically significant at the 0.05 level). The same panel shows that the provider intervention increased the percentage of clients in the provider-only group who renewed before their renewal deadline by an estimated 2.4 percentage points (statistically significant at the 0.10 level). The provider intervention did not discernibly increase renewals by the end of the grace period; that is, there is no statistically significant difference in renewals at the end of the grace period. Supporting these findings, the responses to a survey that DHS administered to providers suggested that the intervention substantially increased providers' awareness of their clients' renewal status and increased their interactions with clients about renewal.

*The client intervention, on the other hand, does not appear to have improved the rate of on-time renewal* — that is, renewal before the benefits closure deadline. There is some evidence, however, that it helped clients renew their cases by the end of the grace period. The second panel in Table ES.1 compares the client-only group outcomes with the control group outcomes. It shows that, for this comparison, only the impact estimate of 2.4 percentage points for client renewals before the end of the grace period is statistically significant (at the 0.10 level) for the client intervention.

## TABLE ES. 1
## IMPACTS ON CHILD CARE SUBSIDY RENEWALS, BY RESEARCH GROUP
### OKLAHOMA DEPARTMENT OF HUMAN SERVICES

| OUTCOME | PROGRAM GROUP | CONTROL GROUP | DIFFERENCE | P VALUE |
|---|---|---|---|---|
| **Provider-only group renewals (%)** | | | | |
| Before closure notice | 23.9 | 21.1 | 2.9** | 0.023 |
| Before benefits closure | 36.7 | 34.4 | 2.4* | 0.090 |
| Before end of grace period | 61.1 | 59.4 | 1.7 | 0.217 |
| *Sample size* | *2,261* | *2,411* | | |
| **Client-only group renewals (%)** | | | | |
| Before closure notice | 20.9 | 21.1 | -0.2 | 0.855 |
| Before benefits closure | 35.1 | 34.4 | 0.8 | 0.565 |
| Before end of grace period | 61.9 | 59.4 | 2.4* | 0.083 |
| *Sample size* | *2,393* | *2,411* | | |
| **Combined intervention group renewals (%)** | | | | |
| Before closure notice | 22.3 | 21.1 | 1.2 | 0.299 |
| Before benefits closure | 35.6 | 34.4 | 1.3 | 0.376 |
| Before end of grace period | 61.3 | 59.4 | 1.9 | 0.193 |
| *Sample size* | *2,283* | *2,411* | | |

SOURCE: MDRC calculations using Oklahoma Department of Human Services data.

NOTES: A two-tailed t-test was applied to differences between research groups. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Estimates are adjusted for child care parent baseline characteristics.

Data are clustered by provider (except for client-only group versus control condition).

The closure notice is mailed to clients 10 days before their benefits are scheduled to end (the benefits closure deadline). The grace period extends for 30 days after the benefits closure deadline. At the end of the grace period, the case is closed.

Finally, the results demonstrate that *combining the client and provider interventions is unlikely to be more effective than the provider intervention alone*. Although the third panel in the table shows that none of the estimated impacts for the combined intervention group relative to the control group is statistically significant, additional analyses (not presented here) show that the renewal outcomes for the combined intervention group are not statistically different from those of the provider-only group or the client-only group, either. In fact, for the outcomes where the provider intervention is estimated to have positive impacts, the estimated outcomes for the combined intervention group fall between the estimates for the control group and the provider-only group — in other words, the average outcomes for clients in the combined intervention group are higher than the average outcomes for clients in the control group, but lower than the average outcomes in the provider-only group. Random differences between the groups may explain this pattern of results, but the main purpose of the combined intervention was to test whether the combination of the provider and client interventions was more effective than either intervention alone. The results strongly suggest that combining the interventions does not produce additional benefits.

Given the cost figures provided by DHS, the BIAS team estimates that the client intervention costs about $1.00 per client. The provider intervention costs approximately $3.57 per provider, with $1.91 of that amount being a one-time cost of an introductory mailing that was sent to providers to explain the intervention. Excluding this introductory mailing and a thank you mailing that was sent to all providers for participating in the study, the cost would be $1.10 per provider per month, or approximately $29,724 per year, if extended to all providers in Oklahoma. While staff time is not included, no additional staff were hired to do the extra work associated with the intervention.

## Conclusion

To date, BIAS studies have shown that behavioral interventions can positively change the behaviors of individuals and families who participate in human services programs.[5] The results of this pilot demonstrate that behavioral interventions can have an impact on staff as well, in ways that improve program outcomes. In fact, the intervention that was delivered to child care providers appears to be more effective at increasing clients' early renewal rates than the intervention that targeted clients directly. Child care providers participating in the provider intervention had financial incentives to ensure that their clients renewed on time (that is, by increasing on-time renewals, providers lower their risk of remaining unpaid for delivering services during the grace period), and providers regularly interacted with DHS clients at times when the benefits of the child care subsidy were likely to be most salient — when clients were at child care homes or centers with their children. The provider intervention took advantage of these interactions to deliver reminders and other assistance to clients in a salient context — from staff directly associated with the child care benefits. The improved outcomes, moreover, were mutually beneficial for clients and providers, as well as for DHS. Behavioral strategies that engage similarly situated staff in other contexts, or that take advantage of related incentive structures, are important areas for future research.

5 Peter Baird, Leigh Reardon, Dan Cullinan, Drew McDermott, and Patrick Landers, *Reminders to Pay: Using Behavioral Economics to Increase Child Support Payments*, OPRE Report 2015-20 (Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2015); Nadine Dechausay, Caitlin Anzelone, and Leigh Reardon, *The Power of Prompts: Using Behavioral Insights to Encourage People to Participate*, OPRE Report 2015-75 (Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2015); Mary Farrell, Caitlin Anzelone, Dan Cullinan, and Jessica Wille, *Taking the First Step: Using Behavioral Economics to Help Incarcerated Parents Apply for Child Support Modifications*, OPRE Report 2014-37 (Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, 2014); Richburg-Hayes et al. (2014).

# ENGAGING PROVIDERS AND CLIENTS

## Using Behavioral Economics to Increase On-Time Child Care Subsidy Renewals

The Behavioral Interventions to Advance Self-Sufficiency (BIAS) project, sponsored by the Office of Planning, Research and Evaluation of the Administration for Children and Families in the U.S. Department of Health and Human Services, is the first major opportunity to use a behavioral economics lens to examine programs that serve poor and vulnerable families in the United States. The project, led by MDRC, aims to apply behavioral insights to issues related to the operations, implementation, and efficacy of selected programs and policies. The goal is to learn how tools from behavioral science can be used to deliver programs more effectively and, ultimately, to improve the well-being of low-income children, adults, and families. For more information about behavioral economics, see Box 1.

This report presents findings from a study designed in partnership with the Oklahoma Department of Human Services (DHS) to increase the number of clients who renew their child care subsidy by their renewal deadline. Before the study was implemented, research by the BIAS team suggested that only one-third of clients submitted their renewal applications on time. On-time renewals ensure that there is consistent child care for client families, stable payment for providers, and a reduced administrative burden for DHS. In response, the BIAS team and DHS designed three interventions: one for DHS child care subsidy clients (the "client intervention"), one for child care providers who serve DHS clients (the "provider intervention"), and one that included both the client and provider interventions (the "combined intervention"). This project is the only BIAS study to date to evaluate an intervention designed for staff who interact face-to-face with clients — in this case, the child care providers.

The sections that follow present a description of the child care subsidy program and renewal process in Oklahoma; the "behavioral diagnosis and design" method used to identify potential obstacles, or "bottlenecks," that may prevent clients from renewing by the deadline; the three behaviorally informed interventions that were designed to improve on-time renewal; and results and implications from a randomized controlled trial to test the effectiveness of the interventions.[1]

## The Child Care Subsidy Program in Oklahoma

The Oklahoma Department of Human Services provides a wide range of assistance programs to help Oklahomans in need, including the Supplemental Nutrition Assistance Program (SNAP); Temporary Assistance for Needy Families (TANF); Medicaid; adult protective services; child welfare programs; child support services; and child care assistance, licensing, and monitoring, which includes the child care subsidy program that is the focus of this report.

Child care subsidies give low-income families access to affordable, high-quality child care programs, which are intended to fit the employment and educational needs of parents while suiting the developmental needs of children and helping prepare them to succeed in school.[2] Research has shown that continuity of

1 Under the BIAS project, behavioral interventions are tested using a random assignment design, where some portion of a given sample (the program group) is eligible to receive the intervention and the rest (the control group) continue with business as usual (the status quo). Randomized controlled trials are widely considered to be the most rigorous form of impact evaluation and the most accurate way to detect the impact of an intervention.

2 Tran and Weinraub (2006); Weber (2011).

## BOX 1
## BEHAVIORAL ECONOMICS

Behavioral economics, part of the broader field of behavioral science, is the application of psychological insights to economic models of decision-making.[*] Innovative research in this area has shown that human decision-making is often imperfect and imprecise. People — clients and program administrators alike — procrastinate, get overwhelmed by choices, and miss important details. As a result, both programs and participants may not always achieve the goals they set for themselves. Principles from behavioral economics can both shed light on decision-making and offer new tools to improve outcomes for program participants.

Research has shown that small changes in the environment can facilitate desired behaviors, that planning and commitment devices can be used to improve self-control, and that default rules can produce positive outcomes even for people who fail to act. In one study, a researcher examined whether a handwritten Post-it® note attached to a mailed survey and requesting a response had an impact on survey response rates. The study found that the personalized note increased the response rate by 22 percent.[†] In another test, researchers tested Quick Enrollment, which aimed to reduce savings plan choices available to employees to increase enrollment in any savings plan. A form was sent to employees who were not enrolled in any savings plan, explaining that they would be enrolled in a pre-selected plan (specified on the form) by simply checking a box and returning the form. After 26 months, the enrollment rate among employees to whom the form had been mailed (the program group) was 41 percent, compared with the 20 percent enrollment rate in the control group.[‡] Finally, the BIAS project previously partnered with Food Bank NYC and the Paycheck Plus Demonstration (an evaluation of a program that is similar to the Earned Income Tax Credit) to use behavioral concepts to increase participant attendance at an informational meeting about Paycheck Plus. The BIAS project increased the percentage of participant attendance by 7.1 percent, relative to the control group's rate of 18.5 percent.[§]

These examples show some of the recent applications of behavioral economics to human behavior. Behavioral tweaks — or "nudges," as they are frequently called — are often meant to be limited in scope. As the psychologist Daniel Kahneman states, behavioral economics is "characterized by achieving medium-sized gains by nano-sized investments."[‖] These types of interventions are not always expected, or intended, to achieve enormous impacts or attain a system overhaul. Instead, they are meant to be responsive to behavioral tendencies and to foster change at relatively low cost and effort. For a more detailed overview of behavioral economics, see *Behavioral Economics and Social Policy: Designing Innovative Solutions for Programs Supported by the Administration for Children and Families.*[#]

[*]For an overview of behavioral science, see Kahneman (2011).
[†]Garner (2005).
[‡]Beshears, Choi, Laibson, and Madrian (2006).
[§]Dechausay et al. (2015).
[‖]Singal (2013).
[#]Richburg-Hayes et al. (2014).

quality child care services is critical to the healthy development of children,[3] and is associated with positive child outcomes such as social competence, behavior outcomes, cognitive outcomes, language development, school adjustment, and overall child well-being.[4]

DHS subsidizes child care payments for Oklahoma parents or guardians who work, participate in job training, or engage in education and otherwise cannot afford high-quality child care. New clients must complete a Request for Benefits form, show proof of their monthly income, provide work or education schedules to demonstrate their need for child care, and specify a DHS-approved child care provider they will use.[5] Clients then must complete an interview with a DHS worker who will determine their eligibility. DHS pays the subsidy on a weekly basis directly to the provider on the client's behalf. Depending on family size, number of children who need care, and household income, clients may be responsible for a copayment due to their provider.

3 Adams, Rohacek, and Danziger (2010).

4 NICHD Early Child Care Research Network (2003); Huston, Chang, and Gennetian (2002); Loeb et al. (2003); Tran and Weinraub (2006); Howes (1988); de Schipper, Van Ijzendoorn, and Tavecchio (2004).

5 To be approved, providers must have a permit or license from Oklahoma Child Care Services and a contract for payment with Adult and Family Services.

## BOX 2
## NOTICES AND DEADLINES IN THE DHS CHILD CARE SUBSIDY RENEWAL PROCESS

**Renewal Notice:** Forty-five days before a client's subsidy is scheduled to end, DHS mails a renewal notice explaining the steps the client must take to renew benefits.

**Closure Notice:** Ten days before a client's subsidy is scheduled to end, DHS mails a closure notice stating that the client's benefits will end as of the renewal deadline.

**Benefits Closure** or **Renewal Deadline:** The date when a client's subsidy closes if the client has not renewed on time.

**Grace Period:** Clients who do not renew on time will stop receiving benefits, but can renew their benefits during the 30-day grace period that follows the benefits closure date. When a client does not renew by the end of the grace period, the case is closed, and any subsequent applications for a child care subsidy must be made as a new client.

Clients who receive a child care subsidy must submit a renewal application — usually every six months — to verify their eligibility. Eligible clients can apply to renew their child care subsidy, SNAP, TANF, and Medicaid benefits at the same time using the same application. Clients can renew online (the method preferred by DHS), over the phone, or in person at a DHS office. The documentation necessary to renew the child care subsidy includes the client's most recent 30 days of pay verification and a schedule showing work, school, and training commitments to confirm that the client is still eligible for child care assistance.

Most important, clients must renew by a renewal deadline or DHS will stop child care subsidy payments. Clients can still renew during a 30-day grace period following the renewal deadline, but DHS will not pay the subsidy during the grace period. If clients fail to cover this cost, providers may temporarily withhold services or clients may lose their place in the child care facility. Some providers may continue child care without these subsidy payments, and if the client does renew during the grace period, those providers will receive retroactive payments from DHS. If the client does not renew by the end of the grace period, however (at which point the case is officially closed), those providers will not receive the retroactive payments. Consequently, such providers may risk losing income by providing child care services during the grace period. DHS reports that many providers call the Department when they are concerned about their income stability and the risks associated with clients who do not renew by the deadline. Retroactive payment also requires additional paperwork for providers and DHS compared with the typical reimbursement process.

Finally, clients who do not renew on time can increase administrative tasks for DHS. DHS staff must field calls from providers concerned about clients who miss the renewal deadline, even though some of those clients may renew during the grace period. When clients do not renew until after the grace period, DHS must enter them into the system as new clients, a more intensive process that also requires DHS workers to reinterview them.[6] In short, on-time renewals ensure continuity of benefits for clients, continuity of payments to providers, and reduced administrative costs for DHS and for providers. DHS also believes that on-time renewals help to strengthen the Department's relationships with child care providers who receive subsidy payments.

Box 2 explains the child care subsidy renewal deadlines and related notifications that are sent to clients.

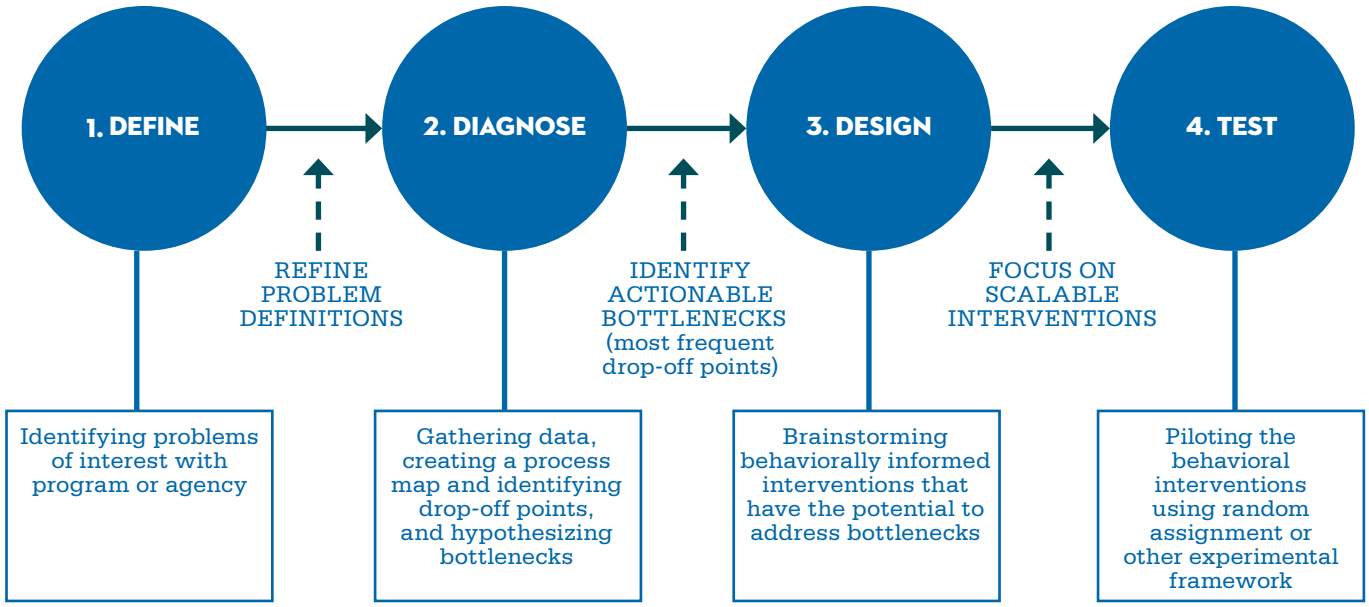
## The Behavioral Diagnosis and Design Process

The BIAS project uses a method called "behavioral diagnosis and design" to apply behavioral principles to human services programs.[7] The BIAS team adopts the perspective of the program's end user to search for barriers that may hinder program outcomes. In Oklahoma, the team sought to identify barriers preventing

6 See www.okdhs.org/programsandservices/cc/asst/docs/faq.htm.

7 ideas42, an early partner in the BIAS project, developed a methodology called "behavioral diagnosis and design" for applying insights from behavioral economics to improve program outcomes. The process presented in this document, also called behavioral diagnosis and design, is a version that has been refined for the BIAS project.

**FIGURE 1**
**THE BEHAVIORAL DIAGNOSIS AND DESIGN PROCESS**




SOURCE: This figure was adapted from a figure created by ideas42.

NOTE: Behavioral diagnosis and design is ideally an iterative process. For a more detailed description of behavioral diagnosis and design, see Richburg-Hayes et al. (2014).

clients from renewing their child care subsidy on time. In Oklahoma, this search also led the team to consider the perspective of child care providers. The team then works with human services staff to design behavioral interventions in response to those barriers.

In the first phase of the process, the team works with the human services program to *define* the problem in a neutral, measurable way. In the *diagnosis* phase, the BIAS team collects both qualitative and quantitative data to explore what may be causing the problem. The team uses these data to develop hypotheses about behavioral causes that may contribute to low participant outcomes. Next, in the *design* phase, the BIAS team designs interventions based on the hypotheses and behavioral diagnoses. Interventions are designed to address issues using simple, inexpensive changes. Last, in the *test* phase, behavioral interventions are evaluated using rigorous scientific methods — ideally, randomized controlled trials.

Figure 1 depicts these four phases. In Oklahoma, the process proceeded in a linear fashion, as the figure suggests. In the ideal case, with more time, the diagnosis and design process is an iterative one, allowing for multiple rounds of hypothesis testing and refinement.

## Applying Behavioral Diagnosis and Design to Increase On-Time Child Care Subsidy Renewals in Oklahoma

### Define

The first phase in the process is to define the problem in terms of the desired outcome, without making presumptions about the cause. DHS identified increasing on-time renewal rates — renewal by the deadline — as a key outcome of interest. Data from previous years suggested that about 39,000 child care subsidy cases were eligible for renewal each year in Oklahoma, but before the study began, data from Oklahoma suggested that many cases are not renewed on time: DHS provided the BIAS team with data for all clients whose child care subsidies were up for renewal in May 2013, a total of 2,961 clients. Roughly one-third of these clients renewed their benefits by the renewal deadline of May 31. One-third failed to renew their

benefits before the end of the grace period,[8] and about a third — which corresponds to roughly 13,000 cases when considered annually — renewed during the grace period. These clients were eligible for the subsidy but did not successfully renew on time. DHS and the BIAS team hypothesized that diagnosing and addressing the barriers, or bottlenecks, for these clients could lead to large increases in on-time renewals.

## Diagnose

In order to better understand the child care renewal process from the clients' perspective, and to identify factors that might influence clients' renewal behaviors, the BIAS team interviewed a variety of people, including DHS leaders and administrators, workers and supervisors at county offices and at a call center who field child care inquiries, child care center providers (where services are provided at a facility), and child care home providers (where services are offered in a family home), as well as DHS clients at DHS offices.[9]

Figure 2 shows key steps in the child care subsidy renewal process and identifies potential bottlenecks that may prevent clients from renewing on time. About 45 days before a client's renewal deadline, DHS mails the client a renewal notice stating that benefits will end unless the client provides DHS with updated information. If a client has not renewed 10 days before the deadline, then DHS sends a closure notice to the client and to the client's provider stating that the client's benefits will end as of the renewal deadline (or "benefits closure" date). Child care providers receive no other information from DHS about their clients' renewal status, nor are they required to complete any paperwork during the renewal process. Some providers reported to DHS that they give their clients access to computers or fax machines to complete their renewal applications.

After examining the process from the clients' perspective, the BIAS team developed hypotheses for four bottlenecks that could inhibit on-time renewal for DHS clients. (In the sections that follow, terms from behavioral science appear in bold type when they are first mentioned. These terms are defined and explained in greater detail in Appendix Table A.1.)

**Bottleneck 1: Unclear renewal process and deadline.** DHS suggested that clients may not understand exactly what is required for renewal. Clients may also be overwhelmed by the information provided.

Clients may perceive the renewal process as challenging because the information in the renewal notice (shown in Appendix Figure B.1) is presented in a dense and potentially confusing manner. For example, the renewal notice leads with, "We need information from you by…" but it does not say what information will be needed; it simply directs the clients to the website for the next steps. The letter clearly outlines *how* applicants can complete their renewal applications (online, mail, fax, hand delivery, or answering the questions over the phone with a representative and submitting required documentation separately) but neglects to explain *what types* of questions must be answered and *what exact* documentation is necessary for renewal. If they misunderstand the renewal notice, clients may not have the proper documentation prepared, hampering their ability to complete the renewal application on time.

Additionally, the online renewal instructions and steps to complete renewal online might be unclear to clients. For example, at the end of the online process, clients are told they do not need to call DHS, and that DHS will contact them if there are issues with their renewal. However, DHS caseworkers mentioned that they do not always contact the client if there is a problem, and some caseworkers expect clients to call to check the status of their application.

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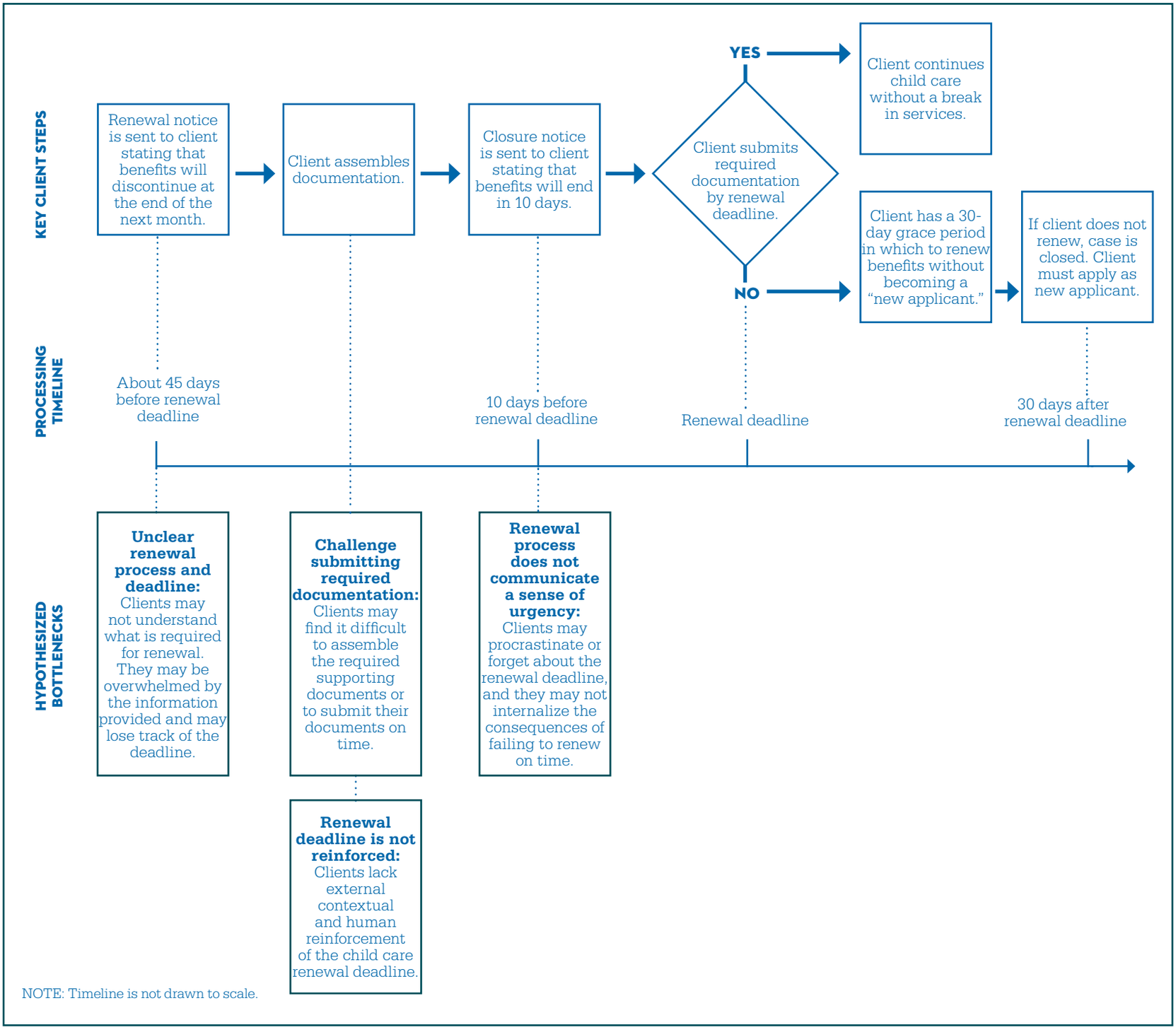
8 DHS presumes that the clients who did not renew before the end of the grace period were eligible to renew and needed child care; or no longer needed child care; or were no longer eligible to receive the child care subsidy. Clients may become ineligible for the child care subsidy if they stop working or going to school, start earning more money, select a child care provider outside of the DHS network (for example through a family member or a different child care center), or if their children age out of the program.

9 All interviews were informal, and the same question was not asked of more than nine people. The number of client interviews was limited because many clients call DHS on the phone with questions about the renewal process, or visit the DHS website, instead of going into DHS offices. Consequently, DHS workers who regularly work with clients and assist them with renewals provided most of the perspective on challenges that clients face during the renewal process.

## FIGURE 2
## TIMELINE OF KEY CLIENT STEPS AND HYPOTHESIZED BOTTLENECKS IN THE CHILD CARE SUBSIDY RENEWAL PROCESS

### OKLAHOMA DEPARTMENT OF HUMAN SERVICES




NOTE: Timeline is not drawn to scale.

Even though individuals tend to think that they can prioritize important information, one's mental resources can become overburdened with excess details, challenges, or emotional stress, leading to a heavy **cognitive load** that makes it difficult to complete tasks. The dense and unclear information in the renewal notice and online renewal application, for instance, might increase cognitive load. In the online process, the information about the required documentation for recertification could be easily missed because of a heavy cognitive load, which may cause **inattention** (because attention is a limited resource, it can be used up) or **tunneling** (devoting one's mental energies to a limited number of issues), and clients may miss important pieces of information. For example, the required documentation for recertification is requested at the very end of the online application, only after clients press the submission button for the application. Consequently, clients may believe that they have completed all the necessary steps even though documentation is still outstanding.

**Bottleneck 2: Clients face challenges submitting the required documentation.** Clients may find it difficult to assemble the required supporting documents or to submit their documents on time. If the client is working, required documents would include pay stubs or statements from all employers for the previous full month, or if self-employed, a federal income tax return from the previous year. If the client is going to school, a copy of the current class or training schedule would be required. Additionally, any income source outside of work (for example, Social Security, unemployment, or child support benefits) requires documentation.

Collecting and saving the appropriate documents that cover a 30-day period may constitute a **hassle factor** that makes renewing on time harder to accomplish, particularly because clients may have multiple jobs with irregular schedules, and they may work in addition to going to school. Clients must also produce multiple pay stubs for each job if employers pay them more than once in each 30-day period. In addition, the renewal notice is ambiguous about the requirement and may not impart a sense of urgency about collecting supporting documentation. Because it only states, "You may also be asked to provide us with some needed proof," the need to assemble documents may feel **psychologically distant,** or abstract. As a result, clients may not register this important requirement. Clients who do not start collecting documentation immediately after receiving the renewal notice will lose critical time to collect 30 days' worth of documents, or they may forget altogether.

**Bottleneck 3: The renewal deadline is not reinforced.** Clients do not receive **reminders** to complete their renewal application at a time when they are thinking about their child care needs.

Renewal information may lack **salience** if clients receive the renewal notice at a time and in an environment disconnected from child care requirements. When clients receive the renewal notice in the mail at their home, they may not be thinking about their child care needs. Other immediate needs (for example, cooking, cleaning, paying bills, and so forth) may take precedence over child care, which happens outside the home. As a result, the notice and the importance of renewal may not be salient to the client.

Given the lack of reinforcement, clients may also experience **prospective memory** failure: they may forget to renew their child care subsidy at the appropriate time because the renewal deadline is not reinforced by their provider or by DHS except when they receive a renewal notice, 45 days before the renewal deadline. Further, the closure notice, which is sent to clients 10 days before the renewal deadline, generally arrives too late to serve as an effective reminder for on-time renewal.

Clients may also suffer from **present bias,** wherein the needs of today feel more pressing than the needs of tomorrow. When clients are notified that they need to renew to maintain their child care benefits, they may prioritize the needs of today over the task of collecting documentation for an event that will occur further in the future. That is, because this task is cumbersome and has a future deadline, clients may continue to push it off and prioritize immediate needs. The lack of environmental reminders to reinforce the renewal deadline may make it difficult for clients to overcome this present bias.

**Bottleneck 4: The renewal process does not communicate a sense of urgency.** Clients may not internalize the consequences of failing to renew on time and procrastinating.

DHS staff believe that clients are well aware of the 30-day grace period. Although payments to providers stop during the grace period, the team learned that many providers will continue to provide child care under the assumption that a client will renew before the end of the 30-day grace period, and the provider will then receive retroactive benefits. **Status quo bias** may also be a factor if clients believe that because they have previously renewed during the grace period without an interruption in child care, there is no need to change their behavior, even though this assumption may jeopardize their child care. When these clients receive the renewal notice, they may not feel any urgency to immediately begin the renewal process because they do not experience an immediate lapse in child care. Consequently, the renewal deadline may feel less urgent to clients, and they may **procrastinate**.

Clients may also experience **planning fallacy,** underestimating the time or effort a task will take. Even if a client had trouble meeting the deadline for a past renewal, that failure may be attributed to a one-time problem and not taken into consideration when planning to complete the renewal application again.

## Design

For each of the hypothesized bottlenecks, the team identified underlying behavioral concepts, and then worked with DHS to develop intervention components — new practices that could address the bottlenecks and be implemented and sustained by DHS for all clients in Oklahoma, depending on the evaluation results. These components were used to develop the three interventions described below: a client intervention, a provider intervention, and a combined intervention that included both the client and the provider interventions. Table 1 shows the connection between the hypothesized bottlenecks, the associated behavioral concepts, and the intervention components. Except where noted, the intervention components identified in Table 1 apply to each of the three interventions.

### *Client Intervention*

The client intervention was composed of two main strategies: (1) early and clear communications to clarify the renewal process, and (2) continued follow-up communication.

**Early and clear communication to clarify the renewal process and deadline.** In order to address the uncertainty of the renewal process and deadline, the team created an early-alert postcard to be sent to clients two months before the renewal deadline. The goal of this postcard was to encourage clients to begin thinking earlier about the upcoming renewal deadline and the preparatory steps necessary for on-time renewal. Figure 3 depicts the behavioral concepts incorporated into the early-alert postcard. Appendix C presents all of the client (and provider) intervention materials.

The early-alert postcard includes a timeline that is color-coded in green, yellow, and red, following the color scheme of a traffic light. The green portion of the timeline and coloring of the early-alert postcard indicates that it is time to start the renewal process now. The yellow portion of the timeline shows that when clients receive the redesigned renewal notice, they will need to begin the application process or they risk losing their benefits. The red portion of the timeline identifies when clients will face closure of their benefits if they do not successfully renew by the deadline. (All of the mailings in both the client and provider interventions include this green-yellow-red color-coding to alert clients about the increasing danger of losing their benefits.) Simplified, standardized color processes have been found to reduce the cognitive load associated with task requirements.[10]

Clients might be more likely to read and save the information in a postcard than in a letter because a postcard is smaller, more visually appealing, and can be read quickly without opening an envelope. The postcard also highlights the message, "Save this Postcard!" Clients may put the postcard on their refrigerator or in another location, which may compensate for the lack of cues in their homes and in their lives that would reinforce

10 For example, Mehta and Zhu (2009) found that the color red "has been shown to make people more vigilant and risk-averse" and enhance performance on detail-oriented tasks.

## TABLE 1
## RELATIONSHIPS BETWEEN HYPOTHESIZED BOTTLENECKS, BEHAVIORAL CONCEPTS, AND PROPOSED COMPONENTS OF THE INTERVENTION

### OKLAHOMA DEPARTMENT OF HUMAN SERVICES

| | PROPOSED INTERVENTION COMPONENT | | | | | |
|---|---|---|---|---|---|---|
| **HYPOTHESIZED BOTTLENECK AND BEHAVIORAL CONCEPT** | Reframe for Loss Aversion | Simplify and Modify Renewal Description | Encourage Plan-Making | Reduce Cognitive Load | Remove Hassle Factors | Add Reminders |
| **1. UNCLEAR RENEWAL PROCESS AND DEADLINE** | | | | | | |
| Cognitive load | | | | ✔ | | |
| Inattention | | ✔ | | | | |
| Tunneling | | | | | | ✔ |
| **2. CHALLENGE SUBMITTING REQUIRED DOCUMENTATION** | | | | | | |
| Hassle factors | | | | | ✔ | |
| Psychological distance | | | ✔ | | | ✔ |
| **3. RENEWAL DEADLINE IS NOT REINFORCED** | | | | | | |
| Prospective memory failure | | | | | | ✔ |
| Salience[a] | | | | | | ✔ |
| Present bias | | | | ✔ | | |
| **4. ABSENCE OF A SENSE OF URGENCY** | | | | | | |
| Status quo bias | ✔ | | | | | |
| Procrastination | | | | | | ✔ |
| Present bias | ✔ | | | | | |
| Planning fallacy | | | ✔ | | | |

NOTES: Behavioral concepts cannot be definitively identified, but rather are hypotheses derived from the behavioral diagnosis and design process. Bottlenecks reflect possible client drop-off points in the renewal process.

[a]Applies to the provider intervention only.

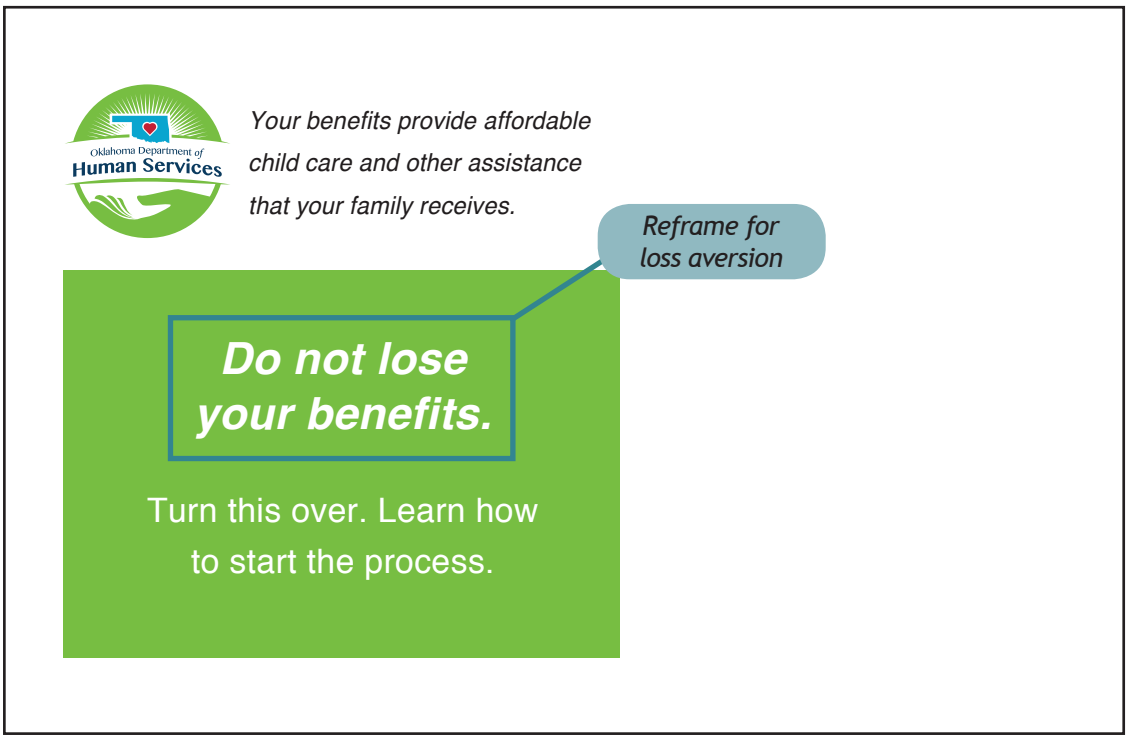
and remind them of the upcoming deadline. Figure 4 shows the timing for this early-alert postcard in relation to clients' renewal deadlines, as well as the timing for other intervention components, as described below. (Figure 4 also depicts the provider intervention, described in the next section.)

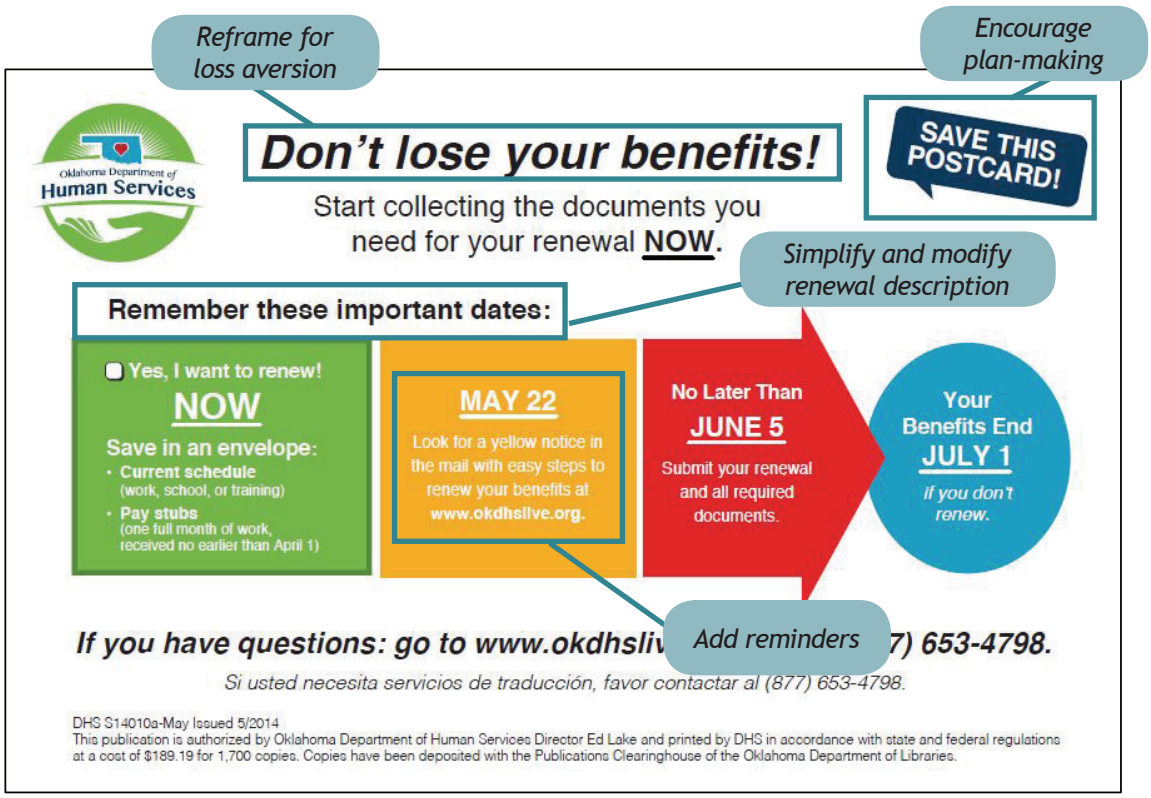
In order to help clients overcome the challenge of submitting the required documents on time, the team also redesigned the state's existing renewal notice to include simpler language, clearer instructions, a similar color-coded timeline, and a **loss-aversion frame** of the consequences of not renewing on time: "Do not lose the affordable child care your family receives." (See Appendix Figure C.1.) "Loss aversion" refers to the stronger emotional response people may have to a loss compared with a gain; that is, the desire to avoid a loss may be more powerful than the desire to acquire a gain. "Frame" refers to the way in which information is presented.

**Continued follow-up communication designed to impress a sense of urgency on clients.** The late-reminder red postcard (shown in Appendix Figure C.2), mailed to clients 20 days before the renewal deadline, provides a final reminder and increased sense of urgency. This final postcard asks clients to take a single action (make a phone call) that would result in direct assistance with the renewal process from a DHS worker, in order to reduce procrastination and planning fallacy. Reminder

## FIGURE 3
## EARLY-ALERT POSTCARD, CLIENT INTERVENTION

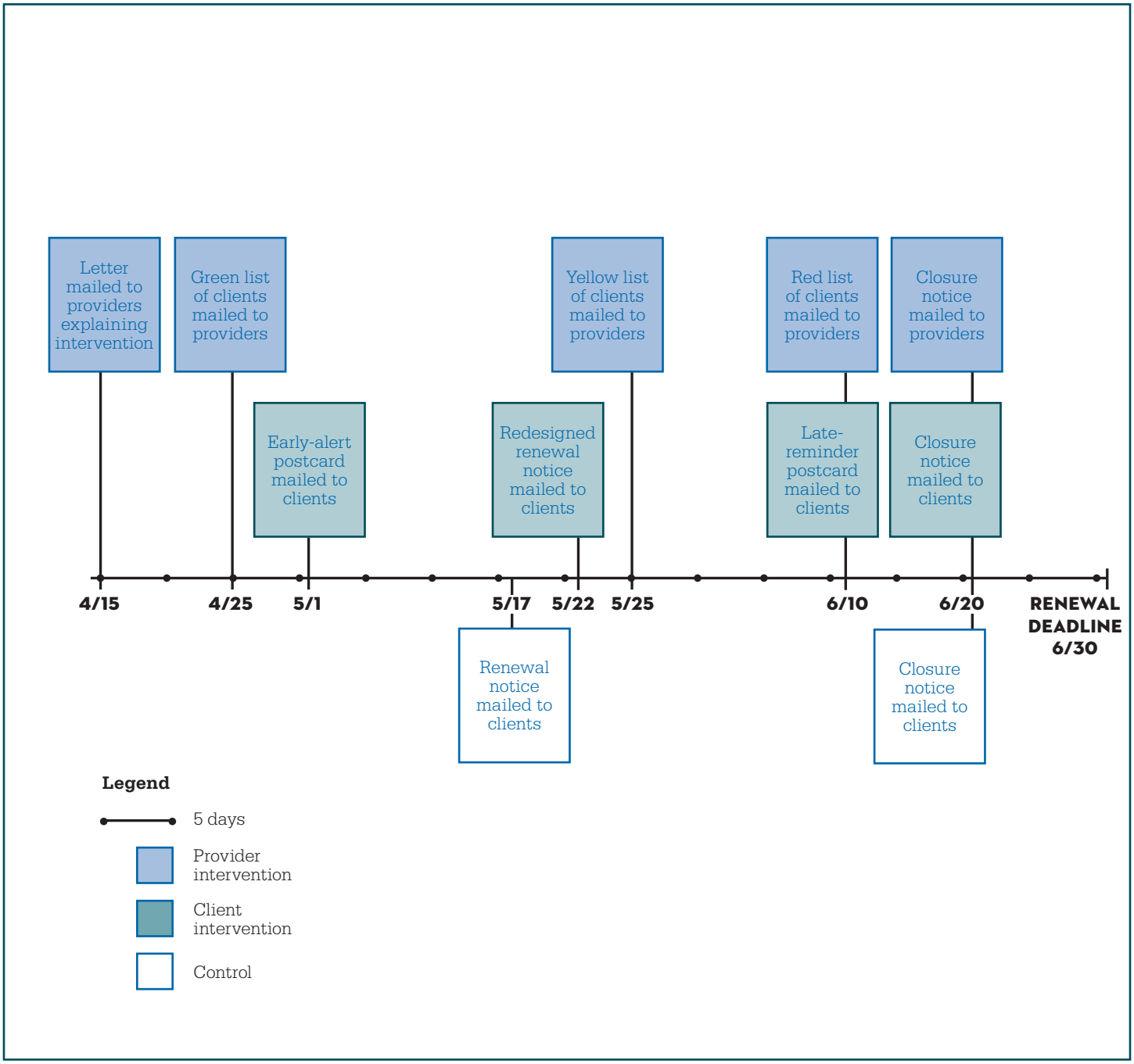
### OKLAHOMA DEPARTMENT OF HUMAN SERVICES



## FIGURE 4
## TIMELINE FOR DISTRIBUTION OF INTERVENTION AND CONTROL MATERIALS, COHORT 1

### OKLAHOMA DEPARTMENT OF HUMAN SERVICES




NOTES: The combined intervention group received both provider and client intervention materials. The mailings were sent on the same calendar date for each cohort.

letters have been found to substantially increase the probability that women receive a mammogram,[11] and to positively affect survey response rates.[12] Additionally, reminders have been shown to increase the number of noncustodial parents making child support payments.[13]

Finally, in addition to color-coding the timeline, the BIAS team implemented the use of a number of other behaviorally informed components to encourage on-time renewal. Each of the revised client materials included a graphical depiction of the renewal timeline with personalized dates to help clients better conceptualize how much time they had to collect and submit their documentation, and to more clearly understand where they were in the process (beginning, middle, end). The team also took advantage of possible **endowed progress effects,** wherein people are more likely to achieve a goal when they feel they have made progress toward attaining it: the client materials included checklists of easy steps in the process so that clients could see their progress. The team hoped to create a sense of accomplishment for clients by clearly defining the actions the client needed to take, with the first item being a simple step (which a client might have already taken), in order to increase the motivation to complete the remaining steps.

### *Provider Intervention*

The second intervention was designed to give child care providers information about their clients' renewal deadlines, prompt them to remind clients about renewal and help them with it, and improve the providers' knowledge about the renewal process and requirements. The BIAS team hypothesized that because providers do not receive payment from DHS if a client does not renew by the renewal deadline, their incentives are aligned to help clients renew on time. The goal of the intervention was to encourage providers to remind clients about renewal deadlines at a time when clients are likely to be thinking about their child care needs, and to offer them assistance completing the process. DHS also hoped that engaging providers and giving them tools to assist their clients would produce a secondary benefit of positively reinforcing the relationship between DHS and child care providers.

In April, before the intervention began, DHS contacted the providers from a call center to inform them of new materials (designed by the BIAS team) that would be sent to them as part of the intervention, including specially designed envelopes that clients could use to collect documentation; tell them when to expect these materials; and explain how they could use the materials to help their clients renew on time. (See Appendix Figure C.3.) Included with these materials was an introductory letter to each provider that clearly described the upcoming intervention and the steps clients must take to renew their subsidy. This letter, in addition to the phone call, helped to prime the providers for the intervention.

The provider intervention was composed of two main strategies.

**First, providers were encouraged to remind clients in person about how and when to renew subsidies.** DHS sent lists of clients who were coming due for renewal to providers and instructed providers to talk to their clients about renewing in order to avoid losing their payments. Like the traffic light color escalation of the client intervention, the lists were color-coded, with the colors correlated to increasing urgency. As shown in Figure 4:

- *Providers in the intervention received a packet at the beginning of each month* that included a list of clients who were due for renewal in two months (green list), with instructions to direct these clients to start collecting renewal documents and to give specially designed envelopes (described in more detail below) to these clients to hold the documents. A separate list of clients who were due for renewal in one month (yellow list) was also sent to providers, with instructions to direct these clients to the renewal website, where they could complete their applications.

11 Mayer et al. (2000); Wagner (1998).

12 Kaplowitz, Hadlock, and Levine (2004); Dillman, Clark, and Sinclair (1995).

13 Baird et al. (2015).

- *Providers received a list approximately 20 days before the renewal deadline of their clients who needed to renew by the end of the month (red list).* Providers were instructed to direct these clients to call DHS immediately.

**Second, providers were encouraged to offer assistance identifying and collecting required documentation.** In order to help clients overcome the challenge of submitting the required documentation, at the start of the intervention DHS included envelopes, designed by the BIAS team, in the introductory packet that was sent to the providers, to pass out to each client whose child care subsidy was coming due for renewal. The front of the envelope included a timeline of the renewal process and a clear set of instructions describing the documents needed for renewal. The envelopes were designed to help clients overcome some of the hassle factors they may experience collecting the required documents, by clarifying the process and documents needed, prompting clients to start collecting documentation, and providing a place to keep all of their documents. Providers were instructed to pass out these envelopes to clients two months before the renewal deadline, as explained above, and to begin the conversation with clients early about renewing their subsidy.

### *Combined Client and Provider Intervention*

The combined intervention included all materials from both interventions — the client intervention and the provider intervention.

## Test

The BIAS team designed the evaluation to test three key questions:

1. *Did the intervention increase the percentage of clients who renewed before their benefits closure date?* This outcome is important because of the risks that clients and providers face when clients do not renew by the deadline.
2. *Did the intervention increase the percentage of clients who renewed before closure notices were mailed (10 days before the closure date)?* This outcome is important because closure notices are also mailed to providers, who sometimes call DHS concerned about their income when they receive the notices.
3. *Did the intervention change the percentage of clients who renewed before the end of the grace period?* This outcome is important because retroactive payments will not be made unless clients renew by the end of the grace period.

The evaluation was performed using a randomized controlled trial with three cohorts of clients, and lasted from April 2014 until August 2014. There were two levels of randomization: (1) a cluster randomized trial of child care providers (for the provider intervention) and (2) individual-level randomization of clients with stratification by provider.[14] Using this process, all providers were randomly assigned to receive either the provider intervention or no intervention, and all clients were randomly assigned to receive either the client intervention or no intervention. These two levels of randomization produced four study groups (as shown in Figure 5):

- the control group, made up of clients who received the status quo from their providers and from DHS — that is, no intervention (N = 2,411)
- the provider-only group, a program group made up of clients whose providers received the provider intervention but who did not themselves receive the client intervention (N = 2,261)
- the client-only group, a program group made up of clients who received only the client intervention but whose providers did not receive the provider intervention (N = 2,393)
- the combined intervention group, a program group made up of clients who received the client intervention and whose providers received the provider intervention (N = 2,283)

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14 In a *cluster randomized trial,* groups of individuals are randomly assigned to an intervention (program group) or to no intervention (control group). In this study, each provider with clients who were due for renewal during the study period was randomized to either administer the intervention to all renewing clients or to continue with the status quo (no intervention). In a *stratified randomized trial,* individuals with a common characteristic are treated as a group, and exact proportions of that group are assigned to program and control conditions. In this study, stratification occurred by provider: for a provider with two clients, one would be randomized to receive the client intervention and the other would be assigned to not receive it.

## FIGURE 5
## RESEARCH DESIGN

### OKLAHOMA DEPARTMENT OF HUMAN SERVICES

| | PROVIDER INTERVENTION | PROVIDER STATUS QUO |
|---|---|---|
| CLIENT INTERVENTION | Combined Intervention Group (N = 2,283) | Client-Only Group (N = 2,393) |
| CLIENT STATUS QUO | Provider-Only Group (N = 2,261) | Control Group (N = 2,411) |

Clients in the control group and the provider-only group received the traditional renewal notice, without the redesign, at the same time that the clients in the client-only group and the combined group received the redesigned notice (mailed 45 days before the renewal deadline). All four groups (control, client-only, provider-only, and combined) received the standard closure notice 10 days before the renewal deadline.

Figure 5 illustrates that providers and clients were randomized using a 2 x 2 factorial design — an experimental design in which research groups are defined by combinations of two factors or more at two levels or more. Factors are components of a "bundled" intervention. Levels describe the amount or intensity of the factor included. This experiment involved two factors: the provider mailings and the client mailings, with two levels each, inclusion (program group) and exclusion (control group) in the intervention. Factorial designs allow the main effect of each factor to be tested with a smaller total sample size than would be required to test the same number of factors with the same power in a traditional experiment. See Box 3 for more information about factorial designs and main effects.

About half of the 1,651 providers (839) were randomized to receive the provider intervention and received the materials for their clients who were due for renewal. The other 812 providers were assigned to receive the status quo. Within those two groups, there were 998 center-based providers and 653 home-based providers. Providers that were randomized to receive the status quo were not asked to do anything new or different for their clients.

About half of the 9,348 clients (4,676) were randomized to the client intervention over three cohorts of clients (one cohort of clients who were eligible for renewal per month, for three months). Approximately half of the clients assigned to the client intervention also had a provider assigned to the provider intervention (the combined intervention group, with 2,283 clients) and the other half did not (the client-only group, with 2,393 clients).

DHS administrative systems were the source of outcome data for the evaluation. Demographic client data show no systematic differences between research groups in baseline characteristics at the time of randomization.[15] DHS also administered a short survey to providers to learn how the intervention was implemented. The results of this survey are described below.

# Findings

## Implementation

On the whole, the interventions were implemented as planned. The implementation data for this study include administrative data documenting the mailings and communications that DHS sent to clients and providers, and come from the survey that DHS administered to providers at the end of the intervention period.[16] DHS printed and mailed all MDRC-designed provider and client materials. Before sending the first provider mailings, DHS called providers to explain the new intervention to them, and told them when to expect the new materials.

15 See Appendix Table E.1 for the research groups' baseline characteristics.

16 The survey was designed and administered by call center staff under the guidance of DHS with input from MDRC, but no part of the survey was required as part of the pilot.

## BOX 3
## FACTORIAL DESIGN

In the current BIAS study, analyses of the data that leverage the factorial design provide additional evidence for the effectiveness of the provider intervention but not of the client intervention. The factorial design uses the whole sample to test the effect of each component, or "factor," of the interventions. This approach provides more statistical power than more traditional multi-arm designs, with effects that are averaged across sample members in all other factor groups, called main effects.

The provider main effect, which compares the average renewal rates among clients in the provider groups (both the provider-only group and the combined intervention group) with the average renewal rates among those in the nonprovider groups (both the client-only group and the control group), is estimated to be positive and statistically significant on renewals before the closure notice was sent (23.1 percent of clients who received the provider intervention compared with 21.0 percent of clients who did not receive the provider intervention). This estimated effect indicates that the provider intervention was effective for this outcome in the entire sample. No other outcomes showed a significant provider main effect. (See Appendix Table D.2.)

The client intervention does not have a significant impact in the entire sample (in which half of the clients are receiving the provider intervention). The estimate for the client main effect, which compares the average renewal rates among those in the client groups (both the client-only group and the combined intervention group) with the average renewal rates among those in the nonclient groups (both the provider-only group and the control group), is not statistically significant for any of the three primary outcomes. (See Appendix Table D.3.)

These analyses, however, have less direct policy relevance for DHS because they do not compare any of the new interventions directly with the status quo. For example, because of the inclusion of the combined intervention group, the intervention group for the provider main effect analysis includes some individuals who also received the client intervention, and the comparison group for the provider main effect analysis also includes clients who received the client intervention, in addition to clients who did not.*

*Factorial main effects are moderated by the presence of all levels of other factors on both sides of the contrast, which is not true of a simple effect between research groups.

The team regularly monitored DHS's processes for mailing all of the intended materials to clients and providers: DHS provided MDRC with lists of clients to whom each postcard would be mailed, and these lists were verified against the randomization files. Any clients who were missing from the lists were verified to be omitted because their cases were closed or they had already renewed. Similarly, DHS provided MDRC with the lists of clients who were included on each provider list, and these were also verified against randomization files to confirm that the correct clients were listed on the correct color-coded renewal list. One provider mailing in May included the wrong clients on the lists. In response, DHS called providers to explain the error and sent them new mailings within a few days with corrected lists. No other deviations from the planned mailings occurred.

In order to learn how providers responded to the mailings, DHS designed a survey and administered it to all providers in the experiment, with input from the BIAS team, one month after the last provider mailings were sent.[17] The survey was designed to assess whether the provider intervention changed provider knowledge and behavior regarding client renewals.[18]

17 The survey was administered during the week of September 8, 2014.

18 The response rate to the survey was 65 percent. Consequently, the survey results may not be generalizable to the full population, but they do suggest that providers generally experienced the intervention as intended and, as described below, that the intervention changed providers' behavior. Center-based providers were significantly more likely to respond than were home-based providers. Providers with higher-quality ratings were more likely to respond than were those with lower ratings. However, there was no significant difference between the number of respondent centers in the program and control groups, and there were no statistically significant differences in the average quality ratings of program and control providers among those who responded. An earlier set of calls to program-group-only providers took place the week of May 19 to confirm that they were receiving the materials and find out if they had questions. The response rate was about 40 percent, but among those who were reached, 87 percent reported that they had received the materials. For more information about quality ratings in Oklahoma, see www.okdhs.org/programsandservices/cc/stars.

## TABLE 2
## PROVIDER SURVEY RESPONSES: EVIDENCE OF IMPLEMENTATION OF THE PROVIDER INTERVENTION

### OKLAHOMA DEPARTMENT OF HUMAN SERVICES

| OUTCOME | PROGRAM GROUP | CONTROL GROUP | DIFFERENCE | P VALUE |
|---|---|---|---|---|
| **Question 1: Do you know when clients are due to renew their child care benefits? (%)** | | | | |
| Yes | 66.0 | 29.6 | 36.5*** | 0.000 |
| | | | | |
| **Question 2: In the last 4 months, how many times did you talk to clients about renewing their child care benefits? (%)** | | | | |
| Never | 11.4 | 21.8 | -10.5*** | 0.000 |
| Once or twice | 32.6 | 34.9 | -2.3 | 0.429 |
| Several | 56.1 | 43.3 | 12.8*** | 0.000 |
| | | | | |
| **Question 3: In the last 4 months, did you ever assist clients with renewing their child care benefits? (%)** | | | | |
| Yes | 32.5 | 29.7 | 2.8 | 0.330 |
| | | | | |
| ***Sample size*** | *521* | *514* | | |

SOURCE: MDRC calculations using Oklahoma Department of Human Services provider survey data.

NOTES: A two-tailed t-test was applied to differences between research groups. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

For Question 1, all non-negative answers (for example, "Sometimes") are included in this calculation.

The full sample size of providers is 1,651. Of those providers, 1,589 were called and 1,035 (521 program group providers and 514 control group providers) responded to the survey, for a response rate of 65 percent. The balance of 554 providers (276 program group providers and 278 control group providers) did not respond to the survey.

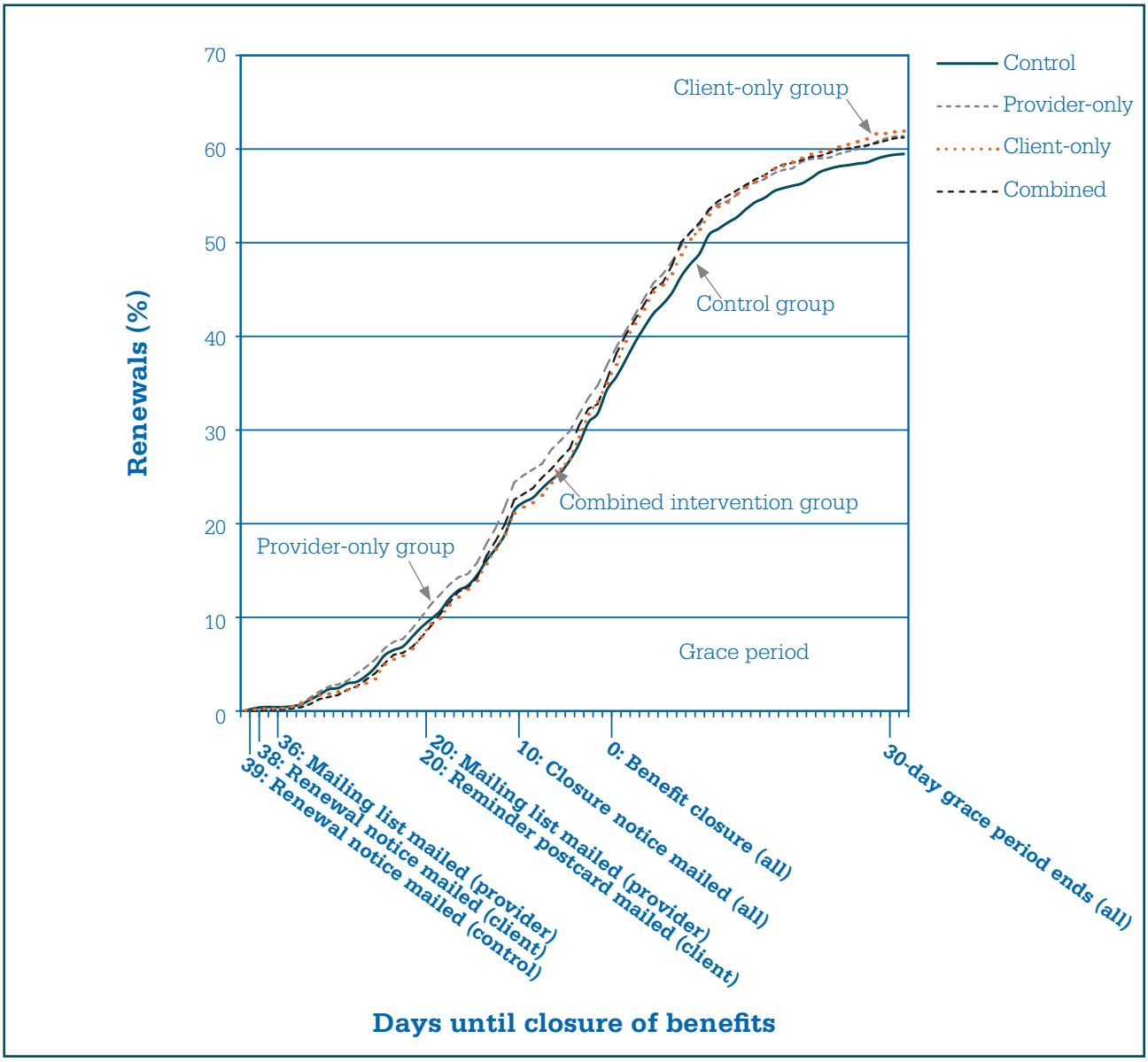
Table 2 shows that providers in the program groups, compared with the control group providers, reported greater awareness of clients' upcoming renewals and greater communication with their clients about renewal. Providers in the program groups were more aware of when clients were due for renewal (an impact estimate of 36.5 percentage points, statistically significant at the 0.01 level).[19] Providers in the program groups also reported speaking to their clients about the renewals more frequently (an impact estimate of 12.8 percentage points, statistically significant at the 0.01 level, for the outcome of providers reporting that they talked to their clients about renewal several times over the last month). There was not a statistically significant difference for the third question, which asked providers whether they assisted their clients with renewal.[20] This finding indicates that while the program group providers reminded clients about the renewal process, they do not seem to have offered much additional help in completing that process.

19 Levels of significance (also represented by asterisks in the impact tables) indicate the probability that an impact estimate of the observed magnitude or larger would occur in the sample if the true impact in the population were zero. For example, if an impact estimate is statistically significant at the 0.05 level (two asterisks), that means a difference of that magnitude or larger would occur by chance only 5 percent of the time if the test were repeated in multiple samples from the same population, where the true impact is zero.

20 There was also no significant difference on this third question between home-based providers and center-based providers when analyzed separately.

## FIGURE 6
## CHILD CARE SUBSIDY RENEWAL RATES OVER TIME, BY RESEARCH GROUP

### OKLAHOMA DEPARTMENT OF HUMAN SERVICES




SOURCE: MDRC calculations using Oklahoma Department of Human Services data.

NOTE: Includes sample members randomly assigned between April 2014 and June 2014.

The administrative data and survey data together suggest that the interventions were delivered as intended. The survey results also suggest that providers interacted more frequently with their clients regarding renewals because of the intervention. The theory behind the intervention was that this increased interaction could translate into improved on-time renewals for those providers' clients.

Figure 6 compares the renewal rates over time for each of the four research groups: clients in the control condition (status quo), clients in the provider-only group, clients in the client-only group, and clients in the combined intervention group. The figure shows that the clients in the provider-only group had consistently higher renewal rates relative to the clients in the control condition throughout the renewal period and in the grace period. Figure 6 also suggests that, over time, renewal rates for clients in all of the program conditions improved over the renewal rates of clients in the control condition. The differences between the lines are

suggestive of trends, but are not always statistically significant. Tests for differences at key points are explored in the next section.

## Impacts

The main analyses described below estimate the effects of the provider-only, client-only, and combined intervention groups relative to the status quo, or control group. These estimates correspond directly to decisions that DHS faces about how to improve its current practices (the status quo). Additional analyses that leverage the factorial design are also discussed in Box 3, and provide supplementary evidence.

### *Main Analysis*

**Provider intervention.** The analysis suggests that the provider intervention helped clients in the provider-only group renew by the deadline, although the results do not provide evidence of impacts by the end of the grace period. Table 3 examines the differences at key points in the renewal process to estimate the impact of each intervention. The first panel of Table 3 compares the impact on outcomes of the provider-only group with those of the control group. It shows an impact estimate of 2.9 percentage points (statistically significant at the 0.05 level) on client renewals before closure notices are sent. Table 3 also shows an impact estimate of 2.4 percentage points (statistically significant at the 0.10 level) on client renewals before the renewal deadline.

**Client intervention.** The analysis suggests that the client intervention did not help clients in the client-only group renew on time. However, there is some evidence that it helped those clients renew their cases during the grace period. The second panel of Table 3 shows that estimated impacts on renewals before closure notices are sent and renewals before the renewal deadline (that is, the benefits closure date) are not statistically significant. Table 3 also shows, however, an impact estimate of 2.4 percentage points (statistically significant at the 0.10 level) on client renewals before the end of the grace period.

**Combined intervention.** The results demonstrate that combining the client and provider interventions is unlikely to be more effective than the provider intervention alone. Although the third panel of Table 3 shows that none of the estimated impacts for the combined intervention relative to the control group is statistically significant, additional analyses show that the renewal outcomes for the combined intervention group are not statistically different from those of either the provider- or client-only group (as shown in Appendix Table D.1). In fact, for the outcomes where the provider intervention is estimated to have positive impacts, the estimated outcomes for the combined intervention group fall between the estimates for the control group and the provider-only group — in other words, the average outcomes for the combined intervention group are higher than the average outcomes for the control group, but lower than the average outcomes for the provider-only group. Random differences between the groups may explain this pattern of results, but the main purpose of the combined intervention was to test whether the combination of the provider and client interventions was more effective than either intervention alone. The results strongly suggest that combining the interventions does not produce additional benefits.

### *Subgroups*

To examine whether the interventions were more effective for specific subpopulations, or when administered in specific settings, impact estimates were compared across subgroups. For example, home-based providers are smaller than center-based providers and may have more opportunity to discuss renewals with clients. Center-based providers, on the other hand, may have more infrastructure, such as computers, to help clients renew their benefits. There is little evidence, however, that either

## TABLE 3
## IMPACTS ON CHILD CARE SUBSIDY RENEWALS, BY RESEARCH GROUP
### OKLAHOMA DEPARTMENT OF HUMAN SERVICES

| OUTCOME | PROGRAM GROUP | CONTROL GROUP | DIFFERENCE | P VALUE |
|---|---|---|---|---|
| **Provider-only group renewals (%)** | | | | |
| Before closure notice | 23.9 | 21.1 | 2.9** | 0.023 |
| Before benefits closure | 36.7 | 34.4 | 2.4* | 0.090 |
| Before end of grace period | 61.1 | 59.4 | 1.7 | 0.217 |
| *Sample size* | *2,261* | *2,411* | | |
| **Client-only group renewals (%)** | | | | |
| Before closure notice | 20.9 | 21.1 | -0.2 | 0.855 |
| Before benefits closure | 35.1 | 34.4 | 0.8 | 0.565 |
| Before end of grace period | 61.9 | 59.4 | 2.4* | 0.083 |
| *Sample size* | *2,393* | *2,411* | | |
| **Combined intervention group renewals (%)** | | | | |
| Before closure notice | 22.3 | 21.1 | 1.2 | 0.299 |
| Before benefits closure | 35.6 | 34.4 | 1.3 | 0.376 |
| Before end of grace period | 61.3 | 59.4 | 1.9 | 0.193 |
| *Sample size* | *2,283* | *2,411* | | |

SOURCE: MDRC calculations using Oklahoma Department of Human Services data.

NOTES: A two-tailed t-test was applied to differences between research groups. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Estimates are adjusted for child care parent baseline characteristics.

Data are clustered by provider (except for client-only group versus control condition).

The closure notice is mailed to clients 10 days before their benefits are scheduled to end (the benefits closure deadline). The grace period extends for 30 days after the benefits closure deadline. At the end of the grace period, the case is closed.

the provider or client intervention was more effective for either homes or centers.[21] Similarly, clients who would have been renewing their SNAP benefits at the same time as their child care benefits may respond differently to the interventions because they have more benefits at stake in the renewal process. However, there is no evidence that either the provider or client intervention was more effective for clients who either were or were not receiving SNAP benefits. The subgroup analyses do not provide evidence that the reminders were more or less effective for either of these subgroups.

21 Subgroup analyses are not shown. Out of all six research group comparisons (four main research groups and two subgroups) for all three primary outcomes, the only difference that is statistically significant when comparing the estimated impact across homes and centers is for the comparison of the combined intervention relative to the client-only intervention. Given the number of comparisons, the evidence does not suggest that homes or centers were more successful with the intervention; this result may be a consequence of normal sampling fluctuation.

### Cost Considerations

One of the key tenets of the BIAS project is to implement light-touch, behavioral interventions that would be sustainable at a relatively low cost. The cost implications are an important consideration for DHS and for other states or agencies interested in behavioral interventions. Since research is considered a one-time expense as part of the BIAS project, the expenses reported below focus on the intervention costs (not research costs) that would be required to implement this initiative on a larger scale in Oklahoma. Thus, the BIAS team considers costs associated with the BIAS test as those above and beyond what DHS was already allocating for the child care subsidy renewal process. For example, the early-alert postcard is included in the cost calculations. The team contracted with a graphic designer to help with the design of the intervention materials. This cost is excluded since it would not be required again to sustain the intervention at a larger scale. In addition, since DHS already mails a renewal notice to clients, the cost of mailing the redesigned renewal notice was not associated with the intervention.

Given the cost figures provided by DHS, the BIAS team estimates the client intervention cost to be about $1.00 per client. The provider intervention costs approximately $3.57 per provider, with $1.91 of that amount being a one-time cost of the introductory mailing. Excluding the introductory mailing and a "thank you" notice that was sent to providers for participating in the study, the cost per month per provider would be $1.10, or approximately $29,724 per year, if extended to all providers in Oklahoma. While staff time is not included, no additional staff members were hired to do the extra work associated with the intervention.

Given the estimated increase in on-time renewals generated by the provider intervention, DHS is considering institutionalizing the intervention as standard practice for all providers in Oklahoma. In addition, DHS is considering modifications that would allow some components to be delivered electronically to providers. These modifications would reduce costs, but additional research would be useful to examine whether they produce different effects. See Box 4 for more on DHS's perspective.

## Discussion

To date, BIAS studies have shown that behavioral interventions can positively change the behaviors of individuals and families served by human services programs.[22] The results of this pilot demonstrate that behavioral interventions can have an impact on staff as well, in ways that improve program outcomes: in fact, the intervention that was delivered to child care providers appears to be more effective at increasing clients' early renewal rates than the intervention that targeted clients directly. The survey results suggest that the provider intervention improved providers' knowledge of their clients' renewal status and increased the frequency of provider and client communications about renewals. The impact estimates for the provider intervention, in turn, suggest that these changes helped improve client renewals by the deadline. The estimated impact on on-time client renewal was modest — less than 3 percentage points — but Oklahoma has about 39,000 child care renewals due every year, so this estimate would translate to about 1,000 additional on-time renewals annually if the intervention were implemented for all providers statewide.

Although there is some evidence that the client intervention improved the renewal rate by the end of the grace period, it does not appear to have helped more clients renew by the benefits closure deadline. A limitation of this pilot, however, was that it did not directly address the online renewal system itself, which was beyond the scope of the BIAS project. The diagnostic phase of the pilot, though, suggested that the renewal requirements and the online renewal process itself might be unclear to clients. Similarly, the online platform may provide other opportunities to improve and simplify the process for clients — for example, by incorporating behaviorally informed messaging into it or prepopulating forms with more information from clients' records.

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22 Baird et al. (2015); Dechausay, Anzelone, and Reardon (2015); Farrell, Anzelone, Cullinan, and Wille (2014).

## BOX 4
## OKLAHOMA DEPARTMENT OF HUMAN SERVICES' PERSPECTIVE

"We at DHS were pleased with the results of the BIAS project, especially the provider intervention. Although the increase in the number of on-time renewals in the provider intervention was relatively small (less than 3 percentage points), it was statistically significant and would translate into thousands more on-time renewals if institutionalized in Oklahoma in future years.

"We were particularly interested in the level of engagement between providers and clients, demonstrated by the post-intervention survey of providers. The survey results indicated that a much higher number of providers in the intervention group spoke with their clients about their upcoming renewals than providers who were in the control group. This may have resulted in the improved rate of on-time renewals for those clients whose providers participated in the intervention. Our department also feels that providing lists of clients due for renewal promotes cooperation and good will between the agency and child care providers. This has also been evident in positive feedback received from providers at various forums. These providers indicated that they would like to continue receiving the lists that were delivered as part of the intervention. Although the costs of the provider intervention are not negligible, the possibility of thousands more on-time renewals and the potential for increased good will as a result of the provider intervention justifies us exploring ways to institutionalize the provider intervention.

"In the future, DHS plans to explore options to continue the intervention, including sending providers lists of clients due for renewal as was done in the pilot, or the possibility of posting such lists to an online provider portal. Posting the lists online would be the most cost-effective for DHS and would also be convenient for providers."

*— Debi Ream, former Deputy Director for Programs, Adult and Family Services*

The results of this pilot do suggest that providing additional renewal information to child care providers and prompting providers to reinforce the renewal deadline to their clients is an effective strategy. Child care providers regularly interact with DHS clients at times when the benefits of the child care subsidy are likely to be most salient — when clients are at child care homes or centers with their children. The provider intervention takes advantage of those interactions and the salient context to deliver reminders, envelopes that clients can take home and use in the renewal process, and other assistance to clients. The improved outcomes, moreover, mutually benefit clients and providers, as well as DHS.

The large portion of clients who renew after the deadline, however, suggests that many clients treat the end of the grace period as the real deadline — a hypothesis reinforced by anecdotal evidence that providers often continue to provide child care services during this period, even though their income may be at risk. For many clients, then, the strongest incentives may be to renew by the end of the grace period, rather than by the renewal deadline. The provider intervention may have altered that dynamic for some clients by highlighting child care providers' incentives, and by giving providers a new mechanism to advocate for their own interest in on-time renewal.

Regardless of the mechanism, the results of this pilot demonstrate that behavioral interventions designed for human services staff can improve program outcomes. Staff regularly interact with clients and often have goals aligned with their clients. Such staff provide salient opportunities to remind clients about deadlines and can help clients navigate processes associated with benefits receipt. Behavioral strategies that engage similarly situated staff in other contexts, or that take advantage of similar incentive structures, are important areas for future research.

## Looking Ahead

Behavioral economics provides a new way of thinking about the design of human services programs and a potentially powerful set of tools for improving program outcomes. In addition to the work in Oklahoma and

previously published BIAS reports, the BIAS project is conducting pilots with other partners, including the Cuyahoga County Job and Family Services (Ohio), the Los Angeles County Department of Public Social Services (California), the Indiana Office of Early Childhood and Out of School Learning, and the Washington Department of Child Support. Results will be published as they become available, to further inform this burgeoning field.

# APPENDIX A
## Behavioral Terms

## APPENDIX TABLE A.1
## BEHAVIORAL TERMS

| TERM | DEFINITION | EXAMPLE TEXT |
|---|---|---|
| **Cognitive load** | The burden on one's mental resources. A heavy cognitive load might impair individual decision-making. People typically think that they will be able to pay attention to information and then understand and remember it as long as it is important. However, an individual's mental resources — which are often taken for granted — are not unlimited and are more fallible than people often recognize. Challenges and emotional stress can drain these mental resources and actually make it difficult to make good decisions. | Paas and van Merriënboer (1994) |
| **Endowed progress effects** | People who perceive advancement toward their goal exhibit greater persistence toward reaching that goal. | Nunes and Drèze (2006) |
| **Frame** | The way in which information is presented. Every piece of information can be presented in different ways, and small changes in the wording of a message or a choice can drastically change the way it is perceived and the choices that people make with regard to it. Information is never evaluated in a neutral or impartial way, because every way of presenting information is a frame that leads people in one direction or another. | Kahneman (2011) |
| **Hassle factor** | A feature or situational detail that makes a behavior harder to accomplish. This could be, for example, a small barrier to completing a task, such as filling out a form or waiting in line. While these factors may seem trivial and are often neglected in program design, reducing or eliminating them can have an outsized impact on outcomes. | Bertrand, Mullainathan, and Shafir (2004) |
| **Inattention** | Since people can process information at only a limited rate, they can pay attention to only a restricted amount of information at any given time. | DellaVigna (2009) |
| **Loss aversion** | The tendency for decisions and behavior to be influenced by the wish to avoid a loss. When a decision is framed in terms of a loss or a gain, it affects the decision-maker's response. When loss aversion is operating, people experience a loss as more painful than when they experience an equivalent gain as pleasurable. | Kahneman, Knetsch, and Thaler (1990) |
| **Planning fallacy** | People often underestimate the length of time or amount of effort it will take for them to complete a task, frequently ignoring past experiences. | Brunnermeier, Papakonstantinou, and Parker (forthcoming) |
| **Present bias** | Giving more weight to present concerns than to future ones. People tend to make plans to do unpleasant tasks "tomorrow," and they make the same choice when "tomorrow" becomes "today." | Laibson (1997) |
| **Procrastination** | When people voluntarily and irrationally delay intended actions, despite the expectation of potentially negative consequences. | Sirois and Pychyl (2013) |
| **Prospective memory** | Remembering to perform a planned action or intention at the appropriate time. | Brandimonte, Einstein, and McDaniel (1996) |
| **Psychological distance** | The distance (spatial, temporal, or probable) between an individual and some outcome or decision. When an event is psychologically distant, it is perceived in an abstract manner, and potentially important details are disregarded. | Trope and Liberman (2010) |
| **Reminder** | Prompting a specific piece of information to make it noticeable to an individual and increase the chances of acting on that information. Reminders often work when they are related to something the individual intends to do. | Karlan, McConnell, Mullainathan, and Zinman (forthcoming) |

(continued)

## APPENDIX TABLE A.1 (CONTINUED)

| TERM | DEFINITION | EXAMPLE TEXT |
|---|---|---|
| **Salience** | The degree to which a stimulus attracts and retains a person's attention. | Kahneman (2003) |
| **Status quo bias** | The current state of the world dominates most individuals' decision making. It is hard to imagine that the world will be different tomorrow, or five minutes from now, and often an individual prefers an outcome simply because it is the status quo. | Samuelson and Zeckhauser (1988) |
| **Tunneling** | Focusing on one thing because attention is limited, which may prevent an individual from noticing new stimuli. | Sims (2003) |

# APPENDIX B

## Oklahoma Department of Human Services Standard Notices to Child Care Subsidy Clients

## APPENDIX FIGURE B.1
## OKLAHOMA DEPARTMENT OF HUMAN SERVICES
## STANDARD RENEWAL NOTICE TO CHILD CARE SUBSIDY CLIENTS

Oklahoma Department of Human Services
OKDHSLive!
PO BOX 2700
NORMAN, OK 73070

**Renew My Benefits**

We need information from you by 06/05/2014 to see if your household can still get help with child Care. If you do not respond your benefits will stop on 06/30/2014.

Visit **www.okdhslive.org** any day after 5/22/2014 and click on the "Renew/Re-Open option" where you will be able to send us your confidential answers online without using mail or traveling anywhere. You will need to click on the "Renew/Re-Open option", answer all the questions and sign the form electronically to submit your benefit renewal. You may also be asked to provide us with some needed proof. Items of proof may include, but are not limited to the:

last 30 days of income received for everyone living in the household such as pay stubs, award letters, court orders, or letters from the person or agency that provides the income, need for child care, such as a work or school schedule, for parents or caretakers living in the home if receiving child care benefits.
expenses you pay such as medical bills for persons 60 or older or disabled, child support you pay someone else, or dependent care costs.

If you do not have a computer or internet service or unable to access the website, you may call 1-877-653-4798 (1-877-OKDHS98) between the hours of 8 am and 5 pm Monday through Friday to submit your renewal over the phone or to find a community partner in your area for help in submitting your renewal online.

Between 5/22/2014 and 06/05/2014, you must either:

submit your renewal online or
submit your renewal by phone at 1-877-653-4798 (1-877-OKDHS98) or
mail a completed and signed paper form to the address above or
fax or bring a completed and signed paper form to your local OKDHS office.

You may get a paper form from any OKDHS office or by visiting our website at www.okdhs.org

OKDHS REVISED 10-10-2012 08MP999E

(continued)

Benefit Review Report 08MP999E

You must also provide required proof by uploading proof electronically, dropping copies at your local OKDHS office, faxing proof to 1-405-325-7155, or mailing copies to:

OKDHS Customer Service Center
PO Box 2700
Norman, OK 73070

Otherwise your benefits will stop on 01/31/2015.

OKDHS Live! - Your Online Benefit Resource

**www.okdhslive.org**

FBOK DLC C 20141206999 D 20141206999 E 20140821999

DSD Flags: NNNNNYNNNYN NNN

## APPENDIX FIGURE B.2
## OKLAHOMA DEPARTMENT OF HUMAN SERVICES
## STANDARD CLOSURE NOTICE TO CHILD CARE SUBSIDY CLIENTS

CLEVELAND COUNTY DHS
631 EAST ROBINSON
NORMAN, OK 73071

OFFICE CODE C
PHONE NUMBER: (405) 666-1434
JUNE 21, 2014
[redacted]
DISTRICT:10 SUPERVISOR:09

[redacted]

CHILD CARE RECIPIENT CLOSURE NOTICE

DEAR [redacted],

CHILD CARE BENEFITS FOR [redacted] ARE BEING CLOSED BECAUSE THE FSS-BR-1, BENEFIT REPORT FORM, WAS NOT COMPLETED. THE LAST DAY OF ELIGIBILITY IS JUNE 30, 2014.

THE DECISION IS MADE IN ACCORDANCE WITH OKLAHOMA ADMINISTRATIVE CODE TITLE 340 CHAPTER 40. YOU ARE REQUIRED TO REPORT CHANGES IN CIRCUMSTANCES WITHIN 10 DAYS OF WHEN YOU KNOW ABOUT THE CHANGE.

IF YOU DO NOT CONSIDER THIS ACTION A PROPER ONE, YOU OR YOUR AUTHORIZED REPRESENTATIVE MAY APPEAL THE DECISION BY REQUESTING A FAIR HEARING AT THE LOCAL HUMAN SERVICES CENTER. FORMS FOR REQUESTING A FAIR HEARING ARE AVAILABLE FROM THE LOCAL HUMAN SERVICES CENTER. ANY REQUEST FOR A HEARING MUST BE MADE WITHIN 30 DAYS. THE PERIOD FOR REQUESTING A HEARING BEGINS WITH THE DATE OF THIS NOTICE. YOU HAVE THE RIGHT TO LEGAL COUNSEL AT THE HEARING. INFORMATION ABOUT WHERE YOU CAN GET FREE LEGAL HELP IS AVAILABLE ON REQUEST FROM THE LOCAL HUMAN SERVICES CENTER OR YOU MAY CHOOSE YOUR OWN PRIVATE ATTORNEY. IF YOU NEED ASSISTANCE COMPLETING THE FORMS OR PREPARING FOR A HEARING, CONTACT YOUR LOCAL HUMAN SERVICES CENTER OR ATTORNEY. IF OKDHS RECEIVES YOUR APPEAL WITHIN 10 DAYS OF THE DATE OF THIS NOTICE, YOU MAY CHOOSE TO CONTINUE YOUR BENEFITS DURING THE APPEALS PROCESS. IF YOU LOSE THE APPEAL YOU WILL BE EXPECTED TO REPAY ANY BENEFITS YOU WERE NOT ENTITLED TO RECEIVE.

IF YOU HAVE ANY QUESTIONS REGARDING THIS NOTICE, PLEASE CONTACT YOUR WORKER AT THE NUMBER LISTED AT THE TOP OF THIS NOTICE.

(PSNDCRC ) DC 20481
(AUTH-DC01987939 DLC-01/21/2015-049)

# APPENDIX C
## Intervention Materials

## APPENDIX FIGURE C.1
## REDESIGNED RENEWAL NOTICE, CLIENT INTERVENTION

OKDHSLive Customer Service Center
PO Box 2700
Norman, OK 73070

# *Renew your benefits NOW!*

Do not lose the affordable child care,
or any of the other benefits,
that your family receives.

*You must complete the renewal process at* ***www.okdhslive.org*** *to avoid losing your benefits.*

Turn this page over to follow
the 3 Easy Steps to Renew Your Benefits.

*Si usted necesita servicios de traducción, favor contactar al (877) 653-4798.*

Page **1** of **2**

(continued)

## 3 Easy Steps to Renew Your Benefits

Use this checklist to complete your benefit renewal process:

☐ **1. Renew your benefits at www.okdhslive.org.**
Click on the blue box titled "Renew/Re-Open" and follow the directions.
*When you log in, you will see a full list of the benefits that you need to renew.*

☐ **2. Submit the documents that prove you are eligible.**
*Be sure to include your case number or Social Security number on any submitted documents. These documents can be submitted in one of the following ways:*

- Scan and upload at www.okdhslive.org. It's easy!
- Fax to (405) 325-7155.
- Mail to OKDHSLive Customer Service Center, PO Box 2700, Norman, OK 73070.
- Submit in person at your local county DHS office.

*Do any of the following apply to you? Check off each that applies and submit the required documents:*

☐ **Do you go to school or training?**
- ☐ Current class schedule
- ☐ Current training schedule

☐ **Do you work?**
- ☐ Current work schedule
- ☐ Pay stubs for one full month of work, received no earlier than April 1, 2014

☐ **Do you have any forms of income, aside from work?** These could include:
- ☐ Unemployment printout
- ☐ Social Security benefit letter
- ☐ Court order for child support
- ☐ Other

☐ **3. Check the status of your renewal.**
One week after you complete the renewal process and submit the necessary documents:

- Visit www.okdhslive.org. Click the blue box "View My Cases."
- Call us at (877) 653-4798 if the status of your case does not show "Renewal completed."

**If you have any questions** or if you do not have access to a computer or internet service, please call us at **(877) 653-4798.**

*Si usted necesita servicios de traducción, favor contactar al (877) 653-4798.*

Page **2** of **2**

## APPENDIX FIGURE C.2
## LATE REMINDER NOTICE, CLIENT INTERVENTION

## APPENDIX FIGURE C.3
## INTRODUCTORY MAILING, PROVIDER INTERVENTION

[Date]

Dear [name of contact(s) at provider],

The Oklahoma Department of Human Services (DHS) is excited to share information with you about a new initiative to help facilitate ***on-time renewal for child care benefits***. Based on feedback we have received from providers, we are testing new materials sent to you and a group of other providers that describe the renewal process more clearly and that provide ongoing reminders regarding your DHS clients who are approaching the renewal deadlines.

***When your DHS clients do not complete their renewals on time, this can cause a delay in your payments, or even cause you to not receive payment for your services.***

***Here's what you can do NOW to help ensure you get paid on time:***

- ☐ **Review the renewal process.**
  More details are on **Page 2** of this letter.
- ☐ **Read AND keep the reference sheet of actions to take.**
  In the coming months, we will provide you with green, yellow, and red lists of your DHS clients coming up for renewal. The reference list tells you actions to take with each set of clients.
- ☐ **Plan to give each client on the green list one of the enclosed envelopes.**
  This will help clients collect required documents that prove they are eligible.
- ☐ **Plan to help clients by providing access to technology.**
  Consider providing access to the internet, fax, and phone for clients to use to complete their renewal.

*If you have any questions about this process, please contact DHS at (877) 653-4784.*

Thank you for partnering with us on this new initiative!

Sincerely,

[electronic signature],
Jim Struby
Adult and Family Services Director

**See the next page for an overview of how you can help in the renewal process.**

Page **1** of **2**

(continued)

DHS clients who receive subsidized child care are required to renew their benefits every 6 months. To renew, clients must access **www.okdhslive.org** and complete the online process. Clients also must submit supporting documentation that proves they are still eligible for benefits.

## 4 Easy Steps to Benefit Renewal – How Can You Help?

1. **Remind clients to collect the documents that prove they are eligible.**
   These documents include school, training, or work schedules, pay stubs, and documents that show other sources of income.

   ***For clients on the green list:*** *Provide them with one of the enclosed envelopes and a reminder to collect these documents early. This will help to speed up the renewal process.*

2. **Direct clients to complete the renewal process at www.okdhslive.org.**
   The renewal process requires clients to answer a set of questions.

   ***For clients on the yellow list:*** *If you have a computer available to clients, please allow them to use it for easy access to the renewal website.*

3. **Direct clients to submit the documents that prove they are eligible.**
   *Clients can submit these documents in one of the following ways:*
   a. Scan and upload on www.okdhslive.org
   b. Fax to (405) 325-7155
   c. Mail to OKDHS Customer Service Center, PO Box 2700, Norman, OK 73070
   d. Submit in person at a local county DHS office

   ***For clients on the yellow list:*** *If you have a fax machine or scanner available to clients, please allow them to use it to submit their documents.*

4. **Remind clients to monitor the status of their renewal.**

   ***For clients on the yellow list:*** *After they complete the online process and submit the documents that prove they are eligible, remind them to monitor the status of their renewal on www.okdhslive.org.*

   ***For clients on the red list:*** *Direct them to contact DHS immediately at (877) 653-4798.*

*If you have any questions about this process, please contact DHS at (877) 653-4784.*

Page **2** of **2**

**(continued)**

(continued)

In the coming months, we will provide you with lists of clients coming up for renewal.

***Look for the following lists in the mail, and keep in mind the associated actions you can take.***

| Client Group | Benefits End | Actions to Take |
|---|---|---|
| GREEN CLIENT LIST | IN TWO MONTHS | Hand clients the envelopes provided in this initial packet.<br>Direct them to collect the documents that prove they are eligible. |
| YELLOW CLIENT LIST | IN ONE MONTH | Direct clients to **www.okdhslive.org** to complete their renewal. |
| RED CLIENT LIST | IN LESS THAN 3 WEEKS | Direct clients to contact DHS at (877) 653-4798 immediately. |

*Note: If the lists you receive in future mailings do not include clients of one of these colors, this means that none of your clients fall into that category at that time.*

(continued)

## *Don't lose your benefits!*

Start collecting the documents you need for your renewal **NOW**.

**Remember these important steps:**

❑ **Yes, I want to renew!**
**NOW**
Use this envelope to collect documents that prove your eligibility.
***(more details below)***

**ONE MONTH**
**before your benefits end**
Look for a notice in the mail with details on how to renew.

**NO LATER THAN 3 WEEKS**
**before your benefits end**
Submit your renewal and the documents.

**Your Benefits End Every 6 MONTHS *if you don't renew.***

***If you have questions: go to www.okdhslive.org or call (877) 653-4798.***

*Do any of the following apply to you?*
*Check off each that apply and collect the documents to prove your eligibility.*

❑ **Do you go to school or training?**
- ❑ Current class schedule
- ❑ Current training schedule

❑ **Do you work?**
- ❑ Current work schedule
- ❑ Pay stubs for one full month of work, received no earlier than the beginning of the current month

❑ **Do you have any forms of income, aside from work?** These could include:
- ❑ Unemployment printout
- ❑ Social Security (SSI) benefit letter
- ❑ Court order for child support
- ❑ Other

**Remember:** To avoid losing your benefits **you must:**

✓ Complete the renewal process at **www.okdhslive.org** after receiving your renewal notice,
✓ Add your case number or social security number to the documents you have collected, AND
✓ Submit the documents.
*You can submit these documents by mailing in this sealed envelope. See www.okdhslive.org for additional ways to submit.*

## APPENDIX FIGURE C.4
## LETTER TO PROVIDERS LISTING CHILD CARE SUBSIDY CLIENTS WITH RENEWAL DEADLINES IN ONE OR TWO MONTHS, PROVIDER INTERVENTION

Oklahoma Department of Human Services
OKDHSLive! Customer Service Center
P.O. Box 2700
Norman, OK 73070

Based on feedback we have received from child care providers, the Oklahoma Department of Human Services (DHS) is providing you with ongoing reminders about clients who are approaching the renewal deadlines. This is to help facilitate ***on-time renewal for child care benefits.***

***When your DHS clients do not complete their renewals on time, this can cause a delay in your payments, or even cause you to not receive payments for your services.***

We have attached **GREEN** and/or **YELLOW** lists of clients coming up for renewal to this letter. Here is what you can do to help ensure you are paid on time:

| Client Group | Benefits End | Actions to Take |
|---|---|---|
| YELLOW CLIENT LIST | IN ONE MONTH | Direct clients to www.okdhslive.org to complete their renewal. |
| GREEN CLIENT LIST | IN TWO MONTHS | Hand clients the envelopes provided in the initial packet. Direct them to collect the documents that prove they are eligible. |

*Note: If the lists you received in this mailing do not include clients on either of these color coded lists, this means that none of your clients fall into that category at this time.*

Instruct clients to call (877) 653-4798 if they have any questions about their case. If possible, provide access to a phone to do so.

Thank you for partnering with us on this new initiative.

Sincerely,
Charles Pruett
Child Care Subsidy Program Manager

**Please see the back of this letter for an overview of how you can help in the renewal process.**

(continued)

DHS clients who receive subsidized child care are required to renew their benefits every 6 months. To renew, clients must access **www.okdhslive.org** and complete the online process. Clients must also submit supporting documentation that proves they are still eligible for benefits.

## 4 Easy Steps to Benefit Renewal – How Can You Help?

**1. Remind clients to collect the documents that prove they are eligible.**

These documents include school, training, or work schedules, pay stubs, and documents that show other sources of income.

***For clients on the green list**: Provide them with one of the envelopes enclosed in your initial packet and a reminder to collect these documents early. This will help to speed up the renewal process.*

**2. Direct clients to complete the renewal process at www.okdhslive.org.**

The renewal process requires clients to answer a set of questions.

***For clients on the yellow list**: If you have a computer available to clients, please allow them to use it for easy access to the renewal website.*

**3. Direct clients to submit the documents that prove they are eligible.**

*Clients can submit these documents in one of the following ways:*

a. Scan and upload to **www.okdhslive.org**
b. Fax to (405) 325-7155
c. Mail to OKDHSLive Customer Service Center, PO Box 2700, Norman, OK 73070
d. Submit in person at a local county DHS Human Services Center

***For clients on the yellow list:** If you have a fax machine or scanner available, please allow them to use it to submit their documents.*

**4. Remind clients to monitor the status of their renewal.**

***For clients on the yellow list**: After they complete the online process and submit the documents that prove they are eligible, remind them to monitor the status of their renewal at **www.okdhslive.org.***

*If **you** have any questions about this process, please contact DHS at (877) 653-4784.*

Page 2

**(continued)**

(continued)

Oklahoma Department of Human Services
OKDHSLive! Customer Service Center
P.O. Box 2700
Norman, OK 73070

The following clients are coming up for renewal soon. In order to facilitate the renewal process, please do the following:

- *Clients on the yellow list are coming up for renewal in the NEXT MONTH. Please direct them to* ***www.okdhslive.org*** *to complete the renewal process.*
- *Clients on the green list are coming up for renewal in TWO MONTHS. Please remind them to collect all of the necessary documentation in the envelope that you hand to them.*

*If either a green or yellow list is not printed below, you do not have any clients that fall in to that category at this time.*

***Remember, please do not post these lists publicly as doing so would violate confidentiality.***

| Client Name | Case Number | Benefits End |
|---|---|---|
| LEMON, LINDA | C000014 | 07/01/2014 |

| Client Name | Case Number | Benefits End |
|---|---|---|
| KEPPEL, KARI | C000013 | 07/01/2104 |

| Client Name | Case Number | Benefits End |
|---|---|---|
| JASMINE, JEANETTE | C000012 | 07/01/2104 |

| Client Name | Case Number | Benefits End |
|---|---|---|
| GREEN, GERALDINE | C000008 | 08/01/2014 |

| Client Name | Case Number | Benefits End |
|---|---|---|
| HELIOTROPE, HELEN | C000009 | 08/01/2014 |

Addendum

(continued)

## APPENDIX FIGURE C.4 (CONTINUED)

Oklahoma Department of Human Services
OKDHSLive! Customer Service Center
P.O. Box 2700
Norman, OK 73070

| Client Name | Case Number | Benefits End |
|---|---|---|
| INDIGO, INDIRA | C000010 | 08/01/2014 |

Addendum

NOTE: The names and case numbers in this figure are fictional.

## APPENDIX FIGURE C.5
## LETTER TO PROVIDERS LISTING CHILD CARE SUBSIDY CLIENTS WITH RENEWAL DEADLINES IN 20 DAYS, PROVIDER INTERVENTION

[OKDHS logo and letterhead here]

[Date]

Dear [name of contact(s) at provider],

Based on feedback we have received from providers, the Oklahoma Department of Human Services (DHS) is providing you with ongoing reminders about clients who are approaching the renewal deadlines to help facilitate ***on-time renewal for child care benefits***.

This notice includes a **RED** list of your DHS clients whose benefits will end the **last day of this month**.

**In Order to Ensure That You Do Not Lose Payments,**
**Direct These Clients to Call DHS at (877) 653-4798 As Soon As Possible.**

If you have any questions about this process, please contact DHS at (877) 653-4784.

Sincerely,

Charles Pruett
Child Care Subsidy Program Manager

Page **1** of **1**

(continued)

[OKDHS logo and letterhead here]

[Date]

Dear [name of contact(s) at provider],

Below is a list of your DHS clients whose benefits will end the **LAST DAY OF THIS MONTH**. Please instruct them to call DHS immediately at (877) 653-4798. ***Otherwise, you are at risk of not being paid.***

***Remember**: Please do not post this list publicly as doing so would violate your clients' confidentiality.*

| Client Name | Case Number | Benefits End |
|---|---|---|
| SAMPLE CLIENT A | 123456-7 | ***July 1, 2014*** |
| SAMPLE CLIENT B | 123456-7 | ***July 1, 2014*** |
| SAMPLE CLIENT C | 123456-7 | ***July 1, 2014*** |

If clients have any questions about their specific cases, they can contact DHS at (877) 653-4798.

Page **1** of **X**

# APPENDIX D
## Intervention Impacts: Program Group Comparisons

# APPENDIX TABLE D.1
# IMPACTS ON CHILD CARE SUBSIDY RENEWALS, PROGRAM GROUP COMPARISONS

## OKLAHOMA DEPARTMENT OF HUMAN SERVICES

| CLIENT INTERVENTION VERSUS PROVIDER INTERVENTION RENEWALS (%) | CLIENT ONLY GROUP | PROVIDER ONLY GROUP | DIFFERENCE | P VALUE |
|---|---|---|---|---|
| Before closure notice | 20.9 | 23.9 | -3.1** | 0.014 |
| Before benefits closure | 35.1 | 36.7 | -1.6 | 0.258 |
| Before end of grace period | 61.9 | 61.1 | 0.7 | 0.607 |
| *Sample size* | *2,393* | *2,261* | | |

| COMBINED INTERVENTION VERSUS PROVIDER INTERVENTION RENEWALS (%) | COMBINED INTERVENTION GROUP | PROVIDER ONLY GROUP | DIFFERENCE | P VALUE |
|---|---|---|---|---|
| Before closure notice | 22.3 | 23.9 | -1.6 | 0.187 |
| Before benefits closure | 35.6 | 36.7 | -1.1 | 0.403 |
| Before end of grace period | 61.3 | 61.1 | 0.2 | 0.899 |
| *Sample size* | *2,283* | *2,261* | | |

| COMBINED INTERVENTION VERSUS CLIENT INTERVENTION RENEWALS (%) | COMBINED INTERVENTION GROUP | CLIENT ONLY GROUP | DIFFERENCE | P VALUE |
|---|---|---|---|---|
| Before closure notice | 22.3 | 20.9 | 1.5 | 0.219 |
| Before benefits closure | 35.6 | 35.1 | 0.5 | 0.743 |
| Before end of grace period | 61.3 | 61.9 | -0.6 | 0.711 |
| *Sample size* | *2,283* | *2,393* | | |

SOURCE: MDRC calculations using Oklahoma Department of Human Services data.

NOTES: A two-tailed t-test was applied to differences between research groups. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Estimates are adjusted for child care parent baseline characteristics.

Data are clustered by provider.

The closure notice is mailed to clients 10 days before their benefits are scheduled to end (the benefits closure deadline). The grace period extends for 30 days after the benefits closure deadline. At the end of the grace period, the case is closed.

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# APPENDIX TABLE D.2
# CHILD CARE SUBSIDY RENEWALS, PROVIDER INTERVENTION, FACTORIAL DESIGN MAIN EFFECTS

## OKLAHOMA DEPARTMENT OF HUMAN SERVICES

| RENEWALS (%) | PROGRAM GROUP | CONTROL GROUP | DIFFERENCE | P VALUE |
|---|---|---|---|---|
| Before closure notice | 23.1 | 21.0 | 2.2** | 0.018 |
| Before benefits closure | 36.2 | 34.7 | 1.4 | 0.173 |
| Before end of grace period | 61.2 | 60.6 | 0.6 | 0.583 |
| | | | | |
| *Sample size* | *4,544* | *4,804* | | |

SOURCE: MDRC calculations using Oklahoma Department of Human Services data.

NOTES: A two-tailed t-test was applied to differences between research groups. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Estimates are adjusted for child care parent baseline characteristics.

Data are clustered by provider.

The closure notice is mailed to clients 10 days before their benefits are scheduled to end (the benefits closure deadline). The grace period extends for 30 days after the benefits closure deadline. At the end of the grace period, the case is closed.

# APPENDIX TABLE D.3
# CHILD CARE SUBSIDY RENEWALS, CLIENT INTERVENTION, FACTORIAL DESIGN MAIN EFFECTS

## OKLAHOMA DEPARTMENT OF HUMAN SERVICES

| RENEWALS (%) | PROGRAM GROUP | CONTROL GROUP | DIFFERENCE | P VALUE |
|---|---|---|---|---|
| Before closure notice | 21.6 | 22.5 | -0.9 | 0.293 |
| Before case closure | 35.4 | 35.5 | -0.1 | 0.886 |
| Before end of grace period | 61.6 | 60.3 | 1.3 | 0.182 |
| | | | | |
| *Sample size* | *4,676* | *4,672* | | |

SOURCE: MDRC calculations using Oklahoma Department of Human Services data.

NOTES: A two-tailed t-test was applied to differences between research groups. Statistical significance levels are indicated as: *** = 1 percent; ** = 5 percent; * = 10 percent.

Estimates are adjusted for child care parent baseline characteristics.

The closure notice is mailed to clients 10 days before their benefits are scheduled to end (the benefits closure deadline). The grace period extends for 30 days after the benefits closure deadline. At the end of the grace period, the case is closed.

# APPENDIX E
## Baseline Characteristics of Study Sample

## APPENDIX TABLE E.1
## BASELINE CHARACTERISTICS OF STUDY SAMPLE MEMBERS, BY RESEARCH GROUP

### OKLAHOMA DEPARTMENT OF HUMAN SERVICES

| CHARACTERISTIC | COMBINED INTERVENTION GROUP | CLIENT-ONLY GROUP | PROVIDER-ONLY GROUP | CONTROL GROUP |
|---|---|---|---|---|
| **Number of adults in household** | 1.0 | 1.0 | 1.0 | 1.0 |
| **Number of children in household** | 1.9 | 1.8 | 1.9 | 1.9 |
| **Average age of adults (years)** | 29.4 | 29.4 | 29.6 | 29.5 |
| **Gender (%)** | | | | |
| Male | 6.5 | 6.4 | 6.2 | 5.8 |
| Female | 93.5 | 93.6 | 93.8 | 94.2 |
| **Education level (years of education)** | 12.4 | 12.4 | 12.4 | 12.4 |
| **Income ($)** | | | | |
| Earned income | 1,146 | 1,131 | 1,123 | 1,131 |
| Unearned income | 24 | 22 | 20 | 22 |
| **Race[a] (%)** | | | | |
| Hispanic | 8.7 | 9.4 | 8.3 | 9.1 |
| White | 67.5 | 67.5 | 67.7 | 66.9 |
| Black | 26.6 | 27.5 | 27.3 | 28.3 |
| Native American | 9.0 | 6.9 | 7.3 | 7.2 |
| Asian | 1.2 | 1.2 | 1.1 | 0.9 |
| Hawaiian/Pacific Islander | 1.4 | 1.1 | 0.8 | 0.8 |
| ***Sample size*** | *2,283* | *2,393* | *2,261* | *2,411* |

SOURCE: MDRC calculations using Oklahoma Department of Human Services data.

NOTES: To assess differences across research groups, an omnibus F-test was conducted. The omnibus F-test, which evaluated the joint significance of the individual characteristics, showed no systematic differences among the four research groups.

[a]Distributions may not add to 100 percent because categories are not mutually exclusive.

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