



**PPIC**

PUBLIC POLICY  
INSTITUTE OF CALIFORNIA

## Technical Appendices

# California's Food Stamp Program Participation and Cost Challenges for the State

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# Appendix A

## PPIC SNAP Policies Survey

### Survey Methodology

To construct an accurate national list of implementation dates of the Supplemental Nutrition Assistance Program (SNAP) policies discussed in the text, we drew on published sources and contacted knowledgeable researchers at the U.S. Department of Agriculture’s Economic Research Service (ERS) and Food and Nutrition Service (FNS), as well as the Urban Institute’s Food Stamp Rules Database (described in Ratcliffe, McKernan, and Finegold 2008), FNS state options reports, and the FNS state waivers database.<sup>1</sup> For further policy history of the program, see the discussion in Super (2004) and the legislative history at [www.fns.usda.gov/snap/rules/Legislation/default.htm](http://www.fns.usda.gov/snap/rules/Legislation/default.htm).

Since 2002, FNS has periodically surveyed the states to better understand the policy changes they may have made. Eight surveys conducted between 2002 and 2009 have resulted in eight State Options Reports (SORs) issued in April 2002, February 2003, October 2003, September 2004, August 2005, October 2006, November 2007, and June 2009. All are available at [www.fns.usda.gov/snap/government/Policy.htm](http://www.fns.usda.gov/snap/government/Policy.htm). These reports are a common starting point for researchers but are limited in that they indicate only whether a policy was in place as of each report’s publication date, not the actual date of implementation. In addition, FNS has known that some of the information in early SORs was incorrect; however, FNS does not budget resources to publish corrections.

FNS compiles a database of SNAP waivers, granted to states on a case-by-case basis, which adds additional information about state policy choices. It is available at [www.fns.usda.gov/snap/rules/Waivers/default.htm](http://www.fns.usda.gov/snap/rules/Waivers/default.htm).

After reviewing these published sources and contacting knowledgeable researchers, we determined that additional follow-up with individual states was necessary to complete our dataset of policies. Further detail about this survey effort is contained in Danielson, Klerman, Andrews, and Krimm (2011). In brief, we surveyed state SNAP program administrators in the fall and winter of 2009–2010, and followed up with them to obtain more detail in summer 2010. To identify appropriate state respondents, we contacted the FNS regional offices (Northeast, Mid-Atlantic, Southeast, Midwest, Mountain Plains, Southwest, Western) and asked them for email addresses and phone numbers for the officials who had participated in the FNS state options surveys, or another authoritative state contact.

In the fall and winter of 2009–2010, we designed a universal questionnaire that we made available via a web-based interactive survey service provider (SurveyMonkey).<sup>2</sup> The questions were informed by the SORs. We relied most heavily on the results of the most recent report from June 2009. We also used earlier reports in the series to date (approximately) the first implementation of a policy. The reports seemed to indicate that a number of states adopted a reporting or asset policy change, then repealed it, and perhaps later re-adopted it. Our survey was designed to determine whether these apparent changes were real or simply reflected inaccuracies in early reports.

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<sup>1</sup> Originally named the Food Stamp Program, the federal name for CalFresh has been SNAP since October 2008; we use the federal name throughout this technical appendix.

<sup>2</sup> We were assisted greatly by Dave Young at FNS headquarters, who had supervised the surveys and written the reports for the last several SORs. He provided invaluable information and advice.

We emailed an introductory letter to state contacts on November 4, 2009, offering them the option to respond to the web survey, by email, or to schedule a phone call. We sent periodic reminders to those who had not responded until our initial survey period ended in February 2010. Several initial contacts assigned or referred our request to others in their departments. Our later reminders customized the query somewhat, using the information available in the SORs to narrow down the date ranges within which we were expecting exact dates to fall.

Roughly half of the respondents used the web-based survey instrument. Most others eventually replied directly via email. A small number of cases requested phone calls and we accommodated them, taking notes which subsequently were used to enter data into the survey response. After an initial response, there were some cases where additional follow-up was required—for instance, if a response was unclear, incomplete, or contained information that was internally conflicting or that directly conflicted with the information we had from other sources. At the end of this first phase, we had collected responses from 46 states (including the District of Columbia), with five states not responding (Georgia, New Hampshire, New Jersey, Rhode Island, and West Virginia).

For the second phase, we customized the query for each state in order to avoid duplicating information already verified. In addition, we asked more detailed questions about each policy.

For each state, we compiled the best available information from our first survey wave, the SORs, and the additional sources from our colleagues, and sent an email asking respondents to fill in the remaining questions where information was missing or conflicting. We set these questions in the context of information already established in our first survey.

We sent these new queries on July 21, 2010, continuing with additional reminders and follow-up through September 20, 2010. We received responses from 48 states (including the District of Columbia), with three states not responding (Delaware, Kentucky, and Maine). Between the two phases, we received at least one response from each state, although not all responses were entirely complete. However, all states for which we did not receive a response in the first phase did respond in the second. Thus, for the three states that did not respond the second time, we do have their first-phase response, plus the additional information from other sources.

Across the two phases of the survey, we collected the following policy details:

- Adoption dates for quarterly reporting, if applicable
- Adoption dates for simplified reporting and expanded simplified reporting, as applicable
- Characterization of non-earned-income households included in expansions of simplified reporting
- Reporting frequency for simplified reporting
- Adoption dates for expanded categorical eligibility, if applicable
- Characterization of provisions of expanded categorical eligibility:
  - whether expansion includes households participating in a TANF or MOE-funded program vs. households that are recipients of TANF- or MOE-funded brochure or other information
  - other criteria for inclusion (for example, presence of children in the household)
  - asset and income tests used, if any
- Changes in (simplified) reporting requirements entailed by expansions of categorical eligibility
- Adoption dates of altered vehicle rules (other than changes to asset requirements conferred by categorical eligibility), if applicable
- Provisions of vehicle rules (raised asset limits, some or all vehicles excluded beyond federal SNAP rules)

- Implementation dates of electronic application systems (web-based, for direct public access), distinguishing pilot projects from statewide implementation, noting whether electronic signatures are allowed

In constructing our dataset of SNAP policies, we drew first on the second phase responses. Where these were incomplete or missing, we used dates established by researchers at ERS and FNS and/or the first phase. In no case was it necessary to fall back on the approximate dates supplied in the SORs. The analysis variables we derived from this survey are summarized in Table A1.

**TABLE A1**  
**SNAP policies**

	<b>Date of policy adoption in California</b>	<b>U.S. outside of California (as of September 2000)</b>	<b>U.S. outside of California (as of September 2009)</b>
<b>Program integrity and modernization</b>			
Fingerprinting	December 2001	4	4
EBT cards	July 2004	35	50
Electronic applications	December 2010	0	17
<b>Asset rules</b>			
One or more vehicles excluded from asset test	January 2004	1	39
Categorical eligibility expansion: household participates in one of an expanded set of programs (“program-based”)	-	12	12
Categorical eligibility expansion: households are recipients of information (“information-based”)	July 2009/February 2011 <sup>3</sup>	1	26
<b>Paperwork and reporting</b>			
Quarterly reporting	July 2004	10	0
Simplified reporting	-	0	49
Percent of caseload with certification periods of less than 6 months	0.8% (FY 2009)	28.0%	3.1% (FY 2009)
Percent of caseload with certification periods of 6 months or longer	99.2% (FY 2009) <sup>4</sup>	72.0%	96.9% (FY 2009)

SOURCES: PPIC SNAP policies survey; FNS National Databank; authors’ calculations from the SNAP quality control files.

NOTES: Several policies were implemented across the state over a period of months (or, in the case of EBT cards, years). The table notes the date on which implementation was complete statewide. In the case of EBT cards, we used a threshold of 95 percent of benefits issued via EBT to indicate statewide implementation. Policies adopted after September 2009 are not reflected in the analyses presented in the body of this report.

In the analysis we include three SNAP variables not derived from our survey: the percentage of SNAP issuance made via EBT cards (states typically made the switchover gradually), the implementation of fingerprinting or other biometric requirements for SNAP applicants, and mean length of certification periods. The first comes from administrative records of states’ SNAP issuance.<sup>5</sup> The second comes from the Urban Institute Food Stamp Rules Database (Ratcliffe, McKernan, and Finegold 2008). We verified the dates in that database and checked for changes by reviewing states’ social services web sites and research reports reviewing the policy. We calculated the third variable from the public-use SNAP quality control samples that we discuss in greater detail in Appendix B.

<sup>3</sup> In July 2009 families with children in the household became categorically eligible for CalFresh. In February 2011, other households became categorically eligible.

<sup>4</sup> Since at least October 1988, the most common certification period in California has been 12 months.

<sup>5</sup> We are grateful to Katie Fitzpatrick of the USDA’s Economic Research Service for sharing these data with us.

# Appendix B

## Description of Other Analysis Variables

### Outcome Variables

We use three sets of outcome variables in the main analysis of the effect of SNAP policies: the natural log of recipients divided by total state population, the natural log of administrative costs divided by the number of SNAP cases, and the natural log of positive fraud investigations divided by the number of SNAP cases. We use data from federal fiscal year 1989 to 2009 (the latest available) in order to track the effects of all of the SNAP policies we consider. Table B1 summarizes the outcome variables we constructed.

### SNAP Recipients

We use the public-use SNAP Quality Control samples to construct the set of caseload outcome variables for federal fiscal years 1989–2009. These files are distributed by Mathematica Policy Research and recent years are available online (<http://hostm142.mathematica-mpr.com/fns/>). Mathematica sent files directly to us for years before 1996. Leftin et al. (2010) provides documentation for the 2009 data file. Reports available at the above web site provide documentation for other years.

We consider only the 50 states and the District of Columbia, excluding Guam, Puerto Rico, and the U.S. Virgin Islands. We also exclude individuals in sampled households determined during the course of the quality control review to be ineligible for SNAP, or eligible for a zero benefit. We do so because the files distributed by Mathematica exclude such households from 2003 forward. We also exclude all recipients participating in a state-funded food assistance program from the figures and statistical analyses presented in the text. For comparative purposes, we do present models that include state-funded recipients in Table C3.

No reviews were conducted in the District of Columbia in March, July, August, and September of 1995, in Louisiana in June through December of 2005, and for Mississippi in June through September of 2005. (Hurricane Katrina affected the latter two states.) When we calculate caseloads of participants in children-only households, we are also missing observations in states with no sampled cases because their caseloads of this group were very small. Our analysis file fills in the missing information by linear interpolation from adjacent months, when reviews were conducted.

Using the weights provided with each file, we constructed four SNAP caseloads: total persons participating in SNAP in each state and month; all participants living in households containing at least one aided child and at least one aided adult; all participants living in households containing only aided adults; and all participants living in households containing only aided children. The first definition of the caseload is clearly the conventional one. As explained in the report, we use the three disaggregations of the caseload to further understand differential trends within it. Our empirical analysis of the effects of policy changes on SNAP participation also use these four caseloads as outcome variables. Appendix C presents these models.

We also use these quality control files to compute the fraction of each caseload with certification periods of less than six months and with those of six months or longer, for each state-month observation.

## Per Capita Participants vs. Participation Rates

We calculate per capita participation, instead of using participation rate estimates calculated for FNS by Mathematica Policy Research, for two reasons. First, although Mathematica researchers simulate the eligible population as accurately as possible, states' policy changes have likely altered the accuracy of that effort—a concern because we are interested in participation changes due to these very same policies. In particular, Mathematica's calculations do not reflect changes in categorical eligibility policies in the participation rate. Thus, the estimates purposely do not take account of expansions of categorical eligibility in either the numerator or the denominator of the rate (Wolkwitz and Ewell, 2009). This is reasonable from the point of view of calculating participation rates, but prevents our estimating the effect of categorical eligibility expansions on that rate. In addition, several other policies likely resulted in changes in eligibility that are difficult to track accurately. For example, households required to submit simplified, semiannual reports may become technically ineligible for the program between reports if their gross income is less than 130 percent of the federal poverty guideline but their net income is over the guideline. They will remain in the caseload until their semiannual report is due.

Second, self-reporting in the major surveys that Mathematica researchers use to calculate the eligible population (the Current Population Survey and the Survey of Income and Program Participation) has deteriorated over time, making these estimates of increasingly uncertain accuracy (Meyer, Mok, and Sullivan, 2009; Wheaton, 2007).

We use Census population estimates to construct the denominator for our outcome variables. We use linear interpolation between the annual estimates to obtain monthly values.

## SNAP Administrative Costs

We requested state expenditure reports from the FNS (forms FNS-269FS) stored in the National Databank. We used these reports for federal fiscal years 1989–2009 to construct an outcome variable by state and fiscal year that includes costs clearly linked to ongoing costs of administering the program.

SNAP administrative costs are complex, allocated according to initial and ongoing eligibility determinations, issuing benefits, capital costs, and a number of other categories (including employment and training programs and nutrition outreach). We use a definition of administrative costs intended to capture the variable costs of administering benefits. As recommended by a 2008 report to USDA, these costs include those categorized as certification, outreach, reinvestment, fraud control, fair hearings, reporting and management evaluation, performance quality control, and a category of “unspecified other” costs (Logan and Klerman, 2008). We adjust these costs to their inflation-adjusted 2010 equivalents using the consumer price index for all urban consumers from the U.S. Bureau of Labor Statistics.

In all cases we summed state and federal administrative costs (outlays and unliquidated obligations) to avoid year-to-year jumps in expenditures resulting from any changes to the state-federal matching rate formula. These totals can vary slightly from those reported in the FNS *State Activity Report* series. For example, in California, the 2009 total from the National Databank (\$1.237 billion) was 2 percent higher than reported in the 2009 *State Activity Report* (\$1.214 billion). This difference is attributable to states' ability to revise their reports for two years after they submit them.

## SNAP Fraud Investigations

The FNS publishes annual state-by-state counts of fraud investigations. Recent reports are available at [www.fns.usda.gov/pd/snapmain.htm](http://www.fns.usda.gov/pd/snapmain.htm).<sup>6</sup> We use reports from federal fiscal years 1989–2009.

From these reports, we constructed two outcome variables. First, we divided total annual fraud investigations that resulted in a positive finding of fraud by average cases in a state and year. Second, we divided total positive fraud findings by total fraud investigations.

**TABLE B1**  
Program outcome variables for federal fiscal years 1989–2009

	Source	Number of missing observations
<b>Caseloads</b>		
All recipients	SNAP QC files	15
All recipients living in households containing at least one child and at least one adult	SNAP QC files	15
All recipients living in households containing only aided adults	SNAP QC files	15
All recipients living in households containing only aided children	SNAP QC files	4,245
<b>Administrative Costs</b>		
On-going costs of administering cases	FNS-269FS	0
<b>Fraud</b>		
Total positive fraud findings	FNS State Activity Reports, Table 14	0
Total fraud investigations	FNS State Activity Reports, Table 14	0

## Independent Variables

Apart from the SNAP policies described in Appendix A, our models also include a set of AFDC/TANF policies that may affect SNAP caseloads (because of the historical linkage between the two programs), as well as a variable that proxies for the strength of the economy, and a set of demographic and political contextual variables that may also shape SNAP caseloads. We describe these below.

### Cash Assistance (Welfare) Policies

We include one high-level welfare reform variable that captures the date of implementation of states' TANF programs. We draw the dates of implementation from Crouse (1999); this is also the coding used by the Council of Economic Advisors (1999). We also include specific, state-level welfare policies that has been shown by previous analysis of the AFDC/TANF caseload has shown affect that caseload (Danielson and Klerman, 2008). We obtained policy details and dates of implementation from Crouse (1999) and from the Urban Institute's Welfare Rules Database, available at <http://anfdata.urban.org/wrd/WRDWelcome.cfm>.

### Welfare benefits and benefit reduction rates

We include both the maximum benefit for a family of three (assuming no other income) and the amount of earnings at which that family's welfare grant would be zero in a state and year. We adjust these and all

<sup>6</sup> We are grateful to the Western Region office of the FNS for providing hard copies of reports for earlier years.

dollar amounts used in the empirical analysis to their inflation-adjusted 2010 equivalents using the consumer price index for all urban consumers from the U.S. Bureau of Labor Statistics.

**Diversions**

We include a variable capturing whether a state has a diversion program intended to assist families experiencing temporary emergencies by giving them a lump sum payment in lieu of a monthly welfare check. While the details of the programs vary, the amount of the diversion payment is typically a multiple (usually two to four times) the monthly welfare payment that a family would otherwise receive.

**Welfare time limits**

We include a variable capturing whether the state has a welfare time limit in place. We do not distinguish between grant elimination and grant reduction time limits.

**Work-related sanctions**

We include two variables capturing whether the state eliminates a family’s grant immediately if an adult is out of compliance with work-related program requirements, or whether the state gradually eliminates the family’s grant in the case of noncompliance. The excluded category is grant reduction in the case of noncompliance.

**TABLE B2**  
Cash assistance (AFDC/TANF) policies

Policy
Maximum monthly benefit, family of 3, divided by 100 (inflation-adjusted)
Monthly earnings at which family of 3 eligible for \$0 benefit, divided by 100 (inflation-adjusted)
Diversions program in place
Time limit in place
Welfare-to-work sanction: gradual grant elimination
Welfare-to-work sanction: immediate grant elimination
Date of switch from AFDC to TANF

SOURCE: Welfare Rules Database, Urban Institute.

**Economy**

We include monthly, state-level, unemployment rates (multiplied by 100) from the Bureau of Labor Statistics’ Local Area Unemployment Statistics series, not seasonally adjusted. We take a 12-month moving average of this measure, and include the current and five lags spaced annually in all models.

**Other Contextual Variables**

In the main specification of our regression model (Table C1), we include a number of contextual variables to control for within-state changes in eligibility and propensity of the population to take up SNAP benefits. These are listed in Table B3 (Panel A) and include wages, age, poverty level, educational attainment, median household income of the population, and a proxy for percentage of the population that is unauthorized. We use this last variable—the percentage of the population aged 25–64, Hispanic, and lacking a high school degree—because it is possible to construct it for the entire time period we analyze. State-level estimates of the undocumented population such as those produced by the Pew Hispanic Center are only available for recent years.

In an alternate specification presented in Table C4 we also include two variables that adjust for differences in state-federal and state-local governing relationships: the federal Medicaid matching percentage and the share of expenditures for welfare program administrative costs that are passed directly through to local governments. We also include four variables to take into account differing governing relationships and for states' political climates over time, which may affect SNAP participation and administrative costs. These are party of the governor, whether the lower house of the state legislature is majority Democrat, whether the upper house of the state legislature is majority Democrat, and state government employees divided by state population. Table B3, Panel B lists these additional contextual variables.

**TABLE B3**  
**State-level contextual variables**

Sources	
<b>Panel A</b>	
State minimum wage (or federal, if state lower than federal) converted to monthly earnings with 30 weekly hours of work, inflation-adjusted	Neumark and Wascher (2007); U.S. Department of Labor
State 20 <sup>th</sup> percentile wage converted to monthly earnings with 30 weekly hours of work, inflation-adjusted	Current Population Survey, Merged Outgoing Rotation Group
Percent of population by age groups: under 5, 5–15, 65 and older (omitted: 15–64)	U.S. Bureau of the Census
Percent of population living in families under 100 percent of the Federal Poverty Level	U.S. Bureau of the Census, Small-Area Income and Poverty Estimates
Median household income (inflation-adjusted)	U.S. Bureau of the Census, Small-Area Income and Poverty Estimates
Percent of population age 25–64 by education level: less than high school, high school (omitted: greater than high school)	Current Population Survey, Merged Outgoing Rotation Group
Percent of population age 25–64 Hispanic with less than high school education (proxy for the percent of the population that is unauthorized)	Current Population Survey, Merged Outgoing Rotation Group
<b>Panel B</b>	
Percent of state expenditures for welfare program administrative costs passed directly through to local governments	Census of Governments, REX-DAC
Federal Medicaid Assistance percentages by state and year	Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services
Governor's party	Klarner (2007); National Governor's Association
Lower house of legislature is majority Democrat / Upper house is majority Democrat	Klarner (2007); National Conference of State Legislatures
Number of state government employees per capita	U.S. Bureau of the Census, Annual Survey of Public Employment and Payroll

NOTE: Linear interpolation used to fill in missing observations for some variables in some years.

# Appendix C

## Methods, Detailed Model Results, and Sensitivity Analyses

We estimate the effects of SNAP policies, welfare policies, the economy, and a set of demographic controls on the SNAP caseload, on administrative costs, and on fraud prosecutions using a standard difference-in-differences approach. Specifically, we regress the natural log of these outcomes at the state-month or state-year level directly on the policies themselves, while controlling for unobserved, time-invariant state-level and national time-varying factors—using dummy variables for state, fiscal year and month—as well as state-specific linear time trends:

$$(1) \quad y_{s,t} = \log\left[\frac{M_{s,t}}{N_{s,t}}\right] = \alpha + X_{s,t}\beta + Z_{s,t}\gamma + \mu_s + f[t, \theta] + \varepsilon_{s,t}$$

The dependent variable is defined as the ratio of each outcome of interest,  $M$ , to either the population or the number of SNAP cases,  $N$ . We take natural logs for ease of interpretation of the parameter estimates.

In equation 1,  $X$  represents the set of  $K$  SNAP policies and  $\beta$  the corresponding  $K$  regression coefficients,  $Z$  is the set of other policies and contextual variables that we hold constant,  $\mu$  is a vector of 51 state dummies (for the 50 states, plus the District of Columbia),  $f[t, \theta]$  is our specification for time effects, and  $\varepsilon$  is a residual. In  $Z$  we include a dummy variable indicating the months for which we interpolated caseload components because there were missing outcomes in a state and time period. The subscript  $s$  represents states and  $t$  represents time (month or year).

We report heteroscedasticity-robust standard errors. Following Bertrand, Duflo, and Mullianathan (2004), we also compute the standard errors clustering on states. We estimate the models using weighted least squares. Our weights are the total estimated population in each state and month.

### Main Specification

Table C1 provides model results for the main specification of the regression equation. Columns 1–4 show estimates for per capita SNAP recipients and column 5 shows estimates for administrative costs per case. We took the natural log of all outcome variables, so the estimates can be interpreted as percent changes in response to a one-unit change in an independent variable (usually the adoption of a policy).

All models are estimated using data from federal fiscal year 1989 through 2009, although outcomes for a few states and time periods are missing or zero (see Appendix B). We use linear interpolation to fill in gaps created by missing data and include dummy variables to indicate that the observation is interpolated. Estimates in column 4 should be interpreted cautiously because of the large number of missing observations for participants living in households with aided children only.

In the text we state that we find no statistically significant difference between the use of quarterly reporting in combination with six month or longer certification periods and the use of semiannual (or simplified) reporting combined with six month or longer certification periods. We base this conclusion on an F-test of the equality of the two estimates—0.029 and 0.025 from Column 1 of Table C1—which does not allow us to reject the hypothesis of equivalence ( $p=0.98$ ). Table C5 considers an alternate specification of reporting and certification policies (discussed below).

Table C2 examines whether fingerprinting policies increase positive fraud findings (positive fraud findings as a percentage of cases) and whether they increase the effectiveness of fraud investigations (positive fraud findings as a percentage of fraud investigations). The standard errors of the estimates are far larger than the estimates themselves, so we unequivocally reject the hypothesis that the parameter estimates are significantly different from zero in both cases.

## Alternate Specifications

We present three alternate specifications in Tables C3, C4, and C5. Table C3 adds state-funded SNAP recipients to all four caseload-based outcome variables. The parameter estimates change little when we do so.

Table C4 adds contextual variables to adjust for differing state-level governing relationships and for changing political climates in the 1990s and the first decade of this century. Including these measures requires dropping observations from the District of Columbia and Nebraska because of their unique political structures. The parameter estimates for SNAP policies change little when we add these variables and drop those observations.

Finally, Table C5 makes the simplifying assumption that reporting policies and certification policies are distinct and do not interact. The estimates indicate that failing to consider this interaction leads to the interpretation that only the length of certification periods, not the frequency of reporting, affects participation. This does not change the substantive conclusion that there is no statistically significant difference between quarterly and semiannual reporting policies that we present in the report.

**TABLE C1**  
Main estimates of policy effects

	(1)	(2)	(3)	(4)	(5)
	All recipients	Recipients living in households with both aided children and aided adults	Recipients living in households with only aided adults	Recipients living in households with only aided children	Administrative costs
Percent of issuance made via EBT cards	0.0085 (0.013)	0.016 (0.014)	0.0029 (0.024)	0.15* (0.066)	-0.085 (0.057)
Fingerprinting	-0.070** (0.021)	-0.096** (0.029)	-0.023 (0.021)	0.032 (0.085)	0.13* (0.056)
Online applications	0.016 (0.031)	-0.0041 (0.038)	0.015 (0.030)	0.28** (0.087)	-0.19** (0.066)
One or more vehicles excluded from asset test	-0.0018 (0.017)	0.016 (0.019)	-0.017 (0.022)	-0.019 (0.064)	0.011 (0.043)
Categorical eligibility expanded—program-based	0.0026 (0.027)	0.00052 (0.029)	0.0093 (0.026)	0.043 (0.086)	-0.022 (0.043)
Categorical eligibility expanded—information-based	0.056* (0.027)	0.063* (0.027)	0.056 (0.032)	0.092 (0.091)	0.033 (0.081)
Either information-based expansion retained one or both standard income tests	0.0061 (0.037)	0.0072 (0.041)	-0.010 (0.040)	-0.041 (0.14)	-0.15 (0.12)
Quarterly reporting interacted with percent of caseload with certification periods of less than 6 months	-0.13* (0.055)	-0.091* (0.042)	-0.059 (0.15)	-0.086 (0.14)	-0.18 (0.14)
Semiannual reporting interacted with percent of caseload with certification periods of less than 6 months	0.040	0.033	0.28**	-0.11	-0.13

	(1)	(2)	(3)	(4)	(5)
	All recipients	Recipients living in households with both aided children and aided adults	Recipients living in households with only aided adults	Recipients living in households with only aided children	Administrative costs
	(0.062)	(0.044)	(0.092)	(0.11)	(0.21)
Quarterly reporting interacted with percent of caseload with certification periods 6 months or longer	0.029	0.034*	0.036	-0.10	0.095
	(0.016)	(0.017)	(0.020)	(0.12)	(0.051)
Semiannual reporting interacted with percent of caseload with certification periods of 6 months or longer	0.025	0.036	-0.021	-0.056	0.065
	(0.023)	(0.026)	(0.020)	(0.086)	(0.066)
Percent of caseload with 6 month or longer certification periods	0.097	0.084	0.25**	-0.00018	-0.50**
	(0.056)	(0.044)	(0.064)	(0.078)	(0.13)
Observations	12,852	12,852	12,852	12,852	1,071
R squared	0.947	0.908	0.922	0.710	0.938
Frequency of observations	month	month	month	month	annual

\*\* p<0.01, \* p<0.05

NOTES: Dependent variables in columns 1–4 are the natural log of SNAP recipients divided by state population. Dependent variable in column 5 is the natural log of administrative costs divided by the mean number of cases during the year. Standard errors are clustered on states. “States” includes the District of Columbia. Estimated using weighted least squares with weights being the total population in each state. All models also include state and year indicator variables, state-specific linear fiscal year trends, month indicator variables (columns 1-4 only), interactions between state indicator variables and the implementation of PRWORA and of AREERA, the 12-month moving average of the state-level unemployment rate and 5 annual lags of that measure, the cash assistance policies listed in Table B.2, and the contextual variables listed in Table B.3, Panel A. Column 5 also includes the percentage of cases that contain only members age 65 and older, that have earnings, and that have no income. Standard errors in parentheses.

**TABLE C2**  
**Fraud investigations and fingerprinting**

	(1)	(2)
	Total positive fraud findings	Rate of positive fraud findings
Fingerprinting	-0.073	-0.071
	(0.36)	(0.15)
Observations	1,071	1,071
R-squared		
Frequency of observations	annual	annual

\*\* p<0.01, \* p<0.05

NOTES: The dependent variable in column 1 is the natural log of positive fraud findings divided by the mean number of cases during the year. In column 2, it is the natural log of positive fraud findings divided by total fraud investigations. Standard errors are clustered on states. “States” includes the District of Columbia. Estimated using weighted least squares with weights being the total population in each state. Both models also include the other SNAP policy variables included in Table C1, state and year indicator variables, state-specific linear fiscal year trends, interactions between state indicator variables and the implementation of PRWORA and of AREERA, the 12-month moving average of the state-level unemployment rate and 5 annual lags of that measure, the cash assistance policies listed in Table B.2, and the contextual variables listed in Table B.3, Panel A. Standard errors in parentheses.

**TABLE C3**  
**Alternate specification: include state-funded SNAP recipients in caseloads**

	(1)	(2)	(3)	(4)
	All recipients	Recipients living in households with both aided children and aided adults	Recipients living in households with only aided adults	Recipients living in households with only aided children
Percent of issuance made via EBT cards	0.0060 (0.013)	0.0059 (0.014)	0.0022 (0.024)	0.17** (0.060)
Fingerprinting	-0.066** (0.021)	-0.076* (0.031)	-0.025 (0.020)	-0.0096 (0.095)
Online applications	0.016 (0.031)	-0.0048 (0.038)	0.015 (0.030)	0.29** (0.089)
One or more vehicles excluded from asset test	-0.0040 (0.018)	0.0075 (0.019)	-0.018 (0.021)	-0.0033 (0.063)
Categorical eligibility expanded—program-based	0.0028 (0.027)	0.0015 (0.029)	0.0092 (0.026)	0.034 (0.086)
Categorical eligibility expanded—information-based	0.056* (0.027)	0.061* (0.026)	0.055 (0.032)	0.079 (0.092)
Either information-based expansion retained one or both standard income tests	0.0073 (0.038)	0.012 (0.043)	-0.0099 (0.040)	-0.043 (0.14)
Quarterly reporting interacted with percent of caseload with certification periods of less than 6 months	-0.13* (0.056)	-0.084 (0.043)	-0.057 (0.15)	-0.083 (0.13)
Semiannual reporting interacted with percent of caseload with certification periods of less than 6 months	0.034 (0.062)	0.018 (0.044)	0.28** (0.091)	-0.086 (0.10)
Quarterly reporting interacted with percent of caseload with certification periods 6 months or longer	0.026 (0.016)	0.022 (0.017)	0.035 (0.020)	-0.077 (0.12)
Semiannual reporting interacted with percent of caseload with certification periods of 6 months or longer	0.026 (0.024)	0.038 (0.027)	-0.021 (0.020)	-0.041 (0.089)
Percent of caseload with 6 month or longer certification periods	0.098 (0.056)	0.089* (0.044)	0.25** (0.064)	-0.0067 (0.078)
Observations	12,852	12,852	12,852	12,852
R-squared	0.947	0.907	0.922	0.705
Frequency of observations	month	month	month	month

\*\* p<0.01, \* p<0.05

NOTES: Dependent variables in columns 1–4 are the natural log of SNAP recipients divided by state population. Dependent variable in column 5 is the natural log of administrative costs divided by the mean number of cases during the year. Standard errors are clustered on states. “States” includes the District of Columbia. Estimated using weighted least squares with weights being the total population in each state. All models also include state and year indicator variables, state-specific linear fiscal year trends, month indicator variables, interactions between state indicator variables and the implementation of PRWORA and of AREERA, the 12-month moving average of the state-level unemployment rate and 5 annual lags of that measure, the cash assistance policies listed in Table B.2, and the contextual variables listed in Table B.3, Panel A. Standard errors in parentheses.

**TABLE C4**  
**Alternate specification: add political climate variables**

	(1)	(2)	(3)	(4)	(5)
	All recipients	Recipients living in households with both aided children and aided adults	Recipients living in households with only aided adults	Recipients living in households with only aided children	Administrative costs
Percent of issuance made via EBT cards	0.010 (0.015)	0.018 (0.017)	0.011 (0.027)	0.14* (0.068)	-0.093 (0.060)
Fingerprinting	-0.061** (0.020)	-0.087** (0.028)	-0.012 (0.023)	0.028 (0.082)	0.13* (0.053)
Online applications	0.019 (0.030)	-0.0026 (0.035)	0.029 (0.030)	0.25** (0.081)	-0.18* (0.067)
One or more vehicles excluded from asset test	0.0066 (0.017)	0.025 (0.019)	-0.012 (0.023)	-0.016 (0.062)	0.016 (0.045)
Categorical eligibility expanded—program-based	0.0071 (0.025)	0.0046 (0.026)	0.011 (0.025)	0.056 (0.074)	-0.027 (0.044)
Categorical eligibility expanded—information-based	0.059* (0.027)	0.068* (0.026)	0.052 (0.033)	0.10 (0.088)	0.024 (0.084)
Either information-based expansion retained one or both standard income tests	-0.011 (0.035)	-0.011 (0.039)	-0.023 (0.039)	-0.038 (0.13)	-0.15 (0.12)
Quarterly reporting interacted with percent of caseload with certification periods of less than 6 months	-0.13** (0.046)	-0.089* (0.036)	-0.079 (0.15)	-0.055 (0.12)	-0.14 (0.14)
Semiannual reporting interacted with percent of caseload with certification periods of less than 6 months	0.042 (0.063)	0.035 (0.045)	0.29** (0.090)	-0.11 (0.11)	-0.12 (0.21)
Quarterly reporting interacted with percent of caseload with certification periods 6 months or longer	0.042* (0.016)	0.046** (0.017)	0.049* (0.021)	-0.074 (0.11)	0.098 (0.055)
Semiannual reporting interacted with percent of caseload with certification periods of 6 months or longer	0.021 (0.022)	0.031 (0.024)	-0.023 (0.019)	-0.049 (0.087)	0.072 (0.069)
Percent of caseload with 6 month or longer certification periods	0.11* (0.052)	0.089* (0.041)	0.25** (0.050)	0.0028 (0.078)	-0.51** (0.14)
Observations	12,348	12,348	12,348	12,348	1,029
R squared	0.948	0.910	0.923	0.711	0.939
Frequency of observations	month	month	month	month	annual

\*\* p<0.01, \* p<0.05

NOTES: Dependent variables in columns 1–4 are the natural log of SNAP recipients divided by state population. Dependent variable in column 5 is the natural log of administrative costs divided by the mean number of cases during the year. Standard errors are clustered on states. “States” includes the District of Columbia. Estimated using weighted least squares with weights being the total population in each state. All models also include state and year indicator variables, state-specific linear fiscal year trends, month indicator variables (columns 1–4 only), interactions between state indicator variables and the implementation of PRWORA and of AREERA, the 12-month moving average of the state-level unemployment rate and 5 annual lags of that measure, the cash assistance policies listed in Table B.2, and the contextual variables listed in Table B.3, Panels A and B. Column 5 also includes the percentage of cases that contain only members age 65 and older, that have earnings, and that have no income. Standard errors in parentheses.

**TABLE C5**

**Alternate specification: separate specification of interim reporting and certification periods**

	(1)	(2)	(3)	(4)	(5)
	All recipients	Recipients living in households with both aided children and aided adults	Recipients living in households with only aided adults	Recipients living in households with only aided children	Administrative costs
Percent of issuance made via EBT cards	0.014 (0.014)	0.022 (0.016)	0.00085 (0.026)	0.15* (0.064)	-0.073 (0.058)
Fingerprinting	-0.066** (0.019)	-0.092** (0.027)	-0.019 (0.020)	0.030 (0.087)	0.14* (0.055)
Online applications	0.014 (0.031)	-0.0064 (0.038)	0.012 (0.030)	0.28** (0.087)	-0.19** (0.068)
One or more vehicles excluded	0.0015 (0.018)	0.020 (0.020)	-0.016 (0.023)	-0.021 (0.064)	0.014 (0.042)
Categorical eligibility expanded—program-based	0.0020 (0.027)	-0.00049 (0.029)	0.013 (0.027)	0.042 (0.086)	-0.028 (0.041)
Categorical eligibility expanded—information-based	0.058* (0.027)	0.065* (0.027)	0.061 (0.034)	0.092 (0.092)	0.031 (0.081)
Either information-based expansion retained one or both standard income tests	0.0038 (0.037)	0.0043 (0.041)	-0.017 (0.041)	-0.041 (0.14)	-0.15 (0.12)
Quarterly reporting	0.0028 (0.016)	0.0059 (0.017)	0.031 (0.017)	-0.099 (0.10)	0.044 (0.037)
Semiannual reporting	0.023 (0.017)	0.030 (0.020)	0.016 (0.018)	-0.066 (0.069)	0.029 (0.052)
Percent of caseload with 6 month or longer certification periods	0.12* (0.049)	0.11** (0.038)	0.20** (0.056)	0.0062 (0.061)	-0.44** (0.12)
Observations	12,852	12,852	12,852	12,852	1,071
R-squared	0.947	0.908	0.922	0.710	0.938
Frequency of observations	month	month	month	month	annual

\*\* p<0.01, \* p<0.05

NOTES: Dependent variables in columns 1-4 are the natural log of SNAP recipients divided by state population. Dependent variable in column 5 is the natural log of administrative costs divided by the mean number of cases during the year. Standard errors are clustered on states. "States" include the District of Columbia. Estimated using weighted least squares with weights being the total population in each state. All models also include state and year indicator variables, state-specific linear fiscal year trends, month indicator variables (columns 1-4 only), interactions between state indicator variables and the implementation of PRWORA and of AREERA, the 12-month moving average of the state-level unemployment rate and 5 annual lags of that measure, the cash assistance policies listed in Table B.2, and the contextual variables listed in Table B.3, Panel A. Column 5 also includes the percent of cases containing only members age 65 and older, that have earnings, and that have no income. Standard errors in parentheses.

# Appendix D

## Data and Methods for the Analysis of SNAP Participation

To assess the role of California’s distinctive population characteristics, we turned to household survey data. The program data we used in other sections of this report have the strength of accurately recording absolute numbers of participants over long periods of time, but contain no information about nonparticipants. Because surveys contain information about both those who participate in CalFresh and those who do not, such data sources can help us to identify personal and household characteristics associated with the decision to participate in the program.

We used the 2008 American Community Survey (ACS) conducted by the United States Bureau of the Census. The ACS collects information about approximately three million randomly selected housing units across the country each year. We obtained a public-use dataset drawn from the ACS by the University of Minnesota’s Minnesota Population Center (Ruggles, et. al, 2009). Table D1 describes the covariates we constructed from this dataset.

**TABLE D1**  
**Analysis variables constructed from the 2008 American Community Survey**

Citizenship of household head (native, naturalized, not)
Citizenship of household members (all, mixed, none)
Age of household head (7 categories)
Age of other household members and household size: number of children under 5, number of children 5 and over, number of adults age 18–64, number of adults age 65 and older
English spoken at home
Percent of federal poverty level (0–50, 51–100, 101–150, 151–200)
Labor force participation of household adults age 18–64 (all, mixed, none)
Anyone in the household received SSI in the past year
Anyone in the household received cash welfare in the past year
Education of household head (7 categories)
Marital status of household head (4 categories)

SOURCES: 2008 American Community Survey; U.S. Bureau of the Census.

Table D2 provides regression parameter estimates. The outcome is the household’s report of whether anyone in the household received SNAP in the past year. We estimated a linear probability model using observations on households reporting income in the past year of 200 percent of the federal poverty level or lower. For a family of four in 2008, this translated into an annual income of \$41,300 or less. We chose this income level to capture the bulk of families that may have been income-eligible for the program during the course of the year. Because eligibility for SNAP is determined by monthly, not annual income, and because monthly incomes can fluctuate, this screen can only approximate a household’s eligibility. Households may also be subject to asset or other eligibility tests, also not captured in this income screen.

In the text, we report the simulated change in the probability that households in California would have reported getting SNAP benefits if the levels of the covariates are altered to match the means across the other 49 states and the District of Columbia.

**TABLE D2**

**Low-income household characteristics and partial correlation with reported SNAP participation**

	(1)	(2)	(3)
	<b>Regression coefficients— household participated in SNAP in the past year</b>	<b>Percent in category in California</b>	<b>Percent in category in the U.S. excluding California</b>
Household head's age: under 18	comparison category	0.00054 (0.00011)	0.00094 (0.000087)
Household head's age: 18–24	0.17* (0.031)	0.085 (0.0019)	0.098 (0.00074)
Household head's age: 25–34	0.22* (0.032)	0.19 (0.0027)	0.18 (0.00095)
Household head's age: 35–44	0.18* (0.031)	0.21 (0.0027)	0.17 (0.00090)
Household head's age: 45–54	0.20* (0.031)	0.17 (0.0024)	0.16 (0.00082)
Household head's age: 55–64	0.17* (0.031)	0.12 (0.0025)	0.13 (0.00090)
Household head's age: 65 or older	0.16* (0.029)	0.22 (0.0025)	0.26 (0.00090)
Household head's education: no formal schooling	comparison category	0.031 (0.0010)	0.016 (0.00025)
Household head's education: up to middle school	-0.042* (0.0096)	0.15 (0.0023)	0.089 (0.00065)
Household head's education: some high school	-0.022 (0.011)	0.15 (0.0023)	0.15 (0.00082)
Household head's education: high school degree or GED	-0.087* (0.011)	0.24 (0.0027)	0.34 (0.0011)
Household head's education: some college	-0.10* (0.012)	0.24 (0.0028)	0.23 (0.00097)
Household head's education: bachelor's or associate's degree	-0.16* (0.014)	0.15 (0.0023)	0.14 (0.00078)
Household head's education: graduate (beyond college)	-0.19* (0.015)	0.038 (0.0012)	0.030 (0.00037)
Household head's marital status: married	comparison category	0.33 (0.0030)	0.27 (0.00098)
Household head's marital status: spouse absent, separated, or divorced	0.12* (0.0047)	0.26 (0.0028)	0.29 (0.0010)
Household head's marital status: widowed	0.064* (0.0028)	0.12 (0.0020)	0.16 (0.00075)
Household head's marital status: never married	0.11* (0.0069)	0.29 (0.0030)	0.29 (0.0011)
Household contains no children under age 5	comparison category	0.79 (0.0027)	0.82 (0.00092)
Household contains one child under age 5	0.18* (0.0077)	0.15 (0.0024)	0.12 (0.00080)
Household contains two children under age 5	0.26* (0.010)	0.053 (0.0015)	0.045 (0.00051)
Household contains three or more children under age 5	0.33* (0.012)	0.0091 (0.00062)	0.0087 (0.00023)
Household contains no children age 5–17	comparison category	0.61 (0.0032)	0.69 (0.0011)
Household contains one child age 5–17	0.12* (0.0040)	0.16 (0.0024)	0.14 (0.0008)
Household contains two children age 5–17	0.18* (0.0055)	0.14 (0.0023)	0.10 (0.00072)
Household contains three or more children age 5–17	0.24* (0.0065)	0.091 (0.0019)	0.065 (0.00058)

	(1)	(2)	(3)
	Regression coefficients— household participated in SNAP in the past year	Percent in category in California	Percent in category in the U.S. excluding California
Household contains no adults age 18–64	comparison category	0.18 (0.0022)	0.22 (0.00085)
Household contains one adult age 18–64	0.11* (0.0094)	0.30 (0.0030)	0.37 (0.0011)
Household contains two adults age 18–64	0.077* (0.0100)	0.36 (0.0031)	0.32 (0.0011)
Household contains three or more adults age 18–64	0.099* (0.012)	0.16 (0.0024)	0.088 (0.00066)
Household contains no adults age 65 or older	comparison category	0.75 (0.0026)	0.72 (0.00093)
Household contains one adult age 65 or older	0.044* (0.0082)	0.20 (0.0024)	0.22 (0.00086)
Household contains two adults age 65 or older	0.10* (0.011)	0.053 (0.0013)	0.055 (0.00044)
Household contains three or more adults age 65 or older	0.034 (0.039)	0.00062 (0.00012)	0.00065 (0.000048)
English is spoken at home	-0.021 (0.0086)	0.50 (0.0032)	0.80 (0.00093)
Household contains all native-born citizens	comparison category	0.52 (0.0033)	0.83 (0.00095)
Household contains a combination of native-born citizens, naturalized citizens, and/or non-citizens	-0.052* (0.0085)	0.40 (0.0031)	0.13 (0.00078)
Household contains all non-citizens	-0.021 (0.011)	0.079 (0.0018)	0.038 (0.00047)
Household head is a native-born citizen	comparison category	0.56 (0.0032)	0.85 (0.00084)
Household head is a naturalized citizen	0.0066 (0.017)	0.18 (0.0024)	0.058 (0.00052)
Household head is a non-citizen	-0.079* (0.011)	0.26 (0.0029)	0.091 (0.00070)
Household's income is 0–50 percent of the FPL	comparison category	0.17 (0.024)	0.17 (0.00088)
Household's income is 51–100 percent of the FPL	0.020* (0.0075)	0.25 (0.0028)	0.25 (0.00099)
Household's income is 101-150 percent of the FPL	-0.12* (0.0068)	0.31 (0.0029)	0.29 (0.0010)
Household's income is 151–200 percent of the FPL	-0.18* (0.0099)	0.28 (0.0028)	0.28 (0.0010)
All adults age 18–64 in the household in the work force	comparison category	0.29 (0.0030)	0.33 (0.0011)
Some adults age 18–64 in the household in the work force	-0.083* (0.0052)	0.55 (0.032)	0.49 (0.0011)
No adult age 18–64 in the household in the work force	0.023* (0.0042)	0.17 (0.0024)	0.18 (0.00088)
Household had income from welfare in the past year	0.41* (0.012)	0.019 (0.00084)	0.023 (0.00033)
Household had income from SSI in the past year	0.24* (0.035)	0.073 (0.0016)	0.058 (0.00051)
Observations	333,818		
R-squared	0.25		

\* p<0.01

NOTES: "Low-income" defined to be households living under 200 percent of the federal poverty level. Model in column 1 includes 51 state dummies; standard errors clustered by state. All estimates use Census-supplied population weights. Standard errors in parentheses.

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