

**Supplemental Nutrition  
Assistance Program Caseload  
Trends and Changes in Measures  
of Unemployment, Labor  
Underutilization, and Program  
Policy from 2000 to 2008**

Final Report

October 18, 2010

James Mabli  
Carolina Ferrerosa



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Policy Research, Inc.

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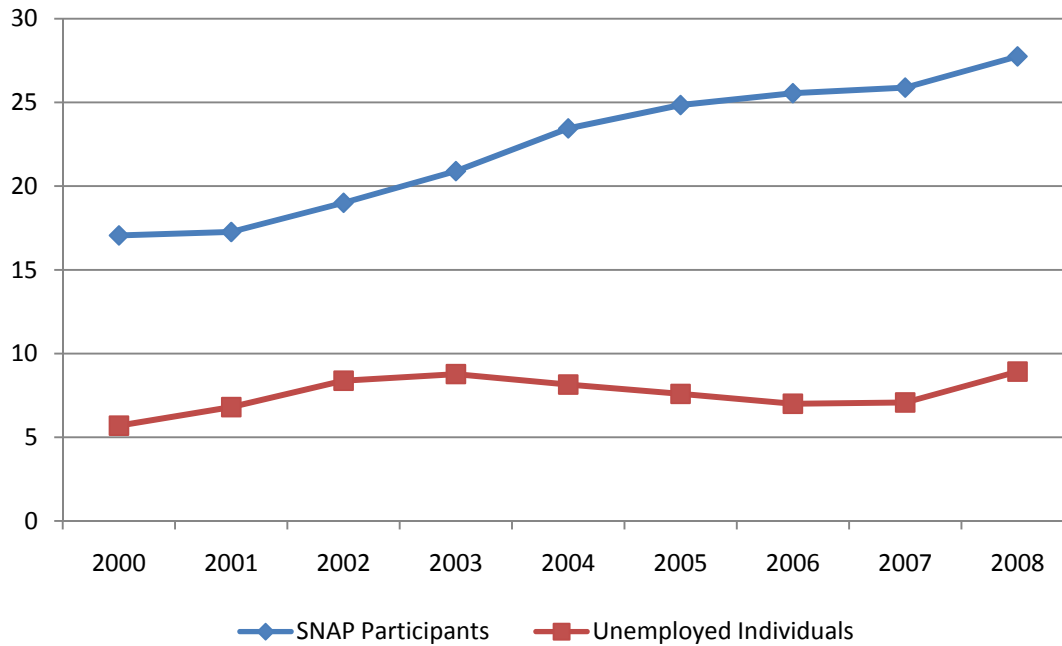
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## EXECUTIVE SUMMARY

The number of participants in the Supplemental Nutrition Assistance Program (SNAP) has increased dramatically over the last 10 years (see Figure 1). In an average month in 2008, 28 million people were participating, up from 17 million people in fiscal year 2000—a 63 percent increase. Since 2008, the number of participants has continued to climb to over 40 million people as of April 2010. This study examines the factors associated with the increase in SNAP participants from 2000 to 2008.

**Figure 1 SNAP Participants and Unemployed Individuals (in Millions): 2000 to 2008**



Source: SNAP QC data January 2000 through December 2008. Bureau of Labor Statistics.

Note: SNAP participant counts reduced to exclude individuals (1) receiving benefits in error or (2) receiving disaster assistance.

The increase in program caseloads over this period occurred concurrently with widespread changes in both the national economy and SNAP policies. For example, the number of unemployed individuals increased from 2000 to 2003, decreased from 2003 to 2006, and then increased again from 2006 through 2008. New SNAP policies were also implemented in many states. Legislative and regulatory changes in 2001 gave states flexibility with regards to the treatment of vehicle values in the SNAP asset test and the option to substantially expand categorical eligibility. Regulatory changes implemented in 2001 also gave states options to reduce the requirements for participants to report income and job changes through simplified and status reporting. In addition, the Farm Security and Rural Investment Act of 2002 made several policy changes that simplified the treatment of income; expanded simplified reporting to more households; allocated funds for improving access,

participation, and outreach; increased the asset limit when determining eligibility for households containing a disabled member; and restored eligibility to many legal immigrants.<sup>1</sup>

This study's three specific objectives are to:

- Examine the relationship between SNAP caseloads and the unemployment rate and selected policy factors from 2000 to 2008
- Characterize the relationship between SNAP caseloads and a set of five alternative measures of labor underutilization from 2000 to 2008, including those that measure discouraged and underemployed workers
- Determine how these relationships differ by characteristics of participant households including household composition and income

We conduct all analyses using a combination of (1) administrative data containing state-level counts of SNAP participants and indicators of SNAP policies and labor market regulations, and (2) Current Population Survey (CPS) data containing state-level estimates of labor market characteristics. All data is obtained at the fiscal year level.

### **Increases in the Unemployment Rate are Associated with Increases in SNAP Caseloads**

We find that a rise in the average state unemployment rate of one percentage point increases the number of SNAP participants as a fraction of the state population by 6.3 percent. For example, if 100,000 individuals participate in SNAP in a state with a population of one million individuals, then a 1-percentage-point increase in the state unemployment rate will increase the number of SNAP participants by 6,300 individuals. Similarly, a 1-percentage-point increase in the national unemployment rate increases the national participant count by 1.3 million participants. The estimate indicates that SNAP participation responds counter-cyclically to changes in the economy, as reflected by changes in the unemployment rate.

### **Offering Broad-Based Categorical Eligibility and Decreasing the Frequency of Recertification Periods are associated with Higher SNAP Caseloads**

Program policy also affects caseload trends. Broad-based categorical eligibility eliminates the asset test for most households, thus simplifying the application process and reducing potential eligibility determination errors. We find that states offering broad-based categorical eligibility have a 6.2 percent higher per capita participant count than states without this policy. Following the same example as above, if 100,000 individuals participate in SNAP in a state with a population of one million individuals, then the state has 6,200 more SNAP participants if it offers broad-based categorical eligibility compared to if it does not offer it. In addition, the frequency of participants' recertification periods is negatively related to SNAP caseloads per capita. We find that a 1-percentage-point increase in the percentage of participants with short recertification periods (1 to 3 months) decreases the number of participants per capita by 0.3 percent. If 100,000 individuals

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<sup>1</sup> Changes to SNAP were also made as of October 1, 2008 as part of the Food, Conservation, and Energy Act of 2008 (commonly referred to as the 2008 Farm Bill) and as of April 1, 2009 as part of the American Reinvestment and Recovery Act (ARRA). Policy changes from this legislation took place after the study period and thus are not considered in this report.

participate in SNAP in a state with a population of one million individuals, then a 1-percentage-point increase in the percentage of participants with short recertification periods (1 to 3 months) will decrease the number of SNAP participants by 300 participants.

### **Increases in Alternative Labor Underutilization Rates are Associated with Increases in SNAP Caseloads**

As a way to assess labor market conditions from several perspectives, the Bureau of Labor Statistics' (BLS) publishes six alternate measures of labor underutilization every month in its *Employment Summary* news release (Table 1). This set consists of the unemployment rate (U-3), two measures that are more restrictive than the unemployment rate (U-1 and U-2), and three measures that are less restrictive than the unemployment rate (U-4, U-5, and U-6). Together with the unemployment rate, the set of six measures of labor underutilization include:

**Table 1 Alternative Measures of Labor Underutilization**

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U-1	The subset of the unemployed who were jobless for at least 15 weeks.
U-2	That portion of the unemployed who lost their last job (including those who completed temporary jobs); does not include those who left their last job voluntarily or who were new entrants or reentrants to the labor force.
U-3	The official rate of unemployment defined as the number of unemployed workers relative to the number of labor force participants (equal to the number of unemployed and employed workers).
U-4	Similar to the unemployment rate, but counts discouraged workers as unemployed. Discouraged workers are individuals who want a job but have given up the search for work because they believe no jobs are available for them. They are formally classified as labor force nonparticipants by the BLS because, while they have searched for a job in the last 12 months, they have not actively searched for a job in the last 4 weeks. U-4 is equal to the sum of the number of unemployed and discouraged workers relative to the sum of the number of labor force participants and discouraged workers.
U-5	Similar to U-4 in that it accounts for discouraged workers, but it also adds marginally attached workers other than discouraged workers. Marginally attached workers are those who want a job and are available to work now, have looked for a job in the past 12 months, but have not looked for a job in the past 4 weeks for a wide range of reasons that extend beyond discouragement over job prospects.
U-6	Includes the unemployed, discouraged workers, other marginally attached workers, and persons who are actually employed but who work fewer hours than they would like (sometimes referred to as the underemployed).

---

Relative to the unemployment rate (U-3), U-1 and U-2 are more restrictive measures of economic strength because they exclude a portion of the unemployed population, and hence make up the lowest rates of labor underutilization. Similarly, U-4, U-5, and U-6 are broader measures of economic strength because they include individuals outside of the unemployed population and hence make up the highest rates of labor underutilization.

For each measure of labor underutilization, a 1-percentage-point increase is associated with an increase in the SNAP caseload. Furthermore, comparing the results across the six specifications shows that the magnitudes of the associations between SNAP caseloads and the measures of labor underutilization decrease as the measure becomes more broadly defined. For example, an increase in the labor underutilization rate that includes only the long-term unemployed (U-1) has a larger effect than an increase in the standard unemployment rate, which, in turn, has a larger effect than an

increase in the labor underutilization rate that includes discouraged workers (U-4) and other workers marginally attached to the labor force (U-5). The ordering of the estimates according to their magnitudes may reflect the greater level of need among the group of longer-term unemployed (measured by U-1).

### **The Relationships between SNAP Caseloads and Both Labor Underutilization and Policy Factors Differ by Household Composition and Income**

Economic and policy measures affect SNAP caseloads differentially according to the type of household in which participants live and the gross income of participants' households.

- The unemployment rate has a larger effect on SNAP caseloads for participants in multiple-adult households with children, participants in households with an elderly member living with adults or children, and participants in adult-only households, relative to participants in other types of households. It also has a larger effect on SNAP caseloads for participants in the poorest households relative to participants in households with greater income.
- States that offer broad-based categorical eligibility have higher SNAP caseloads per capita than states without this policy for participants in single-adult with children and households with an elderly member living with adults or children. This is also true for participants in households with gross income greater than 100 percent of the federal poverty level.
- Program outreach expenditures increase the number of per capita SNAP participants among elderly-only households and among adult-only households. States' outreach efforts also increase the number of per capita SNAP participants among participants living in the poorest households.

### **The Change in Caseloads from 2000 to 2008 Can Be Attributed to Changes in Both Economic and Policy Factors**

We find that changes from 2000 to 2008 in economic factors, including the unemployment rate, labor force participation rate, minimum wage, and characteristics of the low-wage labor market, explain 55 percent of the increase in SNAP caseloads over this period. Changes in policy factors, including broad-based categorical eligibility, program outreach expenditures, and the length of recertification periods, explain 20 percent of the increase in SNAP caseloads.

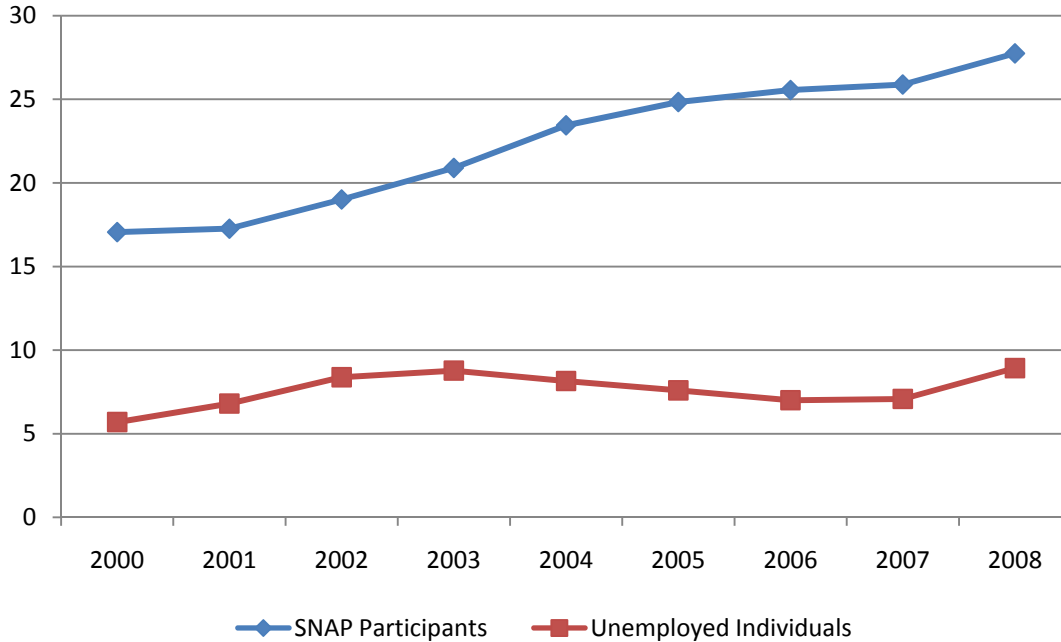
There are also differences by household composition in the attribution of SNAP caseload trends to economic and policy factors. The economy accounts for the greatest proportion of the increase in caseloads for participants in multiple-adult households with children and in households with an elderly member living with adults or children. Changes in SNAP policy account for the greatest proportion of the increase in caseloads for participants in single-adult households with children and in children-only households.

Finally, we find differences by household income in the attribution of SNAP caseload trends to economic and policy factors. The economy accounts for a larger contribution to the increase in caseloads for the participants in households with income below the federal poverty level, while program policy accounts for a smaller contribution (relative to households with higher income).

## I. INTRODUCTION

The number of participants in the Supplemental Nutrition Assistance Program (SNAP) has increased dramatically over the last 10 years (see Figure I.1). In an average month in 2008, 28 million people were participating, up from 17 million in fiscal year 2000—a 63 percent increase. Since 2008, the number of participants has continued to climb to over 40 million people as of April 2010. This study examines the factors associated with the increase in SNAP participants from 2000 to 2008.<sup>2</sup>

**Figure I.1 SNAP Participants and Unemployed Individuals (in Millions): 2000 to 2008**



Source: SNAP QC data Fiscal Year 2000 to 2008. Bureau of Labor Statistics.

Note: SNAP participant counts are reduced to exclude individuals who (1) were receiving benefits in error or (2) were receiving disaster assistance.

The increase in program caseloads over this period occurred concurrently with widespread changes in both the national economy and SNAP policies. For example, the number of unemployed individuals increased from 2000 to 2003, decreased from 2003 to 2006, and increased from 2006 through 2008. In addition, the typical hourly pay of low-wage workers rose by less than 5 cents, in real terms, from 2000 to 2008. Because food prices generally rose faster than the prices of all goods and services over this period, the purchasing power of low-wage workers for food spending is likely to have decreased.

New program policies were also implemented in all states. The 2001 Agriculture Appropriations Act gave states some flexibility to align the treatment of vehicle values in the asset test with the treatment under state Temporary Assistance to Needy Families (TANF) programs. Regulatory changes implemented in 2001 gave states options such as the expansion of categorical eligibility and both simplified and status reporting; the latter two reduced the requirements for participants to

<sup>2</sup> Data from 2008 were the most recently data available during this study.

report income and job changes. In addition, the Farm Security and Rural Investment Act of 2002 made several policy changes that simplified the treatment of income; expanded simplified reporting to more households; allocated funds for improving access, participation, and outreach; increased the asset limit when determining eligibility for households containing a disabled member; and restored eligibility to many legal immigrants.<sup>3</sup>

While related studies examining the contribution of economic and policy changes to movements in SNAP caseloads in the 1990s and early 2000s found that changes in a set of state-level economic measures, including the unemployment rate, explain anywhere from 11 to 80 percent of the change in SNAP caseloads (Klerman and Danielson 2009; Kornfeld 2002), changes in economic factors may not have been as strong a predictor of SNAP caseload trends in the mid-2000s. A study focusing on the most recent period of caseload changes from 2000 to 2006 found that the unemployment rate remained a strong predictor of caseload changes, but its ability to explain the percentage change in SNAP caseloads was small relative to prior studies (Mabli et al. 2009). This may reflect the period on which this analysis focused. Although SNAP participation and the economy have moved together over the past few decades, with the number of SNAP participants increasing during times of high unemployment and decreasing during low unemployment (often with a lag of about two years), the number of participants continued to increase amid a falling national unemployment rate from 2003 to 2006. Mabli et al. (2009) showed that changes in economic factors between 2003 and 2006 should have led to a decrease in SNAP caseloads, but the increase in the number of SNAP participants from 2000 to 2003 continued over this period.

Changes in program policies in the early 2000s expanded program access and outreach, eased application and reporting requirements, relaxed vehicle policies in the asset test when determining eligibility, and restored eligibility to many legal immigrants. These changes may have trumped the effects of the economic factors, but Mabli et al. (2009) estimate that these changes explain only 11 percent of the increase in SNAP caseloads from 2003 to 2006.<sup>4</sup> It is possible that the (estimated) increase in SNAP caseloads during a time of falling unemployment was due to the use of the unemployment rate as the primary economic correlate of SNAP caseloads. The degree to which the unemployment rate sufficiently characterizes the labor market environment of SNAP nonparticipants deciding whether to participate in the program and SNAP participants deciding how long to remain in it has been largely ignored in prior studies examining SNAP caseload trends. The unemployment rate measures the ratio of (1) the unemployed (defined as people who are without work, are available for work, and have actively searched for work in the past four weeks) and (2) the total number of labor force participants (defined as the sum of the unemployed and employed). However, because more than 79 percent of SNAP participants were out of the labor force in 2008 (Wolkwitz and Trippe 2009), an alternate indicator that accounts for people who are marginally attached to the labor force but technically considered labor force nonparticipants may provide a more comprehensive picture of the strength of the economy for SNAP's target population.

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<sup>3</sup> Changes to SNAP were also made as of October 1, 2008 as part of the Food, Conservation, and Energy Act of 2008 (commonly referred to as the 2008 Farm Bill) and as of April 1, 2009 as part of the American Reinvestment and Recovery Act (ARRA). Policy changes from this legislation took place after the study period and thus are not considered in this report.

<sup>4</sup> This does not include the restoration of eligibility to many legal immigrants which was not examined in Mabli et al. (2009).



As a way to assess labor market conditions from several perspectives, the Bureau of Labor Statistics (BLS) publishes six alternative measures of labor underutilization every month in its *Employment Summary* news release (Cohany 2008). This set consists of the unemployment rate, two measures that are more restrictive than the unemployment rate, and three measures that are less restrictive and incorporate people not captured in the official measure. One of the less-restrictive measures includes *discouraged workers*, defined as people who are without work and are available for work, but who have not actively searched for work in the past four weeks because they believe no jobs are available for them.

The central objective of this study is to examine the relationship between SNAP caseloads and the economy from 2000 to 2008. Three specific goals are to:

- Examine the relationship between SNAP caseloads and the unemployment rate and selected policy factors from 2000 to 2008
- Characterize the relationship between SNAP caseloads and a set of five alternative measures of labor underutilization from 2000 to 2008, including those that measure discouraged and underemployed workers
- Determine how these relationships differ by characteristics of participant households including household composition and income

Although the focus is on economic measures, all analyses account for changes in a small set of program policies that prior studies have consistently shown to be correlated with SNAP caseloads. Using a combination of state administrative data and Current Population Survey (CPS) data, we examine factors affecting participation in SNAP from 2000 to 2008, expanding upon the existing research by extending the period of research two years through 2008. Policymakers will be able to use the results of this research to guide the development of effective strategies for increasing program participation, as well as to better understand how changes in the economy contribute to caseload changes.

In the rest of this chapter, we discuss prior, related research and the data used to examine the caseload trends. The subsequent chapters each discuss the findings from the research objectives described above.

## A. Related Research

The rapid declines in SNAP caseloads in the mid to late 1990s and the surge in caseloads from 2000 onward have precipitated a voluminous set of studies examining the determinants of changes in SNAP caseloads. Each study estimates the relationship between a measure of SNAP caseloads and measures of policy changes and economic trends. The bulk of the literature uses state-level aggregate counts of participation, though several studies have also used individual-level data from national surveys.

### 1. Analyses of Aggregate Caseload Trends

Several studies examined the determinants of SNAP caseload trends in the early 1990s. Using participant data from the SNAP Quality Control data, McConnell (1991) analyzed the increase from 1989 to 1990 and found that an increase in unemployment and other factors related to the economy were the major reasons for an increase in the caseload in some states, although other states were

more affected by changes in other program policies. Medicaid, for example, had just introduced several changes that increased eligibility and participation and encouraged its participants to receive SNAP benefits. In addition, the Homeless Assistance Act included changes to SNAP that encouraged more homeless people to participate. Immigration reform also led to an increase in the number of legal immigrants, and many were eligible for SNAP. Kuhn et al. (1997) investigated the influence of macroeconomic conditions on poverty and SNAP participation from 1972 to 1995 and found that changes in the inflation and unemployment rates were important determinants of the SNAP participation rate. They attributed the result to the decline in the real value of Aid to Families with Dependent Children (AFDC) benefits during the 1980s and the decline in real wages that increased SNAP eligibility. Finally, Kabbani and Wilde (2003) estimated the impact of the increase in short recertification periods on the rising participation levels in the 1990s and found that a 10-percentage-point increase in the frequency of short recertification periods lowered the number of SNAP participants as a fraction of the state population by 2.7 percent.

Several studies focused on the decrease in participants in the late 1990s. During this time, while the economy was expanding, welfare reform introduced major changes to SNAP as well as to other programs, such as AFDC (which later became TANF). Changes were also made to the Supplemental Security Income (SSI) program, whose recipients are often automatically eligible for SNAP. The U.S. Department of Agriculture (USDA) (2001), using an eligibility model based on CPS data, attributed 44 percent of the decrease in the number of participants from 1994 to 1999 to a decrease in the number of eligible people, and 56 percent to a decrease in the proportion of eligible people who chose to participate in SNAP. Figlio et al. (2000) and Ziliak et al. (2003) estimated how the Electronic Benefits Transfer (EBT) program and waivers from the work requirement for able-bodied adults without dependents affected SNAP caseloads after controlling for macroeconomic trends.<sup>5</sup> The estimates from their models indicated that about 35 percent of SNAP caseload reduction from 1994 to 1998 was due to state differences in rates of unemployment and employment growth. The amount of the reduction attributed to state-to-state differences in welfare reform was minimal. Wallace and Blank (1999) analyzed the declines in both AFDC and SNAP caseloads in the early to mid 1990s, with a particular focus on the role played by the economy. They found that 8 to 19 percent of the AFDC caseload decline and 28 to 44 percent of SNAP caseload decline from 1994 to 1998 could be explained by unemployment rates, whereas welfare reform explained 8 and 6 percent of the declines, respectively. Finally, Gleason et al. (2001) assessed the effects of specific welfare reform policies, as well as economic factors, on the observed changes in SNAP caseloads between 1994 and 1999. They found that the economic expansion during this period explained close to half of the decline in SNAP caseloads and that policies associated with welfare reform explained close to 27 percent.

Perhaps closest in spirit to the current study, Kornfeld (2002) examined the effects of economic and policy changes on SNAP caseload trends for different household subgroups from 1987 to 1999, with a focus on explaining the sharp decline from 1994 to 1999. Kornfeld found that the economy had an especially strong effect on participants in multiple-adult households with children and in adult-only households. Overall, the economy explained at least 20 percent of the SNAP caseload decline from 1994 to 1999, and changes in TANF policy explained 21 percent.

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<sup>5</sup> Able-bodied adults without dependents (ABAWDS) are nondisabled nonelderly adults living in households without children, many of which are subject to work registration requirements and time limits on benefit receipt.

Extending the research into the early 2000s, Klerman and Danielson (2009) estimated dynamic models of changes in the SNAP caseload by partitioning the group of SNAP participants into those who receive both SNAP and AFDC/TANF benefits and those who receive only SNAP benefits. While controlling for general economic conditions and trends, they examined how SNAP policies such as sanctions for over- and underpayments, benefit receipt using the EBT system, simplified reporting, and transitional benefits affect caseloads. They found that although the economy was more important than TANF implementation in explaining the caseload decline in the 1990s, SNAP policy changes that increased program access were more important than the economy in explaining the rise in the early 2000s.

Mabli et al. (2009) provide the most recent assessment of SNAP caseload change. In addition, their study included a set of policy variables that previously had not been used to examine aggregate SNAP caseload trends.<sup>6</sup> The study also examined how both the SNAP participation rate and number of people eligible for the program were associated with a set of economic and policy factors and then backed out the net implied effect of these factors on the number of SNAP participants. Unlike related analyses that examined only changes in the participant count, this approach enabled the authors to explore the channel through which changes in economic and policy factors affect the number of participants. Finally, the study supplemented the quantitative analysis using the results of interviews with both SNAP administrators and staff from community organizations in 11 states who described their experiences with changing SNAP caseloads, local economic conditions, and state policy during the analysis period.

## 2. Analyses of Individual- and Household-Level Participation

Rather than use aggregated state-level counts, several studies have used individual-level data to examine the association between program policies and caseload changes. Ratcliffe et al. (2008) examined changes in SNAP participation using a rich data set consisting of a combination of the 1996 and 2001 Survey of Income and Program Participation (SIPP) panels and state-level information on SNAP, welfare, minimum wage, and earned income tax credit policies. They found that several state-specific policies increased the likelihood of receiving SNAP benefits, including more lenient vehicle exemption policies and expanded categorical eligibility.

Currie and Grogger (2001) used the March CPS from 1980 to 1998 to examine the relationship between SNAP caseloads and economic factors, welfare reform factors, and SNAP policies. They found that 20 percent of the decline from 1993 to 1998 can be attributed to lower unemployment and 30 percent to the implementation of TANF. They also found that SNAP policies such as the adoption of EBT systems and longer recertification periods differentially affected household subgroups, such as married couples without children (for EBT) and single-parent households (for recertification periods).

Jacobson et al. (2000) used the SIPP to estimate how policy changes affected, among other outcomes, the receipt of SNAP in the early 1990s. Using these results, they compared the model predictions for the late 1990s with actual data and concluded that economic trends could predict about 34 percent of the SNAP caseload decline during this period and changes in welfare and child care policies could explain 16 percent.

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<sup>6</sup> Ratcliffe et al. (2008) include a similar set of policy variables, but do not seek to determine the variables' associations with state caseloads. Instead, they examine the association of policies with the likelihood of participating in SNAP using individual-level data.

## B. Data

We estimated all analyses using a combination of administrative data containing state-level counts of SNAP participants and indicators of SNAP policies and labor market regulations, as well as CPS data containing state-level estimates of labor market characteristics. All data are obtained at the fiscal year level.

We determine the number of participants from SNAP Quality Control Data (SNAP QC), available from the Food and Nutrition Service (FNS). The SNAP QC database is an edited version of the raw data file generated by the SNAP Quality Control System and contains demographic, economic, and SNAP eligibility information for a nationally representative sample of approximately 50,000 SNAP households. The main purpose of the QC review is to assess the accuracy of eligibility determinations and benefit calculations and to determine each state's payment error rate. These data also serve as an important source of detailed demographic and financial information on a large sample of active SNAP participants. The SNAP QC data includes adjustments to the number of participants to remove those who receive benefits for disaster assistance to avoid erroneously attributing a caseload change that is driven by natural disasters to a policy or economic change. The file also includes adjustments to remove those who were ineligible to receive benefits. The demographic characteristic data on the file are used to identify the household composition and income of program participants, providing counts of participants not only at the state level but also by household type and income category within each state. We use state population estimates from the Census Bureau to produce per capita caseloads for each state and fiscal year.<sup>7</sup>

We construct policy variables from a variety of data sources. In addition to obtaining participant counts, we use the SNAP QC data to produce a variable measuring the length of participants' certification periods. We define the broad-based categorical eligibility measure from a database constructed by Mathematica for FNS (Trippe and Gillooly 2010) that is based on survey data collected from states by FNS and several reports by the General Accounting Office and the Center on Budget and Policy Priorities. The database contains the effective date of implementation of the policy for each state and the District of Columbia and we use this information to construct a fiscal-year-level variable indicating that the state offers this policy. Another policy examined, program outreach spending, is drawn from both FNS administrative cost data and from historical records of FNS outreach grant award amounts listed on the FNS website.<sup>8</sup> The final policy variable, the population share of noncitizens in each state, is obtained using the basic monthly files from the Current Population Survey. The number of noncitizens is computed as the mean monthly number of noncitizens across the months of each fiscal year. This procedure is repeated to obtain the number of citizens and the population share is computed as the ratio of noncitizens to both noncitizens and citizens.

We measure the strength of state labor markets using unemployment rates, labor force participation rates, alternative measures of labor underutilization, and various characteristics of state wage distributions. We obtained labor force participation rates (based on unemployment and employment totals) from the Bureau of Labor Statistics.<sup>9</sup> The six alternative measures of labor underutilization (all non-seasonally-adjusted), including the unemployment rate, and the 20th

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<sup>7</sup> See [<http://www.census.gov/popest/states/states.html>].

<sup>8</sup> See [<https://www.fns.usda.gov/snap/outreach/grants.htm>].

<sup>9</sup> See [<http://www.bls.gov/lau/lausad.htm>].

percentiles of wage distributions are estimated using CPS data from the basic monthly file and are averaged over the 12 months within each fiscal year. For other characteristics, such as state minimum wage levels, we used data from the table of historical state minimum wages prepared by the U.S. Department of Labor, Employment Standards Administration, Wage and Hours Division.<sup>10</sup> Minimum wages for each fiscal year were assigned as of October of that fiscal year. For example, the minimum wage in fiscal year 2006 was set equal to the minimum wage as of October 2005.

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<sup>10</sup> See [<http://www.dol.gov/esa/whd/state/stateMinWageHis.htm>].

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## II. A DESCRIPTIVE EXAMINATION OF CASELOAD TRENDS, ECONOMIC MEASURES, AND PROGRAM POLICIES

The period from 2000 to 2008 witnessed extraordinary national changes in SNAP caseloads, the labor market environment, and SNAP policies. Although this was also true for the average state, there was considerable variation in experiences across states. We describe these national- and state-level changes in this chapter.

### A. Caseload Trends

Between 2000 and 2008, the national average monthly number of SNAP participants increased by 62.7 percent, from 17.1 million to 27.8 million (Figure I.1). At the state level, the average caseload also increased by 62.7 percent (Figure II.1).<sup>11</sup> All but two states had positive changes over this period (Hawaii and Wyoming experienced decreases). The caseload increases exceeded 113 percent in the five states with the largest increases and fell below 18 percent in the five states with the smallest increases (the latter set includes the two states with decreases).

Nationally, the number of participants increased steadily from 2000 to 2008. Although most state caseloads increased over this period, 21 states (including the District of Columbia) experienced increases across every interim year.

Figure II.2 shows the average state caseload trend and a selected set of states that experienced different trends. The average state caseload increased each year from 2000 to 2008, as did the caseloads in Alabama and Iowa. The number of participants in New Jersey decreased initially from 2000 to 2001, then increased steadily to 2008. Oklahoma had a somewhat different trend, increasing from 2000 to 2006 and then decreasing to 2008. Finally, the District of Columbia experienced a decrease from 2000 to 2001 and then an increase until 2004, after which there was a minimal amount of change in the size of the caseload.

### B. Population Changes and Caseload Trends

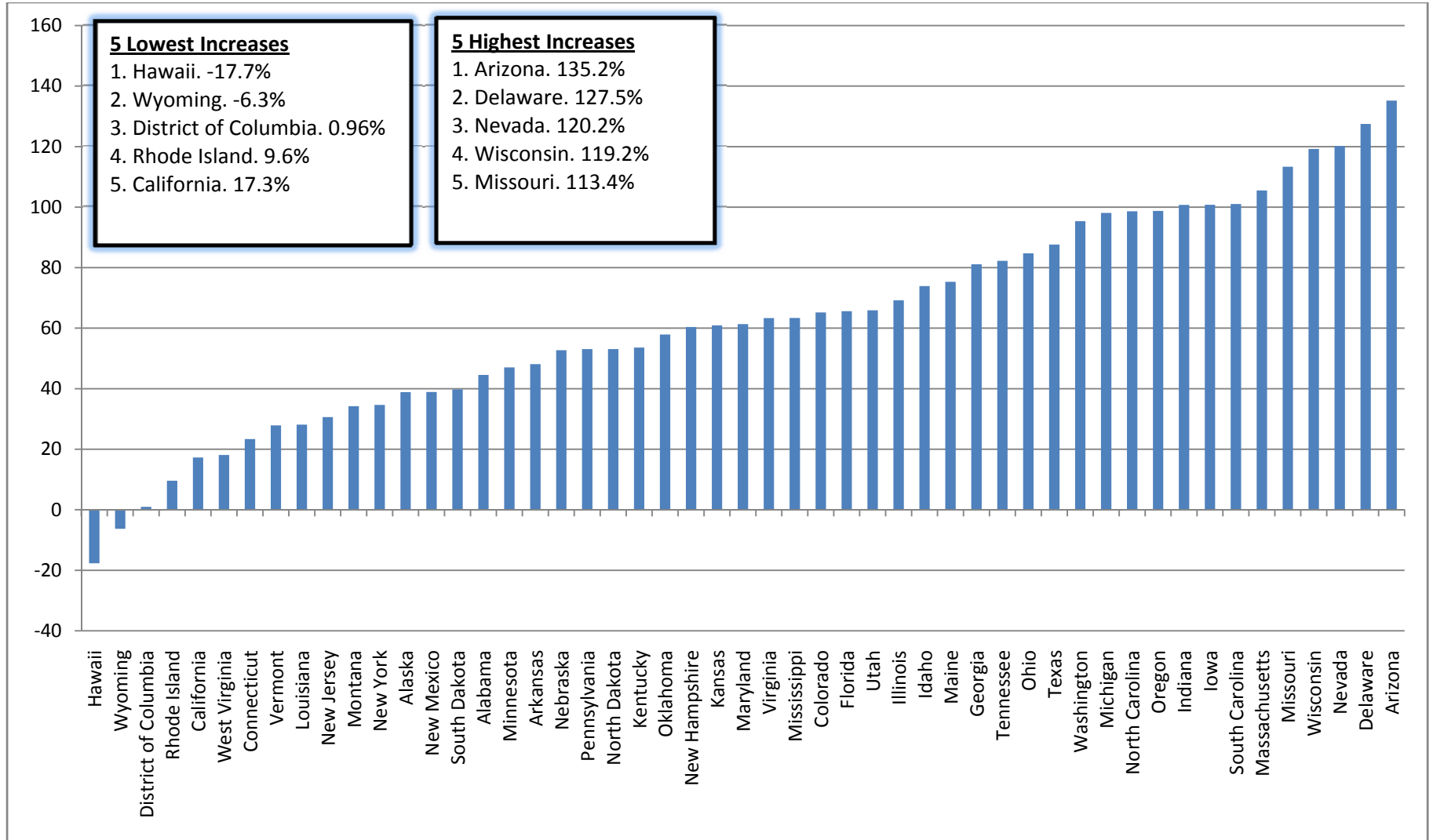
It is important to consider population changes when examining caseload trends because a state may experience a sharp rise in caseloads simply because of rapid growth in the state population. From 2000 to 2008, the national population increased by 7.9 percent, from 282 million to 304 million. The average state population also increased by 7.9 percent, from 5.5 million to 6.0 million. The five states with the smallest increases (all less than 1 percent) were Louisiana, North Dakota, Rhode Island, West Virginia, and Michigan (Figure II.3). The five states with the largest increases (all greater than 17 percent) were Idaho, Georgia, Utah, Arizona, and Nevada.

Figure II.4 accounts for changes in population when examining caseload trends by presenting percentage changes in states' per capita participant counts, equal to the ratio of the number of participants to the number of people in the state. The figure looks largely the same as Figure II.2, which presented changes in caseloads, except that the magnitudes of the changes have lessened and the ordering of the states has changed. All but three states had positive changes over this period (Hawaii, Wyoming, and the District of Columbia experienced decreases). The caseload increases exceeded 97 percent in the five states with the largest increases and was less than 10 percent in the five with the smallest increases (the latter set includes states with decreases).

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<sup>11</sup> This is a simple average across 50 states and the District of Columbia. Weighted averages based on state population are not used.

Figure II.1 Percentage Change in the Number of SNAP Participants, Fiscal Year 2000 to 2008

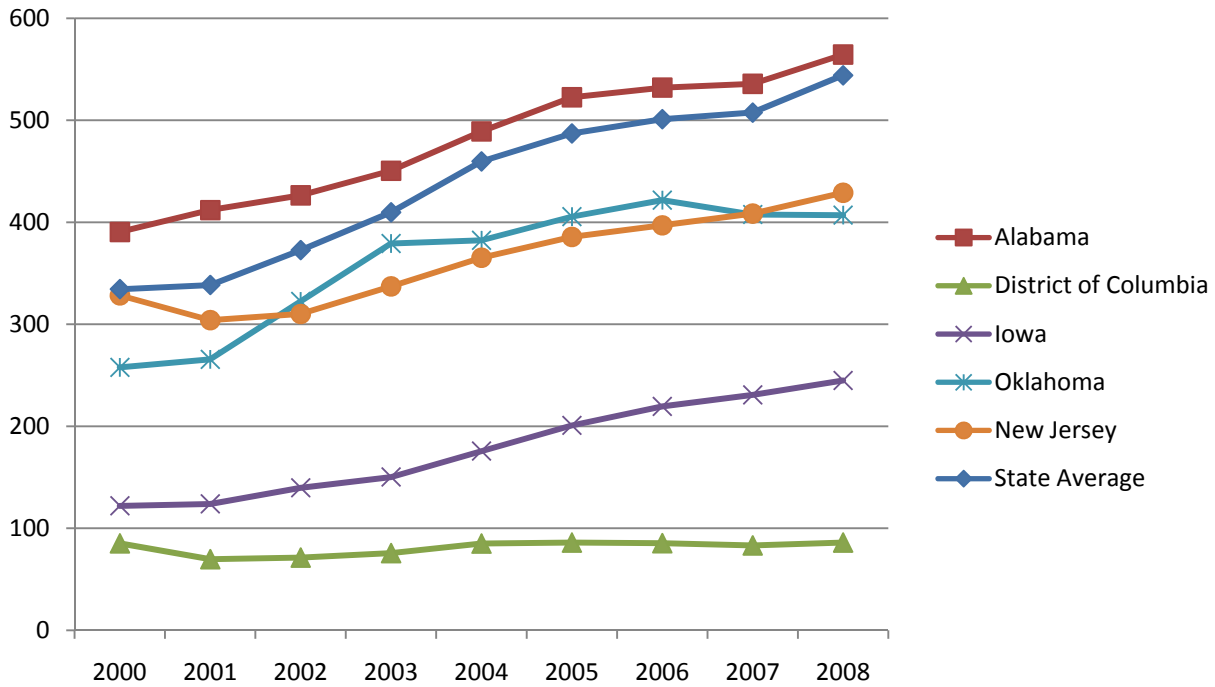


Source: SNAP QC data January 2000 through December 2008.

Note: Fiscal year estimates are monthly averages.



Figure II.2 Number of SNAP Participants (in Thousands) in Selected States by Fiscal Year



Source: SNAP QC data, 2000 to 2008.

Note: Fiscal year estimates are monthly averages.

Comparing Figures II.2 and II.4 shows that several states that experienced stronger caseload growth relative to other states experienced weaker growth in per capita caseloads. For example, Nevada ranked 3rd in caseload growth but 14th in per capita caseload growth, and Utah ranked 21st in caseload growth but 36th in per capita caseload growth. This is due to the extraordinary population growth rates in these states (Nevada’s population experienced the largest growth among all states, while Utah experienced the third largest). Similarly, several states that experienced weaker caseload growth relative to other states experienced stronger growth in per capita caseloads. For example, Michigan ranked 12th in caseload growth but 5th in per capita caseload growth, and Kansas ranked 27th in caseload growth but 20th in per capita caseload growth.

There are two main conclusions to draw from the analysis of population changes in relation to caseload trends. First, the magnitudes of the increases in state caseloads are reduced, but only slightly, when scaled by the state population. This has important implications for the analysis in this study because we examine per capita caseloads rather than caseloads. While focusing on a per capita measure accords with related research on SNAP trends, the results of this study should be interpreted with this normalization in mind. Second, and potentially more important for examining SNAP trends, is that the sizable increases in SNAP caseloads from 2000 to 2008 in nearly all the states was *not* due to population growth. Even after adjusting for changes in states’ populations, all but three states experienced positive increases and the size of the increase for most states was substantial. Indeed, over 62 percent of states experienced increases in per capita caseloads of over 40 percent (Figure II.1).

## C. Economic Measures

In this section we review changes in economic measures over the study period. We do not perform a formal descriptive analysis of how changes in SNAP caseloads are associated with each of these measures. Rather, the purpose is to present background information of how different measures of the economy changed over the study period in order to help interpret our findings from the multivariate analysis.

### 1. Unemployment Rate

The 2000-to-2008 period also saw historic changes in the economy. The most commonly used index of the strength of the economy—the unemployment rate—increased nationally from 4.0 percent in 2000 to 6.0 percent in 2003, decreased to 4.7 percent in 2006, and increased to 5.3 percent in 2008.<sup>12</sup>

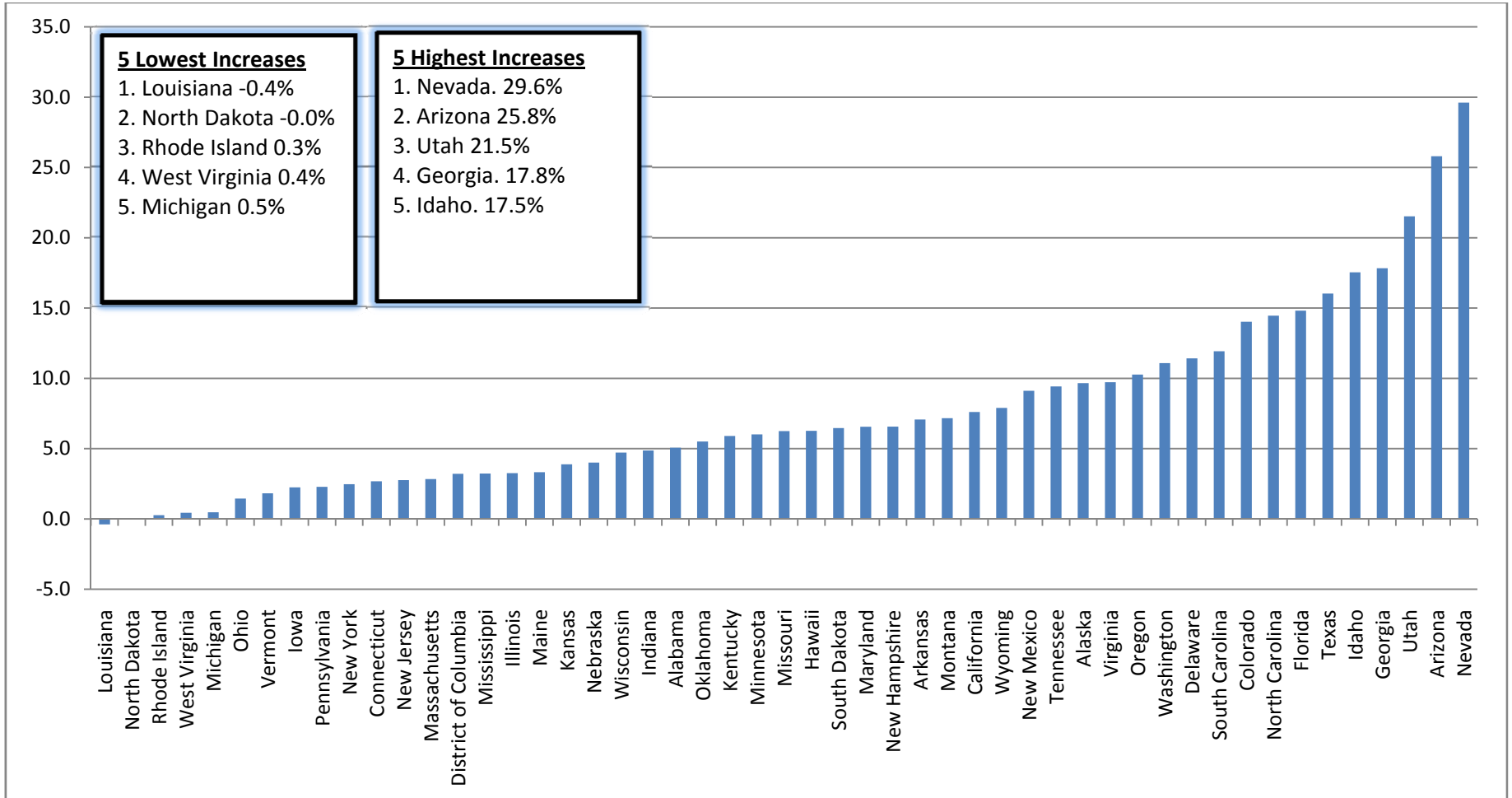
At the state level, the unemployment rate increased on average from 4.0 percent in 2000 to 4.9 percent in 2008 (Figure II.5).<sup>13</sup> Focusing on the most recent recessionary period, between 2007 and 2008, the average state unemployment rate increased from 4.3 percent to 4.9 percent. Examining the variation in unemployment rates in each fiscal year shows that states with lower unemployment rates in 2000 increased more or less in tandem with the states with average unemployment rates (the 25th-percentile unemployment rate was 3.1 percent in 2000 and 4.2 percent in 2008—a 1.1-percentage-point change). The same was true for states with higher unemployment rates in 2000. For those states, the unemployment rate increased by about 1 percentage point (the 75th percentile unemployment rate was 4.6 percent in 2000 and 5.6 percent in 2008).

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<sup>12</sup> Because the alternative measures of labor underutilization, including the unemployment rate, are available at the state level only without adjusting for seasonality, for comparability the national unemployment rates presented here are also non-seasonally-adjusted.

<sup>13</sup> Simple averages are used, rather than weighted averages. Constructing weighted averages based on states' populations is not necessary to account for the size of the state because the unemployment rate normalizes the number of unemployed individuals by the number of labor force participants (equal to the sum of the number of unemployed and employed individuals).

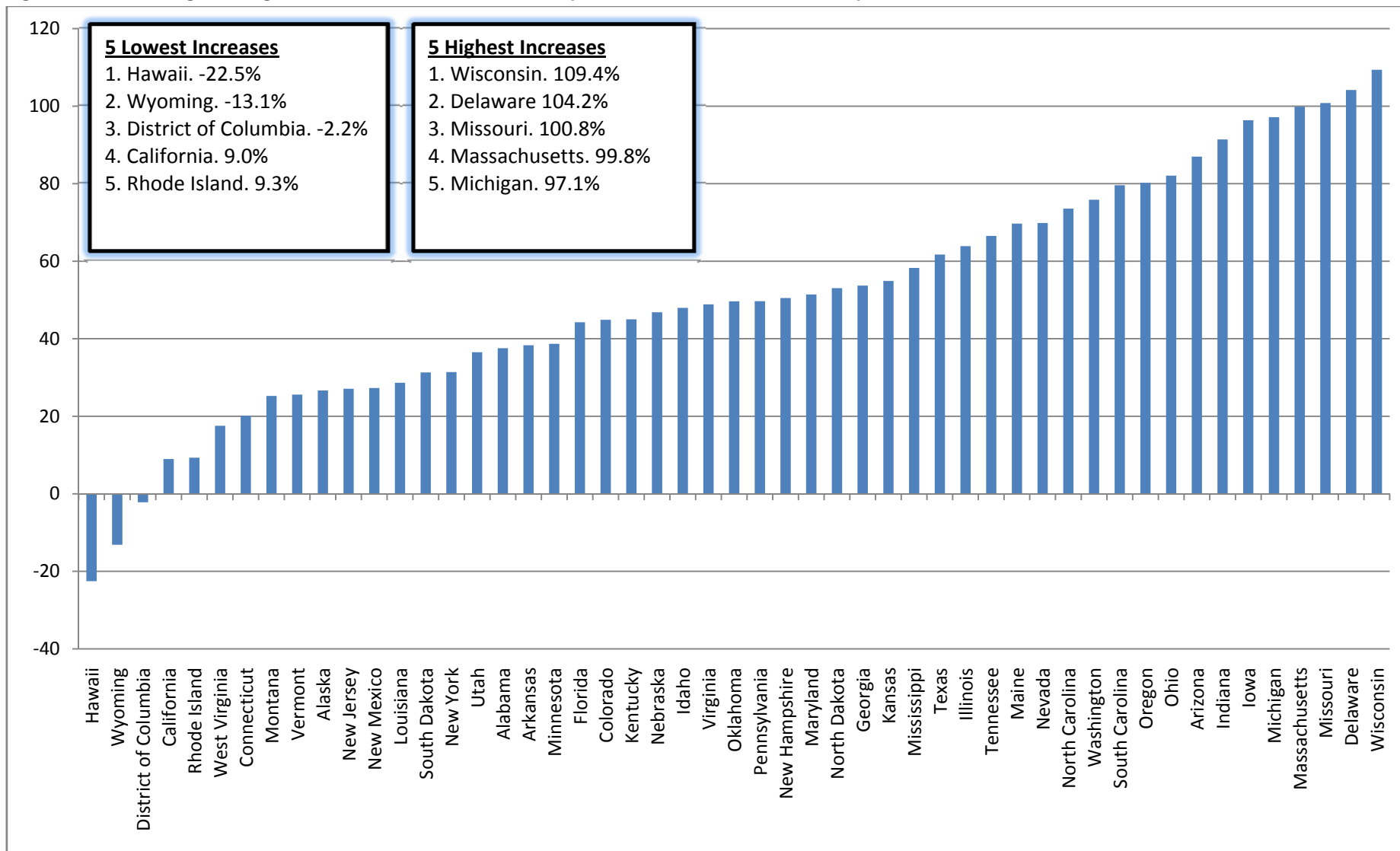
Figure II.3 Percentage Change in State Population, Fiscal Years 2000 to 2008



Source: CPS Basic Monthly Files January Fiscal Year 2000 to 2008.

Note: Fiscal year estimates are monthly averages.

Figure II.4 Percentage Change in the Number of SNAP Participants as a Fraction of State Population, Fiscal Years 2000 to 2008

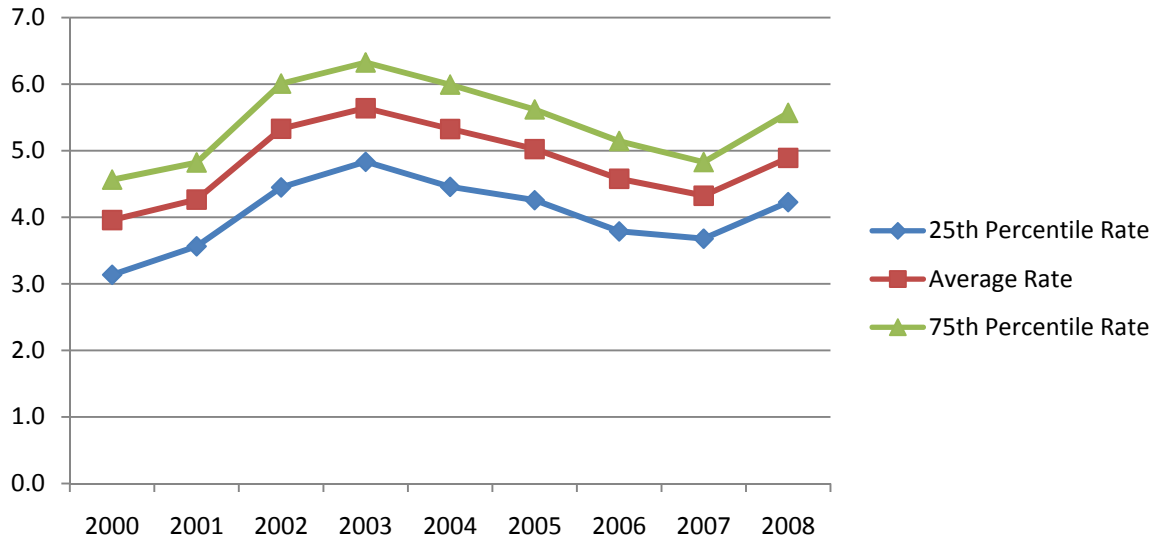


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Source: CPS Basic Monthly Files Fiscal Year 2000 to 2008.

Note: Fiscal year estimates are monthly averages.

Figure II.5 Characteristics of State Unemployment Rate Distributions, by Fiscal Year



Source: CPS Basic Month File, Fiscal Year 2000 to 2008.

Note: Fiscal year estimates are monthly averages

## 2. Alternative Measures of Labor Underutilization

The unemployment rate measures the percentage of unemployed labor force participants. That is, the ratio of the number of unemployed workers to the number of unemployed and employed workers. However, the BLS publishes six alternative measures of labor underutilization that attempt to provide different characterizations of the economy. These are described in Table II.1.

Table II.1 Alternative Measures of Labor Underutilization

U-1	
Definition	The subset of the unemployed who were jobless for at least 15 weeks.
Construction	$(\text{Number of unemployed that have been unemployed for at least 15 weeks}) / (\text{Number of unemployed} + \text{Number of employed}) * 100$
U-2	
Definition	That portion of the unemployed who lost their last job (including those who completed temporary jobs); does not include those who left their last job voluntarily or who were new entrants or reentrants to the labor force.
Construction	$(\text{Number of unemployed that respond that they lost their job, are on layoff, or had a temporary job end}) / (\text{Number of unemployed} + \text{Number of employed}) * 100$
U-3	
Definition	The official rate of unemployment defined as the number of unemployed workers relative to the number of labor force participants.
Construction	$(\text{Number of unemployed}) / (\text{Number of unemployed} + \text{Number of employed}) * 100$

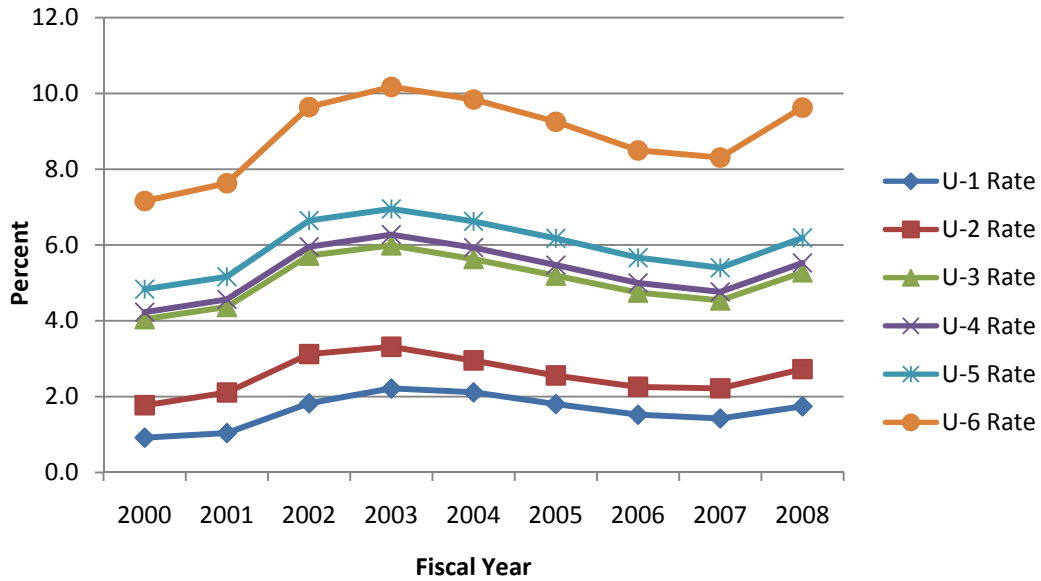
Table II.1 (continued)

<b>U-4</b>	
Definition	Similar to the unemployment rate, but counts discouraged workers as unemployed. Discouraged workers are individuals who want a job but have given up the search for work because they believe no jobs are available for them. They are formally classified as labor force nonparticipants by the BLS because, while they have searched for a job in the last 12 months, they have not actively searched for a job in the last 4 weeks. U-4 is equal to the sum of the number of unemployed and discouraged workers relative to the sum of the number of labor force participants and discouraged workers.
Construction	$(\text{Number of unemployed} + \text{Number of labor force nonparticipants that are discouraged workers}) / (\text{number of unemployed} + \text{Number of employed} + \text{Number of labor force nonparticipants that are discouraged workers}) * 100$
<b>U-5</b>	
Definition	Similar to U-4 in that it accounts for discouraged workers, but it also adds marginally attached workers other than discouraged workers. Marginally attached workers are those who want a job and are available to work now, have looked for a job in the past 12 months, but have not looked for a job in the past 4 weeks for a wide range of reasons that extend beyond discouragement over job prospects.
Construction	$(\text{Number of unemployed} + \text{Number of labor force nonparticipants that are discouraged workers} + \text{Number of labor force nonparticipants that are conditionally interested in obtaining employment}) / (\text{Number of unemployed} + \text{Number of employed} + \text{Number of labor force nonparticipants that are discouraged workers} + \text{Number of labor force nonparticipants that are conditionally interested in obtaining employment}) * 100$
<b>U-6</b>	
Definition	Includes the unemployed, discouraged workers, other marginally attached workers, and persons who are actually employed but who work fewer hours than they would like (sometimes referred to as the underemployed).
Construction	$(\text{Number of unemployed} + \text{number of labor force nonparticipants that are discouraged workers} + \text{Number of labor force nonparticipants that are conditionally interested in obtaining employment} + \text{number of employed workers that are, or are usually, working part-time for economic reasons}) / (\text{Number of unemployed} + \text{number of employed} + \text{Number of labor force nonparticipants that are discouraged workers} + \text{Number of labor force nonparticipants that are conditionally interested in obtaining employment} + \text{Number of employed workers that are, or are usually, working part-time for economic reasons}) * 100$

Relative to the unemployment rate (U-3), U-1 and U-2 are more-restrictive measures of economic strength because they exclude a portion of the unemployed population and hence make up the lowest rates of labor underutilization. Similarly, U-4, U-5, and U-6 are less-restrictive measures of economic strength because they include people outside the unemployed population and hence make up the highest rates of labor underutilization.

At both the national and the state level, the U-1 through U-6 rates increased from 2000 to 2008, with the sharpest rise between 2007 and 2008 (Figure II.6 shows the national rates). Nationally, the alternative measures typically have magnitudes different from those of the unemployment rate but follow the same time trends. The magnitudes of the increases ranged from 0.8 percentage points for U-1 to 2.5 percentage points for U-6, with slightly smaller increases across states, on average (0.7 and 1.8 percentage points, respectively) (Table II.2). The less restrictive the measure of labor underutilization, the larger was the increase in the underutilization rate from 2000 to 2008. Thus, a worsening economy differentially affected the long-term unemployed (U-1 and U-2), the unemployed (U-3), the marginally attached worker population currently out of the labor force (U-4 and U-5), and the employed who wish to work longer hours (U-6).

Figure II.6 National Estimates of Six Alternative Measures of Labor Underutilization



Source: CPS Basic Monthly Files, Fiscal Year 2000 to 2008.

Note: Fiscal year estimates are monthly averages.

Table II.2 National and State Estimates of Alternative Measures of Labor Underutilization, Fiscal Years 2000 to 2008

	National Mean			State Mean		
	2000	2008	Change	2000	2008	Change
U-1	0.9	1.7	0.8	0.9	1.5	0.7
U-2	1.8	2.7	1.0	1.7	2.5	0.7
U-3	4.0	5.3	1.2	4.0	4.9	0.9
U-4	4.2	5.5	1.3	4.1	5.1	1.0
U-5	4.8	6.2	1.4	4.7	5.7	1.0
U-6	7.2	10.0	2.5	7.1	9.0	1.8

Source: CPS Basic Monthly Files, Fiscal Year 2000 to 2008.

Note: Table entries are based on state average monthly values within fiscal years.

### 3. Labor Force Participation

Whereas the unemployment rate measures the proportion of labor force participants that are unemployed, the labor force participation rate measures the proportion of all people at least 16 years old who are either employed or unemployed.<sup>14</sup> The 2000-to-2008 change in the average labor force participation rate across states was not as large as the changes in the unemployment rate and other

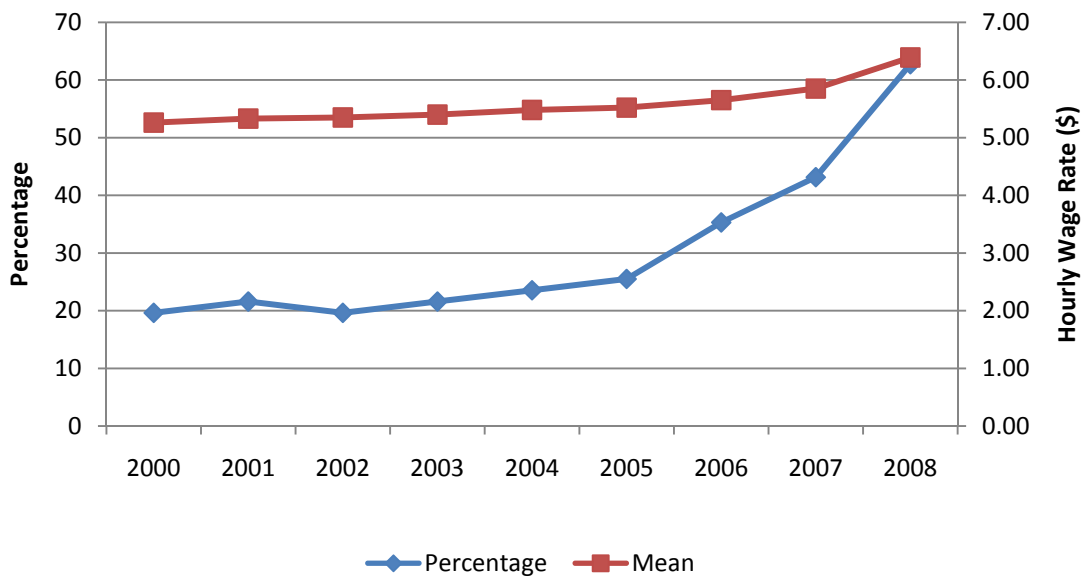
<sup>14</sup> Some studies estimate labor force participation rates only among individuals age 18 to 64, but the definition in this study includes all individuals ages 16 and older in accord with the definition used by the Bureau of Labor Statistics.

measures of labor underutilization over the same period. Between 2000 and 2008, the average labor force participation rate across states increased by 0.2 percentage points. However, the average masks significant variation in the experiences of different states, as more than half of all states experienced a change of 1 to 3 percentage points in the participation rate.

#### 4. Minimum Wage

The federal minimum wage was \$5.15 for much of the study period until July 2007 when it was increased to \$5.85 and July 2008 when it was increased once again to \$6.55.<sup>15</sup> Many states, however, adopted minimum wages greater than the federal minimum wage from 2000 to 2008. In fiscal year 2000, 20 percent of states set minimum wages that exceeded the federal minimum wage (Figure II.7). By fiscal year 2008, this was true for 63 percent of states. In addition, the average minimum wage increased from \$5.26 in 2000 to \$6.39 in 2008.

**Figure II.7 Mean Minimum Wage Across States and Percentage of States with Minimum Wage Higher than Federal Minimum Wage, by Fiscal Year**



Source: Historical state minimum wages prepared by the U.S. Department of Labor, Employment Standards Administration, Wage and Hours Division. See [<http://www.dol.gov/esa/whd/state/stateMinWageHis.htm>].

Note: Fiscal year estimates are monthly averages.

#### 5. Unemployment Durations

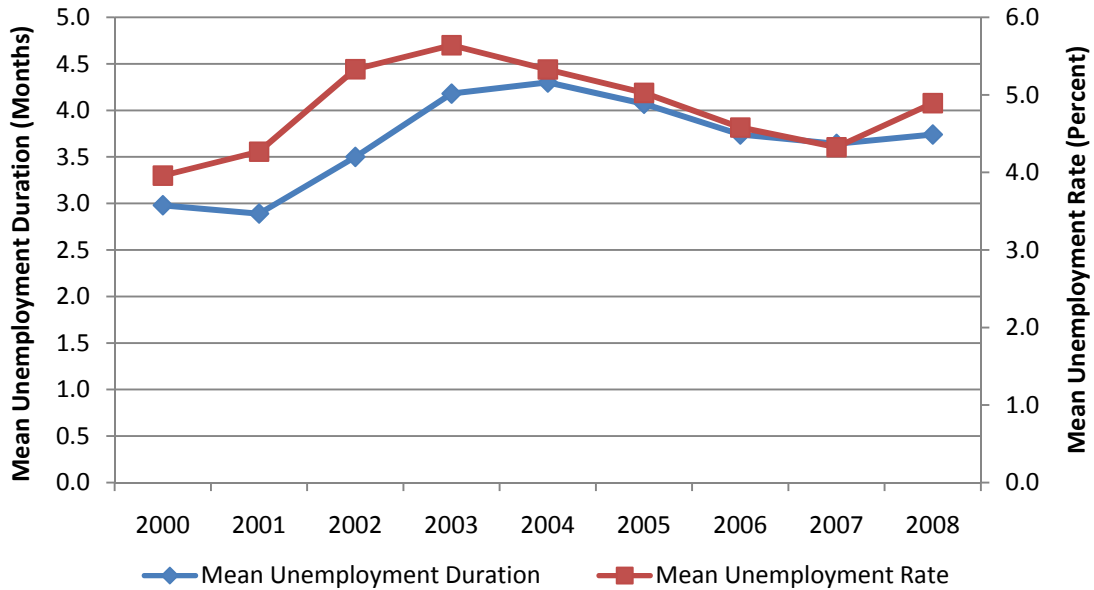
The unemployment rate is descriptive of the number of unemployed labor force participants at a point in time (such as in a certain month) and summarizes a complex, dynamic process in which people enter into and exit from unemployment. Thus, two states may have similar unemployment rates, but the typical length of time a person spends unemployed may differ. As presented in Figure II.8, the mean duration of unemployment across states increased from 3.0 months to 4.3 months from 2000 to 2004, decreased to 3.6 months by 2007, and increased to 3.7 in 2008. In each year, the

<sup>15</sup> These changes were part of the **Fair Minimum Wage Act of 2007** ([Pub.L. 110-28](#), Title VIII).



average duration of unemployment ranges across states from about one month to more than five or six months.

**Figure II.8 Mean Unemployment Duration and Mean Unemployment Rate Across States, by Fiscal Year**



Source: CPS Basic Monthly Files, Fiscal Year 2000 to 2008.

Note: Fiscal year estimates are monthly averages.

## D. Program Policies

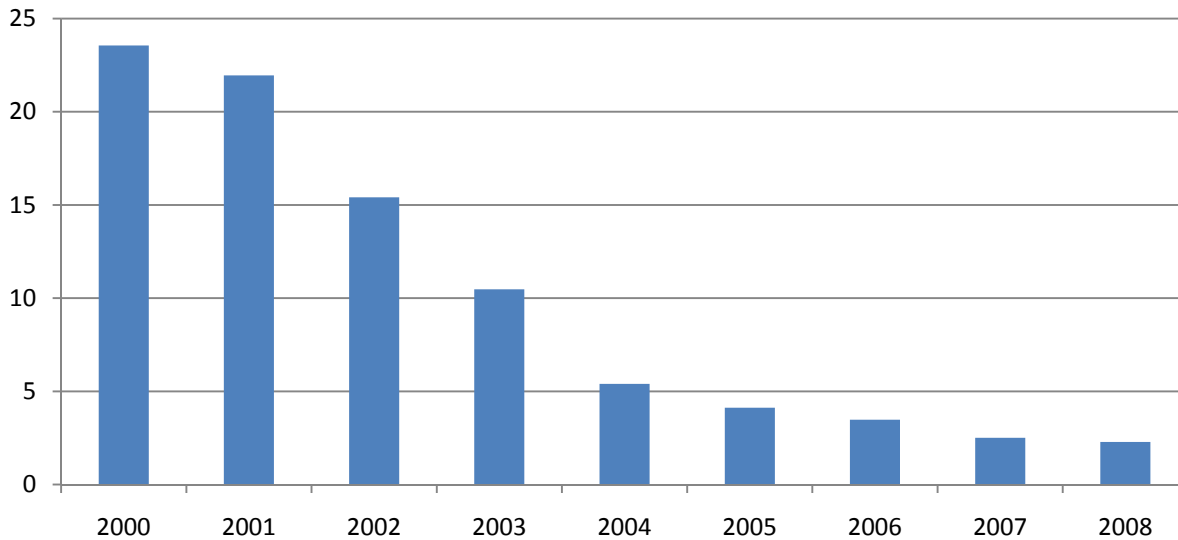
We examine a small set of program policies that have been shown in related research to be significant determinants of SNAP caseloads. This consists of the proportion of participants with recertification periods less than three months, whether a state has positive program outreach expenditures, and whether a state offers broad-based categorical eligibility. We also account for variation in states in the population share of noncitizens to measure the size of the population potentially affected by the national change to restore eligibility to many immigrants in the early to mid-2000s. As in the previous section, we do not perform a formal descriptive analysis of how changes in SNAP caseloads are associated with each of these policies. Rather, the purpose is to present background information on how different policies changed over the study period in order to help us interpret our findings from the multivariate analysis.

### 1. Frequent Recertification Periods

Historically, federal SNAP policy has required that recipients report changes in their financial circumstances to state agencies at each recertification appointment or when changes in monthly income exceed \$25. Caseworkers determine the length of recertification periods, which vary by individual characteristics and circumstances (for example, typically shorter lengths for people with earnings and longer ones for elderly people). In the early 2000s, several regulatory changes were made that gave states the option to offer reporting policies in which they reduce the number of times between recertification that households must report changes in earned income. The average certification period has lengthened in many states as a result.

As a measure of reporting requirements, we define a variable equal to the percentage of SNAP households with recertification periods that are three months or less. For ease of exposition when presenting the estimates below, we refer to this as the proportion of participants with “short” recertification periods. In 2000, 23.6 percent of households had short recertification periods (Figure II.9). This decreased each year through 2008, when it reached 2.3 percent. The variation across states in the measure has also decreased each year. In 2000, three-fourths of states had 45 percent of SNAP households with short recertification periods. By 2008, three-fourths of states had less than 1 percent with short recertification periods.

**Figure II.9 Percentage of SNAP Participants with Short Recertification Periods, by Fiscal Year**



Source: SNAP QC data, 2000 to 2008.

Note: Fiscal year estimates are monthly averages.

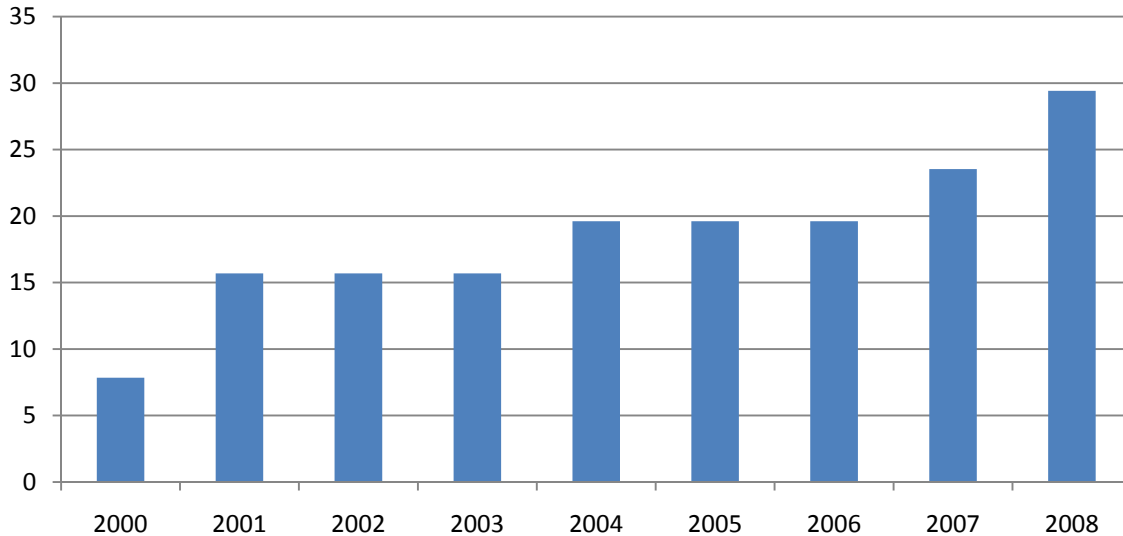
## 2. Broad-based Categorical Eligibility

SNAP has three types of categorical eligibility.<sup>16</sup> The first is pure cash public assistance (traditional) categorical eligibility in which a household is categorically eligible if all its members receive SSI, cash or in-kind TANF, or general assistance. The second is a narrow (non-cash) categorical eligibility in which non-cash benefits or services funded by TANF or maintenance-of-effort (MOE) sources are targeted to a small group of needy households that, in most cases, formerly received or were diverted from TANF cash benefits. The third type, and the one we examine in this study, is broad-based (non-cash) categorical eligibility in which non-cash TANF/MOE-funded benefits or services are targeted to virtually all households applying for SNAP. The benefit is usually in the form of a TANF/MOE-funded brochure or handout that provides information on a range of government assistance programs available to households in need. The information is given to all SNAP applicants who meet the state-determined eligibility criteria for receiving the brochure or handout. Because the brochure is prepared with TANF/MOE funds, all households who receive the brochure are receiving a TANF/MOE-funded service and are, therefore, categorically eligible for SNAP. The categorical eligibility variable in our analysis identifies

<sup>16</sup> See Trippe and Gillooly (2010) for a comprehensive review.

states that have taken the option to offer broad-based categorical eligibility. The percentage of states offering broad-based categorical eligibility increased from 7.8 in 2000 to 29.4 in 2008 (Figure II.10).

**Figure II.10 Percentage of States Offering Broad-based Categorical Eligibility, by Fiscal Year**



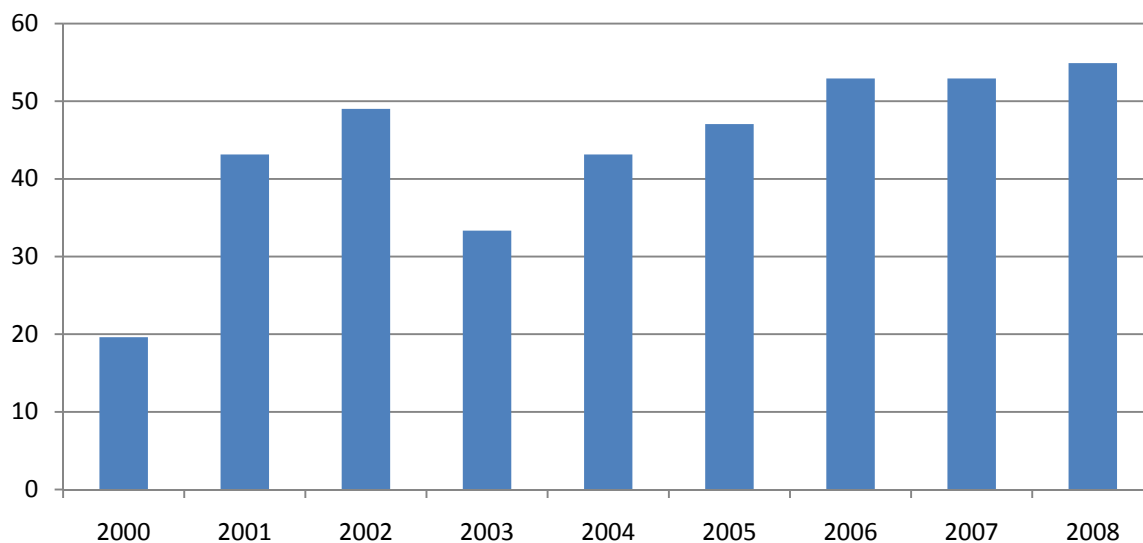
Source: Trippe and Gillooly (2010).

### 3. Outreach Expenditures

There has been a dramatic shift in program outreach policy over the past decade. The 2002 Farm Security Act authorized the USDA to provide \$5 million per year to assist states with their efforts to increase access to and participation in SNAP. The USDA has also provided about \$1 million each year since 2003 to community organizations for outreach.

Total outreach expenditures, defined as the sum of federal and state outreach expenditures and grant- or nonprofit-based outreach expenditures, increased from an average of about \$96,000 across states in 2000 to \$441,000 across states in 2008.<sup>17</sup> However, these averages are estimated using states that have no outreach expenditures from these sources and states that have positive outreach expenditures from these sources. In 2000, 19.6 percent of states had positive outreach expenditures, compared with 54.9 percent of states in 2008 (Figure II.11). Average expenditures among those states with positive expenditures were \$490,000 in 2000 and \$803,000 in 2008. Because of the sizable number of states without outreach expenditures from these sources over this period, our measure of program outreach efforts in our analyses is the proportion of states with positive outreach expenditures, rather than the amount of expenditures.

<sup>17</sup> Whether outreach expenditures are classified under “outreach” or “general administrative purposes” in the National Data Bank from which we construct the outreach variable depends on whether a state has an approved Outreach Plan as part of its Annual Plan. Thus, using only those expenditures that are listed under “outreach” may bias the estimate of the association with the participant count.

**Figure II.11 Percentage of States with Positive Outreach Expenditures, by Fiscal Year**

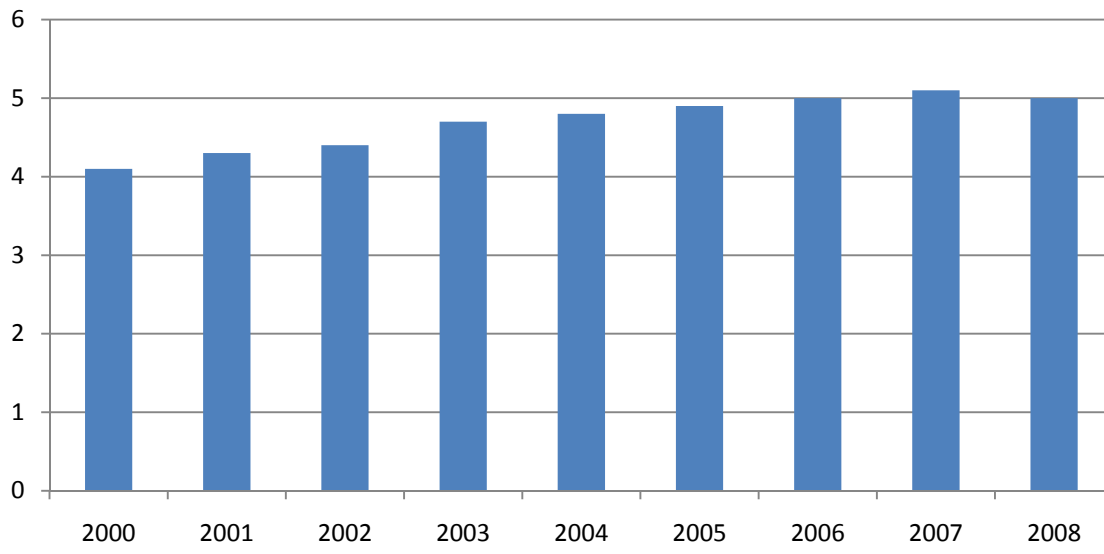
Source: FNS National Data Bank and [<https://www.fns.usda.gov/snap/outreach/grants.htm>].

#### 4. Share of Noncitizens in the Population

In the analysis described in the next chapter, we include a variable measuring the number of noncitizens in each state as a fraction of the state population. While this variable is less common in related studies (see Wallace and Blank (1999) for an exception), we include it here to attempt to measure the target population for the restoration of benefits to certain groups of noncitizens as part of the Farm Security and Rural Investment Act of 2002.

There was an average increase in the per capita number of noncitizens across states from 2000 to 2008. (Figure II.12) In 2000, noncitizens made up 4.1 percent of the average state's population, compared to 5.0 percent in 2008. There is also a sizable amount of variation across states in this percentage (not shown in figure). In 2008, for example, the smallest share was 0.4 percent (West Virginia) and the largest share was 15.8 percent (California).

Figure II.12 Average Percentage of Noncitizens in State Population, by Fiscal Year



Source: CPS Basic Monthly Files, Fiscal Year 2000 to 2008.

Note: Fiscal year estimates are monthly averages.

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### III. METHODOLOGY

This study estimates a multivariate model that examines the associations between changes in employment and policy factors and changes in the number of SNAP caseloads. In this chapter we describe the empirical models used and how model findings are presented.

#### A. Empirical Model of SNAP Caseloads

We examine a “full sample” of all participants as well as subsamples defined by the characteristics of participants’ households. For each sample, we estimate the following econometric model:

$$(1) \quad Y_{s,t} = \mu + \beta E_{s,t} + \alpha P_{s,t} + \gamma_s + \delta_t + \varepsilon_{s,t}$$

where:

$Y_{s,t}$  is the natural logarithm of the per capita SNAP participant count in state  $s$  and year  $t$

$E_{s,t}$  is a set of economic variables for state  $s$  and year  $t$

$P_{s,t}$  is a set of policy variables for state  $s$  and year  $t$

$\mu$  is a constant term

$\gamma_s$  is state-level fixed effect for state  $s$

$\delta_t$  is year-level fixed effect for year  $t$

$\varepsilon_{s,t}$  is a random error term for state  $s$  and year  $t$

The sets of parameters to be estimated consist of  $\beta$ , the coefficients corresponding to the economic variables, and  $\alpha$ , the coefficients corresponding to the policy variables. The time-invariant state fixed effects capture state-specific propensities for people to participate in SNAP. Similarly, the state-invariant year fixed effects capture year-specific propensities for people to participate in SNAP. We use the natural logarithm of per capita participants to allow for possible nonlinear responses of the number of participants to changes in explanatory variables and potentially to reduce heteroscedasticity among the error terms. All models are estimated using a weighted generalized least squares procedure, where the weights are based on state population.<sup>18</sup>

The yearly measures of economic activity include one of six measures of labor underutilization described in Chapter II, such as the state unemployment rate, and a set of additional economic

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<sup>18</sup> Related analyses have differed in their use of weighted data, which has often depended on whether a homoscedastic error structure is assumed. For example, in their analysis of TANF and/or SNAP caseload dynamics, Klerman and Danielson (2009) and Ziliak et al. (2000) use unweighted data and allow for heteroscedasticity, while Wilde et al. (2000), Blank (2001), and Mabli et al. (2009) use weighted data and do not allow for heteroscedasticity. Although we do not formally “correct” for error terms that are potentially heteroscedastic, normalizing the participant count by state population certainly makes the assumption of homoscedasticity more plausible. Taking logarithmic transformations of the dependent variable also helps to reduce the risk of heteroscedasticity.

variables consisting of the state labor force participation rate, the state minimum wage, and the 20th percentile of the state wage distribution. Although the measure of labor underutilization and the labor force participation rate are meant to measure general economic conditions, we also include the 20th percentile of the state wage distribution and the state minimum wage to capture characteristics of the low-wage labor market in which most SNAP participants work and search for jobs.

The set of SNAP policy variables included in the model is intended to measure state efforts to ease reporting requirements for participants, promote program outreach, and expand program eligibility. This includes a state’s percentage of SNAP households that have short recertification periods (3 months or less), a variable that indicates whether a state has positive outreach expenditures in the previous year, a variable that indicates whether a state offered broad-based categorical eligibility in the previous year, and the state population share of noncitizens. Because prior studies have found lagged outreach expenditures to be correlated with current SNAP caseloads, but not outreach expenditures in the current year, we include a variable indicating positive outreach expenditures in a state in the prior fiscal year in all model specifications. In addition, through model specification tests we determined that a state offering broad-based categorical eligibility in the previous year, but not the current year, is an important determinant of SNAP trends. Thus, we include only the lagged measure of broad-based categorical eligibility. Finally, we include a variable measuring the number of noncitizens in each state as a fraction of the state population.

The model is estimated six times—once with each alternative measure of labor underutilization (the U-1 through U-6 rates)—using all SNAP participants. We refer to these results as “full sample” because they include all SNAP participants. We then re-estimate the model six times for each household subgroup:

- Participants in single-adult households with children
- Participants in multiple-adult households with children
- Participants in elderly-only households
- Participants in households with an elderly member living with adults or children
- Participants in adult-only households
- Participants in children-only households

And six times for each income subgroup:

- Participants in households with gross income less than 50 percent of the FPL
- Participants in households with gross income between 50 and 100 percent of the FPL
- Participants in households with gross income greater than 100 percent of the FPL

Because the model that specifies the unemployment rate (U-3) as the measure of labor underutilization is the most common in related studies, and to focus our results on a selected set of tables, we present the household and income subgroup results only for that specification. The expanded set of tables containing results for the measures U-1 through U-6 are presented in Appendix B.



We also discuss a sensitivity analysis in Appendix A in which the model specifying the unemployment rate as the measure of labor underutilization also includes average unemployment durations.

## B. Using Current or Lagged Measures of Labor Underutilization

When modeling the relationship between measures of labor underutilization such as the unemployment rate and SNAP caseloads, one can specify a contemporaneous relationship in which a current-year labor underutilization measure affects current-year caseloads or a lagged relationship in which labor underutilization measures from prior years can affect current-year caseloads. While empirical studies of SNAP caseload trends have used both types of models (Mabli et al. 2009; Wilde et al. 2000), recent studies such as Ratcliffe et al. (2008) and Klerman and Danielson (2009) have found lagged effects of economic factors to be important determinants of caseload changes.

Our approach to selecting the model that best fits the data is to estimate three models using the full sample of SNAP participants. The first has a current-year measure of labor underutilization. The second model has both a current-year measure and a one-year lagged measure. And the third model has a current-year measure and both a one-year and two-year lagged measure. The model fits are compared using the Akaike Information Criterion (AIC) which evaluates the tradeoff between losing degrees of freedom from adding additional variables to the model and improving model fit (Greene 1997). The preferred model has the smallest AIC value. In our case, this is the model that includes both the current-year and one-year lagged measure of labor underutilization and this is the specification that we use throughout the study. We present the results of all three models in Appendix C for the model that includes the unemployment rate (U-3) as the measure of labor underutilization to demonstrate model fit.

## C. Presenting Model Findings

Because the dependent variable in our model has been transformed using a natural logarithm, the raw regression coefficients (multiplied by 100) can be interpreted as the percentage change in the number of SNAP participants as a fraction of the state population for a one unit change in the explanatory variable. The interpretation differs across the types of explanatory variables in the model:

- For the explanatory variables that measure rates or percentages including the labor underutilization measure, the labor force participation rate, and the proportion of participants with short recertification periods, the regression coefficient (multiplied by 100) can be interpreted as the percentage change in the number of SNAP participants per capita associated with a one percentage-point increase in the explanatory variable.
- For the explanatory variables that measure monetary values including the minimum wage and the 20th percentile wage, the regression coefficient (multiplied by 100) can be interpreted as the percentage change in the number of SNAP participants per capita associated with a \$1 increase in the explanatory variable.
- For the explanatory variables that indicate whether a state offers a policy such as broad-based categorical eligibility or has positive outreach expenditures, the regression coefficient (multiplied by 100) can be interpreted as the percentage difference in the number of SNAP participants per capita for states with and without the policy.

To simplify the interpretation of the model results in the main body of the report, we transform the raw regression estimates into these percentage changes in each table. The raw regression coefficients and standard errors for all tables can be found in Appendix D. In addition, because we are using a model specification with both a current-year measure and a one-year lagged measure of labor underutilization, we evaluate the effect of an increase in the measure of labor underutilization that is sustained over a two-year period. For simplicity, we refer to this as an increase in the rate of labor underutilization, rather than a sustained two-year increase in the measure.

## D. Using Model Estimates to Make Predictions

As in Gleason et al. (2001), the current study uses the model estimates to attribute the 2000-to-2008 change in the size of the SNAP caseload to four potential factors: (1) economic conditions, (2) SNAP policies, (3) time trends experienced by all states, and (4) unknown factors. The process for attributing caseload changes to these four competing explanations consists of the following steps:

1. Estimate the actual percentage change in the number of SNAP participants per capita from 2000 to 2008.
2. Estimate the percentage change in the SNAP caseloads per capita from 2000 to 2008 that is predicted by the model. This consists of obtaining a prediction for each state in 2000 and 2008 using the estimates of the parameters of the model and the mean values of all explanatory variables in each year. The final step is to divide the percentage change in the predicted values by the percentage change in the actual values to obtain the percentage of the SNAP caseload change predicted by the model.
3. Estimate the percentage change in SNAP caseloads per capita from 2000 to 2008 that is predicted by the economic factors in the model. This consists of obtaining a prediction for each state in 2000 using the estimates of the parameters of the model and the mean values of all explanatory variables in 2000. Next, obtain a second prediction for each state in 2000 using the estimates of the parameters of the model, the mean values of all economic factors in 2008, and the mean values of all policy factors and time fixed effects in 2000. Because the only difference between the two predictions is whether 2000 or 2008 values of economic factors are used, comparing the predictions measures the impact of changes in the full set of economic factors on SNAP caseloads. As in Step 2, the final step is to divide the percentage change in the predicted values by the percentage change in the actual values to obtain the percentage of the SNAP caseload change predicted by only the economic factors in the model.
4. Estimate the percentage change in the number of SNAP caseloads per capita from 2000 to 2008 that is predicted by the policy factors in the model. This consists of obtaining a prediction for each state in 2000 using the estimates of the parameters of the model and the mean values of all explanatory variables in 2000. Next, obtain a second prediction for each state in 2000 using the estimates of the parameters of the model, the mean values of all policy factors in 2008, and the mean values of all economic factors and time fixed effects in 2000. Because the only difference between the two predictions is whether 2000 or 2008 values of policy factors are used, comparing the predictions measures the impact of changes in the full set of policy factors on SNAP caseloads. As in Step 2, the final step is to divide the percentage change in the predicted values by the percentage change in the actual values to obtain the percentage of the SNAP caseload change predicted by only the policy factors in the model.

5. Estimate the percentage change in SNAP caseloads per capita from 2000 to 2008 that is predicted by time trends in the model. This consists of differencing the year fixed effect estimate for 2008 and 2000 and dividing by the percentage change in the actual values to obtain the percentage of the SNAP caseload change predicted by only the year fixed effects in the model.
6. Estimate the percentage change in SNAP caseloads per capita from 2000 to 2008 that is not predicted by the model. This consists of subtracting from unity the percentage of the SNAP caseload change predicted by the model found in Step 2.

These steps are followed separately for each set of regression results corresponding to six measures of labor underutilization in the full sample and in all household and income subgroups.

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## IV. THE EFFECTS OF ALTERNATIVE MEASURES OF LABOR UNDERUTILIZATION AND POLICY CHANGES ON SNAP CASELOADS

In this chapter we present the findings from our empirical analysis of changes in employment and policy factors and changes in the number of SNAP caseloads. We examine a “full sample” of all participants as well as subsamples defined by the characteristics of participants’ households.

### A. Full Sample Findings

We first report the findings for the model specification in which we use the unemployment rate as the primary measure of labor underutilization, because this is the measure uniformly used in related studies. The estimation results indicate that several economic and policy variables are strongly associated with changes in the per capita participant count (Table IV.1). Beginning with several measures of economic activity, we find that a rise in the unemployment rate of 1 percentage point increases the per capita participant count by 6.3 percent.<sup>19</sup> Some studies, such as Hanson and Gundersen (2002) and Mabli et al. (2009), report this association by translating the results into absolute numbers of participants, rather than in per capita terms. In our case, a 1-percentage-point increase in the unemployment rate increases the national participant count by 1.3 million participants. Similarly, if 100,000 individuals participate in SNAP in a state with a population of one million individuals, then a 1-percentage-point increase in the state unemployment rate will increase the number of SNAP participants by 6,300 individuals. The estimate indicates that SNAP participation responds countercyclically to changes in the economy, as reflected by changes in the unemployment rate.

**Table IV.1 Percent Changes in Average State SNAP Caseload due to Economic and Policy Factors Using the Unemployment Rate as the Measure of Labor Underutilization**

1-Percentage-Point Increase in Labor Underutilization Measure	6.3**
1-Percentage-Point Increase in Labor Force Participation Rate	1.3*
\$1 Increase in Minimum Wage	0.5
\$1 Increase in 20th-Percentile Wage	-12.6**
1-Percentage-Point Increase in the Percentage of Participants with Short Recertification Periods	-0.3**
Positive Outreach Expenditures in the Prior Year	0.8
Offering Broad-Based Categorical Eligibility in the Prior Year	6.2**
1-Percentage-Point Increase in Population Share of Noncitizens	-0.6

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: Model includes year effects and state fixed effects and is based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable is the natural logarithm of the number of participants as a fraction of the state population.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

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<sup>19</sup> Our model includes both a current-year measure and a one-year lagged measure of labor underutilization. As described in chapter III, we evaluate the effect of an increase in the measure of labor underutilization that is sustained over a two-year period, but, for simplicity, refer to this as an increase in the rate of labor underutilization.

The estimate of this association is greater than estimates from other studies in the literature. In two of the most recent studies, Mabli et al. (2009) estimate an association of 3.7 percent using data from 2000 to 2006, and Klerman and Danielson (2009) estimate an association of 3.8 percent using data from 1990 to 2004.<sup>20</sup> Other studies looking at earlier periods estimate an association of 4.2 percent using caseload data from 1994 to 1998 (Wilde et al. 2000) and an association of 4.3 percent using caseload data from 1980 to 1998 (Figlio et al. 2000).

We find that a 1-percentage-point increase in the labor force participation rate increases the per capita participant count by 1.3 percentage points. States' labor force participation rates rose, on average, across the analysis period, indicating that a greater proportion of individuals ages 16 and older are either unemployed or employed, rather than out of the labor force and not actively seeking employment. The positive association between the labor force participation rate and the number of SNAP participants may reflect the difficulty faced by unemployed job seekers or employed workers to find jobs that pay a sufficient wage to make ends meet.

SNAP caseloads are also related to the 20th percentile of the state wage distribution. We find that a \$1 increase in the 20th percentile of wages is associated with a 12.6 percent decrease in the per capita participant count. This appears to be a large effect, but a \$1 increase represents more than a two-standard-deviation increase in the average 20th percentile of wages among states. A more reasonable (and smaller) increase in the wage would result in a smaller decrease in caseloads. Nevertheless, the association is negative and is statistically significant.

Whether a state offers broad-based categorical eligibility is an important determinant of SNAP caseloads. Broad-based categorical eligibility eliminates the asset test for most households, thus simplifying the application process and reducing potential eligibility determination errors. We find that states offering it have a 6.2 percent higher per capita participant count than states without this policy. Following the same example as above, if 100,000 individuals participate in SNAP in a state with a population of one million individuals, then states offering broad-based categorical eligibility have 6,200 more SNAP participants compared to states that do not offer it.

The frequency of participants' recertification periods is negatively related to the size of the state per capita participant count. We find that a 1-point increase in the percentage of participants with short recertification periods decreases the number of participants per capita by 0.3 percent. Both Kornfeld (2002) and Klerman and Danielson (2009) find similar results, though the magnitudes of the association differ slightly. Using data from 1989 to 1999, Kornfeld (2002) found that a 1-point increase in the percentage of participants with short recertification periods decreases the number of participants per capita by 0.1 percent. The decrease is 0.2 percent in Klerman and Danielson (2009).

Consistent with the findings in other studies, we did not find an association between having positive outreach expenditures in the previous year and SNAP caseloads in the current year for the full sample of SNAP participants. As we discuss in the next section, however, outreach expenditures do affect caseloads for specific household subgroups.

Table IV.2 presents the findings from the six specifications of the full sample model corresponding to the six alternative measures of labor underutilization. For completeness, the

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<sup>20</sup> The association in Klerman and Danielson (2009) is based on a model that includes lagged values of unemployment, but the association in Mabli et al. (2009) is based on a model that includes values of unemployment from the current year only.

findings in the U-3 column corresponding to the specification that uses the unemployment rate are copied from Table IV.1. Comparing the results across the six specifications shows that the magnitudes of the associations decrease as the measure becomes more broadly defined. The association between SNAP caseloads and U-1 is largest, with a 1-percentage-point increase in the U-1 rate associated with a 10.6 percent increase in the number of per capita SNAP participants; the association between SNAP caseloads and U-6 is smallest, with a 1-percentage-point increase in the U-6 rate associated with a 4.1 percent increase in the number of per capita SNAP participants. The U-1 rate is the most restrictive because it includes only those unemployed people who have been without work for more than 15 weeks; the U-6 rate is the least restrictive because it includes all unemployed people, discouraged workers and other marginally attached workers, and workers employed part-time who wish to be employed full-time. The ordering of the estimates according to their magnitudes may reflect the greater level of need among the group of longer-term unemployed (measured by U-1) than among the group of unemployed, out of the labor force, and underemployed (measured by U-6).

**Table IV.2 Percent Changes in Average State SNAP Caseload due to Economic and Policy Factors, by Alternative Measures of Labor Underutilization**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
1-Percentage-Point Increase in Labor Underutilization Measure	10.6**	7.5**	6.3**	5.9**	5.4**	4.1**
1-Percentage-Point Increase in Labor Force Participation Rate	2.1**	1.1	1.3*	1.4*	1.4*	1.1
\$1 Increase in Minimum Wage	-0.4	0.3	0.5	0.3	0.2	-0.1
\$1 Increase in 20th-Percentile Wage	-14.4**	-15.8**	-12.6**	-12.6**	-12.9**	-10.9**
1-Percentage-Point Increase in the Percentage of Participants with Short Recertification Periods	-0.3**	-0.3**	-0.3**	-0.3**	-0.3**	-0.3**
Positive Outreach Expenditures in the Prior Year	0.8	0.6	0.8	0.8	0.7	0.2
Offering Broad-Based Categorical Eligibility in the Prior Year	6.6**	5.4**	6.2**	6.2**	6.3**	5.9**
1-Percentage-Point Increase in Population Share of Noncitizens	-0.5	-0.5	-0.6	-0.6	-0.6	-0.8

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the “U-3 Rate” specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

Comparing the results across the six specifications shows that the measure of labor underutilization included in the model affects, by a small amount, the association between SNAP caseloads and several economic and policy variables. This includes the association with the labor force participation rate, the 20th percentile wage, and broad-based categorical eligibility. It does not, however, affect the association with the frequency of recertification periods. The latter set of

associations is nearly identical to the one presented for the model that includes the unemployment rate (U-3) measure.

## B. Household Subgroup Findings

Economic and policy measures affect SNAP caseloads differentially according to the type of household in which participants live. This section presents the results from six household-type subgroup analyses. Table IV.3 corresponds to the regression results for each household type, such as single-adult households with children or multiple-adult households with children, using the unemployment rate as the measure of labor underutilization. The results for the remaining alternative measures of labor underutilization can be found in Appendix B.

**Increases in the unemployment rate have a larger effect on SNAP caseloads for participants (1) in multiple-adult households with children, (2) in households with an elderly member living with adults or children, and (3) in adult-only households.** A 1-percentage-point increase in the unemployment rate is associated with a 12.3 percent increase in the number of per capita SNAP participants for participants in multiple-adult households with children, a 12.4 percent increase in the number of per capita SNAP participants for those in households with an elderly member living with adults or children, and a 9.1 percent increase in the number of per capita SNAP participants for those in adult-only households. This compares with a 6.3 percent increase in the number of per capita SNAP participants in the full sample. These households typically have close ties to the labor market and thus may be affected greatest by changes in the economy.

Changes in the economy, reflected by changes in alternative measures of labor underutilization, also affect SNAP caseloads for participants in single-adult households with children, though to a lesser degree relative to other household subgroups. We find that a 1-percentage-point increase in the unemployment rate is associated with a 4.0 percent increase in the number of per capita SNAP participants for participants in single-adult households with children.

As in the full sample, for most subgroups we find no significant negative association between the minimum wage and the number of per capita SNAP participants. For households with an elderly member living with adults or children, however, there is a large positive association, indicating that a \$1 increase in the minimum wage increases the per capita number of participants by about 19.2 percent. While this may seem counterintuitive, as increased earnings due to higher minimum wages might make participants less likely to be eligible for the program, recent research has found higher minimum wages to be associated with increased TANF caseloads (Page et al. 2005). This is due to the effect of the minimum wage on labor market outcomes in the form of reduced labor demand by employers paying lower-skilled workers. The analogous research question examining minimum wages and SNAP caseloads has not been explored, but it is possible that a similar effect is occurring here for households with an elderly member living with adults or children.



**Table IV.3 Percent Changes in Average State SNAP Caseload due to Economic and Policy Factors Using the Unemployment Rate as the Measure of Labor Underutilization, by Household Subgroup**

	Single- Adult Households with Children	Multiple- Adult Households with Children	Elderly- Only Households	Households with an elderly member living with adults or children	Adult-Only Households	Children- Only Households
1-Percentage-Point Increase in Labor Underutilization Measure	4.0**	12.3**	1.5	12.4*	9.1**	-4.0
1-Percentage-Point Increase in Labor Force Participation Rate	0.4	2.9*	-4.1*	-2.1	1.5	-6.3
\$1 Increase in Minimum Wage	-2.1	-0.8	-3.9	19.2**	0.1	2.0
\$1 Increase in 20th-Percentile Wage	-10.6**	-26.0**	14.2*	10.1	3.1	-0.6
1-Percentage-Point Increase in the Percentage of Participants with Short Recertification Periods	-0.3**	-0.4**	-0.1	-0.3**	-0.1	-0.6*
Positive Outreach Expenditures in the Prior Year	0.6	1.6	7.7**	-6.3	2.8*	-3.6
Offering Broad-Based Categorical Eligibility	6.4**	0.0	12.7**	15.9*	9.9**	-2.1
1-Percentage-Point Increase in Population Share of Noncitizens	0.5	-0.6	-3.3*	-4.2	-1.9	11.4**

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population. Standard errors in parentheses.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

**States that offer broad-based categorical eligibility have greater SNAP caseloads per capita than states without this policy for participants in single-adult households with children, elderly-only households, households with elderly members, and adult-only households.** States offering broad-based categorical eligibility have a 6.4 percent higher per capita participant count for participants in single-adult households with children than states without this

policy. The association is greatest in households with an elderly member living with adults or children, with a 15.9 percent increase in the per capita participant count in states offering this policy.

**Program outreach expenditures increase the number of per capita SNAP participants among participants in elderly-only households and adult-only households.** States with positive outreach expenditures have greater SNAP caseloads for these groups, unlike for the full sample and for other household type subgroups. The number of SNAP participants per capita that live in elderly-only households is 7.7 percent greater in states with positive outreach expenditures in the previous year, compared to states without spending on outreach in the previous year. Similarly, the number of per capita SNAP participants in adult-only households is 2.8 percent greater in states with positive outreach expenditures in the previous year, compared to states without spending on outreach in the previous year.

**States with shorter average certification periods have fewer SNAP participants per capita for participants living in households with children and children-only households.** The associations for single-adult and multiple-adult households with children, as well as for households with an elderly member living with adults or children, are comparable to those of the full sample. For participants in these households, a 1-percentage-point increase in the proportion with short recertification periods is associated with a decrease of about 0.3 percent in per capita caseloads. For children-only households, however, the association is more than twice as large, with a 1-percentage-point increase associated with a decrease of about 0.6 percent in per capita caseloads.

### C. Income Subgroup Findings

Economic and policy measures affect SNAP caseloads differentially according to the gross income of participants' households. This section presents the results from three income subgroup analyses. As with the household subgroup analyses in Section C, Table IV.4 corresponds to the regression results for the specification using the unemployment rate as the measure of labor underutilization. The results for the remaining alternative measures of labor underutilization can be found in Appendix B. The three subgroups examined are participants in households with gross income at or below 50 percent of the FPL; gross income greater than 50 percent, but less than or equal to 100 percent of the FPL; and gross income greater than 100 percent of the FPL.

**Increases in the unemployment rate has the largest effect on SNAP caseloads for participants in the poorest households.** A 1-percentage-point increase in the unemployment rate is associated with a 9.0 percent increase in the number of per capita SNAP participants for participants in households with gross income less than or equal to 50 percent of the FPL, compared to a 2.7 percent increase in the number of participants in households with gross income between 50 and 100 percent of the FPL. There is no statistical association for the highest-income group.

**Characteristics of the low-wage labor market have a larger effect on SNAP caseloads the higher the income of program participants.** The 20th percentile of wages is negatively associated with SNAP caseloads only for participants with incomes above 50 percent of the FPL, and the magnitude of the association is more than twice as large for participants with income above 100 percent of the FPL than for the full sample. A \$1 increase in the 20th percentile of wages is associated with a 25 percent decrease in the per capita count for participants with gross income between 50 and 100 percent of the FPL and a 32 percent decrease in the count for participants with gross income above 100 percent of the FPL. As discussed earlier, although these effects seem very large, a \$1 increase in the 20th percentile wage is quite significant: between 2000 and 2008, the average 20th percentile wage (in real terms) increased by only three cents.

For the poorest households, there is a positive association between the 20th percentile wage and the number of participants. This is counterintuitive, as higher earnings (as represented by the 20th percentile wage) should be associated with a lower likelihood of being eligible. One possible explanation is that the 20th percentile wage does not adequately represent the low wage labor market for the poorest households.

**Table IV.4 Percent Changes in Average State SNAP Caseload due to Economic and Policy Factors Using the Unemployment Rate as the Measure of Labor Underutilization, by Income Subgroup**

	Households with Income Less than 50 Percent of the Federal Poverty Level	Households with Income Between 50 and 100 Percent of the Federal Poverty Level	Households with Income Greater than 100 Percent of the Federal Poverty Level
1-Percentage-Point Increase in Labor Underutilization Measure	9.0**	2.7**	8.0
1-Percentage-Point Increase in Labor Force Participation Rate	2.7*	0.3	-0.3
\$1 Increase in Minimum Wage	-2.2	2.0	4.5
\$1 Increase in 20th-Percentile Wage	8.7*	-25.2**	-32.2**
1-Percentage-Point Increase in the Percentage of Participants with Short Recertification Periods	-0.2**	-0.3**	-0.7**
Positive Outreach Expenditures in the Prior Year	3.6*	-2.3	3.8
Offering Broad-Based Categorical Eligibility in the Prior Year	-4.8	11.3**	19.6**
1-Percentage-Point Increase in Population Share of Noncitizens	-1.1	0.1	-1.6

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population. Standard errors in parentheses.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the “U-3 Rate” specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

**States that offer broad-based categorical eligibility have greater SNAP caseloads per capita than states without this policy for participants in higher-income, but not lower-income, households.** The number of participants living in households with gross income above 100 percent of the FPL is 20 percent higher, per capita, in states that offer broad-based categorical eligibility than in states that do not. The magnitude of the association is much stronger than in the full sample primarily because this policy targets people with income greater than 130 percent of the FPL.

**Program outreach expenditures increase the number of per capita SNAP participants among participants living in the poorest households.** The number of SNAP participants with household incomes at or below 50 percent of the FPL is 3.6 percent higher, per capita, in states with

positive outreach expenditures in the previous year than in states with no spending on outreach in the previous year. There is no statistically significant association for higher income households.

**States with shorter average certification periods have fewer SNAP participants per capita living in households with higher incomes.** Although there is a significant association for all three income subgroups, the magnitude of the association increases with income and is almost four times as large for the highest-income subgroup than for the lowest. This may be because higher-income participants, who are more likely to be employed, value policies that ease reporting requirements, such as simplified and status reporting, more than lower-income participants.

## V. EXPLAINING RECENT CHANGES IN SNAP CASELOADS

The previous chapter presented the estimates of the associations between SNAP caseloads and economic and policy factors. The results, however, were presented for each factor rather than for sets of factors. A question routinely asked in the related literature that naturally follows that analysis is how much of the change in caseloads can be attributed to changes in economic trends as a whole and to changes in policy factors as a whole. To answer that question, this study uses the model estimates to predict what the caseload change would have been in 2008 had only the economy changed, had only program policy changed, and had neither the economy nor program policy changed. As in Chapter IV, we present the results for the full sample, household subgroups, and income subgroups.

### A. Explaining Changes in SNAP Caseloads: Full Sample Findings

Table V.1 shows the proportion of the increase in SNAP caseloads per capita attributable to each of the four factors listed above for the full sample specification that includes the unemployment rate (U-3 rate) as the measure of labor underutilization. Changes in economic factors, including the unemployment rate, the labor force participation rate, the minimum wage, and the 20th-percentile wage from 2000 to 2008, explain 55 percent of the increase in SNAP caseloads. Changes in policy factors, including broad-based categorical eligibility, program outreach expenditures, the length of recertification periods, and the share of noncitizens in the population from 2000 to 2008, explain 20 percent of the increase in SNAP caseloads.

**Table V.1 Factors Explaining the Increase in SNAP Caseloads, 2000 to 2008**

Percentage Change (Actual)	39
Percentage of Actual Change Explained by:	
Economic Factors	55
Policy Factors	20
Time Trend	57
Unknown	-33

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All estimates are based on model specific U-3 that includes year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population.

The proportion of the 2000-to-2008 caseload increase attributed to the economy is more than the effect found by Klerman and Danielson (2009), who found that changes in economic factors explained 20 percent of the increase in SNAP caseloads from 2001 to 2004, and differs from the effect found by Mabli et al. (2009), who estimated that changes in economic factors explained -37 percent of the increase in SNAP caseloads from 2003 to 2006 (meaning the factors predicted a decline in the caseload when the actual caseload increased), though the study periods are clearly different between those studies and different from that of the current study.<sup>21</sup> The estimates of the

<sup>21</sup> The characteristics of the participant sample used also differ across the studies. For example, Klerman and Danielson (2009) estimate this association among participants who do not receive TANF or SSI, whereas the current study estimates the association among all participants.

proportion of the SNAP caseload decline in the late 1990s explained by economic factors range from 11 percent in Kornfeld (2002) to 56 percent in Wilde et al. (2000).<sup>22</sup>

Few recent studies have examined the role of SNAP policy changes in explaining caseload trends, as most of the caseload trend analysis focused on the late 1990s, when changes in TANF policy were most pertinent and states had not yet been authorized to offer many of the SNAP policies currently in place. However, comparing the estimates from the current study with those of the two most recent studies of caseload trends shows that the proportion of the 2000-to-2008 caseload increase attributed to policy factors is less than that found by Klerman and Danielson (2009) from 2001 to 2004 and greater than that found by Mabli et al. (2009) from 2003 to 2006. Klerman and Danielson (2009) found that SNAP policies explained about 29 percent of the total caseload increase from 2001 to 2004.<sup>23</sup> Mabli et al. (2009) found 11 percent from 2003 to 2006. Once again, the study periods are clearly different between those studies and the current study.

Aside from the effects of economic trends and policy factors, the remaining increase in SNAP caseloads was a result mostly of the general time trend (in other words, the year fixed effects).<sup>24</sup> These are factors that are common among states but have changed over time. This may include changes in several policies imposed at the national level such as the Earned Income Tax Credit, Supplemental Security Income, and Medicaid. Alternatively, it may reflect changes over time in the effects of the economic and policy variables that were included in the model or the absence of variables in the model that measure the relevant economic conditions for SNAP recipients more fully. In addition, although we account for national inflation by deflating the monetary variables in the estimation, there may be substantial differences across states in changes in food and energy prices over this time period that affected individuals' purchasing power. Indeed, it is possible that the year fixed effects, though common across all states, are picking up some of the state-level variation in price trends. The time trend may also reflect the Farm Security Act of 2002 and its effect on both administrative staff and community-based organizations in promoting program outreach and informational awareness. In particular, the expenditure-based measure of outreach included in our model may not be a good representation of a state's outreach efforts. The year fixed effects might be picking up the significant increase in these efforts over time across all states. Finally, the time trend may reflect changes in state policies that relaxed the vehicle rules in the asset test when determining program eligibility.

Table V.2 shows the proportion of the increase in SNAP caseloads per capita attributable to economic and policy factors for the full sample and the models based on the six alternative measures of labor underutilization. The column for the U-3 rate (unemployment rate) corresponds to the estimates presented in Figure V.1. Changes from 2000 to 2008 in certain economic factors (labor underutilization, labor force participation rate, minimum wage, and 20th-percentile wage) explain between 29 and 61 percent of the increase in SNAP caseloads. The greatest proportion of the

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<sup>22</sup> The estimates in this period include 20 percent (Currie and Grogger 2001); 24 percent (Ziliak et al. 2003); 35 percent (Figlio et al. 2000); and 47 percent (Gleason et al. 2001).

<sup>23</sup> Policies consist of offering benefits electronically through EBT, implementing simplified reporting, and increasing outreach expenditures (explain 15 percent). Lengthening certification periods explains 14 percent.

<sup>24</sup> Having the general time trend explain a sizable part of the change in caseload trends is not specific to the current study, as many investigations of caseload trends in AFDC, TANF, or SNAP have witnessed predicted changes that are explained more by the unexplained fixed effects than by the set of economic and policy factors (Clarke et al. 2004; Kornfeld 2002; Blank 2001; Wallace and Blank 1999; Kuhn et al. 1997; Mabli et al. 2009; Gleason et al. 2001).

change in SNAP caseloads explained by the economy comes from the specification in which the U-6 rate is used as the measure of labor underutilization. This measure counts not only the unemployed, but also dislocated workers and other marginally attached workers who are out of the labor force, as well as employed workers who are working part-time for economic reasons (meaning that they would like to be employed full-time but cannot find a full-time job). Although the regression results in Chapter IV indicated that the magnitude of the associations between SNAP caseloads and the six alternative measures of labor underutilization decrease as the measure becomes less restrictive (in other words, moving from the U-1 rate to the U-6 rate), economic factors that include the U-6 rate explain the greatest proportion of the change in SNAP caseloads primarily because the U-6 rate experienced the greatest change from 2000 to 2008 relative to the other measures of labor underutilization.

**Table V.2 Percentage of SNAP Caseload Increase Explained by Economic and Policy Factors**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
Percentage Change (Actual)	39	39	39	39	39	39
Percentage of Actual Change Explained by:						
Economic Factors	29	33	55	54	53	61
Policy Factors	21	20	20	20	20	18
Time Trend	64	64	57	58	58	51
Unknown	-13	-16	-33	-32	-31	-30

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All estimates based on models that include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the “U-3 Rate” specification.

Overall, we find that the percentage of the increase in SNAP caseloads explained by economic factors is fairly similar across the U-3, U-4, and U-5 measures of labor underutilization. There are large differences in the percentage explained by economic factors in the models that use the most restrictive measures (U-1 and U-2) and the broadest measures (U-6). This is not the case for the percentages attributable to changes in policy factors across the six models. Changes in policy factors from 2000 to 2008 explain 18 to 21 percent of the increase in SNAP caseloads when different measures of labor underutilization are used. Similarly, the amount explained by the time trend varies a small amount across the six models, indicating that that size of the effect of changes over time in factors common to all states are mildly sensitive to the measure of labor underutilization used.

## B. Explaining Changes in SNAP Caseloads: Household Subgroup Findings

Table V.3 shows the percentage of the increase in SNAP caseloads per capita attributable to the economy and program policy for each of the six household subgroups using the unemployment rate as the measure of labor underutilization. The results for the remaining alternative measures of labor underutilization can be found in Appendix E. The columns present the results for the models for each household subgroup. Across most of the subgroups, there are sizable differences in the proportion of the caseload increase explained by both economic trends and policy factors.

The economy accounts for the greatest proportion of the increase in caseloads for participants in multiple-adult households with children (85 percent) and in households with an elderly member

living with adults or children (182 percent).<sup>25</sup> In both cases, this is attributed to the large association between changes in the unemployment rate and changes in caseloads. For households with an elderly member living with adults or children, however, the sizable amount explained by economic factors is also attributed to the effect of changes in the minimum wage on state caseloads. Smaller, but still sizable, contributions are found for participants in single-adult households with children (51 percent) and adult-only households (49 percent). For participants in elderly-only households, economic factors generally account for 14 percent of the caseload increase. Finally, for children-only households, changes in economic factors actually predict a decrease in caseloads from 2000 to 2008, resulting from the negative association found between the unemployment rate and state caseloads for this group of participants in chapter IV.

**Table V.3 Percentage of SNAP Caseload Increase Explained by Economic and Policy Factors, by Household Subgroup**

	Single- Adult Households with Children	Multiple- Adult Households with Children	Elderly- Only Households	Households with an elderly member living with adults or children	Adult-Only Households	Children- Only Households
Percentage Change (Actual)	29	47	29	18	63	49
Percentage of Actual Change Explained by:						
Economic Factors	51	85	14	182	49	-28
Policy Factors	28	20	15	23	6	41
Time Trend	62	96	-2	-117	13	42
Unknown	-41	-101	72	12	32	44

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All estimates based on models that include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population.

Changes in SNAP policy account for the greatest proportion of the increase in caseloads for participants in single-adult households with children (28 percent), households with an elderly member living with adults or children (23 percent), and children-only households (41 percent). For participants in all three groups, this is due mainly to the strong positive associations between the size of the caseload and a state having either broad-based categorical eligibility or a small percentage of participants with short recertification periods. For children-only households, it is also attributed to the strong positive association between the population share of noncitizens in the state and the size of the caseload.

<sup>25</sup> The percentage change exceeding 100 reflects that the model overpredicts the caseload change over the period. In this case, the residual “corrects” for this by predicting a decrease in caseloads over the period. Other related research has found similar results when using the model for predictive purposes (Klerman and Danielson 2009).



### C. Explaining Changes in SNAP Caseloads: Income Subgroup Findings

Table V.4 shows the percentage of the increase in SNAP caseloads per capita attributable to the economy and program policy for each of the three income subgroups. The columns present the results for the models based on the six alternative measures of labor underutilization. The results differ across the three income subgroups. Relative to the higher income subgroup, the economy accounts for larger contributions to the increase in caseloads for households with income less than 50 percent of the FPL and households with income between 50 and 100 percent of the FPL (47 and 73 percent, respectively). Program policy, however, accounts for a smaller contribution (7 and 34 percent, respectively). For the highest income subgroup, changes in program policy account for 36 percent of the increase in caseloads. This is attributed mainly to the very large effects of broad-based categorical eligibility for this subgroup presented in Chapter IV.

**Table V.4 Percentage of SNAP Caseload Increase Explained by Economic and Policy Factors, by Income Subgroup**

	Households with Income Less than 50 Percent of the Federal Poverty Level	Households with Income Between 50 and 100 Percent of the Federal Poverty Level	Households with Income Greater than 100 Percent of the Federal Poverty Level
Percentage Change (Actual)	49	26	54
Percentage of Actual Change Explained by:			
Economic Factors	47	73	39
Policy Factors	7	34	36
Time Trend	10	122	73
Unknown	37	-129	-47

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All estimates based on models that include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population.

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## VI. CONCLUSION

The number of SNAP participants increased by 63 percent from 2000 to 2008. While the unemployment rate has traditionally been used to measure the strength of the economy, the BLS offers six alternative measures of labor underutilization (including the unemployment rate) to provide a more comprehensive assessment of labor market conditions. This study examines the economic and policy factors associated with the increase in SNAP participants from 2000 to 2008, using both the unemployment rate as the main measure of the economy and the remaining five alternative measures of labor underutilization. It also examines how the associations between changes in SNAP caseloads and economic and policy factors varied by participants' household type and income.

The study's main findings for all SNAP participants include:

- Increases in the unemployment rate are associated with increases in SNAP caseloads. A rise in the unemployment rate of one percentage point increases the number of SNAP participants as a fraction of the state population by 6.3 percent.
- Increases in alternative labor underutilization rates are also associated with increases in SNAP caseloads. Measures of labor underutilization that are more restrictive than the unemployment rate have larger associations with SNAP caseloads than measures that are less restrictive than the unemployment rate.
- Program policy also affects SNAP caseload trends. Caseloads are greater in states offering broad-based categorical eligibility and in states in which fewer participants have short recertification periods (1 to 3 months).

Economic and policy measures affect SNAP caseloads differentially according to the type of household in which participants live and the gross income of participants' households.

- The unemployment rate has a larger effect on SNAP caseloads for participants in multiple-adult households with children, participants in households with an elderly member living with adults or children, and participants in adult-only households, relative to participants in other types of households. It also has a larger effect on SNAP caseloads for participants in the poorest households relative to participants in households with greater income.
- States that offer broad-based categorical eligibility have higher SNAP caseloads per capita than states without this policy for participants in single-adult with children and households with an elderly member living with adults or children. This is also true for participants in households with gross income greater than 100 percent of the federal poverty level.
- Program outreach expenditures increase the number of per capita SNAP participants among elderly-only households and among adult-only households. States' outreach efforts also increase the number of per capita SNAP participants among participants living in the poorest households.

The change in caseloads from 2000 to 2008 can be attributed to changes in both economic and policy factors. We find that changes from 2000 to 2008 in economic factors, including the unemployment rate, labor force participation rate, minimum wage, and characteristics of the low-wage labor market, explain 55 percent of the increase in SNAP caseloads over this period. Changes

in policy factors, including broad-based categorical eligibility, program outreach expenditures, and the length of recertification periods, explain 20 percent of the increase in SNAP caseloads.

There are also differences by household composition in the attribution of SNAP caseload trends to economic and policy factors. The economy accounts for the greatest proportion of the increase in caseloads for participants in multiple-adult households with children and in households with an elderly member living with adults or children. Changes in SNAP policy account for the greatest proportion of the increase in caseloads for participants in single-adult households with children and in children-only households.

Finally, we find differences by household income in the attribution of SNAP caseload trends to economic and policy factors. The economy accounts for a larger contribution to the increase in caseloads for the participants in households with income below the federal poverty level, while program policy accounts for a smaller contribution (relative to households with higher income).

The analysis of how changes in economic and policy factors affect SNAP caseloads is critical in understanding why participation levels change and predicting when those changes may occur. Besides providing the most current estimates of these associations to date, this study attempted to extend the typical line of the analysis of caseload trends by considering five alternative measures of labor underutilization other than the unemployment rate. Further research, however, is needed to explore the relationships between these economic measures and SNAP participation. For example, it is not clear even at a disaggregate level why being a discouraged worker might affect the likelihood of an individual participating in SNAP compared to being a different type of labor force nonparticipant or even an unemployed job seeker. Incorporating this analysis into research examining SNAP participation decisions using individual-level data files such as the Survey of Income and Program Participation would help us understand how this classification affects the relationship between changes in labor underutilization and SNAP caseload trends.

Extending the analysis period of this study through 2009 is also important. While SNAP participation increased from 17 million participants in fiscal year 2000 to 28 million participants in 2008, it increased to over 33 million in 2009. Concurrently, the national unemployment rate nearly doubled from 2008 to 2009. The federal minimum wage also increased over this period, as did the proportion of states offering broad-based categorical eligibility. Extending the analysis through 2009 would help to understand whether the associations between state caseloads and economic and policy factors found in the current study differ in a period of severe economic recession.

Finally, this study looked at differences in caseload trends for household and income subgroups. Examining differences by type of income can be useful too. For example, are the determinants of caseload trends different for households with and without earned income or with and without unemployment benefits? This may be particularly important when expanding the analysis period to include the current economic crisis.

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## **APPENDIX A**

### **SENSITIVITY ANALYSIS USING AVERAGE UNEMPLOYMENT DURATIONS**

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Related studies that have examined the determinants of SNAP caseload trends have used a variety of empirical models to estimate the association between caseloads and economic and policy factors. While the models typically are differentiated according to the types of economic and policy variables included, common to the specifications is the use of the unemployment rate as the primary indicator of the strength of the economy.

In this study, our main model specified the unemployment rate as the primary economic measure, but we also estimated separate models using five alternative measures of labor underutilization other than the unemployment rate. One of these, the U-1 rate, was a more restrictive measure of the economy that focused on the longer-term unemployed (those who have been unemployed for at least 15 weeks). The association with SNAP caseloads was greater for U-1 than U-3 (the standard unemployment rate), suggesting that the length of time spent unemployed is important when examining the association between the economy and SNAP caseloads.

In this appendix, we estimate an auxiliary analysis of SNAP caseload trends and the economy in which we account for the length of time spent in unemployment in addition to the unemployment rate. We focus on unemployment durations in this analysis because the CPS asks unemployed workers how long they have been unemployed but does not ask how long individuals in other labor underutilization states have been in those states. The unemployment rate is a static measure in that it is defined as the number of unemployed labor force participants in a certain month (the number of unemployed divided by the sum of the numbers of unemployed and employed individuals). But this static measure summarizes rich heterogeneity across states in the more complex, dynamic processes in which people change labor market states, such as entering into and exiting from unemployment. Including the average duration of unemployment in the model attempts to summarize how unemployment dynamics differ across states, as two states may have similar unemployment rates but different average unemployment durations.

Table A.1 presents the associations between caseloads and economic and policy factors in a model that includes the mean duration of unemployment in the set of explanatory variables. For comparability, we have also included the main model specification (without the mean duration of unemployment) from Table IV.1.

States with longer average unemployment durations have more SNAP participants per capita, even after accounting for differences in unemployment rates. A one-month increase in the average unemployment rate increases the per capita number of participants by 2.4 percent (Table A.1). The magnitude of the association with the unemployment rate, however, is slightly smaller in the model that includes the average unemployment duration compared to the main model (5.3 percent versus 6.3 percent). The associations between each economic and policy variable and SNAP caseloads are nearly identical in both magnitude and statistical significance across the two models, other than the unemployment rate.

**Table A.1 Percent Changes in Average State SNAP Caseload due to Economic and Policy Factors Using the Unemployment Rate as the Measure of Labor Underutilization with and without Accounting for Average Unemployment Durations**

	Main Model	With Unemployment Durations
1-Percentage-Point Increase in Unemployment Rate	6.3**	5.3**
One Month Increase in Unemployment Duration		2.4*
1-Percentage-Point Increase in Labor Force Participation Rate	1.3*	1.5**
\$1 Increase in Minimum Wage	0.5	0.2
\$1 Increase in 20th-Percentile Wage	-12.6**	-12.2**
1-Percentage-Point Increase in the Percentage of Participants with Short Recertification Periods	-0.3**	-0.3**
Positive Outreach Expenditures in the Prior Year	0.8	0.8
Broad-based Categorical Eligibility	6.2**	6.3**
1-Percentage-Point Increase in Population Share of Noncitizens	-0.6	-0.5

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: Model includes year effects and state fixed effects and is based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable is the natural logarithm of the number of participants as a fraction of the state population. Standard errors in parentheses.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

## **APPENDIX B**

### **FINDINGS BY LABOR UNDERUTILIZATION MEASURE FOR HOUSEHOLD AND INCOME SUBGROUPS**

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**Table B.1 Percent Changes in Average State SNAP Caseload due to Economic and Policy Factors, by Alternative Measures of Labor Underutilization Among Single-Adult Households with Children**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
1-Percentage-Point Increase in Labor Underutilization Measure	6.5**	3.4**	4.0**	3.8**	3.2**	2.6**
1-Percentage-Point Increase in Labor Force Participation Rate	1.0	0.3	0.4	0.5	0.4	0.2
\$1 increase in Minimum Wage	-2.6*	-2.2	-2.1	-2.2	-2.2	-2.4*
\$1 increase in 20th-Percentile Wage	-11.9**	-13.4**	-10.6**	-10.5**	-10.9**	-9.6**
1-Percentage-Point Increase in the Percentage of Participants with Short Recertification Periods	-0.3**	-0.3**	-0.3**	-0.3**	-0.3**	-0.3**
Positive Outreach Expenditures in the Prior Year	0.7	0.5	0.6	0.6	0.5	0.2
Broad-based Categorical Eligibility	6.6**	5.8**	6.4**	6.5**	6.4**	6.2**
1-Percentage-Point Increase in Population Share of Noncitizens	0.4	0.5	0.5	0.5	0.5	0.4

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

**Table B.2 Percent Changes in Average State SNAP Caseload due to Economic and Policy Factors, by Alternative Measures of Labor Underutilization Among Multiple-Adult Households with Children**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
1-Percentage-Point Increase in Labor Underutilization Measure	18.7**	16.7**	12.3**	11.4**	10.4**	7.6**
1-Percentage-Point Increase in Labor Force Participation Rate	4.4**	2.6*	2.9*	3.1*	3.1**	2.7*
\$1 increase in Minimum Wage	-2.3	-1.0	-0.8	-1.2	-1.2	-1.8
\$1 increase in 20th-Percentile Wage	-30.5**	-31.3**	-26.0**	-26.2**	-26.4**	-23.8**
1-Percentage-Point Increase in the Percentage of Participants with Short Recertification Periods	-0.4**	-0.5**	-0.4**	-0.4**	-0.4**	-0.4**
Positive Outreach Expenditures in the Prior Year	1.7	1.2	1.6	1.6	1.4	0.6
Broad-based Categorical Eligibility	0.6	-1.3	-0.0	0.0	0.3	-0.7
1-Percentage-Point Increase in Population Share of Noncitizens	-0.5	-0.4	-0.6	-0.6	-0.6	-0.9

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

**Table B.3 Percent Changes in Average State SNAP Caseload due to Economic and Policy Factors, by Alternative Measures of Labor Underutilization Among Elderly-Only Households**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
1-Percentage-Point Increase in Labor Underutilization Measure	-0.2**	-1.9**	1.5**	1.3**	1.0**	1.9**
1-Percentage-Point Increase in Labor Force Participation Rate	-4.4**	-3.7*	-4.1*	-4.1*	-4.1*	-4.3*
\$1 increase in Minimum Wage	-4.0	-4.0	-3.9	-4.0	-4.0	-4.2
\$1 increase in 20th-Percentile Wage	12.5	11.4	14.2*	14.0*	13.8*	16.5*
1-Percentage-Point Increase in the Percentage of Participants with Short Recertification Periods	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Positive Outreach Expenditures in the Prior Year	7.4**	8.0**	7.7**	7.7**	7.7**	7.5**
Broad-based Categorical Eligibility	12.3*	12.2*	12.7**	12.6**	12.6**	12.9**
1-Percentage-Point Increase in Population Share of Noncitizens	-3.1	-3.5*	-3.3*	-3.3*	-3.3*	-3.4*

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

**Table B.4 Percent Changes in Average State SNAP Caseload due to Economic and Policy Factors, by Alternative Measures of Labor Underutilization Among Households with an Elderly Member Living with Adults or Children**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
1-Percentage-Point Increase in Labor Underutilization Measure	20.9**	21.7**	12.4**	12.0**	11.0**	7.7**
1-Percentage-Point Increase in Labor Force Participation Rate	-0.7	-2.4	-2.1	-1.9	-1.9	-2.5
\$1 increase in Minimum Wage	17.6**	19.1**	19.2**	18.8**	18.8**	18.3**
\$1 increase in 20th-Percentile Wage	6.9	7.3	10.1	10.5	10.3	12.3
1-Percentage-Point Increase in the Percentage of Participants with Short Recertification Periods	-0.3*	-0.3*	-0.3*	-0.3*	-0.3*	-0.3*
Positive Outreach Expenditures in the Prior Year	-6.5	-6.7*	-6.3	-6.3	-6.5*	-7.2*
Broad-based Categorical Eligibility	17.1*	15.2*	15.9*	16.0*	16.3*	15.3*
1-Percentage-Point Increase in Population Share of Noncitizens	-3.7	-3.8	-4.2	-4.2	-4.2	-4.6*

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.



**Table B.5 Percent Changes in Average State SNAP Caseload due to Economic and Policy Factors, by Alternative Measures of Labor Underutilization Among Adult-Only Households**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
1-Percentage-Point Increase in Labor Underutilization Measure	16.8**	10.7**	9.1**	8.5**	7.8**	5.9**
1-Percentage-Point Increase in Labor Force Participation Rate	2.7**	1.5	1.5	1.7	1.8	1.2
\$1 increase in Minimum Wage	-1.3	-0.2	0.1	-0.2	-0.3	-0.7
\$1 increase in 20th-Percentile Wage	1.4	-1.7	3.1	3.0	2.8	5.5
1-Percentage-Point Increase in the Percentage of Participants with Short Recertification Periods	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Positive Outreach Expenditures in the Prior Year	2.8*	2.7	2.8*	2.9*	2.7	2.0
Broad-based Categorical Eligibility	10.9**	8.8**	9.9**	10.0**	10.1**	9.5**
1-Percentage-Point Increase in Population Share of Noncitizens	-1.8	-1.9	-1.9	-1.9	-1.9	-2.2*

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

**Table B.6 Percent Changes in Average State SNAP Caseload due to Economic and Policy Factors, by Alternative Measures of Labor Underutilization Among Children-Only Households**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
1-Percentage-Point Increase in Labor Underutilization Measure	3.6**	-6.2**	-4.0**	-3.9**	3.8**	-1.3**
1-Percentage-Point Increase in Labor Force Participation Rate	-6.8	-6.0	-6.3	-6.4	-6.3	-6.4
\$1 increase in Minimum Wage	1.6	2.0	2.0	2.1	2.2	2.1
\$1 increase in 20th-Percentile Wage	6.5	0.7	-0.6	-0.8	-1.1	1.1
1-Percentage-Point Increase in the Percentage of Participants with Short Recertification Periods	-0.6*	-0.6*	-0.6*	-0.6*	-0.6*	-0.6*
Positive Outreach Expenditures in the Prior Year	-4.3	-3.3	-3.6	-3.6	-3.5	-3.5
Broad-based Categorical Eligibility	-0.3	-1.7	-2.1	-2.1	-2.3	-1.5
1-Percentage-Point Increase in Population Share of Noncitizens	12.0**	11.2**	11.4**	11.4**	11.4**	11.5**

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

**Table B.7 Percent Changes in Average State SNAP Caseload due to Economic and Policy Factors, by Alternative Measures of Labor Underutilization Among Households with Income Less than 50 Percent of the Federal Poverty Level**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
1-Percentage-Point Increase in Labor Underutilization Measure	17.3**	10.2**	9.0**	8.2**	7.4**	6.3**
1-Percentage-Point Increase in Labor Force Participation Rate	4.4**	2.7*	2.7*	2.9**	2.9**	2.1*
\$1 increase in Minimum Wage	-3.4	-2.1	-2.2	-2.4	-2.4	-2.9
\$1 increase in 20th-Percentile Wage	7.2	3.5	8.7	8.2	8.0	11.5*
1-Percentage-Point Increase in the Percentage of Participants with Short Recertification Periods	-0.2**	-0.2**	-0.2**	-0.2**	-0.2**	-0.2**
Positive Outreach Expenditures in the Prior Year	4.0*	3.4*	3.6*	3.6*	3.5*	3.0
Broad-based Categorical Eligibility	-3.5	-5.8	-4.8	-4.8	-4.6	-4.9
1-Percentage-Point Increase in Population Share of Noncitizens	-1.0	-1.1	-1.1	-1.2	-1.2	-1.4

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

**Table B.8 Percent Changes in Average State SNAP Caseload due to Economic and Policy Factors, by Alternative Measures of Labor Underutilization Among Households with Income between 50 and 100 Percent of the Federal Poverty Level**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
1-Percentage-Point Increase in Labor Underutilization Measure	2.9**	3.0**	2.7**	2.8**	2.4**	1.6**
1-Percentage-Point Increase in Labor Force Participation Rate	0.2	0.1	0.3	0.3	0.3	0.5
\$1 increase in Minimum Wage	1.5	1.5	2.0	1.8	1.8	1.7
\$1 increase in 20th-Percentile Wage	-26.9**	-26.7**	-25.2**	-24.9**	-25.3**	-24.6**
1-Percentage-Point Increase in the Percentage of Participants with Short Recertification Periods	-0.3**	-0.3**	-0.3**	-0.3**	-0.3**	-0.3**
Positive Outreach Expenditures in the Prior Year	-2.6	-2.5	-2.3	-2.4	-2.5	-2.9*
Broad-based Categorical Eligibility	10.9**	10.8**	11.3**	11.4**	11.3**	10.9**
1-Percentage-Point Increase in Population Share of Noncitizens	0.1	0.2	0.1	0.2	0.2	0.1

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

**Table B.9 Percent Changes in Average State SNAP Caseload due to Economic and Policy Factors, by Alternative Measures of Labor Underutilization Among Households with Income greater than 100 Percent of the Federal Poverty Level**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
1-Percentage-Point Increase in Labor Underutilization Measure	13.3**	12.4**	8.0**	8.1**	7.6**	5.1**
1-Percentage-Point Increase in Labor Force Participation Rate	0.6	-0.5	-0.3	-0.3	-0.3	-0.7
\$1 increase in Minimum Wage	3.4	4.4	4.5	4.2	4.1	3.8
\$1 increase in 20th-Percentile Wage	-34.5**	-34.9**	-32.2**	-31.5**	-31.4**	-30.7**
1-Percentage-Point Increase in the Percentage of Participants with Short Recertification Periods	-0.7**	-0.7**	-0.7**	-0.7**	-0.7**	-0.7**
Positive Outreach Expenditures in the Prior Year	3.8	3.6	3.8	3.8	3.6	3.2
Broad-based Categorical Eligibility	20.3**	19.0**	19.6**	19.7**	20.0**	19.2**
1-Percentage-Point Increase in Population Share of Noncitizens	-1.3	-1.4	-1.6	-1.5	-1.5	-1.8

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

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## APPENDIX C

### MODEL SELECTION USING CURRENT-YEAR AND LAGGED MODELS

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**Table C.1 Percent Changes in Average State SNAP Caseload due to Economic and Policy Factors Using the Unemployment Rate as the Measure of Labor Underutilization, for Current-Year and Lagged Models**

	Current Period Model	One-Year Lag Model	Two-Year Lag Model
1-Percentage-Point Increase in Labor Underutilization Measure	3.8**	6.3**	6.3**
1-Percentage-Point Increase in Labor Force Participation Rate	0.7	1.3*	6.3**
\$1 increase in Minimum Wage	0.2	0.5	6.3**
\$1 increase in 20th-Percentile Wage	-15.5**	-12.6**	6.3**
1-Percentage-Point Increase in the Percentage of Participants with Short Recertification Periods	-0.3**	-0.3**	6.3**
Positive Outreach Expenditures in the Prior Year	0.3	0.8	6.3**
Broad-based Categorical Eligibility	5.4**	6.2**	6.3**
1-Percentage-Point Increase in Population Share of Noncitizens	-0.5	-0.6	
Akaike Information Criterion (AIC)	-1222	-1238	-1164

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: Model includes year effects and state fixed effects and is based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable is the natural logarithm of the number of participants as a fraction of the state population. Standard errors in parentheses.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

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## APPENDIX D

### REGRESSION COEFFICIENT ESTIMATES AND STANDARD ERRORS

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**Table D.1 Estimates of the Determinants of the State SNAP Participant Count, by Alternative Measure of Labor Underutilization**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
Labor Underutilization Measure	0.037** (0.012)	0.019** (0.010)	0.016** (0.006)	0.016** (0.006)	0.0016** (0.006)	0.014** (0.004)
Labor Underutilization Measure (lag)	0.071** (0.012)	0.048** (0.010)	0.043** (0.006)	0.042** (0.006)	0.038** (0.006)	0.030** (0.004)
Labor Force Participation Rate	0.004 (0.006)	-0.001 (0.006)	-0.003 (0.006)	-0.002 (0.006)	-0.001 (0.006)	-0.003 (0.006)
Minimum Wage	-0.008 (0.011)	-0.003 (0.012)	-0.005 (0.011)	-0.006 (0.011)	-0.007 (0.011)	-0.009 (0.011)
20th-Percentile Wage	-0.197** (0.025)	-0.209** (0.025)	-0.180** (0.025)	-0.179** (0.025)	-0.182** (0.025)	-0.170** (0.025)
Proportion of Participants with Short Recertification Periods	-0.003** (0.000)	-0.003** (0.000)	-0.003** (0.000)	-0.003** (0.000)	-0.003** (0.000)	-0.003** (0.000)
Positive Outreach Expenditures in the Prior Year	0.004 (0.009)	0.002 (0.009)	0.003 (0.009)	0.003 (0.009)	0.003 (0.009)	0.001 (0.009)
Broad-based Categorical Eligibility in the Prior Year	0.046** (0.013)	0.043** (0.013)	0.040** (0.012)	0.040** (0.012)	0.038** (0.012)	0.036** (0.012)
Noncitizen Share	-1.406** (0.308)	-1.095** (0.303)	-1.305** (0.298)	-1.336** (0.298)	-1.355** (0.299)	-1.348** (0.292)

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population. Standard errors in parentheses.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

**Table D.2 Estimates of the Determinants of the State SNAP Participant Count, by Alternative Measure of Labor Underutilization among Single-Adult Households with Children**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
Labor Underutilization Measure	0.011 (0.015)	0.007 (0.012)	0.007 (0.008)	0.008 (0.008)	0.009 (0.007)	0.010 (0.005)
Labor Underutilization Measure (lag)	0.054** (0.016)	0.027* (0.013)	0.033** (0.008)	0.030** (0.008)	0.023** (0.007)	0.016** (0.006)
Labor Force Participation Rate	0.010 (0.007)	0.003 (0.007)	0.004 (0.007)	0.005 (0.007)	0.004 (0.007)	0.002 (0.007)
Minimum Wage	-0.026* (0.012)	-0.022 (0.013)	-0.021 (0.012)	-0.022 (0.012)	-0.022 (0.012)	-0.024* (0.012)
20th-Percentile Wage	-0.119** (0.028)	-0.134** (0.028)	-0.106** (0.028)	-0.105** (0.028)	-0.109** (0.028)	-0.096** (0.029)
Proportion of Participants with Short Recertification Periods	-0.003** (0.000)	-0.003** (0.000)	-0.003** (0.000)	-0.003** (0.000)	-0.003** (0.000)	-0.003** (0.000)
Positive Outreach Expenditures in the Prior Year	0.007 (0.010)	0.005 (0.010)	0.006 (0.010)	0.006 (0.010)	0.005 (0.010)	0.002 (0.010)
Broad-based Categorical Eligibility in the Prior Year	0.066** (0.020)	0.058** (0.021)	0.064** (0.020)	0.065** (0.020)	0.064** (0.020)	0.062** (0.020)
Noncitizen Share	0.004 (0.007)	0.005 (0.007)	0.005 (0.007)	0.005 (0.007)	0.005 (0.007)	0.004 (0.007)

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population. Standard errors in parentheses.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

**Table D.3 Estimates of the Determinants of the State SNAP Participant Count, by Alternative Measure of Labor Underutilization among Multiple-Adult Households with Children**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
Labor Underutilization Measure	0.074** (0.027)	0.055* (0.022)	0.039** (0.014)	0.038*** (0.014)	0.035** (0.013)	0.026** (0.009)
Labor Underutilization Measure (lag)	0.113** (0.028)	0.112** (0.023)	0.084** (0.015)	0.076** (0.014)	0.069** (0.013)	0.050** (0.010)
Labor Force Participation Rate	0.044** (0.013)	0.026* (0.012)	0.029* (0.012)	0.031* (0.012)	0.031** (0.012)	0.027* (0.012)
Minimum Wage	-0.023 (0.022)	-0.010 (0.022)	-0.008 (0.021)	-0.012 (0.021)	-0.012 (0.021)	-0.018 (0.021)
20th-Percentile Wage	-0.305** (0.051)	-0.313** (0.049)	-0.260** (0.049)	-0.262** (0.050)	-0.264** (0.049)	-0.238** (0.050)
Proportion of Participants with Short Recertification Periods	-0.004** (0.001)	-0.005** (0.001)	-0.004** (0.001)	-0.004** (0.001)	-0.004** (0.001)	-0.004** (0.001)
Positive Outreach Expenditures in the Prior Year	0.017 (0.018)	0.012 (0.018)	0.016 (0.017)	0.016 (0.017)	0.014 (0.017)	0.006 (0.017)
Broad-based Categorical Eligibility in the Prior Year	0.006 (0.037)	-0.013 (0.036)	-0.000 (0.035)	0.000 (0.035)	0.003 (0.035)	-0.007 (0.035)
Noncitizen Share	-0.005 (0.013)	-0.004 (0.012)	-0.006 (0.012)	-0.006 (0.012)	-0.006 (0.012)	-0.009 (0.012)

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population. Standard errors in parentheses.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

**Table D.4 Estimates of the Determinants of the State SNAP Participant Count, by Alternative Measure of Labor Underutilization among Households with an Elderly Member Living with Adults or Children**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
Labor Underutilization Measure	0.145** (0.049)	0.092* (0.040)	0.054* (0.027)	0.055* (0.026)	0.053* (0.024)	0.039* (0.018)
Labor Underutilization Measure (lag)	0.064 (0.052)	0.125** (0.041)	0.070* (0.028)	0.065* (0.027)	0.057* (0.024)	0.038* (0.018)
Labor Force Participation Rate	-0.007 (0.023)	-0.024 (0.022)	-0.021 (0.023)	-0.019 (0.023)	-0.019 (0.023)	-0.025 (0.023)
Minimum Wage	0.176** (0.041)	0.191** (0.040)	0.192** (0.040)	0.188** (0.040)	0.188** (0.040)	0.183** (0.040)
20th-Percentile Wage	0.069 (0.092)	0.073 (0.090)	0.101 (0.094)	0.105 (0.093)	0.103 (0.093)	0.123 (0.095)
Proportion of Participants with Short Recertification Periods	-0.003* (0.001)	-0.003* (0.001)	-0.003* (0.001)	-0.003* (0.001)	-0.003* (0.001)	-0.003* (0.001)
Positive Outreach Expenditures in the Prior Year	-0.065 (0.033)	-0.067* (0.033)	-0.063 (0.033)	-0.063 (0.033)	-0.065* (0.033)	-0.072* (0.033)
Broad-based Categorical Eligibility in the Prior Year	0.171* (0.067)	0.152* (0.066)	0.159* (0.066)	0.160* (0.066)	0.163* (0.066)	0.153* (0.066)
Noncitizen Share	-0.037 (0.023)	-0.038 (0.023)	-0.042 (0.023)	-0.042 (0.023)	-0.042 (0.023)	-0.046* (0.023)

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population. Standard errors in parentheses.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.



**Table D.5 Estimates of the Determinants of the State SNAP Participant Count, by Alternative Measure of Labor Underutilization among Elderly-Only Households**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
Labor Underutilization Measure	0.040 (0.035)	-0.030 (0.029)	0.008 (0.019)	0.008 (0.019)	0.008 (0.017)	0.012 (0.013)
Labor Underutilization Measure (lag)	-0.042 (0.037)	0.011 (0.030)	0.007 (0.020)	0.005 (0.019)	0.002 (0.017)	0.007 (0.013)
Labor Force Participation Rate	-0.044** (0.016)	-0.037* (0.016)	-0.041* (0.016)	-0.041* (0.016)	-0.041* (0.016)	-0.043* (0.016)
Minimum Wage	-0.040 (0.029)	-0.040 (0.029)	-0.039 (0.029)	-0.040 (0.029)	-0.040 (0.029)	-0.042 (0.029)
20th-Percentile Wage	0.125 (0.066)	0.114 (0.065)	0.142* (0.067)	0.140* (0.067)	0.138* (0.067)	0.165* (0.068)
Proportion of Participants with Short Recertification Periods	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
Positive Outreach Expenditures in the Prior Year	0.074** (0.024)	0.080** (0.024)	0.077** (0.024)	0.077** (0.024)	0.077** (0.024)	0.075** (0.023)
Broad-based Categorical Eligibility in the Prior Year	0.123* (0.048)	0.122* (0.047)	0.127** (0.048)	0.126** (0.048)	0.126** (0.048)	0.129** (0.047)
Noncitizen Share	-0.031 (0.017)	-0.035* (0.017)	-0.033* (0.017)	-0.033* (0.017)	-0.033* (0.017)	-0.034* (0.017)

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population. Standard errors in parentheses.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

**Table D.6 Estimates of the Determinants of the State SNAP Participant Count, by Alternative Measure of Labor Underutilization among Adult-Only Households**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
Labor Underutilization Measure	0.070** (0.021)	0.017 (0.018)	0.025* (0.012)	0.022* (0.011)	0.020 (0.010)	0.021** (0.007)
Labor Underutilization Measure (lag)	0.098** (0.023)	0.090** (0.019)	0.066** (0.012)	0.063** (0.011)	0.058** (0.010)	0.038** (0.008)
Labor Force Participation Rate	0.027** (0.010)	0.015 (0.010)	0.015 (0.010)	0.017 (0.010)	0.018 (0.010)	0.012 (0.010)
Minimum Wage	-0.013 (0.018)	-0.002 (0.018)	0.001 (0.017)	-0.002 (0.017)	-0.003 (0.017)	-0.007 (0.017)
20th-Percentile Wage	0.014 (0.040)	-0.017 (0.040)	0.031 (0.040)	0.030 (0.040)	0.028 (0.040)	0.055 (0.040)
Proportion of Participants with Short Recertification Periods	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
Positive Outreach Expenditures in the Prior Year	0.028* (0.014)	0.027 (0.015)	0.028* (0.014)	0.029* (0.014)	0.027 (0.014)	0.020 (0.014)
Broad-based Categorical Eligibility in the Prior Year	0.109** (0.029)	0.088** (0.029)	0.099** (0.029)	0.100** (0.029)	0.101** (0.029)	0.095** (0.028)
Noncitizen Share	-0.018 (0.010)	-0.019 (0.010)	-0.019 (0.010)	-0.019 (0.010)	-0.019 (0.010)	-0.022* (0.010)

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population. Standard errors in parentheses.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

**Table D.7 Estimates of the Determinants of the State SNAP Participant Count, by Alternative Measure of Labor Underutilization among Children-Only Households**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
Labor Underutilization Measure	0.096 (0.085)	-0.041 (0.070)	-0.015 (0.047)	-0.015 (0.045)	-0.020 (0.041)	-0.002 (0.030)
Labor Underutilization Measure (lag)	-0.060 (0.090)	-0.021 (0.072)	-0.025 (0.048)	-0.024 (0.046)	-0.018 (0.042)	-0.011 (0.032)
Labor Force Participation Rate	-0.068 (0.040)	-0.060 (0.039)	-0.063 (0.039)	-0.064 (0.039)	-0.063 (0.039)	-0.064 (0.040)
Minimum Wage	0.016 (0.070)	0.020 (0.070)	0.020 (0.070)	0.021 (0.070)	0.022 (0.070)	0.021 (0.070)
20th-Percentile Wage	0.065 (0.160)	0.007 (0.157)	-0.006 (0.162)	-0.008 (0.162)	-0.011 (0.162)	-0.011 (0.165)
Proportion of Participants with Short Recertification Periods	-0.006* (0.002)	-0.006* (0.002)	-0.006* (0.002)	-0.006* (0.002)	-0.006* (0.002)	-0.006* (0.002)
Positive Outreach Expenditures in the Prior Year	-0.043 (0.057)	-0.033 (0.057)	-0.036 (0.057)	-0.036 (0.057)	-0.035 (0.057)	-0.035 (0.056)
Broad-based Categorical Eligibility in the Prior Year	-0.003 (0.115)	-0.017 (0.114)	-0.021 (0.115)	-0.021 (0.115)	-0.023 (0.115)	-0.015 (0.114)
Noncitizen Share	0.0120** (0.040)	0.112** (0.040)	0.114** (0.040)	0.114** (0.040)	0.114** (0.040)	0.115** (0.040)

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population. Standard errors in parentheses.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

**Table D.8 Estimates of the Determinants of the State SNAP Participant Count, by Alternative Measure of Labor Underutilization of Households with Income Less Than 50 Percent of the Federal Poverty Level**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
Labor Underutilization Measure	0.081** (0.024)	0.056** (0.020)	0.051** (0.013)	0.045** (0.013)	0.043** (0.012)	0.044** (0.008)
Labor Underutilization Measure (lag)	0.092** (0.025)	0.046* (0.021)	0.039** (0.013)	0.037** (0.013)	0.031** (0.012)	0.019* (0.009)
Labor Force Participation Rate	0.044** (0.011)	0.027* (0.011)	0.027* (0.011)	0.029** (0.011)	0.029** (0.011)	0.021* (0.011)
Minimum Wage	-0.034 (0.020)	-0.021 (0.020)	-0.022 (0.020)	-0.024 (0.020)	-0.024 (0.020)	-0.029 (0.019)
20th-Percentile Wage	0.072 (0.044)	0.035 (0.045)	0.087 (0.045)	0.082 (0.045)	0.080 (0.045)	0.115* (0.045)
Proportion of Participants with Short Recertification Periods	-0.002** (0.001)	-0.002** (0.001)	-0.002** (0.001)	-0.002** (0.001)	-0.002** (0.001)	-0.002** (0.001)
Positive Outreach Expenditures in the Prior Year	0.040* (0.016)	0.034* (0.016)	0.036* (0.016)	0.036* (0.016)	0.035* (0.016)	0.030 (0.015)
Broad-Based Categorical Eligibility in the Prior Year	-0.035 (0.032)	-0.058 (0.033)	-0.048 (0.032)	-0.048 (0.032)	-0.046 (0.032)	-0.049 (0.031)
Noncitizen Share	-0.010 (0.011)	-0.011 (0.011)	-0.011 (0.011)	-0.012 (0.011)	-0.012 (0.011)	-0.014 (0.011)

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population. Standard errors in parentheses.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

**Table D.9 Estimates of the Determinants of the State SNAP Participant Count, by Alternative Measure of Labor Underutilization of Households with Income Between 50 and 100 Percent of the Federal Poverty Level**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
Labor Underutilization Measure	-0.018 (0.021)	-0.027 (0.017)	-0.024* (0.011)	-0.018 (0.011)	-0.018 (0.010)	-0.018* (0.007)
Labor Underutilization Measure (lag)	0.047* (0.022)	0.057** (0.018)	0.051** (0.012)	0.046** (0.011)	0.042** (0.010)	0.034** (0.008)
Labor Force Participation Rate	0.002 (0.010)	0.001 (0.010)	0.003 (0.010)	0.003 (0.010)	0.003 (0.010)	0.005 (0.010)
Minimum Wage	0.015 (0.018)	0.015 (0.017)	0.020 (0.017)	0.018 (0.017)	0.018 (0.017)	0.017 (0.017)
20th-Percentile Wage	-0.269** (0.040)	-0.267** (0.039)	-0.252** (0.040)	-0.249** (0.040)	-0.253** (0.040)	-0.246** (0.040)
Proportion of Participants with Short Recertification Periods	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)
Positive Outreach Expenditures in the Prior Year	-0.026 (0.014)	-0.025 (0.014)	-0.023 (0.014)	-0.024 (0.014)	-0.025 (0.014)	-0.029* (0.014)
Broad-Based Categorical Eligibility in the Prior Year	0.109** (0.029)	0.108** (0.028)	0.113** (0.028)	0.114** (0.028)	0.113** (0.028)	0.109** (0.028)
Noncitizen Share	0.001 (0.010)	0.002 (0.010)	0.001 (0.010)	0.002 (0.010)	0.002 (0.010)	0.001 (0.010)

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population. Standard errors in parentheses.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

**Table D.10 Estimates of the Determinants of the State SNAP Participant Count, by Alternative Measure of Labor Underutilization of Households with Income Greater than 100 Percent of the Federal Poverty Level**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
Labor Underutilization Measure	0.087* (0.037)	0.053 (0.031)	0.035 (0.020)	0.040* (0.020)	0.042* (0.018)	0.028* (0.013)
Labor Underutilization Measure (lag)	0.046 (0.040)	0.071* (0.032)	0.045* (0.021)	0.041* (0.020)	0.034 (0.018)	0.023 (0.014)
Labor Force Participation Rate	0.006 (0.017)	-0.005 (0.017)	-0.003 (0.017)	-0.003 (0.017)	-0.003 (0.017)	-0.007 (0.017)
Minimum Wage	0.034 (0.031)	0.044 (0.031)	0.045 (0.031)	0.042 (0.031)	0.041 (0.031)	0.038 (0.031)
20th-Percentile Wage	-0.345** (0.070)	-0.349** (0.069)	-0.322** (0.071)	-0.315** (0.071)	-0.314** (0.071)	-0.307** (0.072)
Proportion of Participants with Short Recertification Periods	-0.007** (0.001)	-0.007** (0.001)	-0.007** (0.001)	-0.007** (0.001)	-0.007** (0.001)	-0.007** (0.001)
Positive Outreach Expenditures in the Prior Year	0.038 (0.025)	0.036 (0.025)	0.038 (0.025)	0.038 (0.025)	0.036 (0.025)	0.032 (0.025)
Broad-Based Categorical Eligibility in the Prior Year	0.203** (0.051)	0.190** (0.050)	0.196** (0.050)	0.197** (0.050)	0.200** (0.050)	0.192** (0.050)
Noncitizen Share	-0.013 (0.018)	-0.014 (0.018)	-0.016 (0.018)	-0.015 (0.017)	-0.015 (0.017)	-0.018 (0.017)

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All models include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population. Standard errors in parentheses.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

\*Significantly different from zero at the .05 level, two-tailed test.

\*\*Significantly different from zero at the .01 level, two-tailed test.

## **APPENDIX E**

### **EXPLAINING RECENT CHANGES IN SNAP CASELOADS FOR HOUSEHOLD AND INCOME SUBGROUPS**

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**Table E.1 Percentage of SNAP Caseload Increase Explained by Economic and Policy Factors, by Household Subgroup**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
Single-Adult Households with Children						
Percentage Change (Actual)	29	29	29	29	29	29
Percentage of Actual Change Explained by:						
Economic Factors	27	21	51	50	45	50
Policy Factors	29	27	28	28	28	27
Multiple-Adult Households with Children						
Percentage Change (Actual)	47	47	47	47	47	47
Percentage of Actual Change Explained by:						
Economic Factors	41	57	85	82	84	94
Policy Factors	21	20	20	20	20	17
Adult-Only Households						
Percentage Change (Actual)	63	63	63	63	63	63
Percentage of Actual Change Explained by:						
Economic Factors	28	32	49	49	51	55
Policy Factors	6	5	6	6	5	4
Elderly-only Households						
Percentage Change (Actual)	29	29	29	29	29	29
Percentage of Actual Change Explained by:						
Economic Factors	-8	2	14	12	7	28
Policy Factors	14	14	15	15	15	15
Households with Elderly Living with Adults or Children						
Percentage Change (Actual)	18	18	18	18	18	18
Percentage of Actual Change Explained by:						
Economic Factors	86	165	182	180	179	193
Policy Factors	25	24	23	23	22	15
Children-Only Households						
Percentage Change (Actual)	49	49	49	49	49	49
Percentage of Actual Change Explained by:						
Economic Factors	-5	-17	-28	-28	-26	-22
Policy Factors	43	41	41	41	41	42

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All estimates based on models that include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the "U-3 Rate" specification.

**Table E.2 Percentage of SNAP Caseload Increase Explained by Economic and Policy Factors, by Income Subgroup**

	U-1 Rate	U-2 Rate	U-3 Rate <sup>a</sup>	U-4 Rate	U-5 Rate	U-6 Rate
Income Below 50 Percent of the Federal Poverty Level (FPL)						
Percentage Change (Actual)	49	49	49	49	49	49
Percentage of Actual Change Explained by:						
Economic Factors	38	29	47	46	44	49
Policy Factors	8	6	7	7	6	5
Income from 50 to 100 Percent of FPL						
Percentage Change (Actual)	26	26	26	26	26	26
Percentage of Actual Change Explained by:						
Economic Factors	15	34	73	70	73	87
Policy Factors	34	33	34	34	34	31
Income More than 100 Percent of FPL						
Percentage Change (Actual)	54	54	54	54	54	54
Percentage of Actual Change Explained by:						
Economic Factors	19	31	39	39	37	39
Policy Factors	36	36	36	36	36	34

Source: SNAP Operations, SNAP QC data, and Basic Monthly CPS data for 2000 to 2008.

Note: All estimates based on models that include year effects and state fixed effects and are based on data for 50 states and the District of Columbia from 2000 to 2008. The dependent variable in all models is the natural logarithm of the number of participants as a fraction of the state population.

<sup>a</sup>The unemployment rate is the measure of labor underutilization in the “U-3 Rate” specification.

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