



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

# **Using County-Level Data to Study the Race and Ethnicity of Food Stamp Program Participants in California**

**Parke Wilde**

**Chris Dicken**

Economic Research Service

1800 M Street NW, Room N2167

Washington DC 20036-5831

[pwilde@ers.usda.gov](mailto:pwilde@ers.usda.gov)

*Paper prepared for presentation at the American Agricultural Economics Association Annual Meeting,*

*Montreal, Canada, July 27-30, 2003*

*This paper is not copyrighted. Readers may make verbatim copies of this document for non-commercial purposes by any means, provided that authorship is acknowledged.*

## ***Introduction***

This paper uses county-level administrative data from California to investigate Food Stamp Program participation patterns for several race and ethnicity categories. Some policy relevant questions are: 1) How does the Food Stamp Program's coverage differ by race and ethnicity? 2) How do changes in the caseload over time differ by race and ethnicity? and 3) How important are county-level data for understanding the association between economic conditions and program participation patterns for different race and ethnicity groups?

Because the Food Stamp Program is an entitlement program, it is particularly important to study program participation dynamics in order to forecast future budgetary requirements and understand the impact of recent and potential policy changes. The Federal Government alone does not determine the scale of the program or the number of participants. The caseload depends on economic conditions and policy factors, including some conditions and factors that vary at the county level. To understand the U.S. Food Stamp Program, it is important to understand how program participation dynamics vary across counties. In all States, economic conditions and demographic characteristics differ from county to county. Moreover, in some States, such as California, significant program decisions are delegated to the county level.

This paper employs data on Food Stamp Program participation at the county level, broken down according to race and ethnicity, to study caseload declines in the second half of the 1990s. We focus on California, because it is a large State with a substantial regional racial and ethnic diversity, its Food Stamp Program is administered at the county level rather than the State level,

and its county-level program data are readily available on the internet. Of all States, California provides arguably the best possible illustration of the capabilities of county-level data on the race and ethnicity of program participants.

One motivation for this paper is to explore the degree of additional insight that comes from having county-level data in place of more aggregated State-level data. For most States, county-level data have been collected for many years by the U.S. Department of Agriculture's Food and Nutrition Service (FNS), although California appears to be unique in making these data available on the internet (see the Appendix for more detail on sources of county-level data). Pursuant to civil rights laws and regulations, FNS has required States to report data on the race and ethnicity of program participants at the "project area" level, an administrative unit that is the same as a county in most States (FNS 2000). Across the Federal Government, data collections that include information about race and ethnicity have recently become somewhat more complex, because new official definitions allow people to define themselves as belonging to more than one race. FNS has proposed to stop routinely asking States to report race and ethnicity data of food stamp participants at the project area level, in order to offset the States' increased reporting burden (FNS 2002). Instead, FNS proposes that States continue to report such data at the State level, while maintaining project area data in files at the State agency.

The FNS-101 data are the only nationwide data that provide accurate information about the racial composition of the food stamp caseload at the county level in most States. For example, neither the Current Population Survey (CPS), the Survey of Income and Program Participation (SIPP), nor USDA's Quality Control (QC) sample provide county-level detail. For selected counties,

self-reported Food Stamp Program participation status will be available from the Census Bureau's new American Community Survey and Supplementary Surveys, but survey respondents frequently under-report Food Stamp Program participation. For counties that are not covered in these two new surveys, the only source for program participation information is the administrative data reported through FNS-101. Moreover, while the FNS-101 data could potentially have administrative reporting error, these data certainly have neither sampling variation nor self-reporting bias. It is worth asking whether participation varies much by race and by county, because the unique value added from the FNS-101 data collection depends on such variation.

Most research on food stamp participation uses aggregate State-level data (Figlio, Gundersen, and Ziliak 2000; Wilde et al. 2000; Wallace and Blank 1999) or panel data from major National surveys (Gleason, Schochet, and Moffitt 1998). Neither type of data provides information at the county level. Some recent research has noted the potential importance of using county-level data for this area of work. Goetz, Rupasingha, and Zimmerman (2002) write, "[I]t is well known that poverty occurs in 'pockets,' or spatial clusters, and this is also true for changes in caseloads." They analyze nationwide data on the food stamp benefits received in each county using geospatial econometric models.

The data used by Goetz, Rupasingha, and Zimmerman (2002) contained information about the race and ethnicity of the county population, but not the race and ethnicity of program participants in particular. Interestingly, the authors found that food stamp payments (to participants of all races) fell more quickly in counties with proportionately more foreign-born residents and

African-Americans. It seems plausible that this finding indicates African-Americans and foreign-born residents left the food stamp rolls more quickly than other participants did. However, we know of no previous research that has used actual Food Stamp Program data on the race and ethnicity of participants.

### ***Question 1: Program Coverage***

Figure 1 indicates the proportion of the food stamp caseload that belongs to four race and ethnicity categories: 1) White non-Hispanic, 2) Asian non-Hispanic, 3) Black non-Hispanic, and 4) Hispanic. In northern and northeastern counties, the large majority of households are White. In southern counties and agricultural counties in the center of the State, a larger share are Hispanic. Black households constitute a small share of food stamp cases in most counties, but a higher share in Los Angeles and in East Bay counties, east of San Francisco.

The cross-county diversity in the caseload composition is striking. As Figure 2 emphasizes, county-level data provide important detail about program participation patterns, which is not available in State-level data. However, the county-level data in figure 1 and figure 2 do not indicate whether this diversity is due to something about the program, or whether it simply reflects the spatial distribution of the eligible population in California.

To address this question, figure 3 estimates the number of food stamp participants as a proportion of the number of poor people, by county, for each race and ethnicity category. For example, the first quadrant of figure 3 estimates the number of White food stamp participants as

a fraction of all low-income White people in each county. There are some limitations to this preliminary investigation: the 2002 FSP participation data are compared to the number of persons whose income was under 100 percent of poverty in the most recent decennial Census two years earlier in 2000. Also, the estimated number of food stamp participants assumes a constant 2.2 persons per food stamp household. The actual administrative data report only the number of food stamp cases, not persons. Finally, while the number of persons with income below 100 percent of poverty is a reliable correlate of the number of eligible persons, the actual eligibility rules are complex and use a gross income cutoff of 130 percent of poverty.

There are several notable differences across counties and across race categories. For example, the number of African American food stamp participants is comparatively high, relative to the number of African American people in poverty. The number of Hispanic participants is comparatively low. For all race and ethnicity categories, there is considerable variation across counties in the race-specific ratio of participants to persons in poverty. Even with the limitations noted previously, this illustration suffices to indicate some interesting variation in how the program serves low-income people of different races and ethnicities, which might merit further study.

## ***Question 2: Changes Over Time***

Next, we consider the change over time in the program shares illustrated in figure 1. Recall that figure 1 shows the number of cases in each race and ethnicity category in 1999 as a percentage of all FSP cases. Figure 4 shows the change in this measure, in percentage points, between 1999

and 2001. The Hispanic category increased rapidly (4 or more percentage points) in the highest number of counties. However, for each race and ethnicity category, the share of the total caseload increased in some counties and decreased in others. Clearly, a State-level tally of the caseload shares by race, or of the changes over time in these shares, would not reveal the diversity of changing participation patterns across counties.

### ***Question 3: Program Participation Dynamics***

Much of the literature on program participation dynamics relies on the association between participation measures, economic variables such as the unemployment rate, control variables such as characteristics of particular geographical areas, and policy variables that have changed over time. Here, we give a more limited indication of how some of these partial associations vary by race and county.

Table 1 shows several variants of regression models for food stamp participation as a fraction of the full county population (not just the number of persons in poverty). As in figure 3, the program participation figures come from administrative data for households, in this case for the years 1999-2002. The population figures in the denominator come from the 2000 decennial Census. The explanatory variables include: 1) the county-level unemployment rate for each year, except that the 2002 figures are for July 2002, because the later data were not available at the time of this analysis; 2) a condensed version of the USDA urban-rural categorization known as the “Beale” code; 3) a set of control variables for year, which account for other state-wide factors such as state-wide policies, which vary over time. The regression equations typically



used in the research literature on program participation dynamics are generally much more complex, but this table suffices to indicate the presence of the type of statistical associations measured in such models.

As expected, unemployment has a large and statistically significant positive association with food stamp participation. The level of participation in food stamp/public assistance cases is highest in the largest cities, while participation in food stamp/non-assistance cases is higher in smaller cities and nonmetro counties. It is important to note that the effect of unemployment appears much different depending on the inclusion or exclusion of control variables for the degree of rurality. With no control for rurality, a one percentage point increase in the unemployment rate is associated with a 0.38 percentage point increase in program participation (as a fraction of the county population). By contrast, with controls rurality, a one percentage point increase in the unemployment rate is associated with just a 0.28 percentage point increase in program participation (as a fraction of the county population). Thus, if one ignores county-specific information about rurality, one misses key information that helps in interpreting regression parameters showing the effect of unemployment on program participation.

Table 2 shows similar regressions for four race and ethnicity groups. The unemployment rate most strongly affects program participation for Hispanic households, and least strongly affects participation for White households. For White people, being in the most rural type of county has a positive effect on the probability of participating, compared with being in a large city. For Black and Hispanic people, the effect is precisely the opposite: being in the most rural type of

county has a strong negative effect on the probability of participating, compared with being in a large city.

## ***Conclusions***

Based on recent research (Goetz, Rupasingha, and Zimmerman 2002), there is some suggestive evidence that Food Stamp Program participation dynamics at the county level may differ according to race and ethnicity. Data on the race and ethnicity of program participants are reported by States to FNS for each project area, an administrative unit that corresponds to a county in most States. This paper uses data for the State of California, which makes the data public through a State government internet site.

Our analysis of California data finds: 1) there is a large cross-county diversity in the race and ethnicity of program participants, 2) there is a large cross-county diversity in the share of low-income people belonging to each race and ethnicity category who participate in the Food Stamp Program, and 3) Hispanic participants were a growing share of the caseload from 1999 to 2001 in the largest number of California counties, but each race and ethnicity category was gaining program share in some counties while losing program share in others. In addition, estimated regression parameters show that the relationship between unemployment and program participation varies depending on whether county-level characteristics such as the degree of rurality are controlled. These estimates for the association between unemployment and program participation also vary across race and ethnicity categories.

In conclusion, this research indicates that substantial insight is gained from using county-level data instead of State-level data, and from distinguishing between race and ethnicity categories. While nationwide data on the race and ethnicity of Food Stamp Program participants may not be reported to FNS by States through the FNS-101 system in future years, this research indicates the potential value of that data system and similar systems that provide administrative data at a disaggregated geographic level, such as the county or project area level.

This research on the race and ethnicity of program participants at the county level is just one example of recent attention to county-level program participation data. A new Food Stamp Program Map Machine from USDA's Economic Research Service makes some sources of county level data available to the public through an interactive web-based mapping application (see the Appendix). Other similar data resources may be added to this map machine in the future, perhaps including data on the race and ethnicity of Food Stamp Program participants at the project area level.

Figure 1. The ethnic diversity of California's food stamp caseload varies greatly by geography.

Households in each race and ethnicity category as a percentage of all food stamp households (1999). Darker shades indicate a higher share of all program participants belong to the reference race or ethnicity.

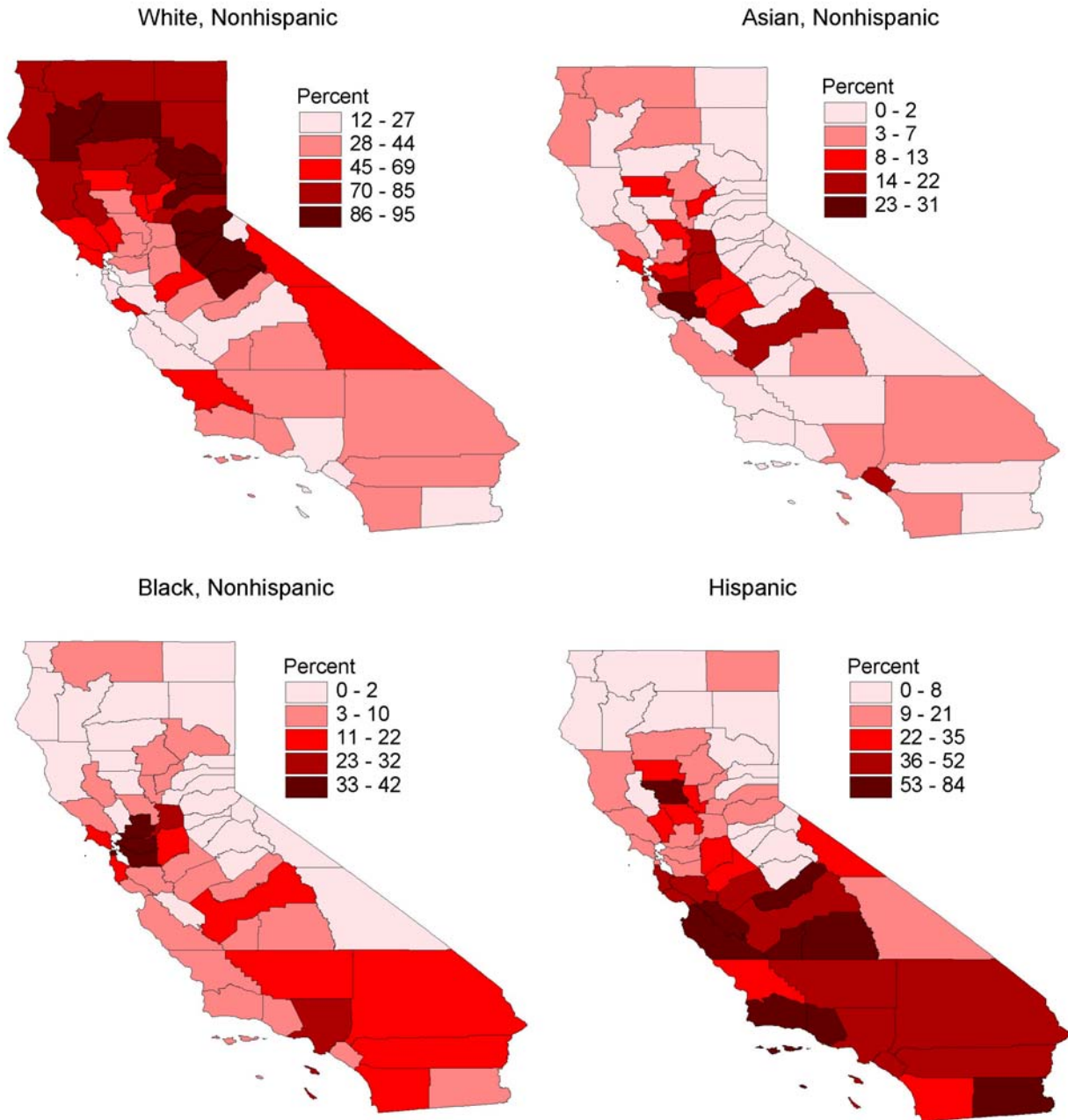


Figure 2. County-level participation data provide considerable insight that is not available in State-level participation data.

Hispanic households as a percentage of all food stamp households (1999). Darker shades indicate a higher share of all program participants are Hispanic.

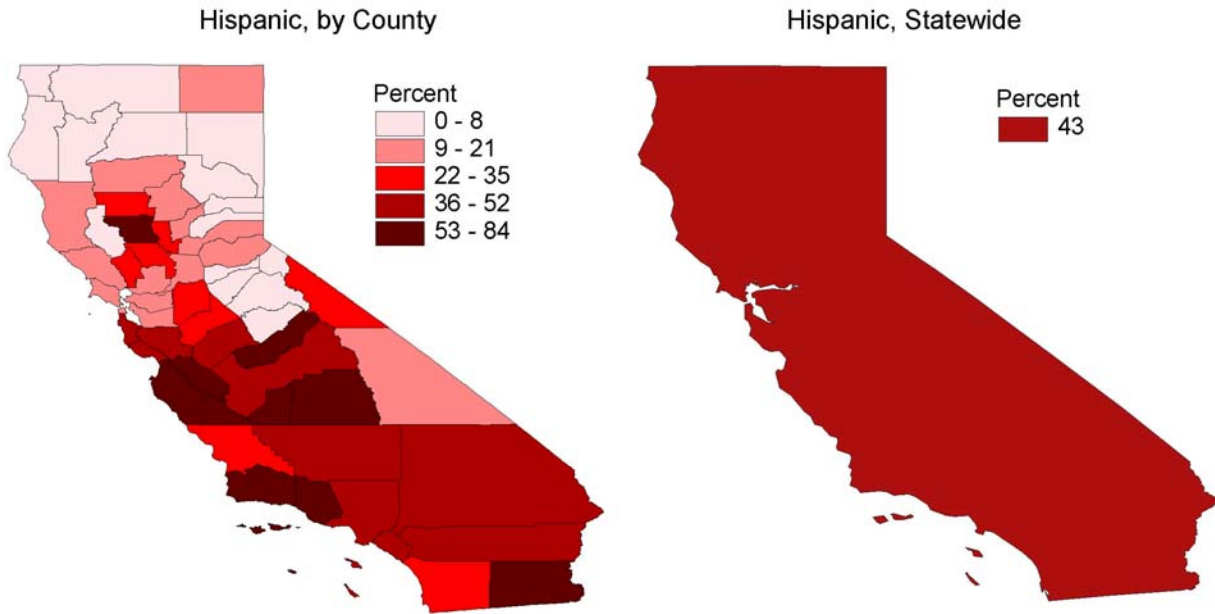
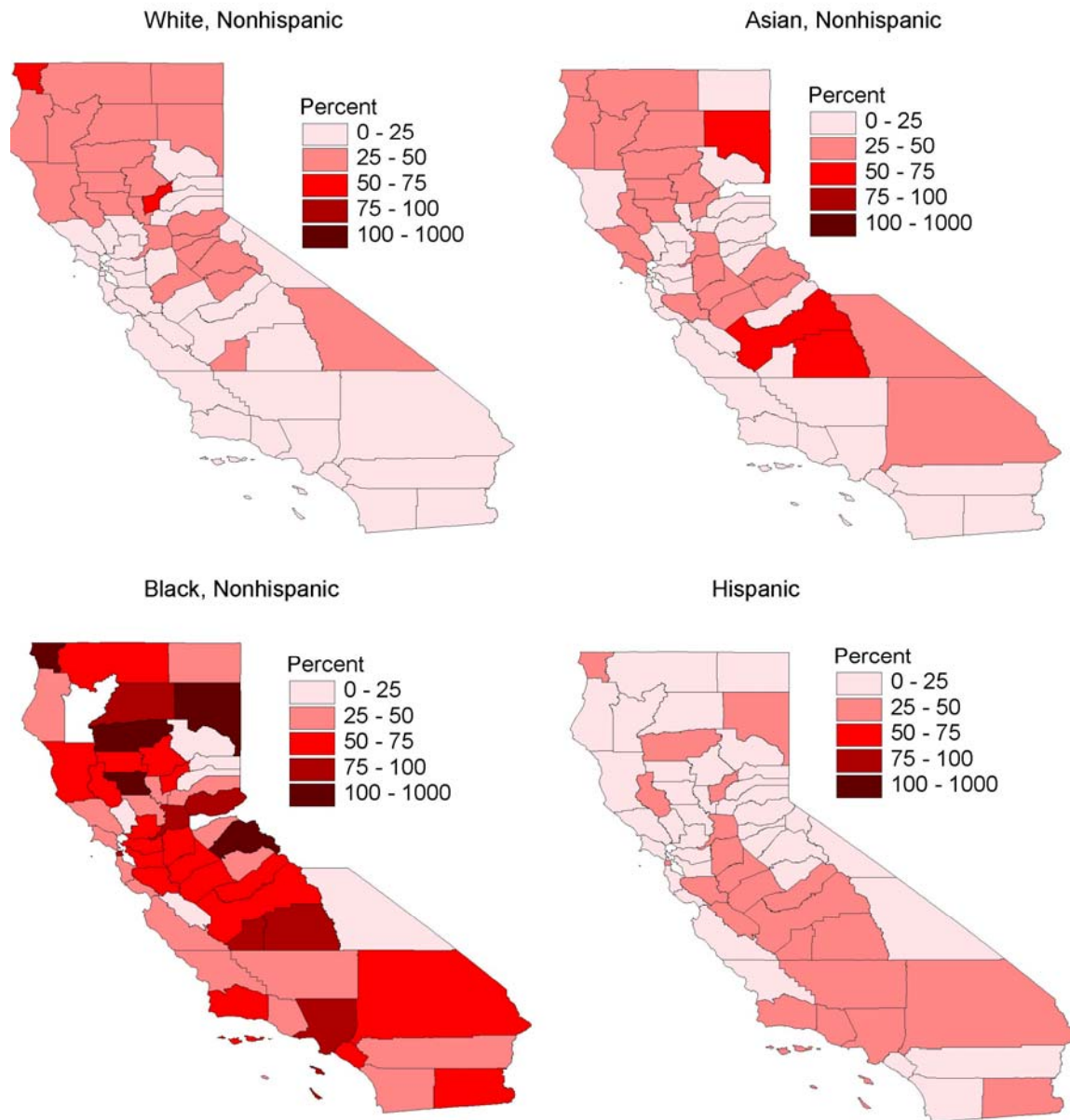


Figure 3. The probability that a poor person in California participates in the Food Stamp Program varies strongly with race and ethnicity.

FSP participants<sup>1</sup> by race and ethnicity (July 2002) as a percentage of the number of persons in poverty by race and ethnicity (Census 2000). Darker shades indicate that a higher share of poor people, of a given race or ethnicity, participate in the Food Stamp Program.



<sup>1</sup> FSP data are for households. To compute the participation ratios in terms of persons, a constant household size of 2.2 persons is assumed.

Figure 4. Each ethnic group is gaining share of the food stamp caseload in some counties, and losing share in others.

Change in share of the FSP caseload, in percentage points (July 1999 - July 2001). A negative change (lighter shades) indicates declining caseload; a positive change (darker shades) indicates increasing caseload.

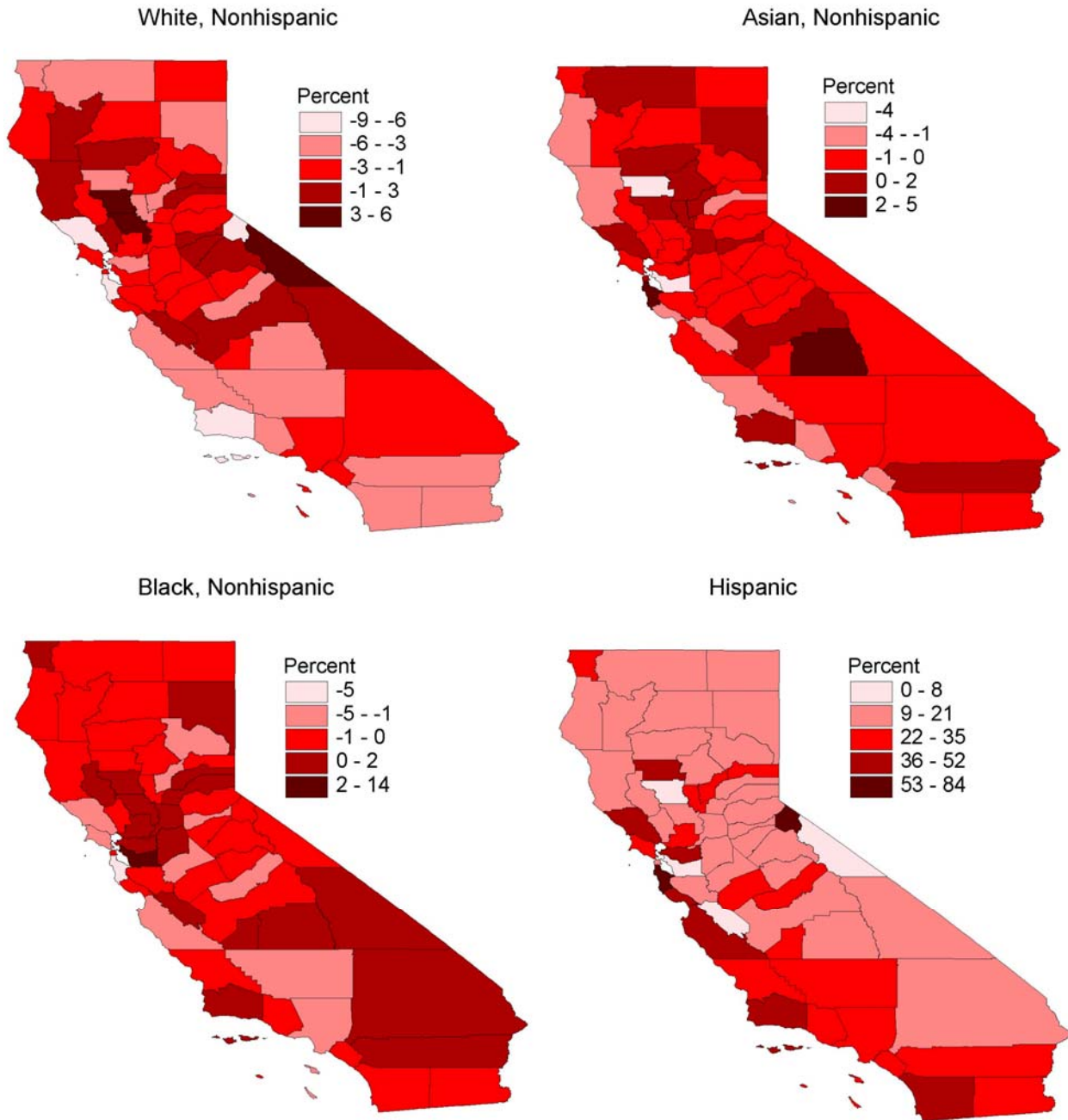


Table 1. The Effect of County Unemployment Rate and Metro/Nonmetro Status on the Number of Food Stamp Participants as a Share of the County Population

Explanatory variable	Full sample				Full-family public assistance?			
					Yes		No	
	Beta	s.e.	Beta	s.e.	Beta	s.e.	Beta	s.e.
Intercept	2.399	(0.34)	2.268	(0.33)	1.429	(0.19)	0.838	(0.18)
County unemployment rate	0.38 *	(0.03)	0.279 *	(0.04)	0.145 *	(0.02)	0.134 *	(0.02)
Metro (pop. over 1 million)	Omitted							
Metro (pop. under 1 million)			1.714 *	(0.38)	0.739 *	(0.22)	0.975 *	(0.21)
Nonmetro (urban pop. > 20k)			1.359 *	(0.51)	-0.222	(0.30)	1.581 *	(0.28)
Nonmetro (urban pop. < 20k)			1.223 *	(0.34)	-0.112	(0.19)	1.335 *	(0.18)
Rural			-0.211	(0.68)	-0.857 *	(0.40)	0.645	(0.37)
Year=1999	Omitted							
Year=2000	-0.651	(0.36)	-0.654	(0.34)	-0.402 *	(0.20)	-0.253	(0.19)
Year=2001	-0.804 *	(0.36)	-0.815 *	(0.34)	-0.581 *	(0.20)	-0.234	(0.19)
Year=2002	-0.817 *	(0.36)	-0.812 *	(0.34)	-0.675 *	(0.20)	-0.137	(0.19)
Adjusted R-square	40.71		45.89		36.94		50.6	

\* Indicates statistically significant at the 0.05 level.

Note: Food stamp administrative data report the number of households by race and public assistance status. To construct the dependent variable in terms of persons, a constant household size of 2.2 persons is assumed. The population data in the denominator of the dependent variable for specific race/ethnicity groups omits households reporting more than one race. Estimates are unweighted. The parameters for the full-family public assistance and non-public assistance subpopulations (in the last two columns) approximately sum to the corresponding parameters for the full sample, because all participant households are classified as either public assistance or non-public assistance.



Table 2. The Effect of County Unemployment Rate and Metro/Nonmetro Status on the Food Stamp Program Participation Rate for Each Race and Ethnicity Category

Explanatory Variable	White		Black		Hispanic		Asian	
	Beta	s.e.	Beta	s.e.	Beta	s.e.	Beta	s.e.
Intercept	2.061	(0.35)	8.838	(1.39)	2.152	(0.32)	1.297	(1.02)
Unemployment Rate	0.106 *	(0.04)	0.178	(0.16)	0.382 *	(0.04)	0.320 *	(0.11)
Metro (pop. over 1 million)	Omitted							
Metro (pop. under 1 million)	2.097 *	(0.41)	4.555 *	(1.60)	1.635 *	(0.37)	5.044 *	(1.18)
Nonmetro (urban pop. > 20k)	2.239 *	(0.55)	-0.185	(2.06)	0.027	(0.53)	-0.212	(1.63)
Nonmetro (urban pop. < 20k)	2.889 *	(0.36)	-1.746	(1.42)	-0.628	(0.32)	2.543 *	(1.04)
Rural	1.603 *	(0.74)	-8.631 *	(2.89)	-3.201 *	(0.66)	-0.274	(2.11)
Year=1999	Omitted							
Year=2000	-0.654	(0.37)	-0.133	(1.48)	-0.482	(0.33)	-0.322	(1.04)
Year=2001	-0.881 *	(0.37)	-0.212	(1.42)	-0.568	(0.33)	-0.477	(1.06)
Year=2002	-0.929 *	(0.37)	-0.433	(1.44)	-0.378	(0.33)	-0.692	(1.05)
Adjusted R-square	36.54		11.81		57.96		18.93	

\* Indicates statistically significant at the 0.05 level.

Note: The dependent variable is the number of participants in each race and ethnicity category as a fraction of the county population in the same race and ethnicity category. Food stamp administrative data report the number of households by race. To construct the dependent variable in terms of persons, a constant food stamp household size of 2.2 persons is assumed. The population data in the denominator of the dependent variable for specific race/ethnicity groups omits households reporting more than one race. Estimates are unweighted.

## Sources

Figlio, David, Craig Gundersen, and James Ziliak. 2000. "The Effects of the Macroeconomy and Welfare Reform on Food Stamp Caseloads." *American Journal of Agricultural Economics* 82(3): 635-41.

Food and Nutrition Service, Financial Management Budget Division, Data Base Monitoring Branch. 2000. *Food Stamp Program Racial Household Participation, July 1999*. Alexandria, VA.

Food and Nutrition Service. 2002. "Food Stamp Program: Civil Rights Data Collection." *Federal Register* 67(229): 70861-70864.

Gleason, Philip, Carole Trippe, Scott Cody, and Jacquie Anderson. The Effects of Welfare Reform on the Characteristics of the Food Stamp Population. Report submitted to the USDA/ERS. Washington, DC: Mathematica Policy Research, Inc. 2001.

Goetz, Stephan, Anil Rupasingha, and Julie Zimmerman. 2002. *Food Stamp Program Participation Dynamics in US Counties and States: Final Report*. University Park, PA: The Pennsylvania State University.

Wallace, Geoffrey, and Rebecca M. Blank. 1999. "What Goes Up Must Come Down? Explaining Recent Changes in Public Assistance Caseloads." In *Economic Conditions*

*and Welfare Reform*, ed. Sheldon H. Danziger, 49-89. Kalamazoo, MI: W.E. Upjohn  
Institute for Employment Research.

Wilde, Parke, Peggy Cook, Craig Gundersen, Mark Nord, and Laura Tiehen. 2000. The Decline  
in Food Stamp Program Participation in the 1990's. Food Assistance and Nutrition  
Research Report No. 7. Washington, DC: USDA.

## ***Appendix: Background on Sources of County-Level Food Stamp Data***

All nationwide county-level data on the Food Stamp Program originate with FNS, but different data fields have been prepared and released to the public at different times by different Federal agencies. Some data sources address the amount of program benefits (in dollars), while others address the number of participants (individuals). FNS itself publishes National and State-level data on its web site, and it reports project area data in internal agency reports. It is worthwhile to distinguish government sources of several types of county-level food stamp data:

- Food stamp *benefits*. The Bureau of Economic Analysis in the U.S. Department of Commerce releases the amount of food stamp benefits received in each county nationwide. The food stamp data are one component of the Local Area Personal Income data from the Regional Economic Information System (REIS). These are the data used by Goetz, Rupasingha, and Zimmerman (2002). Available from:  
<http://www.bea.doc.gov/bea/regional/data.htm>.
- Food stamp *participants*. The U.S. Census Bureau, also in the Department of Commerce, releases the number of food stamp participants in each county nationwide. These data are used in the Bureau's program on Small Area Income and Poverty Estimates (SAIPE). This program uses administrative data, such as the number of food stamp participants, to increase the precision of estimates of income and poverty in years for which there is no decennial Census. Available from:  
<http://www.census.gov/hhes/www/saipe/modelinput.html>.
- Food stamp *participants*, categorized by *race* and *ethnicity*. Under current regulations, States report to FNS project area level data on the race and ethnicity of Food Stamp

Program participants in July of each year. This data system is known by the name of the form States use for these reports, “FNS-101.” The nationwide data are reported in hard copy by FNS (FNS 2000). For California, these data are available in electronic form on the internet: [http://www.dss.cahwnet.gov/research/DFA358F-Fo\\_425.htm](http://www.dss.cahwnet.gov/research/DFA358F-Fo_425.htm).

- Food stamp *households*, categorized by full-family *public assistance status*. A food stamp household is classified as full-family *public assistance* if all household members receive benefits from a public assistance program such as Temporary Assistance for Needy Families (TANF). The household is classified as *non-public assistance* if some or all members do not receive such benefits. While this classification is fairly rough, it could be of considerable use for research on how food stamp caseloads changed at the local level during the period of welfare reform in the 1990s, when there were major changes to cash assistance programs. Under current regulations, all States report to FNS project area level data on the public assistance status of Food Stamp Program participants twice each year. This data system is known by the name of the form States use for these reports, “FNS-388a.” The nationwide data are reported in hard copy by FNS. Unlike the FNS-101 data, there has been no recent change to the reporting burden for States, so there are apparently no plans to stop collecting these data at the project area level. For California, these data are also available in electronic form on the internet: [http://www.dss.cahwnet.gov/research/DFA256-Foo\\_422.htm](http://www.dss.cahwnet.gov/research/DFA256-Foo_422.htm).

To increase the ease and utility of public access to county-level food stamp data, the Economic Research Service has recently developed a “Food Stamp Program Map Machine.” Like the popular “Rural Map Machine” from ERS, this interactive web-based mapping application allows

users to create maps of any part of the country, displaying information about poverty levels and Food Stamp Program participation and program benefits. The map machine will soon be available at: <http://www.ers.usda.gov/data/foodstamps/>. The current version uses data from just the first two Federal Government sources described above, in conjunction with additional county-level data from the Census Bureau. Future versions of the map machine may include more types of county level food stamp data, as data cleaning and clearance issues are resolved.