

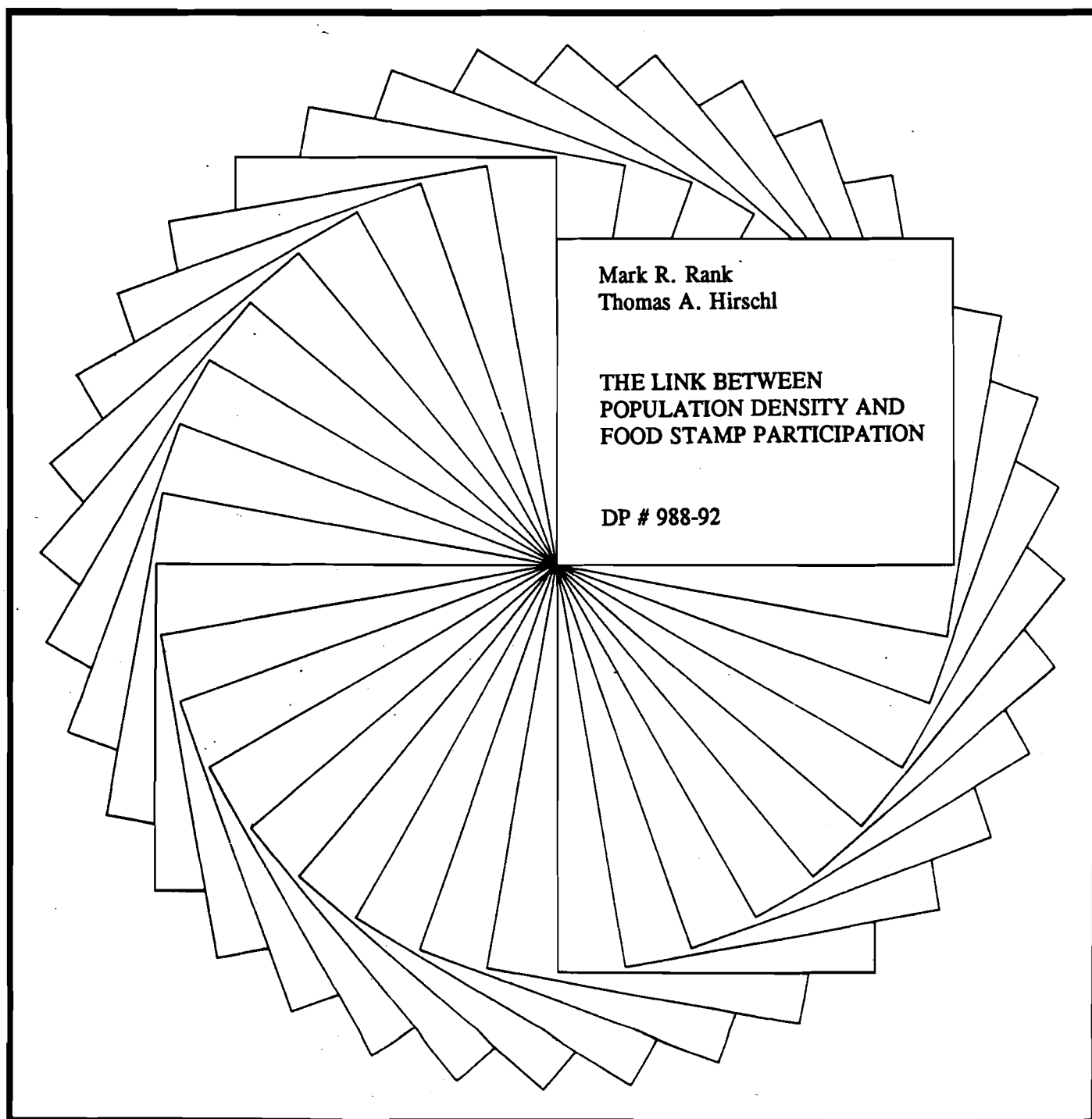
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# Institute for Research on Poverty

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Discussion Papers



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**The Link between Population Density  
and Food Stamp Participation**

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## **Abstract**

This paper explores a neglected topic in the social welfare, poverty, and demographic literatures: the link between population density and participation in the Food Stamp program. Although the role of geographic factors in affecting low-income household behavior is beginning to be addressed by poverty researchers, few studies have looked across wide geographic areas and assessed the impact of population density upon the behavior of low-income families. Longitudinal data from the Panel Study of Income Dynamics are used to meet two objectives: first, to test whether there is a relationship between population density and Food Stamp utilization among eligible households; second, to explore the potential reasons behind such a relationship. Our findings indicate that population density has a strong and positive impact upon the likelihood of participating in the Food Stamp program. Low-income respondents in urban areas are significantly more likely to use Food Stamps in both an aggregate and multivariate context. We then turn to the underlying dynamic behind such an effect. Our analysis reveals that the driving mechanism behind a residence effect is that those in urban areas are more likely to possess accurate eligibility information and to hold less-adverse attitudes toward the use of welfare, which in turn positively impacts upon the likelihood of Food Stamp participation.

## **The Link between Population Density and Food Stamp Participation**

Sociologists and demographers have long been interested in assessing the impact of population composition on individual behavior and attitudes. A variety of topics have been explored including the effect of population sex ratios upon role attitudes and behavior (Guttentag and Secord, 1983), the impact of birth cohort size on predicting marital and fertility rates (Easterlin, 1987), and the consequences of population homogeneity upon the increased likelihood of altruistic attitudes toward the disadvantaged (Kluegel and Smith, 1986).

One particular area of research receiving considerable sociological attention has been that of assessing the differences in attitudes and behavior among individuals residing in localities of varying population densities, specifically, urban and rural areas. For example, various studies have found that urban residents are more likely to hold particular attitudes and to engage in certain types of behavior than their rural counterparts. These include a greater tendency toward unconventional lifestyles, more acceptance of stigmatized behavior, less-conservative attitudes, greater variance in family structure, and so on (Fischer, 1984). Assorted explanations have been posited to explain such differences (Toennies, 1887; Simmel, 1905; Wirth, 1938; Gans, 1962; Fischer, 1975).

Within this research vein, our paper explores a neglected topic in the social welfare, poverty, and demographic literatures: the link between population density and participation in the Food Stamp program in the United States.<sup>1</sup> We look at the connection between population density and household participation in the Food Stamp program among those who are eligible. The Food Stamp program is one of the broadest of the public assistance programs in that it serves low-income individuals regardless of family status, age, or disability status.<sup>2</sup>

The role of geographic factors in affecting low-income-household behavior is beginning to be addressed by poverty researchers such as Wilson (1987; 1991), Sawhill (1989), Anderson (1990), and Jencks (1992). Yet their analyses have focused upon the inner city. Few studies have looked across

wide geographic areas and assessed the impact of population density upon the behavior of low-income households.

The purpose of this paper is to examine the effect of population density on Food Stamp participation by modeling longitudinal data from the Panel Study of Income Dynamics (PSID). The PSID is a nationally representative sample of households followed over time. It is particularly useful for studying issues related to poverty and welfare dynamics, since it oversampled low-income households. Our specific objectives in analyzing the PSID are twofold: first, to test whether there is a relationship between population density and welfare utilization among eligibles; second, to explore the potential reasons behind such a relationship.

#### CONCEPTUAL RATIONALE

Participation rates among eligibles in means-tested welfare programs (e.g., Food Stamps, Aid to Families with Dependent Children, Medicaid, General Assistance) are always below 100 percent and often between 40 and 60 percent. For example, the 1986 Food Stamp participation rate among eligible households was estimated at 43.8 percent (General Accounting Office, 1988). Thus more than half of the qualified households in the United States did not receive Food Stamps even though they were entitled to do so. The question arises, why do some individuals participate while others do not? Further, what is the role of residential context in affecting such behavior?

Among the eligible population, participation in welfare programs is primarily dependent upon three factors. First, an individual must be aware of a program's existence. Without such knowledge, participation is highly unlikely. Second, an individual must believe that they can qualify for the program; an individual who knows about a specific program but who believes he/she is ineligible would probably not apply. Third, the individual must have the desire and ability to apply for public assistance. Consequently, even though individuals may be aware of a particular program and believe

themselves to be eligible, if they hold negative attitudes regarding the use of public assistance they may choose not to participate.

There is strong evidence that the above three factors vary depending upon population density. The first two are highly dependent upon an access and exchange of accurate eligibility information. Welfare programs are not advertised; rather it is through word of mouth or other informal means by which most individuals learn about such programs.<sup>3</sup> Such interactions have an increased likelihood of occurring in areas that are densely populated, particularly since these areas are often segregated on the basis of class and race (Massey and Denton, 1989). Low-income households in urban areas are more likely than their rural counterparts to encounter other low-income households who have first-hand knowledge regarding the welfare system (Stack, 1974; Jencks and Peterson, 1991). Such interactions can make eligibles more aware of the existence of welfare programs and can provide a rough gauge of the eligibility criteria.

In addition, increased interaction among low-income households resulting from population density can reduce some of the stigma and adverse attitudes surrounding the use of public assistance (Rank and Hirschl, 1988). Being in proximity to other low-income individuals who receive welfare can reduce one's own disapproval through the first-hand knowledge that there are others also in need of assistance (Castells, 1983). Indeed, while social stigma is attached to public assistance in both rural and urban areas, such disapproval appears greater in areas of lower population density (Beers, 1953; Keith, 1980; Camasso and Moore, 1985). Rural residents are more likely to view those accepting public assistance as lazy and dishonest (Osgood, 1977).

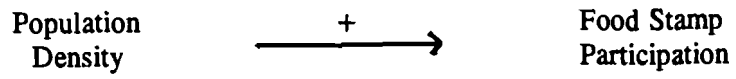
A conceptual framework illustrating our hypothesized relationships of population density to Food Stamp participation is shown in Figure 1. The top half of Figure 1 indicates that we expect there to be a positive relationship between population density and the probability of participation in

**FIGURE 1**

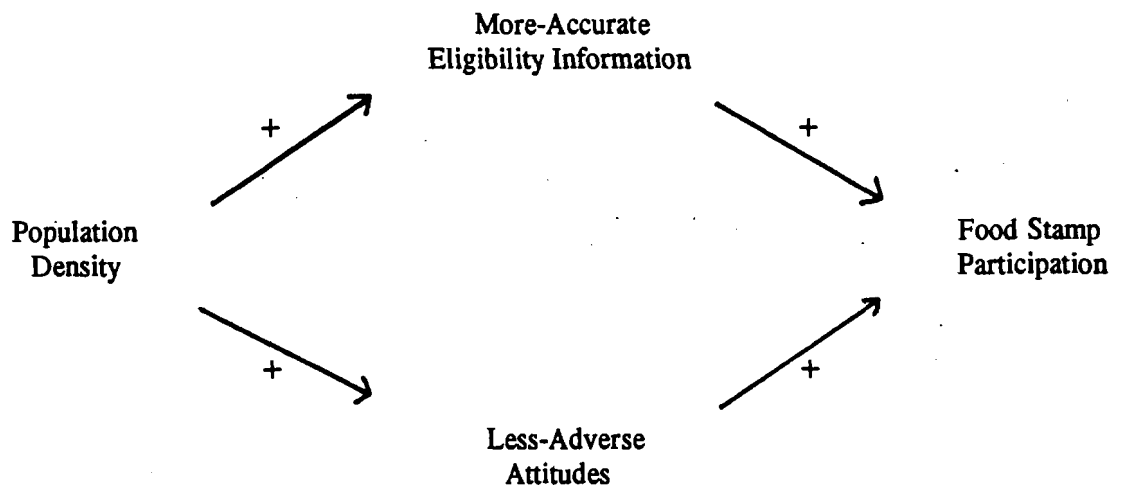
**Hypothesized Relationships between Population Density and Food Stamp Participation among Eligibles**

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Partial Model:



Full Model:



the Food Stamp program. We would expect this relationship to hold in both the aggregate and after controlling for differences in population composition across geographic regions.

The bottom half of Figure 1 illustrates why we believe such a relationship exists. Population density is seen as leading to more-accurate information regarding eligibility in welfare programs and to less-adverse attitudes toward such programs. These two factors in turn are viewed as having a direct, positive effect on increasing the probability of participation in the Food Stamp program. Consequently, once these factors are taken into account, we would expect the direct effect of population density on the probability of Food Stamp participation shown in the top half of Figure 1 to drop out.

Our conceptual framework is broadly consistent with Claude Fischer's subcultural theory of urbanism (Fischer, 1975; 1984; see also Tittle, 1989). According to Fischer, areas that are more densely populated "are inhabited by others who share a particular trait (like ethnicity or occupation), who tend to interact disproportionately with one another, and who manifest relatively distinct beliefs and behavior" (1984, p. 36). Fischer goes on to argue that "Sufficient numbers allow them to have a visible and affirmed identity, to act together in their own behalf, and to interact extensively with each other" (1984, p. 37). As a result, a greater exchange of pertinent information (in this case, welfare eligibility) is more likely to occur among individuals in densely populated areas. In addition, less stigma is often attached to individuals engaged in certain types of behavior such as welfare participation. Both factors result in a greater likelihood of participation in the welfare system among the eligible and are hypothesized as representing the link between population density and the use of Food Stamps.



## DATA AND METHODS

### Data Set and File Construction

The Panel Study of Income Dynamics is a nationally representative, longitudinal sample of households and families interviewed annually since 1968 (see Hill [1992] for a detailed description). Since part of the original impetus for drawing the sample was an effort to assess antipoverty programs, families living below the poverty level were oversampled, and a consistent series of welfare program participation measures has been maintained. The data for our study are derived from the 1988 Cross-Year, Family-Individual File (Institute for Social Research, 1991).

In this analysis we define the universe as the household population eligible to receive Food Stamps during the years that questions were asked about reasons for nonparticipation in the Food Stamp program (1976, 1979, 1980, and 1986), and for the years subsequent to these years (1977, 1980, 1981, and 1987). The purpose of selecting these waves is to be able to model the probability of participation, given a particular reason or circumstance for nonparticipation in the prior year. The unit of analysis in the study is household-year, and the sample is restricted to households which are estimated to be eligible for Food Stamps in order to focus the analysis on the relevant at-risk population, since Food Stamps are designed to serve the needy.

Food Stamp eligibility is estimated using measures available in the PSID. These estimation procedures vary according to changes over time in eligibility rules, as well as according to regional differences (eligibility criteria are higher in Alaska and Hawaii). To qualify for Food Stamps, the household must meet income as well as asset tests. In the study years up to 1981, only net income is tested, and this is computed by subtracting from total income a standard deduction, an earned income deduction, excess shelter costs, and dependent care costs. After 1981, gross as well as net income

tests became mandatory. The asset tests exclude first-home ownership and automobile ownership and are slightly higher for households where the head is age sixty-five or over.

The procedures used to estimate these various eligibility rules are similar to those used in other PSID-based studies of Food Stamp eligibility (Coe, 1983; General Accounting Office, 1988). The PSID provides measures of gross income, earned income, shelter costs, and dependent care costs. Total household assets were estimated by summing all property income from rents, dividends, and interest, and estimating total assets, assuming a modest 5 percent return.

The primary shortcoming of using the PSID to estimate Food Stamp eligibility is that eligibility is determined by monthly income, yet the PSID reports only annual income. Monthly eligibility must be approximated by dividing PSID annual income by twelve, an operation that assumes homogeneity over time. To minimize the problem of erroneously inferring monthly income from annual income, households that experienced a change in the head or wife between the prior year and the interview year were removed from the sample. Such changes are known to be a major determinant of large over-time household income fluctuations (Duncan, 1984).

Although we have no way to measure the extent to which our procedures have overestimated Food Stamp eligibility, we can obtain a measure of underestimation by noting the Food Stamp participation rate of households that the procedures identified as ineligible. The annual average Food Stamp participation rate among the population that we estimated to be ineligible is 2.3 percent.<sup>4</sup> Assuming a participation rate among the underestimated population equal to that of the estimated population (57.2 percent), then the total eligibility underestimation is 3.6 percent of the population. This rather minimal underestimation rate indicates that our procedures are accurate.

#### Key Variables

The PSID gathers individual and household information from a single primary adult within the household. For married-couple families, that individual is generally the male adult head.

Occasionally the wife of the head is interviewed if the male head refuses. In households other than married-couple households, the head of the household (male or female) is interviewed (Hill, 1992). Consequently, many of the specific variables that are used in this analysis refer to the individual characteristics of the head of the household. In addition, there is also household-level information constructed from the responses the head gives concerning individual family members. The data are weighted using modified household weights (Institute for Social Research, 1987: E23). Use of these weights permits unbiased estimates of population parameters.

Food Stamp program participation is our key dependent variable and is based upon the response to a question asking whether the head or some other household member received Food Stamps during the year preceding the interview. We have chosen to focus on the Food Stamp program for several reasons. First, it is the only program in which a specific PSID question is asked regarding nonparticipation. Thus, if we wish to analyze why individuals are not participating in a welfare program, we are limited to the Food Stamp program. Second, because it is needs tested by income level, rather than by age or household type, eligibility pertains to a broad cross-section of the low-income population. Third, because the eligibility standards for the Food Stamp program are the same all across the country, the PSID allows us to calculate Food Stamp eligibility in a much more straightforward fashion than it would for a program such as AFDC, which varies widely from state to state.

Population density is the principal independent variable and is measured as the percentage of county population living in an urban place measured by the 1980 census of population. We believe that this measure of density more accurately reflects social density than does the alternative measure of total population divided into total land area (Land et al., 1990). In addition, percentage urban has a more straightforward interpretation than the population size-density factor score proposed by Land

et al. (1990). Nevertheless, we have estimated our logistic regression models using these alternative measures of population density, resulting in similar findings.<sup>5</sup>

A second key independent variable is the respondent's prior year's experience in the Food Stamp program. This variable is derived from the PSID waves of 1976, 1979, 1980, and 1986. It is then used to predict participation for eligibles in the subsequent year (1977, 1980, 1981, and 1987). Several variables are utilized to construct this measure. First, we estimate if the household was eligible for Food Stamps during these prior years. Second, we determine if they received Food Stamps. Third, if they were eligible but did not receive Food Stamps, the reasons given for nonparticipation are used. The questions regarding nonparticipation cover responses to direct queries about behavior as well as interviewer-coded responses to open-ended questions. Reasons for nonparticipation have been subdivided into three categories: (1) respondent doesn't think he/she was eligible; (2) respondent indicated some degree of adverse attitudes toward the Food Stamp program; and (3) some other reason.

The first reason for nonparticipation is based on a negative response to the question "Did you think you were eligible?" The second reason is the following set of interviewer-coded responses for those who thought they were eligible, to the open-ended question, "Why didn't you try to get Food Stamps?": (1) personal attitudes; was embarrassed to use them or don't like welfare; (2) administrative hassle, didn't want to wait in line, etc.; (3) didn't need them; other people need them worse; (4) just never bothered; never thought about it; didn't have time; and (5) didn't know how to get them; don't know requirements. The intent of this grouping is to capture subjective barriers to Food Stamp participation where the respondent indicated disinterest, distaste, or outright adversity. To some extent, all responses to this particular question presume some degree of adverse attitudes since the respondent has acknowledged that he/she was eligible, yet chose not to participate (Loup, 1992). However, we believe that this particular subset of interviewer-coded responses

indicates a level of attitudinal distancing. The remaining responses to the question "Why didn't you try to get Food Stamps?" are coded as "other." This category represents a residual grouping that includes failed attempts to get Food Stamps.

### Analytical Approach

Data analysis focuses on two broad questions: (1) Does population density affect Food Stamp participation among eligible households? and (2) What are the potential factors or mechanisms driving a density effect? Data analysis addressing the first question is carried out in two stages. First, bivariate rates of Food Stamp participation for completely urban, mixed, and completely rural counties are estimated. Tests of statistical association are used to determine whether these rates vary significantly by density category.

Second, a multivariate model of Food Stamp participation is estimated with density entered as a continuous independent variable. The model controls for factors known to be covariates of welfare participation which may also differentiate the rural from the urban poor. For example, compared to the urban poor, the rural poor are more likely to be white, older, and to reside in a married-couple family (Hirschl and Rank, 1991; Duncan, 1992). The model also controls for a South/nonwhite interaction effect since blacks in the southern region of the United States are more likely to participate in welfare programs (Dill and Williams, 1992) and to be less susceptible to the stigma of poverty and welfare (Amato and Zuo, 1992). Finally, the model controls for a period effect resulting from the 1981 cutbacks in Food Stamps and other federally mandated programs (Levitan, 1990).

Our second major question of interest is what factors or mechanisms are driving a potential density effect? To accomplish this objective, we exploit the longitudinal character of the PSID by observing households receiving Food Stamps in the year following interviews about reasons for nonparticipation. Specifically, we determine whether there is a density effect on the likelihood of using Food Stamps, controlling for prior nonparticipation reasons. First, we test for significant

differences in the bivariate relationship between density and reasons. Second, the reasons for nonparticipation are entered into the model to determine whether this eliminates the hypothesized density effect.

## RESULTS

### Population Density Effect

The first row of Table 1 provides evidence of a positive relationship between population density and Food Stamp participation. Of the eligible respondents residing in completely urban counties, 61 percent participated in the Food Stamp program, compared to 57 percent in mixed counties and 45 percent in rural counties. The differences are statistically significant using a chi-square test of association. Thus, there is evidence for an aggregate association between population density and Food Stamp participation.

Table 1 also indicates that residence is associated with important compositional differences that may influence the likelihood of Food Stamp participation. Eligible respondents residing in completely urban counties have a greater tendency to be in single-parent families, not employed, live outside the South, and to be nonwhite. On the other hand, rural eligibles are more likely to be in married-couple families, employed, white, southern residents, and age sixty-five and over. Such differences between the urban and rural low-income population have been noted by other researchers (Duncan, 1992) and could account for the aggregate association between density and Food Stamp participation.

To test for a density effect net of compositional differences, a multivariate model of Food Stamp participation is estimated for all years that are included in our study. Two separate equation models are presented in Table 2, with the coefficient's odds ratios shown in parentheses. Model I includes population density solely (measured as a continuous variable by a county's urban percentage,

TABLE 1

**Characteristics of Food Stamp-Eligible Population, by  
Residence: Selected Years, 1976-1987**

Characteristic	Residence			Total
	Urban County	Mixed County	Rural County	
Received Food Stamps	61.4%	57.0%	44.6%	57.2%
<b>Household</b>				
Single parent	57.6	37.5	23.7	40.0
Married	17.2	42.3	57.6	39.2
Alone	25.2	20.2	18.7	20.8
Children present	72.4	73.8	77.9	73.8
<b>Socioeconomic status</b>				
Less than 12 years education	62.9	57.4	62.8	58.5
Not employed	67.8	51.1	51.8	53.6
Work-limiting disability	30.4	31.8	45.5	32.1
Income below poverty line	60.5	56.2	61.0	57.1
<b>Demographic</b>				
Nonwhite	64.0	39.1	39.1	42.8
South	20.0	46.5	54.6	42.8
Pre-1982	18.8	19.8	26.2	19.9
Age less than 25	12.8	14.5	10.1	14.1
Age 25-64	73.8	72.4	60.5	72.1
Age greater than 64	13.4	13.1	29.4	13.8

Source: Panel Study of Income Dynamics: 1988 Cross-Year, Family-Individual File.

Note: Data are for 1976, 1977, 1979, 1980, 1981, 1986, and 1987, combined.

TABLE 2

**Logistic Regression Models of Food Stamp Participation for Eligible  
Population: Selected Years, 1976-1987**

Independent Variable	Model I	Model II
Percentage urban	.43(1.54)***	.39 (1.48)***
Household		
Single parent		.42 (1.52)***
Alone		-.40 (.67)***
Children present		.97 (2.64)***
Socioeconomic status		
Less than 12 years education		.55 (1.73)***
Not employed		.85 (2.34)***
Work-limiting disability		.37 (1.45)***
Income below poverty line		.49 (1.63)***
Demographic		
Nonwhite		.00 (1.00)
South		.10 (1.11)***
South*Nonwhite		-.05 (.95)*
Pre-1982		.08 (1.08)***
Age less than 25		.11 (1.12)***
Age greater than 64		-.41 (.66)***
Constant	.00	.46***
Mean participation	.57	.57
Somers' Dyx	.13	.49
N	6,473	6,425

Source: Authors' calculations based on Panel Study of Income Dynamics: 1988 Cross-Year, Family-Individual File.

Note: Data are for 1976, 1977, 1979, 1980, 1981, 1986, and 1987, combined.

\*Significant at the .05 level.

\*\*Significant at the .01 level.

\*\*\*Significant at the .001 level.



ranging from 0 to 100 percent).<sup>6</sup> We can see that this continuous measure of population density is positively associated with the probability of participating in the Food Stamp program. Thus, whether population density is measured by discrete categories (as in Table 1) or through a continuous measure (as in Table 2), it has a significant aggregate effect on the likelihood of eligibles participating in the Food Stamp program. Low-income households in areas of greater population density are more likely to receive Food Stamps.

Model II includes as controls the population characteristics which we examined in Table 1.<sup>7</sup> Population density remains a strong and highly significant positive coefficient. Respondents living in areas of higher population density are more likely to participate in the Food Stamp program, net of household, socioeconomic, and demographic factors. Specifically, the odds of participation for an eligible individual residing in a completely urban county are 48 percent higher than for his or her counterpart residing in a completely rural county. Consequently, our schematic partial model shown in Figure 1 is supported. Population density has a positive effect on receiving Food Stamps, in both an aggregate and multivariate context.

In addition, all but one of the remaining coefficients are in the expected directions. Single parents are more likely to receive Food Stamps than married couples, while those alone are less likely. In addition, respondents with less than 12 years of education, not employed, experiencing a work-limiting disability, or with incomes below the poverty line are also more likely to participate in the Food Stamp program. Residents of the South, those in sample waves prior to 1982, and those less than age 25 are also more likely to participate. The South/nonwhite interaction is negative, which is the only coefficient not in the expected direction.

### Underlying Mechanism

Having established that population density positively impacts upon the likelihood of low-income households participating in the Food Stamp program, the question becomes why? Hence,

what is driving such an effect? Our schematic full model in Figure 1 hypothesizes that population density leads to more-accurate information regarding welfare programs and to less-adverse attitudes toward such programs. These factors in turn are viewed as strongly influencing participation rates, with the direct effect of population density upon participation dropping out.

In Table 3, we examine the prior program experiences for eligible respondents by residence categories. Thus, for eligibles in 1977, 1980, 1981, and 1987, what was their Food Stamp program experience in the prior year (1976, 1979, 1980, and 1986)? The top row shows that approximately one third of respondents in each of the three residence categories were ineligible the year before. Consequently, such households were above the income and/or asset limits, disqualifying them from Food Stamp assistance.

The second row indicates that 52 percent of urban respondents received Food Stamps during the prior year, compared with 48 percent in mixed counties and 41 percent in rural counties. This is consistent with our earlier finding that low-income households in rural areas are less likely to be receiving Food Stamps than their counterparts in urban and mixed areas.

Finally, the bottom three rows display the percentages pertaining to the reasons why eligible individuals did not participate in the Food Stamp program. What we see is that respondents in rural areas are more likely to think they were ineligible, even though in fact they were eligible. This is strong evidence that individuals in more-dispersed population areas have less-accurate eligibility information regarding the Food Stamp program.

In addition, those in rural counties are also more likely to express adverse attitudes toward using Food Stamps. Ten percent of respondents in rural counties gave an adverse attitudinal reason for not using Food Stamps, compared to only 3 percent in urban counties. The percentages for this and the above reason both differ significantly among the three residence categories using a chi-square test of association.

TABLE 3

**Prior Food Stamp Program Experience of Eligible Population,  
by Residence: Years following Interview Waves on Nonparticipation**

Program Experience in Prior Year	Residence			Total
	Urban County	Mixed County	Rural County	
Not eligible	30.4%	32.7%	28.5%	32.2%
Received Food Stamps	51.6	47.8	41.0	48.1
Did not receive Food Stamps because:				
Did not think eligible	8.9	12.3	16.8	11.9
Adverse attitudes	3.2	5.3	10.0	5.2
Other	6.0	2.0	3.7	2.7
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Source: Panel Study of Income Dynamics: 1988 Cross-Year, Family-Individual File.

Note: Data are for 1977, 1980, 1981, and 1987, combined.

Multinomial logistic regression models were also calculated using population density as a continuous variable to predict the types of reasons given for nonparticipation. Percentage rural was positively related to the likelihood of not participating in the Food Stamp program as a result of thinking one was ineligible, and positively related to the likelihood of not participating as a result of adverse attitudes. Thus, those in areas of more-dispersed population density were significantly more likely not to participate as a result of believing they were ineligible, or because of adverse attitudes toward the program.

Each of these differences by residence are consistent with the first half of our hypothesized full model in Figure 1. Population density is associated with more-accurate eligibility information regarding Food Stamps among low-income households and with holding less-adverse attitudes toward the program. The second half of the model predicts that these two factors are in turn positively associated with a greater probability of participating in the Food Stamp program. In addition, our schematic full model in Figure 1 hypothesizes that the direct effect of population density will drop out once these factors are controlled for.

In Table 4, three equations are presented for the combined years of 1977, 1980, 1981, and 1987 (which follow the interview waves on nonparticipation). Model I simply includes population density. For these years, density remains a highly significant variable in influencing the probability of Food Stamp participation.

Population characteristics are then entered as controls in Model II (replicating Model II in Table 2). Once again, we find that population density remains a highly significant and positive coefficient in influencing participation in the Food Stamp program. Eligibles in urban areas are more likely than their rural counterparts to be receiving Food Stamps, net of household, socioeconomic, and demographic differences. In addition, the control variables are in the expected directions, as in Table 2.

TABLE 4

**Logistic Regression Models of Food Stamp Participation for Eligible  
Population: Years following Interview Waves on Nonparticipation**

Independent Variable	Model I	Model II	Model III
Percentage urban	.16(1.17)***	.17 (1.19)***	.00 (1.00)
<b>Household</b>			
Single parent		.35 (1.42)***	.14 (1.15)***
Alone		-.39 (.68)***	-.66 (.52)***
Children present		1.17 (3.22)***	.68 (1.97)***
<b>Socioeconomic status</b>			
Less than 12 years education		.58 (1.79)***	.36 (1.43)***
Not employed		.89 (2.44)***	.73 (2.08)***
Work-limiting disability		.36 (1.43)***	.39 (1.48)***
Income below poverty line		.42 (1.52)***	.34 (1.40)***
<b>Demographic</b>			
Nonwhite		.08 (1.08)***	.12 (1.13)***
South		.12 (1.13)***	-.15 (.86)***
South*Nonwhite		.02 (1.02)	.18 (1.20)***
Pre-1982		.25 (1.28)***	.36 (1.43)***
Age less than 25		.00 (1.00)	.13 (1.14)***
Age greater than 64		-.24 (.79)***	-.32 (.73)***
<b>Prior program experience</b>			
Not eligible			-2.28 (.10)***
Did not think eligible			-3.57 (.03)***
Adverse attitudes			-2.83 (.06)***
Other			-3.56 (.03)***
Constant	.27***	-.19***	2.01***
Mean participation	.59	.60	.60
Somers' Dyx	.11	.51	.73
N	3,539	3,507	3,507

Source: Authors' calculations based on Panel Study of Income Dynamics: 1988 Cross-Year, Family-Individual File.

Note: Data are for 1977, 1980, 1981, and 1987, combined.

\*Significant at the .05 level.

\*\*Significant at the .01 level.

\*\*\*Significant at the .001 level.

Finally, prior program experience is entered into Model III. Four types of program experiences are contrasted with the reference category (participated in the prior year).<sup>8</sup> These include individuals who did not think they were eligible even though they actually were, those with adverse attitudes, the other reason category, and individuals who were not eligible. What we find is strong support for our hypothesized relationships diagrammed in Figure 1. By inserting these variables into the model, the direct effect of population density on Food Stamp participation is no longer significant, with the coefficient being reduced to zero. However, the control variables that were significant in Model II remain significant in Model III. Thus, we are able to explain away precisely the population density effect by including the prior program experience variables.

Second, both variables that we hypothesized would have a strong positive effect on the likelihood of Food Stamp participation in fact do. Households that did not think they were eligible for Food Stamps are highly unlikely to participate during the following year. Likewise, individuals who reported adverse attitudes toward Food Stamps are also extremely unlikely to participate even though they were qualified to do so. Consequently, the more accurate one's information regarding Food Stamp eligibility, and the less adverse attitudes one holds toward the program, the more likely an eligible individual is to participate. As a result, the effect of population density on welfare utilization would appear to exist because those in urban areas are more likely to possess accurate eligibility information and to hold less-adverse attitudes, which in turn positively impacts upon their likelihood of Food Stamp participation.

## DISCUSSION

The effect of population density on welfare participation has been largely ignored in the social welfare, poverty, and demographic literatures. Using data from the Panel Study of Income Dynamics, we have shown that residence has a strong and significant effect upon the likelihood of

participating in the Food Stamp program. This effect holds in both an aggregate and multivariate context. Consequently, participation among Food Stamp eligibles in the United States depends not only upon individual characteristics, but upon contextual ones as well.

The finding that urbanity affects welfare utilization is corroborated by two other studies analyzing different data sets (Rank and Hirschl, 1988; Hirschl and Rank, 1991). When these three studies are considered together, the evidence for a population density effect on welfare use is quite compelling. Such an effect is significant from both a theoretical and policy perspective. It suggests that the use or nonuse of welfare is shaped by factors other than individual characteristics. Rather, spatial and geographic factors are important as well.

Yet these earlier studies were only suggestive as to why such an effect exists. As Hirschl and Rank note,

. . . further research needs to focus on the reasons behind such an effect . . . The task . . . is to evaluate and weigh these alternative explanations to discover the underlying mechanisms that are driving the positive effect of population density on welfare participation rates (1991, p. 233).

The second step of our analysis focused on uncovering the potential mechanism(s) behind a population density effect. It was hypothesized that the effect of residence exists because those in urban areas are more likely to possess accurate eligibility information and to hold less-adverse attitudes, which in turn positively increases their likelihood of Food Stamp participation. This was precisely what we found. Both variables had a strong impact on participating in the Food Stamp program, with the direct effect of population density dropping from significance.

The reason for this particular link between population density and welfare participation can be found in the larger literature in urban sociology, specifically Fischer's subcultural theory of urbanism

(1975; 1984). Individuals in areas of greater population densities are more likely to encounter others in circumstances similar to their own. This is what Fischer has referred to as a "critical mass." Such a concentration allows for specific interest groups to support one another, particularly those engaged in unconventional or stigmatized behavior such as welfare use. Fischer writes,

. . . population composition and economics do partly explain urban unconventionality, but size and density also have consequences. They facilitate the congregation of people with common interests in numbers sufficient to form viable social worlds. Urban concentration affects the minority, the unconventional, and the deviant most (1984, p. 224).

Further, we would argue that this propensity toward interacting with other low-income households is intensified as a result of the residential segregation which occurs in virtually all urban areas on the basis of class and race. As a result, low-income individuals in areas of greater population density are likely to encounter more-accurate eligibility information regarding programs directed toward low-income households. In addition, such interactions and knowledge can lead to less stigma surrounding the use of welfare. Both factors contribute to a greater probability of using public assistance, specifically Food Stamps. This process was diagrammed in Figure 1 and confirmed in our empirical tests.

Finally, from a policy perspective it is important to juxtapose our findings with a fairly large body of evidence that indicates that the need for welfare provision may be greatest in rural areas (O'Hare, 1988). The poverty rate in rural America is approximately one third higher than that found in urban America (U.S. Bureau of the Census, 1991), with long-term poverty also being considerably more prevalent (Adams and Duncan, 1992). In addition, unemployment levels are greater in small towns and their surrounding rural areas (U.S. Departments of Agriculture and Labor, 1986). And



research has indicated that underemployment is more widespread in rural America (Briggs, 1981; Lichter and Costanzo, 1987).

Consequently, where the need for welfare provision is large, the use of such programs is least. Our analysis has shown that access to Food Stamps is simply not equal across geographic regions of the United States. It is our belief that equality of access should be a guiding principle of programs directed to low-income individuals. The stated purpose of such programs is to assist the needy. While that need is felt among all regions of the country, it is particularly hard felt in rural America. The irony is that where the need for Food Stamps is strong, so too is the inability to participate in the program.

## Notes

<sup>1</sup>Indeed, the link between population density and participation in welfare programs in general has been neglected.

<sup>2</sup>As a rule of thumb, the program is open to households whose incomes fall below 130 percent of the poverty line.

<sup>3</sup>Occasionally there are outreach attempts by the United States Department of Agriculture to inform eligible individuals of the existence of the Food Stamp program. Such attempts are often directed at more rural and remote areas.

<sup>4</sup>This 2.3 percent of the population estimated to be ineligible, but actually receiving Food Stamps, were subsequently included in our analysis.

<sup>5</sup>These models are available from the authors by request.

<sup>6</sup>In order to be able to provide a rough comparison with the dichotomous variables in the model, population density which is measured on a scale of 0 to 100 percent is simply measured on a scale of 0 to 1. For example, a county that is 57.8 percent urban would be coded .578. Thus, the continuous nature of the variable is kept exactly the same with the moving of the decimal point over two positions.

<sup>7</sup>The categorical variable definitions, with the reference categories listed in parentheses last, are as follows: household type (single parent/alone/married couple); children (children present/children not present); education of head (less than 12 years/12 or more years); employment of head (not employed/employed); disability of head (work-limiting disability/no work-limiting disability); household income (income below the poverty line/income at or above the poverty line); race of head (nonwhite/white); region (South/non-South); age of head (less than 25/greater than 64/25 to 64).

<sup>8</sup>In addition, we also used households that were not eligible in the prior year as our reference category. The results were similar. The direct effect of population density dropped from significance

in the overall model. In addition, thinking one was ineligible and having adverse attitudes were both strong predictors in not participating in the Food Stamp program when compared to those who were ineligible.

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