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**Spatial Mismatch Outside of Large Urban Areas: An Analysis of Welfare
Recipients in Fresno County, California**

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Abstract

Numerous scholars assert that welfare recipients face a mismatch between their residential locations in inner-city or rural areas where they live far from employment opportunities located in the suburbs. However, the findings of this study bring into question the wholesale application of the spatial mismatch hypothesis to all welfare recipients. Welfare recipients in mid-sized cities such as Fresno, California, do not face spatial barriers to employment since they live in compact areas where distances between residential and employment locations are relatively short. In contrast, job access is important in the non-urbanized areas of Fresno County where welfare recipients who live in job-rich neighborhoods are more likely to be employed than recipients who are dispersed throughout more isolated, non-urbanized areas.

1. Introduction

The spatial mismatch hypothesis has received considerable attention by both scholars and policymakers. First proposed by John Kain in the 1960s (Kain, 1968), the spatial mismatch hypothesis attributes deepening poverty in many central-city, African-American neighborhoods to (1) the shift in the demand for labor toward suburban areas, (2) racial discrimination in housing markets which limits housing mobility among minorities, particularly African Americans, and (3) poor transportation linkages between cities and suburbs. The argument follows that joblessness and low wages among African Americans result, in part, from their spatial separation from low-wage job opportunities increasingly located in suburban areas.

Recently, this spatial mismatch framework has been applied to welfare recipients; many policymakers have suggested that limited access to employment hinders many welfare recipients from finding and keeping jobs. For example, speaking on his initiatives to help low-income families more easily travel to work, former President Clinton stated:

Three-quarters of all the Americans who get public assistance live in central cities or rural areas; two-thirds of the new jobs are in the suburbs. It doesn't take Einstein to figure out that transportation is critical to matching the available work force with the available jobs (The White House, February 23, 2000).

A number of scholars and urban planners have analyzed the spatial separation between welfare recipients and low-wage jobs in a number of large urban areas such as Atlanta, Boston, Chicago, Cleveland, Detroit, Los Angeles, New York, and Philadelphia (Allard and Danziger, 2000; Bania *et al.*, 1999; Blumenberg & Ong, 2001; Citizens Planning and Housing Association, 1999; Lacombe, 1998; Laube *et al.*, 1997; New York Metropolitan

Transportation Council, 1999; Rich, 1999; Sawicki & Moody, 2000.) Rural welfare recipients are likely to be even more isolated from jobs than urban welfare participants since they typically live far from employment centers without access to the extensive public transit infrastructure found in major cities (Deavers et al., 1986; Duncan and Sweet, 1992; Rank and Hirschl, 1988; Rucker, 1994; Tickamyer, 1992; Weber and Duncan, 2000).

On the surface, the application of the spatial mismatch hypothesis to welfare recipients appears appropriate. Like the poor, welfare recipients disproportionately live in central-city neighborhoods distant from employment opportunities increasingly located in the suburbs. However, it may be premature to adopt a “spatial mismatch framework” to understanding the employment difficulties of welfare recipients since most recipients live outside of large urban areas in medium- and small-sized cities and in non-urbanized or rural areas. Far less is known about the extent and impact of spatial isolation in areas outside of the major urban centers.

The question that remains, therefore, is whether spatial isolation negatively affects the economic opportunities of welfare recipients living in smaller urban and non-urbanized areas. This study relies on regression analysis and block-group level data of welfare recipients to examine the effects of spatial access to low-wage employment on welfare usage and employment rates in Fresno County, California, an agricultural county located in central California. The county is an ideal case study since it has a diverse urban structure that includes a mid-sized metropolitan area, small cities and towns, as well as vast tracts of non-urbanized, agricultural areas.

The findings of this study bring into question the wholesale application of the spatial mismatch hypothesis to all welfare recipients. Welfare recipients in the urbanized area of Fresno County do not face spatial barriers to employment since the urban area is compact and distances between residential and employment areas are relatively short. However, welfare usage rates within Fresno County are twice as high in the urbanized compared to the non-urbanized areas.¹ In these urban neighborhoods, while access to employment is good, welfare recipients face many other barriers that keep them from economic self-sufficiency (Blumenberg, forthcoming; Danziger et. al., forthcoming; Olson and Pavetti, 1996). In contrast, job access plays an interesting role in the non-urbanized areas of the county. Contrary to previous studies, the analysis shows that welfare usage rates are higher, not lower in job-rich neighborhoods. Welfare recipients are more likely than other rural, low-income workers, to live adjacent to small cities and towns where jobs are located. In the non-urbanized areas, the benefits of job access are realized through higher employment rates. Welfare recipients living in small towns and cities are more likely to be employed than recipients who are dispersed throughout the remainder of the more isolated, non-urbanized areas of the county.

2. Welfare Recipients and Spatial Isolation from Employment

A large and, now, decades old body of research suggests that spatial isolation from employment opportunities leads to adverse economic outcomes for welfare participants and other low-wage workers. The literature on the effects of spatial isolation

¹Many studies point to higher welfare usage rates in rural and agricultural counties but fail to consider the variation in usage rates within these counties (Brady et al., 2002; Tickamyer, 1992).

on the employment of welfare participants is premised largely on the spatial mismatch hypothesis—the notion that joblessness and low-wages can be explained, in part, by the systematic geographic separation of low-wage, inner-city residents from job opportunities increasingly located in suburban areas. The merits of the spatial mismatch hypothesis have been examined in more than 75 studies and, at least, 8 comprehensive literature reviews (Holzer, 1991; Ihlanfeldt, 1992; Ihlanfeldt and Sjoquist, 1998; Jencks and Mayer; 1990, Kain; 1992, Moss and Tilly 1991; Preston and McLafferty, 1999). With some notable exceptions (Cooke, 1997; Ellwood, 1986; Taylor and Ong, 1995), the evidence supports the negative economic effects of spatial isolation, particularly among African American men.

Extending from the spatial mismatch literature, welfare researchers have developed a series of ecological studies – mapping exercises – to examine whether welfare participants also face a spatial mismatch (Bania *et al.*, 1999; Blumenberg and Ong, 2001; Cervero *et al.*, forthcoming; Lacombe, 1998; Laube *et al.*, 1997; Rich 1999; Sawicky and Moody, 2000). While not directly testing the spatial mismatch hypothesis and its application to welfare participants, these studies rely on maps to graphically portray the residential location of welfare participants, low-wage jobs, and, frequently, the public-transit service linking the two. Although the results of these studies vary, all of the major metropolitan areas examined appear to have some low-income neighborhoods where unemployment rates are high, jobs are few, and welfare recipients live distant from employment opportunities.

The research on spatial isolation in rural areas is drawn primarily from descriptive analyses of the travel distances of low-income, rural residents and qualitative studies of

the travel barriers facing rural welfare recipients. For example, data from the 1995 Nationwide Personal Transportation Survey show that rural, low-income, single parents travel approximately 10 miles to work, 20 percent more than the 8-mile average for all low-income, single parents. Qualitative studies and newspaper accounts of rural welfare recipients also portray their spatial isolation. The stories of the rural poor highlight the lack of jobs in rural communities, the great distances they must travel to reach employment centers, and other transportation difficulties. One newspaper account tells the story of a former rural welfare participant who found a job that required her to make a “...round-trip drive of three hours” (DeParle, 1997). In a study of rural welfare recipients in Iowa, one respondent complained about long travel times and limited transit service; she stated:

I could have had a job on the 15th [of the month] but I didn't have a vehicle. It takes about half an hour to 45 minutes just to get downtown on the bus. Then another 20 minutes after transferring to the appropriate bus. The buses don't even start out here until 6:15 in the morning. So how the heck can I get to work by 6:30? (Fletcher *et al.*, 2002)

This research suggests that many rural welfare recipients have trouble traveling from outlying, job-poor rural areas to employment destinations in adjacent, but distant, urban centers. However, these studies infer but do not measure the direct effects of spatial isolation on rural welfare usage or employment rates.

While these descriptive studies of urban and rural welfare recipients are plentiful, far less welfare research has examined the economic consequences of living in job-poor neighborhoods; and no studies have quantified the economic effects of spatial isolation among rural welfare recipients. In general, employment among welfare recipients is linked to the robustness of the economy (Ziliak *et al.*, 2000). Hoynes (2000) used

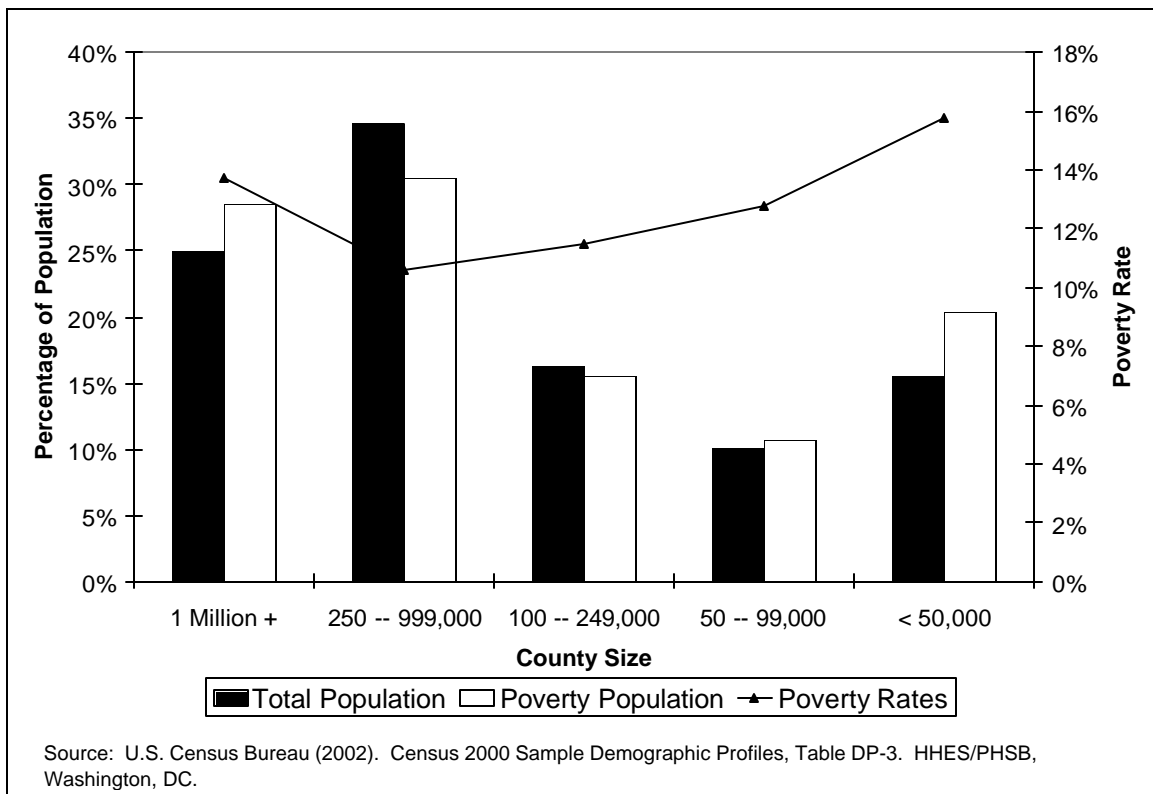
county-level data for welfare recipients in California, Hoynes (2000) and finds that a variety of local labor market conditions (higher unemployment rates, lower employment growth, lower employment to population ratios and lower wage growth) are associated with longer welfare spells and higher recidivism rates. With respect to accessibility at the neighborhood level, Blumenberg and Ong (1998) find that access to local employment leads to lower welfare usage rates among welfare participants in Los Angeles. And Allard and Danziger (2000) find similarly; their study shows that access to employment opportunities is positively related to employment rates for welfare recipients in Detroit.

Employment access has other economic consequences; it also affects earnings. Ong and Blumenberg (1998) find that long distance commutes of welfare recipients are related to lower earnings, perhaps because of the difficulty welfare recipients experience sustaining jobs that require long, expensive, and unreliable travel. Finally, the ability to access reliable and efficient forms of transportation can increase the number of employment opportunities easily reachable within a reasonable commute time. For example, studies find that access to automobiles is associated with higher employment rates among welfare recipients (Cervero, et al., forthcoming; Ong, 1996, Ong, 2002).

Once again, the few studies that attempt to quantify the employment or wage effects of spatial isolation focus on large urban areas such as Atlanta, Boston, Chicago, Cleveland, Detroit, Los Angeles, New York, Philadelphia, and the San Francisco-Bay Area. The applicability of these findings regarding spatial access to employment in smaller urban areas has received less attention. This is a problem since most welfare recipients live in smaller urban and rural areas. As Figure 1 shows, relative to the total population, the poverty population is overrepresented in large counties, counties with

populations over one million. However, approximately 56 percent of the poor live in smaller urban counties, those with populations between 50,000 and one million. Similarly, little attention has been paid to the spatial barriers facing rural welfare recipients who are arguably the most isolated from employment opportunities since they live in counties where jobs tend to be scarce and highly seasonal, where poverty and welfare usage rates are high, and where public infrastructure such as transit or social services tends to be limited (Deavers *et al.*, 1986; Duncan and Sweet, 1992; Rank and Hirschl, 1988; Rucker, 1994; Tickamyer, 1992; Weber and Duncan, 2000). At close to 16 percent, the poverty rate for these very small counties is high, higher than the poverty rate for the large urban counties. Therefore, the counties with populations of less than 50,000 also contain a disproportionate share of the poor (20%).

Figure 1: Poverty Distribution and Poverty Rates by County Size



3. The Study: Location, Data, and Methods

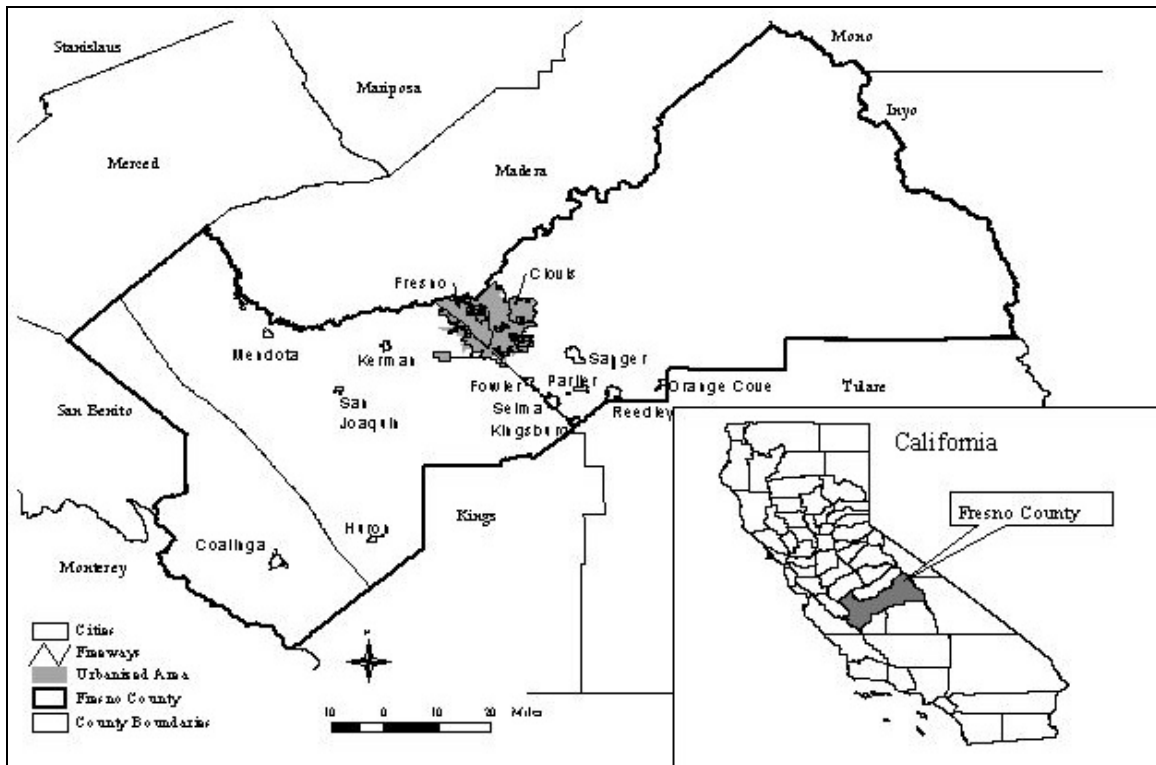
This study examines the relationship between spatial access to employment and the economic outcomes for welfare recipients living in Fresno County, California, an agricultural-based county located in central California. Fresno County is an interesting case study since it is characterized by high welfare usage rates, a racially and ethnically diverse population, and an urban structure that includes both urban and rural areas.² Since the county contains a medium-sized metropolitan area, it is not technically considered a rural county by the United State Department of Agriculture (USDA). However, since the county is so large, some welfare recipients live as much as 60 miles from the urban center.

Figure 1 shows a map of Fresno County. Fresno is the largest city (441,900 population) within the County (826,600 population) and adjacent Clovis (72,800 population) is the second largest city (California Department of Finance, 2002). Sixty-two percent of the county residents live in these two cities and another 18 percent live in small cities and towns scattered around the county (California Department of Finance, 2002). The remaining 20 percent of the population live in small unincorporated towns and rural areas amidst the farms and grazing land of this productive agricultural area (California Department of Finance, 2002). Like most other resource-based counties, Fresno is characterized by seasonal fluctuations in employment, high unemployment rates, and higher than average poverty and welfare usage rates. Fresno County is home to 2.4 percent of the state population (California Department of Finance, 2002) and

²As of January 2000, the welfare usage rate in Fresno County was the fourth highest among the state's 58 counties (California Department of Social Services, 2001).

approximately five percent (62,148) of California’s welfare participants (California Department of Social Services, 2002). In total, 27 percent (363,170) of all California welfare recipients live in the 18 Central Valley farm counties (California Department of Social Services, 2002); the welfare caseload in this agricultural region exceeds that of 30 U.S. states.

Figure 2: Fresno County, California



This analysis relies on U.S. census block-group data to model two different outcome measures—welfare usage rates and the employment rates of welfare recipients—as a function of population and labor market characteristics, including measures of welfare recipients’ relative access to nearby jobs. In the first set of models, the dependent variable is the proportion of the working-age adult population (between 18

and 64 years) in a block group that receives Temporary Assistance to Needy Families.

For a given block group, i , the welfare usage rate R_i is defined as:

$$R_i = W_i/P_i$$

where P_i is the working-age population (18 to 64) and W_i is the number of adults on TANF. Population figures by block groups are from the STF3A files of the 1990 U.S. Census. The Fresno County Department of Employment and Temporary Assistance provided administrative data for all welfare participants who were on aid in 1999. These data included addresses and were geocoded in order to assign each welfare participant to a block group. R_i is assumed to be a function of the population and labor market characteristics that are summarized in Table 1.

In the second set of models, the dependent variable is the percentage of employed welfare recipients in the block group. To arrive at this figure, administrative data on welfare recipients were matched to employment data from the California Employment Development Department. Recipients were considered to be employed if they worked at least one of four quarters in 1999. For a given block group, i , the employment rate J_i is defined as:

$$J_i = E_i/W_i$$

where W_i is the number of adults on TANF and E_i is the number who is employed.³

Once again, population figures by block groups are from the STF3A files of the 1990 U.S. Census.⁴ J_i is assumed to be a function of the population and labor market characteristics also summarized in Table 1.

³ Only those welfare recipients with valid social security numbers were used in this analysis.

VARIABLE	DEFINITION	PREDICTED RELATIONSHIP	
		Welfare Usage	Employment Rate
JOB ACCESS	Ratio between the number of low-wage, feminized jobs accessible in a 3 mile radius to the number of working-age adult population in census tract <i>i</i> .	-	+
COMMUTE BY CAR	Proportion of population 16 years or older that commute by private vehicle.	-	+
LESS EDUCATED	Proportion of 18+ adult population with a high school degree or less as a percentage of the working-age adult population.	+	-
SINGLE-PARENT HOUSEHOLD	Proportion of single-parent family households with children under 18 years as a percentage of the total family households.	+	
LANGUAGE	Proportion of working-age adult population that is linguistically isolated	+	-
HISPANIC	Hispanic working-age adult population as a percentage of the total working-age adult population.	-	+
NEW IMMIGRANTS	Proportion of foreign-born persons who immigrated to the U.S. from 1985 to 1990 as a percentage of the total working-age adult population.	?	?

⁴There is a temporal mis match in the data used for this analysis. Welfare administrative data are from 1999, employment data are for 1998, and population figures are from 1990. Because the relevant 2000 Census data were not released, we used the 1990 demographic figures as a proxy for the 1999 counts. For the purposes of this study, the important measure is the spatial distribution of select demographic groups and not their raw numbers. Since the characteristics of most neighborhoods change relatively slowly, the data for the two time-periods are likely to be highly correlated.

BLACK	Black working-age adult population as a percentage of the total working-age adult population.	+	-
ASIAN	Asian working-age adult population as a percentage of the total working-age adult population.	+	?
RURAL (0,1)	RURAL =1 if the centroids of block groups are outside of the boundary of census-designated urbanized area and RURAL = 0 for the rest of the block groups.	+	-

LESS EDUCATED_{*i*} is the proportion of the adult population over the age of 17 with a high school education or lower. Since studies show a strong relationship between the economic outcomes of welfare recipients their education levels, welfare usage rates should be higher and employment rates lower in areas where the population has little education (Bane and Ellwood, 1994; Blumenberg and Ong, 1998). SINGLE-PARENT HOUSEHOLD_{*i*} is the proportion of single-parent families with children under 18 years old. This variable should be positively related to welfare usage as the welfare program is largely targeted to single-parent families. This variable is a less relevant predictor of employment and, therefore, is excluded from the employment model.

Three racial-ethnic variables are included in the model to capture the effects of the racial and ethnic composition of neighborhoods on the two outcome measures.⁵ Since welfare usage among black families is higher than among most other racial and ethnic groups, there should be a positive relationship between census tracts with high proportions of black residents (BLACK_{*i*}) and welfare usage. The opposite relationship is

⁵The variables “black” and “Asian” are excluded from the models for the non-urbanized areas since there are relatively few African Americans and Asians living outside of the Fresno-Clovis area.

expected with respect to welfare usage among adults of Hispanic Origin (HISPANIC_i); the figures in Table 2 show that the welfare usage rate among Hispanics is lower than any other racial group except whites. The proportion of the population that is Asian (ASIAN_i) should be positively related to welfare usage rates. Sixty-five percent of Asian welfare participants in Fresno County are Hmong who have, on average, higher welfare usage rates than any other ethnic or racial group [Bach and Carroll-Seguin, 1986; Ong and Blumenberg, 1994; also see Table 2].

	% of Total Welfare Participants	Welfare Usage Rates		
		Total Population	Working-Age Adult Population ^a	Working-Age Adult Poor ^b
White	20%	1%	2%	17%
African American	12%	9%	17%	72%
Hispanic	49%	5%	9%	34%
Asian	17%	7%	15%	42%
Southeast Asian	16%	12%	----	----
Hmong	11%	14%	----	----
Total	100%	4%	6%	37%

^a Working-age adult population indicates persons 18 to 64 years old.

^b Working-age adult poor indicate persons in poverty 18 to 64 years old.

With respect to employment, African Americans typically have had the most difficult time moving off of welfare. Data from the National Survey of America's Families show that 34 percent of TANF families reported their race as African American in 1997; this percentage increased to 46 percent in 1999 (Zedlewski and Alderson, 2001). However, the relationship among the other racial-ethnic groups and economic outcomes is less clear. In the same survey, the percentage of recipients who reported being Hispanic remained at approximately 20 percent from 1997 to 1999 and those reporting other races remained at 3 percent (Zedlewski and Alderson, 2001).

Welfare usage rates should also be affected by the number of recent immigrants though the direction of this effect is uncertain. Many new immigrants live in poverty but are not eligible for welfare since they are not permanent residents. However, other immigrants—particularly Southeast Asian refugees—are more likely than other groups to receive benefits since their eligibility is based on the Indochina Migration and Refugee Assistance Act of 1975 which mandates economic support for Asian refugees through the welfare system. With respect to employment, studies show that English language proficiency is positively related to employment (Blumenberg, forthcoming; Danziger et al., forthcoming); $LANGUAGE_i$ is the percentage of the percentage of the working-age population that is linguistically isolated. Further, since recent immigration is also highly correlated with poor English language proficiency, employment is likely to be more difficult for new immigrants. The variable $NEW\ IMMIGRANT_i$ is the percentage of foreign born that migrated to the U.S. between 1985 and 1989.

The variable $RURAL_i$ is a dummy variable, either 0 or 1. $RURAL$ is equal to 1 if the centroid of the block group is outside the boundary of the census-designated urbanized area; $RURAL$ is equal to 0 if the block group centroid is in the urbanized area.⁶ We would expect a positive relationship between rural areas and welfare usage since welfare usage rates are typically higher in rural and agricultural areas compared to urban areas (Rural Policy Research Institute, 1999). In California, welfare usage rates are highest in agricultural counties where ten percent of the population is on aid, almost

⁶The Census 1990 defines urbanized areas as “one or more cities (places) and the adjacent densely settled surrounding territory that together have a minimum of 50,000 persons. In Fresno County, there is one urbanized area that includes the cities of Fresno and Clovis and the adjacent populated block groups.

twice the rate of urban counties (Brady *et al.*, 2002). Also, we would expect lower employment rates among rural welfare recipients, since most of the county's jobs are located in the urbanized area.

The COMMUTE BY CAR_{*i*} variable is drawn from the STF3A file of the 1990 Census. The variable measures the percentage of the working population that commutes by private vehicle. Since automobiles allow welfare recipients access to most of the county's employment within a relatively short commute time, areas with high percentages of auto users should be more likely to have lower welfare usage rates and higher employment rates. Since access to private vehicles is also highly correlated to income, this measure also acts as a proxy for the overall economic status of the neighborhood.

The last variable listed in Table 1 measures access to nearby, low-wage, feminized jobs – jobs in which welfare participants are disproportionately concentrated. Welfare usage rates should be lower and employment rates higher in job-rich areas (Allard and Danziger, 2000; Blumenberg and Ong, 1998). Using block group data on employment from the American Business Directory (assembled by American Business Information, Inc.), we measure welfare participants' access to low-wage, feminized occupations. Estimates of feminized, low-wage occupations were determined by combining industry data with data from the U.S. Bureau of Labor Statistics on the sex composition of occupations, and an occupational and industrial matrix developed by the California Employment Development Department.

Job access (J_i) is calculated by identifying all other block groups with centroids within a three-mile radius of block group i and weighted using a gravity model. Given

that the likelihood that a welfare recipient (and, indeed, all workers) will find a job declines with the distance to the job, the gravity model creates a distance-decay effect on the probability that a welfare participant will find, take, and keep a job. Thus, jobs in block groups within one mile of a residential block group are not weighted. Jobs in block groups located further than one mile are weighted by one dividing by the square of the distance between the two centroids.⁷ The relevant measure is the number of employment opportunities relative to the potential labor supply; therefore, the weighted employment figure is divided by the number of working-age adults in each block group (*i*). The job access variable includes both linear and second order terms. JOB ACCESS (squared)_{*i*} is included because the marginal influence of job richness likely declines for high values of the measure.⁸

The basic models are estimated using least squares regression with the following specification:

$$R_i \text{ or } E_i = a_i + x_i\beta + e_i \text{ for } i=1 \dots n \text{ block groups}$$

where x_i is the vector of observed values for the listed independent variables for block group *i*, β is a vector of coefficients and e_i is the stochastic term which is assumed to have an expected value of 0 and a normal distribution. To reflect the relative weight of each of

⁷This specification is based on numerous transportation studies that show that the flow of commuters between a job center and a residential center declines at a rate proportionate to the inverse of the distance, with a common specification being the square of the distance. See Daniels and Warnes (1980), Meyer and Miller (2000), and Sheppard (1995).

⁸For reporting purposes, the squared value of the job access variable is normalized by 10,000; the variable is calculated as $(\text{job_access}_i * \text{job_access}_i) / 10,000$.

the block groups, the welfare usage models are weighted by the total adult populations (18 and 64) and the employment rate models are weighted by the total number of TANF participants. Finally, to better understand the spatial differences in welfare dynamics, the two models are then replicated for urbanized and non-urbanized areas within the county.

4. Job Access and Economic Opportunity

Both the descriptive statistics and the regression models reveal the significant differences in employment access in smaller urban areas such as urbanized Fresno compared to non-urbanized areas. Figure 3 depicts block group-level data on the geographic distribution of welfare recipients in Fresno County. The map shows that welfare usage rates are highest in the City of Fresno and particularly high in the neighborhoods surrounding the major intrastate highway (State Route 99) that bisects the city. The maps suggest that welfare recipients in Fresno County are more concentrated in cities and towns than the population in general. Eighty-three percent of all welfare participants live in cities compared to 72 percent of the total population, and 71 percent of the adult population with a high school degree or less.

Figure 4 shows the distribution of low-wage, feminized employment in the county. A comparison of the recipient and employment maps shows that employment is more concentrated than welfare participants around the secondary north-south highway (State Route 41) corridor. And, while there are fewer jobs in the non-urbanized area of the county compared to the urbanized area, the ratio between the number of low-wage, feminized jobs and the number of welfare recipients is slightly *higher* in the non-

Figure 3: Welfare Usage Rates -- Fresno County

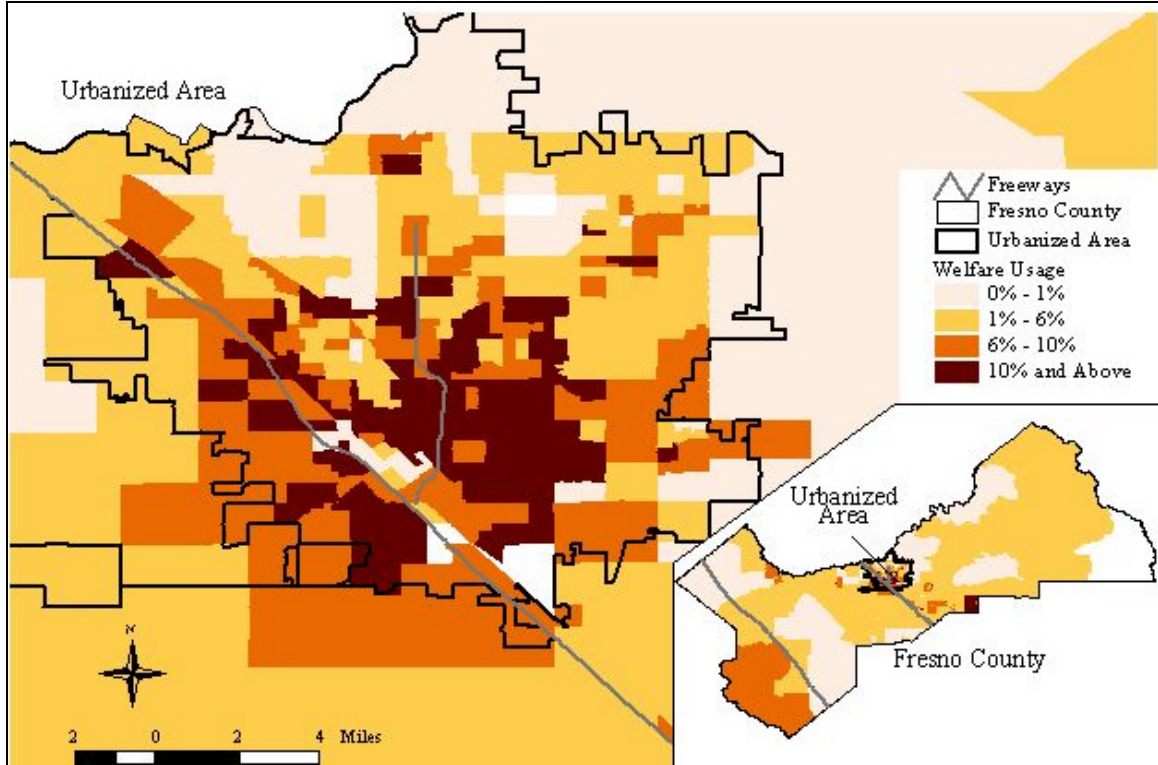
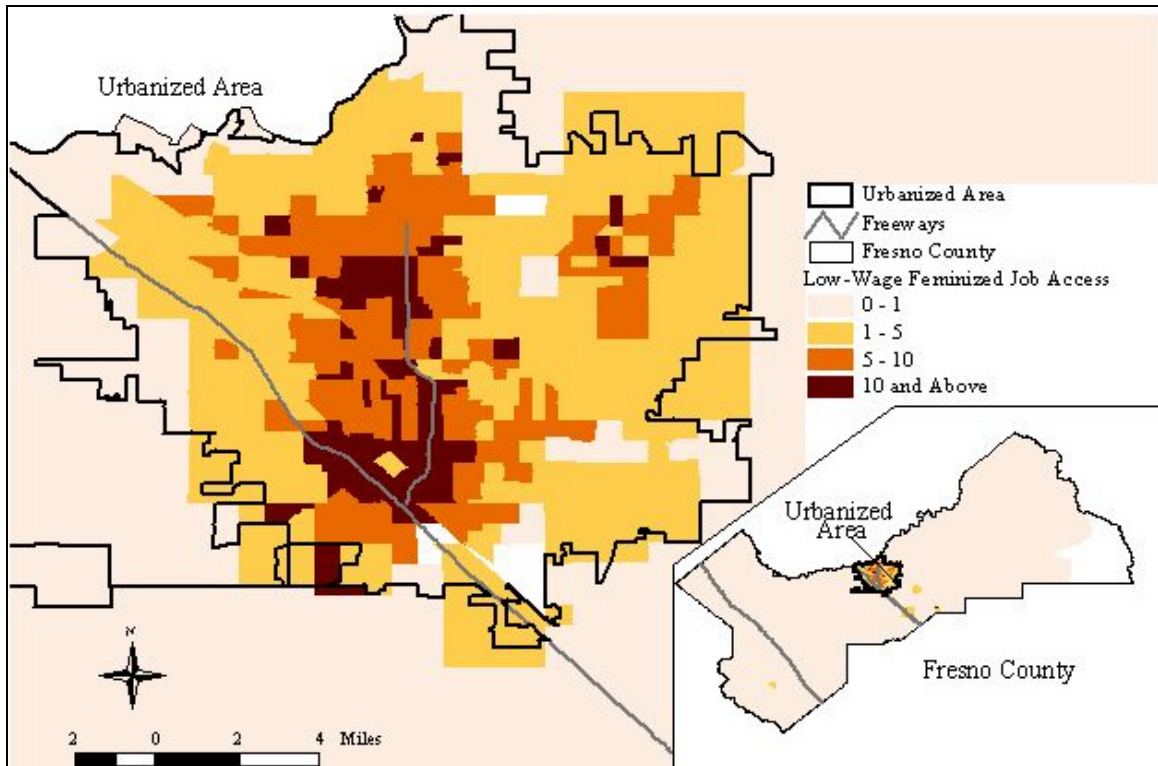


Figure 4: Low-Wage, Feminized Employment – Fresno County



urbanized area of the county. In rural Fresno, there are three low-wage, feminized jobs for every recipient compared to 2.6 jobs per recipient in the urbanized area.⁹ However, as might be expected, employment in the non-urbanized area of the county tends to be more geographically dispersed than urban employment.

Table 3 shows the descriptive statistics for the variables used in the analysis for all block groups and, separately, for block groups in urbanized and non-urbanized areas of the county. The statistics show higher welfare usage rates, lower employment rates, and a greater number of low-wage jobs in urban areas compared to rural areas. The data also reflect the concentration of African Americans and Asians within urban areas of the county. In contrast, rural areas are characterized by higher percentages of less-educated residents, Hispanics, and new immigrants.

Variables	Fresno County		Urban Areas		Rural Areas	
	Means	Std. Deviation	Means	Std. Deviation	Means	Std. Deviation
Welfare Usage Rate	6.5	9.6	8.1	11.5	3.9	3.3
Employment Rate	70.8	16.5	58.5	15	64.7	18.1
Job Access	817	4,777	1,229	6,000	131	496
Job Access (Squared)	2,345	38,935	3,740	49,251	26	258
Commute by Car	91.9	8.7	92.2	9.1	91.4	8.1
Less Educated	69.8	27.4	63.8	27.8	79.7	23.6
Single-Parent Households	14.9	10.8	16.8	11.5	11.7	8.8
Language	9.9	12.6	7.8	11.5	13.3	13.7

⁹It is important to note that these figures do not reflect the relative competition for these jobs; nor do measure the spatial proximity of these jobs relative to the residential locations of welfare recipients.

Language (Squared)	21,192	85,071	19,373	89,634	24,216	77,015
Hispanic	34.9	25.8	27.4	20.6	47.3	28.7
New Immigrants	8.9	12.4	7.9	12.8	10.5	11.3
African American	4.8	11.3	6.9	13.4		
Asian	6.1	7.8	7.6	9		
Rural	38	50				

Spatial Isolation in Fresno County. Table 4 presents the regression results for the first set of models predicting welfare usage and employment rates for all block groups in Fresno County. The model contains a dummy variable indicating whether the block group falls outside of the urbanized area. In both models, most of the independent variables operate as expected. Welfare usage rates are positively related to the percentage of less-educated residents, single parents, African Americans, and Asians. Employment rates are negatively related to the percentage of less-educated and Asian residents and positively related to the percentage of Hispanic residents. The job access variable is not significant in either of the models. The models show, however, that rural areas of the county have lower welfare usage and higher employment rates even when controlling for factors such as education, household structure, racial/ethnic composition, recent immigration, and mode choice.

Spatial Isolation in Urbanized Fresno. The results of the regression models for urbanized neighborhoods in Fresno (Table 5) are similar to those for the entire county with two exceptions. First, there is a statistically positive relationship between welfare usage and the percentage of Hispanics and a negative relationship between linguistic

isolation and employment rates. Once again, in the urbanized area of Fresno County the job access variable is not statistically related to either welfare usage or employment rates

Table 4: Job Access – Fresno County				
	Welfare Usage Rate		Employment Rate	
Variables	Parameter	Std. Error	Parameter	Std. Error
Intercept	-1.980*	0.800	-43.257***	5.42275
Commute by Car	-0.0008	0.0004	0.091	0.053
Job Access	-.00006	0.0005	0.000007	0.001
Job Access (squared)	-0.00006	0.0004	-0.002	0.002
Single-Parent Households	0.225***	0.018		
Less Educated	0.068***	0.010	-0.092***	0.024
Language	0.010	0.029	-0.086	0.064
Language (squared)	-0.000002	0.000002	0.000003	0.000003
Hispanic	0.011	0.012	0.084**	0.026
New Immigrant	-0.032	0.028	0.062	0.055
Black	0.065***	0.017	0.020	0.029
Asian	0.203***	0.028	-.168**	0.055
Rural	-2.900***	0.531	7.370***	1.177
Adjusted R ²	0.627		0.289	
DF	531		511	

***p<0.001 **p<0.01 *p<0.05

For reporting purposes, the squared value of the job access variable is normalized by 10,000.

Spatial Isolation in Rural Fresno. In the non-urbanized area of the county (Table 5), this study finds a *positive* relationship between job access and welfare usage rates in the non-urbanized areas. In other words, welfare usage is higher, not lower, in job-rich neighborhoods. However, there is a statistically significant and positive relationship between employment rates and job access. In other words, those welfare recipients who live in job-rich neighborhoods are more likely to be employed than those who live in areas with fewer adjacent jobs.

Table 5: Job Access – Urbanized and Non-Urbanized Areas				
Fresno Urbanized Area				
	Welfare Usage Rate		Employment Rate	
Variables	Parameter	Std. Error	Parameter	Std. Error
Intercept	-2.303*	0.965	-41.810***	5.823
Commute by Car	-0.0007	0.0005	0.0799	0.058
Job Access	-0.0005	0.0007	0.0005	0.001
Job Access (squared)	0.00008	0.0005	-0.002	0.001
Single-Parent Household	0.221***	0.023		
Less Education	0.064***	0.013	-0.069**	0.026
Language	0.087	0.053	-0.184*	0.083
Language (squared)	-0.000002	0.000002	0.000004	0.000003
Hispanic	0.039*	0.018	0.033	0.030
New Immigrant	-0.048	0.044	0.088	0.065
Black	0.059**	0.020	0.010	0.029
Asian	0.153***	0.043	-0.137*	0.063
Adjusted R ²	0.658		0.206	
DF	330		323	
Non-Urbanized Area				
	Welfare Usage Rate		Employment Rate	
Variables	Parameter	Std. Error	Parameter	Std. Error
Intercept	-1.346	1.198	-41.274**	13.186
Commute by Car	.0008	.001	.041	.126
Job Access	.004*	.002	.032*	.013
Job Access (squared)	-.012	.007	-.333	.200
Single-Parent Household	.145***	.025		
Less Education	.029*	.014	-.053	.070
Language	.019	.026	-.042	.104
Language (squared)	-.000007**	.000002	.000004	.00001
Hispanic	.027*	.012	.114*	.047
New Immigrant	-.069**	.026	.175	.103
Adjusted R ²	0.359		0.128	
DF	200		187	

***p<0.001 **p<0.01 *p<0.05

For reporting purposes, the squared value of the job access variable is normalized by 10,000.

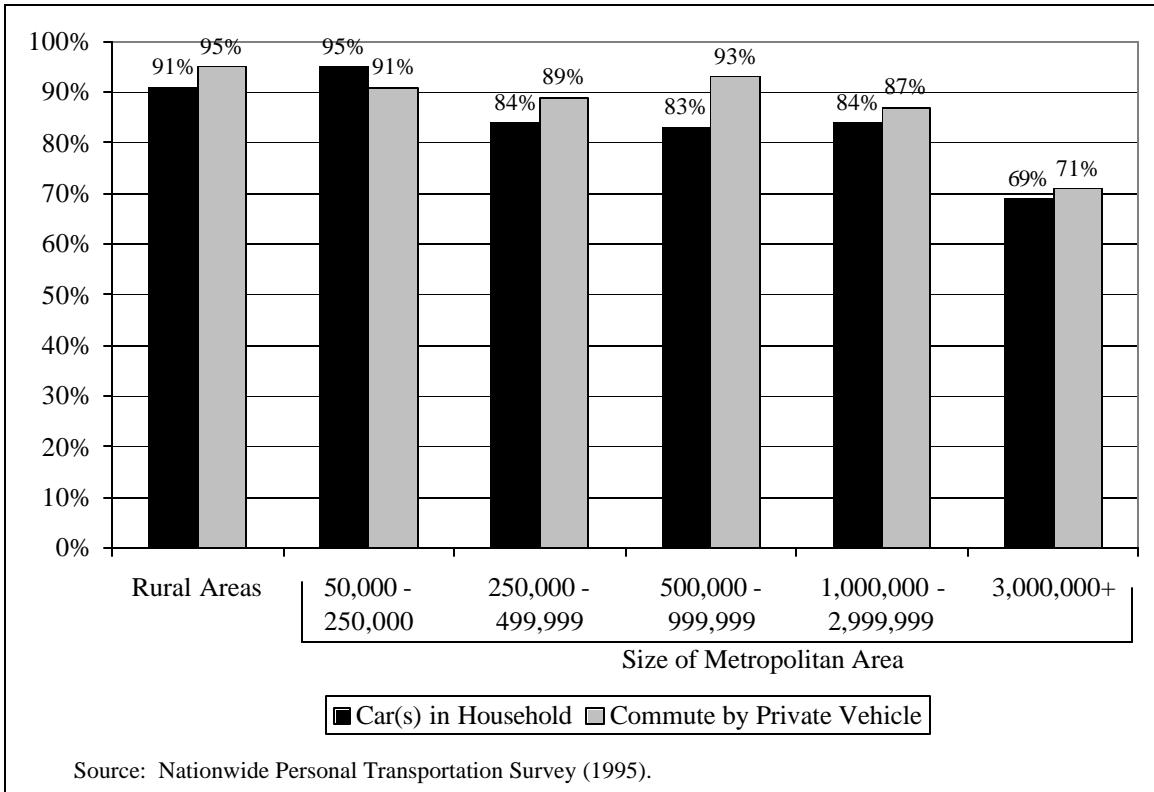
5. Discussion

The findings of this study suggest that spatial access to employment does not influence welfare usage rates in smaller metropolitan areas such as the Fresno-Clovis urbanized area. This result lends credence to the conclusions drawn by a handful of other scholars who have noted that the extent and effects of the spatial mismatch may vary across metropolitan areas. They may be more extensive in large urban areas that have high levels of housing segregation and limited transit service from central cities to outlying suburbs and, perhaps, inconsequential in smaller, more centralized metropolitan areas (Ihlanfeldt, 1992; Ihlanfeldt and Sjoquist, 1998; Weinberg, 2000). Although a controversial area of research, some scholars suggest that the inefficiencies and political apathy associated with large urban areas may outweigh the benefits of urban agglomeration (Fox, 1980; Hirsch, 1968; Oliver, 2000; Stansel, 2002).

Further, supporting data show that low-income adults living in smaller metropolitan and rural areas are more likely to have access to and travel by automobiles than low-income residents living in large urban areas. In many smaller cities and towns, the density of activity is not sufficient to support extensive fixed-route transit service such as the extensive service available in cities such as New York, Los Angeles, or Chicago. Data from the Nationwide Personal Transportation Survey suggest a negative relationship between access to personal vehicles and metropolitan area size. In 1999 the Fresno metropolitan area (MSA) had an estimated population of 880,000 (U.S. Census Bureau, 2000). As Figure 5 shows, in comparable-sized U.S. metropolitan areas, 93 percent of low-income adults commute by private vehicle, compared to 71 percent in metropolitan areas of greater than 3 million. Therefore, the smaller size of the Fresno

metropolitan area combined with an overwhelming reliance on personal vehicles—even among low-income adults—makes most employment opportunities within the metropolitan area easily accessible within a reasonable commute.

Figure 5: Access to Private Vehicles – Adults in Low-Income Household



With respect to the non-urbanized areas, the story is quite different. The data show a positive relationship between welfare usage and job access. A cursory interpretation of this relationship would suggest that living in neighborhoods with ample employment opportunities increases the likelihood that families rely on welfare, a finding that is contrary to the premise of the spatial mismatch hypothesis. However, the observed relationship is likely due to the spatial distribution of welfare recipients relative to both

employment opportunities and other low-income residents.¹⁰ The data show that welfare recipients living outside of the urbanized area are likely to live in close proximity to low-wage employment centers located in small cities and towns. In Table 6, block groups in Fresno County are divided into quartiles based on their relative job richness. The quartiles are created separately for the urbanized and non-urbanized areas of the county. The figures show that although there are many fewer jobs located in the non-urbanized compared to the urbanized area, a much higher percentage of rural welfare recipients live in the job-richest two quartiles. Sixty-three percent of all welfare recipients living in the non-urbanized areas of the county live in the top two quartiles in terms of job richness compared to only 39 percent of recipients in the urbanized area.

Largely women, welfare recipients are disproportionately employed in the low-wage service and retail sectors. These types of jobs – such as jobs as waitresses, clerical workers, or sales clerks – are typically found in cities. Welfare participants may choose to live in these smaller cities since they anticipate difficulties traveling to jobs and services. Moreover, in the non-urbanized areas, low-income residents who live in job-poor neighborhoods are likely to be agricultural workers. Many of the agricultural workers are non-citizens and, therefore, not eligible to participate in the welfare program. Welfare usage in these areas, therefore, would necessarily be low.

But welfare recipients in the non-urbanized area who live adjacent to employment are more likely to be employed. Therefore, within the non-urbanized area it is important to distinguish between welfare recipients who live in very small cities and towns and

¹⁰The findings underscore the importance of addressing the endogeneity of residential location in studies of spatial access to employment.

those who live in the countryside, in more typically rural areas. The findings here suggest that those recipients who live dispersed throughout the agricultural areas of Fresno County are spatially isolated and have difficulty finding employment. However, since most “non-urban” welfare recipients live in small cities and towns, they have good access to employment and high employment rates.

A number of other studies suggest that rural welfare recipients may not have stiffer barriers to employment than urban recipients. Lerman, Duke, and Valente (1999) compared the benefit and tax structures of urban and rural areas and find that financial incentives to work are slightly higher in rural than in urban counties. Also, the rural poor have much higher labor-force attachment than their urban counterparts (Tickamyer, 1992; Lichter *et al.*, 1994). For example, Lichter *et al.* (1994) find that the 24.3 percent of rural, female householders are employed compared to 18.7 percent of urban, female householders. Therefore, rural residents receive less of their income from public assistance than urban participants (Tickamyer, 1992).¹¹ With respect to welfare recipients, recent analyses show that welfare reforms have resulted in equally strong employment gains in both urban and rural areas and some scholars have concluded that the barriers to entering the labor market appear to be no greater in rural than in urban areas (McKernan *et al.*, 2000; Mills *et al.*, 2000).

¹¹Studies show that rural welfare participants have different welfare usage patterns; they tend to have shorter welfare spells but greater numbers of them (Brady *et al.*, 2002; Hoynes, 2000; Porterfield, 1998). The rural poor exit welfare more frequently during the summer months when local rural economies are most robust (Brady *et al.*, 2002).

The findings of this study sharply illustrate the limits of relying on analyses based on large urban areas. Smaller metropolitan areas, small towns and cities, and rural areas function very differently from large urban areas and, also, from each other. They each have their own residential and employment patterns that differentially influence welfare recipients' spatial isolation and, therefore, their likelihood of employment. Employment access in medium-sized urban areas such as Fresno-Clovis and in small towns and cities is quite good. In particular, in the non-urbanized areas, employment access relates to higher employment rates. Conversely, for the welfare recipients dispersed in rural, agricultural areas, spatial isolation poses a true threat to their ability to find and maintain employment.

6. Serving the Diverse Transportation Needs of the Poor

Federal policies have largely been structured to aid inner-city and rural welfare participants in overcoming their spatial isolation from employment. The Transportation Equity Act of the 21st Century (TEA-21), the current federal surface transportation legislation, includes the Job Access and Reverse Commute (JARC) program. This program is aimed at improving the mobility of welfare participants and other low-income individuals seeking employment by facilitating their travel to suburban jobs from urban, rural, and other suburban locations.

However, this study suggests that the general application of “job access and reverse commute” programs across all types of counties is not appropriate nor a good use of funds. The findings in Fresno County in the context of the broader literature on welfare participants and their spatial access to employment suggest that the effectiveness

of welfare reform rests, in part, on tailoring programs and services to meet the unique conditions of welfare participants that differ substantially across urban areas and between urban and rural areas. In large urban areas, spatial isolation from employment and limited access to automobiles reduces the likelihood that welfare participants will find employment and, therefore, increase welfare usage rates (Allard and Danziger, 2000; Blumenberg and Ong, 1998). In these areas, targeted job access and reverse commute programs can potentially link welfare participants to employment opportunities located outside of their neighborhoods.

However, in smaller metropolitan areas and small towns and cities “job access and reverse commute” programs may not be needed or appropriate. The smaller scale of these urban areas means that most welfare participants live reasonably close to jobs. Additionally, compared to low-income residents of large urban areas, low-income residents in these areas rely more extensively on automobiles, in part because of limited transit services. Therefore, in medium-sized urban areas and in small towns and cities, additional public transit service linking low-income residents to employment opportunities may be unnecessary. If implemented, these services are likely to be undersubscribed and inefficient. In these areas, perhaps welfare recipients would be better served by programs to increase levels of education, to provide additional classes in English as a second language, or to provide specialized services to meet the particular needs of racial and ethnic groups.

The policy challenge, however, is providing transportation services to welfare recipients living in areas distant from cities of any size. The dispersed residential locations of rural welfare recipients make fixed-route transit untenable; fixed-route transit

works best in areas with relatively high concentrations of origins and destinations (Levinson, 1992). However, to serve the transportation needs of the rural poor, many transit agencies have established demand-responsive transit services. Residents are picked up from their homes and transported to adjacent towns where they either find employment or take inter-city, fixed-route transit to larger urban areas. For example, the Fresno County Rural Transit Agency (FCRTA) provides transit service, much of it demand-responsive, in the rural, incorporated areas of Fresno County. However, travel times on transit from outlying areas into large urban areas may be too lengthy to sustain.

In instances when public transit is not effective – either for welfare recipients or for transit agencies – policies and services must be developed to enable welfare recipients to purchase, insure, and maintain reliable vehicles. Many policymakers are loathe to support policies and programs that might be perceived by their constituents as contributing to traffic congestion, air pollution, and sprawl. However, eliminating “cars” as a policy option will have negative consequences for both welfare participants *and* public agencies especially in places like Fresno County. Transit agencies may find themselves establishing expensive transit service that transports relatively few welfare participants or low-income riders.

While additional federal resources and programs can help meet the transportation needs of welfare participants, they will only be effective if they are targeted to counties and neighborhoods within counties that can make use of and benefit from such new services and programs. This study shows that in urban Fresno County, spatial isolation from employment may be less of an obstacle than in larger, urban areas such as Los Angeles. In rural areas distant from employment, low-income residents without private

vehicles are severely disadvantaged. Policies should be developed to help these residents own and maintain automobiles. Therefore, given limited public funds, policies ought to reflect the substantial differences in the urban structure of counties and target funding and programs accordingly.

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Sources

- Allard S W, Danziger S, 2000, "Proximity and opportunity: How residence and race affect the employment of welfare recipients" September.
<http://www.ssw.umich.edu/poverty/jpam91.pdf>
- Bach R, Carroll-Seguin R, 1986, "Labor force participation, household composition and sponsorship among Southeast Asian refugees" *International Migration Review* 20(2) 381 - 404
- Bane M J, Ellwood D T, 1994, *Welfare Realities. From Rhetoric to Reform* (Harvard University Press, Cambridge, MA)
- Bania, N, Coulton C, Leete, L, 1999, *Welfare reform and access to job opportunities in the Cleveland metropolitan area*. Paper presented at the 1999 Annual Fall Research Conference of the Association for Public Policy Analysis and Management, Washington, DC, November 6.
- Blumenberg E, forthcoming, "On the way to work: Welfare participants and barriers to employment," *Economic Development Quarterly*.
- Blumenberg E, Ong P, 2001, Cars, buses, and jobs: Welfare participants and employment access in Los Angeles, *Journal of the Transportation Research Board* 1756 22 - 31.
- Blumenberg E, Ong P, 1998, "Job accessibility and welfare usage: Evidence from Los Angeles" *Journal of Policy Analysis and Management* 17(4) 639 - 657.
- Brady H E, Sprague M H, Gey F C, Wiseman M, 2002. "Seasonal Employment Dynamics and Welfare Use in Agricultural and Rural California Counties," in *Rural*

Dimensions of Welfare Reform Eds. B A Weber, G J Duncan, L A Whitener (W.E. Upjohn Institute, Kalamazoo, MI)

California State Department of Finance, 2002, "Official state estimates, E-1 city/county population estimates with annual percent change, January 1, 2000 and 2001" May (Demographic Research Unit, Sacramento)

<http://www.dof.ca.gov/HTML/DEMOGRAP/e-1text.htm>

California Department of Social Services, 2002, "CA 237 CW - CalWORKs Cash Grant Caseload Movement Report, Research and Development Division" January.

California Department of Social Services, 2001, *CAL Statistics*. (Research and Development Division, Data Analysis and Publications Branch, Sacramento)

Cervero R, Sandoval O, Landis J, forthcoming, "The value of transportation in stimulating welfare-to-work transitions: Evidence from San Francisco" *Journal of Planning, Education and Research*.

Citizens Planning and Housing Association (1999). Access to jobs in the Baltimore region.

Cooke T J, 1997, "Geographic access to job opportunities and labor force participation among women and African American in the greater Boston metropolitan area" *Urban Geography* 18(3) 213 - 27.

Daniels P W, Warnes A M, 1980, *Movement in Cities. Spatial Perspectives on Urban Transport and Travel* (Methuen, London)

Danziger S, Corcoran M, Danziger S, Heflin C, Kalil A, Levine J, Rosen D, Seefeldt K, Siefert K, Tolman R, forthcoming, "Barriers to the employment of welfare recipients" in

Prosperity for All? The Economic Boom and African Americans Eds R Cherry and W M Rodgers, III (Russell Sage Foundation, New York)

<http://www.ssw.umich.edu/poverty/wesappam.pdf>

Deavers K, Hoppe R, Ross P, 1986, "Public Policy and Rural Poverty: A View from the 1980s" *Policy Studies Journal* 15(2), 291 - 309

DeParle J, 1997, "Welfare law weighs heavily on Delta, where jobs are few. (effect of welfare reform on residents of the Mississippi Delta)" *New York Times* 147 October 16 A1.

Duncan C M, Sweet S, 1992, "Introduction: Poverty in rural America," in *Rural Poverty in America* Ed C M Duncan (Auburn House, Westport, CT)

Ellwood D T, 1986, "The spatial mismatch hypothesis: Are there teenage jobs missing in the ghetto?" In *The Black Youth Employment Crisis* Ed R B Freeman, H Holzer 147 - 87. (University of Chicago Press, Chicago)

Fletcher C N, Flora J L, Gaddis B J, Winter M, Litt J S, 2002, "Small towns and welfare reform" in *Rural Dimensions of Welfare Reform* Eds B A Weber, G J Duncan, L A Whitener (W.E. Upjohn Institute, Kalamazoo, MI)

Fox W F, 1980, *Size economies in local government services: a review.* (U.S. Department of Agriculture Economics, Statistics, and Cooperatives Service, Washington, D.C.)

Hirsch W Z, 1968, "The Supply of Urban Public Services" in *Issues in Urban Economics* Eds H S Perloff, L Wingo, Jr. (Johns Hopkins Press, Baltimore) 477 - 525.

Holzer H J, 1991, "The spatial mismatch hypothesis: What has the evidence shown?" *Urban Studies* 28 105 - 122.

Hoynes H W, 2000, "Local labor markets and welfare spells: Do demand conditions matter?" *Review of Economics and Statistics* 82(3) 351 - 368.

Ihlanfeldt K R, 1992, *Job Accessibility and the Employment and the School Enrollment of Teenagers* (W.E. Upjohn Institute for Employment Research, Kalamazoo, MI)

Ihlanfeldt K R, Sjoquist D L, 1998, "The spatial mismatch hypothesis: A review of recent studies and their implications for welfare reform" *Housing Policy Debate* 9(4) 849 - 892.

Jencks C, Mayer S E, 1990, "Residential segregation, job proximity, and black job opportunities" in *Inner-City Poverty in the United States* Eds L E Lynn, Jr., M G .H McGreary (National Academy Press, Washington, D.C.) pp. 187 - 222.

Kain J F, 1968, "Residential segregation, negro employment, and metropolitan decentralization" *Quarterly Journal of Economics*, 82, 175 - 197.

Kain J F, 1992, "The spatial mismatch hypothesis: Three decades later" *Housing Policy Debate* 3(2) 371 - 460.

Lacombe A, 1998, *Welfare Reform and Access to Jobs in Boston*. (U.S. Department of Transportation, Bureau of Transportation Statistics, Washington, DC) January.

Laube M, Lyons W, vanderWilden P, 1997, *Transportation Planning for ACCESS TO JOBS: Job Access and the Metropolitan Transportation Planning Process in Hartford, St. Louis and Detroit*. Report prepared for the U.S. Department of Transportation, Federal Transit Administration, Office of Planning, Federal Highway Administration, Office of Environment and Planning. August 28.

Lerman R I, Duke A, Valente J, 1999, "Do Income Support Levels and Work Incentives Differ Between Rural and Urban Areas?" December.

Levinson, H S, 1992, "System and service planning" In *Public Transportation* (Second Edition) Eds G.E. Gray & L.A. Hoel (Prentice Hall, Englewood Cliffs, NJ)

Lichter D T, Johnson G M, McLaughlin D K, 1994, "Changing linkages between work and poverty in rural America" *Rural Sociology* 59 395 - 415.

McKernan S, Lerman R I, Pindus N, Valente, J, 2000, "The relationship between metropolitan and nonmetropolitan locations, changing welfare policies, and the employment of single mothers" JCPR Working Paper 192, June 26
<http://www.jcpr.org/conferences/ruralbriefing.html>

Meyer M D, Miller E J, 2000, *Urban Transportation Planning. A Decision-Oriented Approach* (McGraw-Hill, Inc, New York)

Mills B, Alwang J R, Hazarika G, 2000, "The impact of welfare reform across metropolitan and nonmetropolitan areas: A nonparametric analysis" JCPR Working Paper 183 <http://www.jcpr.org/conferences/ruralbriefing.html>

Moss P, Tilly C, 1991, *Why black men are doing worse in the labor market: A review of supply-side and demand-side explanations.* (Social Science Research Council, New York)

New York Metropolitan Transportation Council (1999). Access-to-jobs.
<http://www.nymtc.org/access/default.html>

Oliver JE, 2000, June, "City Size and Civic Involvement in Metropolitan America, *American Political Science Review*, 94(2), June

Olson K, Pavetti L, 1996, *Personal and family challenges to the successful transition from welfare to work: How prevalent are these potential barriers to employment?* (Urban Institute, Washington D.C.)

- Ong PM, 2002, "Car access and welfare-to-work" *Journal of Policy Analysis and Management*, 21 239 - 252.
- Ong P, 1996, "Work and car ownership among welfare recipients" *Social Work Research*, 2(4) 255 - 262.
- Ong P, Blumenberg E., 1998, "Job access, commute and travel burden among welfare recipients" *Urban Studies*, 35(1) 77 - 93.
- Ong P, Blumenberg E, 1994, "Welfare and Work Among Southeast Asians,≡ in *The State of Asian Pacific America. Economic Diversity, Issues & Policies. A Public Policy Report* Ed P. Ong (LEAP Asian Pacific American Public Policy Institute and UCLA Asian American Studies Center, Los Angeles)
- Porterfield S L, 1998, "On the precipice of reform: Welfare spell durations for rural, female-headed families" *American Journal of Agricultural Economics*, 80(5), 994 - 999.
- Preston V, McLafferty S, 1999, "Spatial mismatch research in the 1990s: Progress and potential" *Papers in Regional Science*, 78(4), 387 - 402.
- Rank M R, Hirschl T A, 1988, "A rural-urban comparison of welfare exits: The importance of population density" *Rural Sociology* 53 190 - 206.
- Rich M, 1999, *Access to opportunities: The welfare-to-work challenge in metropolitan Atlanta*. Paper presented at the 1999 Annual Fall Research Conference of the Association for Public Policy Analysis and Management, Washington, DC, November 6th.
- Rucker G, 1994, *Status Report on Public Transportation in Rural America, 1994*. (Rural Transit Assistance Program, Federal Transit Administration, Washington, DC) P99-3.

Rural Policy Research Institute, 1999, *Rural America and welfare reform: An overview assessment*. Rural Welfare Reform Panel. (University of Missouri, Columbia, MO)

February 10, 99-3 <http://www.rupri.org/>

Sawicki D S, Moody M, 2000, "Developing transportation alternatives for welfare recipients moving to work" *Journal of the American Planning Association* 66(3) 306-318.

Sheppard E, 1995, "Modeling and Predicting Aggregate Flows" in *The Geography of Urban Transportation* Ed. S. Hanson, Second Edition (The Guilford Press, New York)

Stansel D, 2002, "Interjurisdictional Competition and Local Economic Performance: A Cross-Sectional Examination of U.S. Metropolitan Areas" Working Paper (George Mason University, Fairfax, VA)

Taylor B D, Ong P M, 1995. "Spatial Mismatch or Automobile Mismatch? An Examination of Race, Residence and Commuting in U.S. Metropolitan Areas" *Urban Studies*, 32(9) 1453 - 73.

Tickamyer AR, 1992, "The working poor in rural labor markets: The example of the southeastern United States" in *Rural Poverty in America* Ed. Cynthia M. Duncan Westport, CT: Auburn House.

U.S. Census Bureau (2000) Metropolitan area population estimates for July 1, 1999 and population change for April 1, 1990 to July 1, 1999 (includes April 1, 1990 Population Estimates Base). Population Estimates Program, Population Division.

Weber B A, Duncan G J, Whitener L A (eds.), 2002, *Rural Dimensions of Welfare Reform* (W.E. Upjohn Institute, Kalamazoo, MI)

Weber B, Duncan G, 2000, Welfare Reform Reauthorization and Rural America: Implications of Recent Research. Northwestern University/University of Chicago Joint Center for Poverty Research

Weinberg B A, 2000, "Black residential centralization and the spatial mismatch hypothesis" *Journal of Urban Economics*, 48(1) 110 - 134

Zedlewski S R, Alderson, D, 2001, "Do Families on Welfare in the Post-TANF Era Differ from their Pre-TANF Counterparts?" *Discussion Papers. Assessing the New Federalism*. 01-03, February (Urban Institute, Washington, DC)

Ziliak J P, Figlio D N, Davis E E, Connolly L S, 2000, "Accounting for the decline in AFDC caseloads: Welfare reform or the economy?" *Journal of Human Resources* 35(3), 570 - 586