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The transition from welfare-to-work: How cars and human capital facilitate employment for welfare recipients

J.S. Onésimo Sandoval [a,*], Robert Cervero [b], John Landis [c]

[a] Saint Louis University, 3750 Lindell Blvd., Saint Louis, United States
[b] University of California, Berkeley, United States
[c] University of Pennsylvania, United States

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A B S T R A C T

Using a rich panel of data on welfare recipients in Alameda, Los Angeles, and San Joaquin Counties in California, this paper examined the relationship between transportation, human capital, family obstacles, socioeconomic constraints, and employment outcomes for welfare recipients. This paper reports the multinomial logit results that test the spatial mismatch hypothesis, car ownership thesis, and human capital thesis for employment outcome for welfare recipients. First, with respect to the spatial mismatch hypothesis, our work suggests that spatial proximity to jobs was not particularly important in explaining employment outcomes. Second, the private mobility measures, especially car ownership, were found to be significant predictors of employment and exiting welfare. Finally, human capital played an important role for welfare mothers who obtained a job and left the welfare system, and the number of children and their physical and mental challenges were significant barriers to economic self-sufficiency.

Introduction

The 1996 Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) fundamentally changed the U.S. welfare system. Since the passage of PRWORA, a number of policy debates emerged about how to assist welfare recipients make the transition from welfare-to-work. One of the debates focused on transportation. Shortly after the passage of PRWORA the government identified transportation as the "*to*" component of welfare-to-work. In fact, transportation, whether it is public or private, is the vehicle for connecting unemployed, under-privileged inner-city residents – especially women who have to make the transition from welfare-to-work – to job opportunities (Rosenbloom, 1992; United States Government Accounting Office, 1998). However, there is significant disagreement that transportation, or more generally, accessibility, will decrease the welfare rolls and sustain long-term gainful employment for welfare recipients. Even if transportation is a significant factor to secure employment for welfare recipients, there is considerable disagreement as to which type of transportation services are more important – private mobility (i.e., ownership of a car or access to a car) or public mobility (i.e., availability of reliable public transportation services).

PRWORA fully embraced the view that access to suburban jobs, and, in particular, improved public transportation services were crucial factors that policy makers could use to reduce welfare rolls. Federal programs like Access-to-Jobs under the Transportation Equity Act (TEA-21) and the U.S. Housing and Urban Development's Bridges-to-Work program provided hundreds of millions of dollars for expanding transit connections from inner-city areas to suburban jobs (Sandoval, Petersen, & Hunt, 2009). Other policy debates about improving human capital and reducing family barriers were the other components that were essential for women who had to make a successful transition from welfare-to-work (Edin & Lein, 1997; Wachs & Taylor, 1998).

Since 1996, welfare rolls have declined. In 1996, there were 12,320,970 welfare recipients. As of December 2009, there were 4,401,252 welfare recipients (United States Department of Health and Human Services, 2010). Politicians and scholars have narrated their own version of the welfare decline story. These different interpretations of the unparalleled decline in the number of welfare recipients have produced two competing theories: (1) the pre-1996 waivers and PRWORA were largely responsible for the decline of welfare recipients, or (2) the strong economy produced low-unemployment rates making employment opportunities more attractive, which encouraged welfare recipients to leave AFDC/TANF. The conventional wisdom is that both PRWORA and a booming economy helped welfare recipients leave welfare (Bell, 2001).

* Corresponding author.
E-mail address: jsandov3@slu.edu (J.S.O. Sandoval).

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In light of these national trends, the present research examines the factors that are associated with the economic self-sufficiency of welfare recipients in three California Counties: Alameda, Los Angeles, and San Joaquin. Our first objective is to assess the importance of human capital and family obstacle measures in predicting work outcomes for welfare recipients. Our second objective is to assess the effects of job accessibility using a gravity model for different modes of transportation that were available to welfare recipients based on their residential location. Our third, and most important objective, is to assess the importance of car ownership and access to a car in predicting work outcomes for welfare recipients. In this regard, we demonstrate in this paper the importance of owning a car or access to car using a rich dataset that allowed us to use a novel methodology to study welfare-to-work transitions. Before describing our methodology and findings, we briefly review several theoretical issues related to the welfare-to-work debates, as well as the prior research that addresses the methodological contribution we make in this paper.

Transportation and welfare-to-work

Transportation's role in welfare-to-work transitions shows up in two key debates: (1) the spatial mismatch hypothesis, and (2) the value of public transit versus private automobile ownership.

Spatial mismatch hypothesis

The spatial mismatch hypothesis first advanced by John Kain (Kain, 1968, 1992) and then studied by many researchers (Boustan & Margo, 2009; Gobillon, Selod, & Zenou, 2007; Holzer, 1991; Rosenbaum, 1995; Schintler & Kaplan, 2000) is comprised of three elements: (1) "housing segregation affects the distribution of black employment and reduces job opportunities for blacks"; (2) "there is rapid job growth in the suburbs, and slow or negative job growth in the central city"; and (3) "the process of suburbanization makes the problem worse" (Kain, 1968). The basic premise of the hypothesis is that inner-city joblessness is a result of physical isolation and inaccessibility of inner-city residents to travel to suburban employment centers. This hypothesis was extended to PRWORA because the forces that foster the structural barriers to employment are: de facto segregation of welfare recipients, transportation hardship for welfare recipients (i.e., cost of travel to suburban job centers), and lack of viable job opportunities in the surrounding neighborhood economies for welfare recipients.

Evidence related to the spatial mismatch hypothesis is inconsistent. Some researchers have concluded that improved accessibility is absolutely essential in moving the poor off of the welfare rolls (Holzer, Ihlanfeldt, & Sjoquist, 1994; Ihlanfeldt & Sjoquist, 1991; Jencks & Mayer, 1990). For example, a study of poverty in Los Angeles by Ihlanfeldt and Sjoquist (1991) found that accessibility to jobs explained between 30 and 40 percent of the difference in employment rates among black and white teenagers. Research by Blumenberg and Ong substantiates the importance of job accessibility. Their research showed that neighborhoods with higher levels of job accessibility to low-wage firms averaged lower rates of welfare (Blumenberg & Ong, 1998). Another study by Thompson found evidence to support the view that transit accessibility helped poor people. He found that transit accessibility significantly increased wages for individuals who had no car (Thompson, 2007). However, research by Rosenbloom, Ellwood, Leonard, and Zax argued, just as strongly, that accessibility was a fairly inconsequential factor in moving the poor off of the welfare rolls and that the spatial mismatch hypothesis was a smokescreen to more deeply rooted racial divisions (Ellwood, 1986; Leonard, 1987; Rosenbloom, 1992; Zax, 1990). Specifically, Rosenbloom's work suggests that transit accessibility by job access and reverse commute programs (JARC) were failures. She found little evidence that JARC programs connected the poor to suburban job centers (Rosenbloom, 1992). In his study in Chicago, Ellwood found comparably high unemployment rates among blacks, with similar education levels, regardless of whether they resided on the south-side of the city away from job opportunities, or west of the city near the booming Interstate 88 employment corridor. He concluded the chief reason for chronic unemployment among blacks was race not space (Ellwood, 1986). A more recent study by Gurmu, Ihlanfeldt, and Smith (2008) found that residential location was not a significant predicator for employment for welfare recipients.

Public mobility

The debate over the efficacy of private and public mobility has been just as divided. The view that good public transit connections between inner-city neighborhoods and suburban jobs can alleviate inner-city poverty dates back to the race riots and urban upheavals of the mid-1960s. At the time, a much-publicized report by the McCone Commission identified poor public transportation as a contributor to unemployment among central-city blacks (National Advisory Commission on Civil Disorders, 1968). Since the 1960s, the potential role of public transportation in alleviating urban poverty has been embroiled in controversy. Some contend reverse-commute services are absolutely essential (Hughes, 1991; Scholl, 2002; Sööt, Thakuriah, Zhu, & Zhou, 2003), while critics dismiss public transit as an unrealistic mobility option for the poor alike (Blackley, 1990; Orski, 1998; Rogalsky, 2010; Sanchez, Shen, & Peng, 2004). For example, a study by Thompson found a modest statistical relationship between transit access to jobs and employment participation in Dade County, Florida (Thompson, 1997). Similarly, Sanchez examined differences in rates of labor-force participation among residents of Atlanta, Georgia and Portland, Oregon who lived within a quarter-mile walking distance of a transit stop versus those who did not lived within the same radius (Sanchez, 1999). He found those residing near bus and rail stops had higher rates of employment, controlling for other factors like education level, although the relationship did not hold for non-whites.

While inner-city residents generally receive more intensive transit services than residents in the suburbs, this does not necessarily translate into good connectivity to suburban jobs (Wilson, 1997). In the U.S., suburban transit services are notoriously poor: a product of low densities, abundant and free parking, circuitous road designs, and high automobile ownership rates (Cervero & Landis, 1994). Many bus routes serving inner-city neighborhoods do not connect to fast-growing suburban job centers. In the cases when bus routes do make the city-suburb connection, they often do not operate at night or weekends (i.e., non-peak hours) when many low-skilled laborers work (Rogalsky, 2010). Moreover, an estimated 40 percent of suburban entry-level jobs in the U.S. were not on public transit routes (Orski, 1998). The paucity of good suburban transit services in the U.S. is one reason why some contend that public funds might be better spent on providing loans to inner-city residents for buying cars rather than expanding public transportation services (Baum, 2009; Lucas & Nicholson, 2003; O'Regan & Quigley, 1998; Orski, 1998; Rogalsky, 2010; Taylor & Ong, 1995; Waller & Hughes, 1999). When specialized reverse-commute services have been introduced, transit ridership has decreased as participants bought cars once they found steady, well-paying jobs (Rosenbloom, 1992). In the suburbs, low-skilled workers could need access to cars for the same reasons high-salaried workers need to have a car. People use the car for several reasons: to drop their kids off at a daycare center in route to work,

the need to economize on time spent commuting to free up more time for home life, and the availability of free or subsidized parking.

Private mobility

The academic research has consistently shown that cars have a significant impact on work outcomes for welfare recipients. Beginning with the seminal study by Ong and Blumenberg in the 1990s, early research findings showed that cars were important predictors of economic self-sufficiency (Ong, 1996; Ong, 2002; Ong & Blumenberg, 1998). Recent studies continue to show that cars have the greatest impact on economic self-sufficiency. In his 2009 article, Baum found that access to a car significantly increased the likelihood that welfare recipients left welfare and secured gainful employment (Baum, 2009). Research by Flecther, Garasky and Nielsen (2005) augments Baum's findings by showing that access to a reliable vehicle reduced transportation hardships, which in turn helped TANF families achieve economic self-sufficiency. A nearly released study by Rogalsky used GIS to show the complex trip patterns that welfare mothers make during peak and non-peak hours. Her findings conclusively showed that access to a car or car ownership was the only transit option that had the ability to reduce the transportation hardships for welfare mothers (Rogalsky, 2010).

Local practitioners have recognized the importance of cars for welfare recipients. According to a study by Waller (2005), "there are now at least 160 programs supporting car ownership for low-income households." For example, in Fairfax County, Virginia, former welfare recipients were eligible for loans that could be used to purchase and insure second-hand cars (Schintler & Kaplan, 2000). In the San Francisco Bay region, the Metropolitan Transportation Commission (MTC) recognized that public transit could not meet the needs of all welfare recipients. They took a leadership role and worked with community agencies to develop car sharing programs (Sandoval et al., 2009). These two examples show the pragmatic work that local agencies are doing to incorporate a reliable car in the lives of welfare recipients. However, these initiatives have not evaded controversy. The retention of older vehicles, environmentalists point out, exacerbates air quality problems. Others warn that the cost of insuring a car in high-crime, central-city settings can be prohibitively expensive (Raphael & Stoll, 2001). Some scholars worry that welfare recipients depending on the private car to reach jobs will not be able to cover mounting maintenance expenses and costly repair bills that accompany owning older vehicles (Ayres & Siegelman, 1995; Scholl, 2002).

Human capital and welfare-to-work

Transportation is not the only barrier to employment for women making the transition from welfare-to-work. Several studies have shown that education and viable job skills are equally important for welfare recipients as they make the transition from welfare-to-work (Jacobs & Winslow, 2003; Law, 2008; Martinson & Strawn, 2003). Investments in and the accumulation of human capital lead to future monetary gain and economic self-sufficiency, which is the goal of PRWORA (Becker, 1964). Increasing resources that augment human capital reduces welfare recipient's economic dependency on the government (Kates, 1996; Lee, Singelmannb, & Yom-Tovc, 2008). These investments include: schooling, on-the-job training, medical care, health fitness, and other knowledge (e.g., ability to speak English).

PRWORA fosters a job first approach. Thereby, placing little emphasis on increasing education, skill enhancement, job training, and other efforts to augment human capital that welfare recipients can offer to potential employers. Coupled with this lack of emphasis to increase human capital, the labor market has been unforgiving for welfare recipients with low human capital investments in both relative and real terms (Edin & Lein, 1997; Moffitt, 1992). The demand for semi-skilled and skilled labor has increased during the past twenty years. This demand creates an additional barrier to enter the labor force for welfare recipients who have weak labor market attachments, no soft skills, or limited education.

There are two dimensions of education that need to be considered when looking at the impacts of low human capital among welfare recipients. Researchers need to differentiate between level of high school education and level of literacy (Burtless, 1995, 1999; Zill, Moore, Nord, & Stief, 1991). The important labor market predictors of success are the number of years of education and a high school diploma (Burtless, 1995; Finegold, 1998). However, these indicators do not capture the basic literacy skills in reading, document interpretation, and mathematics. Simply having a high school diploma or completing a certain number of years of education does not translate into meaningful human capital investments. A low-level of education is also associated with longer durations of welfare use and recidivism (Bane & Ellwood, 1994). A good education, strong labor market attachments, and transferable job skills may be equally important as transportation, in assisting the urban and rural poor leave the welfare system.

Another human capital factor impacting gainful employment is previous work experience. Employers place more weight on work experience than education attainment (Bishop, 1989; Regenstein, Meyer, & Hicks, 1998; Seccombre, 1999). Previous work experience may serve as a proxy to examine potential employee's attitude towards work, soft skills, and preparedness for the work environment. Welfare recipients may be at a disadvantage because many job-training programs fail to train people for the fastest growing occupations, and these programs lack a focus on the soft skills needed by long-term welfare recipients to obtain and maintain a job (Alfred & Martin, 2007; Gooden, 2007). Recipients who do not have a high school diploma, have low-levels of literacy, lack soft skills, or who have had a long absence from the private job market may encounter challenges to make the transition from welfare-to-work (Burtless, 1995; Maynard, 1995). Transportation is one hurdle in finding and maintaining employment. Finding and holding good paying jobs without human capital investments is equally important (Brooks & Buckner, 1996; Burtless, 1995; Danziger & Danziger, 1995; Kates, 1996; Olsen & Pavetti, 1996).

Research methodology and questions

From a methodological standpoint, past studies on the importance of transit services in explaining job participation rates exhibited some weaknesses that this research has successfully overcome. Earlier studies (Blumenberg & Ong, 1998; Sanchez, 1999; Thompson, 1997) relied on census data in drawing causal inferences, and thus unavoidably suffer from aggregation biases. The research we present in this paper studies relationships at a more appropriate ecological unit (i.e., welfare recipients). Second, past studies have used data from a single time point (e.g., 1990 census data), relying on cross-sectional differences to infer causal relationships. This work examines change in employment status over two-time points, providing a longitudinal context for examining welfare-to-work transitions. Third, this paper presents multiple measures of transit accessibility at different grains of analysis (e.g., both the neighborhood and regional scales) that offer robust indicators of transit service availability and proximity. Lastly, this analysis was executed across three different metropolitan areas of different sizes and different character, enhancing the external validity of the research.

This paper was framed by three major hypotheses. First, we hypothesized that the job access variables for public transit would be statistically significant for only Alameda County. Of the three counties we studied, Alameda County was the only county that had an extensive public transportation system that connected individuals living in poor neighborhoods to job rich neighborhoods. Second, we hypothesized that car ownership would have a significant impact in all counties, but we believed that the impact would be greatest in San Joaquin County, where there was little public transit for low-income families. Thus, if transportation was a significant predictor for work outcomes, we would see this impact in the car ownership/access variables. Finally, we hypothesized that human capital would be an important variable that predicted work outcomes in all three counties. However, we believed these effects would be smaller compared to the car ownership results. The analysis of welfare and work for the three counties represents exemplary cases to study how existing public transit, car ownership/access, and human capital facilitated the transition from welfare-to-work.

Sampling frame and person-level data

We used a rich panel of data from the California Work Pays Demonstration Project (CWPDP).[1] We received permission from the State of California to geocode the addresses for all individuals to the census tract. The census tract information allowed us to create the transit accessibility indices used in our regression models. The data consist of a random sample of 1865 individuals who in 1993/1994 received Aid for Families with Dependent Children (AFDC).[2] A second wave of survey data was compiled for the same individuals in 1995/1996, some of who by this time had found jobs and were no longer receiving AFDC assistance (see Table 1).[3] It is important to note that the dataset we used in this study is not current. In fact, the data was collected before the final passage of PRWORA. Despite this limitation, the dataset contains important information about the relationship between cars, human capital, employment, and welfare usages. This dataset has not been explored using our methodology comparing welfare-to-work outcomes for three counties, which represent rural and urban transportation hardships. We believe that this dataset allows us to speak to current policy debates and it allows us to make methodological contributions that can be incorporated into new welfare-to-work studies.

Table 2 shows the differences in population size, urban densities, demographic composition, and economic standing for three counties. Alameda County, the second most populated county in the San Francisco Bay Area, had a fairly diverse economy, and compared to the other two counties and the state as a whole, averaged fairly low unemployment. Alameda suffered from high concentrations of poverty, mainly in and around west and south Oakland. These areas were far removed from the suburban job boom in the eastern and southern parts of the Bay Area. Between 1981 and 1990, 70 percent of the 182,000 new jobs that were created in the East Bay occurred east of the hills of Alameda and Contra Costa Counties, many located in high-tech job enclaves like Pleasanton and Walnut Creek (United States Department of Commerce).[4] Los Angeles County, the state's most populated county, had more residents than all but eight states. A steady influx of immigrants from Mexico and Central America has, over the past few decades, transformed the county into one of the largest Latino enclaves in the country. Because of its large concentration of defense and aerospace contractors, the county had been harder hit than most by post-cold-war defense cuts. San Joaquin County stands in marked contrast to the other two – a partly rural, partly exurban county in the middle of California's fertile agricultural belt, the San Joaquin Valley. In addition to its large population of seasonal and undocumented workers, it has also become a conduit for affordable housing among Bay Area workers displaced by high housing prices.

Table 1
Panel Data of AFDC Recipients in Alameda, Los Angeles, and San Joaquin Counties, CA.

	Alameda	Los Angeles	San Joaquin
Wave I – 1993/1994	719	1446	952
Wave II – 1995/1996	589	1146	811
Wave I and Wave II	576	802	597

Source: California Work Pays Demonstration Project Survey: English/Spanish Interviews, 1993–1994 (Wave I)/1995/1996 (Wave II), Berkeley, CA 1997.

Regional job-accessibility measures

One of the contributions we make in this paper is the use of a regional job-accessibility metric. First, we chose this form of the accessibility measure because our research team has had extensive experience working with this metric for California. Second, we chose this metric because we have had success with this particular measure in other academic studies on job accessibility for San Francisco Bay Region. Thirdly, we chose this metric because we wanted to have comparable measures of job accessibility across the three regions. For each person in the panel samples, cumulative-opportunities measures of regional job-accessibility were calculated. In the case of the Alameda and Los Angeles County panels, these took the following gravity-based form:

$$A_{ik} = \sum\nolimits_j E_j \exp\left(-\nu T_{ijk}\right) \quad (1)$$

where A_{ik} = accessibility indicator of person residing in location i by mode k; E_j = employment (non-professional, non-executive, and non-managerial occupational classes) in destination zone j (where, for Alameda County, $j = 1$ to 1382 census tracts in the nine-County San Francisco Bay Area, and for Los Angeles County, $j = 1$ to in the 3377 in the six-County Southern California region) in 1990; occupational classes were determined from Part II of the Census Transportation Planning Package (CTPP); T_{ijk} = travel time (in minutes) from residential location i to census tract of employment j by transportation network (i.e., transit or highway) of mode k; for both Alameda and Los Angeles Counties, these were based on regional travel-time matrices maintained by their respective metropolitan planning organizations (Metropolitan Transportation Commission, and the Southern California Association of Governments); ν = empirically derived coefficient for work-trip

[1] For more information on the study please visit the Survey Research Center at the University of California, http://ucdata.berkeley.edu/data_child.php?recid=20.

[2] The original survey was conducted in four counties: (1) Los Angeles; (2) Alameda; (3) San Joaquin; and (4) San Bernardino. We dropped San Bernardino from our analysis for two reasons. First, no valid data was available for transit access at the neighborhood level. Second, we believed that we could overcome this problem because of the close proximity of Los Angeles County. We believed that Los Angeles captured the social, economic, and transportation barriers that welfare recipients struggled with as they tried to make the transition from welfare-to-work.

[3] This analysis included individuals who completed surveys in Wave I and Wave II. Several factors explain the difference in the sample population between Wave I and Wave II. Individuals who completed the survey in Wave I and did not complete the survey in Wave II include those individuals who move to another state or county, those individuals who got married, or those individuals who lost telephone services.

[4] Calculated from: U.S. Department of Commerce, County Business Patterns, U.S. Department of Commerce, Washington, DC, 1981 and 1990.

Table 2
Background comparison of three California case-study counties.

	Alameda	Los Angeles	San Joaquin	California
Population, 1998	1,279,182	9,649,800	551,500	33,494,000
% White (1990)	59.60%	56.90%	73.50%	69.10%
% Hispanic (1990)	13.80%	37.30%	22.70%	25.40%
Median Yrs. Education, 1990	13.9	13	12.7	13.4
Persons/Sq. Mi., 1990	1734	2183	343	191
Per Capita Income, 1997	$37,544	$34,965	$20,092	$26,314
Unemployment rate, 1999	3.40%	5.90%	8.70%	5.20%

Sources: California Department of Finance: http://www.dof.ca.gov/html/fs_data/profiles/pf_home.htm; U.S. Bureau of the Census, Summary Tape File 3A, 1990.

impedances based on best–fitting results from a gravity model that explained home-based work-trip interchanges; for Alameda County, this was set at −0.14 to reflect impedance effects in the San Francisco–Oakland–San Jose Consolidated Statistical Area in 1990; for Los Angeles County, friction factors varied by seven different modal classes; and k = mode of transportation and associated travel network: regional transit network versus regional highway network.

Accessibility indicators for San Joaquin County were similarly calculated, though the cumulative index took a power-function form and was calculated for traffic analysis zones rather than census tracts. The metric took the form in equation (2). The notations are the same as equation (1) and the impedance coefficient is based on experiences for work trips for other U.S. metropolitan areas with populations under 500,000.[5]

$$A_{ik} = \sum_j \left(E_j T_{ij}^{-2.08} \right) \tag{2}$$

Stratifying accessibility indices by transportation mode allowed employment opportunities to be gauged for each place of residence i over the corresponding regional transit network versus highway network. Accessibility measures via transit were refined according to mode used to reach transit facilities (i.e., walk-and-ride or park-and-ride). We also refined the accessibility measures by limiting employment counts to non-professional, non-executive, and non-managerial positions (i.e., the kinds of jobs for which AFDC recipients from Wave I (1993/1994) would most likely qualify). This provided a proxy for the availability of low-skilled, low-to-moderate salary jobs in each region's census tracts (or traffic analysis zones). Finally, job accessibility via highways was based on peak-period travel times for drive-alone trips since journeys to work trips tend to occur during peak hours, predominantly by solo-commuting. Peak hours is the conventional travel-time metric that is used to measure job accessibility (Cervero, Rood, & Appleyard, 1999). It is important to note that limiting our analysis to peak hours may produce a bias in our results by over stating the number of jobs available by transit to welfare recipients who commute during non-peak hours (Rogalsky, 2010). We used the peak hour measures because we wanted to be consistent over both transportation networks (i.e., highway and transit). Secondly, some of our data sources only complied peak-period data travel times. Thirdly, used peak hours because this corresponded to the largest percentage of workers that commute on a daily basis.

[5] For San Joaquin County, indices were calculated for each residential area by cumulatively summing numbers of non-management/non-professional jobs over 522 traffic analysis, adjusted for impedance. Source for impedance coefficient: National Cooperative Highway Research Program (1978).

Model structure

We estimated a discrete-change model for each county to account for change in employment status among welfare recipients over the two-time points. Models took the form of multinomial logit equations that weighed the importance of transportation, human capital, and various control variables in explaining differences in welfare and work outcomes. For each county, a model predicted the probability that a survey respondent belonged to one of three possible discrete-change categories between the 1993/1994 and 1995/1996 periods: (1) remained unemployed (i.e., no job in either time period); (2) secured employment but remained on AFDC; and (3) secured employment and got off AFDC. These three categories roughly correspond to ordinal outcomes that range from the least to the most favorable. The second category reflects situations where individuals found jobs, albeit most likely low-paying ones. Besides low-wage employment, category two likely represents part-time and contingency work (i.e., unstable employment situations which kept working parents with children dependent on public assistance). Of course, the explicit aim of PRWORA was to move recipients into the third category – gainful employment without direct public assistance. The model that was used for our study took the following form:

$$p_{io} = \frac{\exp(T_{io}, H_{io}, C_{io}, O_{io}, I_{io})}{\sum_j \exp(T_{ij}, H_{ij}, C_{ij}, O_{ij}, I_{ij})} \quad \text{for } j = 1, 2, 3 \tag{3}$$

where p_{io} = probability person i belongs to discrete-change category o; T_i = vector of transportation "policy" variables of person i, including variables measuring vehicle ownership, accessibility to regional jobs via highway and via transit networks, and neighborhood-scale transit service quality; H_i = vector of human capital characteristics of person i, including educational level, receipt of job training, language and health status; C_i = vector of potential barriers to work characteristics of person i, including number of dependents and use of daycare services; O_i = vector of other control variables, including race and marital status characteristics of person i; and I_i = vector of interaction effects between transportation and other variables (e.g., the combination of owning a car and having a child who attends daycare).

Generalized least squares estimated the size, direction, and probability of coefficients for both policy and control variables. Weights were used to normalize the sample so that it matched the actual proportions of AFDC recipients in Alameda, San Joaquin, and Los Angeles Counties according to their socio-demographic characteristics.

The major hypotheses that guided our analysis for this paper focused on the transportation policy variables (represented by vector T_i). If these variables provided significant incremental explanatory power in estimating the likelihood each panel respondent belonged to any one of the three discrete-change categories then we would have evidence to take a position on the transportation debates that are taking place in welfare policy arenas today. The degree to which transit versus automobile accessibility and service-level factors increase the probability of respondents falling into the third category (i.e., employment without AFDC), offers insights into how transportation resources should be allocated in assisting welfare recipients as they make the transition from welfare-to-work. The use of human capital and other control variables improves the internal validity of the analysis by statistically removing the influences of potential confounding factors that might also explain employment outcomes. Human-capital factors, like levels of vocational and special training, account for the degree of resources invested in improving the employment potential of welfare recipients (See Table 3).

Table 3
Description of Variables Used For the Regression Model.

Variable Name	Description
Job Access	
Park-and-Ride	Job-accessibility index for individual that use car to connect to mass transit
Walk-and-Ride	Job-accessibility index for individual that walk to connect to mass transit
Drive Alone	Job-accessibility index for individual that use car only to get to work
Bike and Ride	Job-accessibility index for individual that use bike to connect to mass transit
Auto	Job-accessibility index for individual via highway network
Transit	Job-accessibility index for individual via mass transit network
Private Mobility	
Own Car In Wave I	Owned a Car in Wave (0/1)
Acquired Car	Did not own car in Wave I and owned a Car in Wave II (0/1)
Lost Car	Owned a Car in Wave I and did not own car in Wave II (0/1)
Car Access	Had car access in Wave II (0/1)
Human Capital	
Human Capital 1	Take part in classes to help get job and completed program (0/1)
Human Capital 2	Take part in vocational school and completed program (0/1)
Human Capital 3	Take English as second language class and completed program (0/1)
Speak English	English is the primary language (0/1)
Education	Highest school grade achievement
Health Barrier	Limiting health condition that prevents work (0/1)
Health Rating	Recipient's rating of his/her health condition (1=poor thru 4-excellent)
Family Obstacles	
Number of Children	Number of Children 18 years of age or younger
Number of Disabled Children	Number of Disabled Children 18 years of age or younger
Daycare	Used day for youngest child (0/1)
Married	The recipient is married or in a marriage type relationship (0/1)
Age of welfare receipt	The age that the recipient first started receiving AFDC
Socioeconomic Characteristics	
Age	Age of recipient
Gender	Male (0/1)
Moved	Moved since Wave I (0/1)
Res-Length	Number of years living at current residence
White	White (0/1)
Black	Black (0/1)
Latino	Latino (0/1)
Asian	Asian (0/1)
Other	Other (0/1)

Sources: California Work Pays Demonstration Project Survey: English/Spanish Interviews, 1993–1994 (Wave I)/1995/1996 (Wave II), Berkeley, CA: Research Branch, California Department of Social Services and UC Data Archive & Technical Assistance, University of California [producers] 1997. Berkeley, CA: UC Data Archive & Technical Assistance, University of California [distributor], 1997.

Descriptive statistics

Table 4 provides descriptive statistics for our sample. Los Angeles County had the highest percentage of welfare recipients get a job and leave AFDC (12%), followed by Alameda (11%) and San Joaquin (10%) Counties. Los Angeles County had the highest percentage of welfare recipients get a job but remained on AFDC (12%) followed by San Joaquin (7%) and Alameda (6%) Counties. San Joaquin had the highest percentage of welfare recipients that were unemployed and on AFDC (84%), followed by Alameda (83%) and Los Angeles (76%) Counties. San Joaquin County had the highest percent of car owners in Wave I (39%) followed by Los Angeles (27%) and Alameda (21%) Counties. Respondents from San Joaquin County were the most likely to lose a car from Wave I (11%) when asked about their car ownership status in Wave II. With respect to human-capital, the mean years of schooling ranged from 9 years (San Joaquin County) to 11 years (Alameda County). For all three counties, less than one in ten welfare recipients received job training between Wave I and Wave II. Moreover, 84% of the recipients spoke English in Alameda County compared to 64% of the recipients in Los Angeles County. Respondents in San Joaquin County were the most likely to report that they had a health condition that prevents work (35%) followed by respondents in Alameda (31%) and Los Angeles (28%) Counties. The use of daycare ranged from 19% (Alameda County) to 9% (San Joaquin County). The mean number of children ranged from 2.8 (San Joaquin County) to 2.5 (Los Angeles County). In San Joaquin County, 43% of the recipients were married or in marriage type relationships. This compares to 24% and 18% for recipients in Los Angeles and Alameda Counties, respectively. Finally, for the Alameda County panel, blacks were the largest group in the sample (56%), followed by Latinos (17%), and whites (12%). In Los Angeles, Latinos were the largest population in the sample (51%) followed by blacks (28%) and whites (14%). San Joaquin had the most racially diverse welfare population where 33% were white, 27% were Latino, and 13% were black.

Research findings

Table 5 provides the logit results for Alameda, Los Angeles, and San Joaquin Counties. We present results for the two equations: Got Job/Off AFDC (equation (1)) and Got Job/On AFDC (equation (2)). Table 6 provides summary statistics for the results.

We created several job access measures for each county. For equation (1), the walk-and-ride ($p < .01$) and drive-alone ($p < .05$) variables were significant for only Alameda County. For equation (2), drive alone ($p < .05$) was significant for only Alameda County. Transit ($p < .05$) was significant for Los Angeles County. We estimated four private mobility variables. For equation (1), owning a car in Wave I ($p < .05$, Alameda and Los Angeles and $p < .01$ San Joaquin) and acquired a car ($p < .01$) were significant for all three counties. Lost a car was significant in Alameda ($p < .05$) and San Joaquin ($p < .01$) Counties. Car access ($p < .05$) was significant only for San Joaquin County. For equation (2), owning a car in Wave I ($p < .05$) and acquired a car ($p < .05$) were significant for Alameda County.

In regards to the seven human capital variables we estimated, vocational training ($p < .01$) was significant for Los Angeles and San Joaquin Counties for equation (1). English as the primary language was significant for Alameda ($p < .01$) and Los Angeles ($p < .05$) Counties, and the level of education ($p < .01$) was significant for all three counties. Having a health barrier that limits works ($p < .01$) was significant for all three counties. For equation (2), taking additional classes to get a job was significant for Los Angeles ($p < .05$) and San Joaquin ($p < .01$) Counties. Enrolled in ESL classes ($p < .05$) was significant for San Joaquin County. Education was significant for Alameda ($p < .01$) and San Joaquin ($p < .05$) Counties. The health barriers variable ($p < .05$) was significant for Los Angeles and San Joaquin Counties. Finally, the health rating variable ($p < .05$) was significant for Los Angeles County.

We identified five family obstacle variables that might explain work and welfare outcomes. For equation (1), the number of children ($p < .01$) was significant for Alameda and Los Angeles Counties. The number of disabled children was significant for all three counties children ($p < .05$, Alameda and Los Angles and $p < .01$ San Joaquin). The use of daycare ($p < .01$) was significant in Alameda and San Joaquin Counties. Marital status was significant in Los Angeles County ($p < .05$). For equation (2), the number of

Table 4
Sample descriptive statistics by county.

Variable Name	Description	Alameda $n = 576$	Los Angeles $n = 802$	San Joaquin $n = 597$
Job Status				
Got Job/Left AFDC	% who got a job and left AFDC	11%	12%	10%
Got Job/On AFDC	% who got a job but were receiving AFDC	6%	12%	7%
No Job/On AFDC	% who found no job and were receiving AFDC	83%	76%	84%
Private Mobility				
Own Car In Wave I	% Owned a Car in Wave I	21%	27%	39%
Acquired Car	% Did not own car in Wave I and owned a Car in Wave II	15%	10%	14%
Lost Car	% Owned a Car in Wave I and did not own car in Wave II	6%	7%	11%
Car Access	% Had car access in Wave II	21%	19%	22%
Human Capital				
Human Capital 1	% Take part in classes to help get job and completed program	5%	5%	4%
Human Capital 2	% Take part in vocational school and completed program	7%	4%	6%
Human Capital 3	% Take English as second language class and completed program	1%	12%	8%
Speak English	% English is the primary language	84%	64%	72%
Education	% Highest school grade achievement	11	10	9
Health Barrier	% Limiting health condition that prevents work	31%	28%	35%
Health Rating	Recipient's rating of his/her health condition (4 = Excellent, 1 = Poor)	2.6	2.5	2.4
Family Obstacles				
Number of Children	Mean Number of Children 18 years of age or younger	2.6	2.5	2.8
Number of Disabled Children	Mean Number of Disabled Children 18 years of age or younger	0.33	0.26	0.28
Daycare	% used day for youngest child	19%	13%	9%
Married	% married or in a marriage type relationship	18%	24%	43%
Age of welfare receipt	Mean age that the recipient first started receiving AFDC	23	26	24
Socioeconomic Characteristics				
Age	Mean Age of recipient	34	35	35
Female	% Female	98%	98%	98%
Moved	% Moved since Wave I	40%	30%	35%
Res-Length	Mean number of years living at current residence	3.4	4.8	3.5
White	% White	12%	14%	33%
Black	% Black	56%	28%	13%
Latino	% Latino	17%	51%	27%
Asian	% Asian	4%	2%	4%
Other	% Other	10%	5%	23%

Sources: California Work Pays Demonstration Project Survey: English/Spanish Interviews, 1993–1994 (Wave I)/1995/1996 (Wave II), Berkeley, CA: Research Branch, California Department of Social Services and UC Data Archive & Technical Assistance, University of California [producers] 1997. Berkeley, CA: UC Data Archive & Technical Assistance, University of California [distributor], 1997.

children ($p < .01$) was significant for Los Angeles County. The number of disabled children ($p < .05$) was significant for Alameda and San Joaquin Counties. The use of daycare was significant in all three counties ($p < .05$, Alameda and Los Angeles, and $p < .01$ San Joaquin). Marital status ($p < .01$) was significant in Los Angeles County and the age when a welfare recipient first received AFDC ($p < .05$) was significant in Alameda County.

Finally, we included several socioeconomic variables in the model. For equation (1), age ($p < .05$) was significant in Los Angeles and San Joaquin Counties. Gender ($p < .05$) was significant for Alameda County. Moving to a different house in Wave II ($p < .05$) was significant in San Joaquin County. The number of years at the residence ($p < .05$) was significant in Los Angeles and San Joaquin Counties. The race dummy variables were significant only in Alameda County ($p < .01$). For equation (2), age ($p < .05$) was significant for Alameda and Los Angeles Counties. Moving to a different house in Wave II ($p < .05$) was significant in Los Angeles and San Joaquin Counties. The number of years at a residence ($p < .05$) was significant in Los Angeles County.

Discussion

Transportation has consistently been flagged as an important barrier to economic self-sufficiency for poor women. Since 1996, there has been much debate about the role that cars play for poor women in overcoming the spatial mismatch of where jobs are located and where poor women live. The academic research has consistently showed that cars have a positive impact on employment and TANF status. Our findings from this study offer insights into the value of different transportation policy variables in explaining the probability of securing employment for welfare recipients. Aside from transportation, there are several explanations for why women leave welfare and secure employment including human capital, family obstacles, and socioeconomic factors.

Transportation

The strongest predictor for the found work and left welfare outcome was the ability to acquire a car in Wave II. These findings are

Table 5
Multinomial logit results for Alameda, Los Angeles, and San Joaquin County.

		Equation (1)			Equation (2)		
		Got Job/Off AFDC			Got Job/On AFDC		
		Alameda	Los Angeles	San Joaquin	Alameda	Los Angeles	San Joaquin
Job Access	Park-and-Ride	−8.93E-6			−1.92E-08		
	Walk-and-Ride	1.70E-05**		9.60E-04	9.61E-06		8.52E-06
	Drive Alone	−6.00E-05*		7.72E-04	−7.00E-05*		6.41E-04
	Bike and Ride			−2.25E-02			1.03E-02
	Auto		1.08E-11			4.34E-11	
	Transit		−5.56E-08	−2.41E-02		6.11E-12*	8.90E-04
Private Mobility	Own Car In Wave I	1.5882*	1.0844*	5.1125**	−3.4039*	0.6124	0.612
	Acquired Car	2.2567**	2.3273**	4.2495**	−0.8584*	1.0124	1.1301
	Lost Car	−2.4854*	−0.3702	−5.3728**	2.8876	−0.1435	−0.1511
	Car Access	0.3638	0.4592	1.6759*	0.0094	0.1273	−0.1098
Human Capital	Human Capital 1 – Take Classes	0.5056	−0.1174	0.0297	−0.1266	0.5363*	0.9237**
	Human Capital 2 – Vocational School	0.1811	0.7553**	1.2259**	0.1119	0.1773	−0.1099
	Human Capital 3 – ESL Classes	2.0017	0.0145	−1.3314	1.2001	0.4647	−1.3314*
	Speak English	−1.3462**	1.0184*	−0.278	1.7354	0.0591	1.2698
	Education	0.2646**	0.2156**	0.5819**	0.5796**	0.0601	0.1785*
	Health Barrier	−1.5562**	−2.9204**	−5.0857**	−0.2083	−0.8813*	−1.5012*
	Health Rating	−0.1751	−0.1416	−0.3399	0.1823	0.3466*	−0.1144
Family Obstacles	Number of Children	−0.6660**	−0.5643**	−0.0605	0.2018	−0.3603**	−0.0197
	Number of Disabled Children	−1.1583*	−1.1288*	−2.5195**	−1.9970*	−0.2461	−2.1307*
	Daycare	1.1227**	−0.216	−2.4882**	1.1746*	0.6763*	1.8321**
	Married	0.6316	1.3149*	0.6983	0.2759	−0.4076**	0.7211
	Age of welfare receipt	−0.0184	−0.0638	−0.1829	0.1193*	−0.349	0.0001
Socioeconomic Characteristics	Age	0.0413	0.0711*	0.1077*	−0.1018*	0.0443*	0.0039
	Gender	2.1217*	1.7758	−10.3545	−5.2096	1.0005	7.437
	Moved	−0.4242	−0.2289	−1.3896*	0.2859	−0.1712*	−0.8626*
	Res-Length	0.035	−0.071*	−0.1060*	0.0464	0.0414*	−0.0573
	White	8.3925**	−1.1548	5.2498	−0.1846	−1.8275	0.3954
	Black	7.5767	−0.1035	−12.6129	−0.6245	−1.5202	−0.5007
	Latino	8.2709**	1.4654	5.0108	−0.9257	−0.8195	0.8986
	Asian	4.6832**	0.1113	3.9063	−11.9692	0.1139	1.4539
	Other	4.8157**	−0.1139	5.0001	1.721	−1.3627	na
	Interaction (Daycare* Owned Car Wave II)	−0.4449	0.1133	0.6206	2.4161*	−0.813	−1.4335
	Intercept	−9.4376	−4.0043	−1.4335	10.8847	−1.2105	−11.8562

*$p < .05$, **$p < .01$ (Two-tailed test).

consistent with previous research (Baum, 2009; Fletcher, Garasky, & Nielsen, 2005; Gurley & Bruce, 2005; Ong, 1996). Controlling for other factors, the odds ratio of getting a job (and staying off AFDC) to not getting a job jumped by a factor of 70 for an individual living in San Joaquin County whose status switched from not owning to owning a car.[6] This is compared to the odds ratios of 10.3 and 9.6 for individuals who lived in Los Angeles and Alameda Counties, respectively. Welfare recipients that have a car have access to different geographies of job networks that allow them to work more hours during peak and non-peak work shifts. The ability to work at different times during the day and week, can give welfare recipients the opportunity to earn more income and leave the welfare system (Fletcher et al., 2005; Gurley & Bruce, 2005; Rogalsky, 2010). Our results also showed an association with loss of a car and change in job status. This finding suggests that individuals who were car owners in Wave I and for whatever reason were not car owners in Wave II were less likely to get a job and stay off AFDC.[7]

Another interesting finding was the urban and rural results regarding car access. Car access was only significant in San Joaquin County. This finding suggests that there was even a greater reliance on private mobility for rural welfare recipients who had special transportation needs that were not met by the inadequate transportation infrastructure in the area (Fletcher et al., 2005). The rural poor have less access to public transportation compared to the urban poor. The rural poor also have to travel greater distances to

Table 6
Summary statistics for the multinomial logit regression.

		Alameda	Los Angeles	San Joaquin
Classification Table – Percentage of cases correctly predicted[a]	Got Job/Off AFDC	73%	41%	97%
	Got Job/On AFDC	44%	20%	8%
	No Job/On AFDC	80%	90%	56%
	Total	77%	78%	87%
Goodness of Fit Statistics	Chi Square	425.6	818.18	366.48
	Gamma	0.78	0.67	0.90
	Somers' d	0.35	0.32	0.65

[a] Based on the concordance between actual and predicted group membership, where predicted membership involved assigning a case to a category with the highest predicted probability using equations (1) and (2). Predicated probability for the suppressed group (no job and remained on welfare) equals one minus the combined probabilities from equations (1) and (2).

[6] For example, exp (4.2495) = 70.1 times increase in the odds ratio of working and getting off AFDC relative to not working and staying on AFDC.

[7] The car ownership results are important given that California has a restrictive and punitive policy regarding car ownership for welfare recipients. Currently, California allows a welfare recipient to own a car that does not exceed $4650 (Urban Institute, 2008). Given the current environmental standards for cars in California, older cars typically will not pass the vehicle emissions test. These cars tend to be less expensive and less reliable. If cars have a positive impact on work outcomes, it makes good policy to allow welfare recipients to own a new car that is environmentally friendly and reliable regardless of the value of the car.

commute to work compared to the urban poor (United States Government Accounting Office, 1998). These findings point to hard conclusions regarding realistic transportation options for the rural poor: (1) car ownership, or (2) knowing someone who owns a car. The reliance on the car simply underscores that the limited existing public transit system in rural areas simply can't meet the changing and fluid journey-to-work travel demands.

The private mobility results argue in favor of policies that assist welfare recipients to purchase a car so that these recipients can expand their job geography, increase the number of work hours, and give them the flexibility to meet the fluid work and household demands. It is important to note that in Alameda County owning a car was negatively associated with individuals working, but remaining on AFDC. This may suggest that those recipients in this category did not earned sufficient wages to become independent of public assistance. Perhaps they were not able to afford a car because of their low-incomes or state welfare laws prevented them from owning a car. Thus, the directionality likely worked in the opposite direction for this outcome. During the study time, California sanctioned welfare recipients if they owned a car worth more than $1500 (Ong, 1996; Sandoval et al., 2009).[8]

All other transportation variables were weak predictors and, in some instances, the signs of coefficients were opposite from what was expected. Notably, regional accessibility to low-to-moderate skilled jobs via the highway network was negatively associated with individuals obtaining jobs, controlling for other factors. This somewhat counter-intuitive result reflects the fact that those living near core cities and who remained dependent on welfare were still closer to more low-skilled jobs than those who lived farther from core areas of the central cities. Together, these results suggest that once an inner-city resident obtained a car, it did not matter whether the recipient was close or far away from regional job opportunities; either way, the odds of finding a job substantially increased (Cervero et al., 1999; Gurmu et al., 2008).

Job accessibility via transit was more important than via highways in stimulating employment when individuals were in a position to walk-and-ride for Alameda County. Living within a walkable distance to a bus stop or rail station was a significant predictor in successful work outcomes for welfare recipients. If someone did not own a car, having plentiful jobs that were accessible via transit and living in a neighborhood where an individual was able to walk to transit lines did incrementally increase the odds of securing employment. This finding argues in favor of transit-oriented development (TOD) as a strategy for increasing inner-city employment (Bernick & Cervero, 1997).

While job accessibility via transit for walk-and-ride access was highly significant in stimulating employment, park-and-ride access had the opposite effect. This could reflect the reality that once individuals owned a car, they were less likely to drive to stations and take transit to work. Moreover, car ownership can spawn entrepreneurship among inner-city residents. Several studies provide accounts of how inner-city residents with cars sometimes supplement their earnings by operating informally as jitneys, connecting their neighbors to jobs when heading to work themselves (Davis & Johnson, 1984; Teal & Nemer, 1986).

Human capital

Education attainment substantially increased the likelihood that AFDC recipients found work in all three counties. All things being equal, higher levels of education were associated with finding a job and leaving welfare. Welfare recipients who completed some type of vocational school training program were more likely to get a job and get off welfare in Los Angeles and San Joaquin Counties. However, the other measures of human capital had a very small labor market payoff. Although these findings were not particularly surprising, the marginal gains by the human capital variables may indicate that these individuals needed more specific human capital investment. Employers may be putting a higher value on work experience and strong labor market attachments (Dworsky & Courtney, 2007; Jacobs & Winslow, 2003).

Finally, our findings suggest that even if welfare recipients wanted to work, those individuals with a limiting health barrier were less likely to find a job and leave welfare. This was especially apparent in San Joaquin County where there may be insufficient social services compared to the two urban counties to help the poor overcome health barriers. This finding is consistent with other studies that showed that long-term welfare recipients suffer from physical limitations or suffer disproportionately from mental health and substance abuse problems (Aaronson & Hartmann, 1996; Brooks & Buckner, 1996; Dworsky & Courtney, 2007; Salomon, Bassuk, & Brooks, 1996).

Family obstacles

The odds of getting a job and staying off of welfare were higher for married recipients in Los Angeles County. The law was designed to move women into the first available job. These low-skill jobs were more likely to be in the service sector, where low-skilled women were more competitive over men. The end result is that marriage may not have the economic payoff, it once did for low-income women (O'Neill & Polachek, 1993; Oppenheimer, Kalmijn, & Lim, 1997; United States Census Bureau, 1998). The number of children and the number of disabled children were also barriers to finding a job and leaving welfare (Dworsky & Courtney, 2007). For those with children, the use of daycare services for the youngest child significantly increased the odds of finding a job and getting off of welfare.[9] These findings augment other studies that showed that welfare recipients were more likely to care for children with health or behavioral problems without another parent living in the household (Dworsky & Courtney, 2007; Olsen & Pavetti, 1996).

[8] It is important to highlight a methodological shortfall of the car ownership findings. We have no detailed data on the order of events for obtaining a job and obtaining a car. It is possible that we have an internal validity problem associated with the time order of events. The direction of causality between cars and jobs could be reversed. One could argue that the individual first got a job and then when she had enough economic capital she bought a car (Rosenbloom, 1992). Also, the direction of causality could be reversed for the individual who lost a car from Wave I to Wave II and had no employment in Wave II. It could be argued that the individual lost the job and because of this event she no longer had the economic means to keep the car. In both cases, it is the job that impacted car ownership. This problem with the sequence of events (i.e., cars ownership and jobs) has hampered researchers trying to separate the true impact of cars on jobs. We experimented with several strategies to overcome this methodological pitfall (i.e., lagged variables and instrumental variables) (Raphael & Rice, 2002), but we were not convinced that the findings improved our analysis. We made one last effort to solve this problem. We made a request to the State of California to obtain a work history for each individual, but our request was denied because of confidentiality issues. We believe that our hypothesis and interpretation makes sense given the previous evidence from other academic studies. Amid the sensitive nature of the policy implications from these findings, we ask readers to use caution with the car ownership and car access results (Goldberg, 2001; O'Regan & Quigley, 1998; Reid, 1996).

[9] We used a simplified variable for childcare. The survey instrument for the CWPDP did not fully investigate the complex nature of childcare. Therefore, we had access to a few childcare questions. We acknowledge that childcare is a complicated issue in the lives of welfare recipients. Even though we had a limited variable, we believe that this measure of childcare captured part of the positive impact that access to childcare can have for women trying to make the transition from welfare-to-work.

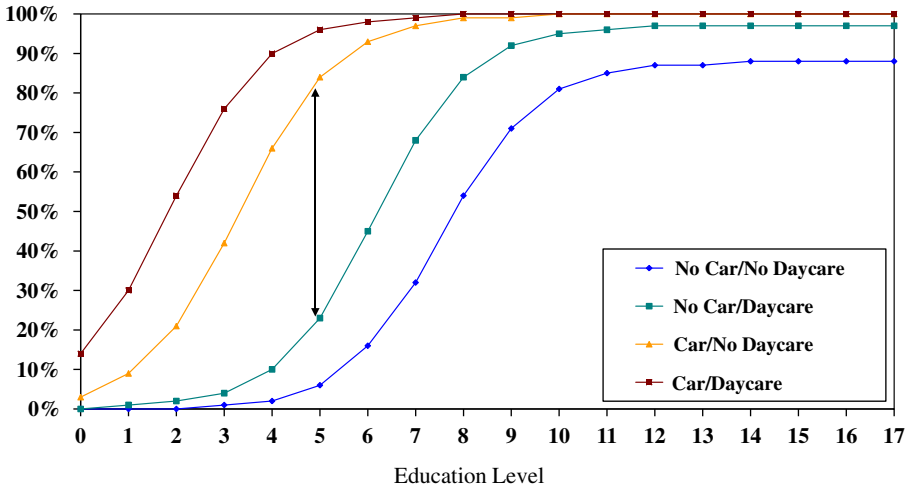

Fig. 1. Sensitivity analysis: probability estimates for a typical welfare recipient finding a job and getting off AFDC.

Sensitivity analysis

Fig. 1 graphically shows a sensitivity analysis to underscore the importance of a car for welfare mothers. The figure shows the probability of finding a job and leaving welfare based on four outcomes. We wanted to see how the probabilities changed for each level of education for a typical welfare mother. The figure demonstrates that women with low-levels of education benefit from car ownership. For example, a woman with a fifth grade education that had no car and no access to daycare had a 6% chance of finding a job and leaving welfare. If she used daycare, her estimated probability increased to 24%. If she became a car owner, her probability of finding a job and leaving welfare increased to 84%. If we she used childcare and became a car owner, her probability increased to 96%. This figure highlights important policy implications that can be implemented to address employment barriers for welfare mothers. Access to a car for welfare recipients with a low-education can have a significant payoff in terms of helping them find employment and leaving welfare (Baum, 2009). Owning a car is of great importance to working moms on welfare, who have complicated journey-to-work trip chains. Local agencies should work with local and state governments to develop innovate car access programs using JARC federal money (Sandoval et al., 2009). Public transportation and fixed route bus systems can't solve the deep and durable structure of inequality pervasive in many urban areas. Our findings, coupled with the other findings on transportation and welfare-to-work, lend further credence to private mobility as the only efficient and long-term solution to stimulating employment among welfare recipients, with limited education, who live in transit poor neighborhoods (Baum, 2009; Fletcher et al., 2005; Ong & Blumenberg, 1998; O'Regan & Quigley, 1998; Rogalsky, 2010).The figure also showed that a typical woman who earned a high school education had a high probability of leaving welfare and finding employment without a car or childcare services. This figure confirms our findings that human capital can overcome structural barriers (i.e., car access) to gainful employment.

Conclusions

The research we presented in this paper provides evidence for three key debates that were raised at the beginning of this paper: (1) the spatial mismatch hypothesis, (2) the efficacy of automobiles in stimulating welfare-to-work transitions, and (3) human capital and family barriers. First, with respect to the spatial mismatch hypothesis, our work suggests that once other factors were controlled for, spatial proximity, as expressed by the measures of regional accessibility, was not particularly important in explaining employment outcomes. Second, the private mobility measures, especially car ownership, were found to be significant predictors of employment and exiting welfare. Finally, human capital played an important role for welfare mothers who obtained a job and left the welfare system and the number of children and their physical and mental challenges were significant barriers to economic self-sufficiency.

Given that the main theoretical findings were consistent across three counties may indicate that these challenges are present in other parts of the U.S. The results are instructive for policy makers trying to address inadequate transit service. Many urban neighborhoods continue to experience high welfare dependence and, at the same time, the surrounding suburbs continue to prosper with economic and social opportunities. There is no single transportation solution to the current welfare-to-work challenges. Improving public transit and making private mobility more accessible to welfare recipients can contribute to successful employment outcomes. Our findings support the view that enhancing car ownership is just as important if not more important than creating new JARC programs. If we are not going to give poor women a car, then our findings support the view that enhancing meaningful human capital can facilitate employment for welfare recipients.

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