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Transit, Employment and Women on Welfare

Authors
Ong, Paul M.
Houston, Douglas

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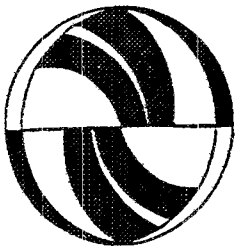

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Paul M. Ong
Douglas Houston

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The University of California
Transportation Center
University of California
Berkeley, CA 94720

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Paul M. Ong
Douglas Houston

School of Public Policy and Social Research
University of California, Los Angeles
Los Angeles CA 90095-1656
Phone (310)-825-4390 email pmong@ucla.edu dhouston@ucla.edu

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The University of California Transportation Center
University of California at Berkeley

Abstract Inadequate transportation has emerged as a major barrier to employment for welfare recipients required to transition from public assistance to employment under welfare reform. Transportation is a particularly daunting barrier for single women without access to a household car This study uses multivariate techniques to examine whether nearby transit access impacts the employment outcomes of this population in Los Angeles County Results show that the level of transit service near a recipient's home makes a moderate, yet statistically significant, contribution to increasing the probability of employment and transit use for work-related trips However, recipients who use public transit face multiple problems, including overcrowding and infrequent service [Keywords· transit access, transit usage, employment, women on welfare]

INTRODUCTION

This paper examines whether public transportation provides a resource to single women without a household car as they transition from public assistance to employment With the implementation of welfare reform, recipients face increased pressure to find a job as quickly as possible The goals of the 1996 Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) include ending welfare dependency and promoting economic self-sufficiency. New regulations under TANF (Transitional Assistance for Needy Families, the post-1996 welfare program) limit cash support, place a time limit on benefits, mandate strong work requirements, and delegate the implementation of reforms to the states and local agencies The dominant strategy has shifted from basic education and training to a "work-first" approach that pushes recipients to find work and leave welfare as quickly as possible.

Under welfare reform, hundreds of thousands of recipients have been forced into the labor market Many of the recipients remaining on public assistance face substantial barriers to employment, including a lack of reliable and dependable transportation Inadequate transportation is one of the most prevalent obstacles facing recipients as they attempt to balance work and family obligations (Blumenberg and Ong, 1999; Crew and Eyerman, 1999, Coalition for Workforce Preparation, 1999; Green et al , 2000, Danziger et al , 1999; Work, Welfare and Families and the Chicago Urban League, 2000) An overwhelming majority of county welfare administrators in California indicate transportation problems hinder their efforts to move people off welfare (Ebener, 1999) Research suggests that recipients who own or have access to a car are more likely to be employed Travel by auto allows recipients to geographically widen their search for work, commute further once employed and to travel at night and on weekends (Ong, 2000, Ong, 1996, Cervero, Sandoval and Landis, 1999, Passero, 1996) Unfortunately, approximately 40% of recipients do not have access to a household car and must rely on public transit or rides from friends or relatives as their primary means of transportation These "autoless" recipients often have greater difficulty finding and sustaining employment, particularly in areas where public transit is not reliable or not available on nights or weekends (Ong et al, 2001)

When available, reliable public transportation may be an important resource for autoless recipients, especially for those who are spatially isolated from job opportunities. Many live in inner-city neighborhoods or predominantly minority areas and face a "spatial" mismatch because they live far away from job opportunities and employment growth (Stoll, 2000; Kasarda, 1980, Kain, 1992, Coulton et al , 1997; Bania et al , 1999, Rich, 1999) Research suggests that racial

segregation limits the job opportunities of low-skill African American and Latino workers in Los Angeles, particularly since little or no job growth has occurred in or near minority areas in the 1990's (Stoll & Raphael, 2000) Furthermore, job-search requires traveling extensively because firms tend to avoid recruiting in low-income, minority neighborhoods (Kirschenman and Neckerman, 1991).

Even when recipients live in job-rich areas, they may not have the education, skills or work experience required by employers Holzer (1996) found that few jobs were available to those with poor basic skills or previous work experience This may be particularly true for disadvantaged workers, such as African Americans, high school drop outs and welfare recipients who have the greatest difficulty finding work (Holzer & Danziger, 1997, cited in Pastor and Marcelli, 2000) These "spatial" and "skills" mismatches translate into a substantial geographic barrier to employment for many recipients and help explain why most recipients work miles from home, even when they live in job-rich neighborhoods (Blumenberg and Ong, 1998, Ong and Blumenberg, 1998, Ong et al , 2001)

These geographic barriers particularly impact recipients engaged in job-search activities Survey results and focus groups suggest that recipient travel during the job-search phase of the Los Angeles County welfare-to-work program is difficult, especially for those without a car Recipients must often travel to unfamiliar areas to turn in a daily quota of job applications while continuing to manage child and household responsibilities, this requirement is an exceptional burden for mothers who must rely solely on public transit for their travel (Ong et al , 2001)

Recipients' ability to overcome the geographic difficulties of job-search activities may vary by race, ethnicity and gender For instance, Stoll (2000) finds that low-skilled Black workers in Los Angeles cover more geographic space in their search for work than whites or Latinos This may be a behavioral response on the part of Blacks of not living near jobs or not having access to nearby jobs A more extensive job search had a positive impact on the employment of blacks and the wages of Hispanics (Stoll, 1999) Research also suggests that women search more locally for work than men (Hanson & Pratt, 1991) Recipients may have similar job-search patterns, especially since the welfare-to-work caseload in Los Angeles County is overwhelmingly comprised of single women, the majority of whom are either African American or Latinas (Ong et al , 2001)

Previous research also suggests that, once recipients find employment, their work commute patterns may vary by race, ethnicity and gender The commute patterns for some groups may not reflect the same geographic patterns as their job search activities For instance, Stoll (2000) finds that low-skilled Blacks in Los Angeles were more likely than whites or Latinos to work near their residential location than in distant white and mixed suburban areas, even though they covered a greater geographic distance for their job search He suggests that this could be due to geographic barriers, increased time and money costs of a longer commute, or perceptions of hostility. Taylor and Ong (1995) found that commuters living in minority areas have a shorter average work trip than other commuters The problem is not just race. Research suggests that women travel less distance to work than men (McLafferty & Preston, 1992, Hanson & Johnston, 1985; Howe & O'Conner 1982). Hanson and Pratt (1991) found that women in female-dominated occupations place a higher priority on a job's proximity to home and hours over wage

considerations Women may also be more sensitive to distance than men for reasons related to their lower incomes, position in female-dominated jobs and use of certain modes of transportation (Hanson & Johnston, 1985) Although women may generally commute a shorter distance than men, this gender disparity does not hold for all racial groups. Analysis of service workers in the New York metropolitan area suggests that white women have significantly shorter commutes than white men, while minority women commute as far as minority men (McLafferty & Preston, 1991)

The literature also suggests that social networks are related to an individual's ability to overcome geographic barriers (Pastor and Marcelli, 2000) A number of effects have been associated with the type and quality of an individual's social networks Individuals searching for work often get information about job leads and opportunities through personal connections (Granovetter 1974). People in underclass neighborhoods are particularly disadvantaged Wilson (1987) suggests that residents of these areas may be exposed to a high level of institutional, social and cultural breakdown and may lack social ties to people who are employed Pastor and Adams (1996) find that living in a poorer neighborhood in Los Angeles "dampens" wages because of the "lower quality" of job networks in poor areas Among African Americans in Los Angeles, social ties to working people increases the probability of being employed, but social ties to persons receiving welfare decreases the probability of being employed (Oliver & Lichter 1996). Gender also plays a role. In Los Angeles, social networks are more important to the female labor force participation of black and Hispanic women than that of white women; social linkages to AFDC recipients seems to negatively impact the labor force participation of women, particularly for black and Hispanic women (Johnson, Jr et al , 2000) Hanson and Pratt (1991) find that

community-based contacts are more important for women than men, especially for women in female-dominated occupations Although the literature does not carefully address ways that social networks may impact travel mobility, it is likely that they provide informal transportation support by increasing an individual's ability to borrow a car or catch a ride

Informal access to transportation resources can be complimented by reliable public transportation However, little research addresses whether public transportation is adequate and reliable for work-related travel and whether it impacts employment outcomes of recipients Sanchez (1999) found that proximity to public bus and transit stops corresponds with increased labor market participation in Atlanta, Georgia, and Portland, Oregon, although this relationship did not hold for non-whites This analysis, though, did not focus on welfare recipients. Cervero, Sandoval and Landis (1999) use individual-level data on pre-welfare reform recipients in Alameda County, California, and find that the number of transit routes within a half-mile of a respondent's place of residence makes a small, yet statistically significant, contribution to finding employment Finally, there is little evidence that an employer's distance from transit stops impacts a firm's prospective or actual demand for welfare recipients (Holzer and Stoll, 2000) Early analysis of the role of public transportation in the post-TANF period provides little detail or sophisticated analysis Results, though, show that TANF recipients using transit often experience long trips on unreliable and overcrowded buses that only reach a few potential work locations (Ong et al., 2001, Gardenhire, 1999).

To fill the gap in our knowledge of the role of public transit, particularly in the post-welfare reform era, this paper investigates the influence of proximity to transit on promoting welfare to

work in Los Angeles The remainder of this paper is organized into six parts The first part provides an overview of the geographic distribution of welfare recipients, jobs and transit service The next section describes the conceptual models for this analysis, one for the determinants of employment and the other for the determinants of transit usage. The third section describes data from a recent survey of TANF recipients in the Los Angeles metropolitan area and the multivariate methods used to estimate the independent contribution of transit access on employment and transit usage The fourth section presents the major findings on the probability of being employed, which indicate that higher levels of transit access increase the odds that autoless recipients are employed The fifth section presents the results for the analysis of transit usage Autoless recipients living near higher levels of transit access are more likely to take transit for their job-search and work commute Part six discusses some of the quality-related problems with the existing transit system Many recipients using public transit experience delays and long waits, overcrowding, and poor service The last section discusses the policy and programmatic implications While there is a need to improve mass transit, it is not a panacea because of the high marginal cost Alternative strategies must be considered

RECIPIENTS, JOB & TRANSIT SERVICE

Many welfare recipients live in parts of Los Angeles County that are isolated from potential job locations Fig 1 overlays the geographic distribution of jobs with the residential location of welfare-to-work recipients who are transit dependent. More specifically, this map identifies areas with a high density of jobs that may be available to women on welfare, that is, jobs that require less than a high school education and that are held predominantly by women [2]

Residential patterns are based on welfare recipients who are transit dependent [3] Only twelve percent of transit-dependent recipients live in areas with a high density of potential jobs

Many transit-dependent recipients live in inner-city neighborhoods that experience high levels of segregation, poverty and welfare dependency Recipients are not isolated to these areas, though, and also reside in areas such as Glendale and Long Beach The majority of potential jobs are spread along the corridor stretching from the City of Santa Monica, through the City of Beverly Hills and along Wilshire Boulevard through downtown Pockets of potential jobs are also located in portions of the San Fernando Valley, Torrance and Long Beach areas Although this description oversimplifies the complex relationships between work and residence in Los Angeles, it demonstrates that many transit-dependent recipients live far from employment centers

<Insert Fig 1>

Many transit-dependent recipients live in areas with a high level of transit service, while others do not Fig 2 overlays areas with a high level of transit service during the am travel peak with the residential locations of welfare transit riders [4] Transit service extends across many of the areas of the county where transit-dependent recipients live. Thirty-four percent of transit-dependent recipients live in neighborhoods with a high level of transit service Many areas with a high density of potential jobs (as shown in Fig 1) have a high level of transit service This suggests that transit service is well positioned in the county to carry recipients in high-service areas from home to work, at least during the morning weekday commute. Many of these recipients, though, may face difficulties such as delays, multiple transfers, and being passed by

overcrowded buses Most (66%) transit-dependent recipients live in neighborhoods with a lower level of transit service Since Fig 2 only identifies only areas with a high level of transit service, some of these recipients have access to a more moderate transit service, particularly in the more dense parts of the county

<Insert Fig 2>

Although geographic distributions of recipients, jobs and transit service help describe the transportation problems facing recipients in Los Angeles County, these ecological relationships are not sufficient to measure the impact of transit service on employment outcomes or on transit usage Further analysis using micro-level data is required

CONCEPTUAL MODELS

Two conceptual models are used to examine the relationships at a micro-level between welfare to work and public transit, one focusing on employment and the other on transit usage The first model examines the likelihood that autoless welfare recipients will be employed and takes the following form

1) $\text{Prob}(\text{employment}_{i,t})=f(X_i, \text{employment}_{i,t-1}, Y_i, \text{transit}_{i,t})$

X_i is a vector of recipient personal (for example, education, age, and race) and household factors (for example, the number of young children). The existing literature (see Moffitt 1992 for summary) indicates that the probability of employment increases with education, prior work experience, and age (but at a declining rate), decreases with the presence of younger children and long-term welfare dependency, and varies by race Prior employment ($\text{employment}_{i,t-1}$) is likely to be correlated with many of the other independent variables, consequently, estimated

coefficients for ($employment_{i,t-1}$) capture the probability of current employment after accounting for the impact of past employment Past employment should be a strong predictor of current employment because many with prior employment are able to continue with their employer or are better situated to find a new job They are more familiar and connected to the labor market, and they have work-related experiences that give them an advantage with potential employers Moreover, past employment may capture unobserved individual characteristics related to the willingness and ability to work

Y_i is the vector of social capital and captures the impact of informal social and community networks and resources that could help facilitate recipients in moving from welfare to work Many recipients may have fewer contacts with people with jobs and may therefore receive few job leads through personal contacts Social networks and resources could also increase a recipient's access to transportation resources for their work-related trips Welfare-to-work recipients often make work-related trips by borrowing a car or catching a ride from a friend or relative (Ong et al , 2001) This sort of access varies with the extent of a recipient's familial and friendship networks Previous research suggests that inner-city residents may also get rides through an informal arrangement that takes the form of a passenger paying a small fee for a ride (Davis and Johnson, 1984, Cevero, 1997). In Los Angeles, informal neighborhood carpools and "jitneys" are an important means of travel for low-income women (Genevieve Giuliano, cited in Blumenberg et al , 1998)

Public transit may also provide an important transportation resource as recipients move from welfare to work, particularly for recipients without a household car. $Transit_{i,t}$ accounts for a

recipient's level of access to public transit Effective service can increase a recipient's ability to travel for job-search and work commutes, and provide greater flexibility in fulfilling household obligations such as shopping and arranging childcare. While proximity to transit lines is conceptually important, the level of transit service available and the destination of nearby lines also seems important The level of transit service near potential job sites may also play an important role in whether recipients secure and retain certain jobs

The second conceptual model examines the determinants of transit usage of autoless recipients [5] A positive association between increased transit access and increased employment in equation (1) does not necessarily demonstrate that a higher level of nearby transit provides a transportation resource for recipients' work-related trips Autoless welfare-to-work recipients may choose to live closer to transit stops for other reasons, such as increased personal mobility. Therefore, we use a second equation to test whether autoless recipients increase their level of transit usage as the level of transit access increases

2) $\text{Prob}(\text{transit use}_{i,})=f(X_i, \text{employment}_{i,t-1}, Y_i, \text{transit}_{i,t})$

The preference for and need to use public transit varies across demographic and cultural groups. This is captured by X_i, a vector of the personal and household factors. For example, travelling by transit may be difficult for recipients responsible for transporting children to childcare Therefore, the number of children in a recipient's home may decrease a mother's likelihood of using transit Prior employment ($\text{employment}_{i,t-1}$) may have an influence on modal choice. Those who have worked recently not only have greater job experience but are also more likely to have greater experience and knowledge of how to assemble the transportation resources needed

to meet employment-related activities If public transit is an inferior choice, then these recipients are more likely to rely on other modes

Y_1 is the vector of social and community capital, and measures a recipient's ability to borrow a car, catch a ride from a friend or relative or use an informal "jitney" for a small fee. All of these options are likely to reduce a recipient's travel time, increase their personal safety and increase the convenience and flexibility of travel at a relatively low cost For these reasons, access to a car through social networks is expected to decrease a recipient's likelihood of using transit for work-related trips

The level of nearby transit access ($transit_{i,t}$) is expected to increase the likelihood that recipients will use transit for work-related trips As mentioned above, the level of service, destination, and schedule of nearby routes may also be important factors in whether a recipient uses transit

DATA AND METHODOLOGY

This paper uses data from a survey of TANF recipients in the Los Angeles metropolitan area[6] and transit data from the regional association of governments The sample is restricted to cases headed by a single female (the most common type of welfare household), who was White, Latina or African American[7] and who responded that she did not have a household car ("How many vehicles (including cars, vans, trucks) do you own? This includes your family or household") A total of 565 observations meet these criteria and are used in the employment analysis. The transit usage analysis, though, is restricted to the 414 recipients who reported a travel mode for

their work or job-search trip [8] This restriction is required because the survey did not systematically collect detailed travel data on those not employed and reported not actively searching for employment

Some basic characteristics of both samples are listed in Table 1 Employment status is based on whether the respondent was employed at the time of the interview ("Are you currently working?") The employment rate for the sample of autoless recipients is 44% [9] Fifty-eight of the sample for the transit usage analysis used transit for their work or job-search travel

<Insert Table 1>

A central question of this paper is whether public transit provides a resource to assist recipients transitioning from welfare to work The influence of nearby public transportation is captured by a transit access variable that represents the number of bus stops within one-fourth mile of the respondent's residence, which is a standard distance that previous research has used as a reasonable walking distance All respondents verified their place of residence during the interview process, and the addresses were assigned a latitude-longitude coordinate. The locations of bus stops were acquired from the Southern California Association of Governments (SCAG) and represent stops for all of Los Angeles County's major bus providers. The number of unique bus stops within a quarter mile of each respondent's residence was counted. A unique stop is defined as a unique route/direction For instance, if the northbound and the southbound buses for a line stop at a given intersection, each counts as a single bus stop. If the northbound and the southbound buses for another line stop at the same intersection, the total bus stops would be four, and so forth. In this way, this variable not only provides a relative measure of access to

nearby transit stops, but also a relative measure of the level of bus service intensity available within a quarter mile [10] Most respondents live within a quarter mile of at least one transit stop while almost half (48%) are near a relatively high number of transit stops (Table 1)

As discussed earlier, some respondents have access to informal transportation services through informal social and community networks For instance, many recipients without a household car may have access to car travel via friends, relatives, or acquaintances through ride sharing or borrowing a car Unfortunately, the survey provides limited information on this type of social capital While the survey of recipients did not ask about the ease or difficulty of catching a ride, it did ask about the ease or difficulty of borrowing a car ("If you had to borrow a car today for some reason, how easy or difficult would it be?") Less than a third responded that it was "very easy" or "easy" to borrow a car while over two-thirds responded that it was "difficult" or "very difficult" to borrow a car

This survey also contains information on key personal and household characteristics age, the number of young children (4 years old and younger), educational attainment, years on welfare, and prior work experience Age is included as a continuous variable to capture the influence of age on employment and transit usage A dummy variable for women over the age of 45 is used to capture the influence of being an older woman on these outcomes [11] Race/ethnic variables are included to capture any systematic differences in employment opportunities for Blacks and Latinos relative to Whites. Because of the characteristics of this population, educational attainment is compressed toward the lower end. The major distinction is between those with and without a high school education, and that is captured by a dummy variable for those who had

completed at least 12 years of schooling Because of the limitation of the available administrative data, long-term dependency welfare is captured by a dummy variable for respondents on welfare for 90 or more months Prior work experience is captured by earnings and alternatively by the number of quarters worked in the last half of 1998.[12]

Because the dependent variables (EMPLOYED and TRANSIT) are dichotomous with values of either 0 or 1, logit regressions are used and have the following functional form:

$$Pr_i\ (OUTCOME) = e^{\beta Z}/(1+e^{\beta Z})$$

$$for\ OUTCOME \subset (1,0)$$

Z is the vector of independent variables described earlier, and beta is the vector of estimated coefficients Despite the difference in functional form, the results for both OLS and logit regressions are consistent with each other Because the model uses a non-linear equation, the coefficients have to be transformed to derive marginal changes in probability due to a one-unit change in an independent variable This can be estimated using the following equation

$$\Delta Pr/\Delta x = C(p(1-p))$$

where C is the estimated coefficient for variable x, and p is the observed probability of employment or transit usage for the sample used for each model

EMPIRICAL RESULTS FOR EMPLOYMENT

The coefficients from the estimated model show that employment rates vary by the level of nearby transit and by personal and household characteristics The employment rate for those with a relatively low level of transit service is lower than for those with a relatively high level of

transit service (43% versus 46%). This can also be seen in the means for the variables used in the logit employment model as listed in Table 2 The means show that current employment is related to education, age, fewer younger children, being over 45 years old, a woman's ability to borrow a car and long-term welfare dependency. Prior employment (as measured by employment or total earnings) is strongly and positively related to current employment Among those with two quarters of previous employment, 67 percent were currently employed compared to 44 percent for those with one quarter of previous employment and only 32 percent for those with no previous employment These differences are large and statistically significant, however, covariation among the independent variables may obscure the true causal relations

<Insert Table 2>

The coefficients in Table 3 estimate the contributions of the independent variables, *ceteris paribus*, and the results are consistent with the predicted impacts discussed earlier Those with less than a high school degree fare worse than those with more schooling, but only by less than a percentage point Employment increases with age, with the effect diminishing with each additional year as indicated by the negative coefficient for age squared The presence of younger children (ages 0 to 4) decreases employment levels slightly, but the estimated impact is statistically insignificant. Being over 45 years old has a huge impact on employment, increasing odds of current employment by about 26 percentage points over women under 45 after accounting for other factors This extremely large difference is difficult to explain, and it may be due to differences in unobserved circumstances such as a greater ability to share child caring responsibilities with relatives Very long-term welfare usage (90 or more months) decreases the employment rate slightly Given the widely held notion that long-term dependency creates an

extremely hard to employ population, this difference is surprisingly small This result may be due to the selective nature of those required to participate in the welfare-to-work programs or to a fundamental change in behavior caused by time limits. Most of the coefficients for the race/ethnic variables are also statistically insignificant Prior employment as measured by the square of earnings is extremely significant The likelihood of employment increases by about 10 percent for every additional $1,000 that a recipient earned in the second half of 1998 The alternative measure (quarters of employment) is also a stronger predictor of employment, as shown in Model 3 Each additional quarter of prior employment increases the odds of currently working by 18 percentage points

The variable for the density of nearby welfare recipients is used as a proxy for underclass neighborhoods The small and insignificant contribution of this variable suggests that the characteristics of the individual may have a stronger influence than characteristics of underclass neighborhoods on the probability of being employed Of course, this result may also reflect that this variable is a poor indicator of underclass areas

Differences in the level of car access for autoless households have the predicted impact; however, the estimated coefficients are not statistically significant. The variable for "Unable to Borrow a Car" controls for those who indicated that they found it "Very Difficult" to borrow a car After accounting for other factors, there is no difference in employment between those able and unable to borrow a car.

<Insert Table 3>

Models 2 & 3 indicate that employment increases with the number of bus stops near a recipient's home Model 2, in particular, has a higher chi-square than Model 1 suggesting that the use of transit access measures and prior earnings together provide the best model. The impact of transit access diminishes with each additional stop as indicated by the negative coefficient for bus squared. Every additional 10 stops near a recipient's home (indicating 10 additional unique bus lines by direction) increases the likelihood of employment by about 3-4% Figure 3 simulates the impact that the number of nearby bus stops has on the probability of employment [13]

<Insert Fig 3>

EMPIRICAL RESULTS FOR TRANSIT USAGE

Greater transit access not only increases the probability of employment, but also transit usage This is not a surprising result, but quantifying the impact is important in understanding how much public transit is a resource for women on welfare Among those employed or seeking work, 58% rode the bus or train for their work commute or job-search trip, and those in areas with a high level of transit access were more likely to use transit than those in areas with a low level of access (60% versus 53%).

Although this difference is consistent with our hypothesis, multivariate techniques are necessary to separate out the independent effect of transit access from other factors. Table 4 presents the means for the variables used in multivariate analysis of modal choice for work-related trips The statistics show that transit use corresponds with less education, age, not being able to borrow a car and higher levels of transit access

<Insert Table 4>

The estimated coefficients of the multivariate logit regressions for transit usage are listed in Table 5 The outcome (dependent) variable for our analysis of transit use is a dichotomous variable indicating whether recipients reported using transit for a work or job-search trip. Model 1 pools both the employed and job-seekers, while Model 2 examines only employed recipients and Model 3 examines job-searching recipients Because of small sample size, independent variables with extremely low t-values are excluded in Model 2 and Model 3 to make them parsimonious

<Insert Table 5>

The results for Model 1 show that race is an important factor in predicting the likelihood of using transit, particularly for Black women who are 27% more likely to use transit [14] Respondents who reported that it was "Very Difficult" to borrow a car were about 14% more likely to take transit for a work-related trip Job-searchers are more likely to find it very difficult to borrow a car While the inability to borrow a car increases the odds that an employed recipient uses transit by 13%, it increases the odds that a job-searching recipient uses transit by about 19%

Prior employment has a negative impact but is not statistically significant in Model 1. This may be due to differential effects on those employed and those seeking work. Model 2 indicates that prior employment is strongly significant for employed recipients and accounts for about a 32% decrease in the likelihood of using transit This implies that employed recipients with prior employment may also be better equipped to arrange transportation alternatives such as catching a

ride and/or borrowing a car, thereby decreasing their overall transit use. Model 3 isolates the transit usage of recipients in job-search activities and suggests that prior employment does not make a significant contribution to whether they use transit for the job-search

The level of transit access near a recipient's home makes a significant contribution to both the transit use of employed and job-searching recipients Every additional 10 stops near a recipient's home (indicating 10 additional unique bus lines by direction) increases the overall likelihood of using transit by about 2-3% for the general Model 1.[15] Figure 3 simulates the impact that the number of nearby bus stops has on the probability that recipients use transit for work or job-search trips. While the contribution of nearby stops holds for employed recipients (Model 2), it makes a very strong contribution for recipients in job-search activities (Model 3). Every additional 10 nearby stops increases the odds that a recipient in job-search activities will use transit

<Insert Fig 4>

TRANSIT QUALITY

Although many recipients use public transit in their efforts to transition from welfare to work (particularly in areas with a high level of transit access), the quality of the service is often problematic This is not to say that transit service is informally bad. Survey results indicate that less than half (46%) of autoless recipients who used transit for their most recent work or job-search trip reported that their travel was very or somewhat easy This implies transit provides many autoless women on welfare with a useful resource as they transition to work [16] Some

recipients revealed in focus groups that buses are often on time and reliable, that transit can be more reliable than a car, that transit is relatively inexpensive, and that they feel more comfortable in light of recent initiatives to improve transit safety (Ong et al , 2001).

Unfortunately, public transit is far from ideal for many other autoless women on welfare, regardless of the level of nearby transit service. Of autoless respondents who used public transit recently, most had one or more transfers (70%), were passed by at least occasionally or sometimes (61%), and/or felt unsafe at least occasionally or sometimes (57%) The average waiting time was 22.5 minutes Responses to an open-ended question reveals that two of the biggest problems with transit was infrequent service or waiting, crowding, and that the bus was not on schedule Crowding is a particular problem for recipients near higher levels of transit access

Recipients indicated a strong preference for improvements in the quality and frequency of bus service over assistance with out-of-pocket costs of transportation They indicated they prefer more frequent service (including less crowded service), buses being on-time and closer bus stops. Autoless recipients in areas with high level of service are slightly *more* likely to want better or more frequent service than respondents in areas of lower transit service, although this difference is not statistically significant Recipients did not seem to have one clear preference when they were asked to rank a close-ended set of transit-related programs: 30% picked more frequent service, 26% picked Emergency Ride, 26% picked Free Pass, and 18% picked Shuttle Services.

Recipient preferences for auto-oriented programs were surprisingly clear. An overwhelming majority of autoless recipients (67%) expressed a preference for a car loan program that would help them become car owners This response reflects a recipient desire for a transportation resource they do not currently have. This may partially explain why they were less likely to choose assistance with car maintenance or insurance This result, though, may also reflect a recipient preference for travelling by car, which in many cases provides greater flexibility in negotiating numerous work- and household-related trips Recipients also reported that travel by car for work-related trips is easier than travel by transit About 66% of autoless recipients who traveled by car for their most recent work or job-search trip reported that their travel was very or somewhat easy This percentage is much higher and statistically different from the percentage of autoless transit riders who reported easy travel (as reported above), suggesting that recipients who are able to catch a ride or borrow a car greatly reduce their burden of travel.

The combination of new work requirements and less than satisfactory transit service imposes difficulties on recipients trying to cope with the complexity and uncertainty of work travel in combination with household-related trips For many, transit service is a last resort, an inferior alternative when there is not another feasible option

CONCLUSION

The results reported in this article demonstrate that the public transit system in Los Angeles County provides a resource for many single, autoless women on welfare Not surprisingly, the level of service is a determinant of transit usage, which increases with higher levels of nearby

transit access Transit access also makes a moderate, yet statistically significant, contribution to increasing the probability of employment for autoless welfare recipients Every ten additional nearby transit stops increases the odds of using transit by 2-3%, and the odds of being employed by 3-4%, *ceteris paribus*

These results suggest that expanding and improving transit service could help remedy the geographic barriers facing welfare recipients Many recipients would benefit from additional service during peak commute hours since the majority of recipients begin work between 7 am and 9 am on weekdays Also, many recipients begin their job search early in the morning and put in a "full" day of travel (Ong et al , 2001) Recipients could also benefit from improvements to existing transit service For many, transit travel poses numerous difficulties, including overcrowding, delays, and poor service on the most heavily used lines These problems occur even in neighborhoods with high levels of transit service because demand exceeds supply

Despite the potential benefits from enhancing public transit, decisions on transportation investments must weigh the relative cost effectiveness of alternative strategies The biggest problem with public transit is the high marginal cost of adding lines and runs Expanding and improving services makes sense only in areas with substantial unmet demand. On the other hand, investing in public transit does not make sense in neighborhoods with relatively few recipients because low patronage produces an extremely low benefit to cost ratio. Unfortunately, recipients in Los Angeles tend to be highly dispersed

There are other effective options Para-transit services for recipients could be more easily targeted towards recipient travel needs [17] Social service programs could legitimize informal transportation arrangements by reimbursing recipients for the cost of trips made by catching a ride or using informal "taxis" or "jitneys "[18] Travel by car is more reliable and convenient than public transit in many cases, and car ownership significantly increases employment and earnings (Ong, 1996, Ong et al , 2001). Given these factors and recipients' preference for auto travel, social service programs could provide assistance with the costs of purchasing and maintaining a car While neither the transit or auto strategies offer a comprehensive solution, they may each be a part of an overall strategy to address the spatial, skill and social gaps between women on welfare and employment

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Table 1. Sample Characteristics

	Sample for Employment Analysis	Sample for Transit Usage Analysis
Total observations	(565)	(414)
Ethnicity		
White	9%	8%
Latino	50%	49%
Black	41%	43%
Age		
18-30	45%	44%
31-44	44%	46%
45-60	10%	10%
Previous Employment		
No Prior Employment	55%	51%
1 Quarter	16%	16%
2 Quarters	29%	33%
Car Access Measures		
Can easily borrow a car	28%	27%
Difficult to borrow a car	72%	73%
Transit Access Measures		
Low (0-5)	24%	23%
Medium (6-14)	28%	26%
High (15-30)	25%	26%
Very High (31-196)	23%	25%

Table 2. Mean of Variables for Employment Regressions

Variables[a]	Total	Employed	Not Currently Employed
Employed	0 442	1 00	0 00
Less than HS	0 442	0 416	0 463
Age	32 7	33 5	32 0
Age squared/100	11 5	12 04	11 1
Older Recipient (45+)	0 092	0 108	0 079
Black	0 409	0 384	0 429
Hispanic	0 504	0 540	0 476
Young Children	0 529	0 484	0.565
90 plus months of aid	0 313	0 308	0 317
Density of Welfare Recipients	117 1	114 4	119 2
Unable to Borrow a Car	0 524	0 492	0 549
Previous Earnings	1 57	2.47	0 856
Previous Earnings Squared	0 011	0 018	0.005
Previous Employment	0 745	1 044	0 508
No of Bus Stops w/in ¼ mile	21 7	22 5	21 0
Bus Stops Squared	1 120	1.112	1.127
Sample Size	565	250	315

[a] See text for a detailed description of variable definitions

Table 3. Logit Regression Results— Employment Outcomes

Dependent Variable Currently Employed

Characteristic	Model 1	Model 2	Model 3
Constant	-3 453**	-3 664**	-4 063***
Less than HS	-0 298	-0 318	-0 343*
Age	0.188*	0.192**	0.210**
Age squared/100	-0 275*	-0 284*	-0 304**
Older Recipient (45+)	0 992*	1 103*	1 051*
Black	0 048	0 017	0 103
Hispanic	0 381	0 319	0 354
Young Children	-0 236	-0 224	-0 238
90 plus months of aid	-0 289	-0 341	-0 409*
Density of Welfare Recipients	-0 001	-0 001	-0 001
Unable to Borrow a Car	-0 164	-0 191	-0 230
Previous Earnings	0 398***	0 417***	
Previous Earning Squared	15 603***	-16 653***	
Previous Employment			0 730***
No of Bus Stops w/in ¼ mile		0 016**	0 014*
Bus Squared		-0.123**	-0 101*
Model X^2	74 658	79 738	72 437
df	12	14	13
P-value	(p=0.0001)	(p=0 0001)	(p=0.0001)
N	565	565	565

Coefficients * p < 10 ** p < 05 *** p < 01

Table 4. Mean of Variables— Transit Access & Transit Usage

Variables [a]	Total	Transit	Non-Tranist
Used Transit for Work/Job-search Trip	0 585	1 000	0 000
Less than HS	0 423	0.450	0 384
Age	32 9	33 4	32.1
Older Recipient (45+)	0 089	0 087	0 093
Black	0 432	0 459	0 395
Hispanic	0 490	0 492	0 488
Young Children	0 510	0 479	0 552
90 plus months of aid	0 307	0.310	0 302
Density of Welfare Recipients	115 6	116 5	114 2
Unable to Borrow a Car	0 519	0 583	0 430
Previous Employment	0 816	0 748	0.913
No of Bus Stops w/in ¼ mile	22 5	25 6	18 1
Job-search	0 399	0 413	0 378
Sample Size	414	242	172

[a] See text for a detailed description of variable definitions

Table 5. Logit Regression Results— Transit Access & Transit Usage

Dependent Variable Using Transit for Work or Job-search Trips

Characteristic	Model 1 Work or Job-search Trips	Model 2 Work Trips Only	Model 3 Job-search Trips Only
Constant	-1 613**	-1.274*	-1 771**
Less than HS	0 290		
Age	0.021	0 011	0 024
Older Recipient (45+)	-0 582		
Black	1 078***	1 221**	0 824
Hispanic	0 666	0 947*	0 390
Young Children	-0 146		
90 plus months of aid	-0 085		
Density of Welfare Recipients	0 001		
Unable to Borrow a Car	0 588***	0 540**	0 774**
Previous Employment	-0 187	-0 324**	0 212
No of Bus Stops w/in ¼ mile	0 014***	0 012**	0 172**
Job-search	0 005		
Model X^2	34 044	18 527	16 427
df	12	6	6
P-value	(p=0 0011)	(p=0 0066)	(p=0 0157)
N	414	249	165

Coefficients * p < 1. ** p < 05 *** p < 01

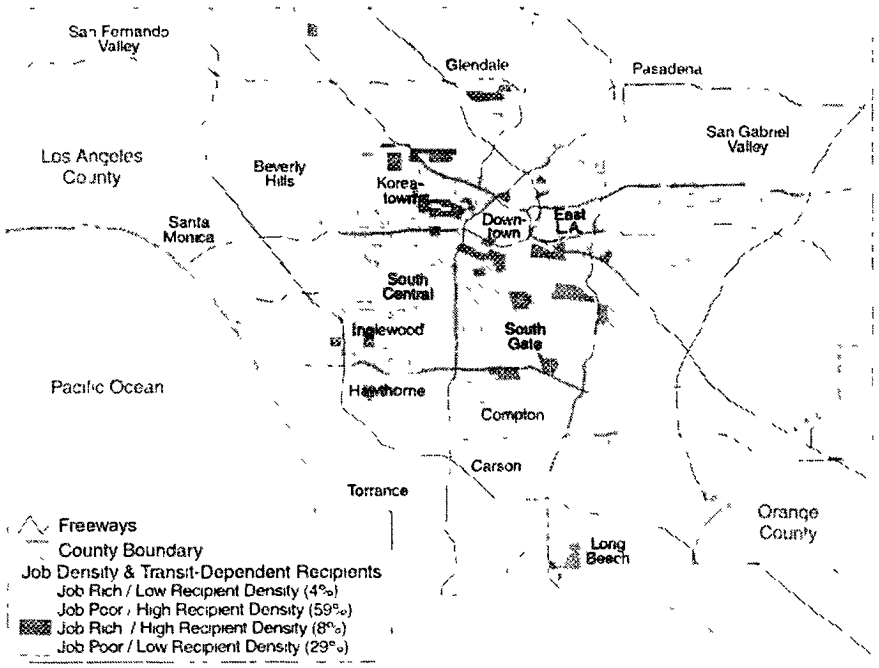

Fig. 1. Job density and transit-dependent recipients, central Los Angeles County

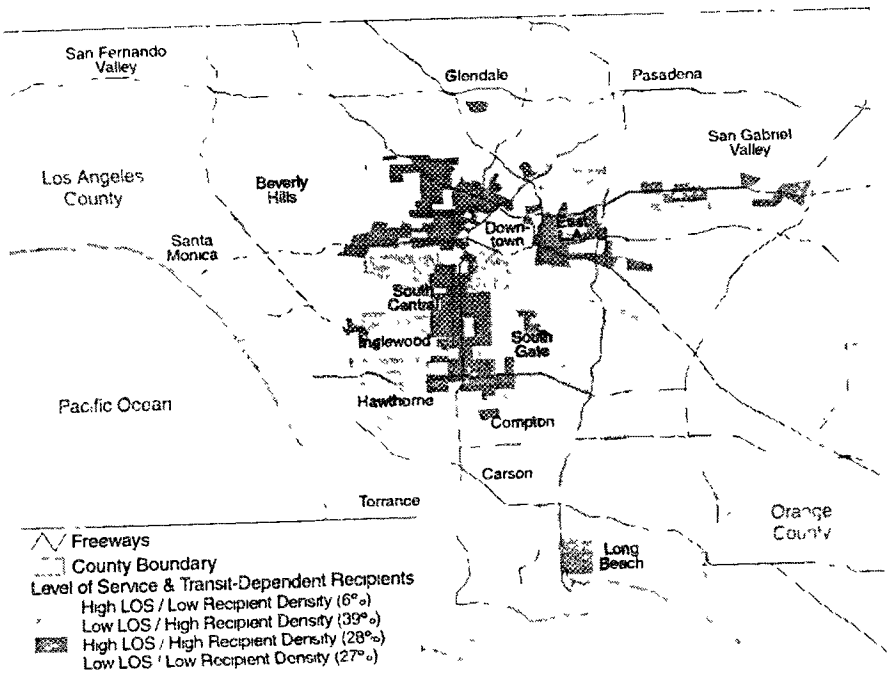

Fig. 2. Transit level of service (LOS) and transit-dependent recipients, central Los Angeles County

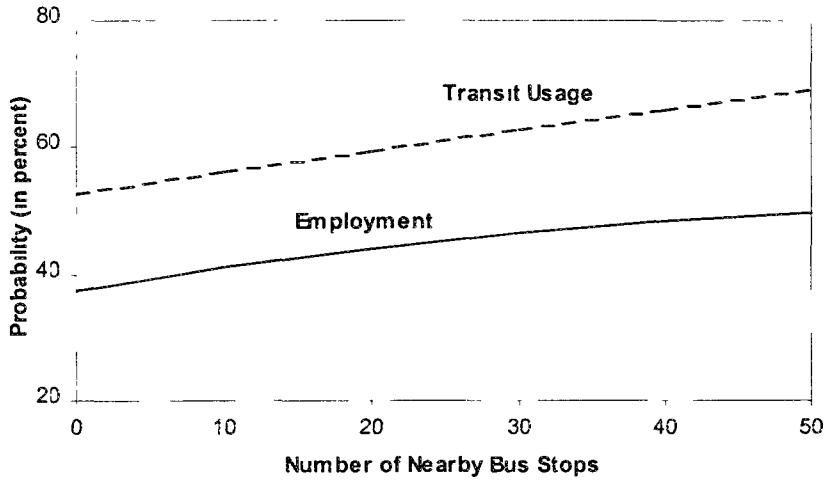

Fig. 3. Simulated effect of nearby bus stops on the probability of employment and transit usage.

NOTES

[1] We are indebted to Evelyn Blumenberg for insightful comments throughout our collaboration on analyzing welfare to work, the University of California Transportation Center for financial support, Ralph & Goldy Lewis Center for Regional Policy Studies at UCLA for its staff support and use of its computing facilities, Paul Smilanick of the California Department of Social Services and Manuel Moreno of the County of Los Angeles for their assistance in accessing state and county data, Katsumi Nonaka and Hiro Iseki for their technical assistance, and to our colleagues and three anonymous reviewers who provided comments and suggestions We alone are responsible for all interpretations and any errors

[2] The geographic location of potential jobs for women on welfare was estimated using on a number of sources These jobs are defined as jobs in occupations that are predominantly female and that require less than a high school education The location of all jobs in Los County was derived from the American Business Information (ABI) database for Los Angeles County for 1998 The gender composition of occupations was based on the 1998 Current Population Survey, the educational level was based on aggregated and unpublished data from the California Cooperative Occupational Information System (CCIOS) conducted by California's Labor Market Information Division Using these data, occupations that were predominantly female and required less than a high school degree were identified These occupations were matched with job classifications using an occupation-industry matrix obtained from the California Employment Development Department (unpublished summary data) The number of potential jobs for women on welfare in all area was then extracted from the ABI employment data based on the Standard Industry Code (SIC) of jobs Although this estimation of job location does not indicate

actual job openings, it provides an aggregate measure of the geographic distribution of potential jobs Traffic Analysis Zones (TAZs) with more than 1,500 potential jobs per square mile were classified as areas with a high job density

[3] The geographic distribution of transit-dependent recipients was derived through a number of methodological steps First, the residential patterns of the adult welfare population in Los Angeles County in July 1999 were estimated using a geocoding process that assigned a latitude-longitude coordinate based on recipient addresses in the county's welfare-to-work administrative data The number of recipients per TAZs was aggregated from these locations Next, the Southern California Association of Governments (SCAG) estimated the number of these recipients in each TAZ who would to rely on transit for a work-related trip based on their Regional Mode Choice Model A lack of a household car is an important factor in determining transit usage For the purpose of this article, we equate estimated and projected transit usage with the transit-dependent population Areas with more than fifty or more transit-dependent recipients per square mile were classified as areas with a high density of transit-dependent recipients

[4] The level of transit service is estimated based on the bus line schedules for the am peak travel period (6am-9am) for Los Angeles County The geographic location of bus lines and bus schedule data was obtained from the Southern California Association of Governments (SCAG) Using this data, areas with a high level of transit service were derived though a number of methodological steps. First, the number of buses running along each line during the am peak was calculated Next, each Travel Analysis Zone (TAZ) was assigned the total number of bus runs that passed through it during the am peak period. TAZs were classified as having a high level of service if they had approximately 50 buses passing through them per hour during the am

peak travel period This provides an aggregate measure of the relative level of transit service for all TAZs in Los Angeles County without regards to the destination or actual ridership of each line

[5] An alternative approach is to estimate a multinomial model with four outcomes: employed using transit, employed not using transit, not employed using transit and not employed and not using transit Unfortunately, detailed modal information was not collected from all respondents, consequently, we have developed two separate models using available data— one examining the employment outcomes of all women and a second examining the mode choice for women who were employed or engaged in job-search activities

[6] The metropolitan area is coterminous with Los Angeles County The survey was sponsored by the Department of Public Social Services of Los Angeles County, designed by the Ralph & Goldy Lewis Center for Regional Policy Studies at UCLA, and conducted by the Survey Research Center at the California State University, Fullerton The sample was drawn from administrative files for those in the Greater Avenues for Independence (GAIN) welfare-to-work program in late 1999, almost two years after the implementation of welfare reform in Los Angeles County Administrative files also provide limited information on work and welfare history The survey is based on stratified samples for each of the five districts for the County Board of Supervisors The questionnaire was automated in a CATI (Computer Assisted Telephone Interview) system and administered over the telephone in English, Spanish, Vietnamese, and Armenian The survey, which was conducted by telephone between late November 1999 and February 2000, contains over fifteen hundred respondents.

[7] Recipients of other racial groups were excluded from this analysis since they represented only a very small number of respondents

[8] Travel mode was derived from a number of questions For employed respondents, we derive the mode of travel based on the question "How do you usually get from home to work?" There is an equivalent question for those who "make a trip anywhere in the last week to look for a job, such as going to Job Club, picking up job application or whatever " For these job-searchers, we use the mode they reported on their last job-search trip ("The last time that you left your home to do something to find a job, how did you get there?") There is also a group of job seekers not actively searching in the prior week, and their modal choice was based on data from their partial trip diary and other available data For many respondents, the trip diary includes several trips; consequently, we assigned the mode they would most likely take to job-search activities based on their frequency of reported transit and car usage and on the number of times they reported using transit in the last week and six months Since such assignments could be problematic, we tested the robustness of our results by running the transit usage analysis for two subsets of the working/job-searching populations the respondents who were employed and actively searching for work in the prior week, and all respondents who were employed or searching for work. There were no qualitative differences

[9] This rate is much less than the 52% employment rate for the entire sample Previous multivariate analysis performed for the entire sample of respondents confirms that car ownership is positively correlated with employment (Ong, 2000) This current analysis eliminates the influence of car ownership on employment by examining only those without a household car.

[10] This measure does not, though, differentiate the level of service by time of day or whether the lines that travel near a recipient's home provide access to potential job sites.

[11] Since not every adult is the mother of the children on the welfare case, women on welfare over 45 years old may be the grandmother of the child on the welfare case. Unfortunately, the survey

does not provide information on the relationship between the adult and child or children on the same welfare case.

[12] The California Department of Social Services (CDSS) provided information on long-term welfare usage and prior employment CDSS compiled information on long-term welfare history based on MediCal Eligibility Determination System (MEDS) data CDSS obtained information on prior employment from the California Employment Development Department (EDD) Base Wage database, which contains quarterly records of all workers in the unemployment insurance (UI) program The UI program covers approximately 95 percent of all paid workers in the private sector The data do not include self-employment, employment in firms not in the Unemployment Insurance Program, and some governmental agencies Given the lack of continuous employment for welfare recipients, this study does not use the calculated potential years of labor market experience, which is commonly used in most empirical studies of labor-market outcomes

[13] Figure 3 simulates the probability of employment and transit use for the ninety percent of the sample who lived near fifty or more bus stops The observations used for each simulation are the same as the sample used to estimate the logit regression models

[14] We also estimated a model using the 79% of all working/job-searching recipients who explicitly reported the mode used for work-related trips (see note 5) The results are consistent with those for Model 1 There are two difference for the regression with the restricted sample 1) Hispanics are significantly more likely to use transit, 23% more likely that whites, and 2) prior employment has a statistically significant negative impact

[15] The variable for bus squared was included in preliminary logistic models and was not statistically significant

[16] The survey used in this analysis was primarily designed do document transportation needs and deficiencies of participants and, in that way, did not explicitly target positive perceptions and comments on the transit system

[17] Numerous community-based organizations in Los Angeles County have expressed an openness to provide transportation services for recipients involved in welfare-to-work activities (LADPSS, 2000)

[18] Many recipients without a household car make their work-related trips by borrowing a car or catching a ride from friends or family Still others pay for informal "taxis" or "jitneys" that provide a ride for a small fee (Ong et al , 2001).