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Giving up Job Search Because I Don't Have a Car: Labor Market Participation and Employment Status Among Single Mothers With and Without Cars*

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Labor market participation and employment status among single mothers with and without cars

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Abstract

Greater mobility enabled by a car is important in getting and maintaining jobs, but to what extent it affects labor market participation rate? This paper investigates both labor market participation rate and employment rate, and whether car availability in the household have any significant association with these probabilities. Our analysis show that availability of a car has positive associations with both labor market participation rate and employment rate, and the associations are particularly stronger for single mothers. Although women with children in a couple-based family households are much less likely to be labor force, single mothers who are head of households are more likely to participate in labor market and seek for jobs regardless availability of cars. After they participate in labor market, employment outcomes of single mothers are better than mothers in couple-based family households if they have cars. Predicted labor market participation rate for a thirty-year old single mother without a car can be as low as a half, while those who with a car may be almost 20% higher. Her employment rate is predicted to increase from approximately 75% to 85% if she has a car. Single mothers usually have multiple responsibilities and face severe special-temporal constraints. Greater mobility enabled by a car may increase time availability together with spatial reach, which may in turn, encourage them to become labor force.

Introduction

Private car availability is important in getting and maintaining jobs, and it can be even more critical for working women with children who need to handle both work trips and household-serving trips. Researchers have extensively investigated association between employment and transportation availability, and discussed its policy implications. However, it is still not clear whether the car availability affects the matching rate in job search or decisions in participating in a labor market. Some people may be unemployed because s/he cannot find an adequate job within a reasonable commuting range or during available hours. Others, particularly those who have heavy household responsibility, may give up job search when s/he has serious spatial and time constraints due to the combination of household responsibility and low mobility.

This paper analyzes the labor market participation and employment rates separately, and assesses their associations with household car availability. Our analysis pay particular attention to single mothers, because poverty rate among single mothers is very high. We analyze labor market participation rate and employment rate separately because timing and time frame of decisions on these two activities are likely different. People determine whether to participate in a labor market, considering their skills, family status, and resource availability. If they decide to withdraw from a labor market by a choice, the decision can last for months or years. In contrast, employment status may change weekly or monthly basis. Data used for the analyses are from the Survey of Income and Program Participation (SIPP) 2008 panel. Our analyses find that both of the labor market participation and employment rates are lower for women with no household car and for those in households with fewer cars than the number of household adults. The association with car availability is particularly stronger for single mothers when compared with mothers in couple-based family households. The findings suggest that household car availability is important not only for getting and maintaining jobs but also for encouraging or enabling to start job search.

Close inter-relationships between automobility and employment

Since John Kain (*1*) developed the concept of "spatial mismatch," extensive research has conducted on the employment outcomes in relation to the segregation in residence and the suburbanization of jobs. Original spatial mismatch studies focused on the spatial (or physical) distance between Afro-Americans' residence and locations of jobs that they are qualified for (extensive reviews in (*2–4*). Urban economists have constructed theoretical models that explain the background mechanisms of "mismatch" (*5*, *6*), and many empirical studies provided evidence that shows a lower employment rate, lower wages, and longer commuting distance for Afro-Americans in urban center compared to White workers in suburbs (*7–9*).

Planners responded to the spatial mismatch with three strategies, disperse of urban poor to richer suburbs, providing mobility, and re-attracting jobs to inner city (*10*). Among them, mobility policy primarily focused on public transit service through the Jobs Access and Reverse Commute program. However, several scholars found severe limitations in improving employment outcomes of urban poor through improvements in public transit service (*11–15*). Instead, research finds that availability of private auto matters in getting

and maintaining jobs (*16–18*). Urban Afro-Americans spend longer time for commuting than Whites, but covering shorter distance due to low auto ownership (*8*). As spatial search-matching labor market model addresses why individuals with smaller search radius (*i.e.*, lower spatial mobility) would face higher unemployment rates and lower wages (*17*). As automobiles offer higher travel speed, reliability and more flexibility to travel, job seekers with car access can reach more job opportunities possibly with higher wages and salaries than those without (*12*, *16*, *19–27*). For example, Taylor and Ong (*16*) discussed that the higher unemployment rate among minorities are rather caused by lower availability of automobile. Even after getting a job, workers with car access can retain their jobs better than those without as the latter group of workers suffer from longer and uncertain travel time due to less dependable public transit service. As a result, automobile access substantially and positively related to employment outcomes, levels of earnings and income, and probability of exiting the welfare program, for low-income job seekers and workers, including welfare recipients (*12*, *13*, *28–30*). These findings hold even after controlling for the endogeneity of auto ownership and household income (*31*). In response, planners developed a concept of job accessibility to account for the effective job opportunities available within a certain level of travel impedance (*19*, *26*, *32–34*).

The study of spatial/modal mismatch was eventually extended from Afro-Americans to, more generally, to other racially and ethnically minority groups of people and low-income households, which include welfare recipients and single mothers with children (*18*, *35*, *36*). More specifically, importance of availability of private auto onto employment outcomes also attracted attention after the US welfare reform in the mid-1990s. When Personal Responsibility and Work Opportunity Act replaced Aid to Families with Dependent Children (AFDC) program with Temporary Assistance for Needy Families (TANF) program, it added work requirements to receive welfare while liberating limits for asset accumulation including private vehicles (*37–39*). The relaxation of vehicle asset limit quickly increased the vehicle ownership among likely welfare recipients (*40*). The accumulation of private vehicles, in turn, was hoped to improve their employment outcomes. Indeed, research shows that vehicle access has positive association with employment among welfare recipients, while the housing vouchers are, in contrast, has no significant association (*41*).

One issue still not fully discussed is, whether auto ownership associates with the labor market participation rate, the employment rate, or both of those who in a labor market. The official (un)employment rate defined by U.S. Bureau of Labor Statistics considers only those who in labor force, and do not include jobless people who are *not* looking for jobs. However, people with household responsibility may withdraw from a labor market, rather than spend time for searching jobs, if they have limited transportation options. Women with children typically need flexible non-fixed-route transportation to handle their complex travel (*42*, *43*). If they are not educated very well, available jobs to them often have irregular work hours, which also adds difficulty to handle life without a car (*44*). As a result, they may be strongly discouraged to participate in a labor market and simply quit searching for jobs.

Data

SIPP data and key variables

SIPP is a nation-wide longitudinal survey of households, and each panel lasts for 2.5 to 4 years. Participants are interviewed every four months, and each interview is called a wave~~s~~. The survey consists of core and topic modules. Core modules basically ask consistent questions across the waves, and interviewees are required to answer the same questions for each month. It contains data such as family status, income, labor force participation, reasons for not working if they are jobless, and social program participation. Topic modules vary from wave to wave, ask~~s~~ more specified questions such as car ownership and commute mode. Among 2008 panel data of SIPP, Wave 4 has a topic module that contains household car availability. Wave 4 of SIPP 2008 panel data surveys 91,219 individuals in 35,141 sample units. The timing of the interview / data collection was August to November of 2009, depending on the rotation of the survey participants.

We focus on employment status of people at an age between 18 and 69 years, and on reasons why the person did not work particularly for those who did not work during the survey reference period. Young people under 18 years old are excluded because many of them go to school, and seniors at an age of 70 years old and over are also excluded because many of them start retiring around the age. As dependent variables, we construct indicator variables of labor market participation (*lm*) and employment (*employed*). A person is considered to be in a labor market (*lm*=1) if a person is working, searching for jobs, or on layoff. In other words, people who are not working because of physical condition, schooling, retirement, pregnancy, care responsibility, or no interest to work are out of a labor market. Among people who are in a labor market, employment indicator variable is constructed (*employed* =1 if the person is employed at least partially during the reference month, and 0 otherwise).

Model

First, we assess the labor market participation rate using logistic regression model.

$$lm = \exp\left(f\left(X_{per}, X_{hh}, X_{hhcar}, X_{loc}\right)\right) / \left(1 + \exp\left(f\left(X_{per}, X_{hh}, X_{hhcar}, X_{loc}\right)\right)\right)$$

where *lm* is an indicator variable for labor market participation. As explanatory variables, we employ personal characteristics (X_{pes}), household characteristics (X_{hh}) including household car availability (X_{hhcar}), and residential locations (X_{loc}).

As personal characteristics, we include racial ethnic groups (*black*=1 if a person is Afro American, and 0 otherwise; *hsp*=1 if a person is Hispanic or Latino origin, 0 otherwise), gender (*female*=1 if a person is female, 0 otherwise), age and age squared, citizenship status (*alien*=1 if a person is not U.S. citizen, 0 otherwise), whether the person is a household head (*hhhead*=1 if the person is a head of household), and educational attainment using indicator variables for less than high school and college graduates (high school

graduates are the base). As household characteristics, we control household size, whether the household is female-headed family household (*fheadhh*=1 if the household is female headed family household and 0 otherwise), and whether the household has family child (*famchild*=1 if the household has at least one family child, 0 otherwise). Household car availability is controlled by two indicator variables. One is an indicator variable for households with at least one car (*hhauto*=1 if the household has at least one car, 0 otherwise), and the other indicator variable is whether the household has enough car for every adult in the household (*fullauto*=1 if the number of cars in the household is equal to or greater than the number of household members 18 years old or older). Residential locations are controlled by the Census Divisions of the residential states (9 categories), and whether the residence is inside a metropolitan area (*metro*=1 if the residence is inside a metropolitan area and 0 otherwise).

Besides the variables discussed above, we also included interaction terms to address inter-group differences in coefficients. One is the interaction of citizenship status and Hispanic/Latino origin. Hispanic/Latino immigrants form a large group in the U.S. and build a strong community within, thus they may have less difficulties in finding jobs compared to immigrants from other countries. Another is an interaction of households with a family child and female. When household has a child or more, child-caring responsibility may be unevenly distributed between genders, which may result in lower labor market participation and employment rates. Third one is the interaction of full-auto availability and household head status of a person. When a household has fewer cars than the number of adults, the household head person is more likely to enjoy priority in vehicle use than other adult members. The last one is the interaction of household with a car and female-headed family household. Prior research discusses that single mothers are in particular needs for cars (*42*). If that is the case, this interaction should be positive and significant.

Then, for people who participated in the labor market, we assess the employment rate as follows.

$$employed = \exp\left(f\left(X_{per}, X_{hh}, X_{hhcar}, X_{loc}\right)\right) / \left(1 + \exp\left(f\left(X_{per}, X_{hh}, X_{hhcar}, X_{loc}\right)\right)\right)$$

where *employed* is an indicator variable for employment, and *employed* is and indicator variable for employment status. As explanatory variables, we employ the same set of personal characteristics (X_{pes}), household characteristics (X_{hh}) including household car availability (X_{hhcar}), and residential locations (X_{loc}).

For both models, we employed a person-weight of the dataset (*wpfinwgt* in SIPP). Since SIPP survey strategically over-sample low-income households and welfare recipients, it is important to control the sampling error by using weights.

Result

Table 1 summarizes the results for both labor market participation rate (left) and employment rate among those who are labor force (right). Each set of columns show coefficients, robust standard errors (clustered by household), and odds ratio, respectively. Table 2 follows up table 1 by conducting post-estimation analysis about inter-group differences. For example, non-citizens are less likely to be labor force

among non-Hispanics (the coefficient for non-citizen indicator variable is negative and significant in Table 1), while among Hispanics, non-citizens are not significantly different from U.S. citizens in the labor market participation rate (sum of coefficients of non-citizen indicator variable and its interaction with Hispanic/Latino origin is not significantly different from zero).

TABLE 1 Labor Market Participation Rate and Employment Rate

Logistic Regressions	(1)			(2)		
Dependent Variables	Labor Market Participation Rate			Employment Rate		
	Coefficient	Std. Error	Odds Ratio	Coefficient	Std. Error	Odds Ratio
Age	0.261***	0.00521	1.298	0.00619	0.0111	1.006
Age ^ 2	-0.00337***	6.08e-05	0.997	2.88e-05	0.000136	1.000
Female	-0.299***	0.0274	0.741	0.327***	0.0582	1.387
Afro Americans	-0.0443	0.0365	0.957	-0.547***	0.0638	0.579
Hispanics	0.0965**	0.0444	1.101	-0.0950	0.0835	0.909
Non-Citizen	-0.136**	0.0619	0.872	-0.179*	0.106	0.836
Non-Citizen * Hisp	0.160*	0.0910	1.174	0.526***	0.165	1.692
Less than High School	-0.544***	0.0358	0.581	-0.534***	0.0658	0.586
College Graduates	0.543***	0.0282	1.721	0.764***	0.0658	2.146
HH Head	0.282***	0.0345	1.326	0.561***	0.0658	1.753
HH Size	-0.0169	0.0113	0.983	0.0204	0.0199	1.021
HH with Family Child	0.371***	0.0457	1.448	0.199***	0.0748	1.220
HH with Family Child * Female	-0.981***	0.0485	0.375	-0.123	0.0917	0.884
HH with a Car	0.351***	0.0446	1.421	0.291***	0.0790	1.338
Full Auto (# of HH Car >= # of adults)	0.485***	0.0354	1.623	0.676***	0.0675	1.965
Full Auto * HH Head	-0.160***	0.0449	0.852	-0.386***	0.0910	0.680
Female-Headed Family HH	0.0646	0.0707	1.067	-0.724***	0.112	0.485
Fem-Headed Fam HH * HH with a Car	0.0980	0.0787	1.103	0.350***	0.128	1.419
Census Division		✓			✓	
Metro area or not		✓			✓	
Wald chi2		6,634.7			1,231.3	
Pseudo R2		0.1367			0.078	
Observations		59,676			43,026	

Errors are clustered by household. Robust standard errors are reported
*** p<0.01, ** p<0.05, * p<0.1

As previous research documents, racial ethnic groups as well as citizenship have significant associations with labor market participation rate and employment rate. Labor market participation rate of

Afro-Americans is not significantly different from other racial groups, but they face significantly lower employment rate (table 1). Hispanics/Latino are higher in labor market participation rate than non-Hispanics, while employment rate is not significantly different from non-Hispanics (table 1). Non-citizens are lower both in labor market participation rate and employment rate, possibly because of visa issues. However, non-citizens with Hispanic/Latino origins are not significantly different from U.S. citizen counterparts in labor market participation rate, and they are higher in employment rate than citizen counterparts. Hispanic/Latino non-citizens are typically come to U.S. for works and may leave U.S. when they lose jobs (table 2).

TABLE 2 Inter-group Comparison of the Coefficients

		LM Participation	Prob. Employed
US Citizen vs. Non-Citizen	for Non-Hisps	-	(-)
	for Hispanics	n.s.	+ +
HH with Family Children	for Males	+	+
	for Females	- -	n.s.
Full vehicle availability	for HH Heads	+ +	+ +
	for non-HH Heads	+ +	+ +
Women with Children Who are Fem HH Heads vs. Non-HH Head in Couple HH			
	in No Car HH	+ +	n.s.
	in Full Car HH	+ +	+

+ + / - - positive or negative at p<0.01, + / - positive or negative at p<0.05,
(+) / (-) positive or negative at p<0.1, n.s. not significant

There are significant gender differences both in labor market participation and employment outcomes. Women are more likely to withdraw from the labor market (table 1), particularly when her household has at least one child (table 2). However, females who stay in the labor market are more likely to be employed than male counterparts (table 1). Men in households with at least one child are more likely to be in labor market and more likely to be employed (table 1). The result suggests that traditional gender household division of labor discourages women with children to participate labor market, which selection bias in the (un)employment rate results.

Availability of cars also have significant associations with labor market participation rate and employment rate. Furthermore, the magnitude of associations are different between household heads and those who are not household head. First, members of households with at least one car are more likely to be in labor market, and more likely to be employed (table 1). If a household has enough cars for all the adult members (18 years or older), both probabilities of labor market participation and being employed are even

higher (table 1). Full-auto availability matters less for household heads but remains to be positive even for household heads (tables 1 and 2). Full-auto availability matters less for household heads because they typically receive priority in using a car if they need for getting and maintaining jobs.

Single mothers are likely to be in a household head of a female-headed family household (*hhhead*=1 and *fheadhh*=1) and have at least one child (*famchild*=1). Single mothers are more likely to be in labor market than non-household head mothers in couple-based family households, regardless car ownership of the household. As shown in table 2, when the coefficients of female-headed family household and household head status are jointly considered for no-car household, the difference is positive and significant for labor market participation rate. When interaction of household with at least one car and female-headed household is added for consideration on top of previous two factors, the difference between single mothers with a car and non-household head mothers in households with a car is also positive and significant. It may be because single mothers are often the primary or the only source income, and need jobs more seriously than mothers in couple-based household. Indeed, household heads are more likely to be employed than non-household head, possibly because they become household head because of the earnings, or because they take whatever jobs available to them to feed family members (table 1).

With regard to employment rate, however, single mothers are more likely to have jobs than mothers in couple-based household, only when household cars are available. Considering coefficients of household head and female-headed family households together, employment rates of single mother household heads in no-car households are not significantly different from non-household head mothers in couple-based no-car households (table 2). Two groups are significantly different, when cars are available. Coefficients of household car availability and its interaction with female headed household are both positive and significant (table 1). Moreover, when single mothers with full-car availability are compared with non-household head mothers in couple-based full-car households, employment rate is significantly greater for single mothers (table 2). Although reasons for better employment rate are remain unclear, single mothers may be able to reduce required time for caring responsibility, reach further jobs, or accept non-regular work-hour jobs thanks to greater mobility enabled by a car.

To take a closer look at the associations with car availability for single mothers of different racial ethnic groups, we predicted probabilities of being in labor market and employed. Since logit models are non-linear, it is difficult to interpret the magnitude of the impact from the table. As a case study, we predicted probabilities for 30 years old women with one child. She live with no one else, and thus she is a head of female-headed family household, and household size is two. She is a U.S. citizen and has less than high school degree. Residential area is set in a metropolitan area located in Pacific division. Figures 1 and 2 illustrate predicted labor market participation rate and employment rate for single mothers with and without cars. For both figures, the left sets of columns show the predicted results for single mothers who are not Afro-Americans or Hispanics, the middle sets of columns show the results for Afro Americans, and the right sets show the results for Hispanics. In each set of columns, the left column in dark color shows the

predicted values for those who in a household without a car and the right column in light color shows the values for those who in a household with a car. Since we assume that the household has only one adult, having a car means full-auto availability for the single mother.

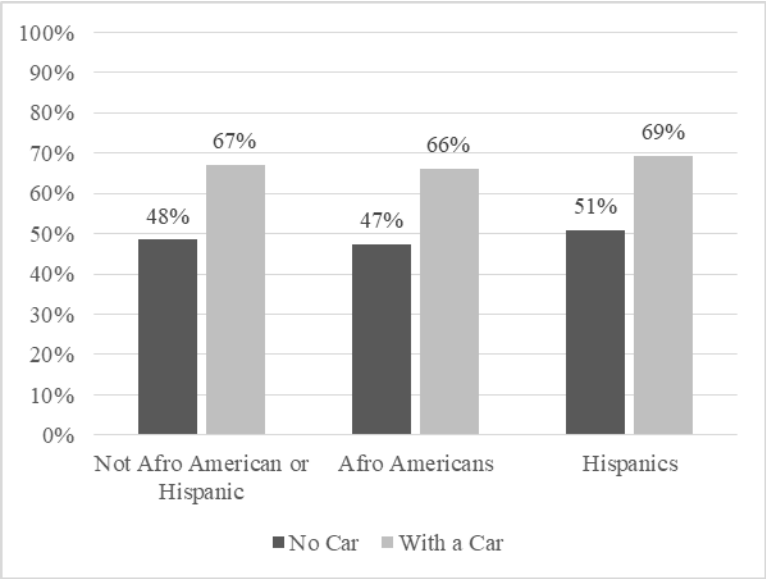

FIGURE 1 Predicted Labor Market Participation Rate for Single Mothers with and without a Car

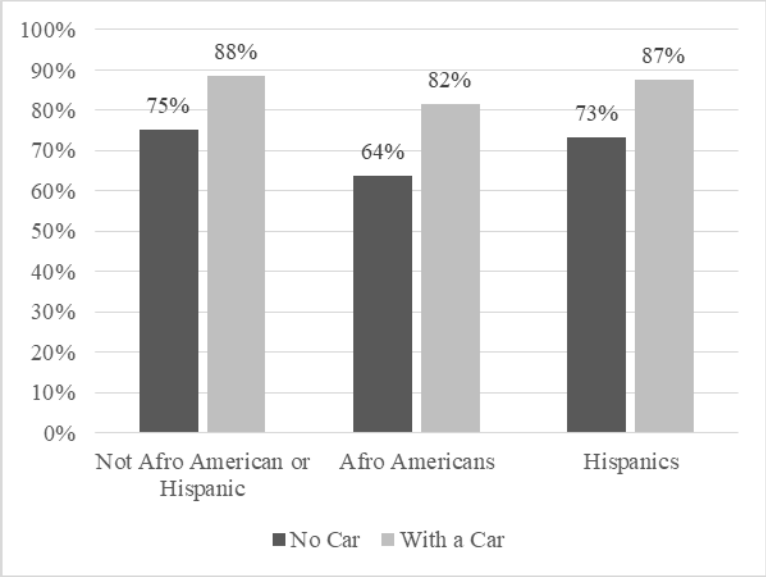

FIGURE 2 Predicted Employment Rate for Single Mothers with and without a Car

Figures 1 and 2 show large gaps between single mothers with and without a car for all demographic groups. Only a half of single mothers without a car are in labor market, while 66 to 69% of single mothers

with comparable characteristics are in labor market. Among single mothers in labor market, the probability of being employed is also higher for those who with a car. Among Afro Americans, for example, only 64% of single mothers are employed, while 82% of single mothers with comparable characteristics are employed. Although the analysis does not prove causality relationship, the result suggests that having a car may have a large impact in employment outcomes. Auto ownership may not only matters in getting and maintaining jobs, but also in encouraging and enabling single mothers start searching for jobs.

Conclusions and discussions

Our analysis shows that availability of car may be an important factor for labor market participation. Researchers have already discussed that availability of a car have positive and significant association with getting jobs among minority, low-income, or welfare recipients, and its association is likely to include causal relationship. Our findings show that mobility barrier may affect not only employment processes but also from one step earlier, that is, start searching for jobs.

More specifically, single mothers, one of the major type of welfare recipients, seem to be sensitive to car availability. Single mothers face two different pressures; they have to take care of children while they are also responsible for earning income. Generally, women with children typically hesitate to be labor force, and if these mothers are in couple-based family households, traditional gender division of household labor is observed. Namely, men pay more effort to bring money to the family. With regards to single mothers, the predicted probabilities of participating in a labor market is greater than mothers in couple-based household due to the pressure to earn income as a household head. The probability of being labor force for single mothers is even higher if their households have a car, possibly thanks to the flexibility and capability provided by the car. Furthermore, they are more likely to be employed when they have a car. In sum, the overall probability of having jobs, which is a product of labor market participation rate and employment rate, is much greater for single mothers with a car than for those who without a car. The result suggests that car availability is critical when policy plans to encourage single mothers leave welfare and work. Without a car, they may not even think about start searching for jobs.

There are two shortcomings in this paper. One is not controlling endogeneity of car ownership in labor market participation and employment processes. People who are willing to work may buy a car prior to job search, and people with stable income are more likely to purchase a car. Another is that the models we use do not address the role of expected employment outcome in deciding whether to join the labor market. People often decide to go to school, retire, or stay in welfare program based on their expectations in employment rate and wages. Further research is anticipated to address causal relationships between car ownership and labor market participation, and car ownership and employment outcomes.

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