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Transportation and Minority Women s Employment: Insights from New York

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One of the most significant trends of the past three decades has been the rapid entry of women into the paid labor force. Women's growing labor force participation has affected all aspects of social and economic life, but especially transportation—the "glue" that connects women's economic and domestic spaces. This raises important questions about transportation policies: What are the transportation needs of working women and how can public transportation systems be designed to facilitate women's work trips? Addressing these issues requires a detailed understanding of women's access to and use of various transportation options. Research shows that women's transit decisions are strongly influenced by gender relations at home and in the workplace[1, 2]. Yet, class, racial and ethnic divisions overlay gender differences, creating complex, interlocking webs of difference. How do these differences influence transportation access and use?

This research examines the reliance on various transportation modes for women of different race and ethnicity. While the vast majority of working women in the U.S. commute by car, a significant fraction rely on other transportation modes, particularly in metropolitan areas. Using 1990 PUMS data for the New York metropolitan region, we analyze how the mode of transportation used in travelling to work varies by gender, race, residential location, and direction of commuting trip. We also estimate the impacts of economic status, household responsibilities, and access to automobiles on mode decisions for African-American, Latina, and white women. The results, which indicate that differences among women in transit mode are at least as large as the well-known differences between men and women, emphasize the diversity of women's transportation needs.

The research focuses on the New York metropolitan region, an area with a diverse population and an extensive, well-developed mass transit network. New York is an atypical American city: Its size, population density, and high rates of mass transit use set it apart from the auto-dependent cities that exist in most of the United States. Therefore the findings of this research may not be generalizable to all metropolitan contexts. Despite this limitation, the research illuminates the range of planning and policy issues that arise when mass transit is available in an ethnically, racially and economically diverse American city. As governments take steps to reduce reliance on the automobile and improve mass transit, such knowledge provides an important base for designing policies that are sensitive to women's diverse transit needs.

This study extends our previous research in several ways. In earlier work, we uncovered significant gender and race differences in commuting time, indicating that many African-American and Latina women do not work closer to home than their male counterparts[3]. Transportation is the single most important factor accounting for these differences, though other economic and domestic factors are also significant[4, 5]. This paper extends our past research to explore the disparities in transportation dependence that so strongly influence commuting times. The first section of the paper presents a brief review of the literature on gender and race differences in transportation access and use. We then describe the 1990 PUMS data for the New York region and the definitions of variables used in the analysis. The final section presents the results of statistical analyses of the effects of economic, geographic, and household factors on gender and race differences in transportation mode.

BACKGROUND

Access to transportation has fundamental effects on women's work trips. At a time when most people travel to work by car, members of households with no private car are at a great disadvantage. Lacking a car, they are forced to either search for work in close proximity to their homes, travel to work by mass transit, or rely on others for their transportation needs. Mass transit typically involves much longer travel times than other transportation modes[4, 6], and it offers inferior mobility[7]. Walking to work is an option for many workers, but it greatly limits the geographical range of job opportunities and the spatial extent of job search[8].

Just as with many other aspects of their lives, women's access to transportation is contingent on marital status, age, and family structure, as well as on income. Among households with two wage earners, men are more likely to drive to work than are women[6, 9]. Preference is often given to the man in the use of a family car[1]. As a result, married working women are more reliant on public transit for the work trip than are men[7, 10, 11]. Single mothers, who bear the full economic and domestic responsibilities for their families, have distinct travel patterns. Research indicates that single mother make more trips and travel further than their married counterparts[12, 13]. When data are disaggregated by income, single mothers make more person-trips than comparable married women, but they travel fewer person-miles[2].

Historically, these processes led to sharp gender differences in transportation use in the U.S. Many studies conducted in the 1970s and 80s found that women were more reliant on public transit than were men[1, 14]. Women drove less than men, both in terms of travel distance and number of trips[7]. Recent evidence indicates that this gender differential is changing. In her detailed analysis of 1990 NPTS data, Rosenbloom found that women are slightly more likely to use a private vehicle for commuting than are comparable men, except in the lowest income category[2]. In part this reflects women's greater tendency to make linked work trips, trips that are more easily accommodated by the car than by other modes. Women are more likely than men to do domestic chores on their journeys to- and from the workplace[15, 16]. It also results from the increase in licensing among women, and the general rise in women's incomes[2]. Thus, we are seeing more parity in mode use between men and women, though their worktrips still differ substantially in length, time, and number of trip linkages[1].

The local context alters these relationships. In the U.S., mass transit is only a viable option in medium to large metropolitan areas. Large cities in the northeast and Midwest have the best-developed mass transportation networks. At the core of urban areas served by rapid transit, gender differences in commuting are typically small. Men and women both use public transportation to travel to jobs in the central business district[5, 10]. In suburban parts of North American cities, women are far more likely to drive to work than their counterparts living in central cities. Indeed, in suburban areas, the vast majority of workers of both sexes drive to work[5]. Suburban mass transit systems are typically geared to moving workers from suburban residential areas to jobs in the center—a traditionally male commuting trip. The absence of mass transit systems within suburbs makes intra-suburban commuting trips time-consuming and often impossible, except by car. Despite the overwhelming reliance on cars by men and women living in suburban areas, gender differences in work trip times are significant and consistent[17, 18]. Compared to men, suburban women drive shorter times to work and are more concentrated in suburban jobs[19].

Given the range of influences on women's mode choices, transportation use is likely to vary considerably among women of different racial and ethnicity. The disproportionate number of African-American and Latina women who are primary providers of their household's incomes and their low average wages mean that they are more likely to rely on public transit than are white women. Studies confirm minority women's greater reliance on mass transit. In northern New Jersey, our analysis of 1980 census data showed that over 25% of African-American women used mass transit, compared with 14% of African-American men and even smaller percentages of white men and women. Johnston-Anumonwo[20] found similar patterns in Buffalo and Rochester, New York. From the national, NTPS sample, Rosenbloom[2] observed that Hispanic and black women in urban areas are three times more dependent on mass transit than are white women.

These differences clearly reflect the diverse social and spatial contexts of women's lives. Compared to white women, minority women typically live in households with lower incomes and with less access to a private car. Rates of licensing and car ownership also vary with race/ethnicity, as do household characteristics such as marital status and the presence of children. The effects of these factors on the transportation decisions of women from different race and ethnicity are explored in the sections that follow.

DATA

In analyzing these relationships, we utilized data from the 1990 Public Use Microdata Samples (PUMS) for the New York metropolitan region. The PUMS data comprise a 5 percent sample of the region's population, drawn from the 1990 Census of Population. Since the research focuses on mode of transportation for commuting, we only included employed workers in the sample, yielding a sample size of over 400,000. The PUMS data provide information for individuals about household and individual characteristics including income, marital status, presence of children, occupation, industry of employment, commuting time, and transportation mode. The data have been widely used in studies of women's commuting patterns[20, 21]. A detailed description of the PUMS data for New York is provided in McLafferty and Preston[4].

Although the PUMS data includes information on more than 10 transportation modes, to simplify the analysis we grouped the modes into broad categories. The New York region is crisscrossed by mass transit, including the dense subway and bus networks in New York City, and the far-reaching light rail networks that extend into the New York, New Jersey and Connecticut suburbs. These modes were combined into a single "mass transit" category. Commuting by car and van were treated as a separate "car" category, with drivers and passengers combined. Finally, the modes, walking to work and working at home were grouped together since they represent highly localized work trips. One shortcoming of the PUMS data is that people are asked only about their primary transportation mode; multi-modal trips are not recorded. Therefore our findings only pertain to the principal mode of transportation for individual commuting.

As in all census information, the identification of racial/ethnic groups is problematic. Race typically refers to biological differences of sociocultural significance to a society that "racializes" those differences. Ethnicity refers to cultural differences reflecting religion, national origin, and language. The race variable in the census reports an individual's self identification as a member of a racial group. We used this variable to identify the African-American and white populations. We defined as Latino those people who identified their race as "Spanish," and those persons regardless of race who stated they were of Hispanic origin[4].

The study area consists of the 24 counties that make up the New York Consolidated Metropolitan Statistical Area. It is divided into two parts, the center and the suburbs, that have distinct population patterns and employment trends. The **center** includes Manhattan and the other urbanized counties of New York City and the nearby urban counties in New Jersey, including the cities of Newark and Jersey City. These counties in general have high population densities, high reliance on mass transit, and generally low median household income levels. In contrast, the **suburbs** include all counties outside the urban core. In this group are older suburban counties like Westchester, NY, and more distant ex-urban counties in New York, New Jersey, and Connecticut. The suburban counties typically have moderate population densities, low rates of mass transit use, and relatively high median incomes. However, there is considerable diversity among suburban counties, particularly between the older, high-income suburbs near the center where population and employment are stable or declining, and the ex-urban counties that have grown rapidly in employment and population in the last decade.

RESULTS

Table 1 shows race and gender differences in transportation mode for residents of central and suburban areas. Among those living in the urbanized center of the New York region, women are consistently less likely than men to commute by car. Just 47% of white women in the center travel by car, compared to 56% of white men. Gender differences are even more pronounced for African-Americans and Latinos. Whereas close to half of African-American and Latino men use a car in traveling to work, only one-third of their female counterparts do so. By comparison, women of all race/ethnicity rely much more on mass transit and are slightly more likely to walk or work at home than are men.

Layered upon these gender disparities are significant racial differences in mode use. Our findings confirm the results of other studies which show African-American's and Latino's dependence on mass transit[2, 20]. Overall, nearly half the minority men and women in the center use mass transit for commuting, compared to only 33 percent of white workers. The propensity to walk to work or work at home also varies by race, with African-American men and women being the least likely to utilize these transit options. This may reflect the lack of local job opportunities in some African-American neighborhoods, a factor emphasized in the recent literature on the spatial mismatch hypothesis[22, 23].

Gender and race differences are more muted in the suburbs due to the overwhelming reliance on the automobile (Table 1). Over 70 percent of men and women of all race and ethnicity commute by car in the suburbs. However, as in the center, minority men and women are more reliant on mass transit, and less on the car, than their white counterparts. Interestingly, among white workers in the suburbs the gender differential is reversed, with a slightly higher percentage of women commuting by car than men. This is consistent with Rosenbloom's finding that for women, commuting by car offers the flexibility needed to link trips for domestic purposes with their work trips[2]. In contrast, our results indicate that African-American and Latina women in the suburbs are less able to make these mode choice decisions. Minority women are the least likely of any suburban gender/race group to commute by car.

Table 1
Mode by Gender and Race/Ethnicity (percentages)[1]

Center	Car	Mass Transit	Walk/Home	N
White Men	56.0	31.3	10.6	41222
White Women	46.5	36.3	14.8	34958
Black Men	47.9	45.0	5.9	10995
Black Women	33.5	58.3	6.8	14567
Latino Men	44.7	43.1	10.2	14046
Latina Women	29.5	55.5	13.3	10784
Suburb	**Car**	**Mass Transit**	**Walk/Home**	**N**
White Men	84.8	10.2	4.2	102478
White Women	86.9	6.7	5.8	81802
Black Men	79.2	13.2	6.0	4756
Black Women	71.4	18.1	7.7	5675
Latino Men	78.8	11.8	7.1	5633
Latina Women	75.8	13.4	8.9	4317

As expected, the fraction of suburban residents who work at home or walk to work is much less than that in the center. Just 3% of white suburban women walk to work and a similar percentage work at home. Black and Latina women in the suburbs have a slightly greater tendency to walk to work (5%) but still the rates are low. The low-density suburban landscape, in which residential and nonresidential land uses are highly segregated, does not facilitate localized work trips.

Although well-known gender disparities are apparent in our data, these results also highlight the diversity of women's experiences. Minority women are much more dependent on mass transit than are white women and men of any race or ethnic group. The following sections explore this diversity and analyze some of the reasons for it. To simplify the presentation, we only discuss results for women; though comparisons with men are mentioned when appropriate.

Job locations have important effects on gender/race differences in mode of transportation. Table 2 shows modal splits for four types of commuting flows that represent various combinations of residential location (center/suburb) and job location (center/suburb). All women use mass transit primarily for commuting trips within the center and for trips from the suburbs to the center. This is especially true for white women—less than 10% of white women in the two other commuting flow categories (i.e. intra-suburbs and center-to-suburb) rely on mass transit. In contrast, a comparatively large percentage of black women (30%) use mass transit for reverse commuting trips and for commuting within the suburbs (12%). Similar percentages exist for Latina women (28% and 8% respectively). Thus, minority women rely more on mass transit for the kinds of trips for which it is not well designed—reverse commuting trips from the center to the suburbs and intra-suburban trips. The PUMS data reveal that minority women who rely on mass transit for these trips have long commuting times and lower-than-average wages. For these women, the long times spent on transit systems ill-designed to accommodate their commuting trips garner little economic reward.

Table 2
Transportation Mode by Race/Ethnicity and Commuting Flow
(percentages)

Flow Type	Race/Ethnicity	Car	Mass Transit	Walk/Home
Center-Center	White	41.4	39.6	16.3
	Black	30.1	61.1	7.3
	Latina	26.2	57.8	14.2
Center-Suburb	White	87.7	9.1	2.4
	Black	67.1	29.9	1.6
	Latina	68.1	27.9	3.0
Suburb-Suburb	White	91.3	1.4	6.7
	Black	75.2	12.2	9.3
	Latina	79.2	8.0	10.5
Suburb-Center	White	64.2	35.1	0.3
	Black	53.8	45.0	0.4
	Latina	60.0	38.1	0.9

It is well known that licensing and access to an automobile have significant effects on women's mode choice decisions. Our data set does not include licensing information, but it does contain data on car availability in the woman's household. Table 3 shows these data disaggregated by race/ethnicity and place of residence. Significant racial differences in car availability are evident in the center. Whereas almost 75% of white women in the center have access to an automobile, only 60% of black women and 58% of Latina women have access to a car. Car availability is much more widespread in the suburbs for all race groups. Yet while 98% of white women live in a household with at least one car, only 87% of black women and 92% of Hispanic women do so. Thus, in both central and suburban contexts, minority women have less access to cars than do white women, although the disparity is larger at the center of the region.

Table 3
Percentage of Women with Access to a Car by Race/ Ethnicity and Location

	Center	Suburbs
White	**73.8%**	**97.9%**
African-American	60.3%	87.0%
Latina	58.1%	91.8%

Income is also a significant determinant of mode choice, affecting car ownership and the affordability of different modes. Like many studies, ours finds significant variation in women's mode use with income[7, 11]. In both the center and suburbs, women with low household incomes are least likely to commute by car (Table 4). Latina, and especially African-American, low-income women are highly dependent on mass transit. In addition, low income women of all ethnic/racial backgrounds have a marked propensity to walk to work or work at home. Even in suburban areas, almost one-sixth of all low income women walk or work at home. Increases in household income bring about sharp increases in automobile ownership and use. Typically as income rises, people substitute car use for walking

and mass transit[7]. Thus, we find a general decline in transit use with income for women of all races in both contexts. In the center, two-thirds of minority women in low-income households use mass transit, and this drops to one-half for the highest income households. Transit use is substantially lower in the suburbs and among white women, yet similar trends are apparent. The only exception is for white women in the suburbs. White women in high-income households are most reliant on transit (7.4%, compared to 5.6% for middle- and 5.7% for low-income white women. These high-income white suburban women mainly use mass transit to commute to high wage jobs in Manhattan. Given these women's high access to automobiles, their decisions to use transit appear to be based on choice more than necessity. By comparison, minority suburban women who rely on mass transit tend to have low incomes and to use transit for intra-suburban work trips.

Table 4
Mode by Household Income and Race/Ethnicity (percentages)

Center

Income	**Race/Ethnicity**	**Car**	**Mass Transit**	**Walk/Home**
< $20000	White	32.1	41.3	23.9
	Black	20.1	67.1	11.3
	Latina	16.5	63.5	18.5
$20000-50000	White	42.3	41.1	14.9
	Black	31.2	61.0	6.4
	Latina	28.6	57.5	12.3
> $50000	White	52.8	33.1	11.5
	Black	42.9	50.8	5.0
	Latina	38.5	50.0	9.7

Suburbs

Income	**Race/Ethnicity**	**Car**	**Mass Transit**	**Walk/Home**
< $20000	White	79.4	5.7	13.0
	Black	52.8	24.9	15.0
	Latina	62.9	15.5	16.2
$20000-50000	White	88.3	5.6	5.4
	Black	73.1	17.9	5.9
	Latina	77.0	12.7	8.4
> $50000	White	87.9	7.4	4.2
	Black	76.0	16.7	5.7
	Latina	78.7	12.6	7.4

Marital status and the presence of children also influence differences among women in transportation mode. For African-American and Latina women, marriage has significant effects on mode choice (Tables 5a,b). In the center and suburbs, married minority women are much more likely to commute by car than their single counterparts, regardless of the presence of children. The percentage of married African-American and Latina women who travel to work by car is 15 points higher than that for unmarried women. Economic factors are critically important in explaining these disparities based on marital status. The results of logistic regression models (not shown here) indicate that marriage leads to higher household incomes which enable car ownership and use. In fact, when we control for household income and car ownership, the effect of marital status on car use disappears for minority women.

Table 5a
Mode by Race, Marital Status and Presence of Children: Center
(percentages)

	Race/Ethnicity	Car	Mass Transit	Walk/Home
Married, Kids	White	60.4	22.0	15.7
	Black	41.3	52.1	5.6
	Latina	37.7	47.4	13.4
Married, No Kids	White	52.2	32.4	14.3
	Black	42.9	49.6	6.3
	Latina	33.9	51.8	12.7
Single, Kids	White	55.1	27.9	15.3
	Black	29.0	62.2	7.5
	Latina	25.4	57.1	15.8
Single, No Kids	White	37.1	45.2	14.7
	Black	29.0	62.1	7.2
	Latina	23.8	62.5	11.8

Table 5b
Mode by Race, Marital Status and Presence of Children: Suburbs
(percentages)

	Race/Ethnicity	Car	Mass Transit	Walk/Home
Married, Kids	White	89.0	3.7	7.0
	Black	78.2	14.1	5.9
	Latina	82.2	8.2	7.5
Married, No Kids	White	87.4	6.8	5.5
	Black	80.0	14.0	4.7
	Latina	77.6	14.3	6.5
Single, Kids	White	86.2	5.0	7.6
	Black	66.4	19.9	10.2
	Latina	68.7	16.6	12.1
Single, No Kids	White	85.8	5.0	7.6
	Black	65.5	21.7	8.9
	Latina	70.9	16.9	10.1

[1] In all tables, percentages do not sum to 100 because “other” modes (e.g. taxi, motorcycle) were omitted

In contrast, for white women, the presence of children has a much greater impact on car use than marital status. White women with children are more dependent on the car for commuting, irrespective of marital status. This is particularly true in the center where car use varies significantly and mass transit is widely available (Table 5a); however, similar patterns are evident in the suburbs, although the disparity is less (Table 5b). These results for white women confirm findings from other American cities which show that women use the car because of its flexibility for transporting children to school, activities, and child care and for performing other domestic chores[2, 15]. This is true for both single and married white mothers in our sample, suggesting the widespread availability of cars for white women independent of marital status. On the other hand, for African-American and Latina women, economic constraints, as reflected in marital status, have much more powerful impacts on mode choice decisions.

WOMEN WHO WALK AND WORK AT HOME

Although we have emphasized car and mass transit use, our findings show that walking to work and working at home are important transit options for women of all races, especially for low-income women and women living in the center. What are the characteristics of women with these localized work trips? For all race/ethnic groups in both the center and suburbs, single mothers make up a larger percentage of women who walk and work at home than of women who use other modes. Interestingly, the disparity is greatest in the suburbs. For example, for African-American women in the suburbs 30% of those in the walk/home category are single mothers, compared to 23% of those using other modes. For Latinas in the suburbs, the comparable figures are 27% and 18%. Although the numbers are small, they illustrate the dependence of suburban single mothers on localized jobs.

Women who walk and work at home also occupy distinct labor market niches, mainly in consumer services. Between 60 and 80% of women who walk or work at home are employed in this sector, primarily in retailing, personal services, and childcare. Beyond this concentration in consumer services, labor market segmentation differs by race/ethnicity. For white women, 20% of those who walk or work at home are employed in producer services. In the center of the New York region, gentrification has opened up residential areas within walking distance of producer service jobs for many white women. For suburban white women in the walk/home category, those who work in producer services typically work at home. Apart from their concentration in consumer services, minority women who walk or work at home hold jobs in different industries from white women. In the center, over 30% of Latina women who use this mode of transportation work in manufacturing (22% in the suburbs). This suggests the existence of highly localized manufacturing complexes that rely on Hispanic female labor—the spatial expression of gendered, ethnic, "niche," labor market segments[24].

For African-American women there is little evidence of these highly localized labor market segments beyond the consumer services sector. Eighty percent of African-American women who walk or work at home are employed in consumer services. This, coupled with the low percentages of African-American women in the walk/home category, suggests the relative absence of employment opportunities in African-American residential areas and the uniformity of the few job opportunities that exist. Our data offers little evidence for black women of the kinds localized, segmented job opportunities that exist for white and Latina women in the center. Many writers have commented on the absence of employment opportunities in the highly segregated communities where many black Americans live[22, 23, 25].

CONCLUSIONS

Our analysis of 1990 PUMS data reveals significant race and ethnic differences in women's access to and use of various transportation modes for commuting to work. In the center and suburbs of the New York region, African-American and Latina women are more reliant on mass transit and less reliant on the automobile for their worktrips. Low-income and unmarried minority women are especially dependent on mass transit, largely because financial constraints inhibit car ownership and use. These differences are apparent for all types of commuting flows, particularly intra-suburban trips and reverse commuting trips—trips which most mass transit systems are ill-designed to accommodate. For African-American women in the center, walking to work and working at home are less significant transportation options than for Latina and white women. A smaller fraction of Black women walk to work and work at home, and this disparity persists after controlling for household income and domestic responsibilities.

Minority women's reliance on mass transit raises several important policy issues. In urban labor markets, mass transit has contradictory roles as both a catalyst for employment and a barrier to employment for women. On the one hand, mass transit opens up a wide geographical range of employment opportunities, giving minority women access to important employment nodes in Manhattan, central Brooklyn, Newark, and elsewhere. On the other hand, mass transit entails long commuting times. Our previous work shows that transit is the most important determinant of minority women's long commute times and that ceteris paribus, a trip by mass transit takes 20 to 40 minutes longer each way than a similar trip by car[4]. Furthermore, trip chaining for domestic purposes is typically more difficult via mass transit. Thus, the need to rely on mass transit can inhibit employment, especially for low-income women who lack the financial resources needed to organize their lives to accommodate long commuting trips. Wealthier women can afford services like full-day and in-home child care or domestic help, that ease the burden of household responsibilities. How many low-income women are kept out of the labor market by the absence of these services?

Despite the advantages of car travel for women, we do not advocate car-oriented transit policies for the densely populated New York region, because of the social and environmental consequences of auto dependence. We support the continued development and improvement of mass transit as the primary means of addressing the region's transportation needs. However, as this research indicates, transit policies and problems cannot be isolated from other social and economic development policies. For women in particular, transportation and social structures are deeply intertwined. Improving women's access to paid employment calls for integrative policies that recognize the links between transportation, social and retail services, and employment opportunities. Social service policies that support the use of mass transit by low-income women are especially needed. These include providing daycare and after school programs in low-income neighborhoods and encouraging essential health and retail services to locate near mass transit hubs. Such policies are essential for improving access to employment for many African-American and Latina women in central areas.

Our findings also point to the shortage of jobs within walking distance for African-American women in the center of the New York region. Although walking to work and working at home are less visible transit options than driving and using mass transit, our findings show that they are important for low-income women, single women with children, and women who work part-time. They also provide an entry into the labor market for women who need flexible working conditions and employment close to home. The relative lack of such opportunities in African-American residential areas in the center creates obvious barriers to employment and contributes to many other social and economic

problems [25, 20]. Finding and keeping paid employment becomes much more difficult when local job opportunities are absent[8].

Addressing these problems calls for policies to stimulate local employment and create a more diverse set of appropriate job opportunities in inner-city African-American neighborhoods. Policies that provide low-interest loans to new businesses, encourage local entrepreneurship, and improve social/physical infrastructure have important potential benefits. The recently initiated "empowerment zones" policies are intended to address some of these issues by providing government funding for new businesses and community development. In future evaluations of these policies it is critically important to assess the impacts on minority women's employment, impacts that may well differ from those on minority men's employment.

In summary, our analysis demonstrates the urgent need for research and policy development that is sensitive to multiple sources of difference, both social and geographical. Our findings reflect the unique social and spatial structure of the New York urban region, so their implications for other places may well be limited. Additional research is needed to identify and explore how contextual factors influence women's transportation needs. Recognizing the diversity of women's experiences and the multiple layers of difference is an essential foundation for effective transportation policy-making and planning.

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