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Research in

SOCIAL, ECONOMIC + ENVIRONMENTAL EQUITY

Are we there yet?

RACE, POVERTY AND EQUITY IN NEIGHBORHOOD TRANSPORTATION

BOSTON COLLEGE SCHOOL OF SOCIAL WORK

RISE^3

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The Rise^3 mission is to:

"REFRAME CHALLENGES AND RESOLVE PROBLEMS AROUND SOCIAL, ECONOMIC AND ENVIRONMENTAL EQUITY IN WAYS THAT IMPACT LOCAL OUTCOMES WHILE GENERATING KNOWLEDGE AND POLICY IDEAS OF NATIONAL AND GLOBAL SIGNIFICANCE."

The Boston College School of Social Work Research in Social, Economic and Environmental Equity (RISE^3). RISE^3 brings together researchers from BC and beyond with practitioners, policymakers and those experiencing inequities to better understand the root causes of social, economic and environmental equity, identify the most effective solutions and demonstrate how to implement them in ways that change lives for the better.

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INTRODUCTION

We rely on some mode of transportation, usually multiple forms, to get to work, school, childcare, recreation, health checkups or treatments, civic activities, and social engagements. The automobile is the most common mode and over time it has helped shape the landscape of U.S. cities and towns with a massive infrastructure of roads, highways, bridges, and parking lots. About 122.6 million American workers, for example, commute to work by car, either alone or in a carpool.[1] Affordable, accessible, and quality transportation can allow people to take advantage of opportunities such as moving to a safer neighborhood with better schools despite its distance from work or friends. Others may choose to take a lower-paying job if it is close to public transportation that makes it easy to get to and from home.

While transportation is an essential feature of our daily lives, we often take it for granted. We tend to assume that the access to most transportation options is equally available across American society. This brief unpacks this assumption and assesses how essential features of transportation such as time, cost, and distance are distributed among groups in the U.S. We pay particular attention to how transportation provides advantages to some and constrains others, especially across race/ethnicity, income and, where possible, the different combinations of racial/ethnic and income groups.

COMMUTING TIME

People with busy schedules know that time is a valuable resource that can never be recovered when spent. Commuting to work, with exceptions, can be a consuming part of our daily routines because it impedes us from our work, interactions with family and friends, and other social activities. Flexibility in time is the freedom to make choices about how we spend our days and our lives.

Data from the American Time Use Survey[2] in 2015 suggests that, among people that were employed, they commuted an average of 46 minutes each workday to get to/from their jobs. The working poor spent less time (39 minutes) commuting to work compared to higher income workers (47 minutes). However, there were no differences in average commute time among racial/ethnic groups (Table 1).

We combined race/ethnicity and income to examine whether there is a joint association. In fact, Figure 1 specifies how poverty and race/ethnicity are associated with commute time. Among the working poor, Hispanic and African American workers had higher commute times (40 minutes and 47 minutes, respectively) than white workers (31 minutes). In contrast, there were no differences in commute time for higher income workers across racial/ethnic groups.

The data suggest two things. First, your income level affects how long it takes to get to work. Lower-income people spend less time commuting while higher-income people spend more time. Second, race/ethnicity impacts how long it takes to get to work primarily if you are low-income. Among the working poor, if you are white, you spend less time transporting yourself, and if you are Hispanic or African American, you spend more time. In contrast, commute time is similar across racial/ethnic groups from higher-income households.

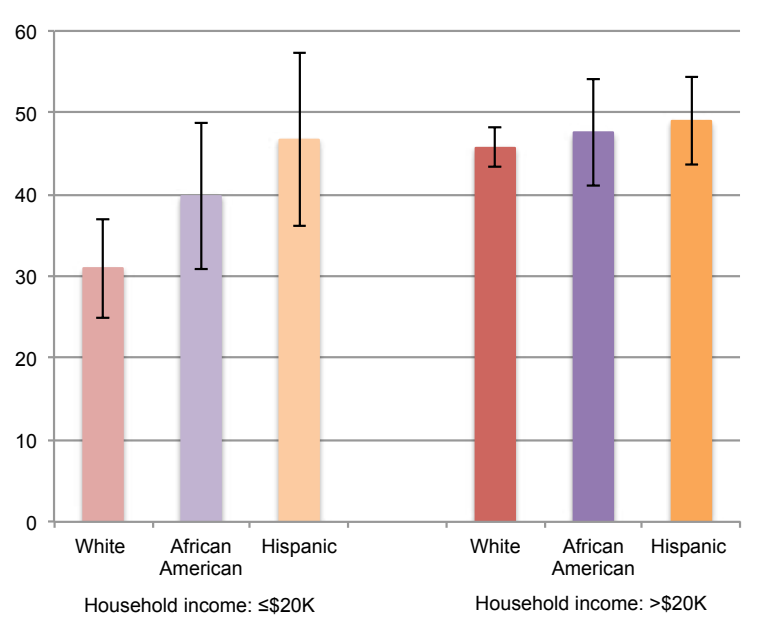

FIGURE 1. Mean commuting time to work by poverty and race/ethnicity (among those who work and commute >1 minute: N=7538): American Time Use Survey, 2015

* While there was a significant difference in mean commuting time by racial/ethnic group among lower income households (p=.03), there were no differences among higher income households (p=0.5)

TRANSPORTATION SPENDING

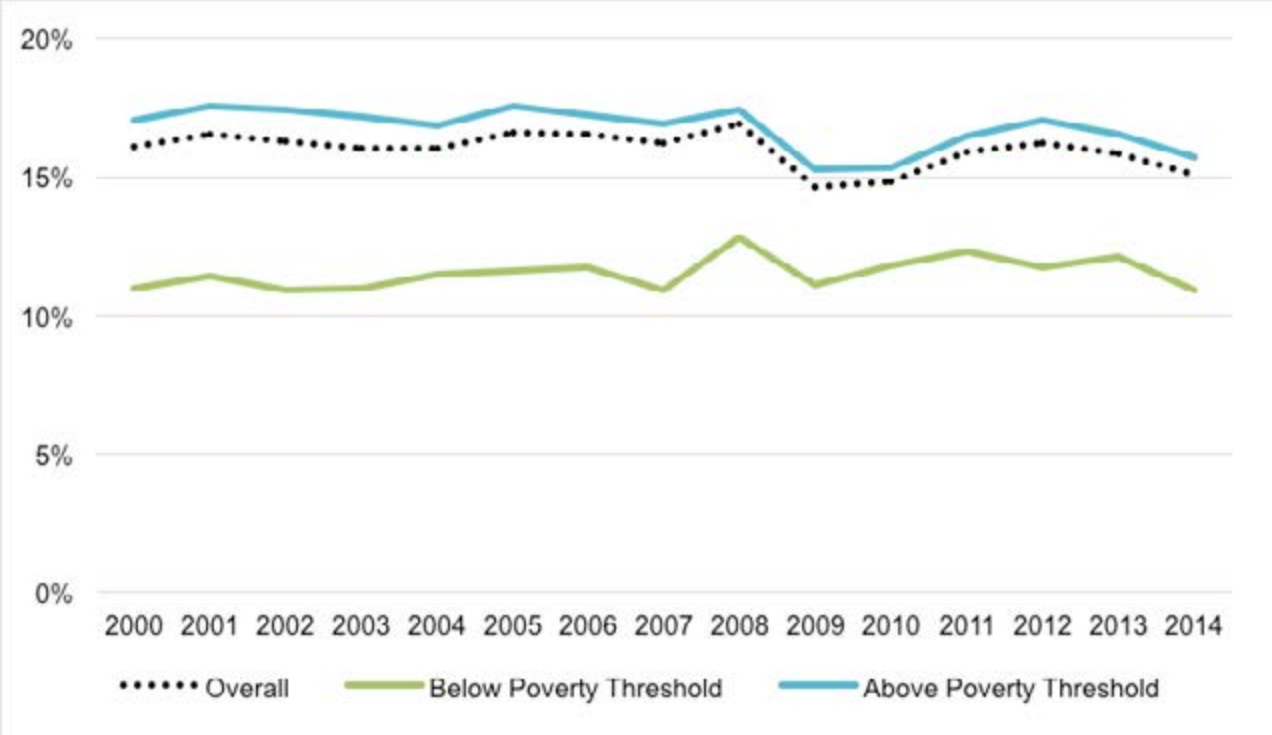

FIGURE 2. Transportation expenditure as a proportion of household budget by poverty (N=139,278): Consumer Expenditure Survey, 2000-2014

While time may be money, money itself is important too. A dollar spent on transportation is unavailable for other family needs such as schooling, rents or mortgages, insurance, food, health care, leisure, and clothes. We investigated whether poverty and race affected both the amount and proportion of income spent on transportation in America.

Using the Consumer Expenditure Survey,[3] we looked at the percentage of household income spent on transportation for U.S. families from 2000 through 2014, by poverty (Figure 2) and race/ethnicity (Figure 3). Spending on transportation was remarkably consistent over that fifteen-year period. The one exception was a spending increase in 2008, which is likely a result of the recession that hit that year. On average about 16% of household expenditures (or $8,512) were spent on transportation (Table 2). Low-income families spent a much smaller proportion of their budgets on transportation (12% or $1,547) compared to higher income households (17% or $9,696). On the other hand, they also tended to experience a sharper increase in the money spent on transportation in 2008. This set of findings suggests that their transportation needs or options were less elastic--they had fewer ways to reduce the pressure on spending that the recession caused than other families.

TRANSPORTATION SPENDING

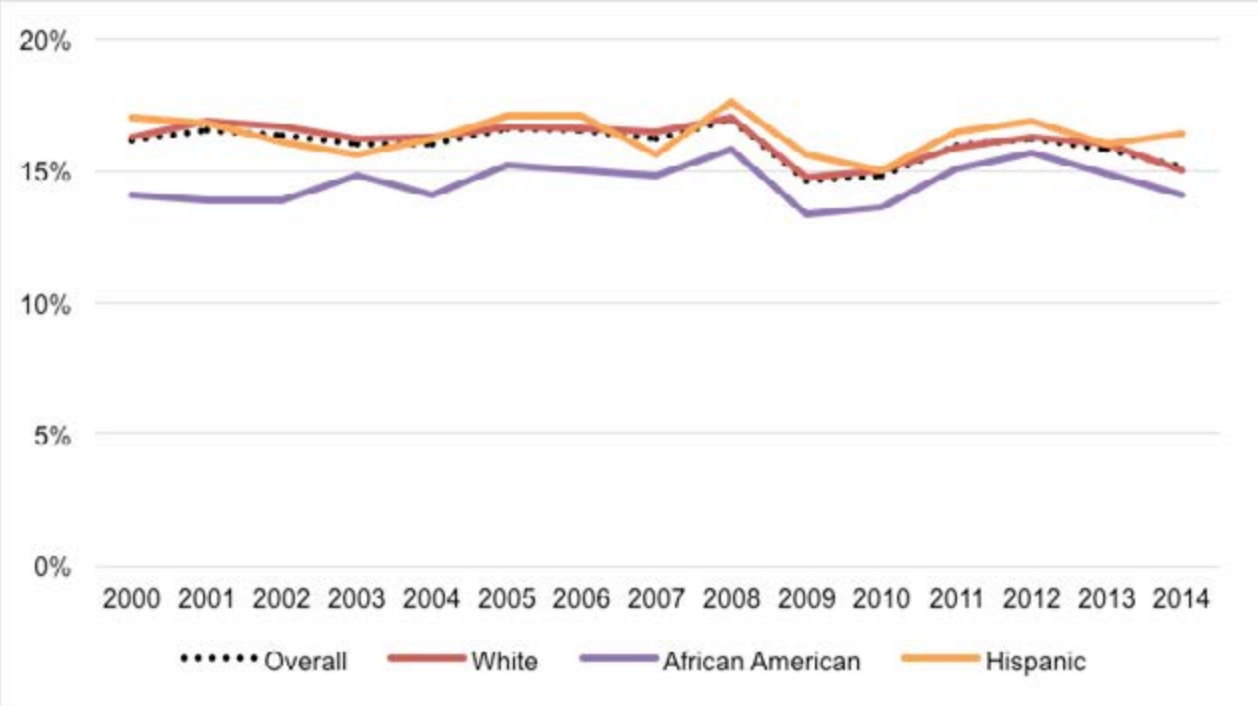

Figure 3. Transportation expenditure as a proportion of household budget by race/ethnicity (N=139,278): Consumer Expenditure Survey, 2000-2014

Race also affected transportation spending. On average, African Americans, Hispanics, and whites all spent a similar proportion of their budget on transportation (15%, 16%, and 16%, respectively) (Figure 3). However, the absolute amount households spent on transportation varied. On average, African Americans ($6,507) had the lowest expenditure on transportation, followed by Hispanics ($7,913) and whites ($8,955).

TRANSPORTATION SPENDING

We also were able to examine the combined categories of race/ethnicity and poverty. We asked, "Was the proportion of spending different for a particular racial/ethnic group in poverty than it was for that racial/ethnic group as a whole?" In short, yes. The intersection of race and poverty mattered. Considering both race/ethnicity and poverty, Figure 4 exhibits different patterns than assessing one without the other. It is apparent that poverty status clearly demarcates spending on transportation. Low-income families from all racial/ethnic groups spent a substantially smaller proportion of their household budgets on transportation than higher income families. Among higher income families, Hispanics tended to spend a higher portion of their budget on transportation, while African Americans and whites spent similar amounts with some fluctuations over time. For families in poverty, African Americans consistently spent a smaller proportion of their budget on transportation than whites and Hispanics, who tended to show a similar proportion of transportation spending.

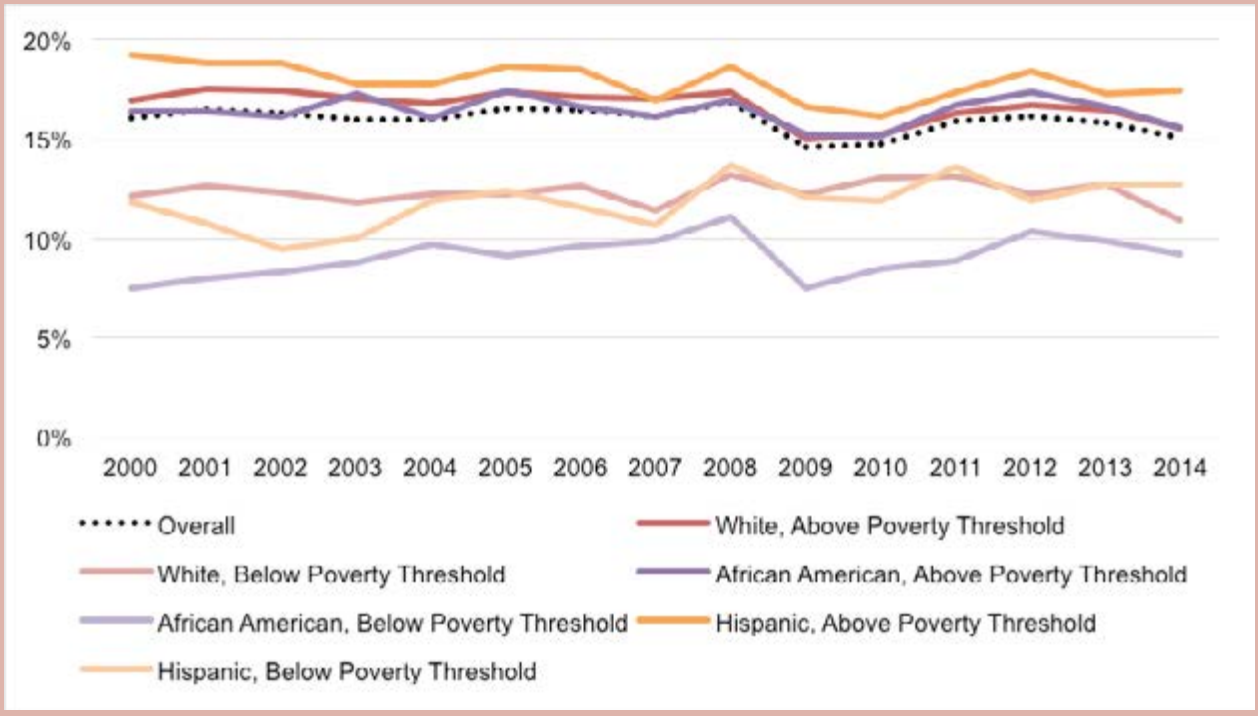

Figure 4. Transportation expenditure as a proportion of household budget by race/ethnicity and poverty (N=139,278): Consumer Expenditure Survey, 2000-2014

PUBLIC TRANSPORTATION

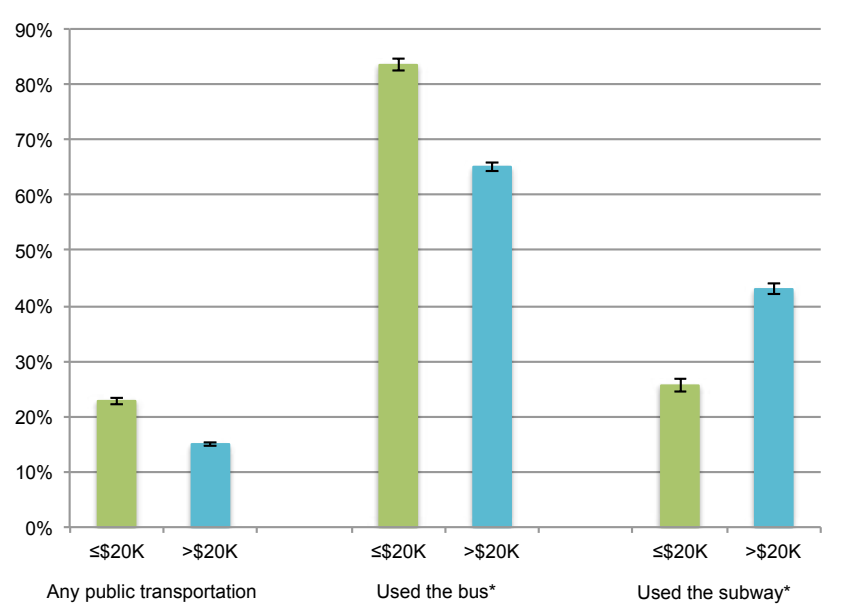

Figure 5. Proportion of households that use public transportation by poverty (N=27,696): American Housing Survey, 2013

*Among those households that used any public transportation (N=6,177)

While the car is the most frequently used mode of transportation, a substantial number of Americans use public transportation. Approximately, 7.4 million workers take some form of public transportation, such as the subway, bus, or rail.[1] Using the American Housing Survey[4] in 2013, we looked at which households used public transportation. Twenty-three percent of low-income families had at least one household member who used some form of public transportation compared to 15% percent of higher income families (Figure 5). However among those households that used public transportation, a substantially higher percentage of low-income families used the bus (84%) compared to the subway (26%). In contrast, among higher income families, 65% used the bus compared to 43% who used the subway. Thus, use of the bus is correlated with poverty.

The data also demonstrated that use of public transportation in general was associated with race/ethnicity. Among racial/ethnic groups, whites (13%) were less likely to use public transportation than African Americans (30%) and Hispanics (25%).

PUBLIC TRANSPORTATION

(Figure 6) In addition, the racial/ethnic differences in public transportation were even more striking when it came to use of the bus in particular. Among those households that used public transportation, Hispanics (85%) and African Americans (84%) were more likely to use the bus than whites (59%). In contrast, whites (40%) were more likely to use the subway than African Americans (37%) and Hispanics (35%).

To summarize, poverty status significantly affects whether one uses public transportation. Further, it substantially affects the mode of public transportation one uses – specifically, buses. Race also affects both. You are more likely to use public transportation in general if you are African American or Hispanic and, if you use public transportation, disproportionately more likely to use the bus. Due to insufficient sample sizes, we were not able to examine whether the likelihood of using the bus changes when both race and income are simultaneously considered

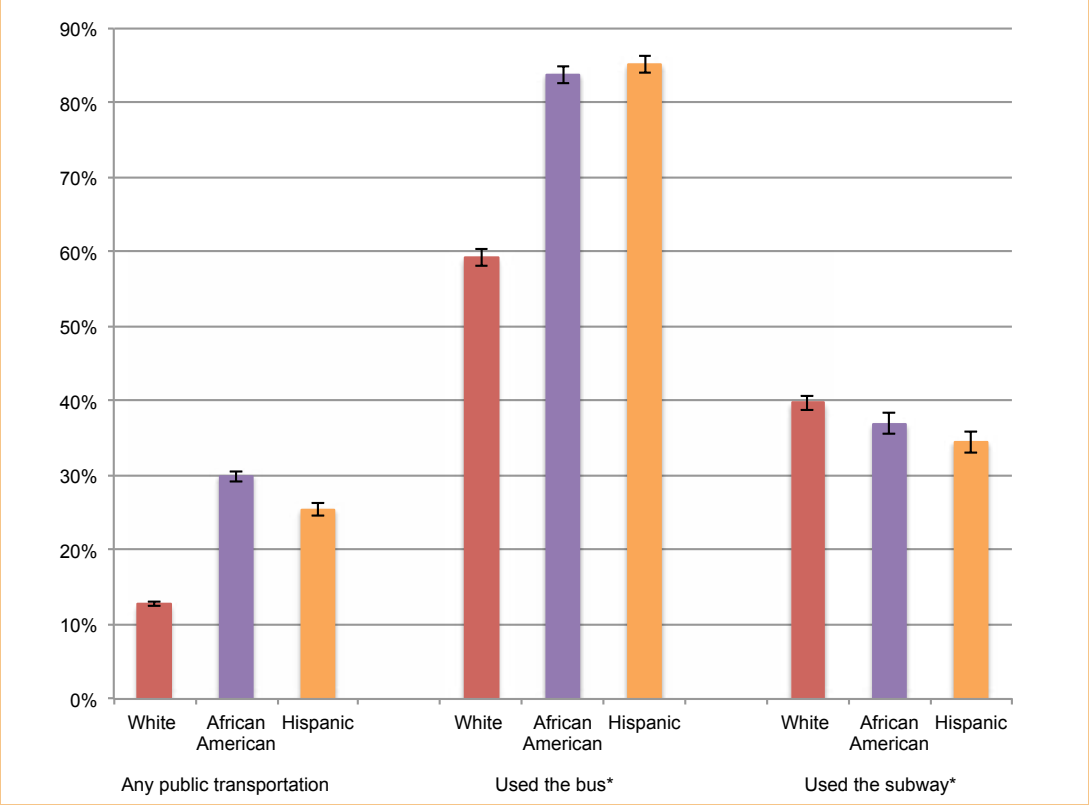

Figure 6. Proportion of households that use public transportation by race/ethnicity (N=27,696): American Housing Survey, 2013

*Among those households that used any public transportation (N=6,177)

PUBLIC TRANSPORTATION

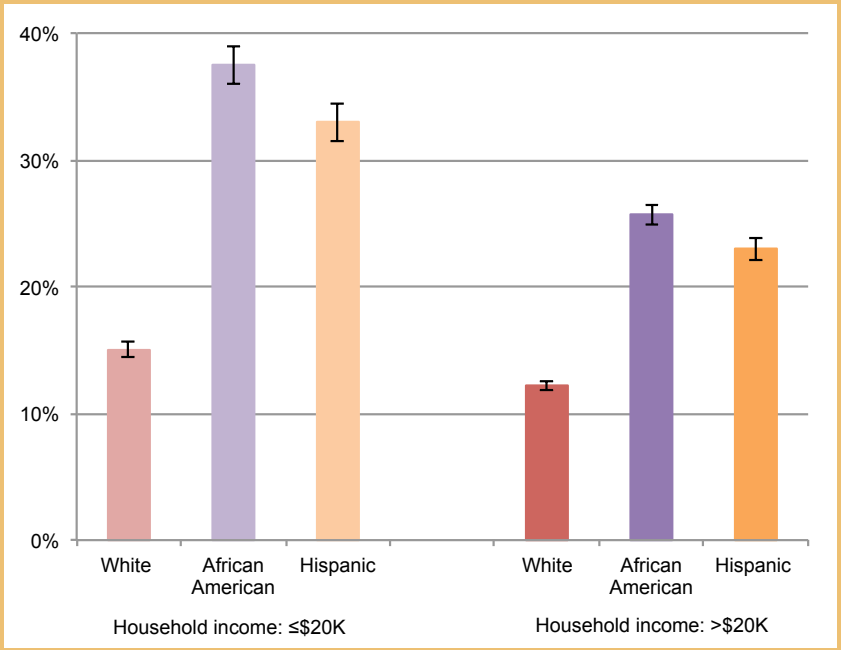

Figure 7. Proportion of households that use any public transportation by race/ethnicity and poverty (N=27,696): American Housing Survey, 2013

*Significant differences in use of any public transportation by race/ethnicity for both lower and higher income households ($p<0.001$)

We were only able to examine use of any public transportation by race/ethnicity and poverty due to the small sample sizes for the specific types of transportation used. Figure 7 illustrates that, overall, lower income families were more likely to use public transportation than higher income families. However, for both lower and higher income households, African Americans and Hispanics were more likely to use public transportation than whites.

CONCLUSIONS

It is apparent from these analyses that poverty and race/ethnicity are both important in teasing apart how people make use of transportation options. It is also clear that the combination of poverty and race/ethnicity provides a compelling and more nuanced narrative about how people make decisions about transportation particularly when it comes to time and money. People in poverty spend less time commuting to work and less money on transportation than people with higher incomes. Given their limited financial resources, the low income may decide to live closer to their workplaces and spend a larger share of their income on other necessities such as housing/utilities (Figure 8) and food (Figure 9). This may be particularly true for African Americans from low-income families. In addition, race/ethnicity and poverty each affect a worker's likely mode of transportation. You are more likely to take the bus if you are in poverty, and if you are a person of color.

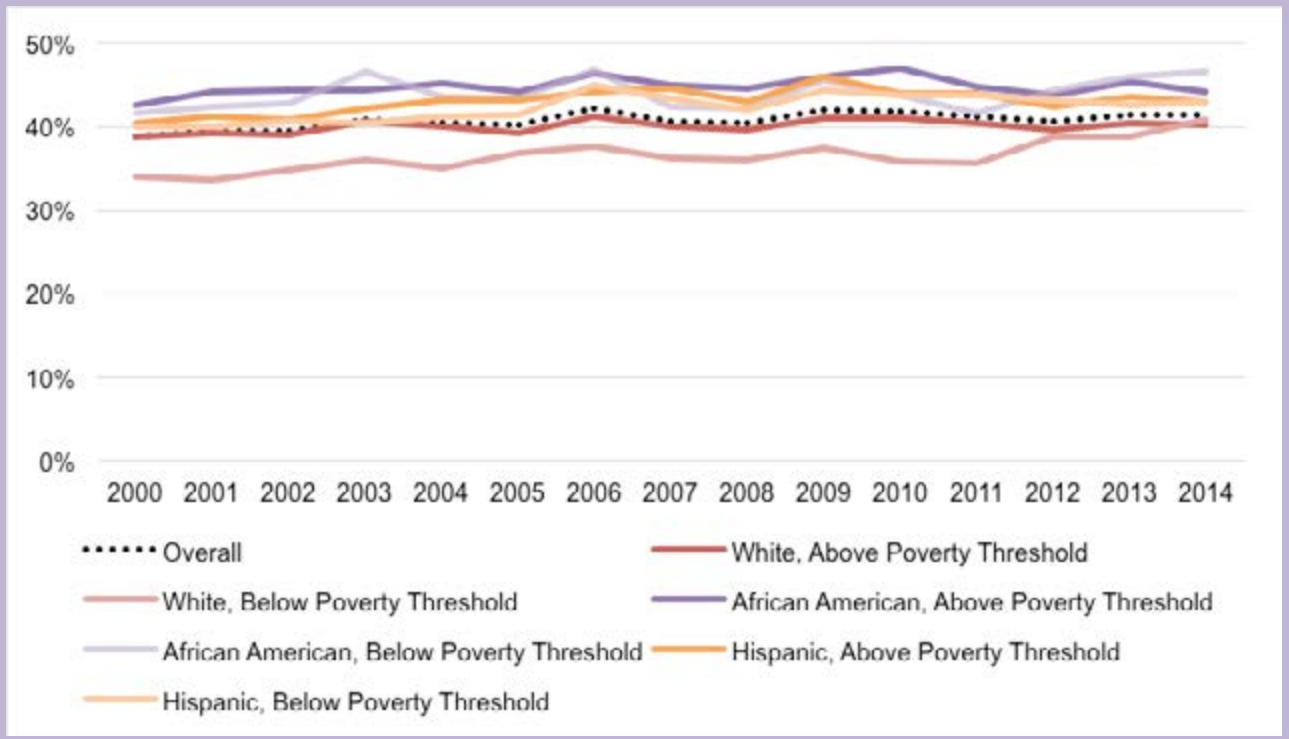

Figure 8. Housing and utility expenditure as proportion of household budget by race/ethnicity and poverty (N=139,278): Consumer Expenditure Survey, 2000-2014

CONCLUSIONS

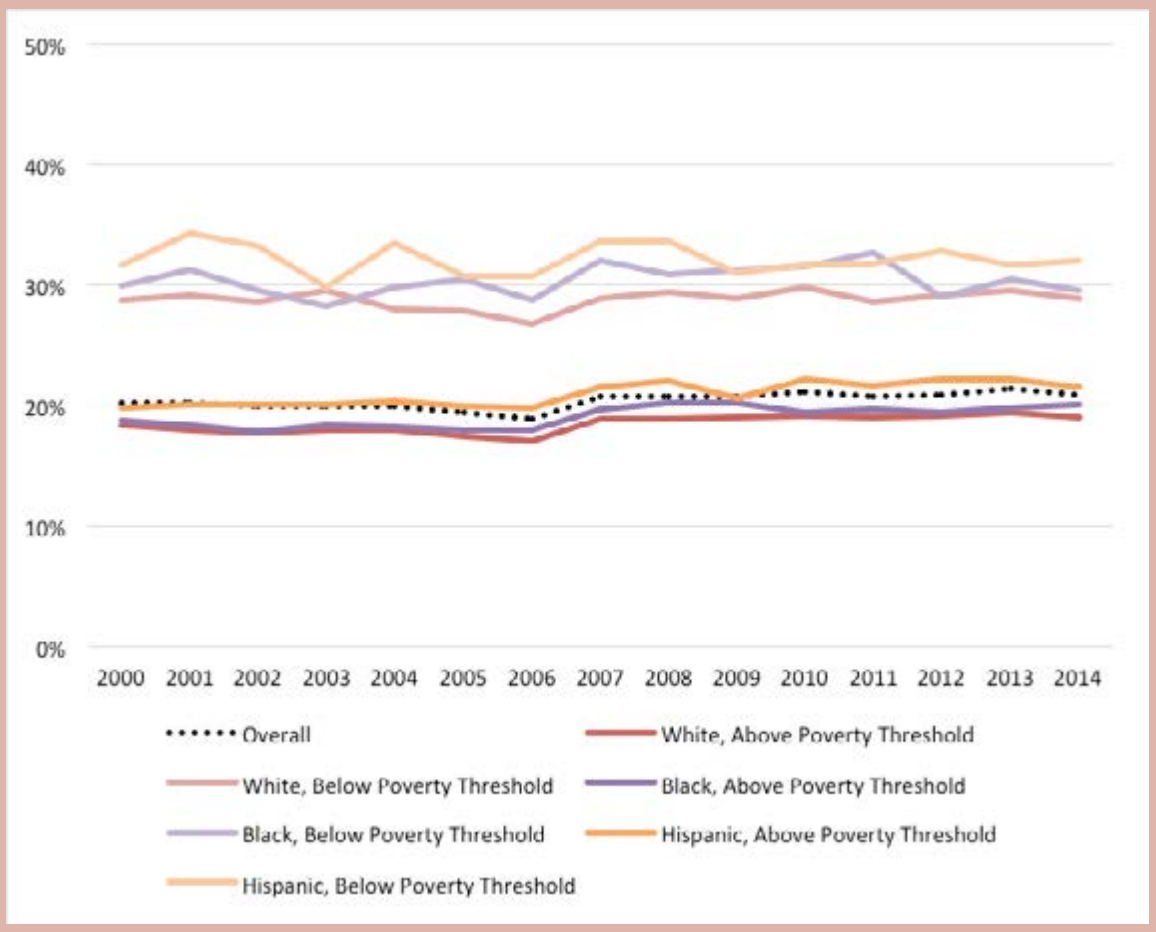

Figure 9. Food expenditure as proportion of household budget by race/ethnicity and poverty (N=139,278): Consumer Expenditure Survey, 2000-2014

In sum, decisions about the type, time spent on, and money used for transportation affect flexibility and quality of life, factors involved in what is sometimes referred to as "self-determination."[7] Self-determination refers to an individual's or family's capacity to address and meet their own needs, using approaches and resources of their choosing. Discrimination, however, against certain racial and ethnic groups can limit options for housing, schools, jobs, and childcare – all of which may be destination points in our daily place map. Accordingly, people encountering discriminatory behavior may have less than the optimal circumstances in which to make transportation decisions. Public policies around transportation can better support self-determination if they take into account the way these race/ethnicity and income affect the realities of transportation in peoples' everyday lives.

APPENDIX A

Table 1. Mean commuting time to work by poverty and race/ethnicity (among those who work and commute >1 minute: N=7,538): American Time Use Survey, 2015

	N	%[a] in dataset	Time[a], minutes	p-value[b]
Poverty – annual household income				0.01
≤ $20K	716	9.5%	38.8	
> $20	6822	90.5%	46.6	
Race/ethnicity				0.4
White	5110	67.8%	44.9	
African American	857	11.4%	46.2	
Hispanic	1571	20.8%	48.7	
Total	7538	100%	45.9	

[a] Weighted estimates

[b] Overall difference between groups

Table 2. Mean household expenditure on transportation by poverty and race/ethnicity (N=139,278): Consumer Expenditure Survey, 2000-2014

	N	%[a] in dataset	%[a] expenditure	p-value[b]	Expenditure[a], dollars	p-value[b]
Poverty – total household expenditure				<0.001		<0.001
Below poverty	19,987	14.5%	11.5%		$1,547.37	
Above poverty	119,291	85.5%	16.8%		$9,696.46	
Race/ethnicity						
White	104,395	75.3%	16.2%		$8,955.41	
African American	18,031	13.2%	14.6%	<0.001[c]	$6,506.88	<0.001[c]
Hispanic	16,852	11.5%	16.4%	0.07[c]	$7,913.12	<0.001[c]
Total/Mean	139,278	100%	16.0%		$8,511.67	

[a] Weighted estimates

[b] Overall difference between groups

[c] p-value is pairwise comparison vs. White. P-value for pairwise comparison between African American and Hispanic was <0.001.

Table 3. Proportion of households that use public transportation overall as well as by bus and subway (among those that use public transportation: N=27,696): American Housing Survey, 2013

	N	%[a] in dataset	%[a] used any public transportation (N=27,696)	p-value[c]	%[a,b] used the bus (N=6,177)	p-value[c]	%[a,b] used the subway (N=6,177)	p-value[c]
Poverty – annual household income				<0.001		<0.001		<0.001
≤ $20K	7,127	25.4%	22.8%		83.5%		25.6%	
> $20	20,926	74.6%	15.0%		65.1%		43.0%	
Race/ethnicity				<0.001		<0.001		<0.001
White	19,680	70.2%	12.7%		59.2%		39.7%	
African American	4,418	15.7%	29.9%		83.8%		36.9%	
Hispanic	3,955	14.1%	25.4%		85.2%		34.5%	
Total	28,053	100%	16.6%		70.4%		38.0%	

[a] Weighted estimates

[b] Among those households that used any public transportation

[c] Overall difference between groups

APPENDIX B

American Time Use Survey (ATUS)[2]

The ATUS is sponsored by the U.S. Bureau of Labor Statistics and has been conducted by the U.S. Census Bureau annually since 2003. Households that have completed their final month of the Current Population Survey are eligible for the ATUS. Households are selected to participate in the ATUS based on a range of demographic characteristics. One person age 15 years or older is randomly chosen from the household to answer questions about the amount of time he/she spends doing a range of activities, including travel to work. Participants are interviewed one time regarding the previous days' activities (4am previous day to 4am interview day) with oversampling for weekends. In 2015, there were nearly 25,000 participants interviewed for the ATUS. Those who reported being employed part-time or full-time were asked how long, in minutes, they engaged in travel related to work.

We used 2015 ATUS data on 7,538 respondents age 18+ years who reported being in employment and commuting to work at least 1 minute in the prior day. This analysis excluded participants who were employed but engaged in travel to work 0 minutes in the prior day. This may indicate he/she does not commute, i.e. may work from home, and/or was interviewed at the weekend and may not have commuted to work in the prior day. The primary respondent reported the socio-demographic characteristics of himself/herself and their household, including race/ethnicity (White, Black, Hispanic). Household poverty status was based on self-reported annual total family income was dichotomized as ≤ $20K versus > $20K. Due to sample size restrictions, respondents identifying as Asian or Other race/ethnicity were excluded. Survey weights were used in all analyses to produce nationally-representative estimates.

Consumer Expenditure Survey (CES)[3]

The CES has been sponsored and conducted by the U.S. Bureau of Labor Statistics (BLS) annually since 1979. The CES is a rotating panel study that randomly selects households from the U.S. civilian population to assess household expenditure. Annually approximately 7,000 new households are randomly selected to participate in the survey over the course of five quarters. The first interview of each household collects demographic data, with the following four consecutive quarter interviews collecting family expenditure over the past three months. Up to 95% of total household expenditures may be identified in the interview panel survey.

We used 2000-2014 CES data to capture the earliest observation containing expenditure information per household (N=139,278 with primary respondent age 18+ years) within the series of four quarterly interviews on household expenditures. At each interview, respondents answered a range of questions on transportation-related expenditures, including vehicle purchases, gasoline and motor oil, other vehicle expenses, and costs of public and other transportation. The BLS computed quarterly expenditure on transportation, which we which we top-coded to four standard deviations above the mean and multiplied by four to yield an annual estimate of household transportation expenditure, per BLS guidelines. We then calculated both the total expenditure in real dollars using the national consumer price index (2013-2015=100)[5] and the percentage of transportation expenditure as a proportion of the total household expenditure. The primary respondent reported the socio-demographic characteristics of himself/herself and their household, including race/ethnicity (White, Black, Hispanic). Due to sample size restrictions, households identifying as Asian or Other race/ethnicity were excluded. Household poverty status was derived using total expenditure as a proxy for household income. We computed a dichotomous indicator to measure household income relative to the annual federal poverty level using the US Department of Health and Human Services poverty guidelines: below poverty threshold (below poverty) versus above poverty threshold (above poverty). Replicate population weights were used in all analyses to produce nationally-representative estimates.[6]

American Housing Survey (AHS)[4]

The AHS-national file is sponsored by the Department of Housing and Urban Development and has been conducted by the U.S. Census Bureau annually or biennially since 1973. The AHS provides data on the size and composition of housing stock in the U.S. and beginning in 2011, included topical supplements rotated in and out of the questionnaire. In 2013, there were approximately 60,000 respondents were interviewed for the AHS and less than half of those participated in a supplement on transportation.

We used 2013 AHS data on 27,696 respondents age 18+ years that participated in the transportation supplement. Among those, 6,177 respondents reported that someone in the household used any public transportation and they were subsequently asked whether anyone in the household used the bus or subway. The primary respondent reported the socio-demographic characteristics of himself/herself and their household, including race/ethnicity (White, Black, Hispanic). Due to sample size restrictions, respondents identifying as Asian or Other race/ethnicity were excluded. Household poverty status was based on self-reported annual total family income and dichotomized as ≤ $20K versus > $20K. Survey weights were used in all analyses to produce nationally-representative estimates.

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