

How Affordable is Transportation? A Context-Sensitive Framework

“This new framework provides a foundation for policymaking by asking how affordable transportation options are, for whom, and in what settings.”—Yingling Fan

Project Fast Facts

- Transportation affordability—the financial burden households bear in purchasing transportation services—varies widely among population groups in the United States.
- Traditional measures of transportation affordability fail to consider the wide variation in households’ transportation needs and locations.
- Owning an automobile is associated with a higher probability of employment, longer working hours per week, stronger social ties, and larger social networks.
- Low-income households have the lowest auto ownership rates.
- Auto-oriented U.S. urban areas require more travel to access destinations, resulting in higher transportation costs.
- Reducing society’s auto dependence while simultaneously providing financial subsidies for car access among disadvantaged populations are divergent but equally important potential strategies for improving transportation affordability.

Background

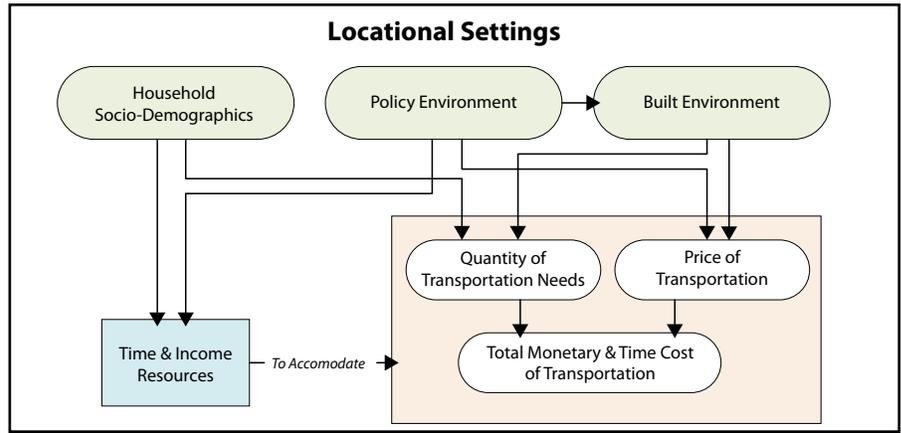
In 2008, Americans owned about 255 million personal vehicles, which accounted for nearly 90 percent of both work commute and shopping trips. However, about 17 percent of low-income households have no private vehicles. In a society of auto dominance, low-income households without access to automobiles have a limited capability to access desired destinations and opportunities. As a result, their social welfare is negatively affected. For example, owning an automobile is associated with a higher probability of employment, longer working hours per week, stronger social ties, and larger social networks.

Measuring Transportation Affordability

Traditional methods of measuring transportation affordability are limited, making it difficult to assess which transportation subsidy programs and policy strategies make transportation more affordable. In this study, researchers developed a new, contextualized framework for measuring transportation affordability that is location- and population-sensitive. This new framework takes into account:

- *Household demographics*: considers the differences in households’ transportation needs, time availabilities, and resource availabilities. For example, a single-mother household has very different needs in terms of travel time, destination, and mode than does an unmarried man who lives alone. The framework recognizes that while the majority of low-income and poor households own cars, this does not mean cars are affordable and may instead indicate “forced car ownership” that exerts hardship on families by laying claim to households’ financial resources.
- *The policy environment*: considers the variation in the policy environments at different locations. This includes the availability of publicly funded subsidy programs to help low-income households combat transportation hardship (such as car ownership programs and public transit subsidies), as well as land-use and housing policies.





The alternative model to understand transportation affordability. (Note: Price of transportation refers to the monetary and time cost of transportation per unit of travel.)

- *The built environment:* measures the built environment by accessibility—the capacity to access desired services by different modes of transportation. The built environment (urban design, land use, and the transportation system) influences which transportation services are needed and determines the amount of travel necessary to carry out activities. For example, a transit/pedestrian/biking-friendly environment lowers demand for the automobile—the most expensive transportation mode.

The new framework also incorporates time. Disadvantaged households may be forced to choose slower, lower-quality transportation services and thus may spend less money on transportation, appearing to need it less. The framework defines transportation affordability as a household's capacity to pay transportation costs (including both monetary and time-based costs) without incurring financial difficulties and time pressures.

Overall, this new framework provides a foundation for policymaking by asking how affordable transportation options are, for whom, and in what settings.

Conclusions

This study proposes an alternative and innovative framework for analyzing transportation affordability. The research also points out two dilemmas associated with transportation affordability:

- The socioeconomically disadvantaged have the lowest auto-ownership rate, yet their transportation needs are better served by automobiles.
- While automobiles can reduce transportation hardships for the socioeconomically disadvantaged, the existing

auto-oriented urban landscape in the United States imposes greater distances between destinations, which leads to higher transportation costs.

The research suggests a two-fold solution. First, transportation policies need to promote long-term changes in the built environment to reduce auto dominance. Moving to a more compact, mixed-use urban form that offers multiple modes of good transportation services can improve transportation affordability by reducing household reliance on automobiles as well as reducing the amount of travel required for daily activities.

Second, policies for promoting auto access among the socioeconomically disadvantaged should be considered. If full access to private cars is not possible, even occasional access could make a big difference in meeting the travel demands of low-income households. Programs supporting access to private transportation may include financial subsidies for car ownership and cooperative car-sharing programs.

About the Research

This study was conducted by Yingling Fan, assistant professor in the University of Minnesota's Humphrey School of Public Affairs, and graduate student Arthur Huang, and sponsored by CTS. The final research report is available at www.cts.umn.edu/Research/ProjectDetail.html?id=2010023.