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Using innovative data collection methods to document transportation disadvantage in environmental-justice populations: An interdisciplinary case study

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Abstract

Traditional diary data-collection methods may not fully capture the lived experiences of individuals who are transportation disadvantaged. This research utilizes an intensive ecological, longitudinal design to understand the actual and desired travel experiences of two environmental-justice (EJ) populations: older adults and women with dependent children experiencing homelessness. An interdisciplinary team collaborated on the design and development of an app, *MyAmble*, to measure the impact of transportation disadvantage on the following domains of social exclusion: resources participation, and quality of life. *MyAmble* includes several innovations – daily digital audio journals, a text-messaging based qualitative interview tool, and a challenge logger enabling participants to document real-time transportation barriers through videos/photos. Findings will inform recommendations related to transportation services for EJ populations and offers implications for practice and research.

Background

- The U.S. faces rising demographic shifts such as growing minority and aging populations as well as changing economic dynamics
- These factors lead to concerns about how U.S. transportation systems respond to the needs of environmental justice (EJ) populations.
- Research shows that minority groups, individuals who are lower-income, and older adults are at high risk of experiencing transportation disadvantage, perhaps due to where they tend to live or the fact that they are less likely to travel during peak work commuting hours.

Need for Innovation

- No existing data collection strategies record and investigate both the *actual* and *desired* travel experiences of EJ populations
- By considering both *actual* and *desired* travel experiences, we can ascertain the causes of differences between these two domains and the temporal and spatial scales on which these differences occur.
- Extant research fails to measure the holistic impact of transportation gaps on the lived experiences of at-risk populations.
- To engender greater transportation access and equity, more research is critically needed to inform transportation planning and policies that will better serve these populations.
- *MyAmble* measures the impact of TD on the following domains of social exclusion resources, participation, and quality of life.
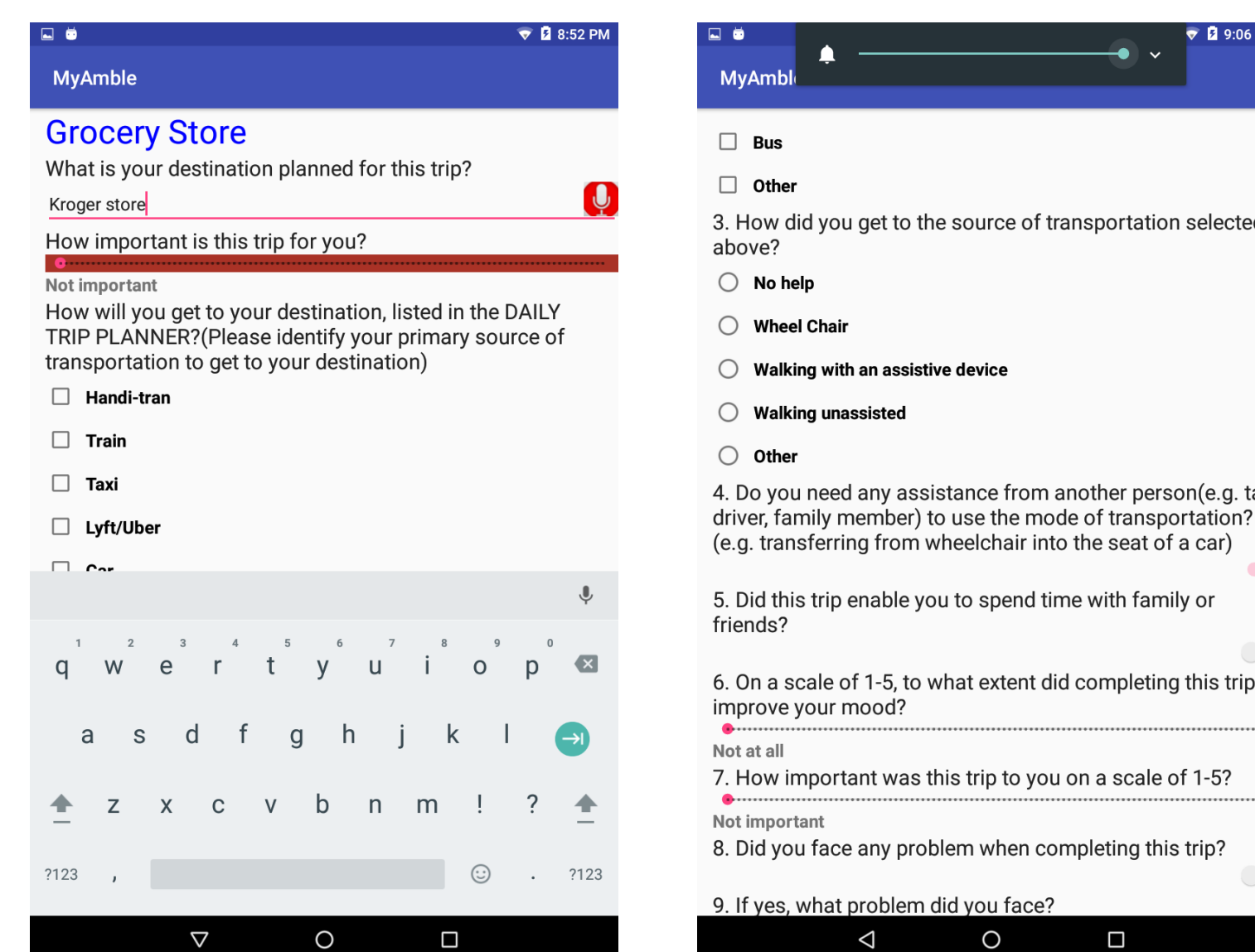
Case Study: *MyAmble*

The case study occurred in two cities in Tarrant County, Texas – Fort Worth and Arlington. Tarrant County is the third largest county in Texas and borders Dallas County in north central Texas. Data from the 2015 American Community Survey (ACS) reveal that the region includes some of the fastest-growing communities in the US, and Tarrant County's population is projected to grow to more than 2 million people by 2020. Fort Worth is the largest city in Tarrant County, and Arlington is the second largest. Arlington is also the largest municipality in the US to lack a public transit system. The ACS finds that the average regional travel time to work in 2015 was 26 minutes, compared to a national average of 25 minutes. The poverty rate in 2015 was 13.1%, and persons 65 years and older represented 10.5% of the total population.

App Development

- A team comprised of faculty and graduate students in social work, civil engineering, and computer science undertook this project.
- The *MyAmble* is designed to prompt potentially TD populations to identify and characterize their transportation plans/ desires. In the evening, the participants review the transportation plans, make any necessary changes to their observed trips, and record the reasons behind the changes in their plan. The participants may record their diary entries manually by interacting with the app or orally by speaking directly into the app. Additionally, the participants are encouraged to take pictures and/or video using the app in order to capture visual data related to their perceptions of their transportation mobility.

Daily Trip Planner

Conclusions

- The daily trip planner is designed so that participants will record their experiences with transportation mobility throughout the day.
- The daily trip planner also asks participants to identify any other activities that they would like to complete that day but cannot.
- In the evening, participants are asked to complete a review of their daily plan.
- Overall, the daily trip planner is designed to extend the typical travel diary to capture more detail about each realized and unrealized transportation event and unserved travel demand in order to examine missed opportunities due to transport limitations.

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