

Leveraging App Technology to Document Social Exclusion and Lost Opportunities Due to Transportation Disadvantage Among Environmental Justice Populations: An Interdisciplinary Case Study

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Overview

- EJ Populations
- Gaps in the current research
- Context of study
- Research objectives
- Data collection app
 - Daily Trip Planner
 - Travel History
 - Challenge Logger
 - Travel Buddy
- Implications

Environmental Justice (EJ) Populations



- *My [power] chair got stuck in mud over by CiCi's, over there by that tire shop. I couldn't go forward, backwards, and she [police officer] come out and she helped me stand so that the guy from the tire company came over and pushed my chair up... You can go this side of Collins and you can get through, but if you're on the other side of Collins where CiCi's and all the restaurants are, you can't go straight down the thing... they've got dips, holes... it's bad enough trying to cross at a crosswalk let alone be in the road when they're coming at you...*

- (Older adult, Arlington, TX)

I mean to get somewhere on time and to even like get places from back and forth, you know, like appointments. You gotta be at an appointment, and say you miss the bus by a couple of seconds. You have to wait a whole 'nother hour. Or you get on a bus and it breaks down or something happens you lose out on a lot of different opportunities at different times.

- Mother experiencing homelessness, Ft. Worth, TX

Social Exclusion

A process by which individuals or households experience deprivation, either of resources (such as income), or of social links to the wider community of society. (Oxford Handbook of Sociology, 2009, p. 234)



Domains of Social Exclusion

Resources

Material/economic

Access to public/
private services

Social resources

Participation

Social participation

Culture, education,
and skills

Political and civic
participation

Quality of Life

Health and well-
being

Living environment

Crime, harm, and
criminalization

Research Gaps

- Traditional diary data-collection methods may not fully capture the lived experiences of individuals under-engaged in typical peak work commuting hours and EJ populations
- These individuals are underrepresented in traditional civil engineering transportation planning models
- The result is transportation disadvantage and negative consequences for:
 - Social engagement
 - Quality of life
 - Social mobility

Study Context



An arterial in
Arlington, TX

Research Objectives

- To utilize an ecological, longitudinal design to collect data from low-income, transportation disadvantaged older adults and mothers experiencing homelessness
 - Identify suppressed travel/activities and measure
 - Frequency
 - Magnitude
 - Impact
 - Measure overall attitudes and impacts
- To test the feasibility of using an electronic tablet with an app designed specifically as a digital platform for collecting data

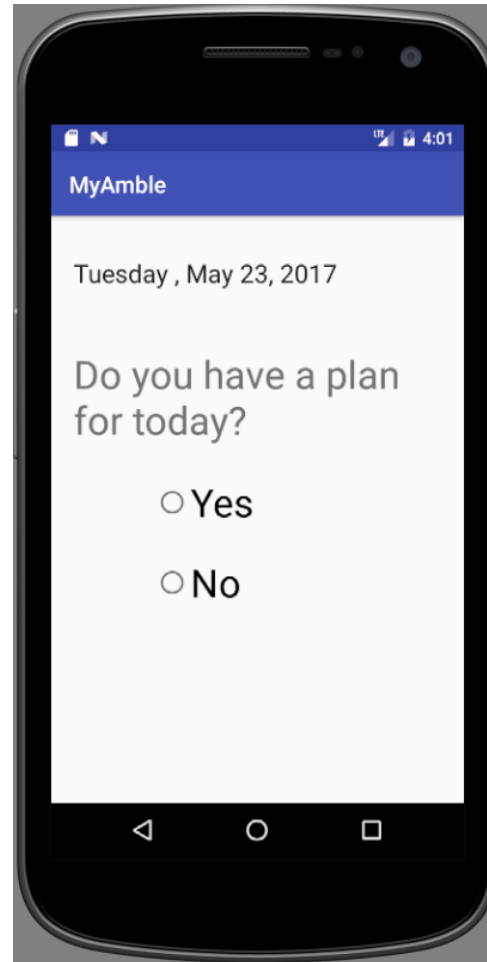
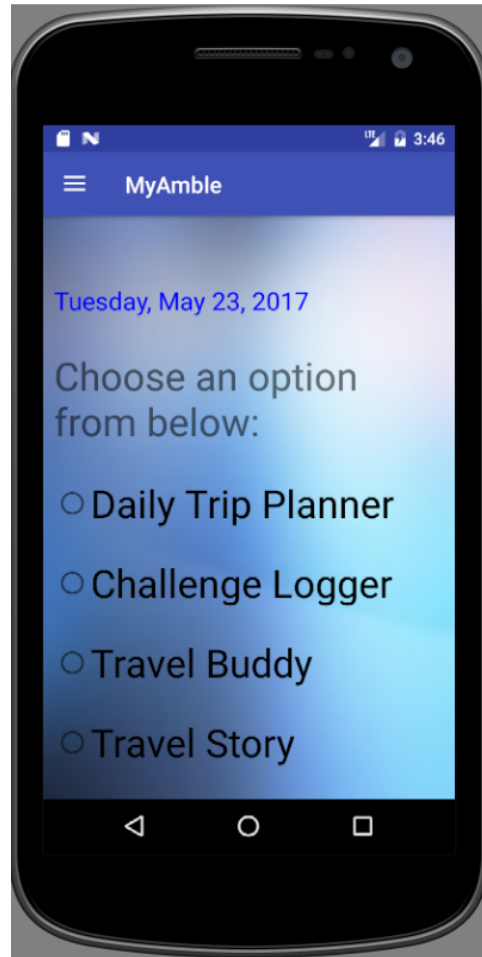
Data Collection App: *MyAmble*

- Use tablets for innovative data collection
- Create interactive app structured on an interview concept
- Use open-ended questions to collect specific target information
- Use voice recognition or keyboard for registering responses
- Use tablet-resident cameras to document transportation disadvantage visually
- Increase participation and improve data quality
- Consider all travel modes and activities

Features of *MyAmble*

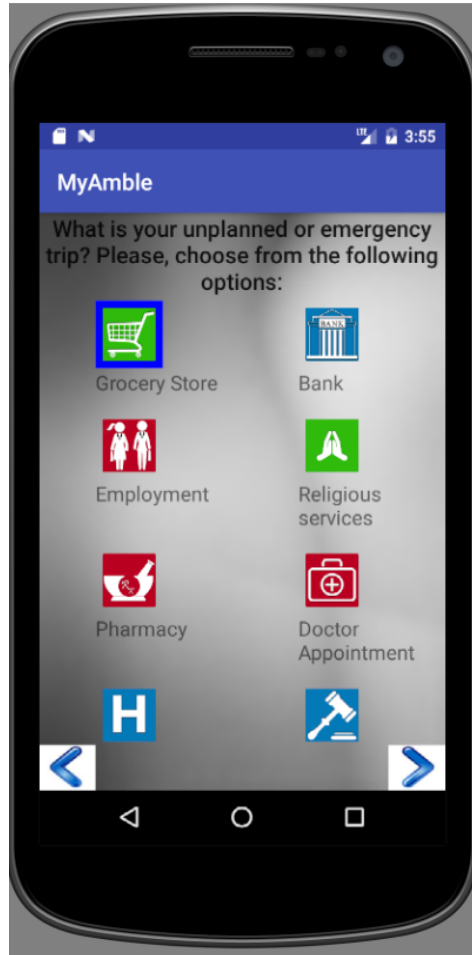
- Daily Trip Planner (morning, evening)
- Travel History (on-going)
- Travel Buddy (interactive text messaging)
- Challenge Logger (GPS data, voice/text, picture/video)

Daily Trip Planner (morning)



*Did you complete any
emergency or
unplanned trips since
your last log in?*

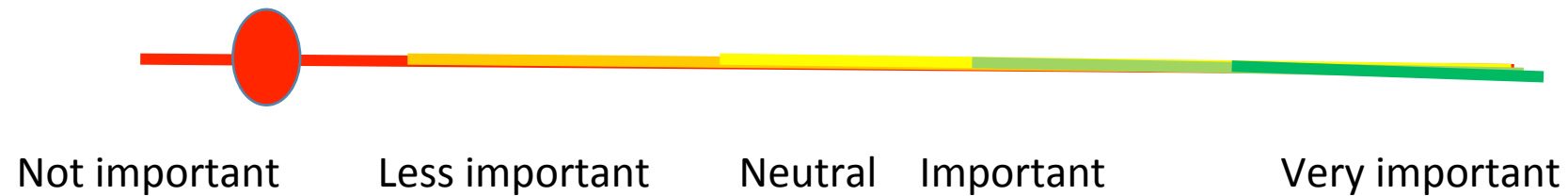
Daily Trip Planner (morning), cont.



What is your destination planned for this trip?



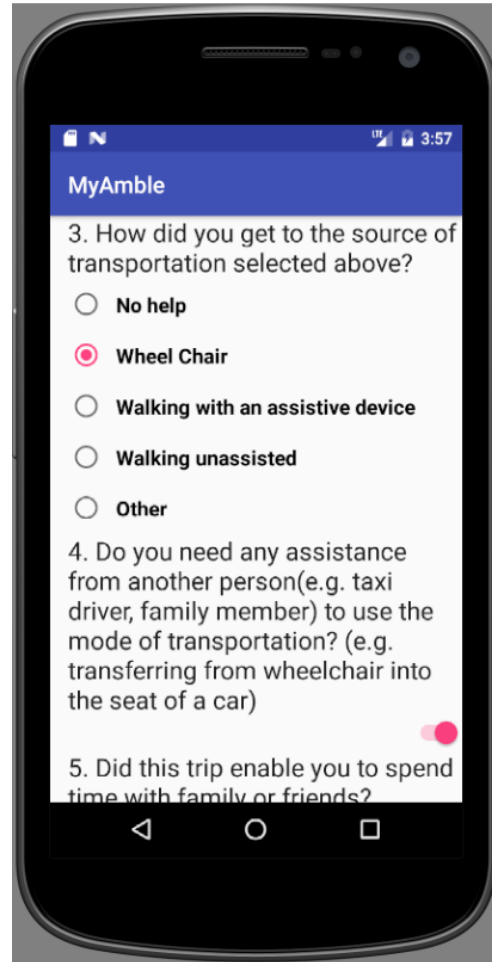
How important is this trip for you?



Daily Trip Planner (morning), cont.

How will you get to your destination?




- *Handi-tran*
- *Train*
- *Car*
- *Taxi*
- *Car*
- *Bus*
- *Lyft/uber*
- *Other*

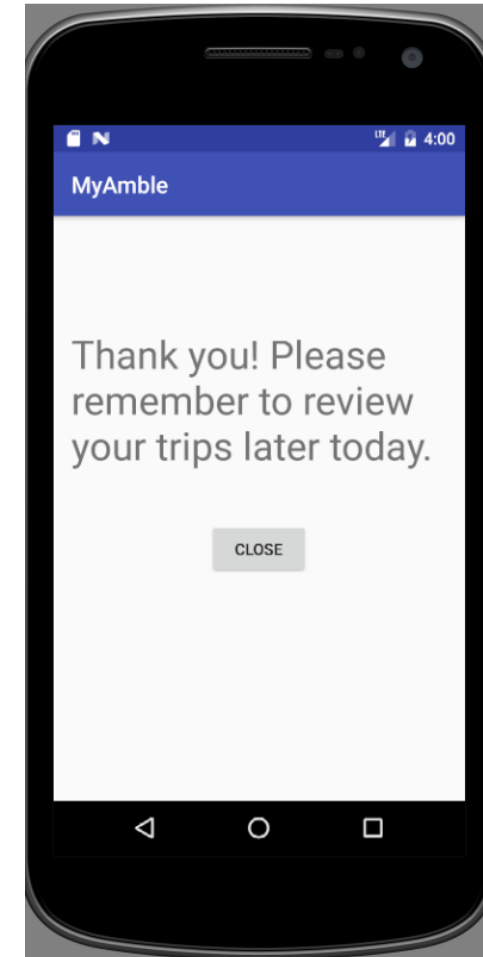


- *What will be your approximate departure time?*
- *Are you planning to go to another _____ today as well?*
- *Are there any other activities that you would like to complete today but cannot?*
- *Why are you not including them in today's trip?*



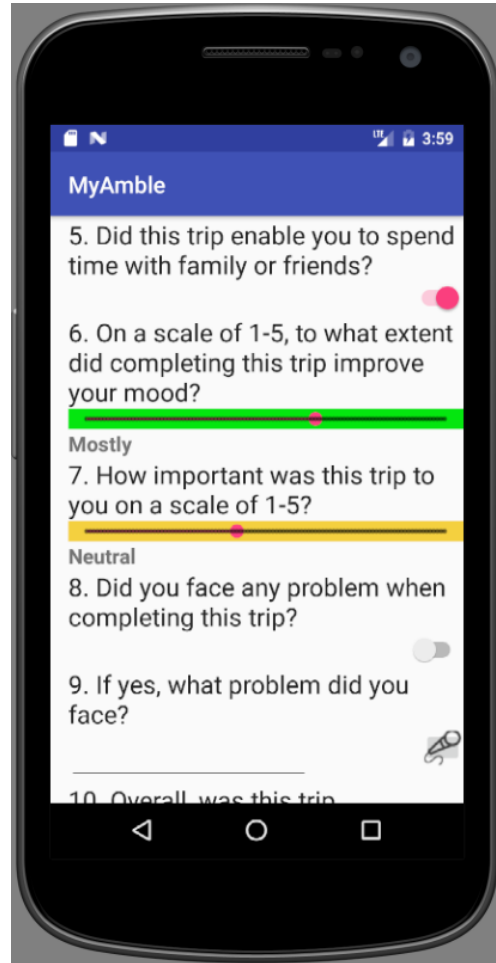
Daily Trip Planner (morning), cont.

- *If you do not have any planned trips today, why are you not travelling?* 
- *Are there any other activities that you would like to complete today but cannot? (No/Yes)*
- *What are the activities?* 
- *Why are you not including them?* 



Daily Trip Planner (evening)

- *Trip Details for _____*
- *Which mode of transportation did you use?*
- *How did you get to the source of transportation?*
- *Did you need assistance from another person to use the mode of transportation?*






Overall, was this trip successful? (No/Yes)

Daily Trip Planner- Evening Review Journal

- To what extent did you complete the trips you planned for today?*



- Overall, what were the benefits of completing today's trips?* 
- At any point today, after making your daily plan, did you think of a trip that you wanted to complete but that was not possible today?* 
- Why were you not able to complete them?* 

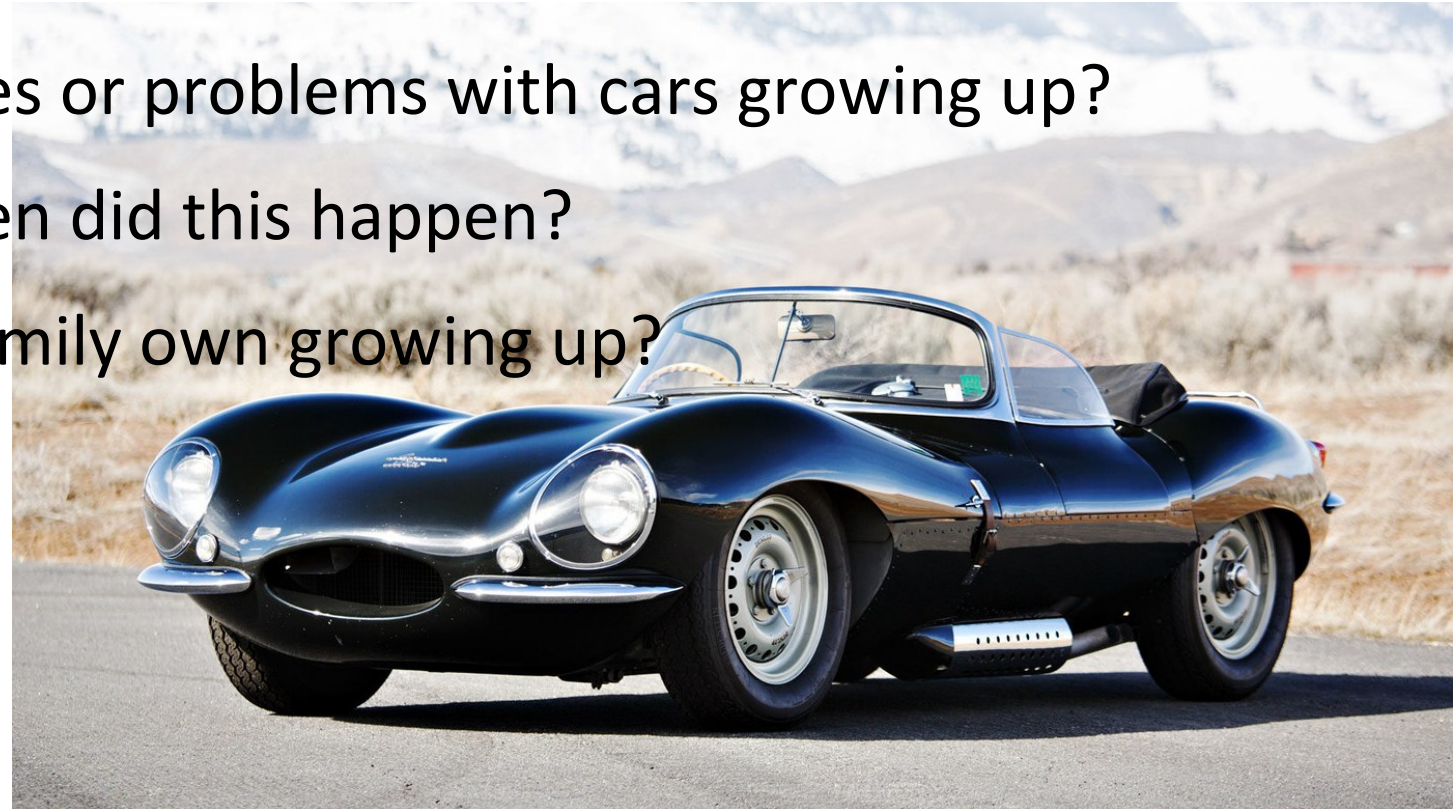
Travel History

- Did you grow up using public transportation?
- When was the first time that you used public transit?
- What are your earliest memories of your first family car?
 - How did it make you feel?
 - Was it a classic?



Travel History, cont.

- How old were you when you got your first car?
- Do you have a picture of your first car?
- Did you have any challenges or problems with cars growing up?
- If you stopped driving, when did this happen?
- How many cars did your family own growing up?



Challenge Logger

- Enables participants to document real-time transportation barriers through videos/photos
- GPS functionality



Travel Buddy

- A series of interview questions sent to participants via text messages
- Questions elicit information across the 3 domains of the theoretical framework of *social exclusion*
- Questions sent to participants 2-3 times a week

Travel Buddy Questions

Resources

Tell me about your day-to-day life – how do you get out of the house to get your basic needs met?

How do you get out of the house to get the services that you need?

Participation

How do you get out of the house to see family and friends

How do you get out of the house to be politically or socially involved, if you want to be, e.g., voting, city council meetings?

Quality of Life

How does your access to transportation affect your overall quality of life?

How safe do you feel leaving your house or traveling around your community?

Implications

- Expand methodology to other EJ populations
- Utilize data to inform transportation planning
 - Strengthen service to EJ populations
 - Develop research roadmap
- Develop future interdisciplinary collaborations between social work and engineering

Questions ?