

Project Title: Disparities in Access to Driver Education for Teens as a Health and Mobility Equity Issue

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Research Priority: Promoting Safety

Principal Investigator(s): Megan Ryerson University of Pennsylvania

PI Contact: mryerson@design.upenn.edu

Project Partners:

- Children's Hospital of Philadelphia
- SEPTA
- Pennsylvania Department of Transportation

Research Project Funding: \$120,268.00

Project Start and End Date: 07-01-2023 to 06-30-2024

Project Description:

Teens who complete behind-the-wheel (BTW) driver education (DE) are able to secure early licensure and are less likely to crash in their early years as a motorist. Disparities in accessibility to BTW DE are therefore disparities in health outcomes (crashes) and mobility (i.e., ability to secure early licensure). The following research grant is to support a stream of research focused on disparities in access to BTW DE, and therefore, safe driving skills and early licensure, for teens. Using inferential statistics and non-parametric statistical techniques, the team will identify economic, racial, and spatial disparities in accessibility to BTW DE by correlating individual data with propensity to engage in DE (Aim 1). Our team will further investigate the disparities in the acquisition of specific safe driving skills by linking individual data with VDA results (Aim 2). As disparities in accessibility to BTW DE are disparities in health outcomes and mobility, our research will uncover an actionable way forward to directly address healthy and mobility equity. Our team has assembled a completely novel database of over 18,000 Ohio teens, which includes the following individual-level data: state licensing data, crash data, and DE completion data; household-level data matched with transportation urban planning-related open data; and results from the Virtual Driving Assessment (VDA), a virtual driving skills measurement test our broader team at the Children's Hospital of Philadelphia administers to learner drivers. Advanced spatial modeling techniques allow us to collect Socio-economic status data related to home address and calculate impedance to the nearest DE center. Our project will investigate the following: Aim 1: Identify individual factors that are most strongly correlated with a teen engaging in BTW DE and early licensure. Our early findings at the census tract level tell us that average income is most correlated with a teen pursuing BTW training and early licensure; variables such as activity density and travel distance to BTW DE are also correlated, but more slightly. By matching home address with home value data, we assemble the data set that allows us to test the hypothesis directly that income is the strongest predictor of a teen engaging in BTW DE and pursuing early licensure. Moreover, we hypothesize that an individual's race, as well as details related to the density of their neighborhood (i.e., the collocation of activities), is related to their propensity to engage in BTW DE/early licensure, with BTW DE completion being lower among minority teens. If our hypotheses are correct, it will showcase the deep disparities in who is most likely to avoid a crash outcome and the mobility that comes with early licensure. Aim 2: Identify individual factors that are most strongly correlated with specific acquisition of safe driving skills. Our team has proved the direct correlation between BTW training completion and reduced crash rates in teens; we aim now to correlate the acquisition of specific safe driving skills with the completion of BTW training. Our hypothesis is that teens who have completed BTW DE are both overall less risky drivers and have a stronger ability to scan for and respond to hazards/other road users. If our hypotheses are correct, it will showcase the criticality of training drivers from a public health perspective, for individual well-being and to reduce threats to all road users. This project is a collaboration between the University of Pennsylvania Department of City and Regional Planning, the Children

Hospital of Philadelphia, and the State of Ohio Department of Public Safety.

Outputs:

The anticipated outputs are 3 journal articles and novel datasets.

Outcomes/Impacts:

Motor vehicle crashes are one of the most significant, and the most preventable, public health issues especially for children and teens. As our early findings negatively correlate income with BTW DE completion, it is likely that the cost and the challenge of physically transporting oneself to BTW DE is prohibitive. Thus, interventions which reduce BTW DE cost for lower-income teens (vouchers, etc.) and increase physical accessibility to BTW DE (subsidized pick-up service, Uber vouchers) should be analyzed for their ability to “move the needle” in getting teens to BTW DE. Our study provides the foundation upon which these studies - directly evaluating interventions and interacting with teens through mixed-methods research - will be built. Moreover, upon making these research findings, our team will assess the role of the VDA as a low-cost intervention that could be setup in schools, pediatric offices, etc. in imparting safe driving skills. The VDA could work in concert with BTW DE is a research direction that is both promising for making driving skills acquisition more accessible and very promising for funding (the PI plans to submit an NSF Civic application in Spring 2023). We will eventually branch out to investigate the correlation between citations for unlicensed drivers (which can trap people in a cycle of debt) and access to BTW DE.