Safe and Equitable by Design: Data-driven Methods Are Needed to Integrate the Traveler Perspective into Transportation System Design

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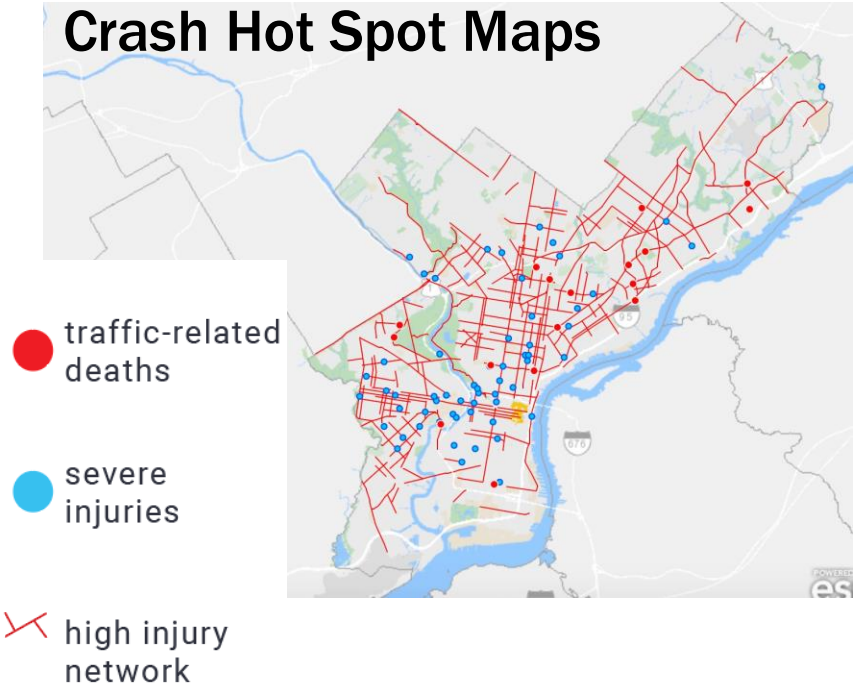
Infrastructure Bill Centering Safety, Equity, and Accessibility

- New Methods for Safety Analysis
- Accessibility Modeling with Equity at the Center
- Planning for the Unexpected: Models to Predict and Recover from Shocks in the Transportation System

Safe and Accessible Urban Transportation



Source: PHL Vision Zero Plan

Imperfect picture of safety

- Underreporting
- Near-misses
- Avoidance of unsafe facilities
- Incomplete information on type of crash and characteristics of victims
- Not useful to evaluate the effectiveness of countermeasures

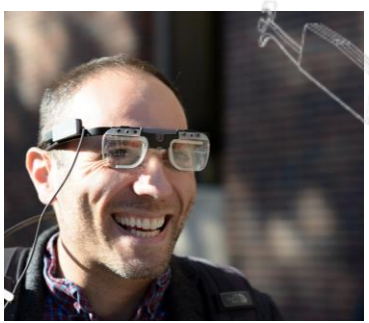
If safety is not represented by counting crashes, what is a good measurement? How to collect the data?

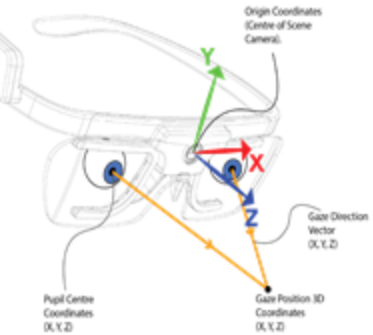
A Brand-New Way to Measure Safety

Protected Lane

Unprotected Lane

b. sample photographs of protected lane infrastructure (*above*) and unprotected lane infrastructure (*below*)





Collect 100x/second:

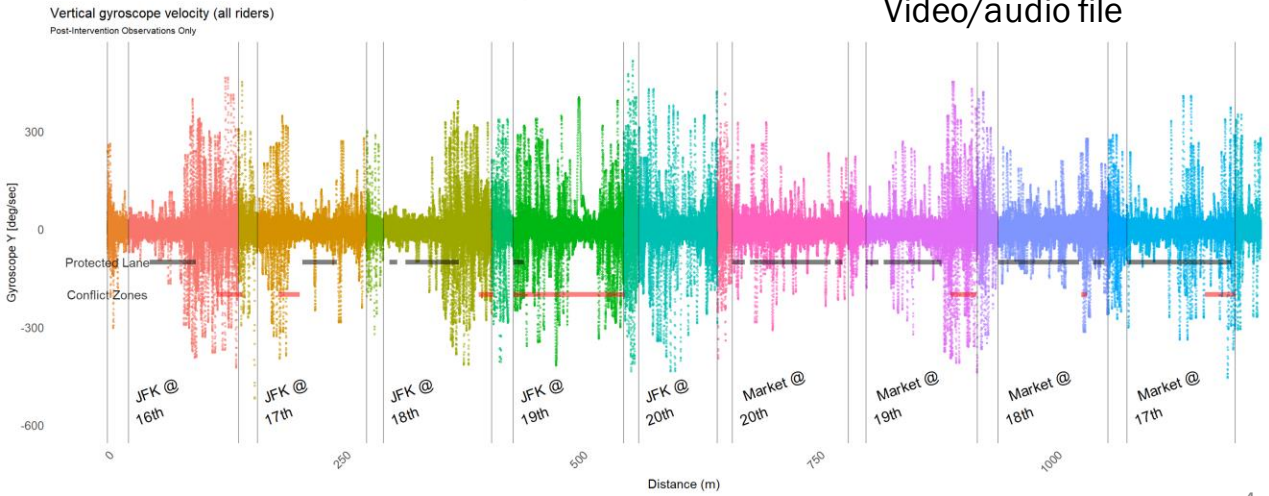
Eye movement type

Gaze location, duration

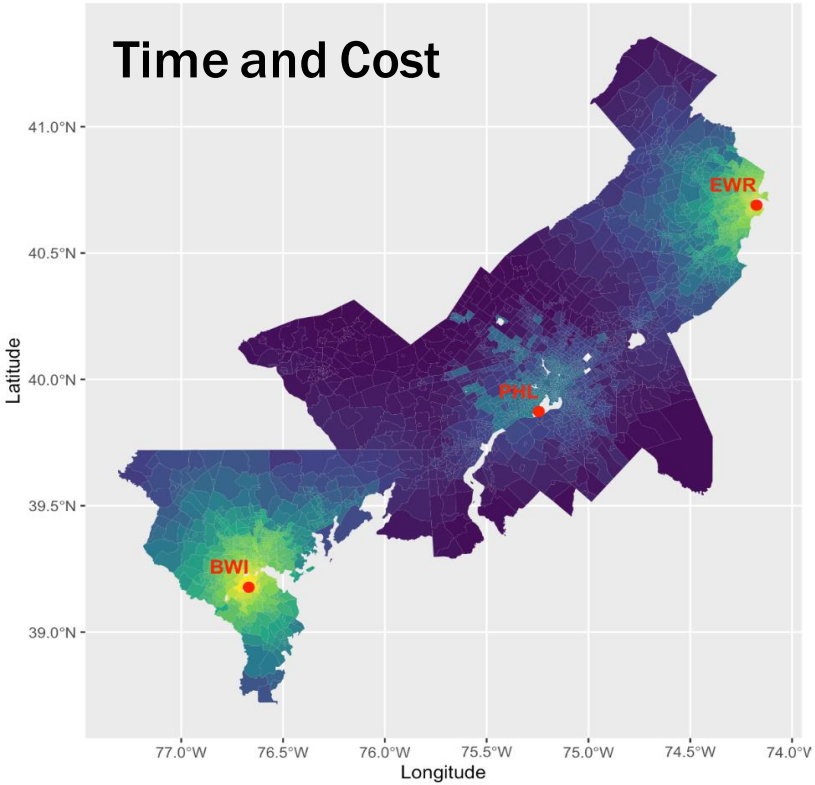
Pupil position, dilation

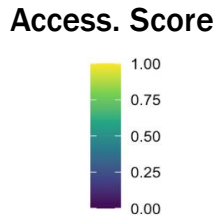
Head movement
(Gyroscope and Accelerometer)

Video/audio file



Modeling Accessibility – What is “Impedance” to you?





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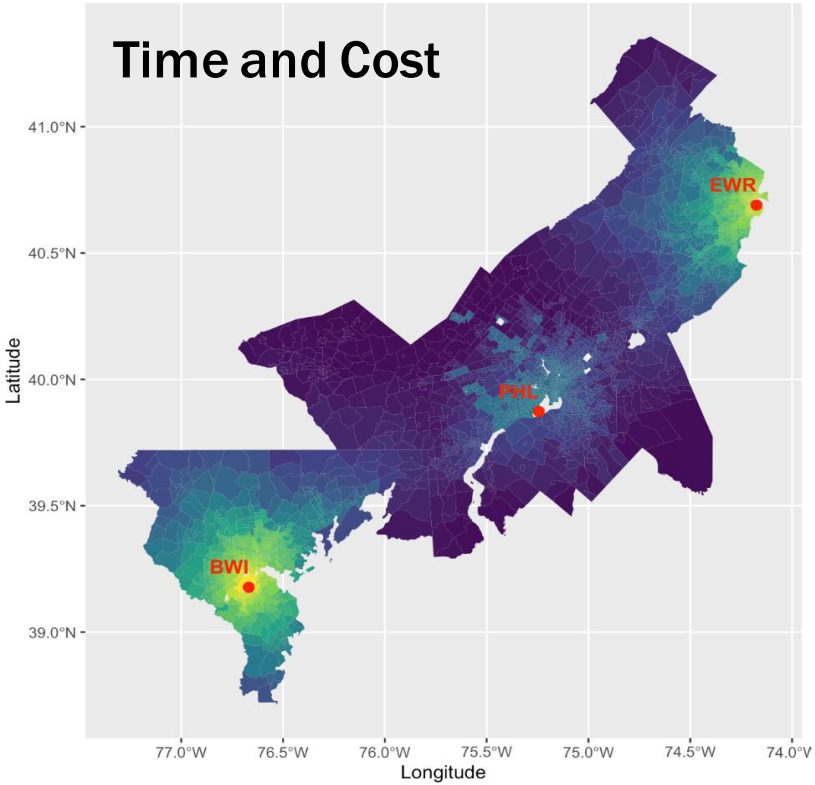
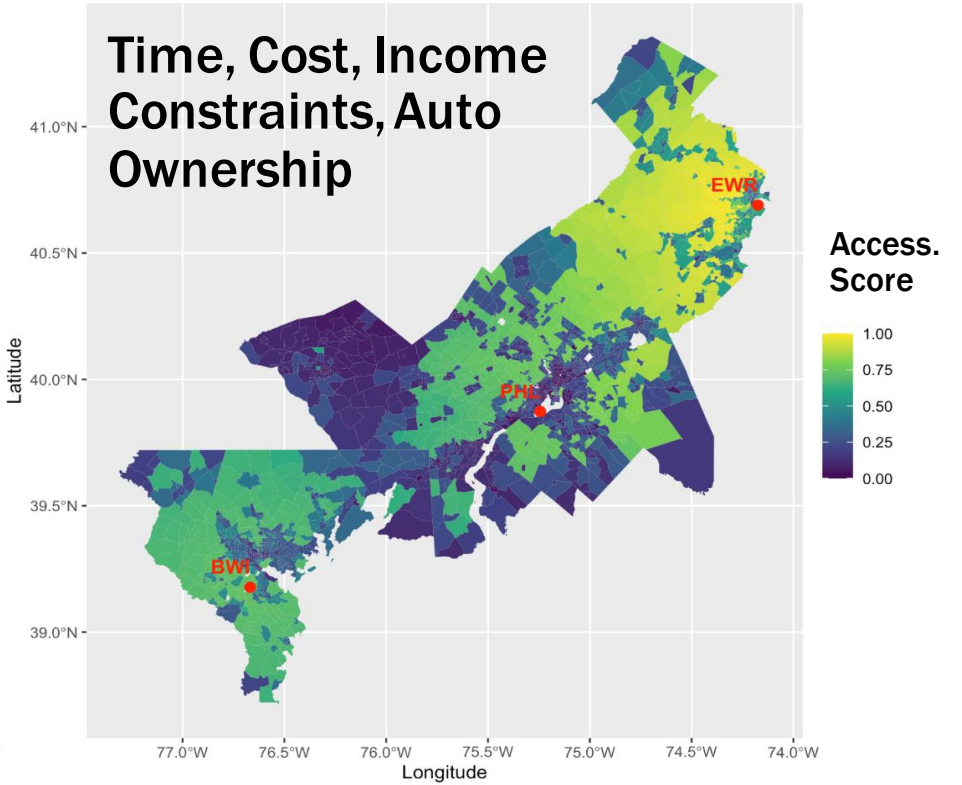




Does a New Bus Provide Accessibility if People Don't Know It's Running?

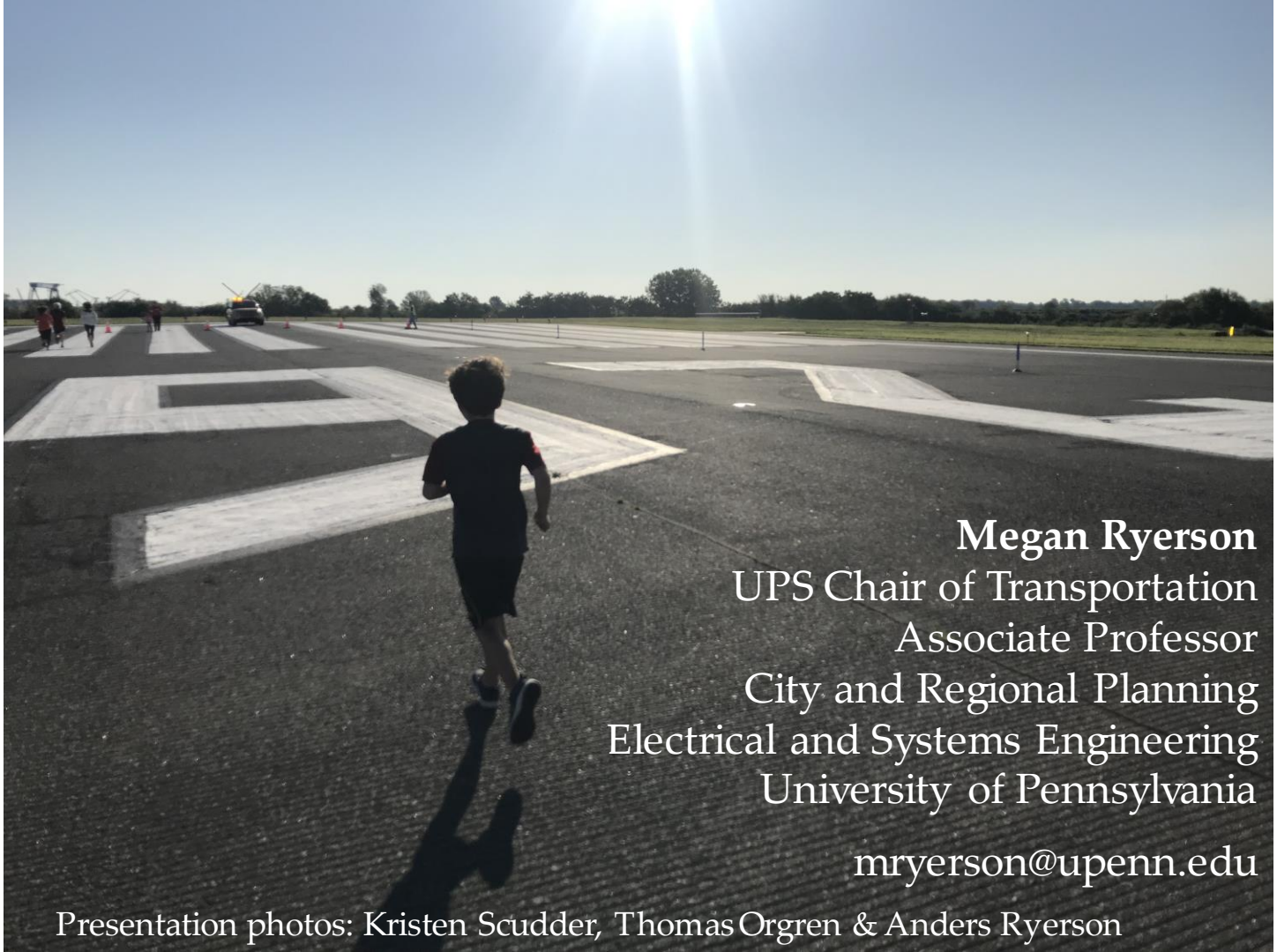
How easily do travelers traverse an intermodal terminal?

If People Don't Feel Safe, Does the Transit System Provide Accessibility?

Planning for the Unexpected: Models to Predict and Recover from Shocks in the Transportation System

Hard-to-model scenarios and futures because history does not necessarily teach us about the future

Bayesian structural time series analysis to forecast what would have happened had the shock not occurred



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