

Associating Ridesourcing with Road Safety Outcomes: Insights from Austin Texas

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Role of Ridesourcing in Vision Zero

Why could ridesourcing use be associated with road safety outcomes?

- Ridesourcing associated with reduction of alcohol-involved crashes and driving under the influence offenses

Supported by Morrison et al. (2017) & Dills and Mulholland (2018)

- Drivers cruising contributes to congested city centers and associated with increase in crashes

Supported by Barrios et al. (2018)

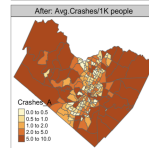
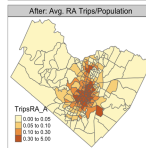
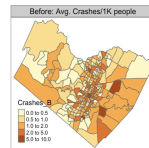
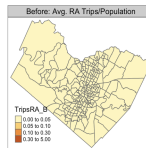
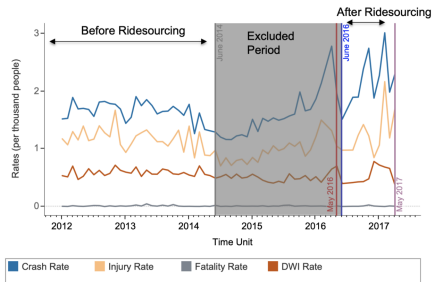


Ridesourcing Associations with Crashes & DWIs

Research Scope Uncover relationship of ridesourcing use with:

- crashes, injuries, fatalities,
- Driving While Intoxicated (DWI) offenses

Novel Use of Data Spatio-temporal ridesourcing demand and road safety outcomes (datasets from AustinTX)



Spatial Panel Data Modeling Approach

- Spatial error, lag, SARAR models with fixed effects
- Moran's I tests for spatial autocorrelation
- Feature importance

Safety Outcome



Road Crashes
Injuries
Fatalities



DWI Offenses

Predictor



Ridesourcing
Trips

Controls



Road Traffic



Vehicle
Ownership



Household
Income



Employment
Share



Population
Density



Gas
Prices

Ridesourcing Associated with Road Safety Improvements

Results of spatial dependence modeling

	Crashes	Injuries	DWI Offences	Fatalities
Ridesourcing coefficient	-0.013	-0.025	-0.036	-0.0009
Reduction %	0.12%	0.25%	0.36%	insignificant
P-value	$p < 0.05$	$p < 0.001$	$p < 0.0001$	$p > 0.1$
Adjusted std. errors	0.007	0.009	0.007	0.002
Census tract and month-year fixed effects	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	8720	8720	8720	8720

- Potential benefits of ridesourcing: reducing capital loss and court costs, avoid insurance rate increases & loss of income due to DWI offenses.
- Magnitude of ridesourcing effects on improving road safety is lower compared to infrastructure improvements.

■ Feedback Request

- new metropolitan areas granular datasets
- analyses robustness

■ Proposed Contributions

- externalities measurement of ridesourcing use
- spatio-temporal data analytics of ridesourcing demand & supply

Thank You!

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