

Bikeshare Replication

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Paper review

- **Impact of a public transit strike on public bicycle share use: An interrupted time series natural experiment study**
- Fuller et al. (2019)
- Most major U.S. cities now have public bicycle rental programs.
- i.e. Bluebikes in Boston
- From Nov 1 to Nov 7, Philadelphia Transit Authority workers strike. This limits access to normal transportation modes in the city and provides a natural experiment.



Question and Findings

- How does public bikeshare use change as a result of the transit disruption?
- Two time series models using `lm()` and `CausalImpact` R package
- Control for temperature and precipitation in Philadelphia plus bikeshare use in similar cities: Boston, Chicago, D.C.
- Found that bikeshare use increases during the strike but returns to baseline shortly thereafter.
- Conclusion: while interventions to incentivize public bikeshare use may work, these interventions likely need to be long term in order to alter habits.

Bayesian Model

During the Period 9/1/16 to 12/31/16

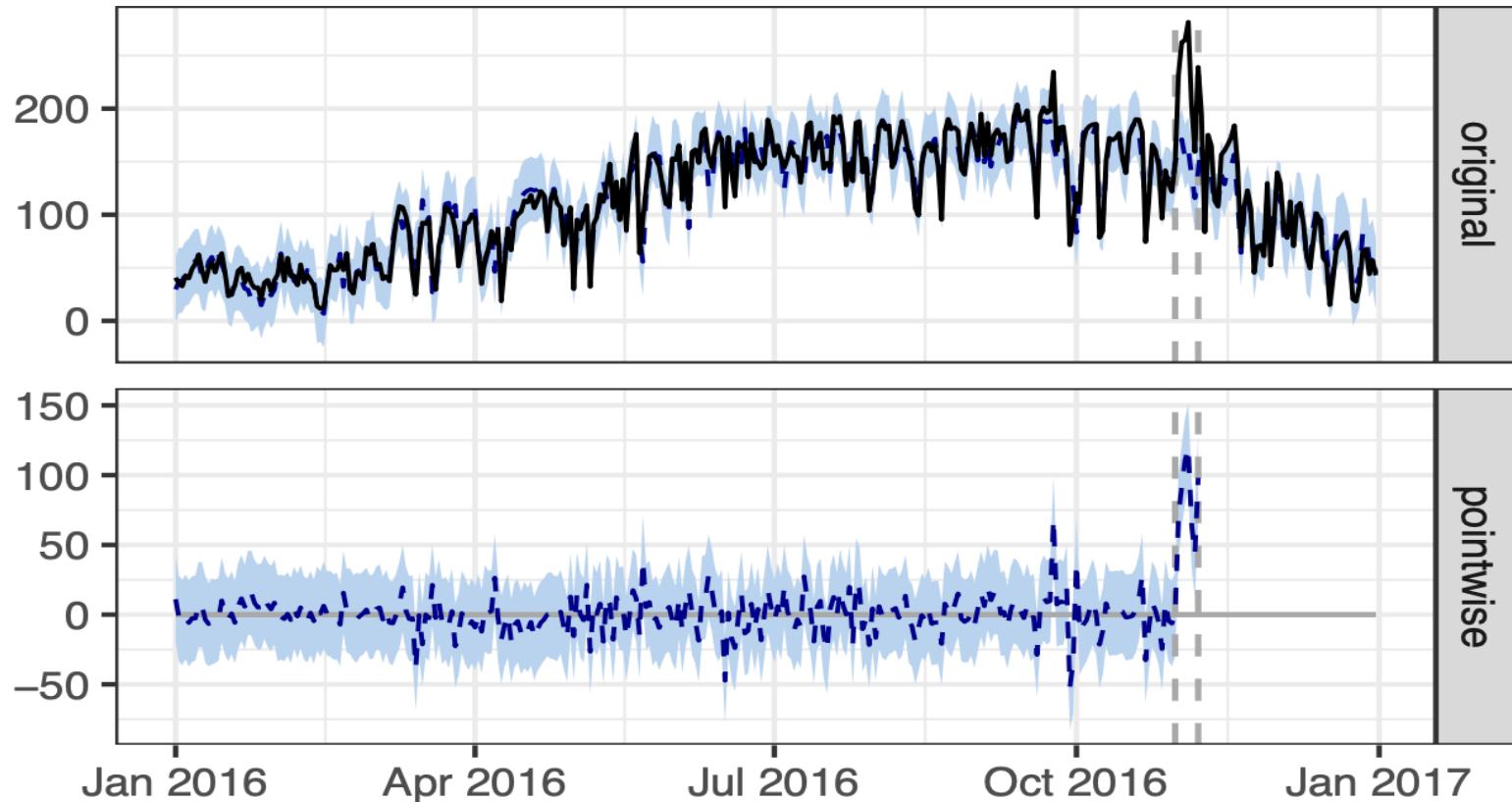


Figure 1: On the pointwise facet, movement from zero shows the deviation from the expected value without an intervention.

Multiple Change Point Model
During the Period 1/1/16 to 12/31/16 in Philadelphia

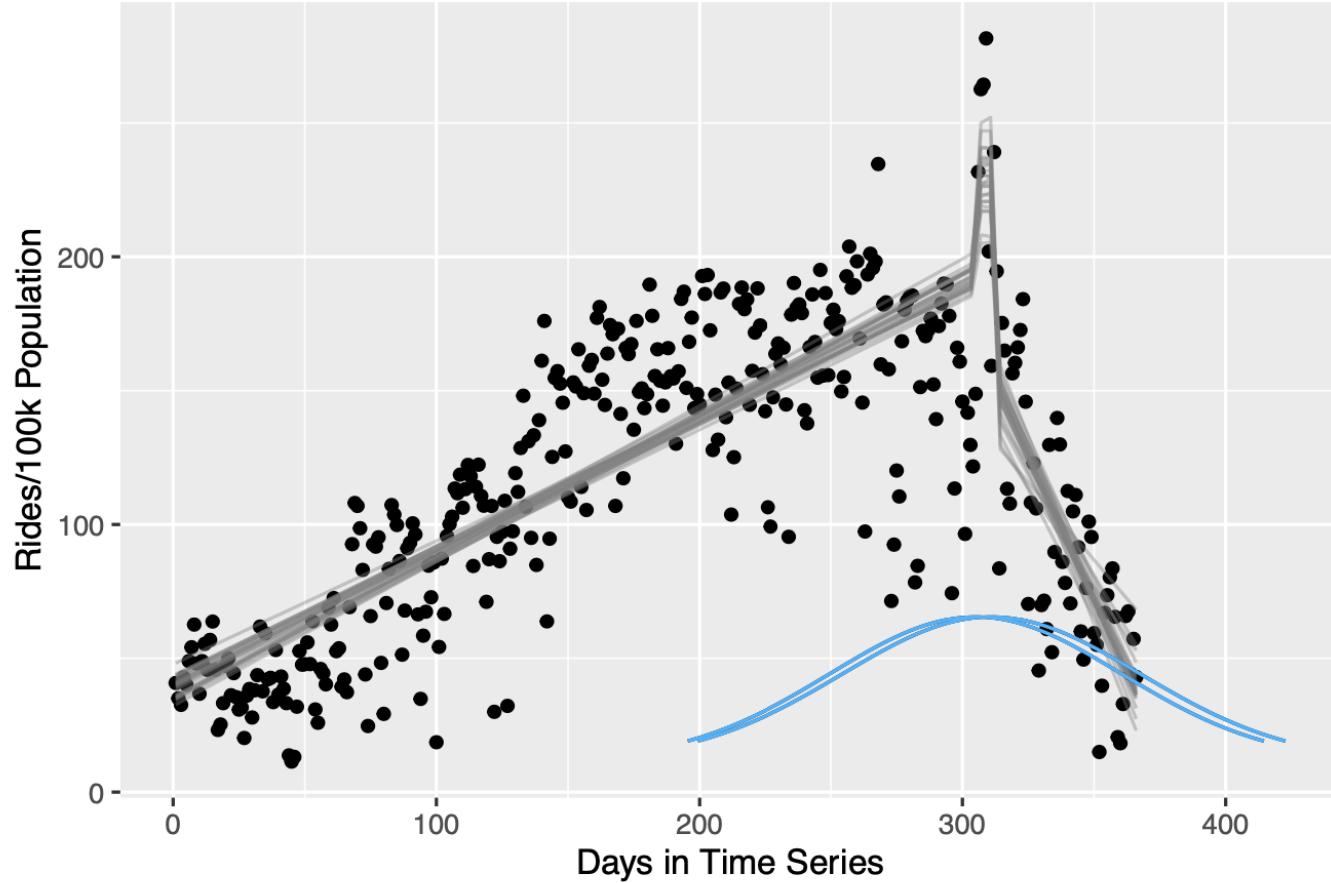


Figure 2: Changepoints are day 305 and 311, the beginning and end of the transit strike

Predicted Density of Ride Rate by Time Period

Periods Divided by Philadelphia Transit Strike

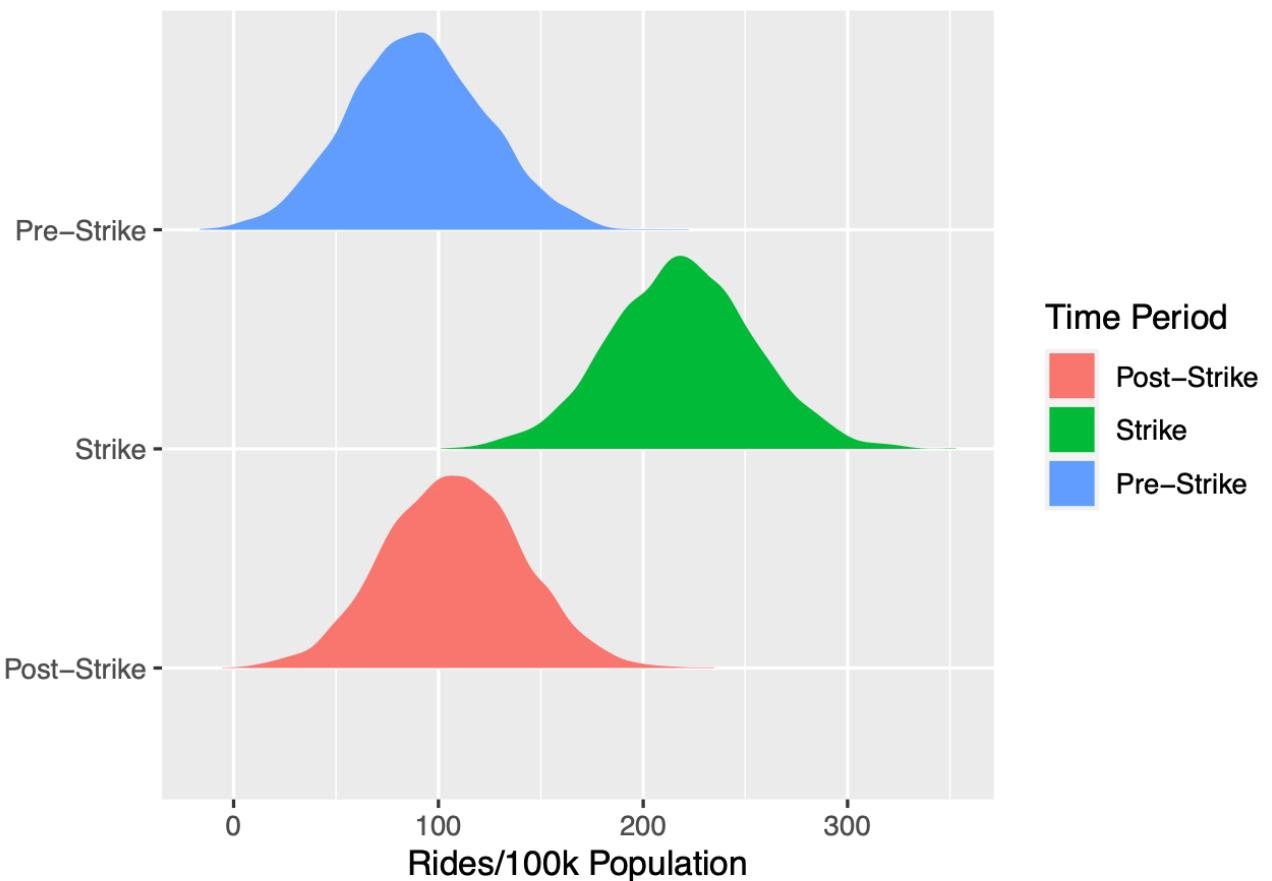


Figure 4: These predictions are generated from the posterior distribution for a standardized precipitation of 0 inches and temperature of 50 degrees. Again the Pre-Strike and Post-Strike periods have significantly lower bikeshare use rates than the strike period though now standardized, the Post-Strike period appears to have higher predicted bikeshare usage rates.