University of Zurich[UZH]

Mobility during the Pandemic: the Swing Tilted to One Side

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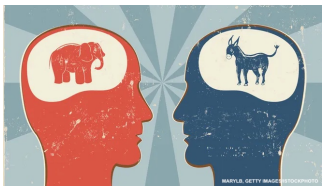
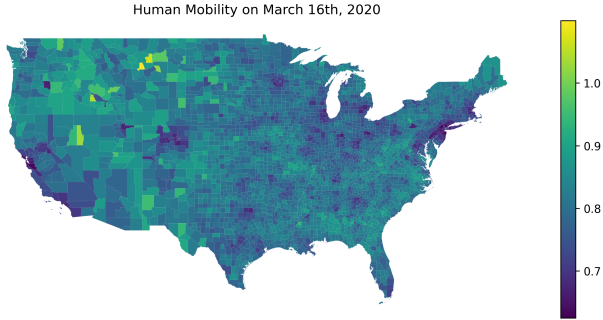
Background



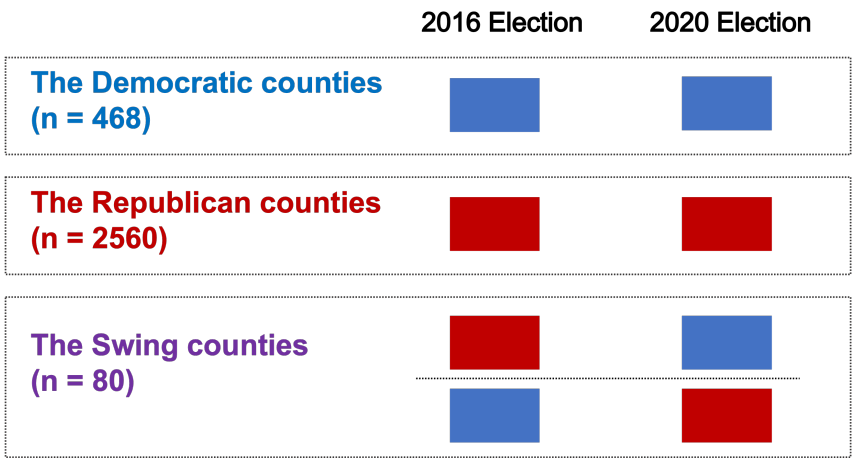
- Political stance affects customer behavior (Jung et al., 2017)
- Political stance affects the perception of COVID-19 (Bock et al., 2022)
- **Does political stance influence mobility pattern?**

Research Aim

- **Identify potential difference in human mobility patterns among the Democratic, Swing, Republican counties**
- **Study time**: February 1st - April 30th, 2020 (the first pandemic wave)
- **Study area**: The Contiguous US (3108 counties)

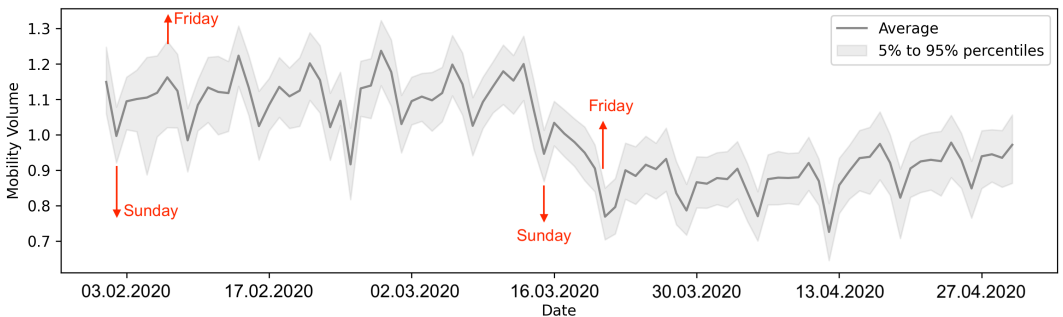


Definition of Political Stance



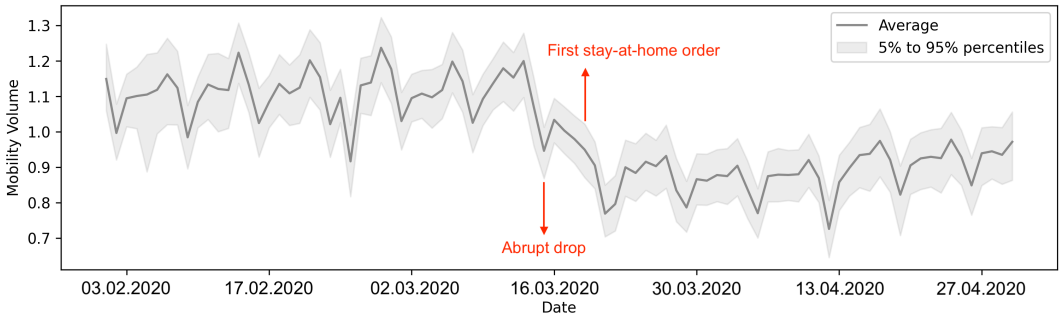
Characterizing Mobility Change

- **Mobility Volume**:
  - The number of daily trips in each county (normalized)
  - Raw data: origin destination matrices (Kang et al., 2020)



Characterizing Mobility Change

- **Mobility Volume**:
  - The number of daily trips in each county
  - Raw data: origin destination matrices (Kang et al., 2020)
- **Structural Break Analysis** (Guler et al., 2019):
  - capture mobility changes



Characterizing Mobility Change

- **Structural Break** (Guler et al., 2019):
  - An abrupt change in time series
  - The changes in the parameters of regression models

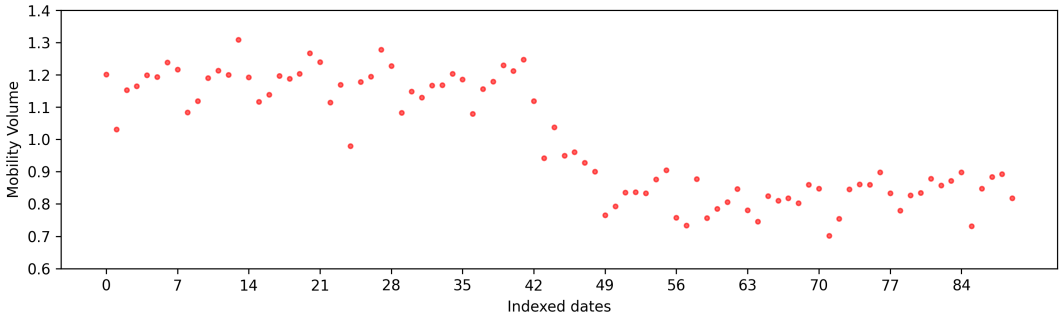


Figure: Harford County, Maryland is taken as an example

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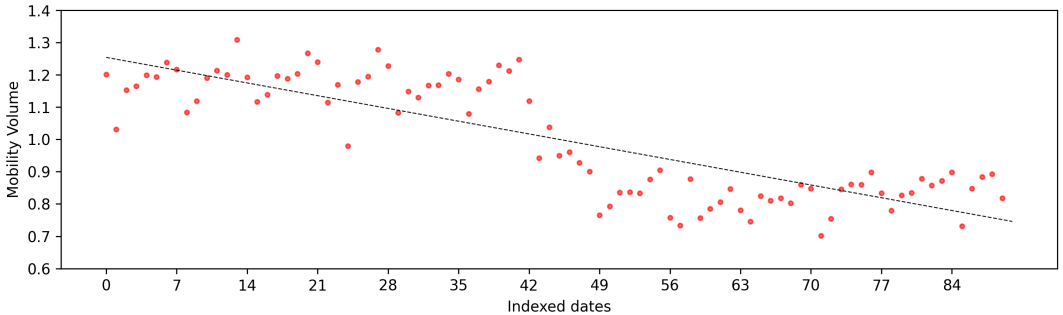

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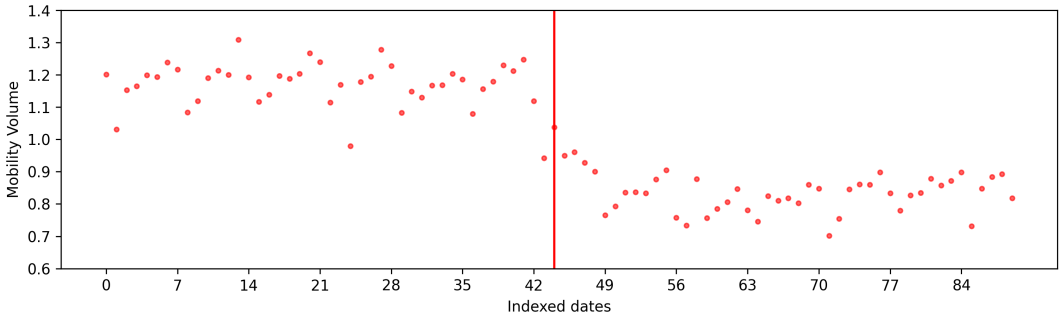

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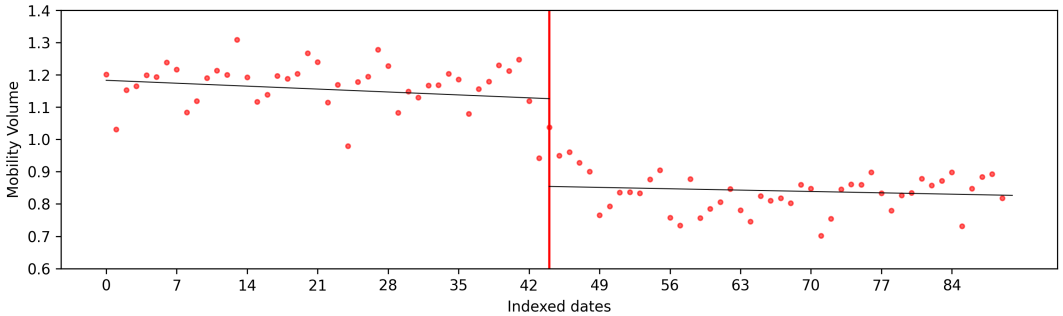
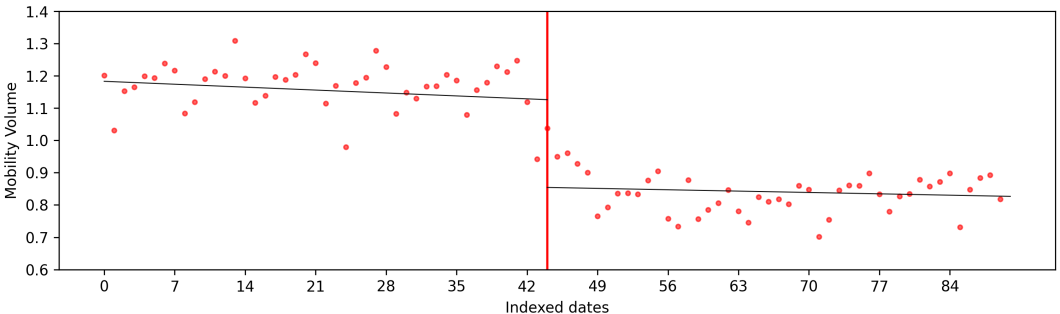


Figure: Harford County, Maryland is taken as an example

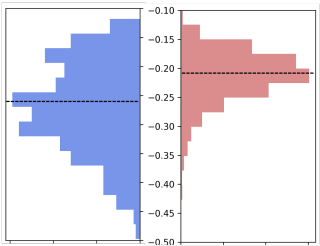
Characterizing Mobility Change

- **Mobility Volume Difference**: the level of change
- **Before-break Slope**: the rate of change before break point
- **After-break Slope**: the rate of change after break point

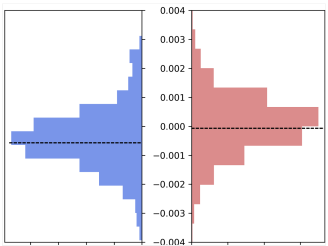


Results

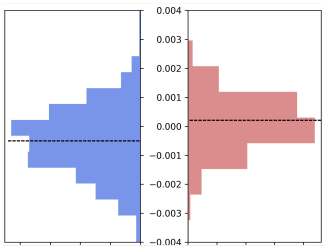
- The Democratic counties had greater reduction than the Republican counties



Mobility Volume Difference



Before-break Slope



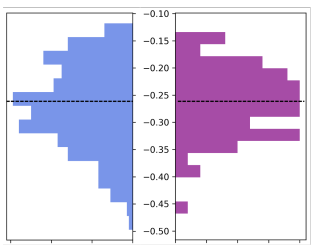
After-break Slope

Results

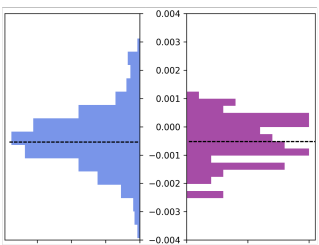
The Swing Counties?

Results

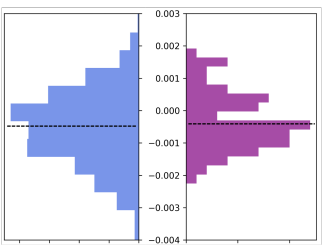
- The Democratic counties had the same mobility pattern as the Swing counties



Mobility Volume Difference



Before-break Slope

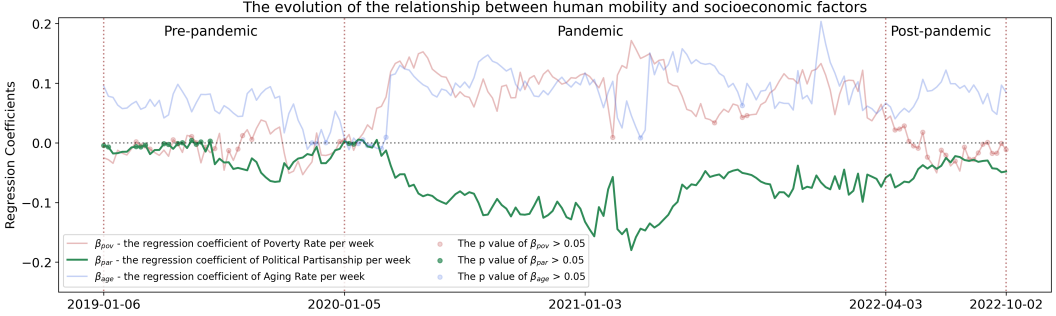


After-break Slope

- **Discussion**
  - The Swing and Democratic: largest and constant decreases
  - Most counties had the breakpoints on the same day, March 16th 2020

Extended Work

- **Spatial regression**
- **Study time**: pre-pandemic, 5 waves, post-pandemic
- **Socioeconomic factors**: political stance



Extended Work

- **Spatial regression**
- **Study time**: pre-pandemic, 5 waves, post-pandemic
- **Socioeconomic factors**:
- political stance, poverty rate, aging rate