How ride-hailing services affect bus ridership using micro-level data

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Background and motivation

• Few studies have examined the impacts of transportation network companies (e.g., Uber, Lyft) (TNCs) on bus ridership
  • TNC data scarce
• Previous work using bus ridership data suggests relationship varies (Hall et al. 2018)
  → Size and direction of effect is unclear
• Growing partnerships between TNCs and transit
• What about the other cities, esp. medium-sized cities? What is the status quo?
Setting: Lane County, OR

Lane Transit District (LTD)
Methods and data

• “Natural experiment”: Uber operated in Eugene between July 24, 2014 and April 5, 2015
  • Sued by Eugene → left (returned in 2018)
• Bus ridership (# of people who alight and board) at a given bus stop and time- 39 million observations between 2012 and 2017
• Regression analysis (negative binomial): Impacts of bus ridership compared
  • Compare to control cities and control period
  • Effects across days and within days
  • Across different neighborhoods
Preliminary results

• Status quo: Overall *increase in bus ridership by 2%* when Uber was active in Eugene/Springfield relative to control cities and prior to Uber’s entry
  • Average bus ridership per stop, time period, and date: 14 people
• Variation within day?
  • Bus ridership increases during morning rush hour to evening rush hour
  • Bus ridership decreases after 6pm
• Variation across days? No difference between weekdays and weekends
• Variation across neighborhoods? Bus ridership increases by 1% in downtown
• Increase in bus ridership after Uber leaves... not sure why
Policy implications

• Results robust to ample controls and different specifications

• Status quo: Bus ridership increases modestly when Uber was active in Eugene (complements)
  • However, lots of variation within days
  • Active partnerships between transit agencies and TNCs could benefit both parties → especially at night
  • Relevant for similar-sized college towns (college students ride the bus for free)
    • Buses less frequent