

Spatial Distribution of Supply and the Role of Market Thickness: Theory and Evidence from Ridesharing

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Research Question on a Broad Level

How does economies of density shape the distribution of supply in spatial markets?

Focus on three more specific questions in the context of Ridesharing:

1. What does **theory** say about driver behavior, efficiency, and platform response?
2. How to **empirically test** whether density has an impact?
3. **Implications** for policy and business strategy?

Quick Answers: Theory

- Equilibrium distribution of **drivers** skewed towards regions with higher demand density.
 - \Rightarrow demand more likely to go unfulfilled in less dense regions.
- **Platform** desires some skew but not as much as arises in equilibrium.
- Platforms should encourage a more even distribution through using **wages and prices** as levers.
- All of the above are more pronounced for **smaller platforms**.

Quick Answers: Empirically Testing the Theory

Objective: Test the implications of the model

- Demand more likely to go unfulfilled in less dense regions
- More pronounced for smaller platforms.

Challenge: Unfulfilled demand is unobserved.

- cannot tell whether percent fulfillment in region i is more than i' .

Solution: For each trip there is a “trip back”

- If riders use Lyft to exit region i consistently less than they do to enter it \Rightarrow Lyft's supply is skewed from i .
- Especially if the same is not true of Uber.

Findings: supply skewed towards denser areas:

- Skew is more pronounced for smaller platforms.
- Skew is much more pronounced for taxi (compared to rideshare)

Business Strategy:

- Platforms should incentivize drivers to operate in less dense areas through higher wages
 - but **avoid** passing the full extra cost to passengers.

Policy

- Breaking up or downsizing rideshare platforms can disproportionately hurt outer areas.
- Our analysis: minimum required size is 120K rides/day for NYC.