UNBANKED POPULATION AND NYC TAXICAB TRIPS

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Abstract

Taxi cabs are an integral aspect of the public transit systems in New York City. The yellow cabs that are ubiquitous throughout the city are key to the economic activity of the largest metropolitan area in the United States. This article reports on a large-scale study of the passenger trips taken by taxi cabs around New York City, conducted for the New York City Taxi and Limousine Commission. Quantitative and qualitative methods were used to investigate patterns and characteristics of taxi passengers, including the use of different modes of payment. These results have implications for local regulations of the for-hire vehicle industry, particularly in the context of the rapid growth of services that require credit cards. Without some type of cash-based payment option, taxi services will isolate certain neighborhoods. At the very least, existing and new providers should be prepared to deal with the increased adoption of credit cards for taxi payments, which have implications for local regulations of the for-hire vehicle industry, particularly in the context of the rapid growth of services that require credit cards.

Research Questions

- Credit card based taxi service exclude many potential taxi riders
- Expansion of taxi services must account for people who use cash by choice or circumstance
- Immigrant status and access to bank accounts strongly predict cash fares
- Outer borough taxi trips often cash based
- Percent of households in poverty was not statistically significant though negatively correlated
- Strongest positive predictors of cash payments are percent foreign born and percent of unbanked
- Ordinary least squares (OLS) and generalized linear models (GLM) are shown

Data and Methods

The data is based on a random sample of 300,000 taxi trips between October 2014 and March 2015. The sample included all registered taxi and limousine companies in New York City, covering the entire metropolitan area. The data was collected through GPS tracking devices installed in taxi cabs.

Analysis

- Neighborhood characteristics help explain propensity to pay cash for taxi trips
- Cash trips, which serve more unbanked areas of the city than yellow cabs, have higher shares of cash fares

Regression Analysis

- Dependent variable: percent of cash trips
- Independent variable: percent of households with high shares of unbanked residents
- Ordinary least squares (OLS) and generalized linear models (GLM) are shown
- Taxicab fare data is disaggregated by neighborhood, date, and destination
- Generalized linear models are used to model the presence of a taxi fare payment category

Conclusions

- Cash payments are common for taxi trips
- Outer borough taxi trips often cash based
- Overcharged rides and errors in bank accounts strongly predict cash fares
- Expansion of taxi services must account for people who use cash by choice or circumstance
- Credit card based taxi service exclusion may penalize lower income populations

Characteristics for All Trips - October 2014

<table>
<thead>
<tr>
<th>Neighborhood</th>
<th>Green Cab Trips</th>
<th>Yellow Cab Trips</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Park West</td>
<td>53,379</td>
<td>35,299</td>
</tr>
<tr>
<td>Central Park North</td>
<td>63,792</td>
<td>36,973</td>
</tr>
<tr>
<td>East Harlem</td>
<td>70,269</td>
<td>45,009</td>
</tr>
<tr>
<td>Washington Heights</td>
<td>74,515</td>
<td>45,009</td>
</tr>
<tr>
<td>West Harlem</td>
<td>37,087</td>
<td>25,000</td>
</tr>
</tbody>
</table>

Fare Characteristics of Green and Yellow Taxicabs in Unbanked Neighborhoods

<table>
<thead>
<tr>
<th>Neighborhood</th>
<th>Green Car Fare Distribution</th>
<th>Yellow Car Fare Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Park West</td>
<td>44% ≤ 0.50</td>
<td>50% ≤ 0.50</td>
</tr>
<tr>
<td>Central Park North</td>
<td>44% ≤ 0.30</td>
<td>40% ≤ 0.30</td>
</tr>
<tr>
<td>East Harlem</td>
<td>44% ≤ 0.20</td>
<td>40% ≤ 0.20</td>
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<tr>
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Testing Payment Type Hotspots

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Source: New York City Taxi and Limousine Commission