

Who is Multimodal? An Analysis of Commuting in Chicago

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Purpose

The purpose of this research is to learn about the commuting behaviors and preferences of people living in the city of Chicago. Specifically, we want to examine the characteristics of people who use multiple travel options, or modes, to get to work; this is referred to as multimodal commuting.

Hypothesis

We hypothesize that there are factors that influence an individual's mode of commute. The critical factor we examine is time: we hypothesize that people will tend to select the commute mode that minimizes the duration of their commute. We also want to test if these factors relate to an individual being a multimodal commuter.

Key Variable Justification

We chose commuting time as our primary explanatory variable both because it appears in the literature (such as Caulfield et al 2012) and in our experience the time required for various modes influences our mode choice

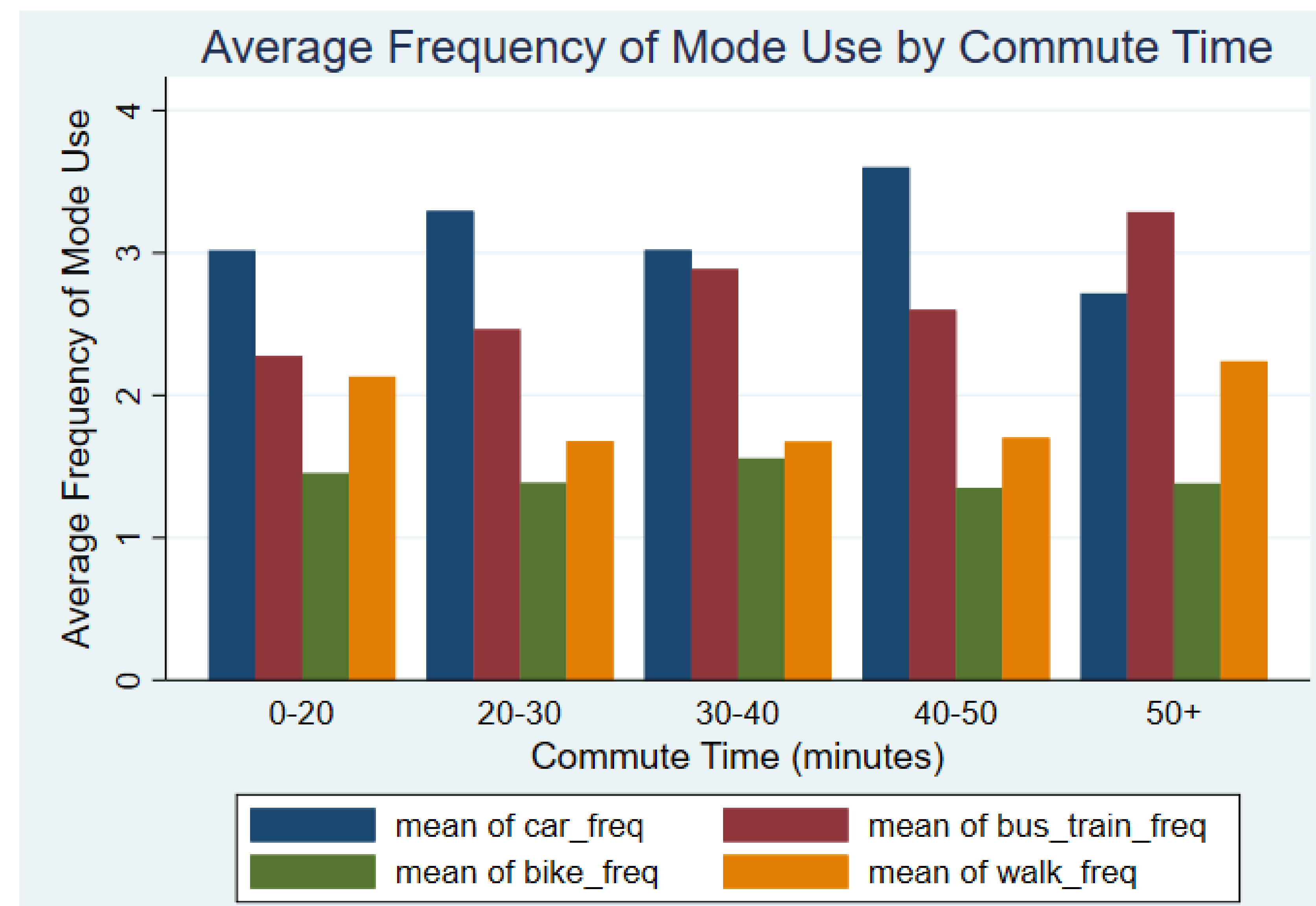
Note on multimodal commuting

Multimodal commuting is "the use of more than one mode of transportation during a specified time period" (Buehler and Hamre 2015). The time periods studied are often a single day or week, but we expand this to the period between Memorial Day and Halloween to see if individuals use different commuting modes during this time.

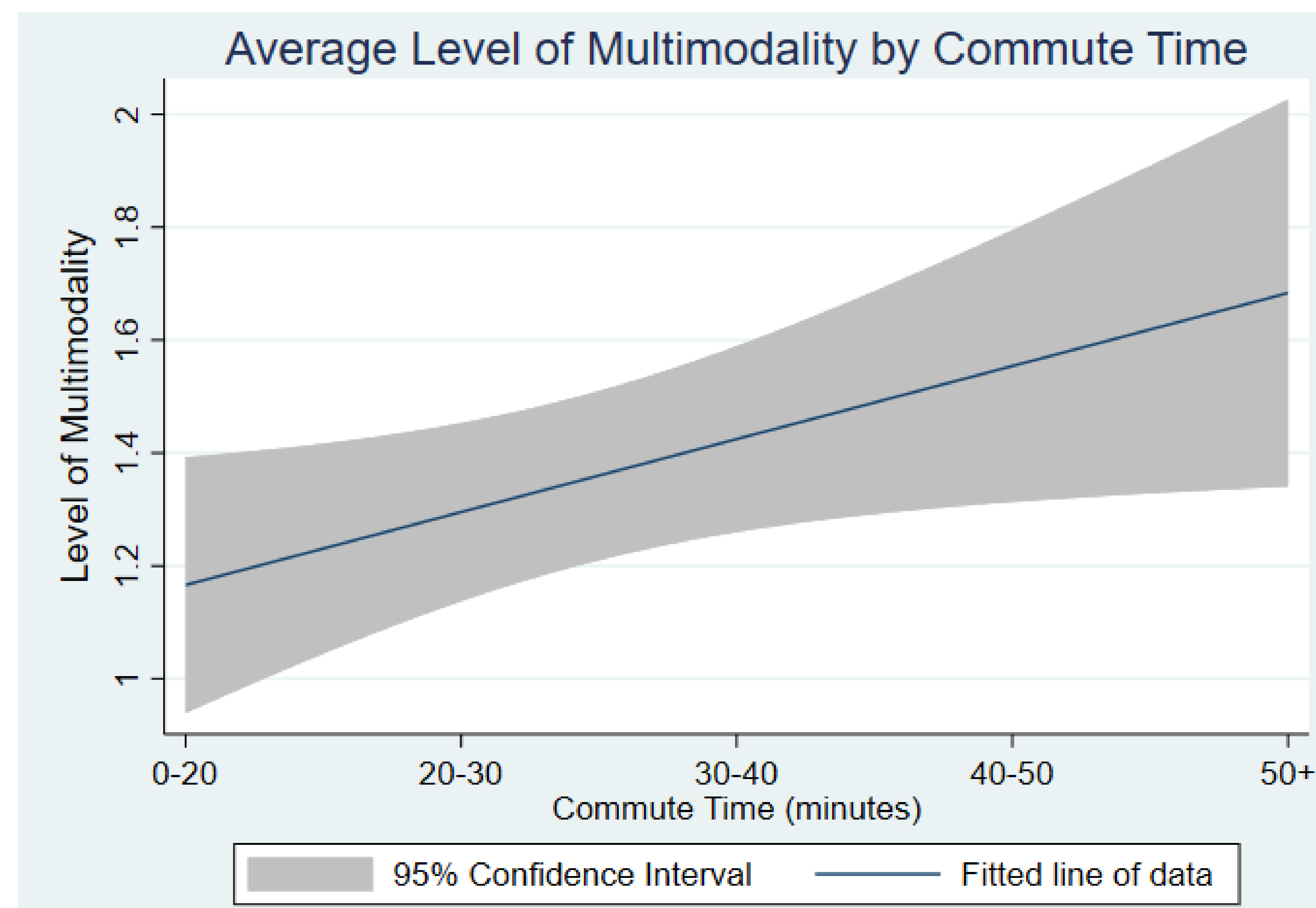
Survey Design

To test our hypothesis, we surveyed residents of Chicago about their current commute to work and preferences for hypothetical commutes that involve riding a bicycle and taking a train. We also gathered demographic information on respondents.

Looking at our Data



Above: There does not seem to be a straightforward relationship between mode choice frequency and commuting time; however, this may change when we control for other variables such as income and education.



Above: Next, we examine commuting time and levels of multimodality, which are based on the frequencies with which respondents use multiple commuting modes over the survey period. There is a relationship in this data set where people with longer commute times are on average more multimodal. This may suggest that people with longer commute times choose to be more multimodal, or that being multimodal takes more time; we have not established a causal relationship, only a correlation.

Survey Distribution

We used Qualtrics to administer our survey and randomly recruit respondents. Before distributing the survey, we obtained IRB approval from Loyola University Chicago

Sample Selection

Because we are looking at commuting in Chicago, we narrowed our sample to people living in the city itself, who are currently employed, and between the ages of 18 and 55.

Sample Size

Our survey sample size is 220. This small size limits our analysis and ability to extrapolate results to larger populations. However, collecting our own data gave us the specific information we wanted, such as the frequencies of commuting modes over an extended time frame.

Challenge

We asked survey respondents to input the nearest cross-streets to where they live and work, because these reveal public transit access and ease of travel. Working with these responses has been difficult because there were many errors in how people inputted their responses.

Next Steps

We are continuing our analysis by running statistical regressions on our data. This allows us to control for variables as we test correlations between commuting mode frequencies and what we think explain them.

Citations

-Buehler, Ralph, and Andrea Hamre. "The Multimodal Majority? Driving, Walking, Cycling, and Public Transportation Use among American Adults." *Transportation*, vol. 42, no. 6, 2015, pp. 1081-1101.

-Caulfield, Brian, Elaine Brick, and Orla Therese Mccarthy. "Determining Bicycle Infrastructure Preferences - A Case Study of Dublin." *Transportation Research Part D-Transport And Environment* 17.5 (2012): 413-17. Web.