ABSTRACT
The purpose of this research is to test the systematic variation in the perception of travel time among travelers and relate the variation to the underlying street network structure. Travel survey data from the Twin Cities metropolitan area (includes the cities of Minneapolis and St. Paul) is used for the analysis. Travelers are classified into two groups based on the ratio of perceived and estimated commute travel time. The measures of network structure are estimated using the street network along the identified commute route. T-test comparisons are conducted to identify statistically significant differences in estimated network measures between the two traveler groups. The combined effect of these estimated network measures on travel time is then analyzed using regression models. The results from the t-test and regression analyses confirm the influence of underlying network structure on the perception of travel time.

OBJECTIVE
Test the systematic variation in the perception of travel time among travelers. Relate this variation to the underlying street network structure.

METHODOLOGY
Identify actual commute route for travelers, obtained directly from the data or using shortest travel time path algorithms.

- Estimate measures of network structure (N_i) along actual commute route.
- Estimate ratio of reported travel time to measured travel time, τ, based on estimated network measures (N_i), socio-demographic characteristics (Xsd) and accessibility (Accd).

Stratify travelers in two groups (Go, Gu) based on ratio of travel time. Conduct t-test comparisons of means of network measures. Develop regression models to predict ratio of travel time.

RESULTS
Network variables influence the ratio of reported travel time to measured travel time.

- Measures of network structure show the expected influence on an individual’s perception of travel time.
- Differences exist in the performance of some network measures (e.g., trip circuity) in the regression models compared to t-test analysis. This shows that the combined effect of the network variables can differ from their individual effects.

CONCLUSIONS
Statistically significant differences in network structure can be seen between the two traveler groups.

The difference in an individual’s perception of travel time can be related to network structure.

Network structure variables influence an individual’s perception of travel time, after controlling for non-network variables.

Network Structure and Travel Time Perception
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