Determining the Impact of the Light Rail on Seattle's Average Weekday Traffic

A 2008-2018 Study

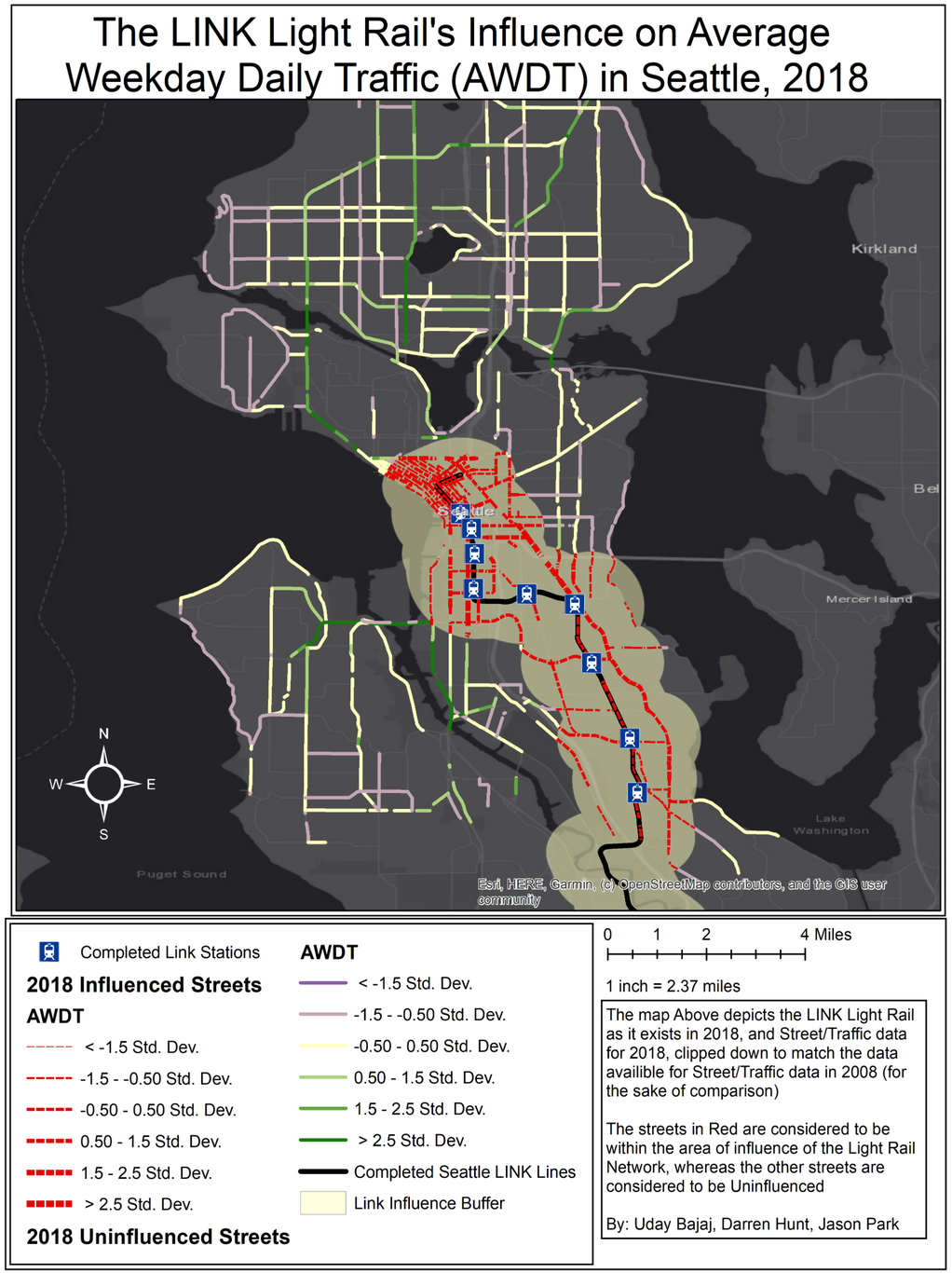
Uday Bajaj, Darren Hunt, Jason Park | University of Washington Dept. of Geography

Introduction

- Seattle's Light Rail opened in 2009, giving commuters in the area a new transportation option.
- Our primary project goal was to determine significant changes in Average Weekday Daily Traffic (AWDT) densities over time.
- Z-score tests used 2013 and 2018 data compared to traffic densities 1 year prior to the train's opening (2008).
- Conducting tests such as these may help answer questions such as, "Is the Light Rail a cost-effective traffic solution?", and others.

Methods

- Tools used include ArcMap 10.7.1; Excel.
- Within ArcMap, we used Sound Transit provided shapefiles (stations and route), and Seattle provided traffic densities (AWDT) for 2008, 2013, and 2018.
- We applied buffers of 1-mile around the stations (simulating walking distance) and a ¾ mile buffer around train segments.
- Streets within the buffer are considered areas influenced by the Light Rail.
- A standard Z-score test is applied to determine significant changes in AWDT from 2008-2013 and 2008-2018.



Findings and Conclusions

- With P-values < 0.00001 (where 0.05 is significant), we found Z-scores of 286.9 and 60.2 for the 2013 and 2018 tests, respectively.
- These are considered statistically significant; however this indicates an **increase** in traffic due to positive Z-score values.
- The scores are calculated using the mean AWDT values throughout the buffer zone, so the region of impact is inside the area of influence (highlighted on map).
- Interpreting this finding in context, it is **not** reasonable to conclude the Light Rail itself resulted in traffic density increase, rather factors such as a local population increase, change in job location, change in car ownership, etc. could have caused this result.
- Conducting further tests, such as including ACS data for thorough research, can help us understand public transit's impact, as well the city's evolving traffic density patterns.

DATA REFERENCES

- "2013 Traffic Flow Counts." Seattle City GIS, Arcgis Online, 30 May 2019, data seattlecitygis.opendata.arcgis.com.
- "2018 Traffic Flow Counts." Seattle City GIS, Arcgis Online, 30 Aug. 2019, data-seattlecitygis.opendata.arcgis.com.
- "Open Transit Data (OTD): OTD Downloads: Sound Transit." Sound Transit, 2018, www.soundtransit.org.