

Final Project Proposal

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Project Description and Motivation:

- Evaluate the viability of government-sponsored public bicycle rentals in metro areas like Logan or SLC
- Find the most common trip uses for rented bicycles
- Learn about the demographics of rentals and trips within Guadalajara
- Find total yearly cost estimate for government to run
- Find demographics to target (should bikes be on campus first?)
- Are there noticeable differences between densely vs sparsely spaced stations?
- Has bike use increased since implementation in 2014?
- Do bike rush hours work similarly to cars? How do they work and when will rush hours occur.
- Estimate annual savings for a given demographic (ie., students at USU) for a similar program in place of their current mode of transportation.
- Which civic features (schools, shopping, worksites) result in increased bicycle use?

The concept of publicly available non-emissive transportation, such as scooters or bicycles, is not a brand-new concept in civic life. The benefits of such a program existing in a city include social mobility, reduced carbon emissions into the city's atmosphere, as well as reduced road traffic. However, the viability of such solutions within the US has seen only dubious success; many privately-held services such as Lime scooters have experienced failure due to a lack of maintenance, failure to mesh with culture in the US, vandalism, and other cost overhead that is often not accounted for in electric charging costs or user error. These scooters are a common sight in Logan, UT, but often remain left in the same spot for days or weeks until moved, and it is usually unclear how they are charged or operated to a layperson, even if they wanted to use or move it.

An alternative solution has been in practice within the metro area of Guadalajara; the city government has established over 350 stations where subscribed users can ride a bicycle from any station to another. Stations are rather densely-packed, with the typical station 2-3 blocks from others in each direction. Regular users can quickly learn the most convenient stations for their daily tasks, which could result in increased ease of use and, ultimately, more success as an emissions-reduction program.

Schedule (current april 8th)

Week 1:

- April 12th presentation

- Dataset cleaning and correlations (find other datasets to compare? Logan and SLC data?)
- Scatter the plots
- Demographics research

Week 2:

- Predictive models (mostly to show what things can be predicted)
- Find useful trends within the demographics research

Week 3:

- April 27th final report due
- Make pretty graphs
- Report findings

Division of Responsibilities:

Benson:

- Evaluate the estimated annual cost of program maintenance in Guadalajara, Logan or SLC.
- Estimate a similar program's success (usage frequency) in Logan.
- Find expected emissions reductions through use of this program in both Guadalajara and Logan.

Jensen:

- Find a USU student's estimated annual cost saving by using a bike-share program in place of their current mode of transportation.
- Find usage trends within the program used in Guadalajara; who uses the program the most, and when.

Nathan:

- Research which features of a city (schools, shopping, worksites, busy roads, etc.) influence bicycle traffic.

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Problems:

More data in general would be helpful:

- We could also find a dataset of a similar city to Logan or SLC as well as some outside the US.
- We may need to resort to manual data collection (surveys) for some aspects of this project, such as finding potential cost savings for USU students.

No maintenance and cost data:

- Viability of these services is heavily based on cost, we could find at least one dataset that includes maintenance data.
- We could find bike data to find normal maintenance requirements for bikes with different rental costs.

Location as a prediction target is not easy to handle:

- One option is to target the station code; this results in hundreds of target classes. With millions of entries available this should not be a problem, except for processing time.
- Another option is to target coordinate location, (X,Y). The problem is that we don't know how to handle a tuple as a target.

