All code, plots reside here:
https://github.com/karunmj/usu-coursework/tree/master/cs5660datasc/hw/hw3

Transit frequency analysis for Logan, UT

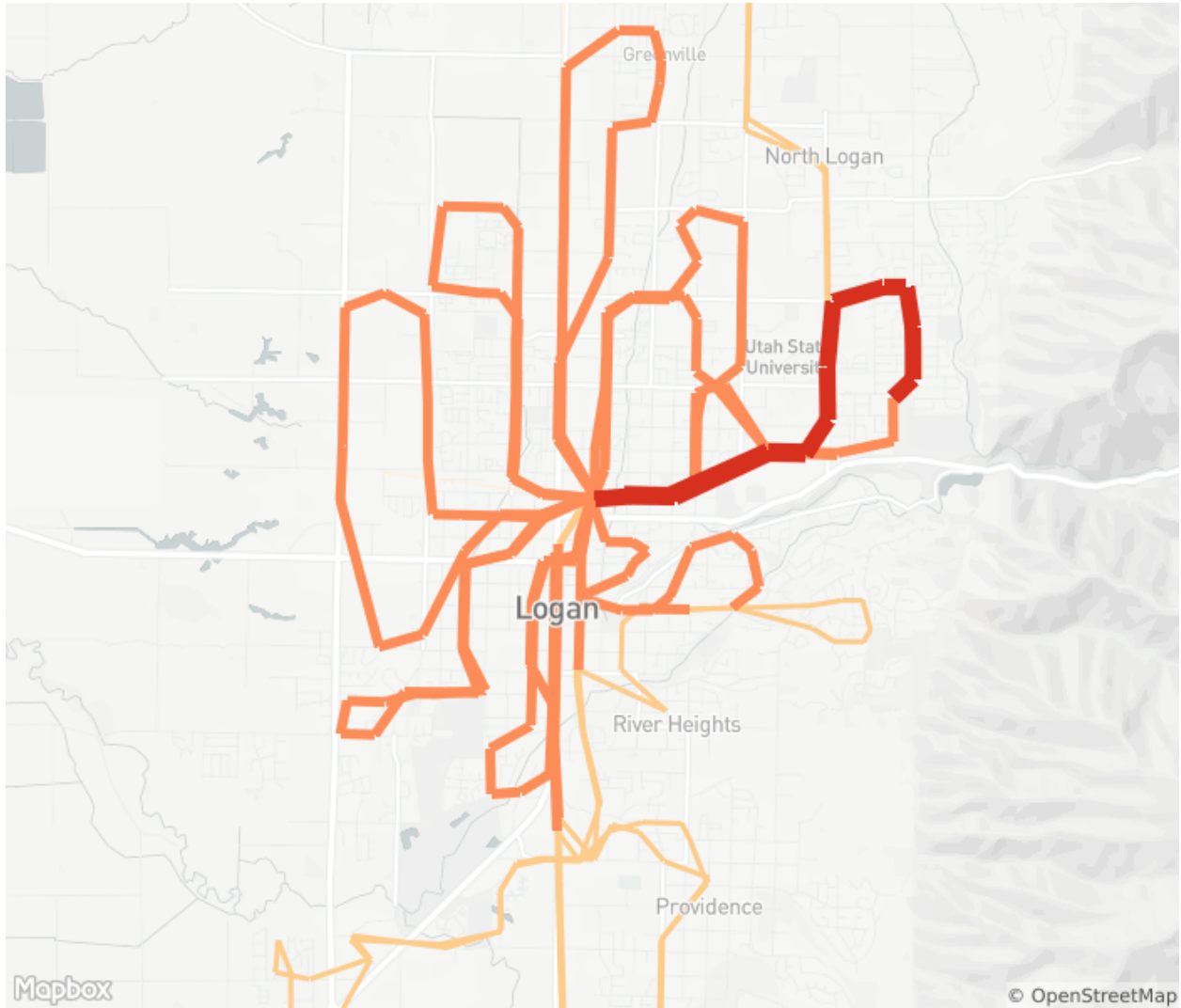Fig. 1: Frequency service map for Logan, UT between 07:00 to 09:00 am on a regular weekday (link)

Motivation:

Public transportation is more attractive to commuters when frequent service exist between a trip's origin and destination. Transit frequency refers to the number of available trips between two transit stops for a particular period in time. Higher transit frequency would provide a level of flexibility and ease to commuters as they do not necessarily have to time their trips around transit schedules and are mostly guaranteed shorter transfer times between trips. Such information is usually not conveyed in an official transit map. Fig. 1 shows a frequency service map for Logan, Utah, served by Cache Valley Transit District (CVTD) for the time period between 7:00 to 9:00

am on a regular weekday. Stronger color and line width represents more frequent service between two stops.

Methods:
Frequency was calculated by dividing the number of available trips between every two distinct stops for the given time duration of two hours. An early morning time duration was chosen, as a primary reason for commute was getting to work. Routes were formed between distinct stops and were assigned a frequency class, with a higher class corresponding to more available trips per duration. Frequency classes included 0, 3, 6 and 10. For example, a route was assigned class 6 when the total number of trips between them were 12 over the 2 hours.

The coloring scheme was obtained from Color brewer ("ColorBrewer: Color Advice for Maps" 2016), a web tool for selecting colors for maps. Higher frequency classes were assigned darker colors and larger stroke widths. A light map background was chosen to highlight the transit routes, and the zoom level and bounding box were set such that Logan city was in view. Mapbox Studio had been used to generate an HTML page with the frequency intensity as a GeoJSON overlay. This works had been inspired and heavily borrowed from a Mapzen blog post ("Transit Dimensions · Mapzen" 2016), Transitland Datastore ("Datastore · Transitland" 2016) and work of Ian Reese ("README.md" 2016)

Conclusion:
Fig. 1 shows it is easier to get to Utah State University (USU) and the surrounding region as transit stops have more frequent service between them. This is primarily due to Route 1 that runs every 15 minutes, Route 4 every 30 minutes and Route 15 every 45 minutes between 7 to 9 am. However, CVTD services would not be convenient for commuters who would like to get to other places around Logan. A legend for frequency classes with their corresponding colors would have conveyed more information, however may add more confusion. A GIF presentation would have been able to convey frequency intensities over a varying time scale. Overall, a frequency intensity map of city's transit system is an effective means to convey important information.

References:
"ColorBrewer: Color Advice for Maps." 2016. Accessed October 23. http://colorbrewer2.org/#.

"Datastore · Transitland." 2016. Accessed October 23.
        https://transit.land/documentation/datastore/.

"README.md." 2016. Gist. Accessed October 23.
        https://gist.github.com/irees/272e5dc57614cab595a0.

"Transit Dimensions · Mapzen." 2016. Accessed October 23. https://mapzen.com/blog/the-transit-dimension-transit-land-schedule-api/.