Project Objective

Using C-TRAN bus stop event data, create a summary report regarding the accuracy of initial stop locations based on the dynamic GPS location data of bus stop events. Show the mean, median, and number of stops greater than 30 feet away from the latitude and longitude location calculated from the sample data.

Project Approach

The approach to this problem was first based on a set of sample data of bus stop events from 3/1/2019 to 3/7/2019. This sample data contained bus stop events, which are triggered when a bus is within a 30 foot proximity of a bus stop on its designated path and its doors open. Data regarding the number of stops, routes, stop times, trips shapes of the route and calendar dates was provided. This data was referenced against the July service schedule stop locations and public C-Tran stop information.

Using this data, exploratory data analysis was conducted. This included mapping GPS coordinates of individual routes, looking for abnormalities/outliers in the data, creating a relational database and comparing GPS points to locations on Google Maps.

After speaking with David Crout from C-TRAN, questions our project group came up with were discussed and a better sense of our project objectives was created. For the purposes of this project, our project goal is to provide a summary report with our analysis of how static stop location GPS coordinates compared to dynamic data collected from bus stop events. David will also provide us with a list of stops to ignore as transit centers are not to be considered in our analysis.

Team Structure

The team will have two, two week sprints to work on the project. One of which will extend outside of the class. The first sprint meeting will be 7/30 after class. During this meeting we will be deciding what stories we need to create, rank them in importance, and then execute them as a team. The team will likely be two front end and two back end developers.

Project Milestone Update

We are on track with our milestones. However, we will be getting a new larger dataset and updated stop locations during the week of 7/30 -- we will continue to work with our small dataset to not delay our work. Currently, we are on track to complete our milestones and projects particularly since we've already received and analyzed our first dataset.

Milestones	**1**	**2**	**3**	**4**
7/16 (week 4)	~~Project Plan~~	~~Understand C-tran data~~	~~Setup Github~~	~~Begin midpoint report~~
7/23 (week 5)	~~Meet with C-tran~~	~~Schedule meeting with Professor for next week (week 6)~~	~~Finish Midpoint report~~	After meeting with c-tran, come up with a design that would satisfy the project
7/30 (week 6)	Begin implementation	Get new larger dataset	Analyze the data	
8/6 (week 7)	Finish implementation	Begin second sprint	Preparing for final presentation	
8/13 (week 8)	Final Presentation			

Meeting with Professor

We have a meeting scheduled with Dr. Tufte on 8/1 from 2:10pm - 2:40pm.

Backlog - Future enhancement

- Looks for vehicles with consistent GPS issues
- Create front end for displaying data
    - Allow user to select a specific vehicle/stop location.routes to display the data
- Data visualization
- Create a front end that can be fed quarterly data and stop info
- Allow front end that can run a set of queries
- Allow front end that can run any query (that works)
- Allow front end to read in stop locations and quarterly cvs