MEMORANDUM

To: Dr. Jeff LaMondia, Urban Freight Director, SFCTA

From: Lan Liu

Date: April 7, 2017

RE: The implementation of an urban freight-cycling network in San Francisco, CA

I. Purpose

This assignment is made to evaluate the implementation of an urban freight-cycling network. And the designer need to use ArcGIS's Network Analysis tool to look into the fastest route to be used for the trial run, travel time to every nightclub in San Francisco from a distribution hub, and the number of nightclubs and neighborhoods within reachable limits.

II. Methods of creating a map

A large map was created from eight layers and an inset map was created from a data frame with three layers. The final layout was made with following steps:

- First, the data was downloaded and exported into a folder. And three layers (Streets, California Landmarks, Planning Neighborhoods, San Francisco Food Vendors, and Network Dataset) were selected to show up in ArcGIS. By using the selection tools, Costco Wholesale, Bar/Nightclub, Civic Center, and landmarks within the planning neighborhoods were created into different layer, respectively. Then, Network Analyst and Network Analyst Window were prepared for network analysis. "Create Network Location Tool" button was clicked to create stops in sequence by dropping flags (Costco, "O MythosTavernand", and "Jackson Fillmore Trattoria"). "Solve" button was clicked to show the shortest path from Costco to the two destinations.
- Second, a new data frame was inserted, and the same layers were added. By selecting "Load Locations" and setting "FullName" in the name field to decide where was the origin locations. In addition, do the same to choose destinations (Bar/Nightclub), the field name was changed to "StoreName". "OD Cost Matrix Properties" was clicked and Default Cutoff Value was changed to 5 minutes. "Solve" button was clicked to display all the possible pairs of Civic Center to Nightclubs possible, with rankings and travel times.
- Third, a new data frame was inserted, and the same layers were selected to show up. Did the same preparation in the first section about network analyst. Repeat "Load Locations" step shown in the second part for "Facilities", "3, 5, 10" minutes were set up in Default Breaks and "from Facilities" was set up in Direction filed. Before clicking "OK", Generalized Polygon Type and unchecked Generate line should be checked. "Solve" button was clicked to show the service area around the Costco hub. Using clip tool to highlight the nightclubs and neighborhoods accessible within each time band. The data used to create the map comes from the folder named lab 9. The full citation is referred to the memo.

III. Findings

As shown in Figure 1, the fastest route from Costco to O MythosTavernand, and Jackson Fillmore Trattoria is 3.4 miles which takes 6 min. The instruction of how to get these two night bars is presented in Figure 1. Most night bars are located between 5 min and 3 min travel time from Costco. And as further the distance between Costco and the destinations, the larger size of vehicle is recommended.

Figure 1: A summary of the route from Costco to two destinations

IV. Caveats

Before clipping landmarks into neighborhoods, it has both "Civic Ctr" and "Civic Center" in the "FULLNAME" of location, which creates some confusion. So make clip is necessary to create a layer of the landmarks only within the planning neighborhoods of San Francisco which contains only "Civic Center".

V. Appendices

Streets

http://www.arcgis.com/home/item.html?id=d6bd91b2fddc483b8ccbc66942db84cb

Planning Neighborhoods

https://data.sfgov.org/Geographic-Locations-and-Boundaries/Neighborhood-Groups-Map/qc6m-r4ih\

Landmarks

https://www.census.gov/cgi-bin/geo/shapefiles2014/layers.cgi

San Francisco Food Vendors

https://data.sfgov.org/Economy-and-Community/Retail-Food-Stores-San-Francisco-CA/pt38-uhn6