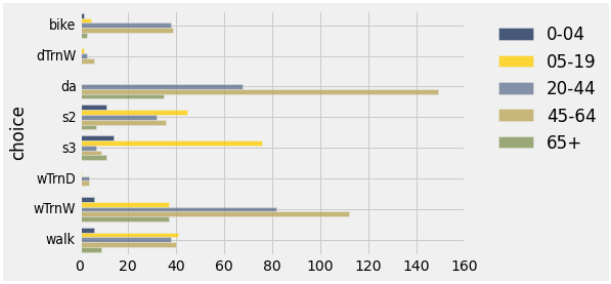
CE 88
Homework 5
Due 3/2/2016 (1 week)



In this homework, you will explore travel mode choices of individual travelers and investigate what conditions could make cycling a more popular travel option. Particularly, we will explore travel choice data to find out distinctive properties of travellers who choose to travel by bike, as well as the properties of their intended destinations that could make cycling a more favorable choice.

Data. In this homework, we will use a subset of the travel choice data from the California Household Travel Survey. The data are contained in *modechoice.csv* file and were presented in Minilab5. Please refer to the minilab for data description.
Travel Analysis Zones (TAZs) data contained in *SF_Oak_TAZs.geojson* are also required. Please refer to the Minilab3 and your solutions of the previous homeworks regarding the use of *folium* package for creating interactive map overlays.

Problem 1 (2 points). In the analysis below, we will focus on the travellers who had **both** biking (‘**bike**’) and driving alone (‘**da**’) **available** and have **chosen either one or the other**. Prepare a data table containing trip records of the travelers who match the latter conditions. How many trip records does it contain?

Problem 2 (3 points). Cycling can be physically demanding. Travel distance and age are possibly the important factors that influence the choice to drive alone rather than to bike. Produce a scatterplot of ‘total_travel_distance_bicycle’ vs ‘age’ variables, representing choices made with markers of different colors (for example, blue for ‘da’ and red for ‘bike’). Is age an important factor? What is the upper limit of the distance that most people are willing to bike?

Problem 3 (5 points). Let us focus on the bike trips and try to find out more about why people choose to bike. Produce a map visualizing the origin TAZs of bike trips with grey, and the destination TAZs with red color (**hint**: use fill_opacity=0.2 for both). What is the most popular biking destination? Why do you think it is so? What other data might you need to collect to investigate the reasons that make a destination (and an area in general) bike-friendly?

Your submission must be both a PDF file with your answers and the original ipynb.