Project Guidelines

**The purpose of the project (1 points)**

For example: This project will study how measures of economic activity (income, unemployment, production structure) evolve over time at a narrow geographic level (a commute zone) within the United States. As an example, consider New York City: It has had ups and downs over the years, In the 1970s and 80s it was a model of urban decay; Today, there are few areas in the United States that are more prosperous than New York. This project will describe and visualize the properties of these fluctuations.

**The structure of the project report (1 points)**

For example:

I anticipate that the project will have three sections.

Basic statistics about the cross-sectional inequality and the volatility of income over time will be reported.

Visualizations of illustrating the dynamics. For example, paths for interesting areas will be presented relative to aggregate statistics of the distribution, e.g. like Korea in the PWT matplotlib example) and disasters (e.g. Detroit).

Finally, I plan present a national map that illustrates the relative changes over time to visualize the geographic distribution of these local economic fluctuations in economic activity. This map might be supplemented with an additional map which cross-references the production structure of each community, e.g. we may see that those communities that were most tilted towards manufacturing are the ones that declined the most.

**Data Report**

**Overview of the data**

Where is data from? What is the main property of the data. (2 points)

For example:

Overview: The data behind my project comes from the Bureau of Economic Analysis. As mentioned above, their regional accounts data provides access to measures of economic activity at (i) detailed geographic levels (e.g. county's) and (ii) a long time series for these measures dating back to 1969.

**Important variables** (3 points)

For example:

The key series that I must retrieve is what the BEA calls personal income which is defined as:

"Personal income is the income received by, or on behalf of, all persons from all sources: from participation as laborers in production, from owning a home or unincorporated business, from the ownership of financial assets, and from government and business in the form of transfer receipts. It includes income from domestic sources as well as from the rest of the world."

One way to think about this is that it is close to an income side measure of output. In my analysis, I will focus on personal income per capita which adjusts this measure by the population within that geographic area.

In my report I will also download population. Other measures of economic activity are available from the BEA or can be merged with the Census.

The Geography that I will work with is at the county level. I eventually may aggregate up to what is called a "commute zone."

**Key imports**

import numpy as np

import matplotlib.pyplot as plt

%matplotlib inline

import pandas as pd

import statsmodels.api as sm

from statsmodels.iolib.summary2 import summary\_col

**Access of the data**

1. Clear state how to access the data (csv link, etc) (2 points)

url = 'http://research.stlouisfed.org/fred2/series/UNRATE/downloaddata/UNRATE.csv'

data = pd.read\_csv(url, parse\_dates=True)

1. Use merge to merge two or more datasets together (Bonus: 2 points)
2. Show what the data looks like (1 point)

data.head()

**Analysis**

1. Summary statistics of key variables (2 points)
2. Plots of key variables (2 points)
3. Hypothesis of a theory (2 points)
4. Linear regression to test the hypothesis (3 points)
5. Concluding remarks (1 points)

**Presentation: (10 points)**

Every team has to sign up for a 10 minutes presentation in the last two classes of the course.

Please use your jupyter notebook for your presentation. Divide the whole notebook into three parts, each team member presents one part.

In the presentation, you should clearly explain what you did, what you encounter as problems and how you overcome the problems. You don’t have to finish the whole project; it is ok to have contents that are to be finished. You can also ask for help for the parts you are having difficulty with.