

Import & Export statistics of United States
CS 560 Final Project Proposal
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https://zwang190.github.io/us_import_export/

Background and Motivation

As the globalization evolved, each commodity and product, which are being used by customers in daily basis, are not monotonically produced or assembled in one country or region. Countries and regions are conducting international business and trades in an increasingly frequent manner, generating revenues and obtaining the goods and services benefiting domestic markets by doing export and import with various partners within the world-wide range.

My motivation came from my previous experience. When I was undergraduate, my major was business administration with concentrating in international business. Also, during my internship, I worked in Dubai, United Arab Emirates for a company which was doing vegetables and fruits import and export.

Project Objectives

The goal of this project is to illustrate current economic situation to audiences by visualizing international trades data of United States and point out the changes due to the impact of covid-19. The designer has identified sufficient data covering recent years to make comparisons among the figures in 2020 and other years, exhibiting the development and trend of the economy by analyzing the changes in those data. This goal will be achieved by several objectives:

1. Generate an overview of the whole import/export activities by balance of payments and total revenue and expense in U.S. dollars.
2. Exhibit the import/export goods based on five principal end-use categories and analyze the import/export by dividing data into a more specific end-use categories with dozens of options in order to explain the detail of foreign trade activities.
3. Illustrate involvement of each state by analyzing their revenue/expense.
4. Explain the changes of demands toward certain goods of specific states.

Data

Data will mainly come from United States Census Bureau and World Integrated Trade Solution, which are credible and free website with large amount of trading data available. The link will be attached as following:

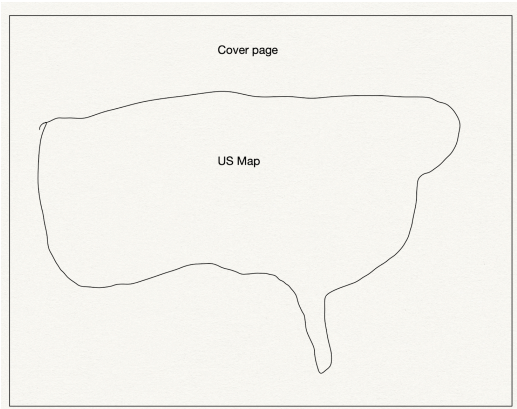
<https://www.census.gov/foreign-trade/index.html>
<https://wits.worldbank.org/CountryProfile/en/>

Data Processing

Data from those two sources are well organized. Certain of the data is in CSV format, which can be directly used. Some of them are in Excel format, which needs some parsing work, such as using Python scripts to implement the extraction.

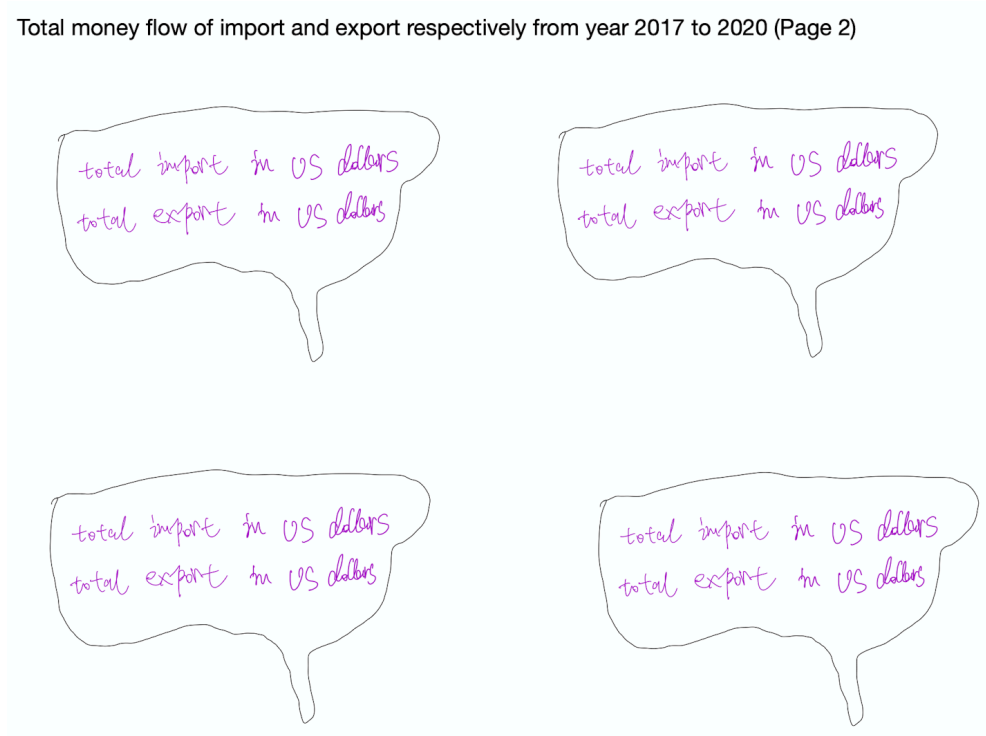
Visualization Design

First of all, this will be the cover page.

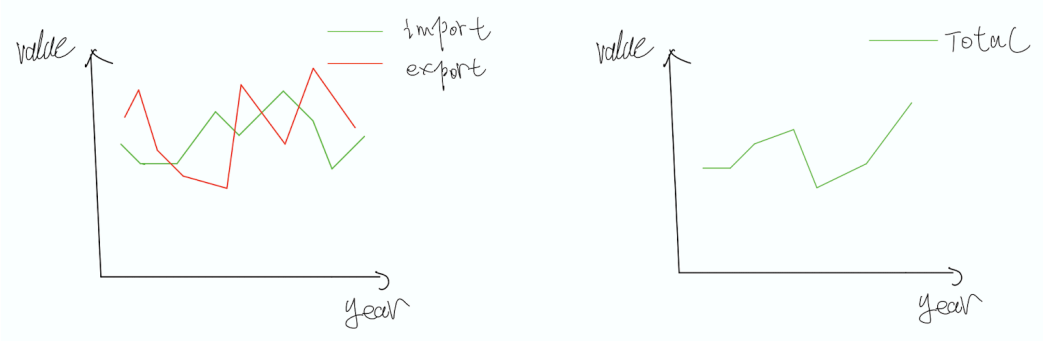


Page 2 and page 3 will serve objective 1. Those data will be drawing general pictures for audiences with the total money flow and balance of payments.

Total money flow of import and export respectively from year 2017 to 2020 (Page 2)

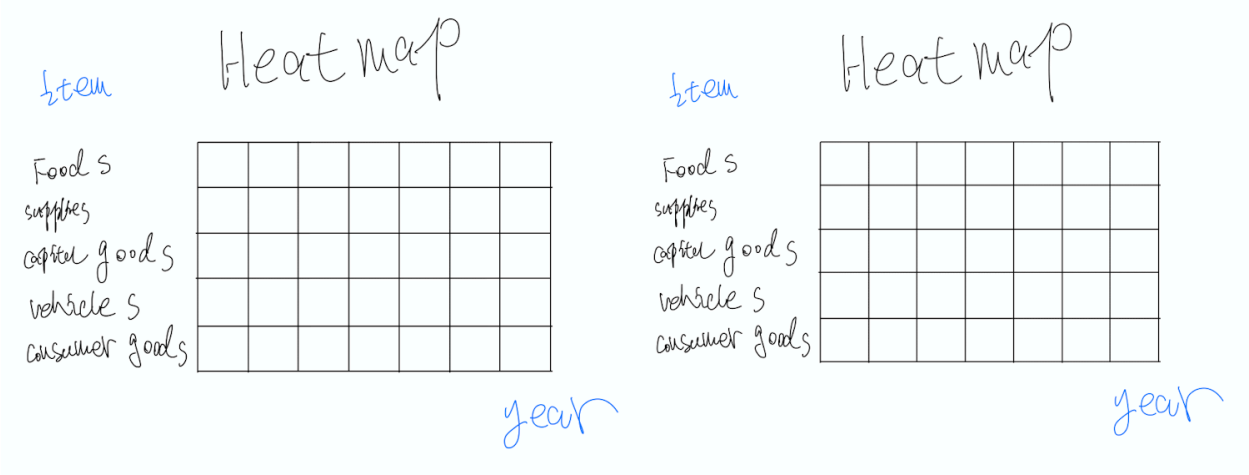


The balance of payments of import, export and total respectively (page 3).

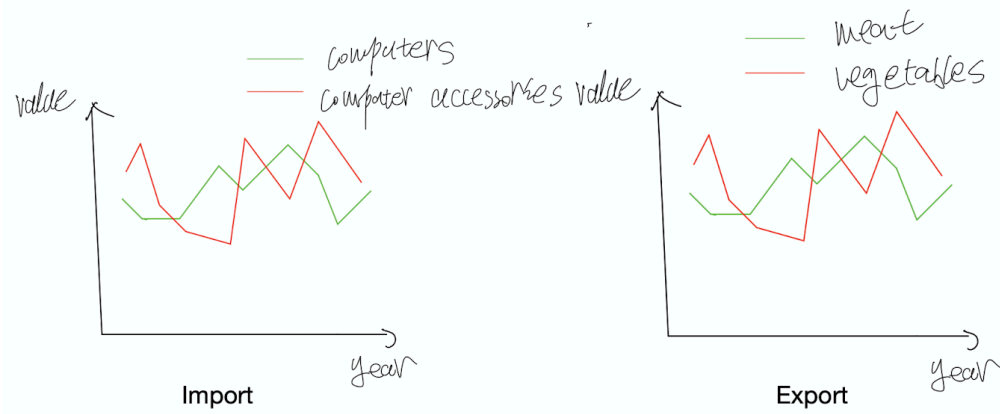


Page 4 and page 5 are designed for objective 2. page 4 will lead the audiences into the the detail of the goods in foreign trade activities. Those two heat maps will visualize the money flow happened based on five principal end-use categories, including Food, production supplies, capital goods, automotive vehicles and consumer goods. Those two heap maps can briefly introduce the usage of goods. However, foreign trading absolutely will involve goods which will serve for significant amount of purposes. Therefore, page 5 is designed to generate a more detailed line graph with dozens of categories given by U.S. census as variables.

Money flow of items based on five principal end-use categories (page 4).



U.S. foreign trades based on end-use categories (page 5).



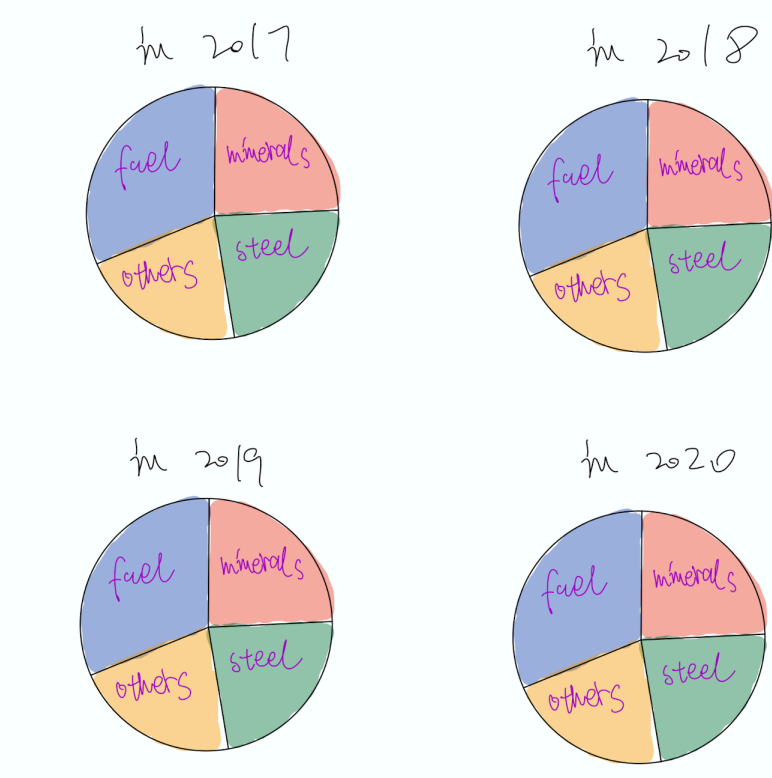
In order to comprehensively investigate the status of foreign trades, the designer decided to visualize the data of foreign traders at state level, conducting data analysis over money flow of import/export. Page 6 will adopt choropleth map with being segmented by states in order to achieve objective 3. This choropleth map will exhibit money flow of import/export at each state.

Revenue/expense from foreign trades at state level (page 6)

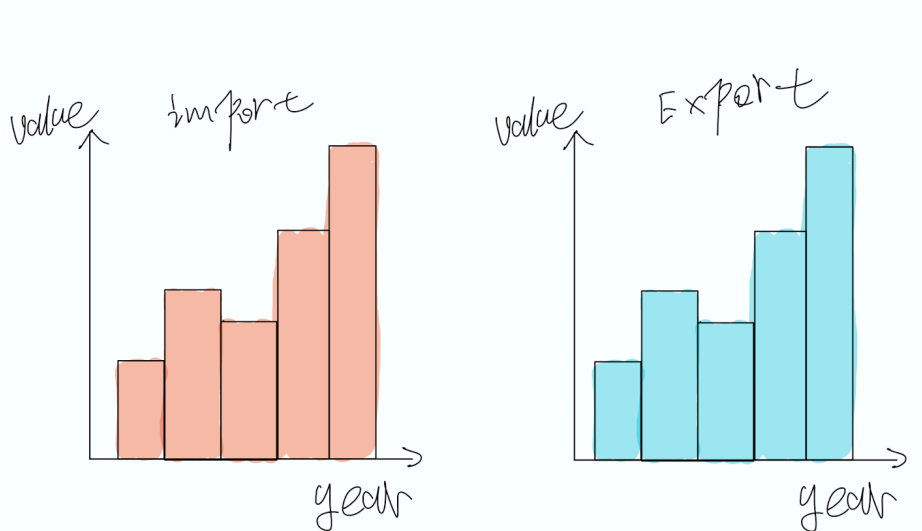


Finally, the designer will adopt four pie charts to visualize the commodities in trading at page 7. Those four pie charts aim at showing the **proportion of commodities at each state over those years**. In addition, **histogram** will be applied to illustrate trading amount of commodities.

Proportions of trading goods at state level (Page 7)



Changes of demands of certain goods in foreign trades at state level all over the years (page 8).



Must-Have Features

Page 1 - Cover page with a US flag , title and etc..

Page 2 - Four maps graphs exhibiting total U.S foreign trade with world in U.S. dollars in different years.

Page 3 - Historical data with regarding with balance of payments.

- The graph will adopt multi-line chart.
- Exhibit three variables, including total balance, import and export respectively in different years.

Page 4 - Heatmap of Import and Export based on five principal end-use categories.

- Apply two heatmaps to display the import/export activities with five principal categories over those years.
- Plan to include from year 2010 to 2020.

Page 5 - Import/export based on more specific categories.

- Use multi-line charts.
- Plan to include from year 2010 to 2020.

Page 6 - Apply choropleth map displaying states' involvement in foreign trades.

- Have four choropleth maps to exhibit all states' involvement in terms of import/export activities.
- Each graph represents one year.
- Plan to include from year 2017 to year 2020.

Page 7 - Illustrate items involved in foreign trade at state level.

- Four pie charts indicating percentage of goods, such as fuel, minerals, steel and others et..
- Plan to Include four years from 2010 to 2020.

Page 8 - Use two histogram charts to show changes of quantity of certain items at state level in terms of import and export respectively over the years.

Optional Features

- Add Interactive functions with users, such as zooming and filters.
- Illustrate tariff information if applicable.
- Exhibit more graphs, such as information regarding with certain specific commodities.
- Gather import/export activities with specific large countries and regions.

Related Work

United States Exports, Imports and Trade Partners, <https://oec.world/en/profile/country/usa>

World Integrated Trader Solution, Detailed Country Analysis, <http://wits.worldbank.org/visualization/detailed-country-analysis-visualization.html>

United States Census Bureau, U.S. Trade by End-use, <https://www.census.gov/foreign-trade/statistics/graphs/enduse.html>

U.S. Exports in 2016, [https://atlas.cid.harvard.edu/explore?](https://atlas.cid.harvard.edu/explore?country=231&product=undefined&year=2016&productClass=HS&target=Product&partner=undefined&startYear=undefined)

[country=231&product=undefined&year=2016&productClass=HS&target=Product&partner=undefined&startYear=undefined](https://atlas.cid.harvard.edu/explore?country=231&product=undefined&year=2016&productClass=HS&target=Product&partner=undefined&startYear=undefined)

Visualizing International Trade in 10 Maps, <https://howmuch.net/articles/worlds-trade-explained-in-10-visualizations>