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AIT 580 Data analytics Research Project

On

U.S. Foods and Beverages Imports

(1999 to 2017)

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Abstract

The purpose of this study is to examine the shipping value and quantity of food products (Food and Beverages) shipped to US ports, as well as the source of shipping, from 1999 to 2017. This seems to be a formal set of data as from Commerce Department, Census Bureau, and is freely accessible to the public on the online webpage of the Department of Agriculture (USDA). Food and beverage shipping value and quantity are organized by schedule year and categorized into food groups focusing on key goods and services or computation stages. My aim is to discover and interpret information using different tricks in Python, RStudio, and SQL to create useful insight that will allow consumers to instantly recognize and approximate growth curve. (Kenner, 2018)

Introduction

Manufactured Foods and Beverages are becoming increasingly popular. Customers want comfort, reliability, and diversity in their own ever-changing food. The U.s imported goods nearly 15% of its own overall food production including over 200 countries world - wide, including nearly 4 million western food amenities and farmlands. According to information out from United States Department of Commerce and the United States Census Bureau, imported goods have become a greater proportion of Americans' nutrition as well as the food production in the U’s In 2017, the Federal Government spent 136 billion dollars on Foods and Beverages produced in other countries. Between 1999 and 2017, the total expenditure in the United States on imported food risen by many more than 300 percent, from $43.1 billion in 1999 to $136.2 billion throughout 2017. The year where there was a steady decline had been in 2008, even during Global Depression.

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Through using set of data offered either by Commerce Department and the United States Census Bureau, researchers would then investigate and analyze this same worth and quantity of Foods and Drinks importation from 1999 to 2017 and produce meaningful information and graphical representations that would detect potential the regularly exportable foods and drinks, wearing protective gear to decrease the number of foreign goods, and enabling domestic industry of necessary foods. That use this imported goods data frame, this research article will address the questions research issues:

- Major source countries of imports to United States.
- Expenditure by United States on import of each food type over the period of 1999 to 2017.
- Statistical Summary of import quantity for different food types.
- Annual growth percentage of each food type over the period of 1999 to 2017.
- Overall Expenditure by United States on imports every year over the period of 1999 to 2017.
- Volume of food and beverages that were imported to country.

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Literature Review

There were only these few data analysis assessments performed on this time series. Where one of MIKE POLHEMUS's research papers emphasizes the value of imported goods, inflation expectations, as well as the tendency of Processed foods over time. Inside this article, they formed a nutrition wage growth indicator using information from the Bureau of Labor Statistics' CPI report from the United States Dept Of labor, using 2017 prices as an indicator for rising prices. Per the research study, nutrition imports increased by three percentage points with consumer prices ranging from.3 percent to 5.4 percent per year, while population increase ranged from.7 percent to 1.1 percent per year, implying that population explosion is not the primary reason for the increase throughout imported goods. (POLHEMUS, blog/usaimportspending, 2019)

Materials and Methods

The information has been obtained from the United States Department of Agriculture (USDA) website (Kenner, data-products/us-food-imports/, 2018), which really is open to visitors. This same information was obtained in the form of a CSV file with information shared across different papers. From 1999 to 2017, this data includes information on valuation, quantity, inflation expectations, nutrition classifications, and exporters emerging economies.

This same information has been recovered in raw state because we had to tidy up as well as eliminate the missing value as well as cut - outs for categorical and continuous items in the data, and even some duplicate entries that would interfere with the data gathering. Following data cleansing, RStudio and Python are being used in this research study to be tried to illustrate and process can start among characteristics, and SQL was often used to recover a few beneficial data to assist in data analysis.

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Results

I. Major source countries for Imports of United States From the year 1999 to 2017 – RStudio

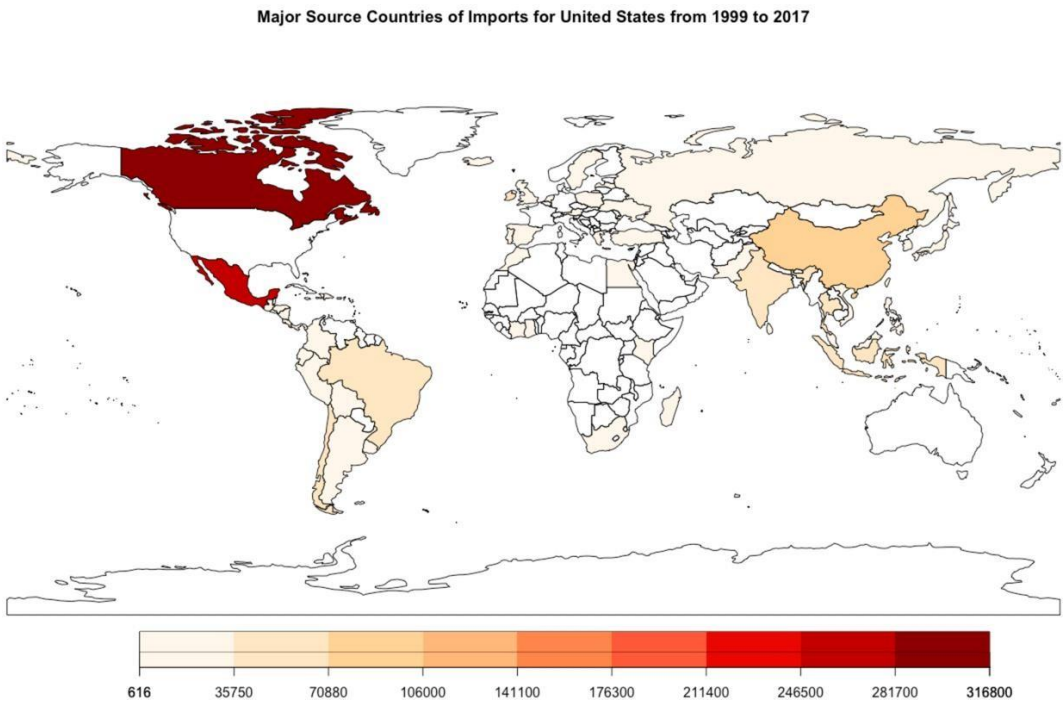

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Figure 1 Major Source Countries for Imports of United States from 1999 to 2017

The graph previous section depicts the significant source states wherein the United States obtains so much, as well as the total spending on the regions for imported products. Throughout this research study, a map viewer from RStudio is being used to portray the significant source nations of imported goods as well as the amount spent on them through the United States. Functions such as “joinCountryData2Map”, “mapCountryData” and “RColorBrewer::brewer.pal” are used to generate the plot.

According with graph, Canada is indeed the significant source nation of imported goods again for United States, with such a total spending of 316791.7 million Of dollars from 1999 to 2017, and Mexico is the second significant country, with something like a total spending of 253824.9 million Dollars, that also receives the majority of products and services to the United States. When compared with other countries, the above two nations account for most imports into the United States. The US needs to import very little from countries like egypt and Ukraine, in which total expenditures are only 957.0 million dollars and 615.7 million dollars, including both.

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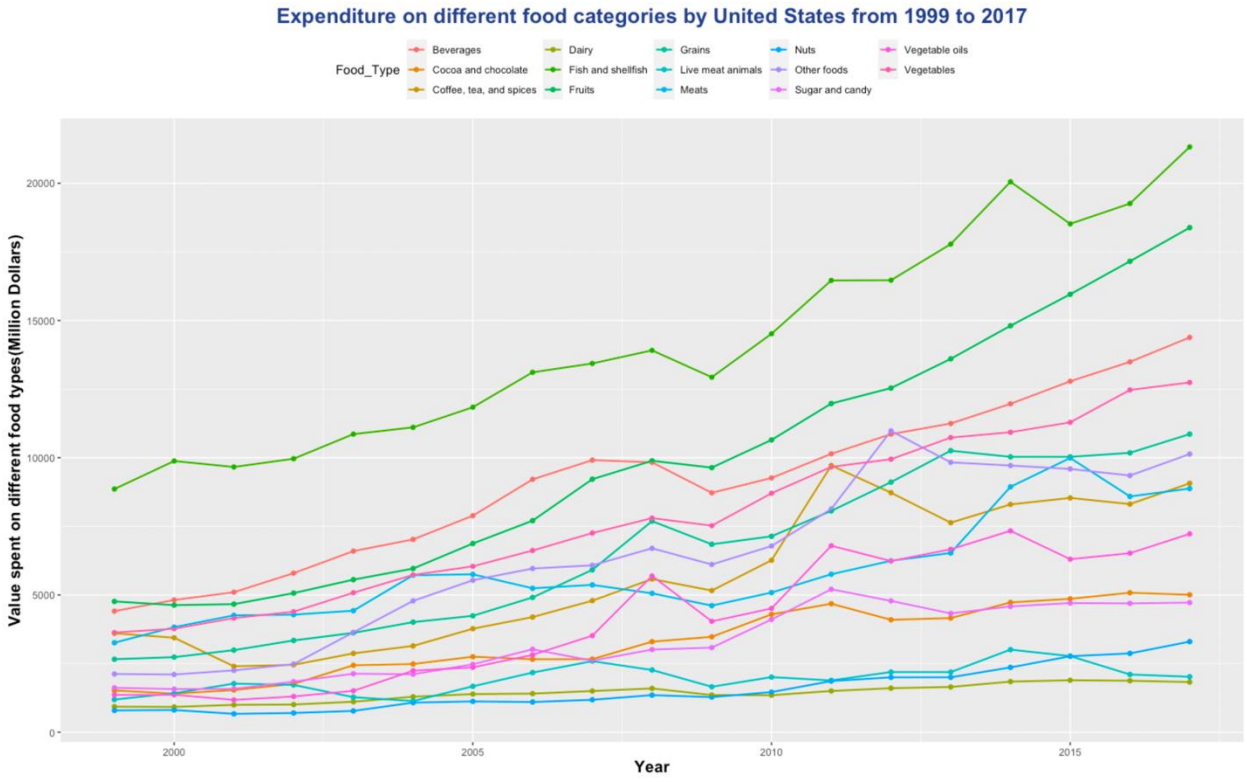
II. Expenditure on different Food Categories by United States from the year 1999 to 207 - RStudio



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The graph earlier in this section depicts this same amount of money being spent either by United States on every food from 1999 to 2017. Throughout this scientific report, a Statistical Analysis from RStudio is used to depict the amount of money being spent by the United States on multiple food groupings. The narrative is created using activities such as ggplot, geom point, and geom line.

From 1999 to 2017, the graph demonstrates that the nutrition type "Fish and Shellfish" was strongly transferred into the United States more than almost any other food. During this time, the demand of "Fish and Shellfish" significantly expanded. In 2017, the optimum amount of "Fish and Shellfish" is sourced, with an average worth of 21324.1 million Dollars, and researchers do see that Fruit and vegetables are the second most products and services importation. Researchers could also see an exponential increase in all kinds of food throughout the year from 1999 to 2017

III. Statistical Summary of import quantity for different food types over the period of 1999 to 2017 - Python

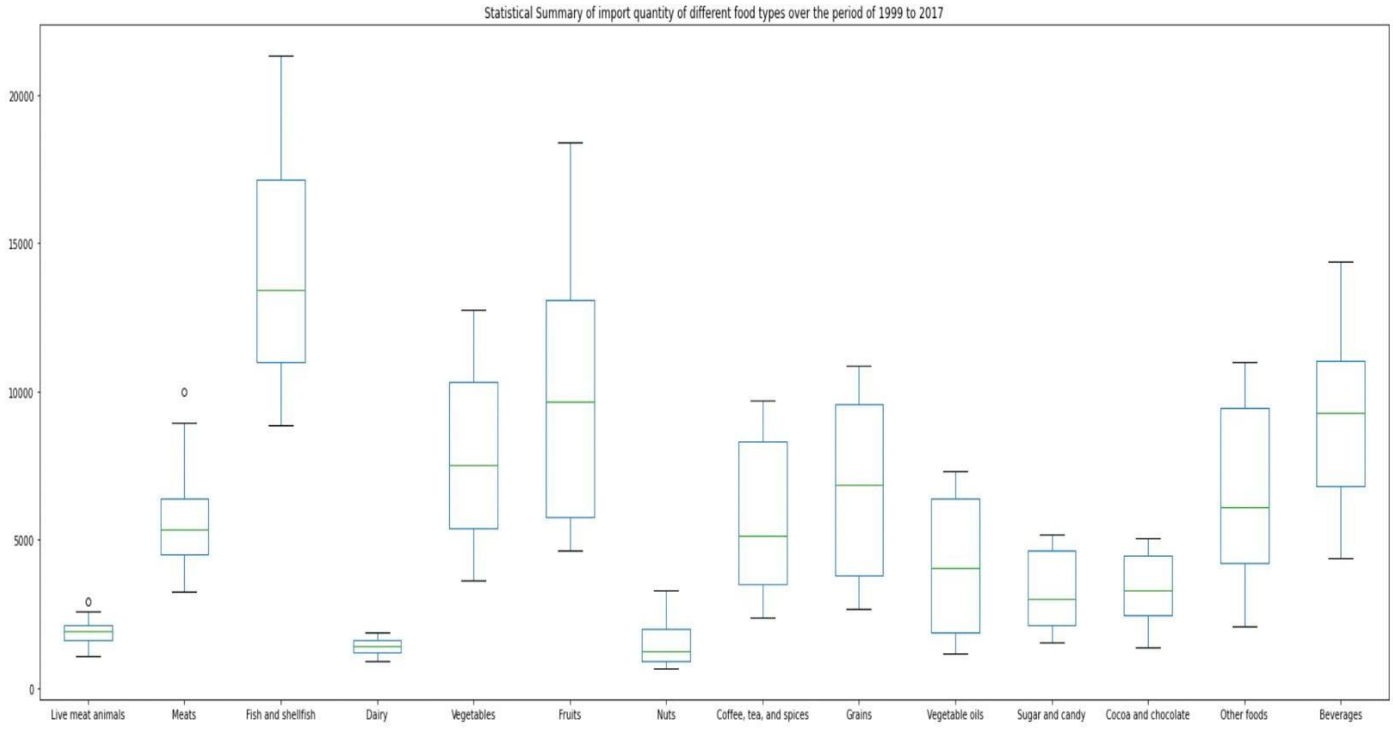

Figure 3 Statistical Summary of import quantity for different food types over the period of 1999 to 2017

The graph earlier in this section depicts a statistical description of exporters volume for multiple food types from 1999 to 2017. Throughout this research article, a box plot from Python is being used to depict a statistical description of exporters count. The plot was created using functions such as "plot.box" and the library "matplotlib.pyplot."

The boxplot depicts the amount range of each food imported into the United States. The Fresh produce category 'Fish and Shellfish' is more likely to have the owing to increase in imported products each time. The diagram depicts the estimated range of Volume shipped over through the generations.

IV. Volume of United States Imports by Food Type from the year 1999 to 2017 - RStudio

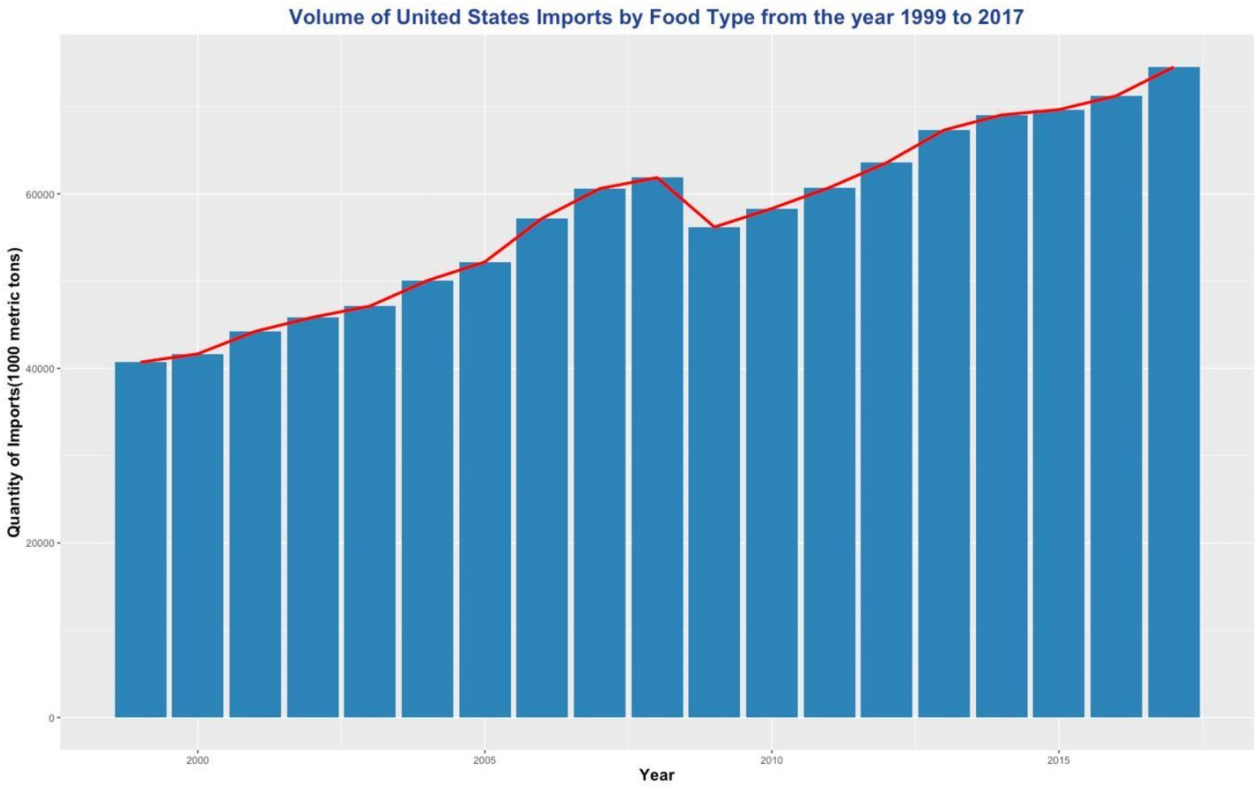

Figure 4 Volume of United States Imports by Food Type from the year 1999 to 2017

Shown above bar graph depicts the number of Foods and Beverages importation from 1999 to 2017. In this scientific report, a Bar Plot from RStudio is being used to depict the quantity of Foods and Drinks importation. The plot was created using functions such as ggplot and geom bar. The graph clearly shows that more Foods and Beverages are shipped into the country reached than in previous years. In 2017, an approximate amount of 74533.5 Metric Tons of Foods and Beverages were introduced to the United States from foreign nations, and Foods and Beverages shipping amount was kept increasing from 1999 to 2008, although from 2009 to 2011, there would be a decrease in shipment of Foods and Beverages especially in comparison to 2008, and then again from 2012. And there is increase in quantity till 2008

V. Overall Expenditure on Imports of Food and Beverages by United States from 1999 to 2017 - RStudio

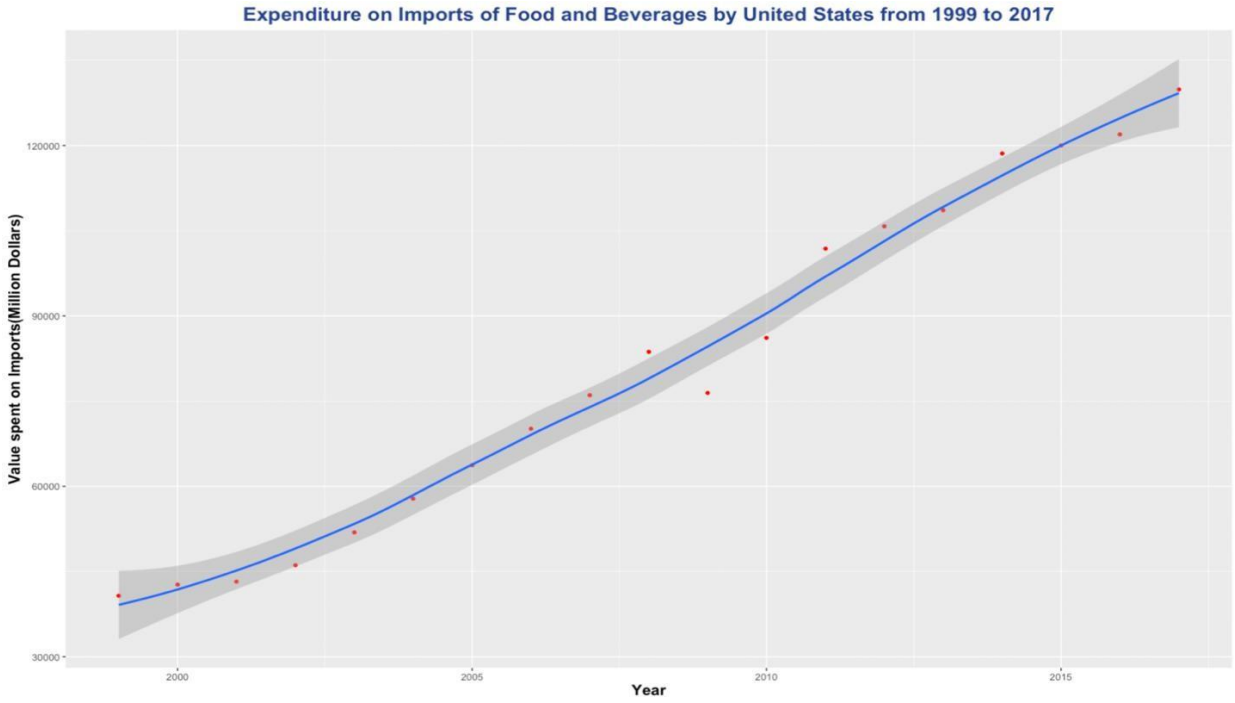

Figure 5 Expenditure on Imports of Food and Beverages by United States from 1999 to 2017

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The graph earlier in this section depicts the total spending by the United States on imported goods from 1999 to 2017. In this research article, a Statistical Analysis with Seamless Function from RStudio is used to portray the expenses made by the United States from 1999 to 2017. This graph is created using functions such as ggplot, geom point, and geom smooth.

This same graph produced shows that the most money is spent on Foods and Beverage Imports in 2017. Exporters cost the United States an approximated 129873.7 million of dollars in 2017. Researchers could also reach the conclusion that there is a steady increase in imported goods over the time frame, with the exception of 2009, while there was a fall in the price invested on imported goods especially in comparison to 2008, and even though shipments were expanded then in 2010 and the worth expended on foreign goods kept increasing from then until 2017.

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VI. Annual Growth percent of Food Categories from 1999 to 2017 - RStudio

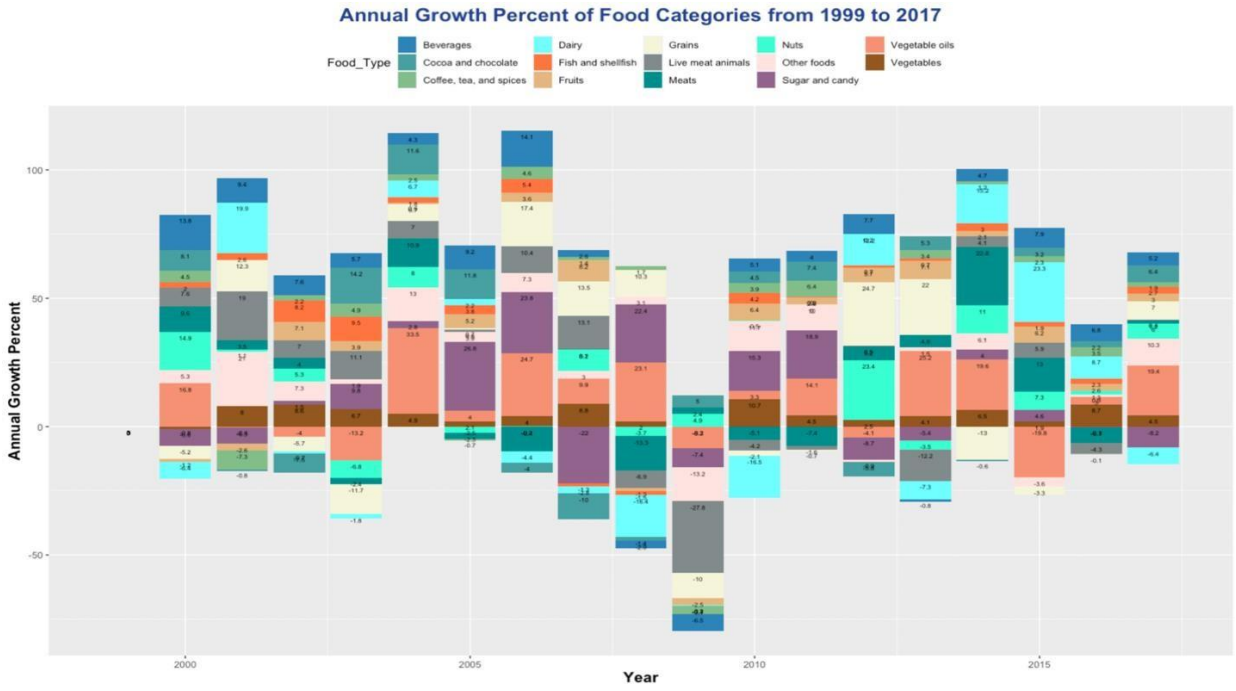

Figure 6 Annual Growth percent of Food Categories from 1999 to 2017

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The graph above depicts the annual percentage growth in agricultural classifications from 1999 to 2017.

In this scientific report, a bar graphs plot from Rstudio is being used to depict the Yearly basis Growth Percentage of Food Classifications. This plot was created using operations such as ggplot, geom bar, and geom text.

Based according to the above plot, we can conclude that the yearly growth fraction for some kinds of food increased while it reduced for others from 1999 to 2017. In 2006, there has been a rise in yearly basis percentage change over almost everyone food types, although in 2009, there had been a sharp decline in yearly basis percentage change for about all types of food.

VII. Analysis of the Food import and learning about their metrics

- I stuffed the cleaned data sources into SQL server and made columns for them.
- Using SQL, I was able to recover the top five important affected countries of imported goods for the United States from 1999 to 2017. Canada is the most important exporter of goods for such United States.

	COUNTRIES	EXPENDITURE
1	Canada	316791.7
2	Mexico	253824.9
3	China	75727
4	France(*)	62251.4
5	Italy(*)	57032.4

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- In 2017, the United States produces 74533.5 metric tons of foods and drinks, the most in any previous year.

	YEAR	IMPORTQUANTITY
1	2017	74533.5

- In comparison to previous years, the Government Is spending the least amount of money on food and beverages in 1999, with a total trade value of 40723.9 million of dollars.

	YEAR	IMPORTVALUE
1	1999	40723.9

- The following are some documents with annual increases just under 0.

	FOOD_...	FOOD_TYPE	FOOD_GROUP	YEAR	IMPORTQUANTITY_IN_1000METRICT...	ANNUAL_GROWTH_IN_I...	ANNUAL_GROWTH_IN_IMPORTVALUE	IMPORT_VALUE_IN_M...
1	1	Live meat animals	Animal foods	2002	8302.9	7	-2.7	1723.9
2	1	Live meat animals	Animal foods	2003	9223.2	11.1	-25.9	1276.7
3	1	Live meat animals	Animal foods	2004	9866.3	7	-11.2	1134.3
4	1	Live meat animals	Animal foods	2008	11558.6	-6.9	-12.4	2266.4
5	1	Live meat animals	Animal foods	2009	8350	-27.8	-27	1655.5
6	1	Live meat animals	Animal foods	2011	7872.7	-1.6	-6	1886.5
7	1	Live meat animals	Animal foods	2013	6947.3	-12.2	-0.1	2190.2
8	1	Live meat animals	Animal foods	2015	7661.2	5.9	-7.8	2772.5
9	1	Live meat animals	Animal foods	2016	7335.2	-4.3	-24.2	2102.9
10	1	Live meat animals	Animal foods	2017	7365.6	0.4	-3.9	2020
11	2	Meats	Animal foods	2006	1627.4	-9.4	-8.8	5243.6
12	2	Meats	Animal foods	2008	1411.5	-13.3	-5.7	5059.8
13	2	Meats	Animal foods	2009	1445.4	2.4	-8.8	4612.1
14	2	Meats	Animal foods	2016	1825.8	-6.1	-14	8589.1
15	3	Fish and shell...	Animal foods	2001	1755.2	2.6	-2.2	9663.3
16	3	Fish and shell...	Animal foods	2009	2246.8	-0.2	-7	12933.9

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Limitations and Further Research Needed

The original data in the data - set was among the key constraints encountered again whilst analyzing the information. The information has been spread across various sheets, that I had to separate and combine to form a more manageable range of data that can be packed into Python, R, and SQL for further analysis. There have been a huge amount of void and seriously lacking values in the articles that needed to be cleaned up. Foremost, there were few columns, such as only eight columns for every documentation. Another few columns in the set of data would've have decided to make the information much more accessible for analysis and resulted in somewhat valuable insights.

Much farther investigation on the wage growth value could be made by mixing the wage growth values column to the data - set, which aids in profound data gathering and estimating the pattern of imported goods.

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Conclusion

The evaluation of the US Imported products time series from the US Commerce department and the US Census Bureau provided important insights from which we would make judgements on the terms of volume and value of regularly foreign - made foods and drinks, allows users to quickly recognize and approximate growth curve. Based on the plotlines and graphs, we can reach the conclusion that Canada seems to be the significant source nation of imported goods for the United States, and that Fish and Shellfish are strongly sourced into the nation compared to alternative products, in the upward trend in Foodservice imported goods over the centuries. Considering the recent tendency, it is completely obvious that Americans have year-round requirement for just some foods and beverages that really are challenging to widespread in the U. S. due to location and environmental constraints.

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REFERENCES: -

Kenner, B. (2018, 05 02). *data-products/us-food-imports/*. Retrieved from www.ers.usda.gov: https://www.ers.usda.gov/data-products/us-food-imports/

Kenner, B. (2018, 05 02). *data-products/us-food-imports/*. Retrieved from www.ers.usda.gov: https://www.ers.usda.gov/data-products/us-food-imports/

POLHEMUS, M. (2019, 05 31). *blog/usaimportspending*. Retrieved from www.statgraphics.com: https://www.statgraphics.com/blog/usaimportspending

POLHEMUS, M. (2019, 05 31). *blog/usaimportspending*. Retrieved from www.statgraphics.com: https://www.statgraphics.com/blog/usaimportspending