Visualization of Grain Exports in 2019

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Abstract

This will be the last section that will be done

**Keywords**: Grain, Rice, Wheat, Corn, Grain Products, Feeds

**Index Terms**: Data Visualization, Scientific Visualization

# Introduction

Data visualization helps deliver data in the most efficient way possible. The work done in this project involves creating cloropleth maps of the USA, based on the export of various grains. Each state will be colored differently, based on the export of a grain. These grains are rice, corn, wheat, feeds, and processed grain products. The URL of the live website is <https://kevin-test-app7.herokuapp.com/>

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All data in this project is taken from this website. <https://www.ers.usda.gov/data-products/state-agricultural-trade-data/>

The main dataset used is named: U.S. agricultural exports, commodity detail by State: calendar years 2000 - 2020

# Methods

Many different tasks were performed in this project. Some of the data needed to be cleaned. Next, an appropriate webhost will be used to host the website. Finally, the plots of each grain will be created to help visualize the data.

## Data Cleaning

The raw dataset contains a lot of information that is not necessary for this project. For example, the raw data contains information about grain exports every year, along with many different vegetables and tree nuts. This information was removed from the displayed dataset. The raw formation can still be found on the USDA’s website. After removing this extra information, the data was reformatted by removing some unnecessary whitespace and saving the data as a comma separated file.

## Web Host

Heroku was chosen as the webhost for several reasons. The first reason is that Heroku’s will host the website for free. The second reason is that Heroku’s linux container runs the python code necessary for Plot.ly. Finally, using Heroku can save lots of time by doing most of the website hosting tasks on its own. Tasks such as maintaining a linux VM, finding an appropriate webhost, port configuration, etc, were handled with minimal time. For these reasons, Heroku is an ideal choice for hosting a small project.

## Plots

The plots are all cloropleth maps. Choropleth maps are maps composed of polygons, and are used to represent spatial variations of a quantity. In this project, all 5 Chloropleth Maps featured the United States of America, colored by the grain exports in millions of dollars.

# Discussion

## Rice Insights

Interestingly, only a few states in the United States exported rice. These are Arkansas, California, Louisiana, Mississippi, and Texas. No other state had any export of rice. Another interesting point is that even though Misssissppi is much smaller than California, it produced more rice than California did.

Map

Description automatically generated

## Wheat Insights

Wheat seems to be produced by many different states. North Dakota has the most wheat exports, followed by Kansas. Most of the states in the center of the United States produced some amount of wheat.

Map

Description automatically generated

## Corn Insights

Iowa is the state with the highest amount of corn exports. Almost every state had some amount of corn exports. The only states that had no corn exports are Nevada, Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire, and Maine, Alaska and Hawaii.

Map

Description automatically generated

## Feeds Insights

Feeds are agriculture grown for livestock of poultry. Every state except Hawaii exported some Feeds.

Map

Description automatically generated

## Grain Products Insights

According to the USDA, any food made from wheat, rice, oats, cornmeal, barley or another cereal grain is a considered to be a grain product. Every state except Hawaii and Rhode Island exported grain products.

# Future

The data is only from 2019. More years could be visualized to see if any trends can be spotted. Also, different color schemes could be tested, to see if any other trends become visible.

# Conclusion

Visualizing data is important because it can help viewers see correlations and trends in the data. Using a cloropleth map to visualize grain exports by state has provided several interesting insights.

References

1. Link to website: <https://kevin-test-app7.herokuapp.com/>
2. Link to raw data: <https://www.ers.usda.gov/data-products/state-agricultural-trade-data/>
3. Link to public github repo: <https://github.com/kzhong678/cs519ScientificVisualizationProject>