Project Writeup – Data Visualization

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Executive Summary

Link to visualization

**Current Challenge**

Since 2022, the United States has suffered from unrestricted inflation. W

The rise in the inflation rate has been attributed to many factors. The US response to the COVID-19 pandemic included a series of federal initiatives, notably the CARES Act and the American Rescue Plan, which collectively authorized roughly $5 trillion in government spending. ([Unpacking the Causes of Pandemic-Era Inflation in the US | NBER](https://www.nber.org/digest/20239/unpacking-causes-pandemic-era-inflation-us))

Among all factors, energy prices account for more than 50% of the price increase. Average [U.S. retail gasoline prices are some 50 percent higher](https://www.forbes.com/sites/davidblackmon/2021/07/29/gasoline-prices-remain-high-and-could-go-higher-but-theres-a-catch/" \o "https://www.forbes.com/sites/davidblackmon/2021/07/29/gasoline-prices-remain-high-and-could-go-higher-but-theres-a-catch/" \t "_self) than a year ago at $3.19 a gallon, with crude feedstock costs rising. The gas shortage in Europe and Asia is also driving the U.S. gas price high this year.

([Rising Energy Poses Big Inflationary Threat To U.S. Economy (forbes.com)](https://www.forbes.com/sites/daneberhart/2021/09/21/rising-energy-poses-big-inflationary-threat-to-us-economy/#:~:text=U.S.%20energy%20expenditures%20totaled%20%241.2%20trillion%20in%202019,it%20continues%20its%20fragile%20recovery%20from%20the%20pandemic.))

This program reviews the historical trends and mega-events that have led to dramatic fluctuations in the price of crude oil through crude oil production and price data beginning in 1900. Allows viewers to explore the macro situation behind the global crude oil market.

**Intended Audience**

This project is intended to show the history of the global crude oil market to policymakers in the energy field, such as the Department of Energy (DOE), the Environmental Protection Agency (EPA), and the Energy Information Agency (EIA). Researchers interested in the history of the crude oil market can also get valuable information from this dashboard.

**Data Source**

* **Source:** The data source of this project is from the Fossil Fuel topic of Our World in Data affiliated to the University of Oxford.
* **Licensed:** All visualizations, data, and code produced by Our World in Data are completely open access under the Creative Commons BY license.( [CC BY 4.0 Deed | Attribution 4.0 International | Creative Commons](https://creativecommons.org/licenses/by/4.0/)) Users have the permission to use, distribute, and reproduce these in any medium, provided the source and authors are credited.
* **Collection Methods**: This dataset is collated by Our World in Data based on several data sources, including [Powering Past Coal Alliance(PPCA](https://www.poweringpastcoal.org/)),[Beyond Coal EU](https://beyond-coal.eu/coal-exit-tracker/), [Bloomberg Global Coal Countdown](https://bloombergcoalcountdown.com/), and [EMBER Climate](https://ember-climate.org/)
* **Biases/Sampling:** This is a macro data so there is no sampling problem
* **Descriptive Statistics:** Please look at the dashboard
* **Data Cleaning:** The original dataset is clean to use. Some wrangling operations have been conducted to produce data frames more suitable for specific visualizations.
* **Privacy:** The minimum unit of this dataset is country so privacy problem is not available.

**Technology Used**

Most of these projects are realized in Tableau. Python is used to wrangle data and do explorative data analysis.

**The goal of this Project**

The objective of this project is to conduct a comprehensive analysis of the historical dynamics within the crude oil marketplace. This analysis aims to elucidate the correlation between fluctuations in crude oil production and consumption patterns and their subsequent impact on petroleum pricing structures. By examining historical precedents, it is possible to discern the interplay between these macroeconomic variables and thereby enhance the accuracy of future price forecasting in the crude oil sector.

Summary of Analysis

**Key Insights**

1. Over time, the production of crude oil is much more diverse. It is difficult for a single country or cartel to dominate and control the crude market right now.
2. Geo-political risk is the biggest reason for a large fluctuation in crude oil price which quickly passes to petroleum. Usually, it is hard to get prepared, most of the time can only wait for the market to get a new equilibrium again.