



# Global Economic Prediction

Crude Oil and Stock Price

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# WELCOME!

- Bachelor of Science in Chemistry from University of Illinois at Urbana Champaign
- Data Science study from Flatiron School



# Stakeholder



- 183rd on the Fortune 500 in 2021
- Hydrocarbon exploration
- Petrochemical manufacturing

Occidental Petroleum

# AGENDA

**01** Business Problem

**02** Data

**03** Limitations

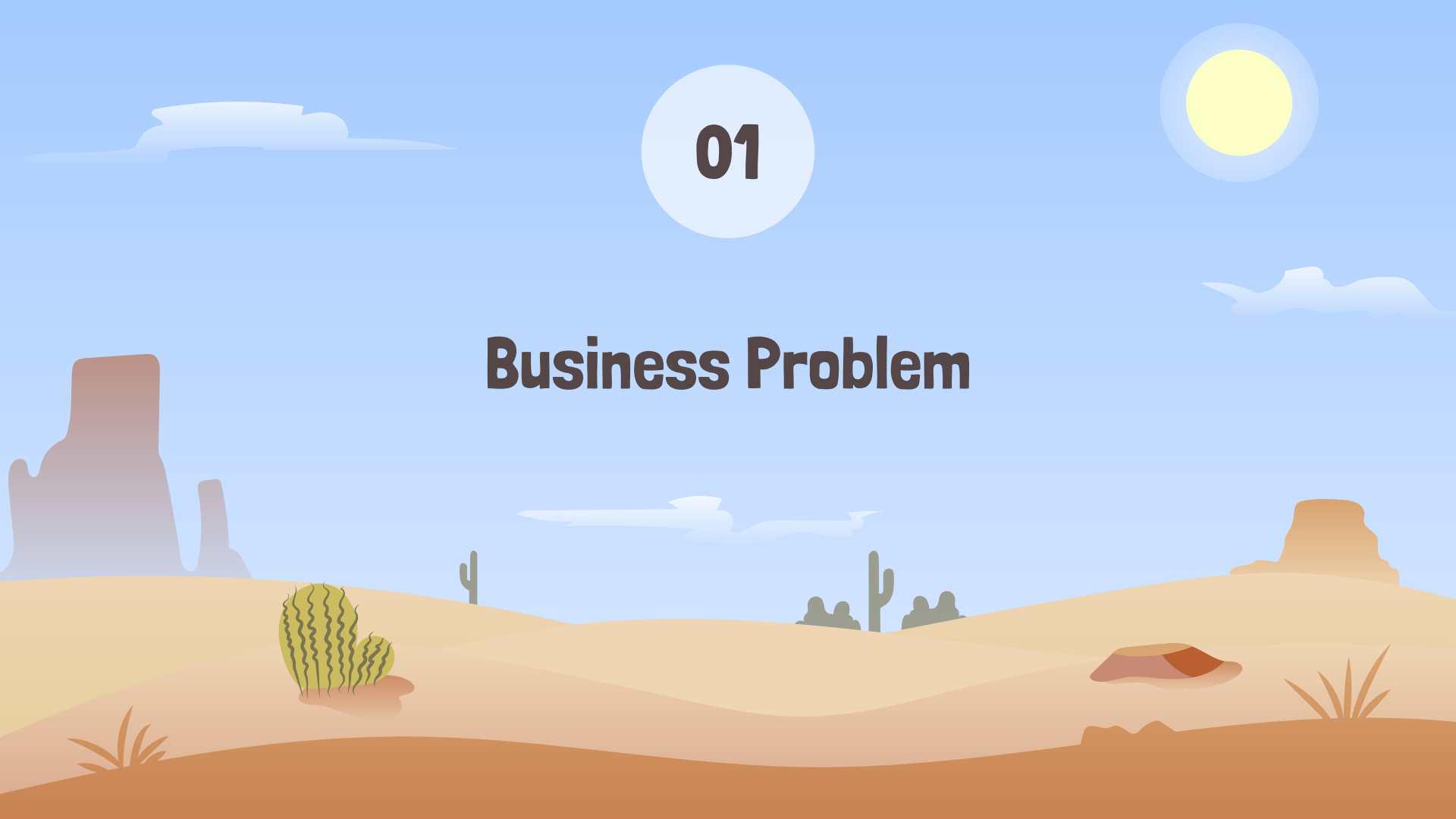
**04** Features

**05** Recommendation



**01**

# **Business Problem**



# HIGH GAS PRICE!

On June 15, 2022, the highest gas price in California almost reached \$10!



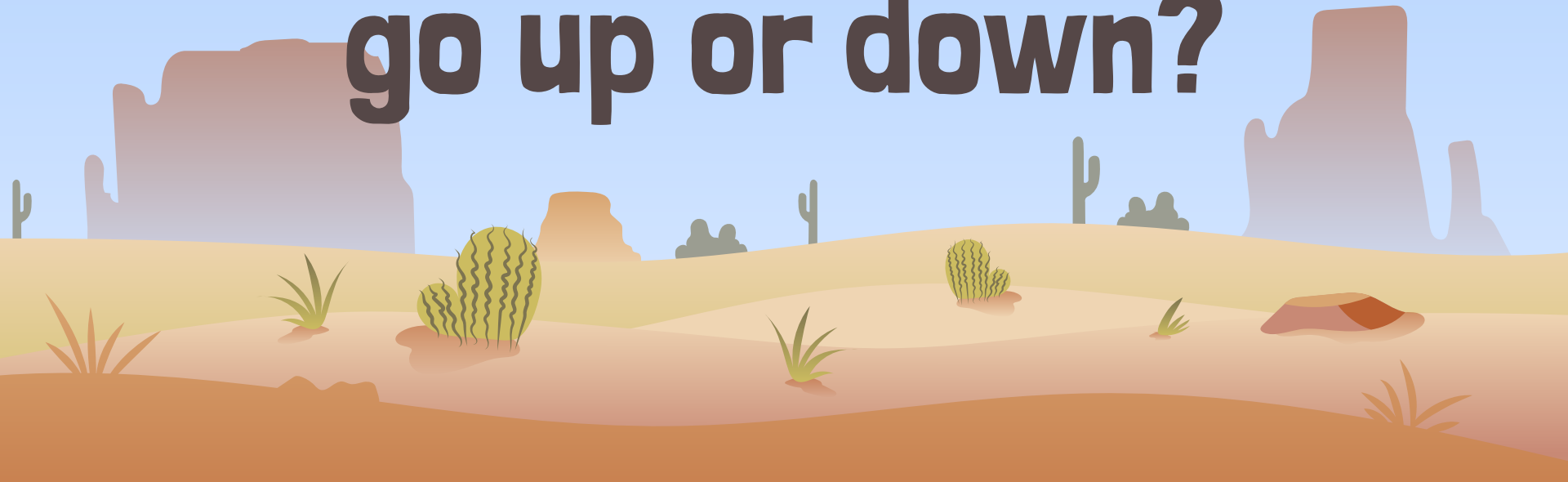
# HIGH GAS PRICE!

Crude oil price dropped about 15%  
from the highest peak of June

**BUT** recently, Warren Buffett invested  
\$5 billion dollars in Occidental Petroleum



**Will the stock price  
go up or down?**



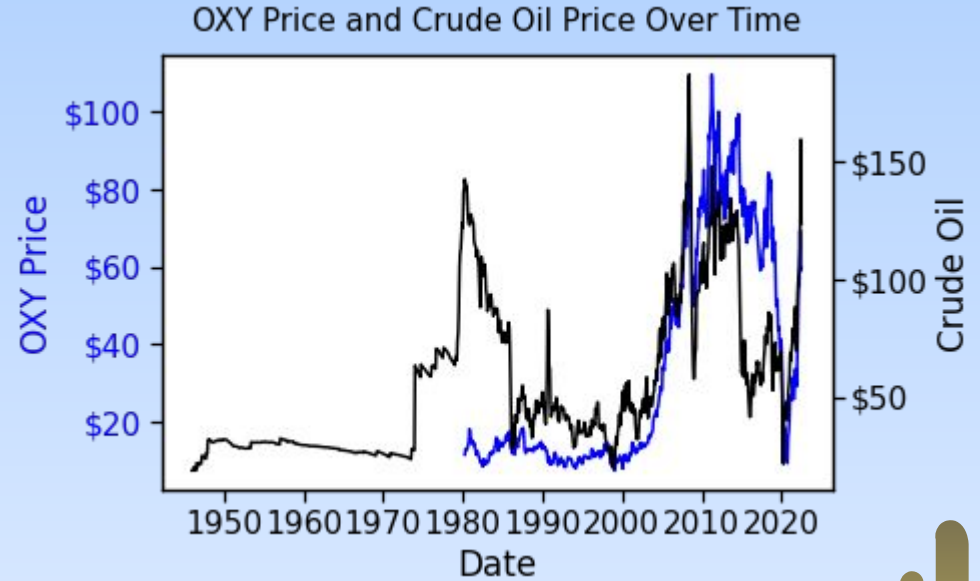
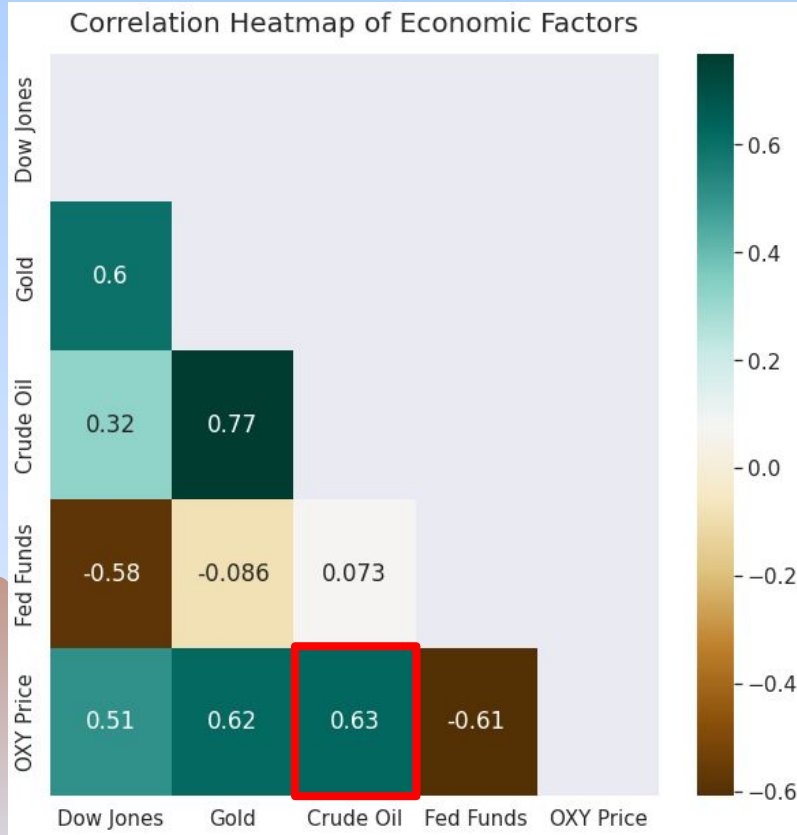




**02**

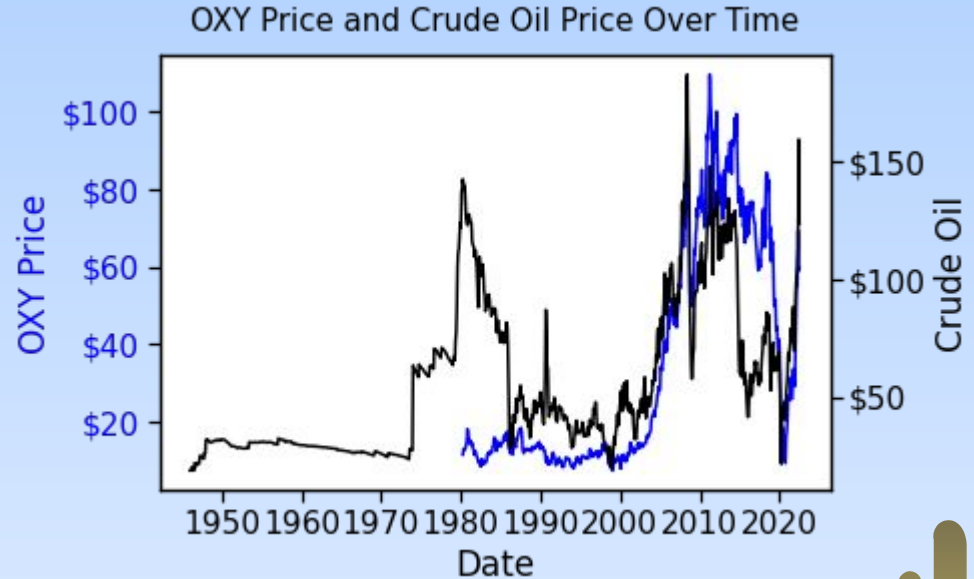
**DATA**

# DATA SELECTION



# DATA SELECTION

- TradingView
- MacroTrends
- Monthly crude oil price records from January 1946 to July 2022
- Monthly Occidental Petroleum price records from April 1980 to July 2022



**03**

# Limitations



# **LIMITATIONS**

## **World Issues**

- War
- Pandemic



## **Technology**

- Electricity
- Nuclear Energy

## **Government Policy**

- Government Party
- Environment Policy

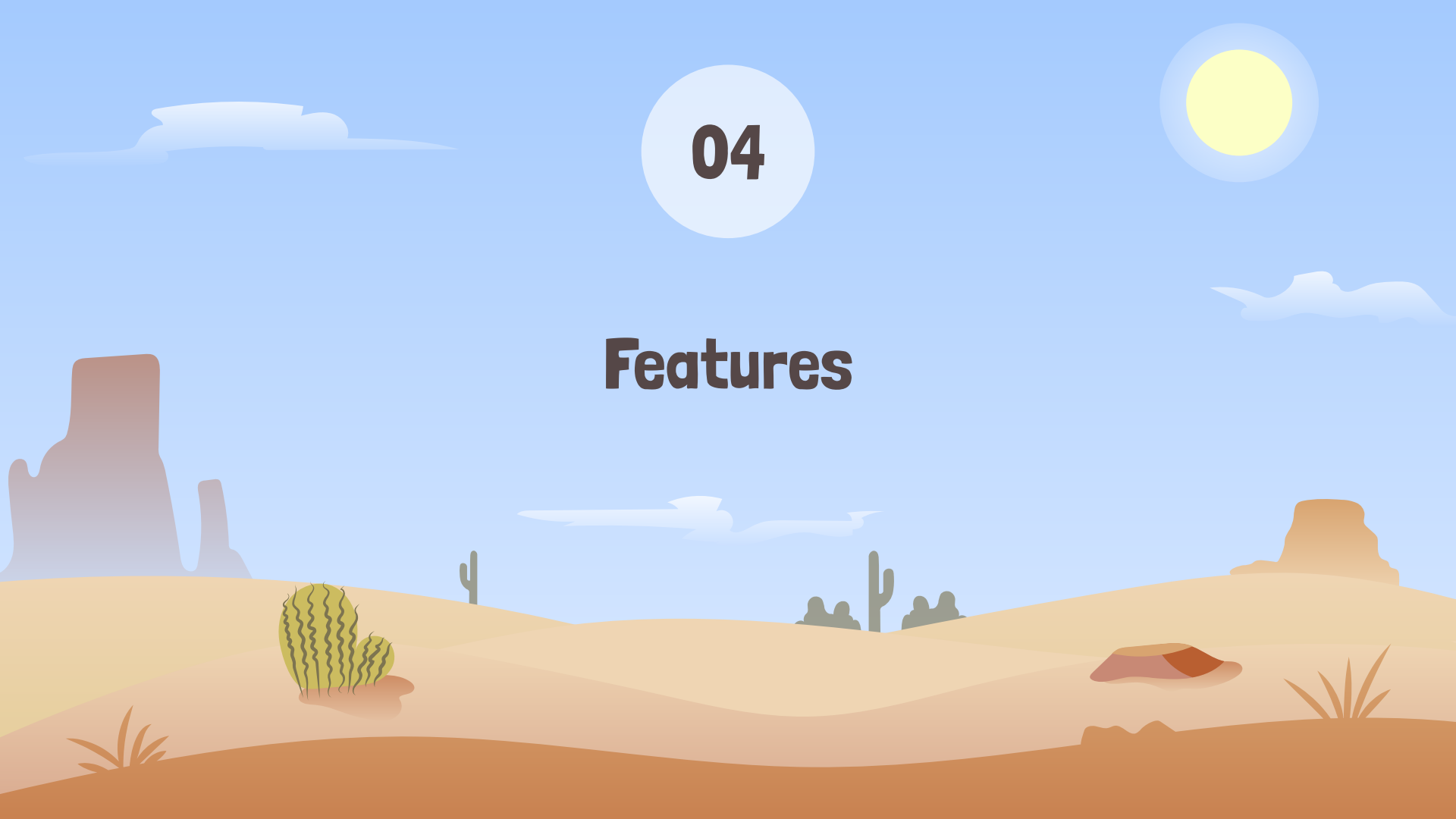


## **Economic Factors**

- Economic Crisis
- Inflation

**04**

# Features



## Crude Oil Price Prediction and Actual



# ARIMA

## Train

RMSE : \$9.64

Confidence Interval : 85.8%

## Test

RMSE : \$18.64

Confidence Interval : 81.6%

## Crude Oil Price Prediction and Actual



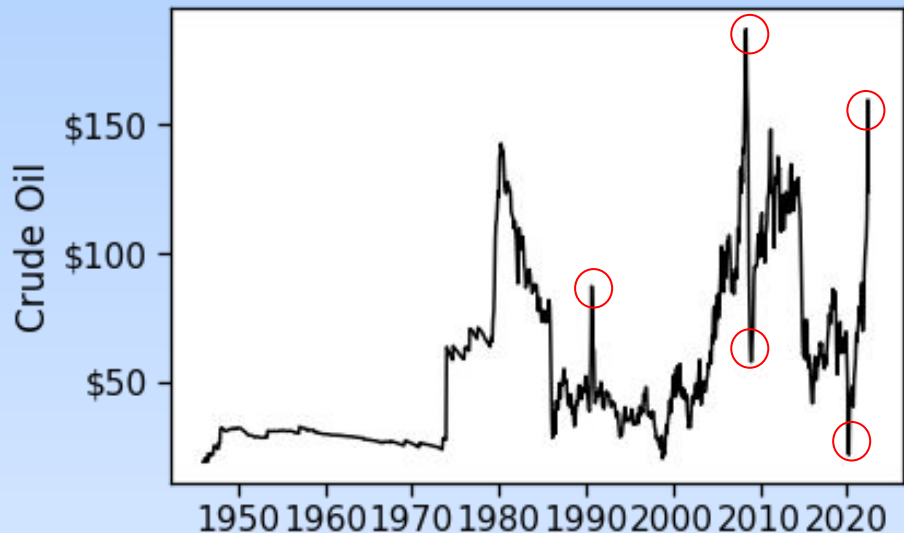


# Facebook Prophet

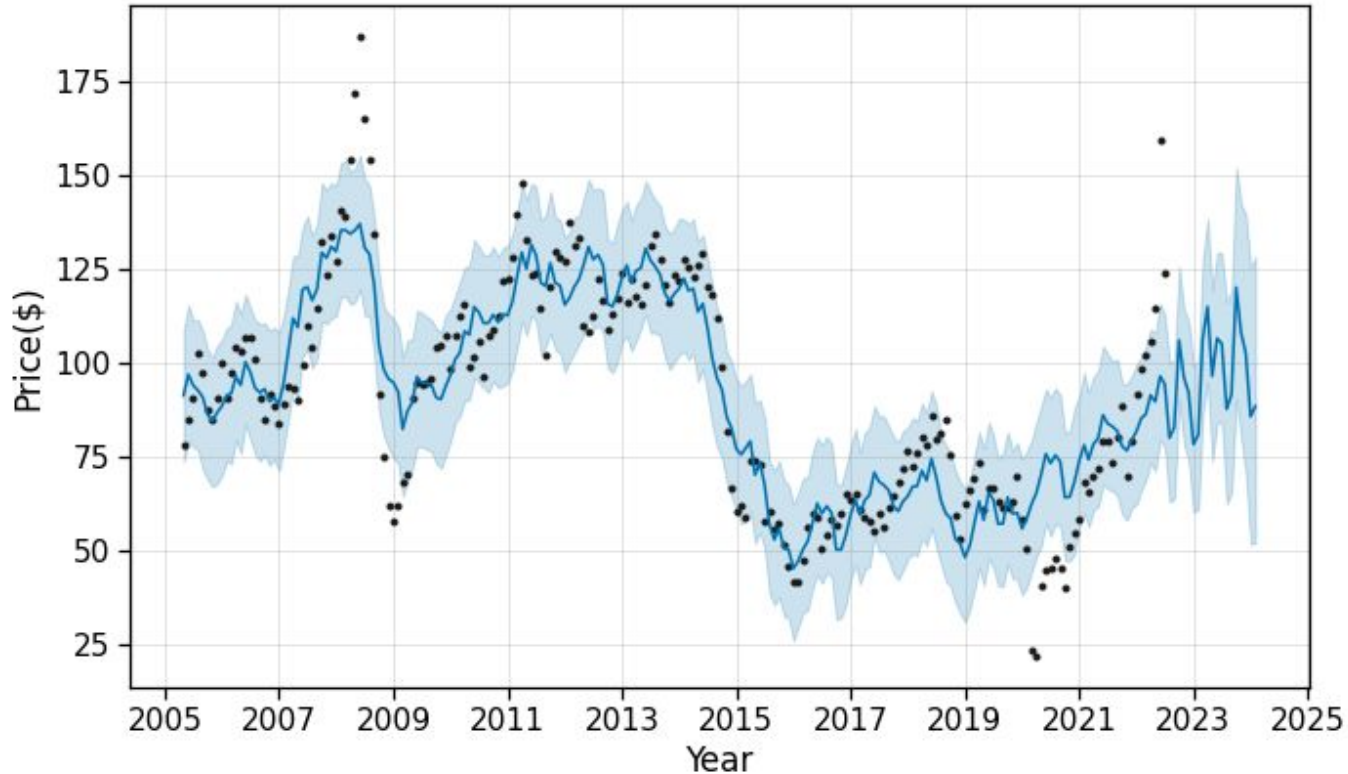


- Open source software released by Facebook's Core Data Science team.
- Procedure for forecasting time series data based on non-linear trends.
- Handles outliers very well

Crude Oil Price Over Time



## Crude oil Price Prediction by Facebook Prophet

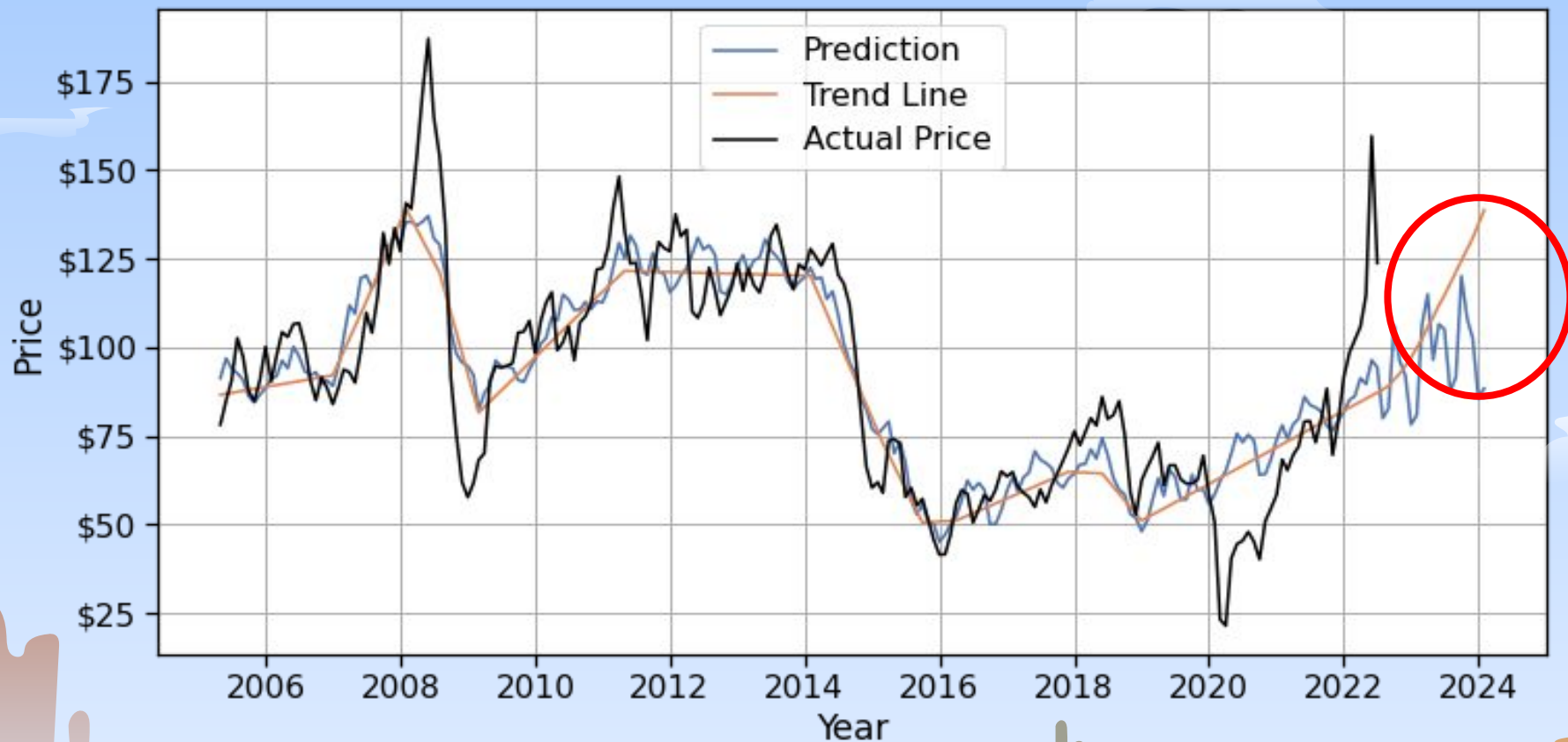


## Facebook Prophet

- Actual Price
- 80% Confidence Level
- Prediction

RMSE : \$14.08

# Crude Oil Price Prediction and Trend Line



**05**

# **Recommendations**



# Recommendations

## Rising Trend of Crude Oil

- November 2023 by PROPHET
- July 2027 by ARIMA

## High Price and High Demand

- Increase hydrocarbon exploration
- Increase supply chain
- Prepare possibility of cash out from Berkshire Hathaway before the second quarter of 2027



# THANKS!

## DO YOU HAVE ANY QUESTIONS?

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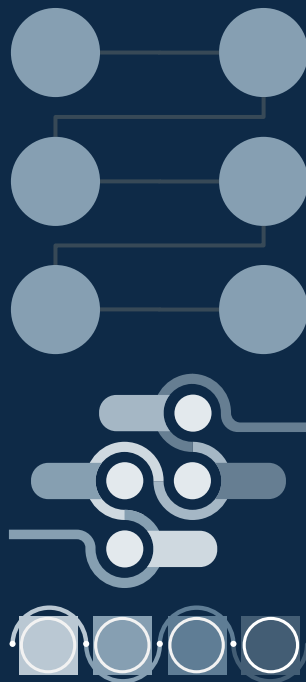
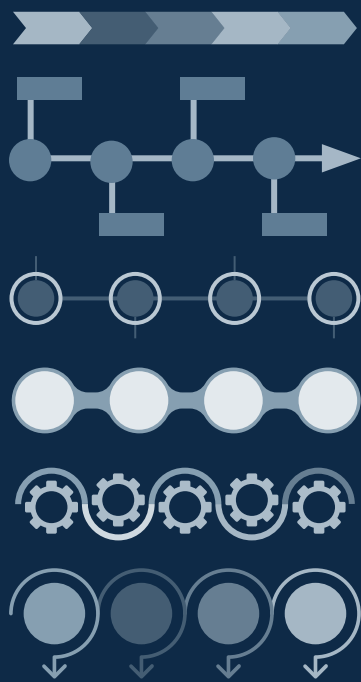
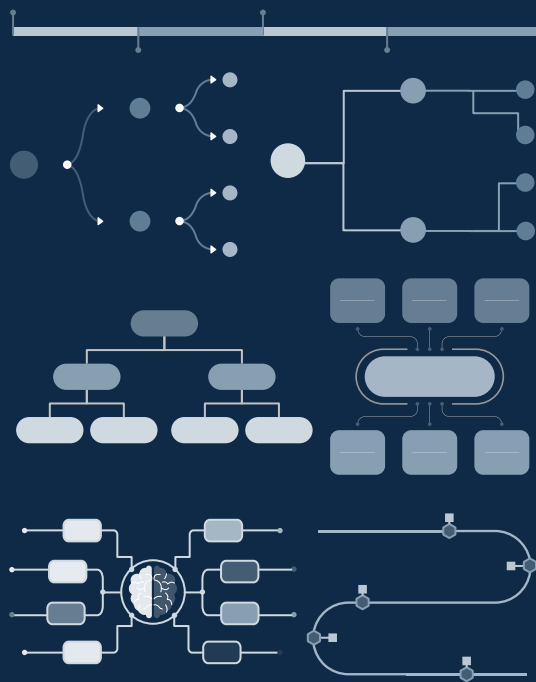
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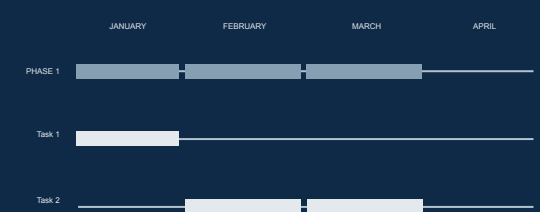
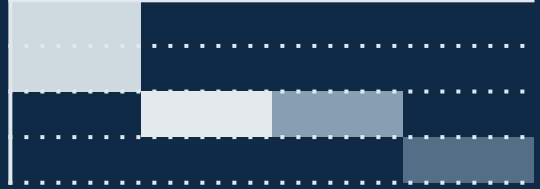
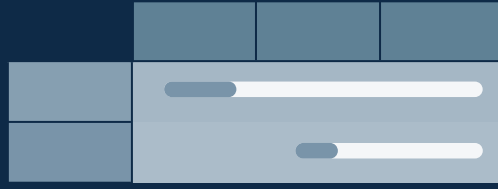
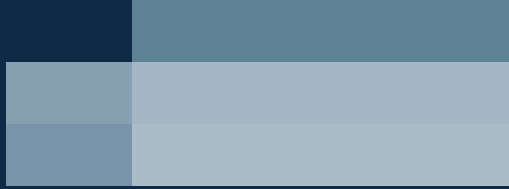
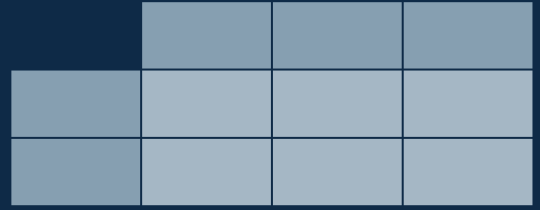
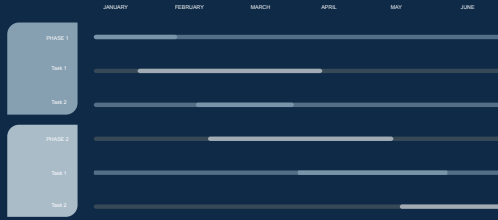
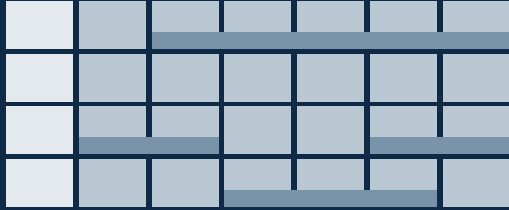
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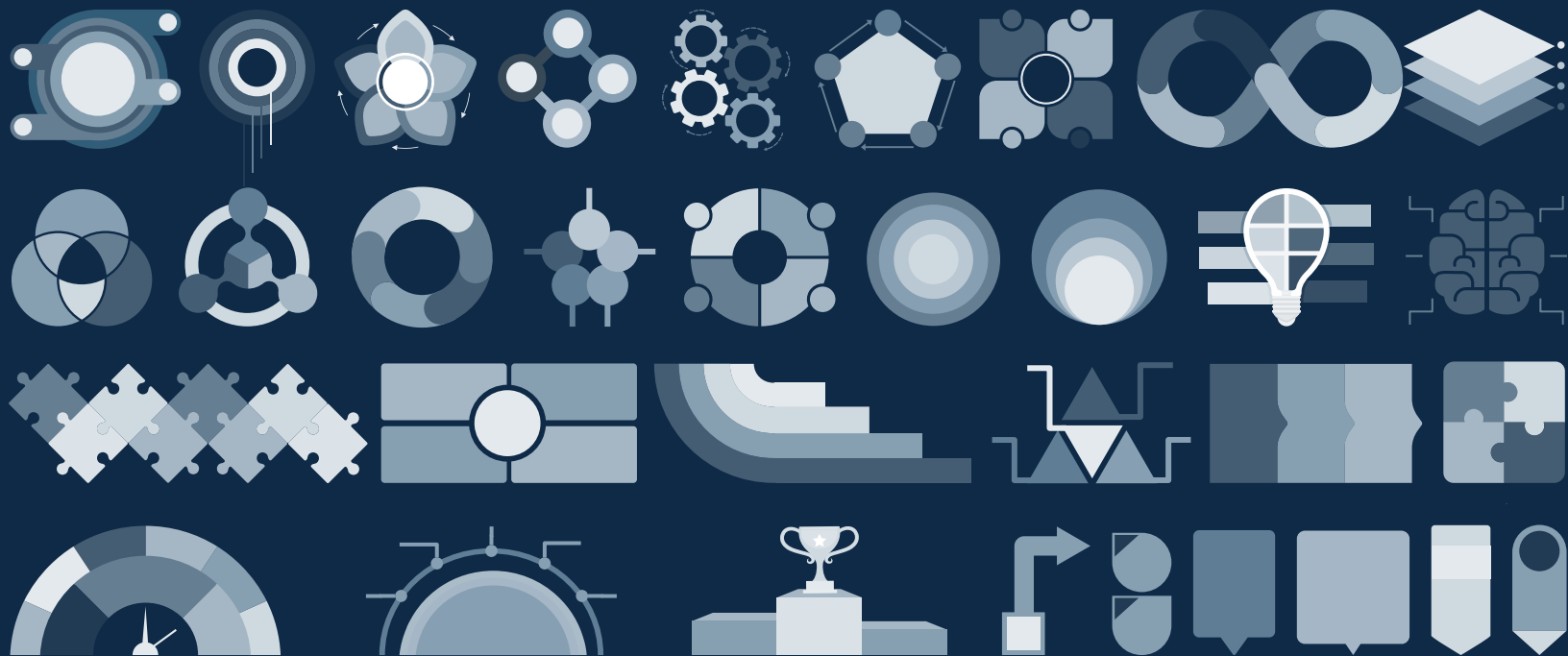
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