

INFRASTRUCTURE STOCK ANALYSIS

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Abstract

Infrastructure serves as the bedrock of society and the financial markets. In our study, we delve into the infrastructure sector of the market, utilizing the BlackRock Global Infrastructure ETF (Ticker: IGF) as our analytical tool, Python and libraries (yfinance, pandas, matplotlib, csv, and os) as our means to make the analysis. Our objective is to discern the correlation between various sectors within infrastructure. Through the application of t-tests, we discovered a lack of correlation between the utilities and energy sectors. This insight could potentially reshape our understanding of these integral components of infrastructure.



INTRODUCTION

- 1. What country has the largest weight in the index? What is the trend of the stocks labeled under that country?
- 2. What sectors make up the infrastructure index? And how do their performances compare to each other?
- 3. After visualizing the performance of each sector, do any of them appear to be correlated? If so, is the correlation significant?

METHODS

yfinance - Yahoo Finance API that we used to access historical ticker data.

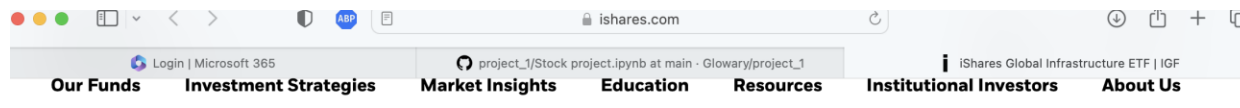
Libraries:

- pandas
- matplotlib
- csv
- os
- scipy.stats



n [79]:

```
import yfinance as yf
import pandas as pd
import matplotlib.pyplot as plt
import csv
import os
```



EQUITY

[Fact Sheet](#) [Prospectus](#) [Financial and Legal Documents](#) [Product Brief](#) [Data Download](#)

IGF

iShares Global Infrastructure ETF

How To Buy

Add to Compare

iShares Global Infrastructure ETF

NAV as of Oct 10, 2023

\$42.71

52 WK: 40.53 - 49.10

1 Day NAV Change as of Oct 10, 2023

▲ 0.70 (1.67%)

NAV Total Return as of Oct 09, 2023

YTD: ▼ -7.18%

Fees as stated in the prospectus

Expense Ratio: 0.41%

```
# Find the top three US energy stocks based on market value
top_energy_tickers = ['LNG', 'WMB', 'KMI']

# Get historical data with the energy tickers
e_stocks = yf.Tickers(top_energy_tickers)

# Determine the previous 12 months of data
energy_hist = e_stocks.history(period='12mo')

# Find the closing price
top_close = energy_hist['Close']

top_close
```



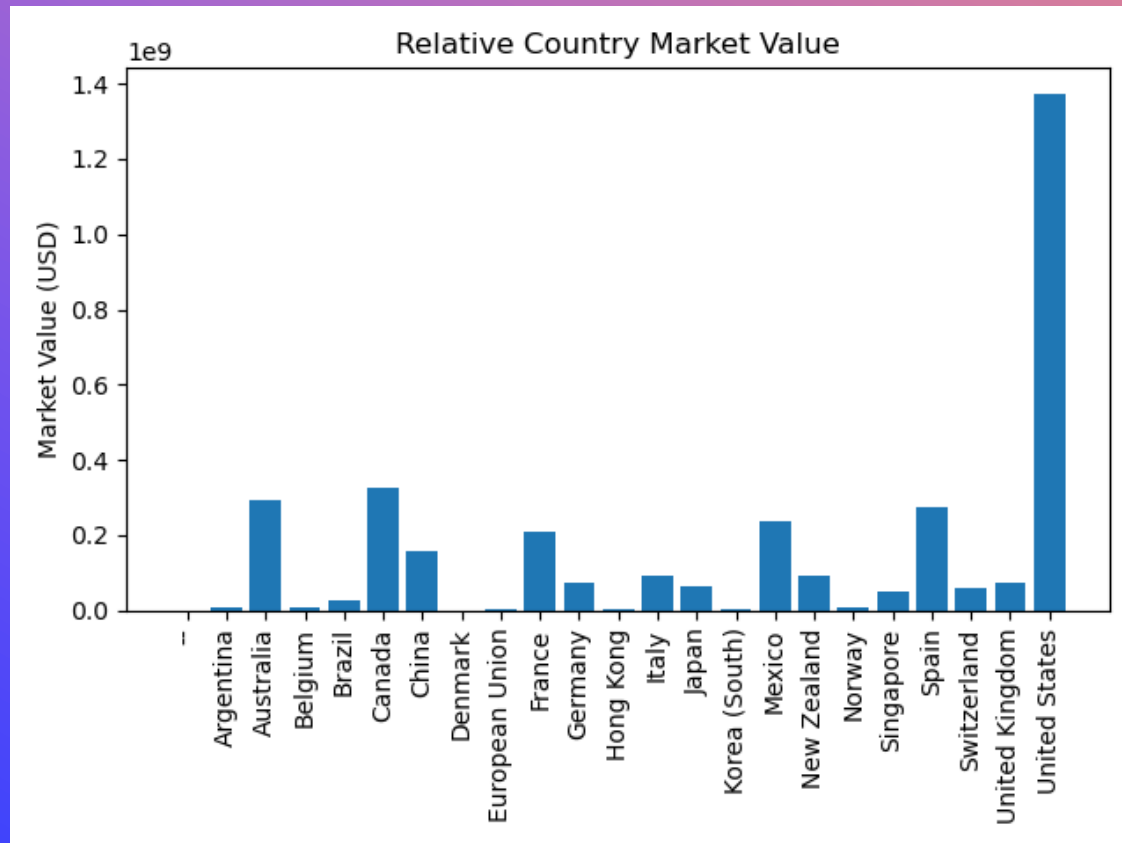
RESULTS

What answers did we find?

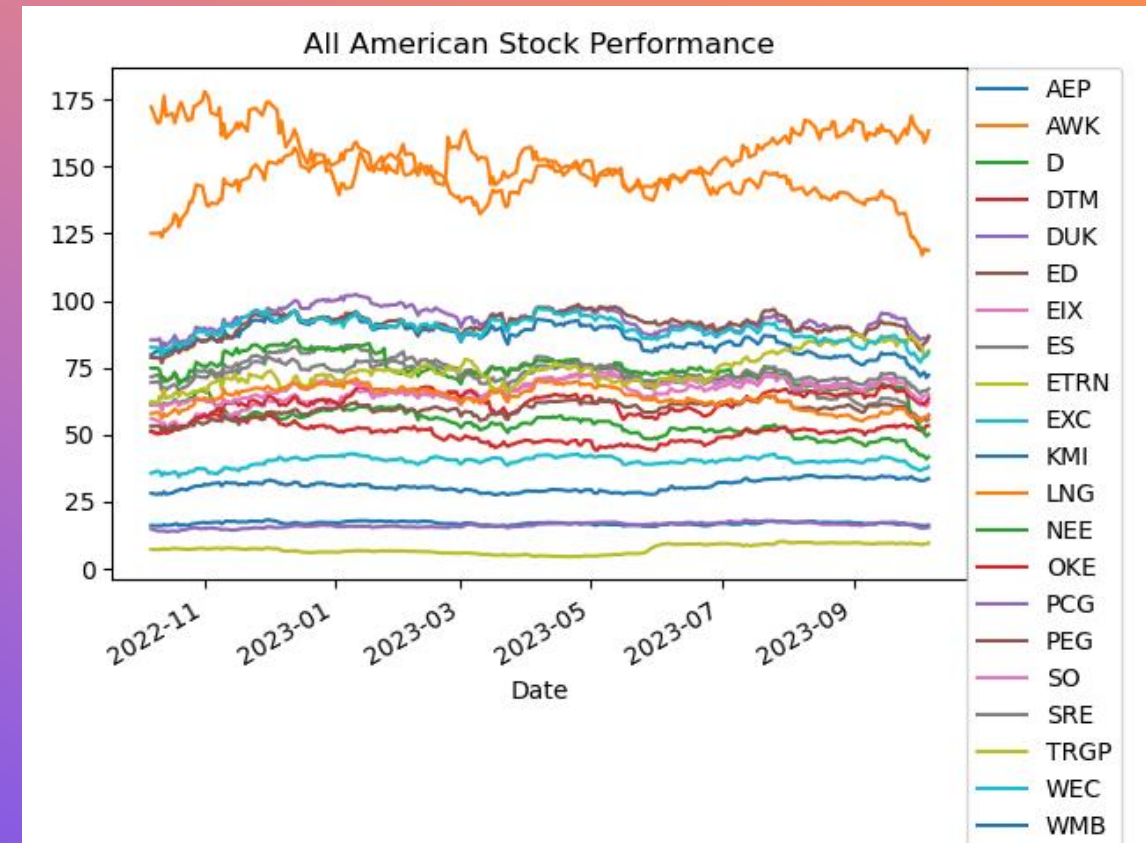


WHAT COUNTRY HAS THE LARGEST WEIGHT IN THE INDEX?

WHAT IS THE TREND OF THE STOCKS LABELED UNDER THAT COUNTRY?



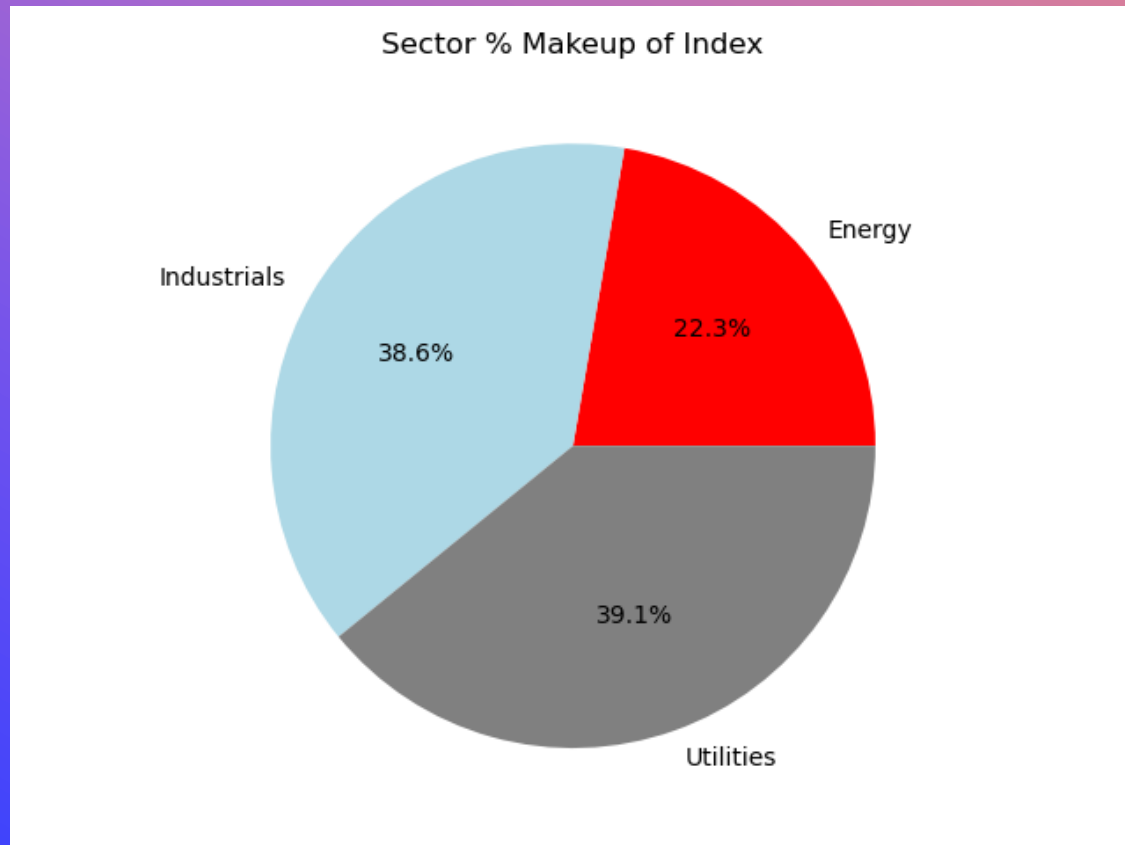
Created a bar chart to compare the over market capitalizations by country.



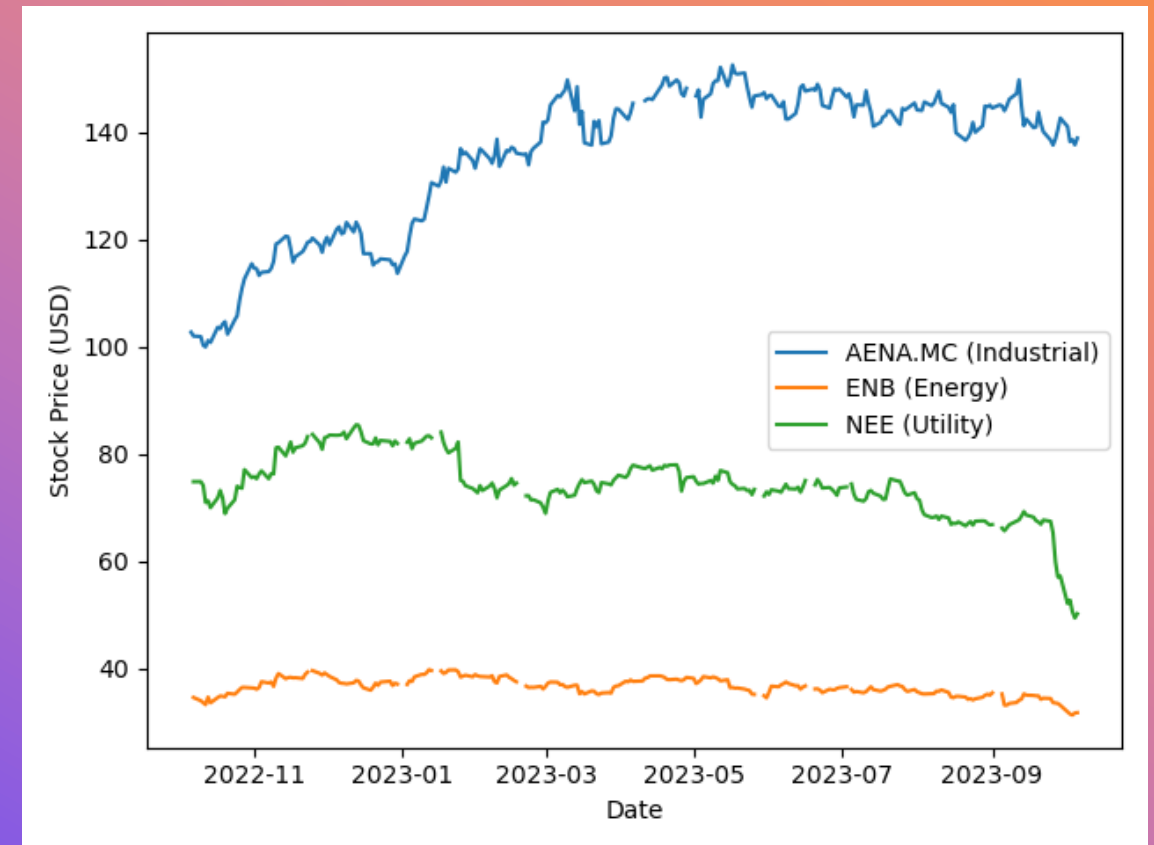
Plotted the closing prices of the largest country's stocks on a line chart.

WHAT SECTORS MAKE UP THE INFRASTRUCTURE INDEX?

AND HOW DO THEIR PERFORMANCES COMPARE TO EACH OTHER?



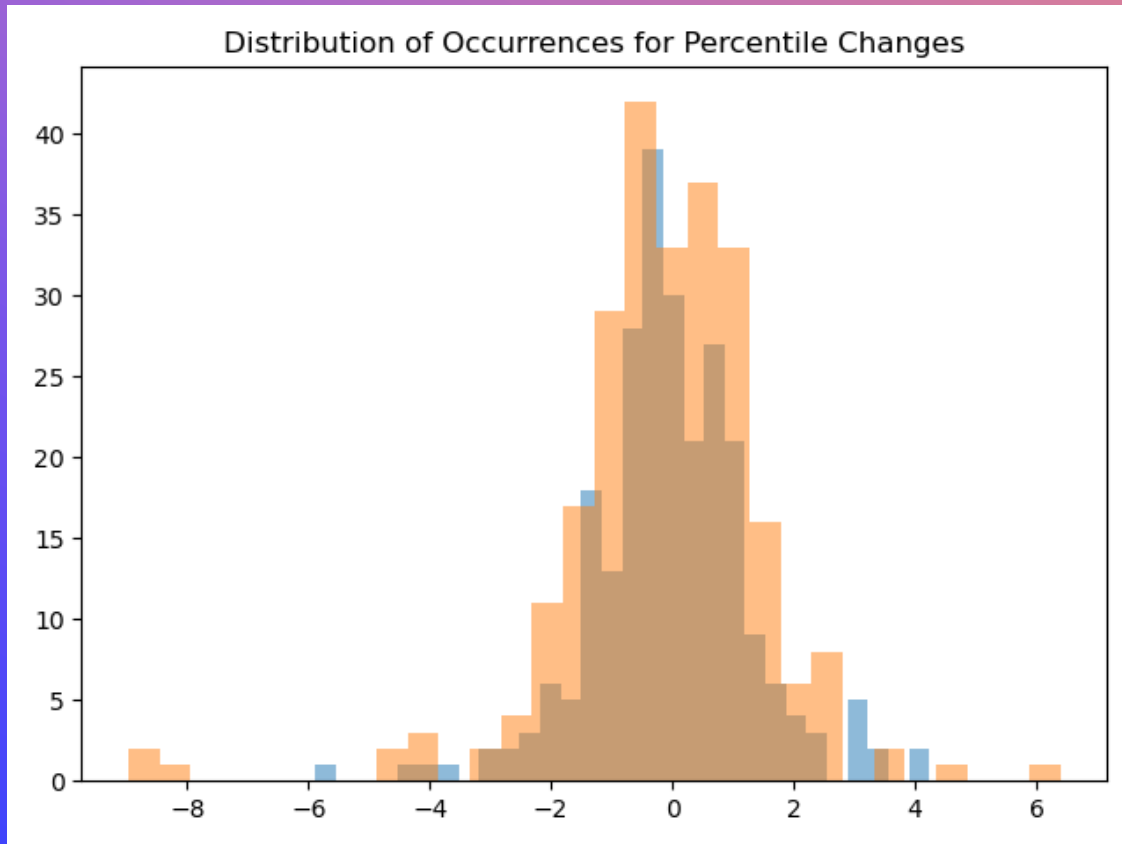
Created a pie chart to show the percentage make-up of the index by sector.



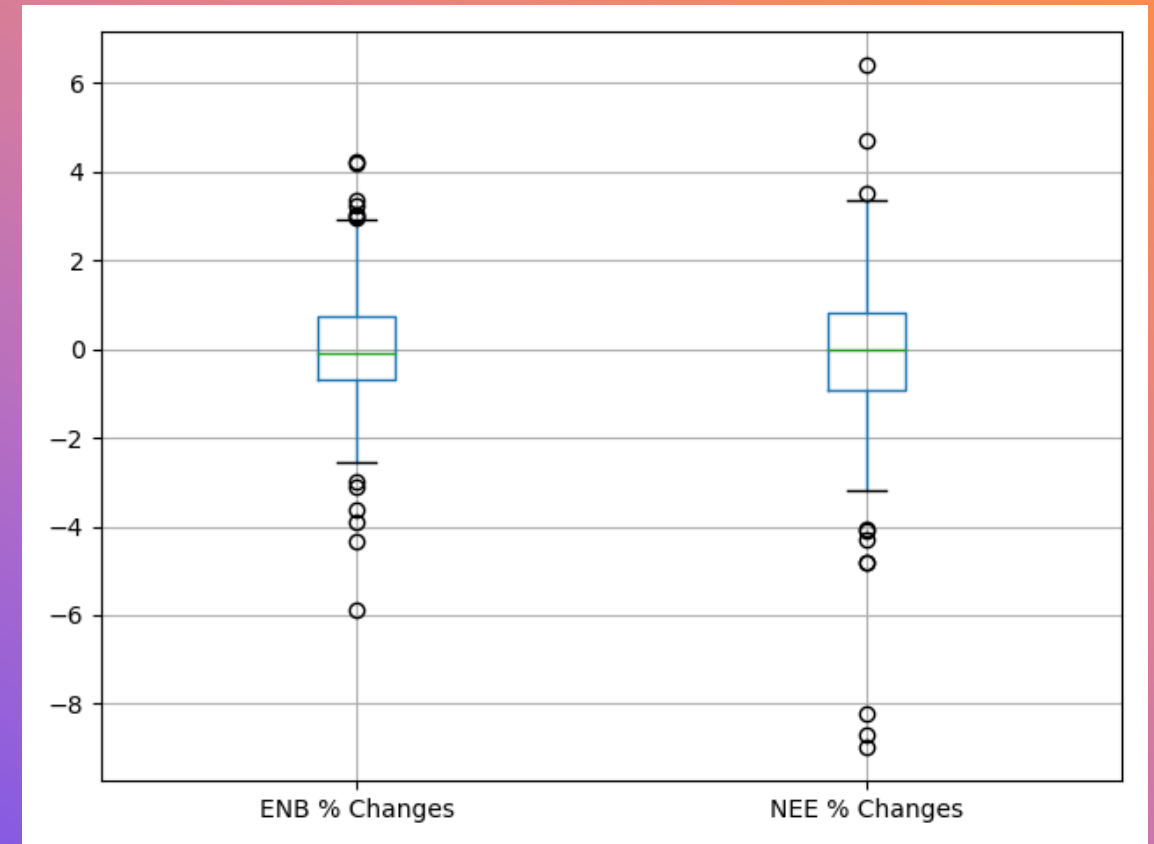
Plotted the closing prices of the largest stock (by market capitalization) in each sector to represent the entire sector within the index.

AFTER VISUALIZING THE PERFORMANCE OF EACH SECTOR, DO ANY OF THE APPEAR TO BE CORRELATED?

IF SO, IS THE CORRELATION SIGNIFICANT?



Plotted the daily percentage difference in closing prices on a histogram to see if the distributions are “Normal”.



Box and whisker plot to visualize outliers.

Discussion

The index is heavily weighted towards the United States, likely due to its large GDP and perceived lower risk, but this doesn't guarantee the index's performance. In fact, most US stocks are currently in a downtrend. The index is primarily composed of the industrial and utilities sectors, which together account for 77.7% of its weight, with the energy sector making up the remainder. This distribution is likely due to perceived risk, as energy companies are often seen as riskier. Despite both being in a downtrend, there is no significant correlation between the utilities and energy sectors, as determined by a t-test on the daily percentage change of their closing prices.

