THE "STOCK" NETWORK

New York Stock Exchange (NYSE) Analysis

Sherry and Hiam

Project 3 - Presentation

December 8th, 2021

BREAKDOWN

A gentle breeze, a bit of rain... We don't mind this.

Although, when it comes to a full downpour of rain or a large snow storm, this inclement weather may devastate a life, damage property, or close off an internet connection. Did some climatic event affect your financial situation? Let's investigate if daily weather has some effect on stock markets.

PROJECT SCOPE

01

PROJECT SCOPE

We will be considering weather in the New York City (NYC) area, and stock exchanges from New York, where their headquarters are in NYC as well.

We will be analyzing the stock close prices, and the transaction volumes to see if there is a pattern for maximum temperature and a correlation that may occur over time.

HYPOTHESIS & RESEARCH QUESTIONS

02

HYPOTHESIS

Maximum temperature correlates to the local Headquarters of the NYC stock exchanges between January 2018 and October 2021.

RESEARCH QUESTIONS

01

Is there a trend between the daily max temperature (^{O}C) and stock volume over time?

02

Is there a trend between the daily max temperature (^{O}C) and stock closing price over time?

03

Is there a relationship between the daily max temperature (^{O}C) and stock volume?

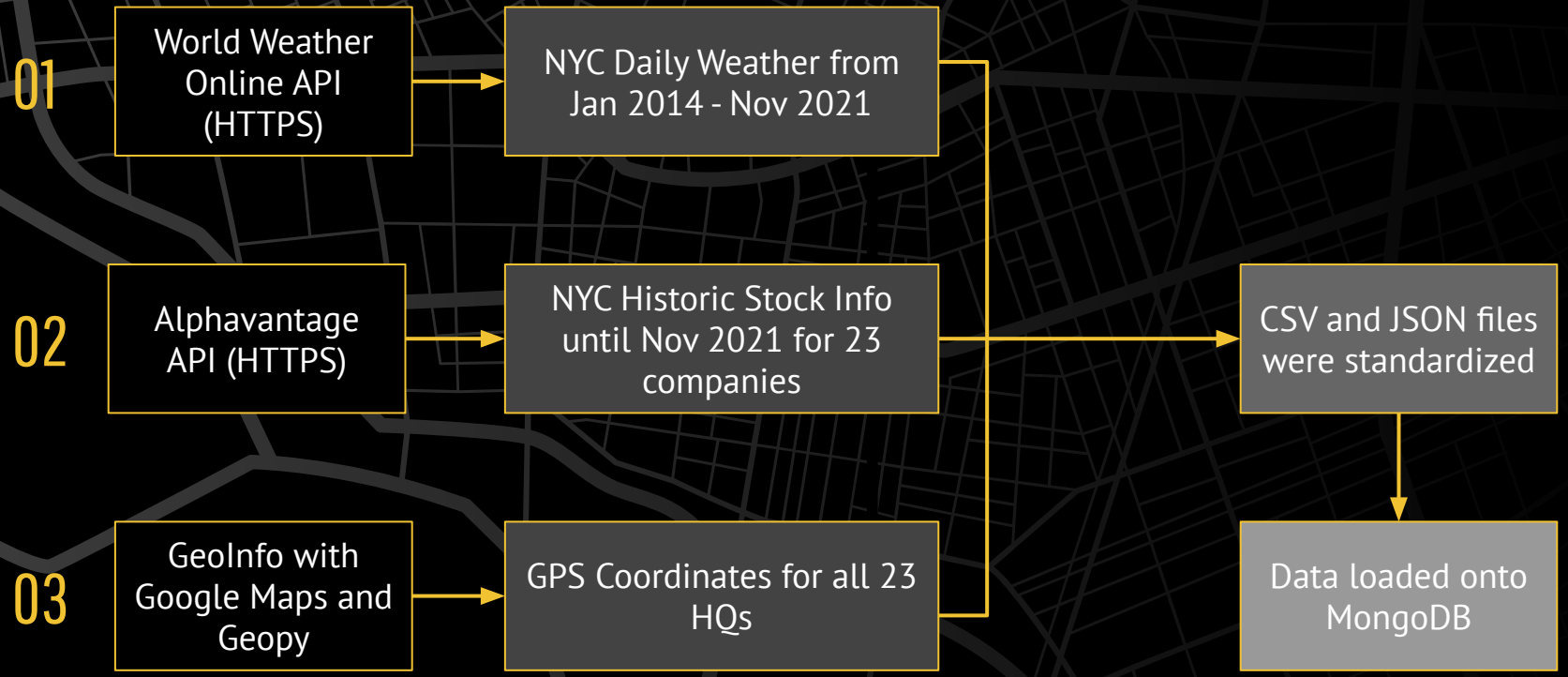
04

Is there a relationship between the daily max temperature (^{O}C) and stock closing price?

PROJECT CYCLE

03

DATA ACQUISITION, TRANSFORMATION AND STORAGE

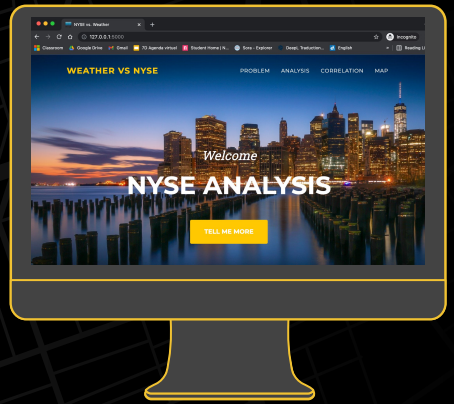


DATA RETRIEVAL AND VISUALIZATION

Data loaded onto MongoDB

Queried Data through Flask App

D3 (Flask URL)



CODE DEEP DIVE

01

Setting up our
Flask APP

Setting Up our Flask APP

```
from flask import Flask, render_template, redirect
from flask_pymongo import PyMongo
from flask import jsonify

from flask_cors import CORS

from scipy.stats.stats import pearsonr

app = Flask(__name__)

app.config["MONGO_URI"] = "mongodb://localhost:27017/NYSE_Weather_db"
mongodb_client = PyMongo(app)

# To request from local server and avoid CORS error
CORS(app, support_credentials=True)
```

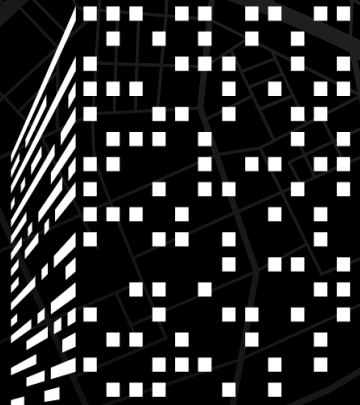
CODE DEEP DIVE

01

Setting up our Flask APP

02

Creating Routes for .html files



Creating our Routes for the .html files

```
#First Main Page Route
@app.route("/")
def home():
    # load home page
    return render_template("index.html")
```

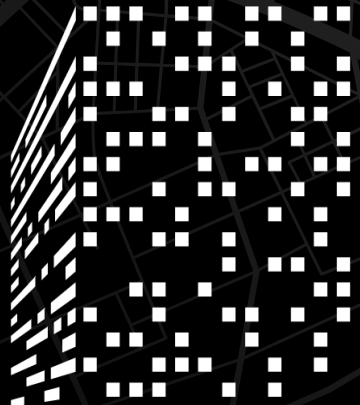
CODE DEEP DIVE

01

Setting up our Flask APP

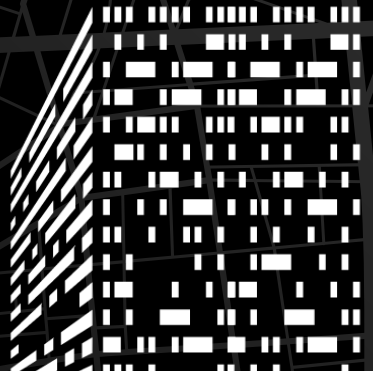
02

Creating Routes for .html files



03

Creating Routes to connect to database



```
#Map Data Route
@app.route("/data")
def getData():
    # loop through here and append to list
    all_map_data = mongodb_client.db.StockGeoInfo.find()
    myData=[]
    for each in all_map_data:
        del each['_id']
        myData.append(each)
    #print(myData)
    #print("hello map")
    return (jsonify(myData))
```

Creating our Routes for Data Retrieval

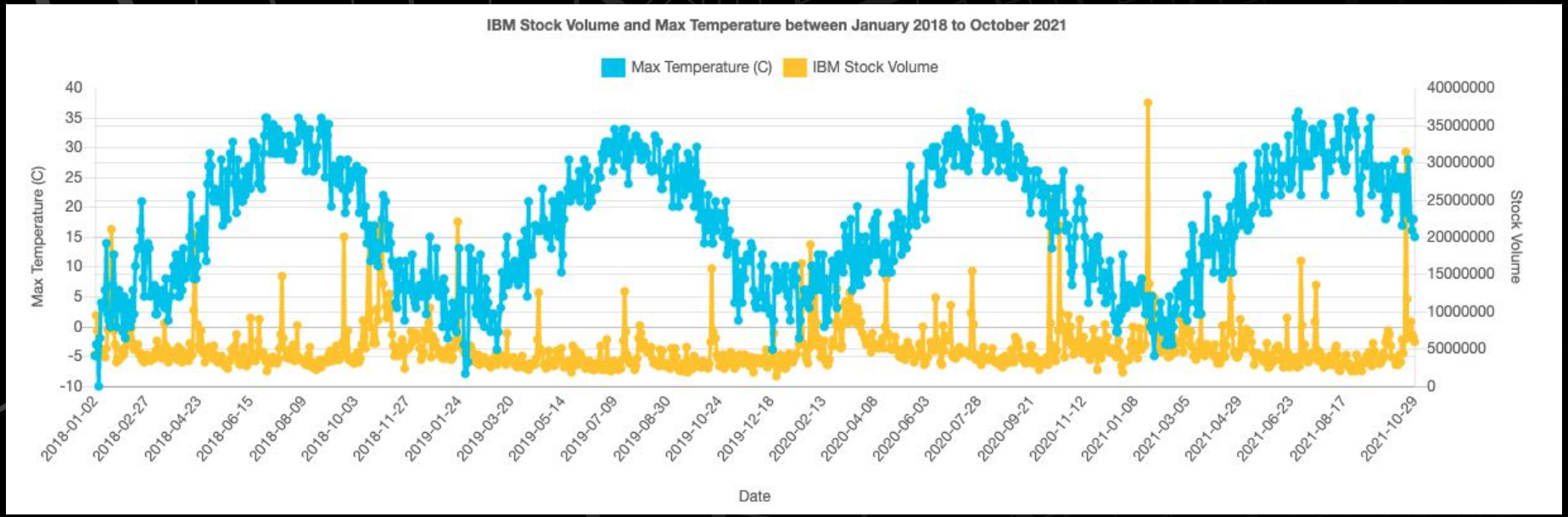
WEBSITE DEMO

04

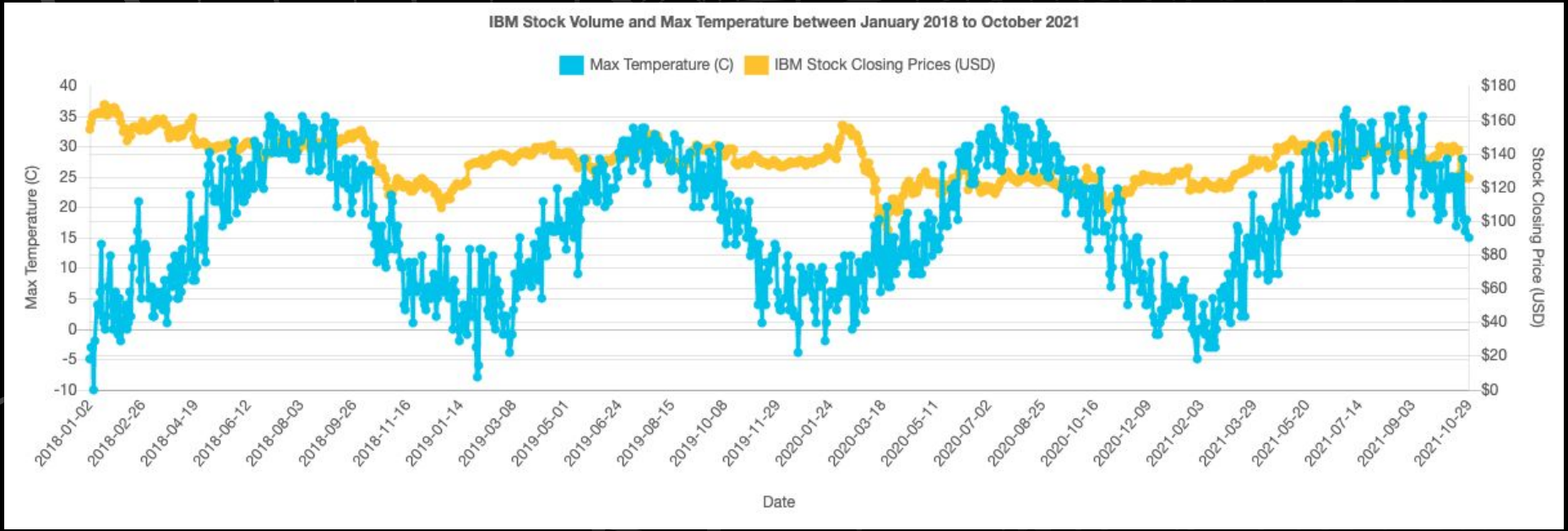
RESEARCH FINDINGS

05

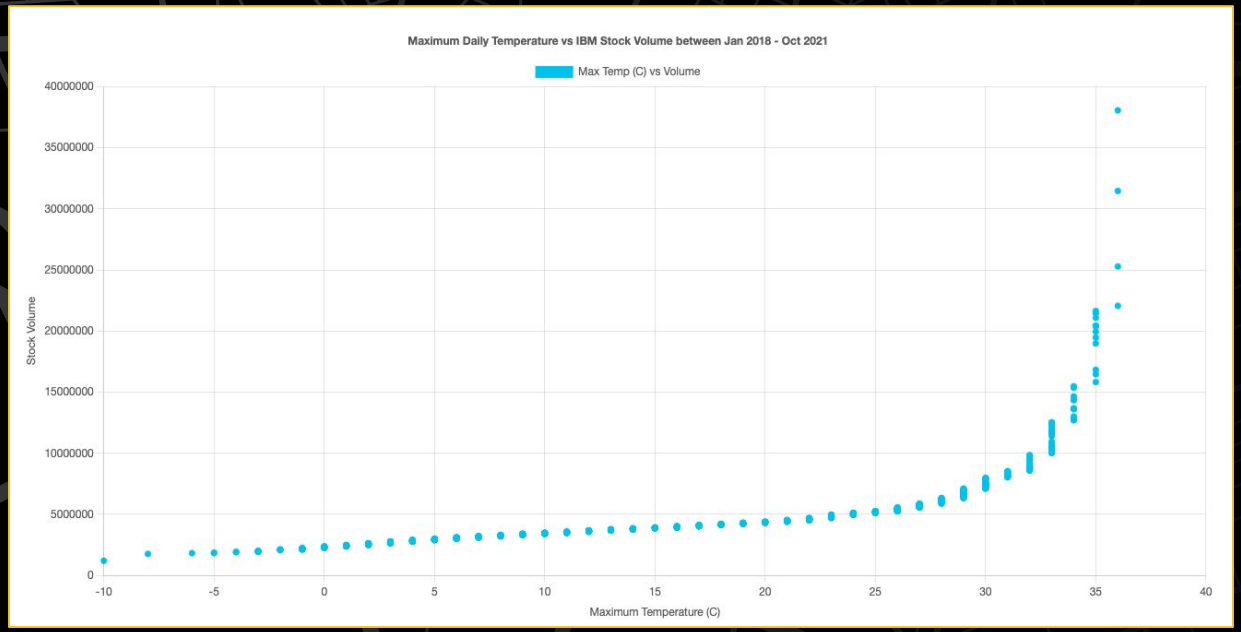
Is there a trend between the daily max temperature and stock volume over time?



Is there a trend between the daily max temperature and stock closing prices over time?

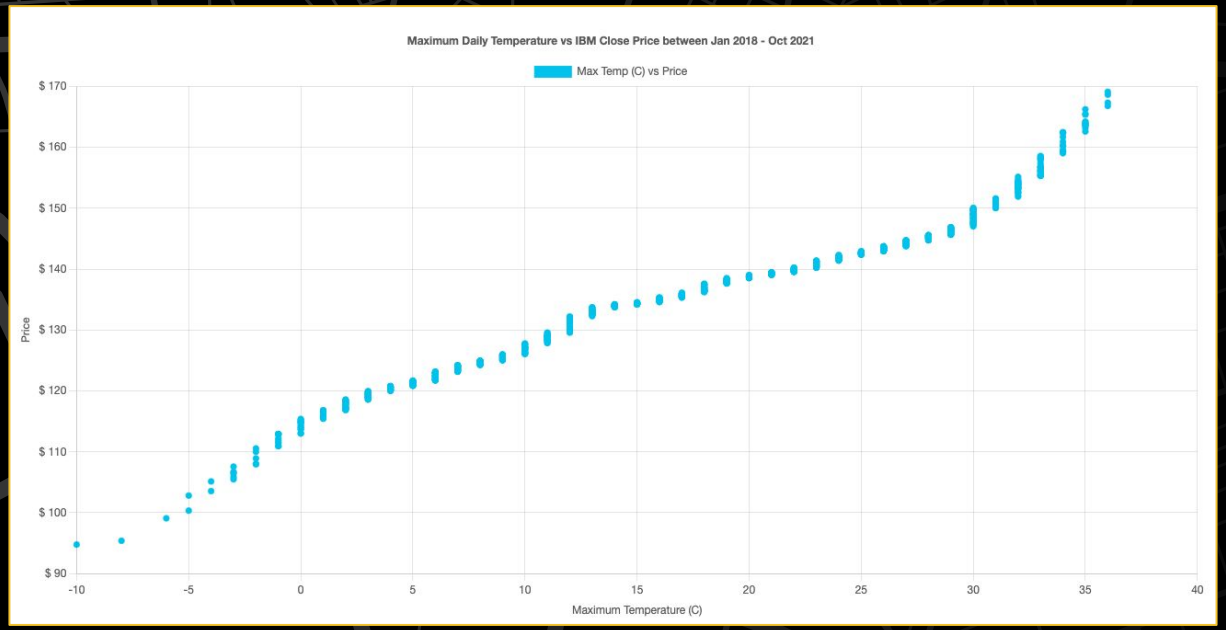


Is there a relationship between the daily max temperature and stock volume?



r^2 value: **0.52819**

Is there a relationship between the daily max temperature and stock closing prices?



r^2 value: **0.96884**

CONCLUSIONS

06

OVERALL CONCLUSIONS

Based on the findings obtained, we do not reject the null hypothesis declared of Weather (Max Temp) correlates to the local HQs of NYC stock exchanges during January 2018 to October 2021.

Strong possibility of a correlation with the maximum temperature and stock close prices (IBM - r^2=0.96884).

Moderate possibility of a correlation with the maximum temperature and volume (IBM - r^2=0.52819).

LIMITATIONS AND FUTURE CONSIDERATIONS

07

LIMITATIONS

- Time Frame
- Number of HQs
- Weather Factors
- Linear Regression Model

FUTURE CONSIDERATIONS

- Multiple Weather Factors: Humidity, Snow Fall, Precipitation, etc.
- Increase the number of HQs for analysis.
- Expanding out Time Frame Scope.
- Have a date filter where we could look into specific timeframes for hidden trends
- Looking at alternative models to fit the non-linear trends.

RESOURCES

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RESOURCES

Data Sources:

- NYC Daily Weather Data: World Weather Online API
- Stock Information: Alphavantage API
- Geo Information: Google Maps and Geopy

Javascript Libraries:

- Visualizations for Analysis and Correlation: Chart.js
- To get our retrieve our data: **D3**
- To create our map: **Leaflet**
- To create our interactive webpage: Bootstrap 5.0 template

References:

1. https://www.investopedia.com/terms/c/closingprice.asp
2. https://www.investopedia.com/terms/v/volume.asp