

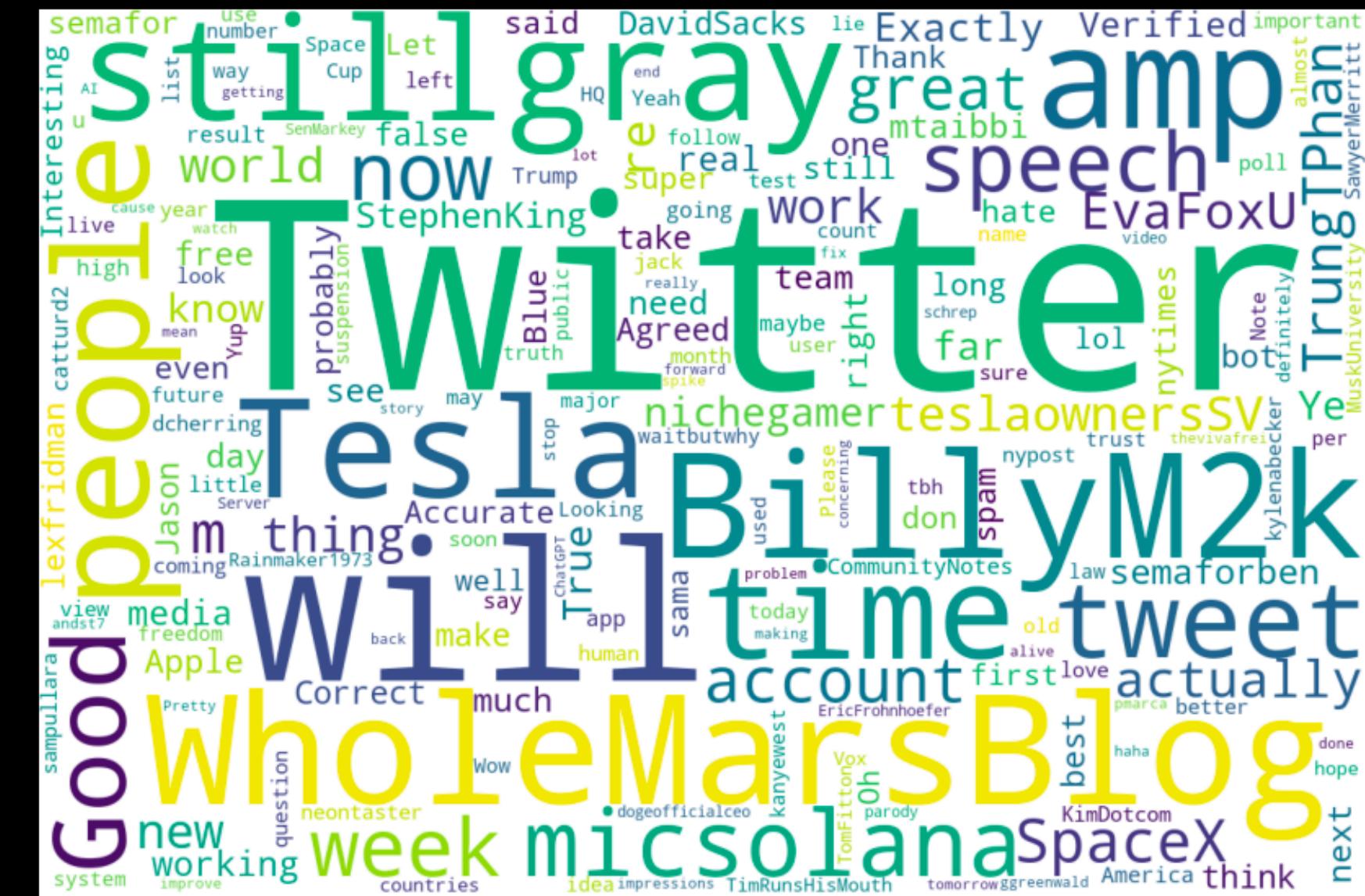
Stock Prediction using Twitter Sentiment Analysis

**API, NLP (Sentimental Analysis),
Grander Causality,
Random Forest Model**

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Your opinion matters!

- There are different methods and there is a lot of controversy about which one is the best. In the fundamental (Warren Buffet's theory). They affirm that all public known information about a company, which includes **OPINIONS**, would affect the stock price.
 - Social Media platforms: Twitter or Reddit have become a variable to consider.



Data bases & API TWITTER

- Stock Market TESLA (daily open-close): 232 rows (Jan.-Dec 2022)
- Global Mention of TESLA #: 153.000 rows (April - Dec. 2022)
- Global Mention of Elon Musk (last week: 06.-13.2022)
- @Elon Musk own tweets (Oct.- Dec. 2022)

The screenshot shows the Twitter Developer Portal interface. At the top, there's a dark header with the Twitter logo and the text "Developer Portal". Below it, a white section is titled "Twitter API v2" with tabs for "Essential", "Elevated" (which is selected), and "Academic Research".

The main content area has a title "Elevated" and a sub-section "Overview" which says "Higher levels of access to the Twitter API for free with an approved application." It shows a green checkmark indicating "Your Project has Elevated access: Dumb Stanislas".

A table provides detailed information about the API endpoints:

Endpoints	Rate limit ⓘ	Tweet cap ⓘ	Special attributes
GET /2/tweets/:id	300 requests / 15 mins PER APP 900 requests / 15 mins PER USER	no	-
GET /2/tweets	300 requests / 15 mins PER APP 900 requests / 15 mins PER USER	no	-

Below this, there's a section titled "Use cases" with three images: one of two people laughing, one of a group of people looking at a phone, and one of a person working on a computer.

Sentimental Analysis

NLP: study affective states

Libraries: Text Blow & `from nltk.sentiment.vader import SentimentIntensityAnalyzer`

- **positive** sentiment, **compound** ≥ 0.05
- **negative** sentiment, **compound** ≤ -0.05
- **neutral** sentiment, the **compound** is between $]-0.05, 0.05[$



```
print(rows)
```

```
[{'text': 'The sale comes as shares of the electric vehicle and solar panel maker have collapsed, losing over half th  
eir value... https://t.co/Zx33J405Rn', 'date': datetime.datetime(2022, 12, 15, 15, 9, 44, tzinfo=datetime.timezone.utc), 'id': 1603406964037386242, 'location': 'Texas, USA', 'compound': -0.3612}]
```

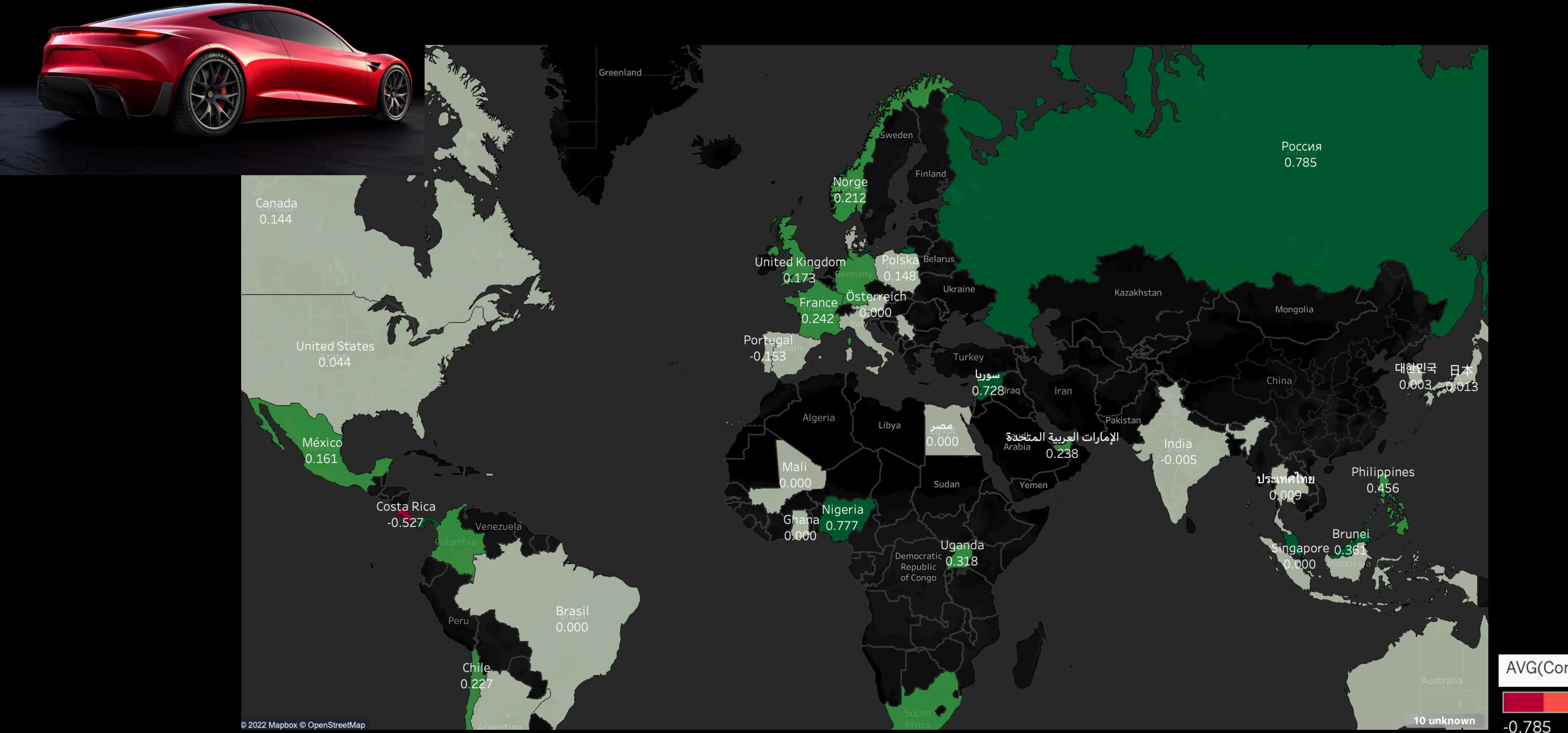


```
print(rows)
```

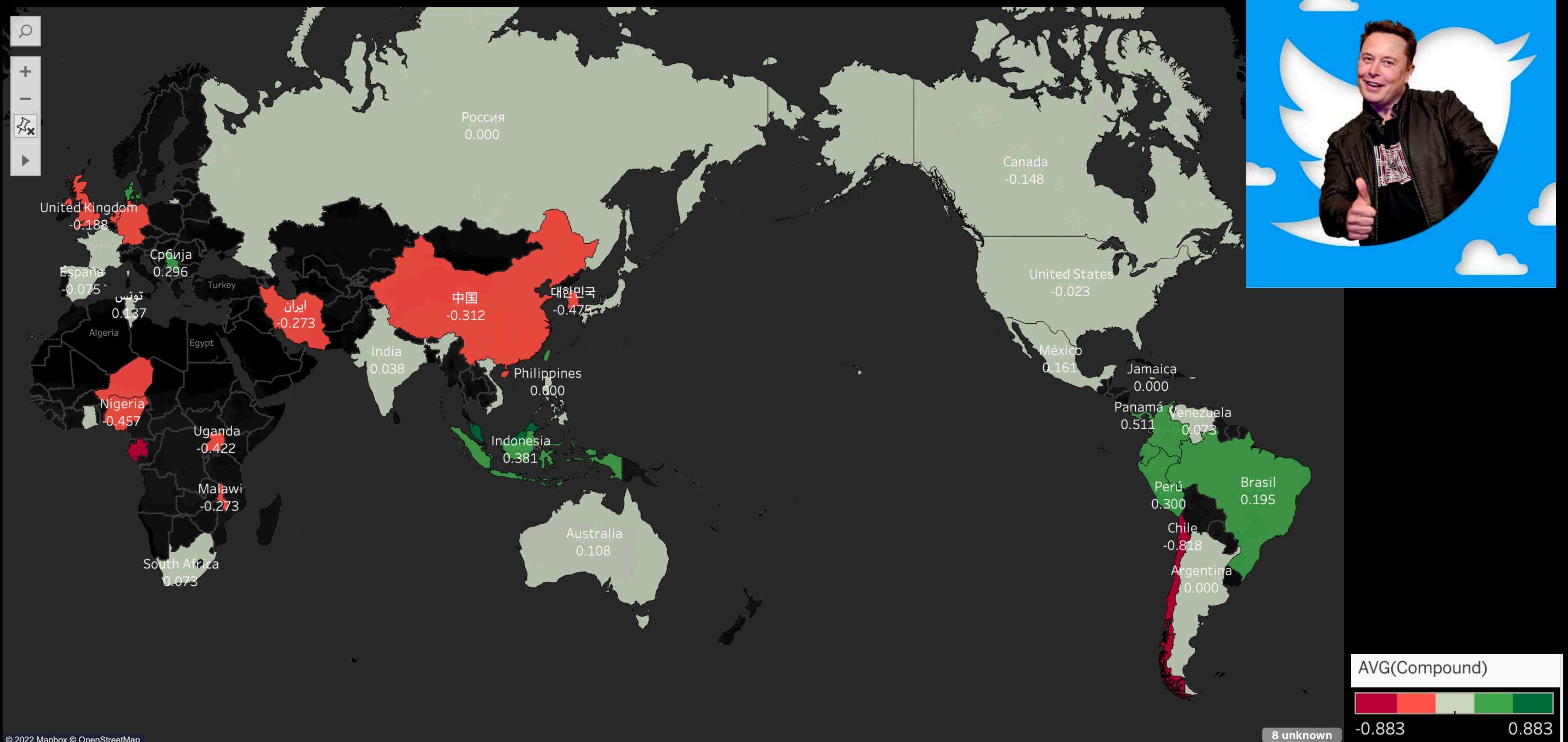
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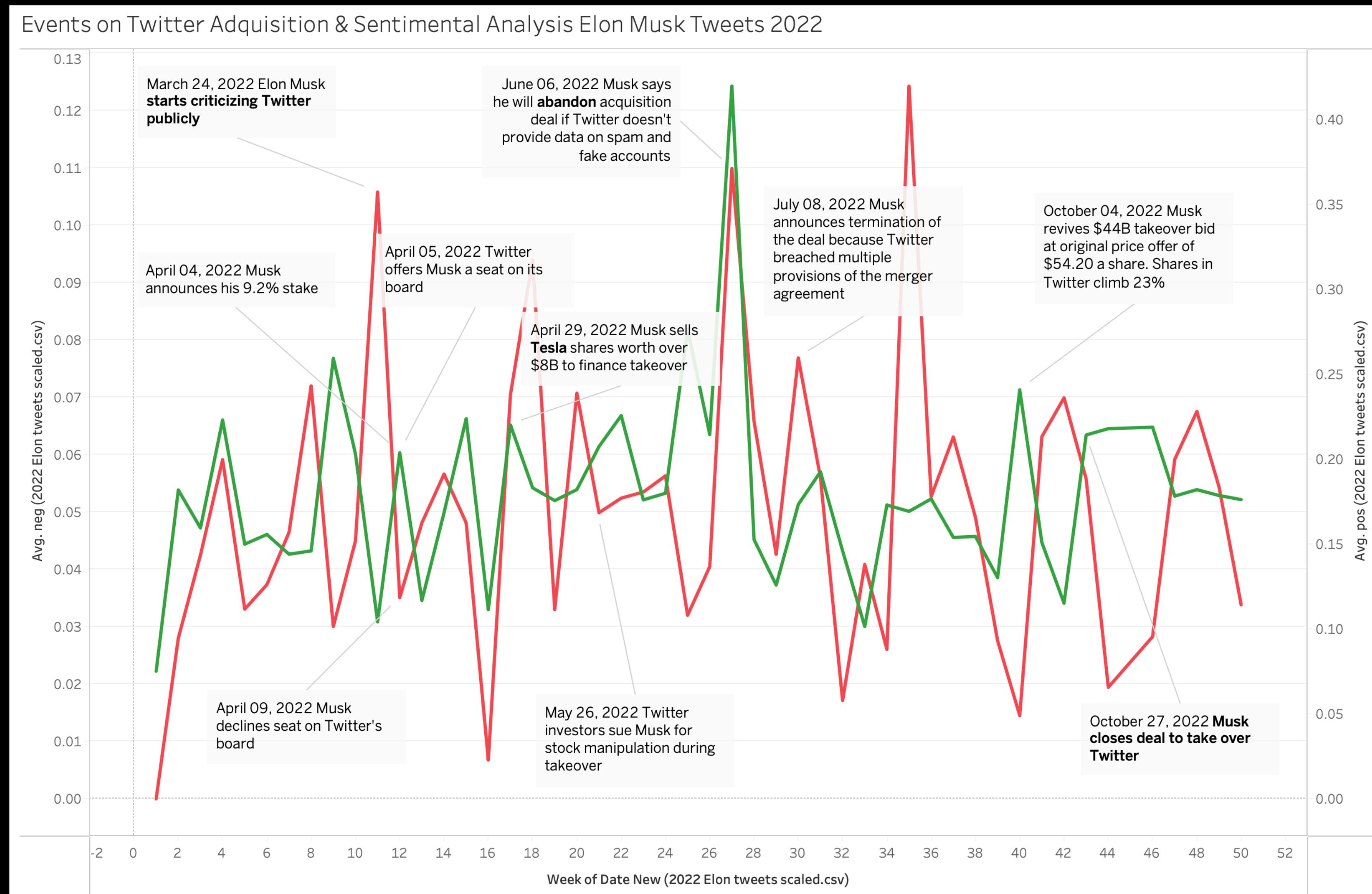
Multi-Country TESLA opinion on Twitter (last 7 days)



Multi-Country Musk opinion on Twitter (last 7 days)



How tweeted Musk during the Twitter acquisition?



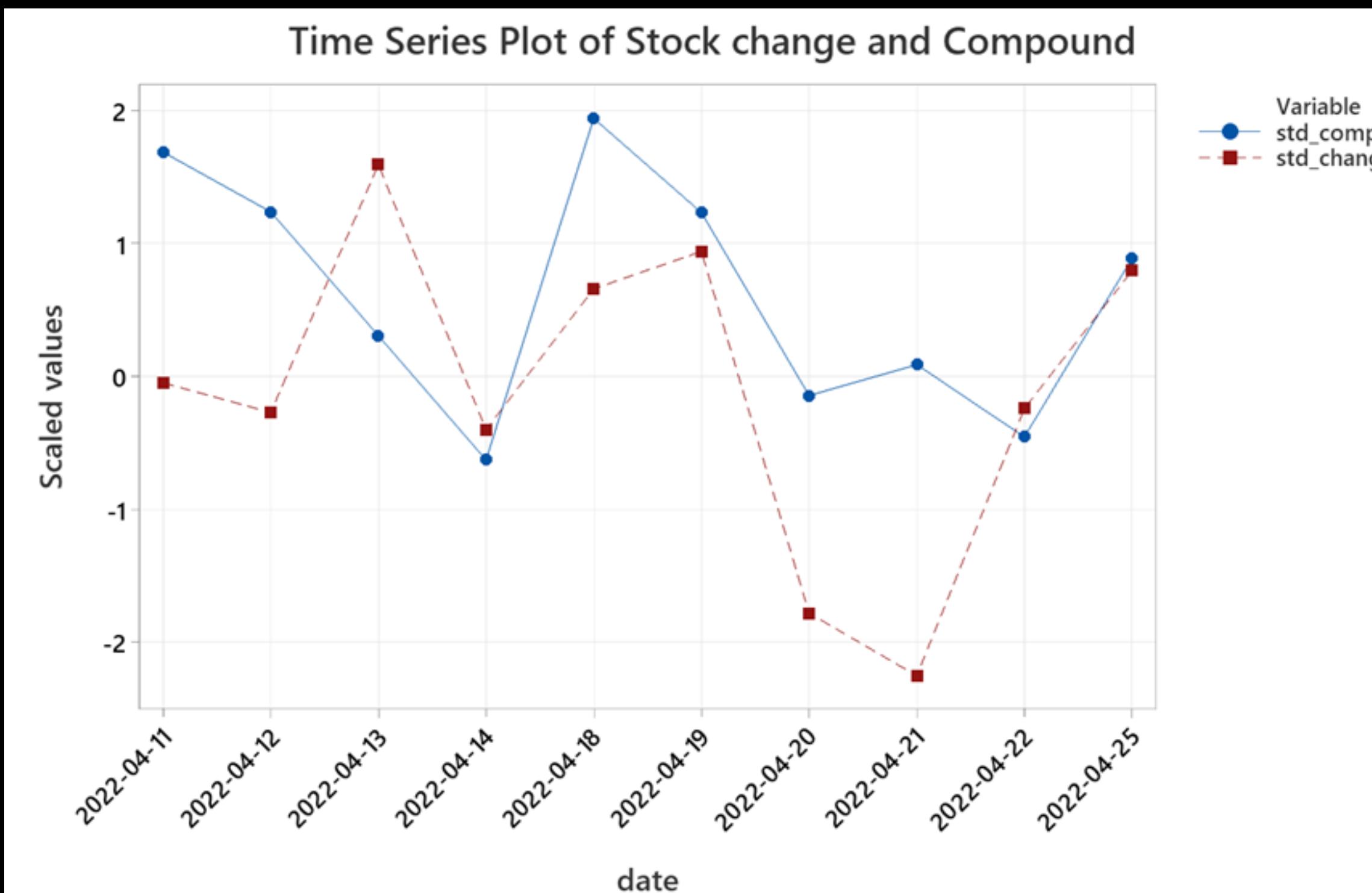
**Owning
Twitter**

**OWNING
Twitter**

Methodology

Grander Causality Analysis

- Correlate Tesla Stock change to Twitter Tesla mood



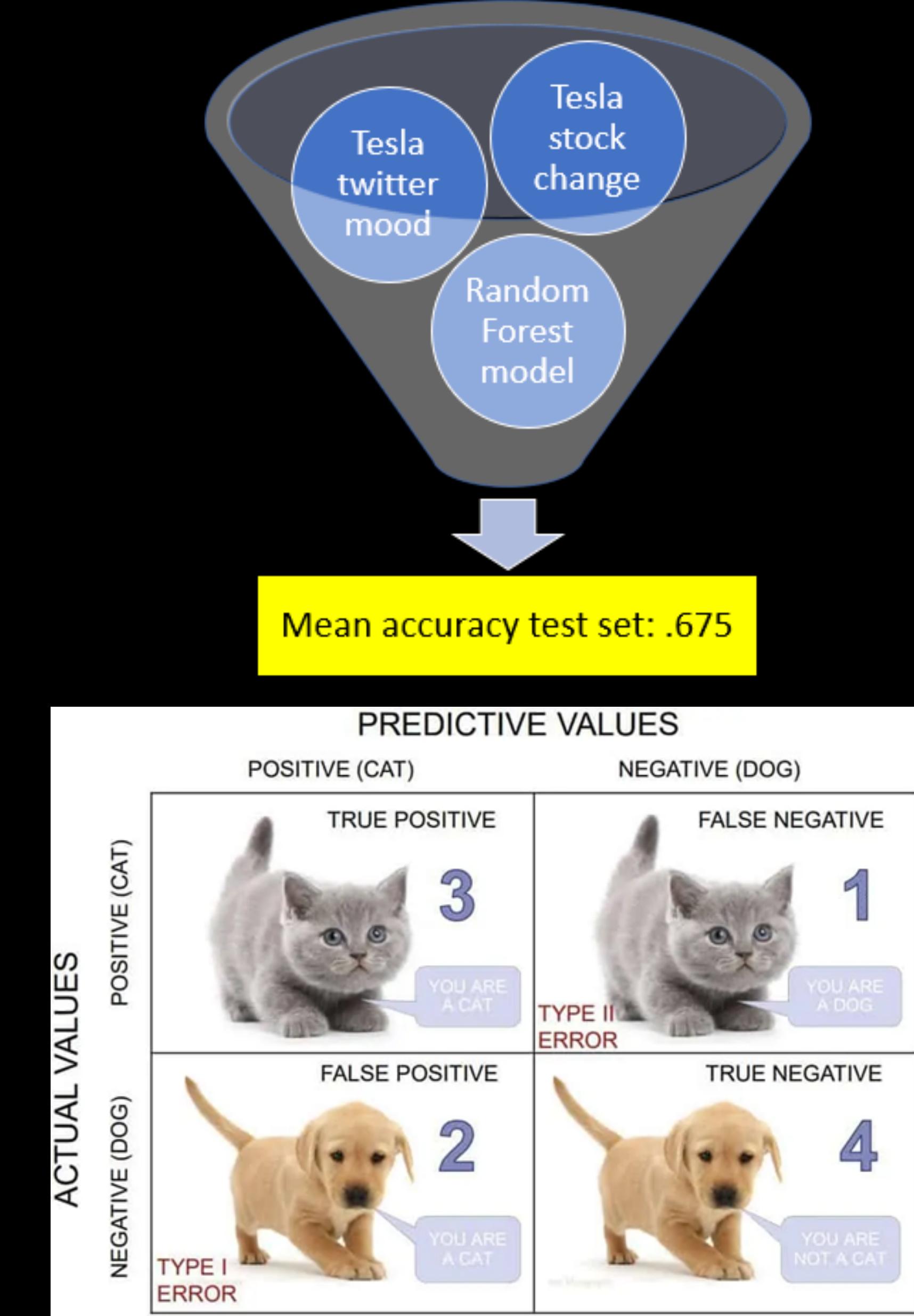
STATISTICAL SIGNIFICANCE (P-VALUES) OF BIVARIATE GRANGER-CAUSALITY CORRELATION BETWEEN MOODS AND TESLA STOCK IN PERIOD APRIL 2022 TO NOVEMBER 2022.



Lag	Compound
1 day	0.5212
2 days	0.806
3 days	0.9414
4 days	0.0312
5 days	0.0413

Classification Model

Random Forest Classifier



*“Behavioral economics tells us
that emotions can profoundly
affect individual conduct and
decision making”.*

Johan Bollen

