

Has Twitter become more toxic?

Žan Stanonik, Damla Cinel, Lorenz Mangold



Research Question

On April 14, 2022 **Elon Musk** started the acquisition of the social media website **Twitter**. The takeover concluded on October 27, 2022 and Musk started initiatives to reform the company, such as:

- Lay-off for more than 50% of the employees
- Introducing a new verification system
- Unbanning multiple users like Donald Trump
- Scaled back on fact-checking and hate-speech monitoring

Especially the last change raises the question:
Have the **tweets** of the users become more **toxic** since the change of ownership?

Theory

Since the acquisition of Twitter by Musk, **more hate speech** can be identified on the platform.

Methods

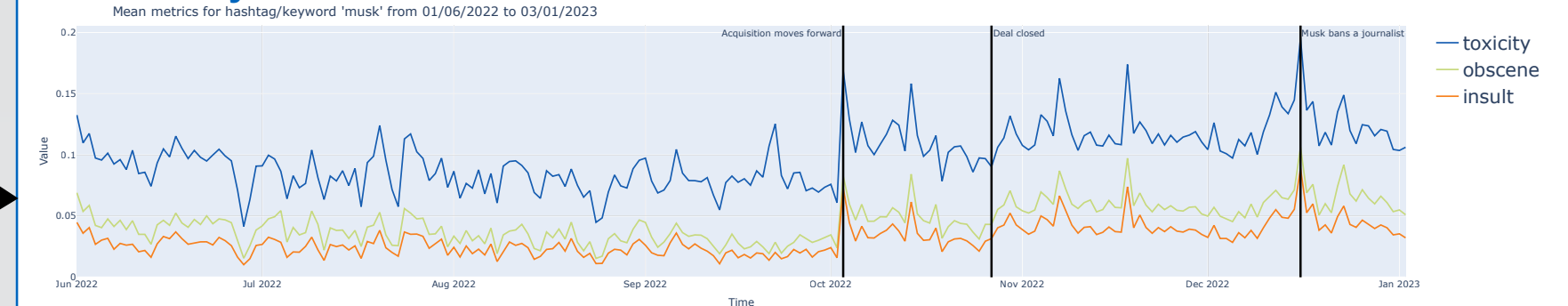
To be able to come to the **conclusion** that the toxicity level on Twitter increased after Elon Musk took over, we had to use a **representative sample** of tweets. These hashtags are chosen as neutral and **relevant to daily-life** as possible. Throughout this project, our goals were to:

- Gather tweets with **chosen hashtags** and **key-words** before and after the take over
- **Lemmaize text** for more robust prediction of the models
- Use pre-trained **NN Models** like **Perspective** and **Detoxify** to determine the toxicity of the tweets
- **Compare the toxicity** between the tweets over time

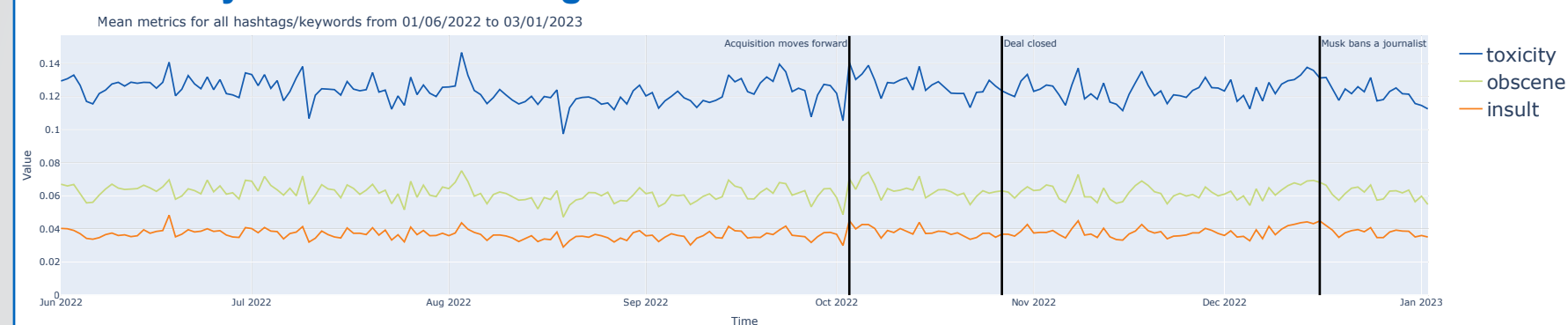
Most Toxic Tweets

processed_text	lemma_toxicity
to this goddamn bastard administration and to all goddamn bastard democrats and to all goddamn bastard democrat supporter and to all goddamn bastard democrat voter to all goddamn bastard trump hater and trump supporter to all goddamn bastard republican hater go straight to hell	0.999321
fuck republiKKan fuck trump fuck fascism fuck desantis	0.999308
Fuck Donald trump!fuck Elon Musk!Fuck the @gopfuck @FoxNews @cnn @NBCNews @NEWSMAX Fuck the fake outrage come from the Republican Party GOP ! trump ass need to be under the jail!Fuck White Supremacists , Antisemitism , Fascist , Christian Nationalism!Any Questions	0.999304
fuck MSM Fuck trump Fuck party of Nazis Fuck Twitter	0.999297

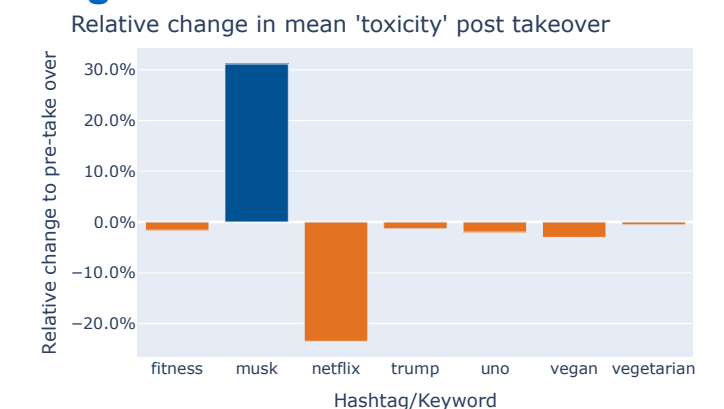
Tweet Analysis For Musk



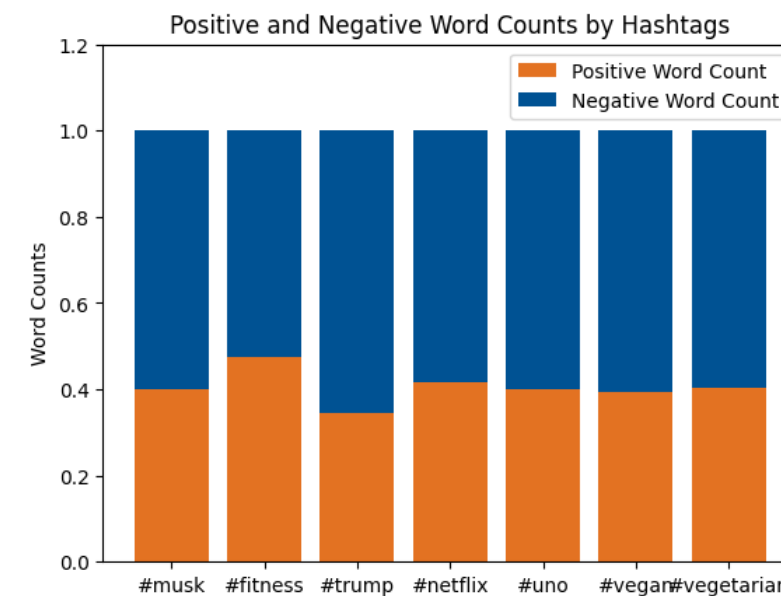
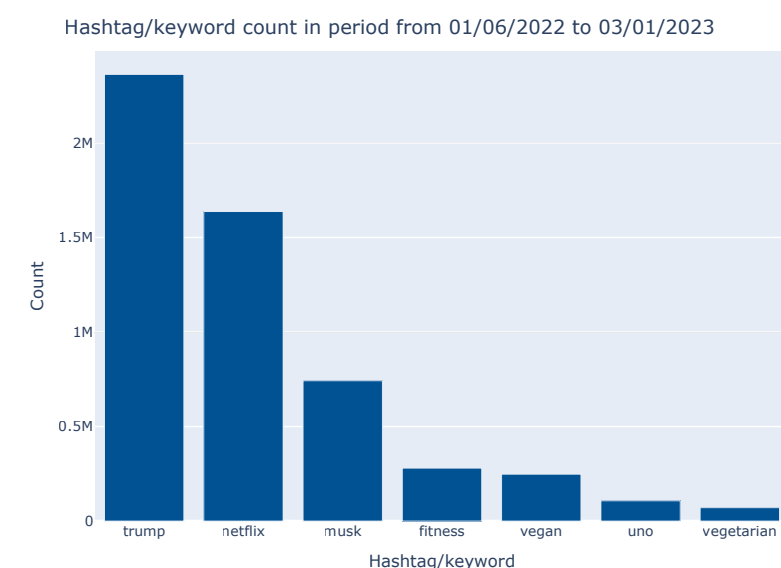
Tweet Analysis For All Hashtags



Change After Takeover



Collected Data



Results

- We could **not** find **convincing evidence**, that Twitter has become **more Toxic** in general since the takeover
- Tweets talking about **Elon Musk** are significantly **more toxic**, which we proved with a t-test
- **A lot of tweets** achieved a **high level of toxicity**, yet the users were still able to post them
- Through word analysis we found out, that **Trump** had the **most negative words** used per tweet
- We included only original tweets, since the amount of **spam-tweets** was too **high**
- The tweets not related to Elon Musk experienced a **small decrease** in **toxicity** post-takeover