



# SENTIMENT ANALYSIS OF SOUTH AFRICAN TWEETS ABOUT COVID-19 VACCINES

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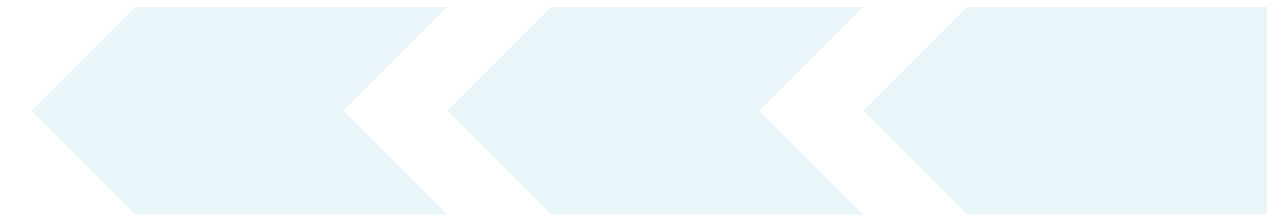
Presented by

**THATO DITSELE**

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# OVERVIEW



**INTRODUCTION**

**RESEARCH PURPOSE**

**RESEARCH BENEFITS**

**OBJECTIVES & QUESTIONS**

**LITERATURE REVIEW**

**METHODOLOGY**

**SCOPE AND LIMITATIONS**

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**RESULT**

**CONCLUSION**

**RECOMMENDATIONS**

**THANK YOU**

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# INTRODUCTION



- The global impact of the Corona virus disease (COVID-19) since its emergence in China in December 2019 has been significant, leading to the widespread spread of the virus.
- South Africa reported its first COVID-19 case in February 2020 and has since reported over 3.7 million confirmed cases, with approximately 103,000 deaths (Department of Health, 2022).
- Despite this, there has been growing vaccine scepticism in South Africa, with only 67% of those polled expressing certainty in getting vaccinated and the remaining 33% uncertain or against getting vaccinated (Bam, 2021).

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# PURPOSE & VALUE



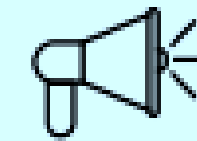
## Inform future pandemics

Paying attention to what the public thinks can lead the government officials to make more informed decision on how to deal with the current or future pandemics (**Bakker et al., 2018**).



## Boost vaccine acceptance

To boost vaccine acceptability and uptake in South Africa, social media has been used to promote evidence-based information regarding COVID-19 vaccinations (**Bam, 2021**).



## Inform vaccine campaigns

The South African government/ officials could act according to the informed data and create campaigns based on how people perceive the COVID-19 pandemic.

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# RESEARCH QUESTIONS

**RQ 01**

**What are the sentiments expressed in South African tweets about COVID-19 vaccines?**

**RQ 02**

**What are the central themes discussed on Twitter about COVID-19 vaccines in South Africa?**

**RQ 03**

**How did South Africa's Twitter sentiments on COVID-19 vaccines change throughout 2021?**

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# RESEARCH OBJECTIVES

**RO 01**

**To get the sentiments expressed in South African's tweets about COVID-19 vaccines.**

**RO 02**

**To get the central themes from the tweets about COVID-19 vaccines.**

**RO 03**

**To learn and visualise how South African's Twitter opinions changed during different COVID-19 periods.**

# LITERATURE REVIEW



Twitter can help researchers identify the public's thoughts and perceptions on health-related themes in the context of health-related viewpoints (Luo et al., 2021).

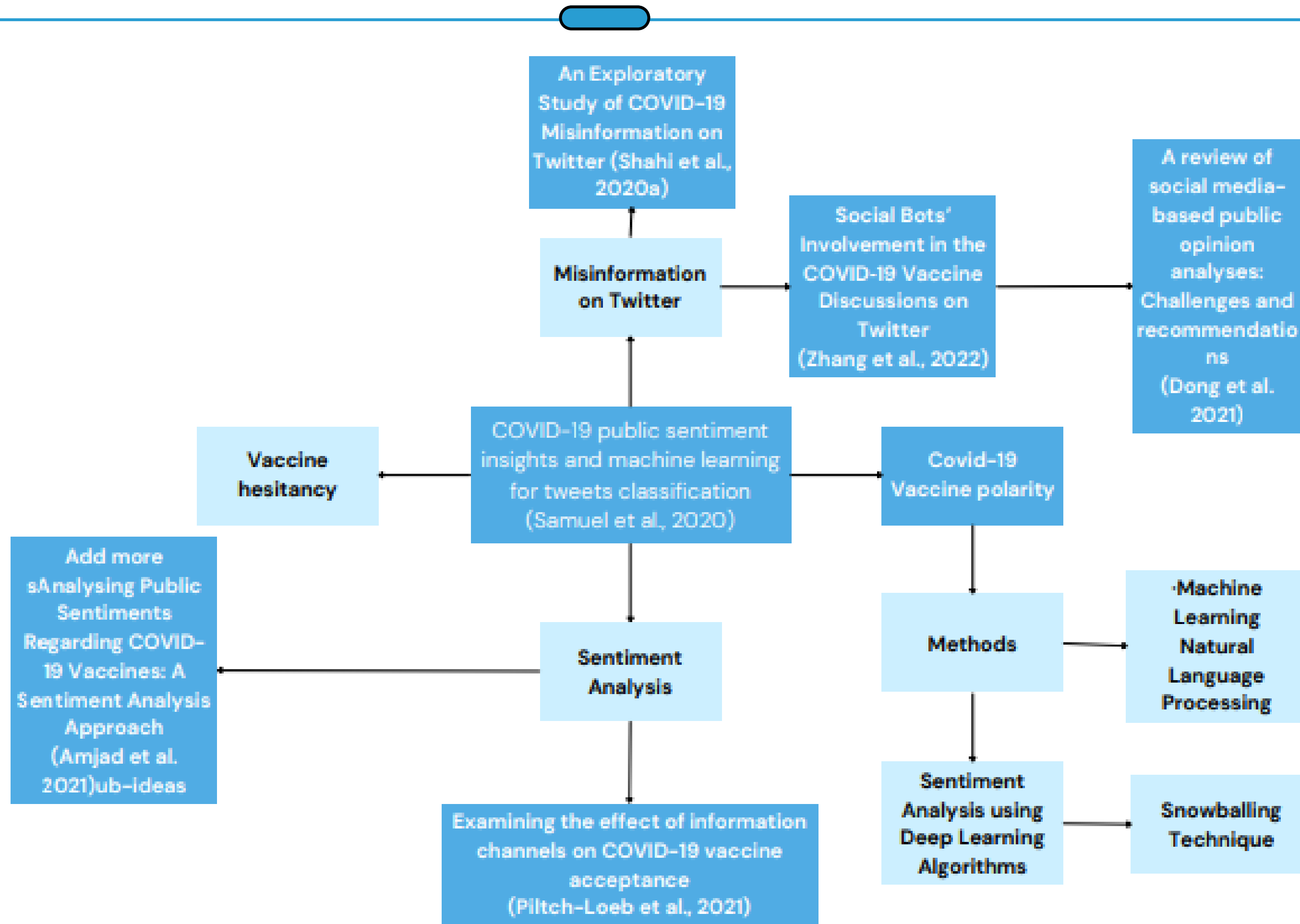
## **T H E M E S**

Misinformation

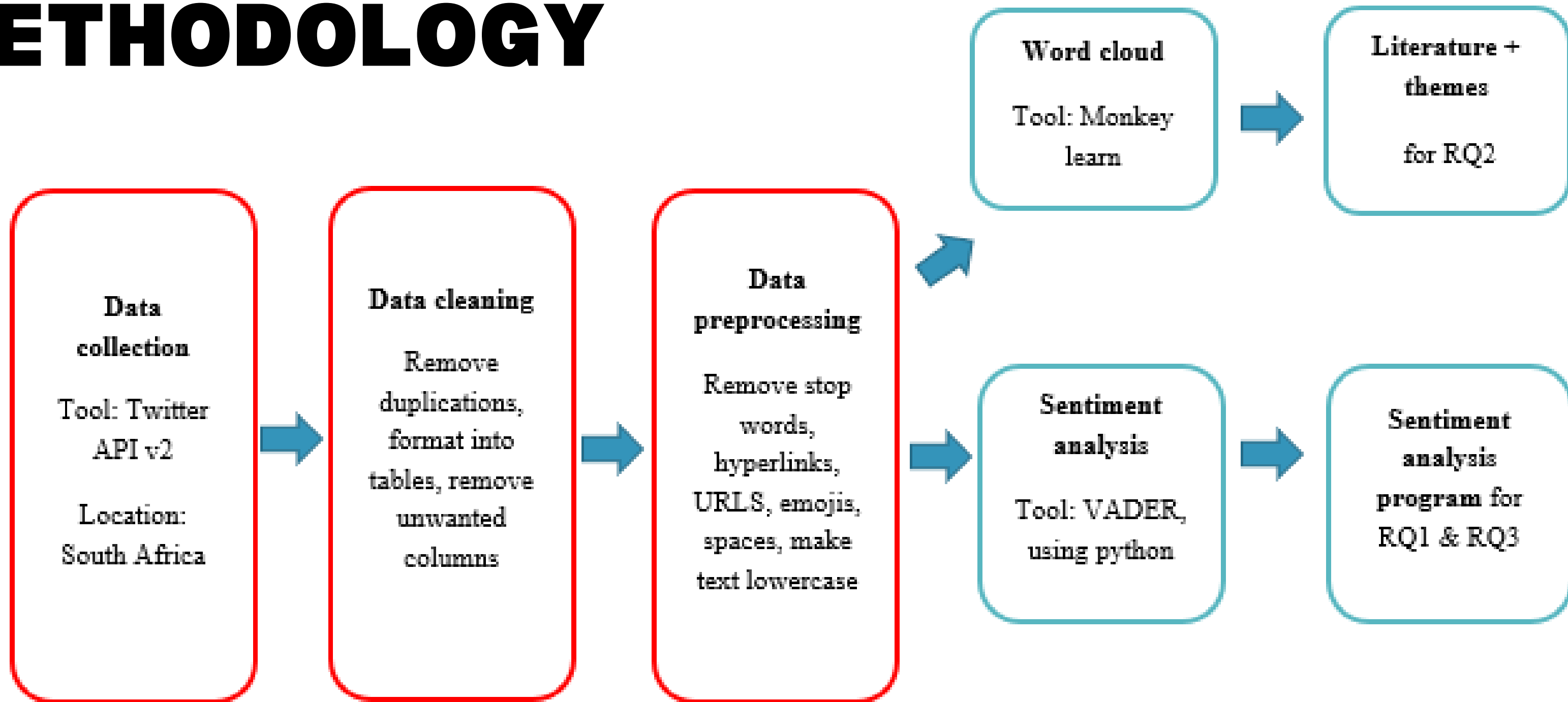
Vaccine hesitency

Pro & Anti Vaccination

Sentiment analysis methods



# METHODOLOGY



Data Collection, Cleaning and Pre-Processing

Sentiment Analysis, Theme classification

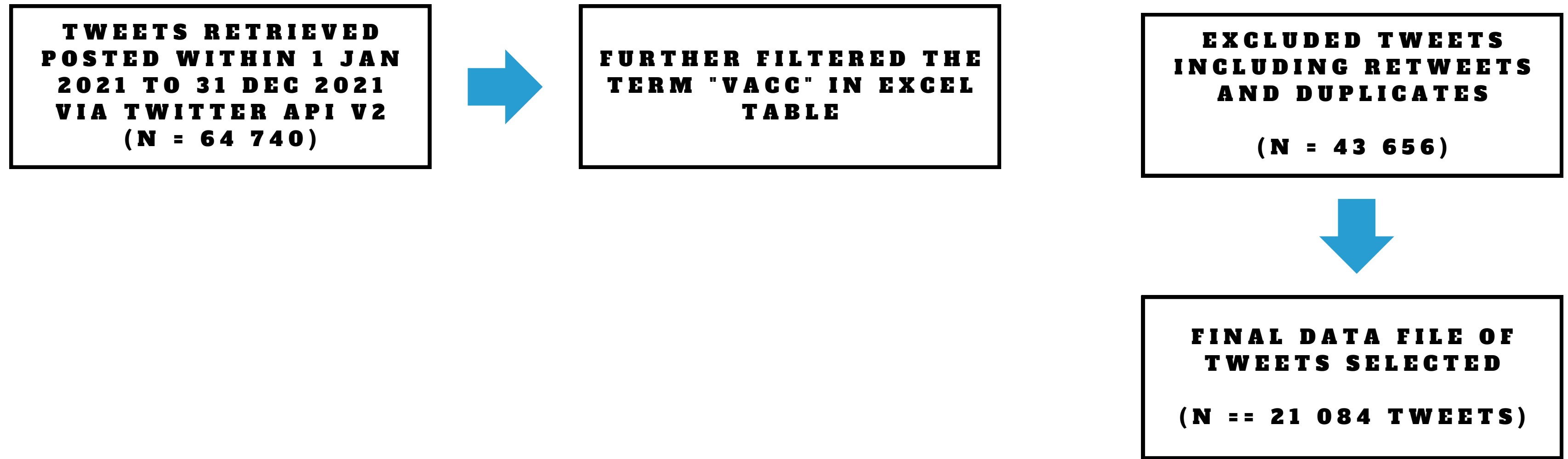
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<b>Philosophy</b>	<ul style="list-style-type: none"><li>• <b>Interpretivist Approach</b></li></ul>
<b>Purpose</b>	<ul style="list-style-type: none"><li>• <b>Descriptive Study</b></li></ul>
<b>Approach</b>	<ul style="list-style-type: none"><li>• <b>Inductive</b></li></ul>
<b>Instruments</b>	<ul style="list-style-type: none"><li>• <b>Topic modeling and automated sentiment analysis</b></li></ul>
<b>Strategy</b>	<ul style="list-style-type: none"><li>• <b>Mixed method (both quantitative and qualitative data)</b></li></ul>

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<b>Target Audience</b>	<ul style="list-style-type: none"><li>• <b>South African Twitter users over 18</b></li></ul>
<b>Data Collection</b>	<ul style="list-style-type: none"><li>• <b>Twitter API V2</b></li></ul>
<b>Analysis</b>	<ul style="list-style-type: none"><li>• <b>Valence Aware Dictionary and Sentiment Reasoner (VADER)</b></li><li>• <b>Automated sentiment analysis</b></li><li>• <b>Word cloud</b></li></ul>
<b>Ethics</b>	<ul style="list-style-type: none"><li>• <b>Approved by UCT Commerce in Ethics Committee</b></li></ul>

# DATA CLEANING

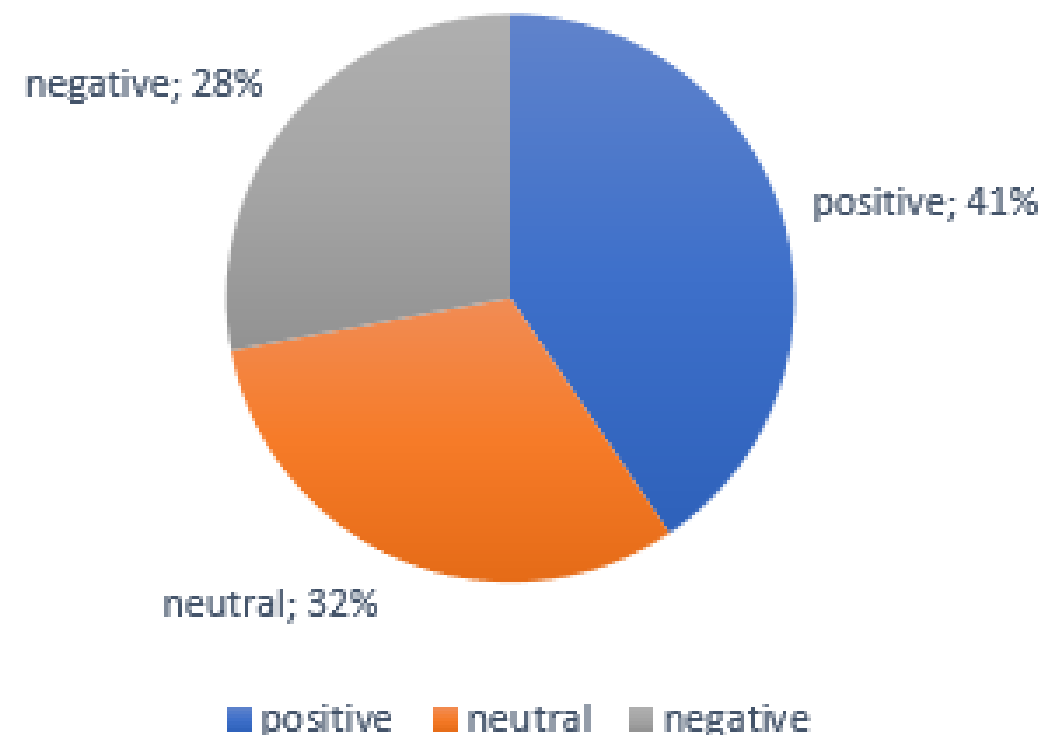




# RQ1

Positive tweets (n = 8543)	Neutral tweets (n = 5894)	Negative tweets (n = 6647)
<i>"Please get sputnik V vaccine is the only I will take"</i>	<i>"Why are we not educating people on the vaccine the same way people who advocate for Prep etc"</i>	<i>"IM NOT TAKING THAT VACCINE!!!! 🤔"</i>
<i>"I wanna be getting my vaccine too 🤔"</i>	<i>"Why is the vaccine roll out so low in Northern Cape?"</i>	<i>"Say No to the vaccine"</i>
<i>"Finally took my vaccine today. No pain, no effect whatsoever"</i>	<i>"Why should people be forced to take the Covid-19 vaccine 📌"</i>	<i>"I have no interest in all your vaccine lies! God sees you! Petition Against Mandatory Vaccinations in South Africa"</i>

## Distribution of sentiments in tweets

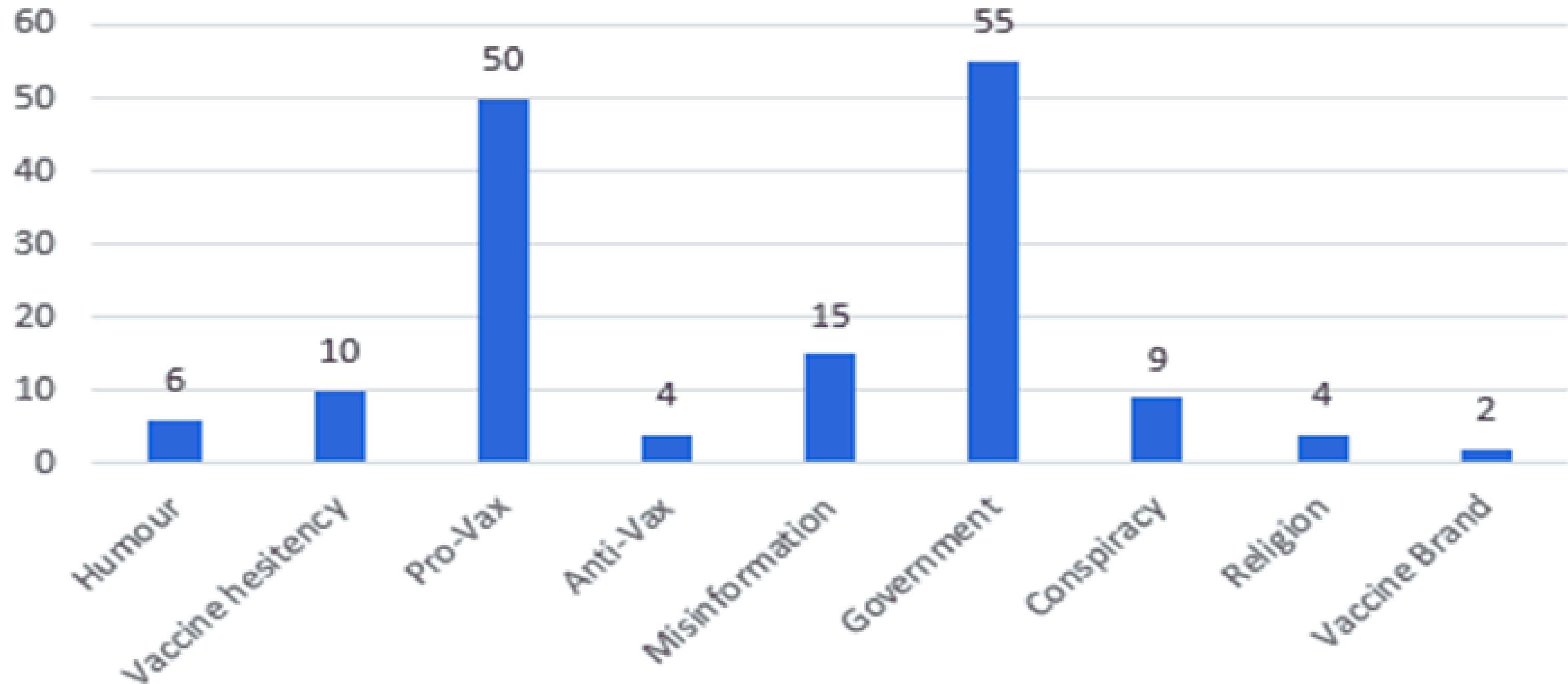


## SENTIMENT SCORES: N = 21 084

	neg	neu	pos	compound	label
0	0.000	1.000	0.000	0.0000	neutral
1	0.092	0.588	0.319	0.6597	positive
2	0.000	0.737	0.263	0.3612	positive
3	0.000	1.000	0.000	0.0000	neutral
4	0.000	0.674	0.326	0.7430	positive
5	0.000	1.000	0.000	0.0000	neutral
6	0.067	0.854	0.079	0.1027	positive

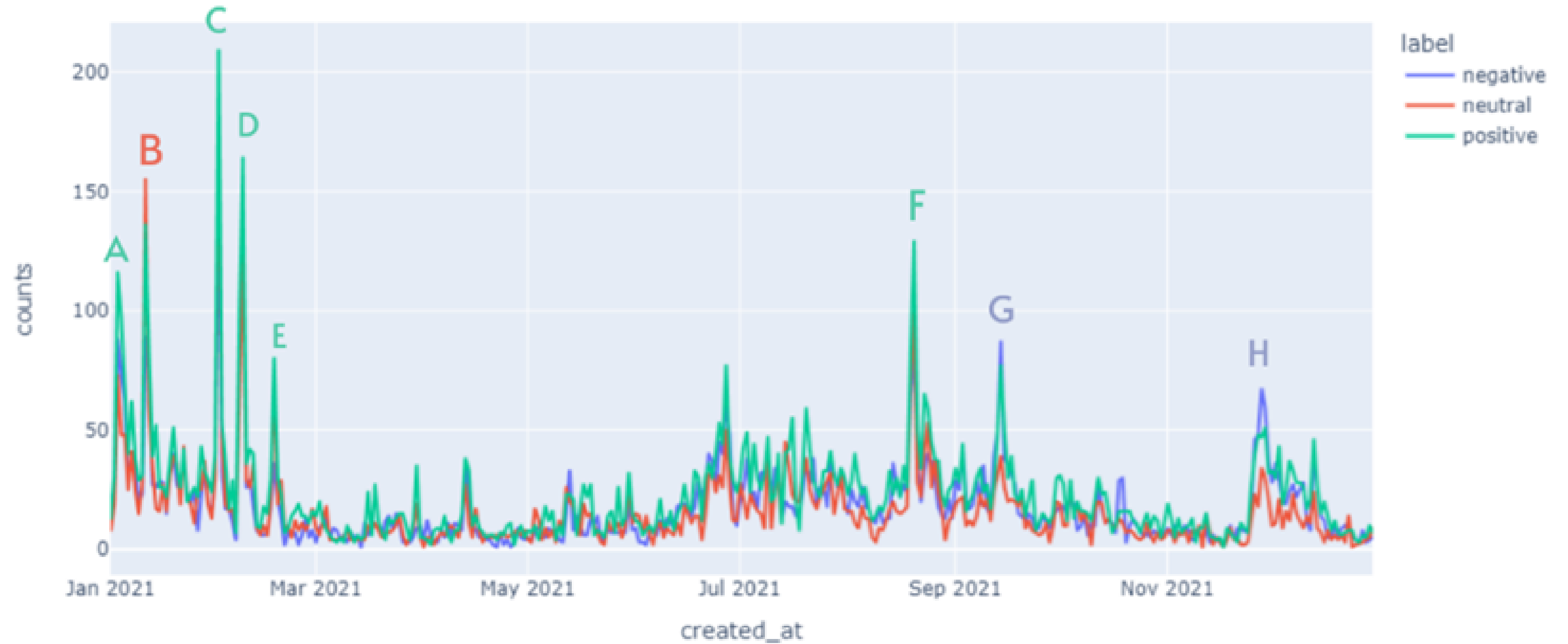
## RQ2

### VACCINE THEMES FROM TWEETS



# RQ3

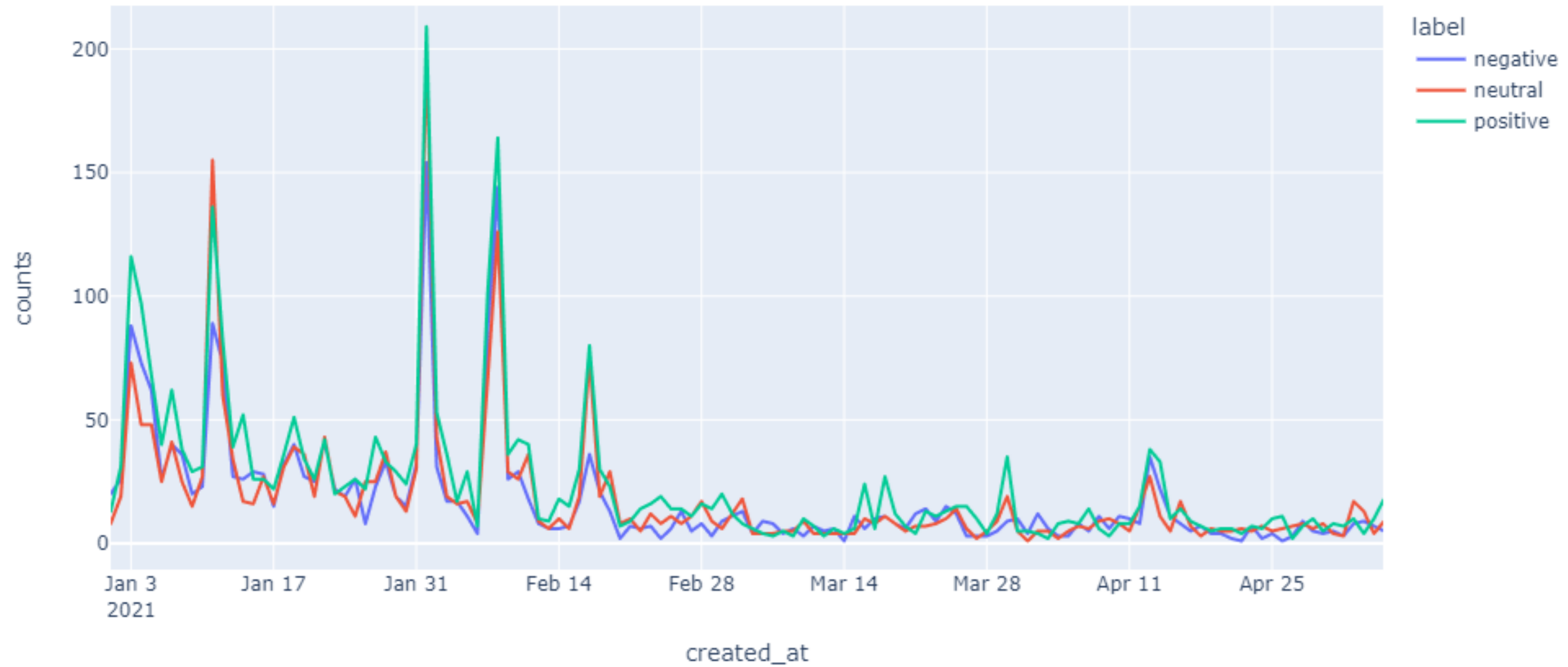
daily tweets and sentimental analysis



Line graph showing change in tweet sentiment from January 2021 to December 2021

# RQ3

daily tweets and sentimental analysis



Line graph showing change in tweet sentiment from January 2021 to March 2021

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# LIMITATIONS

- # **Tweet content evolves rapidly**
- # **Social bots**
- # **Sentiment Analysis models cannot pick up sarcasm**
- # **Our study doesn't prove causality**
- # **Tweets contain English + African languages simultaneously**

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# LIMITATIONS

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# CONCLUSION

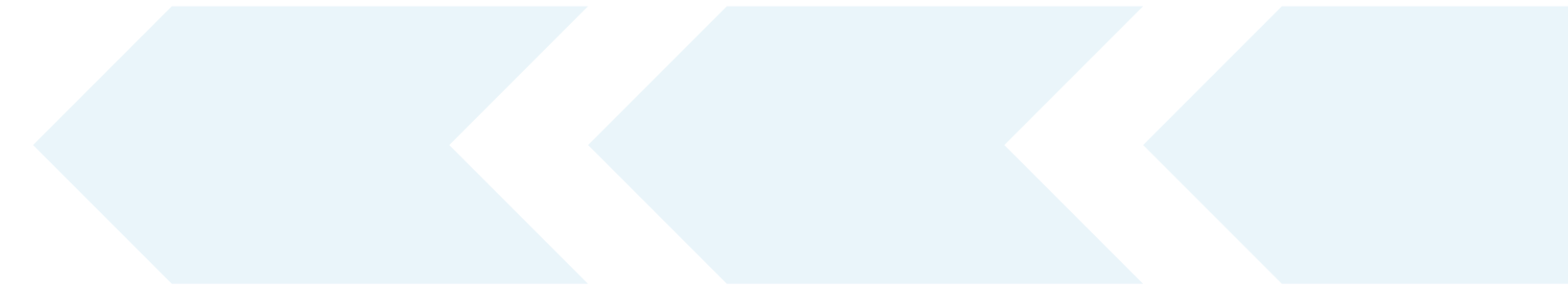
- # **Facinating insights from the data**
- # **Polarity: people favour vaccinations**
- # **Verified Twitter accounts have more impact**
- # **Gradual Tweet decline with rapid spikes at periods**
- # **South African Twitter users did not trust the governments rollout plan**

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# RECOMMENDATION

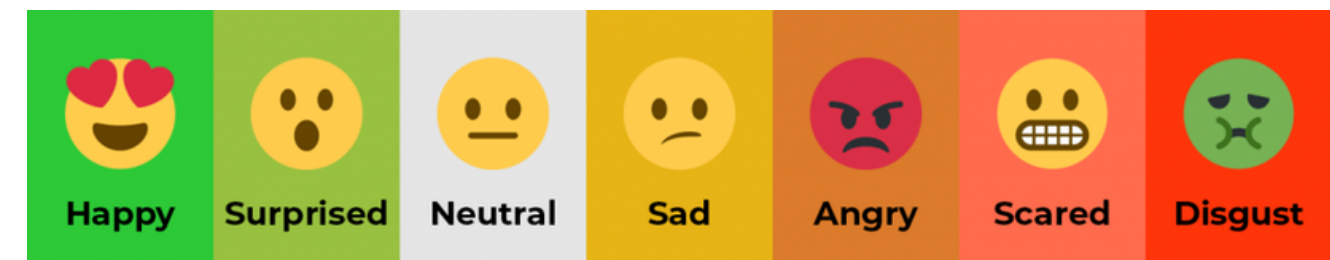
## RECOMMENDATION 01

Explore other social media platforms



## RECOMMENDATION 02

Add more tools along with sentiment analysis





# THANK YOU!