

# Toxicity in online political deliberation

The case of YouTube during the 2020 US presidential election

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NetSciX

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Department of  
Network and  
Data Science

CENTRAL  
EUROPEAN  
UNIVERSITY



ELTE  
EÖTVÖS LORÁND  
UNIVERSITY

# WHAT YOUR FACE MASK SAYS ABOUT YOU

YOU'RE A  
TRUE FAN



YOU'RE A  
GEEK



PHIL HANAS WISCONSIN STATE JOURNAL 2020 ©

YOU'RE A  
FUNNY GUY

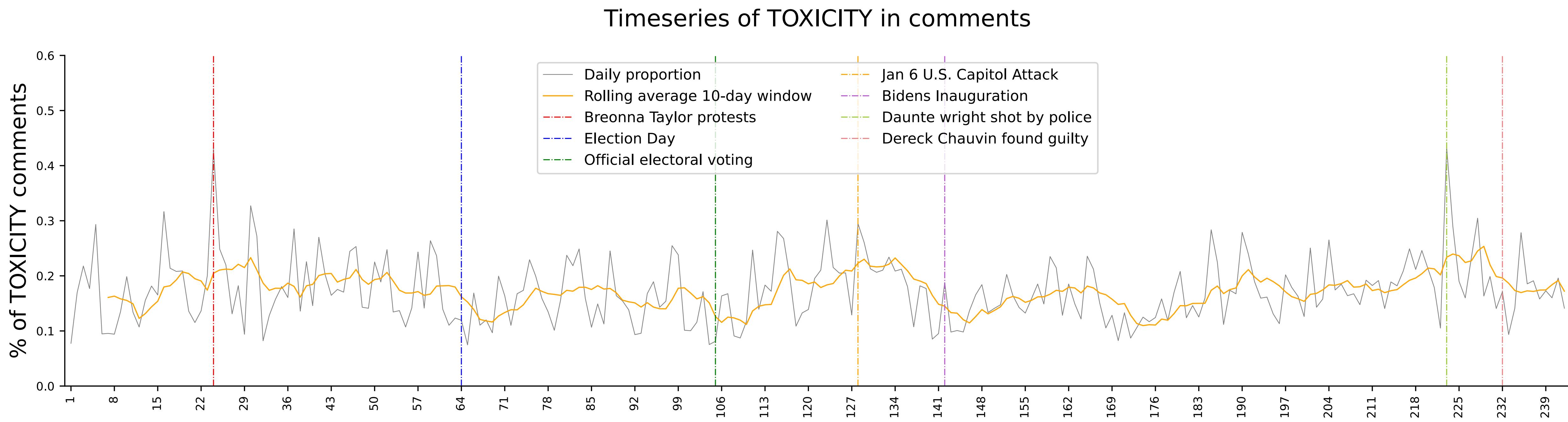


YOU'RE A  
**JERK**



**When talking about politics online and the conversation becomes hostile, do users choose silence?**

# Prevalence of Antisocial Behaviour



**When talking about politics online and the  
conversation becomes hostile, do users  
choose silence?**

## Event: U.S. 2020 presidential elections

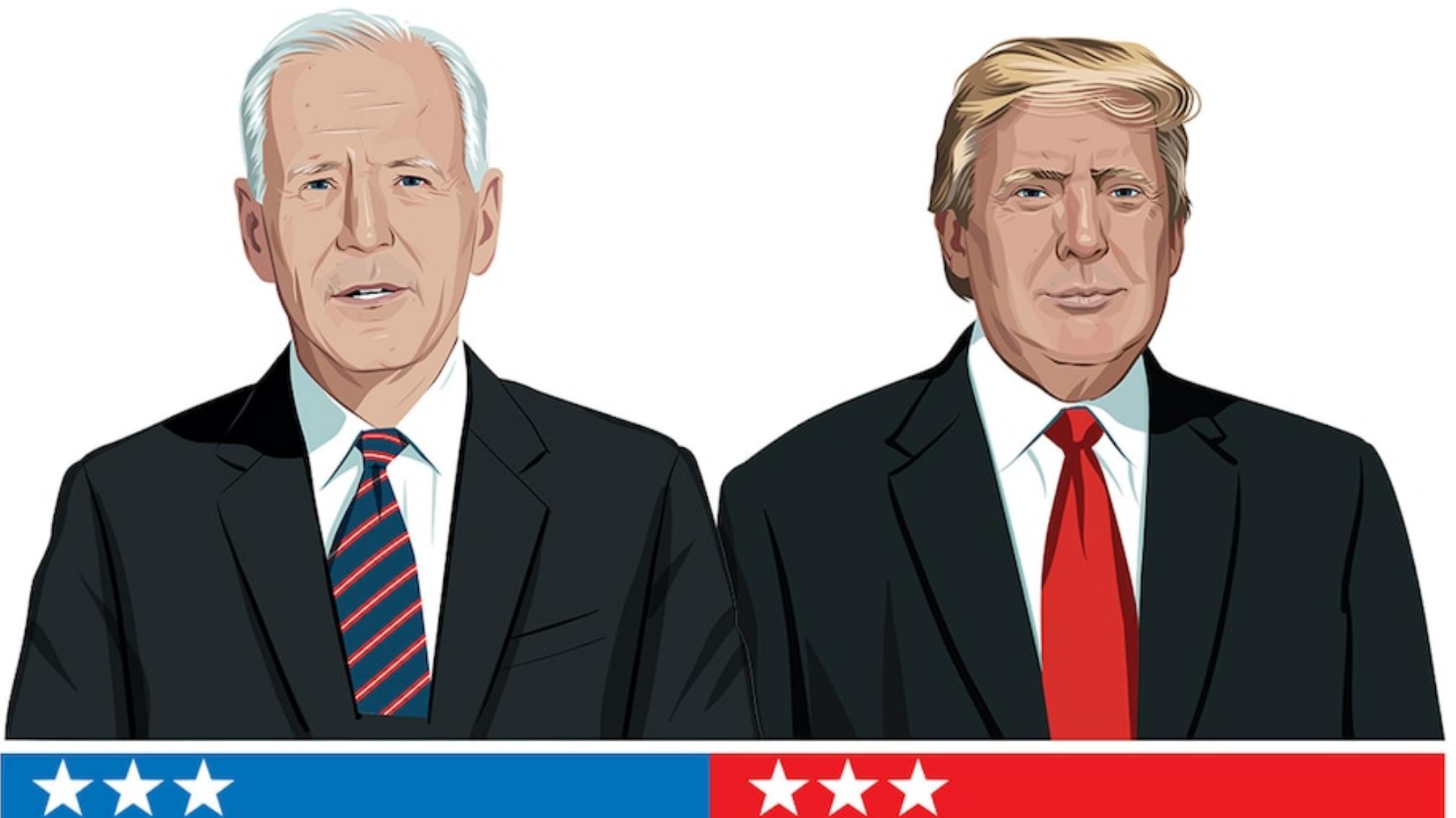
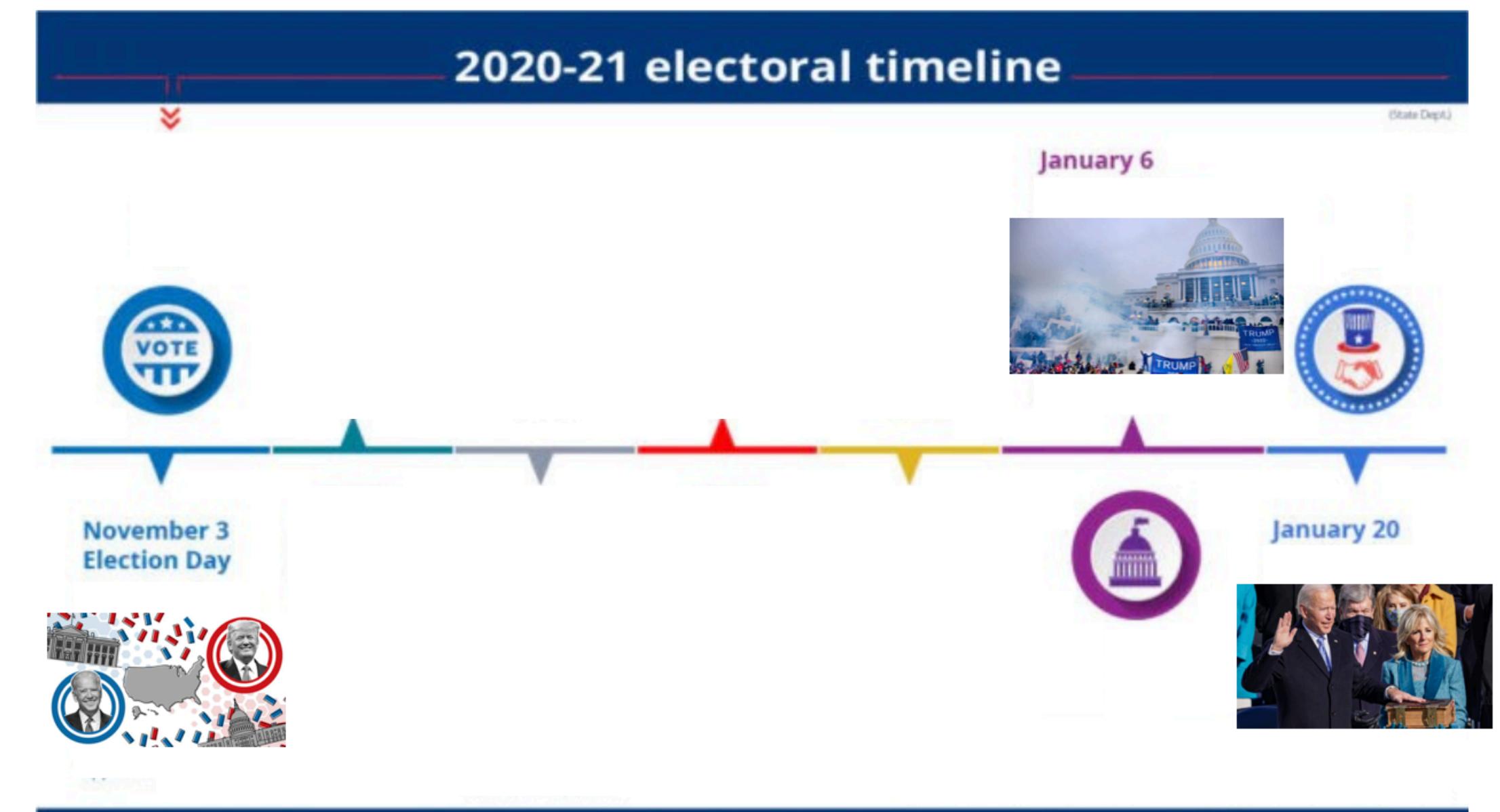


Illustration by Ben Kirchner for The Washington Post

## Period: Sept 2020 - April 2021



Source: National Archives

## Event: U.S. 2020 presidential elections

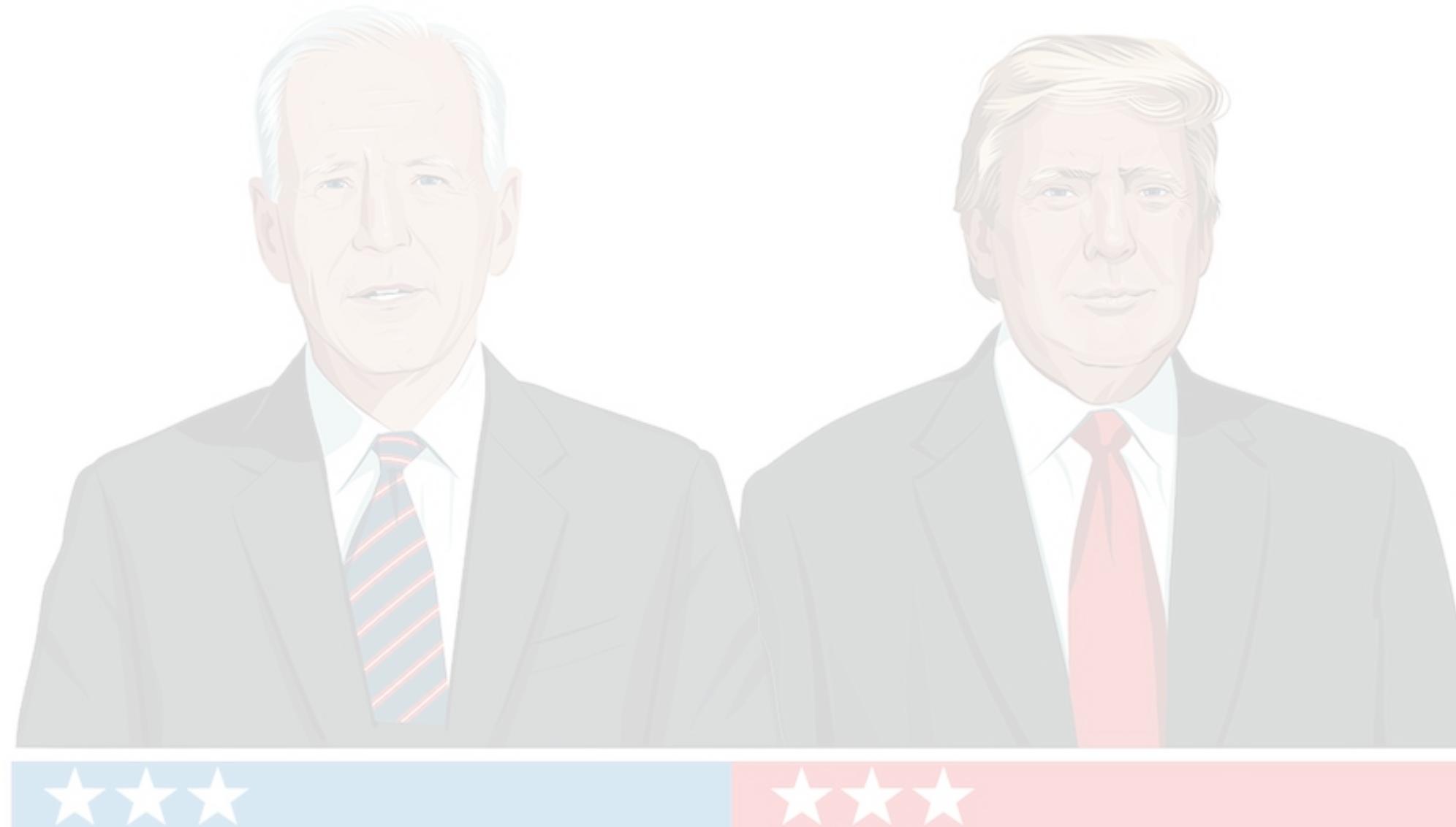
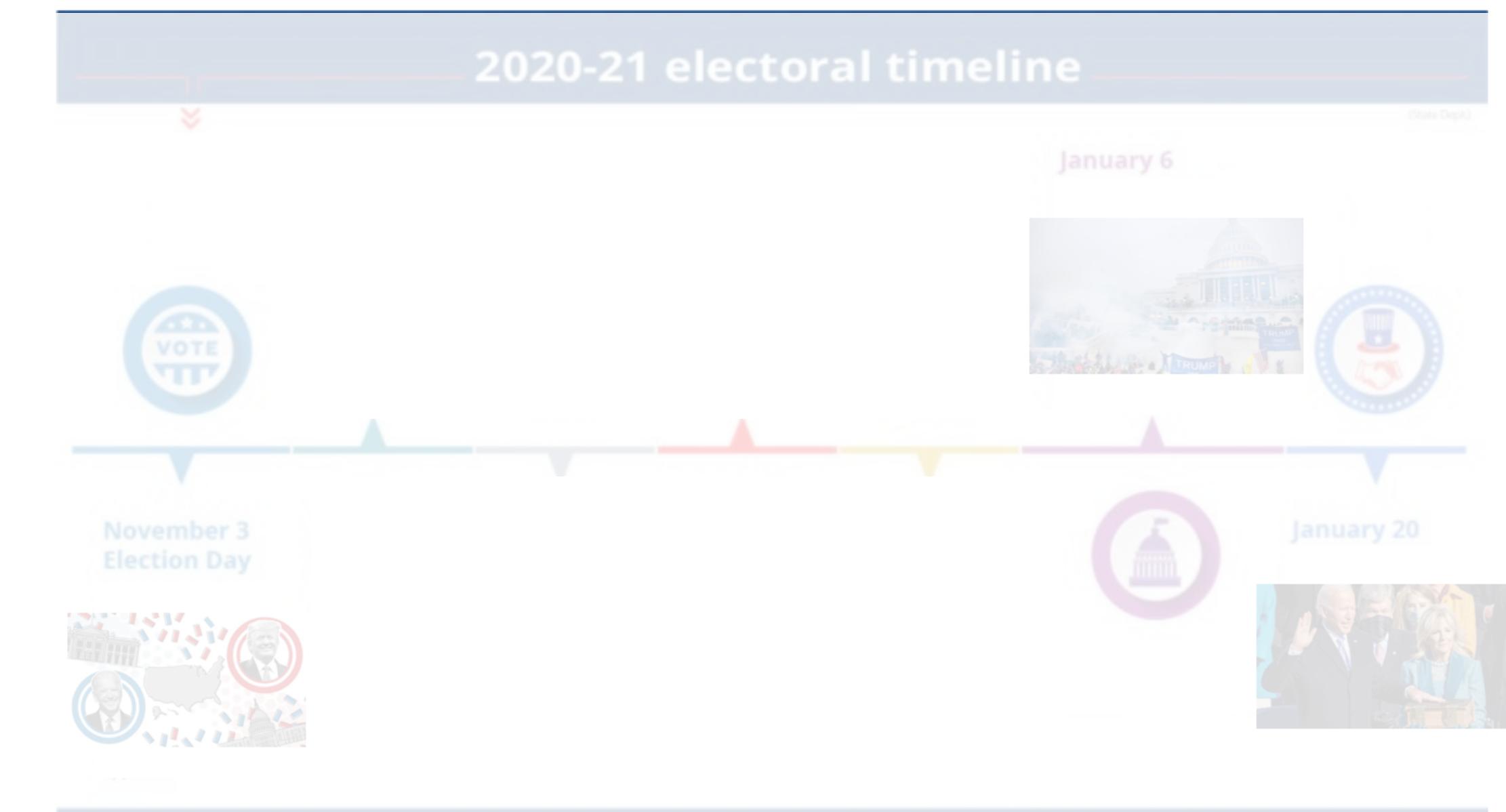


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## Channels: Left/Right bias rating & engagement



## Event: U.S. 2020 presidential elections

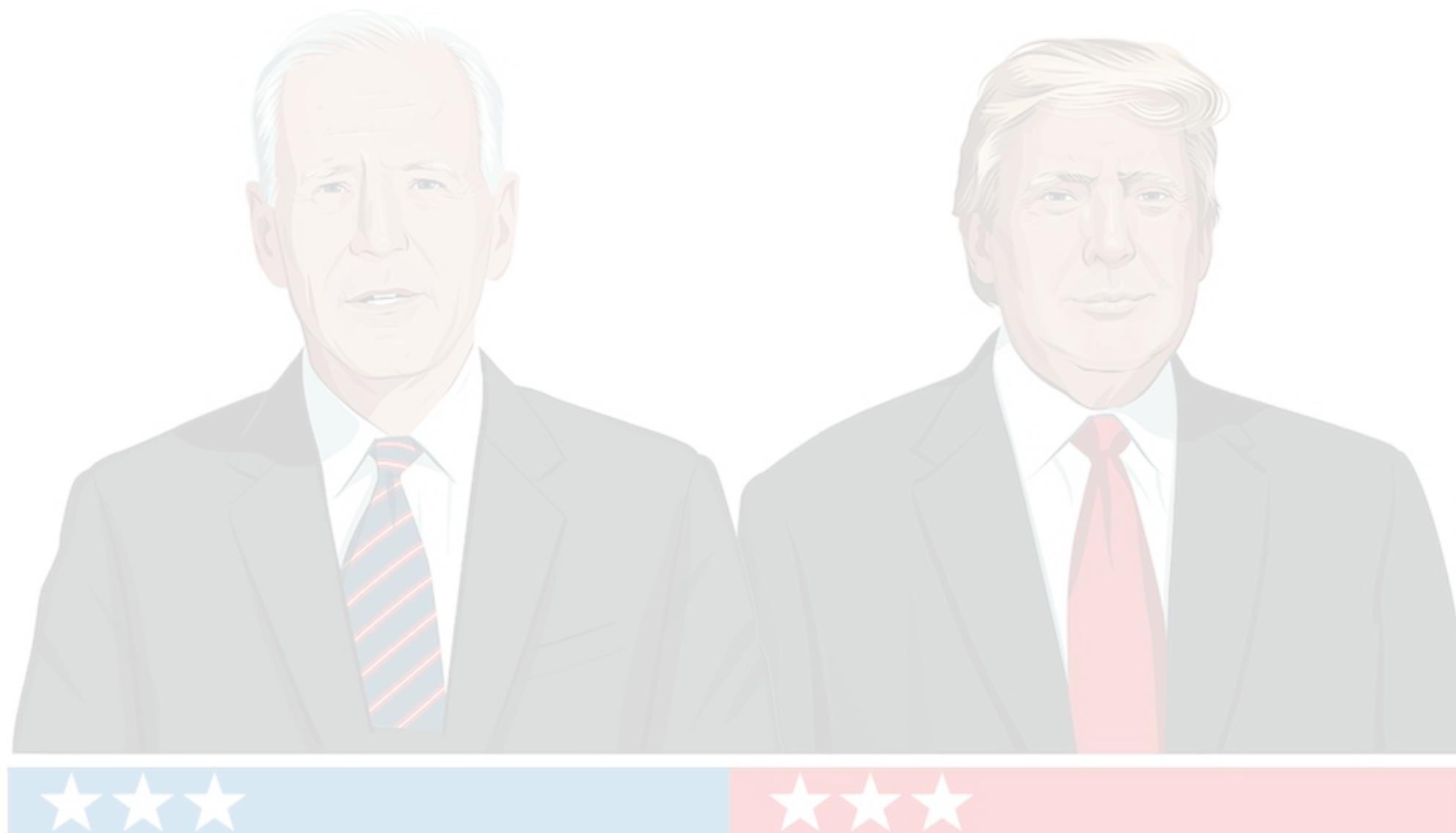
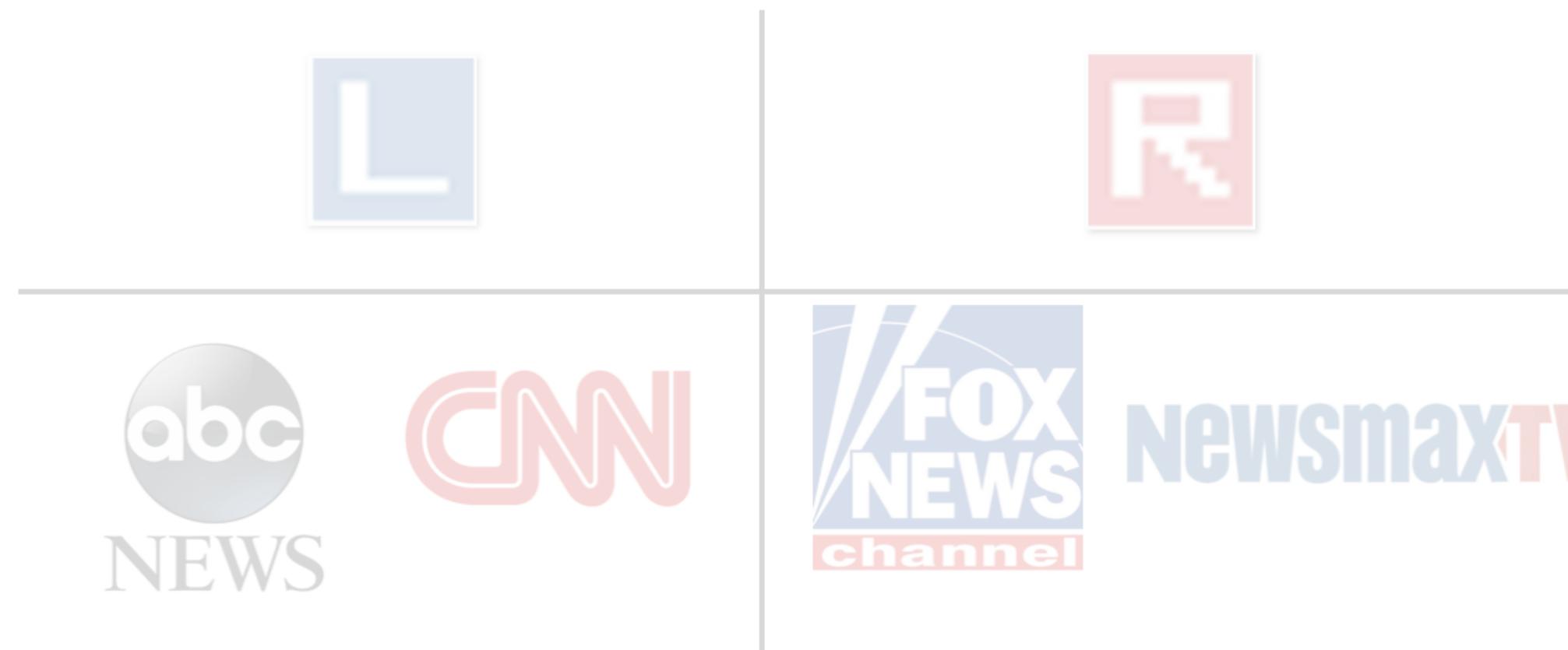
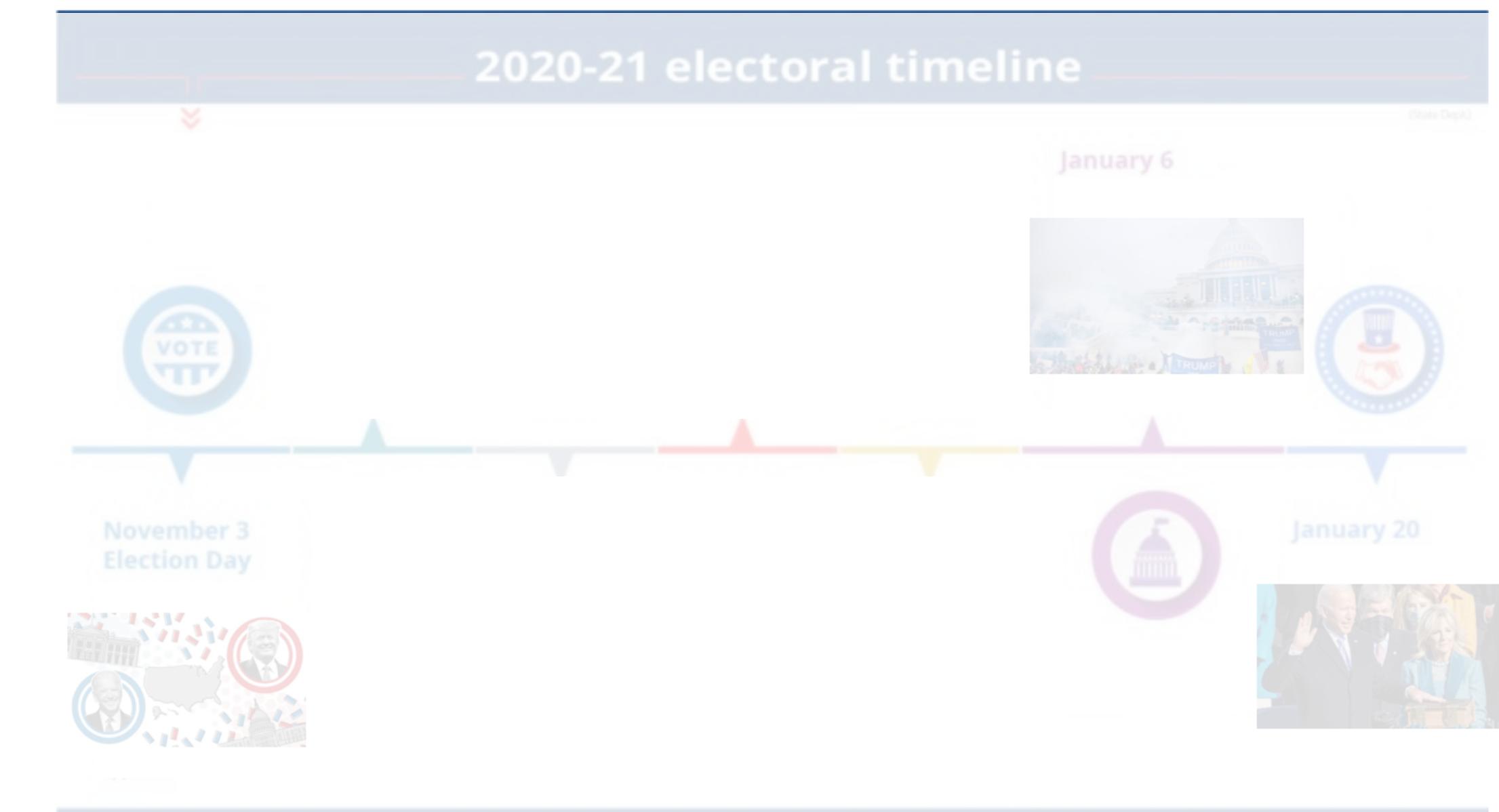


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## Channels: Left/Right bias rating & engagement



## Period: Sept 2020 - April 2021



Source: National Archives

**Dataset: 30,000 videos ~40M comments & replies**



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YouTube ES

Search

#CNN #News

Watch President Joe Biden's full inauguration speech

2,371,214 views 20 Jan 2021 President Joe Biden gives a speech after being sworn in as the 46th President of the United States. ...more

CNN 14.4M subscribers

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Add a comment...

1 year ago

What makes America great are the people who treat each other humanely, despite various different backgrounds. Ideally, that each person has the freedom to pursue their dreams.

272 REPLY

▲ 41 REPLIES

1 year ago

Amen..

5 REPLY

1 year ago

Except if they're conservative.

11 REPLY

1 year ago

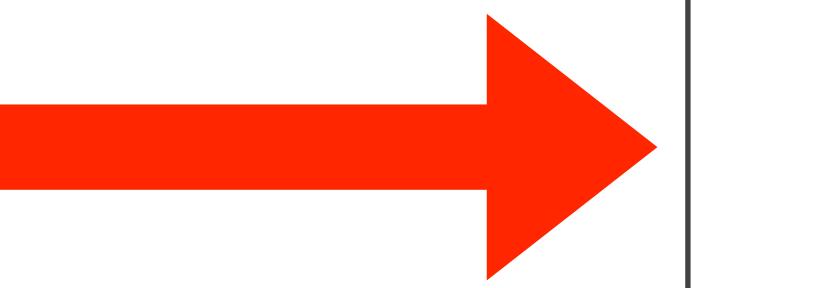
YES!! ...Unless they sneak into our Country and we're forced to pay for their food and healthcare

2 REPLY

1 year ago

Biden's speech has MORE Morality. I Love such soul

2 REPLY



[parent, reply1, reply2,...]

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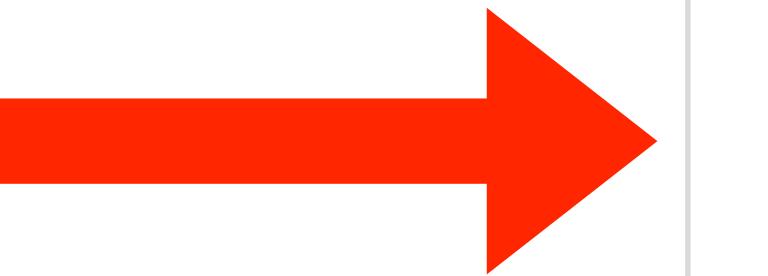
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## Perspective

**Toxicity:** “a rude, disrespectful or unreasonable comment that is likely to make people leave a conversation.”

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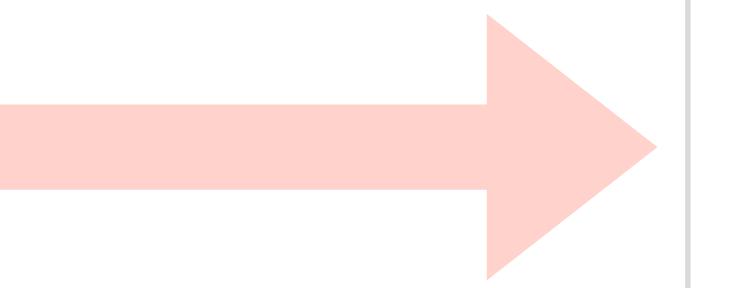
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[parent, reply1, reply2,...]

## Perspective

Toxicity: “a rude, disrespectful or unreasonable comment that is likely to make people leave a conversation.”

[toxic, no-Toxic, no-Toxic,...]

[toxic, no-Toxic,..., END]

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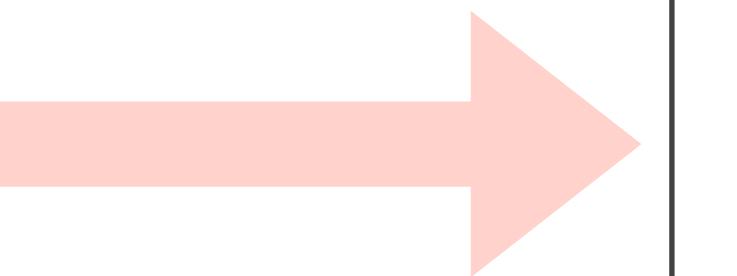
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[toxic, no-Toxic, no-Toxic,...]

[toxic, no-Toxic,..., END]

[1, 2, 2,...,0]

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# **When talking about politics online and the conversation becomes hostile, do users choose **silence**?**

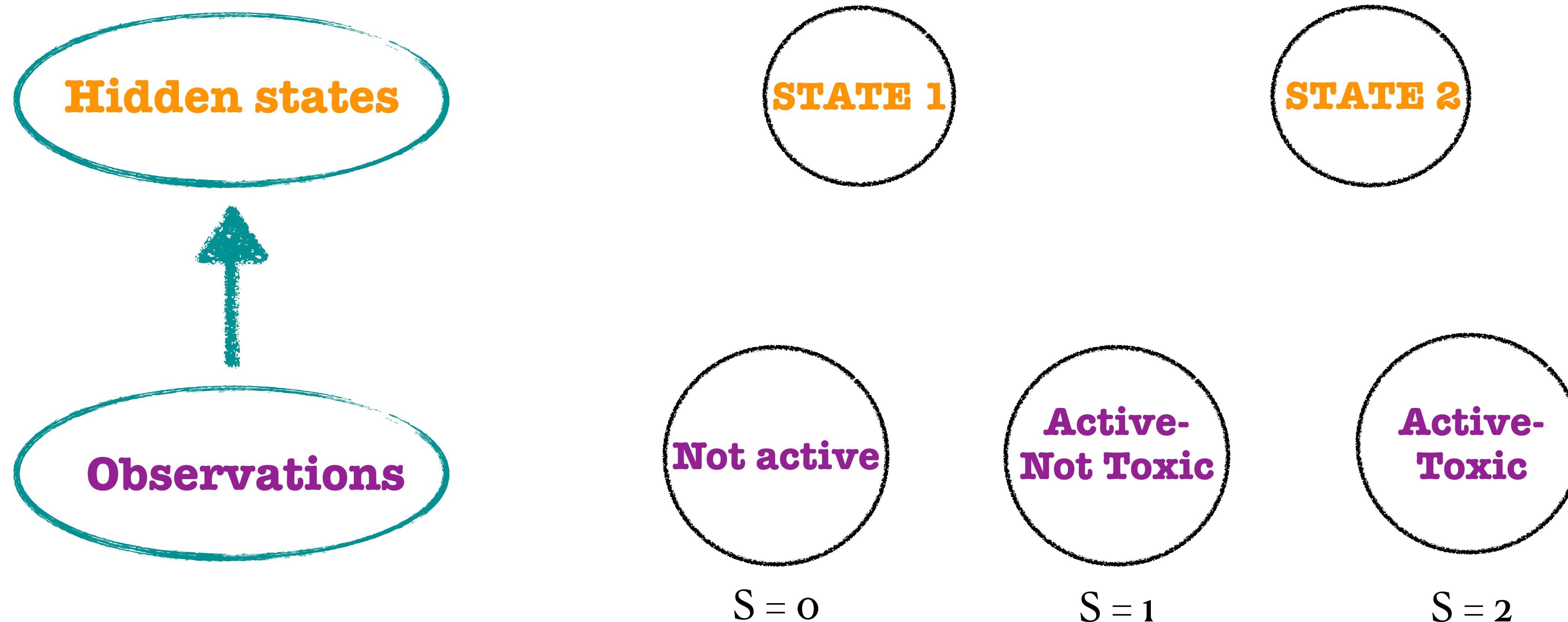
[1, 2, 2,...,0]

# When talking about politics online and the conversation becomes hostile, do users choose **silence**?

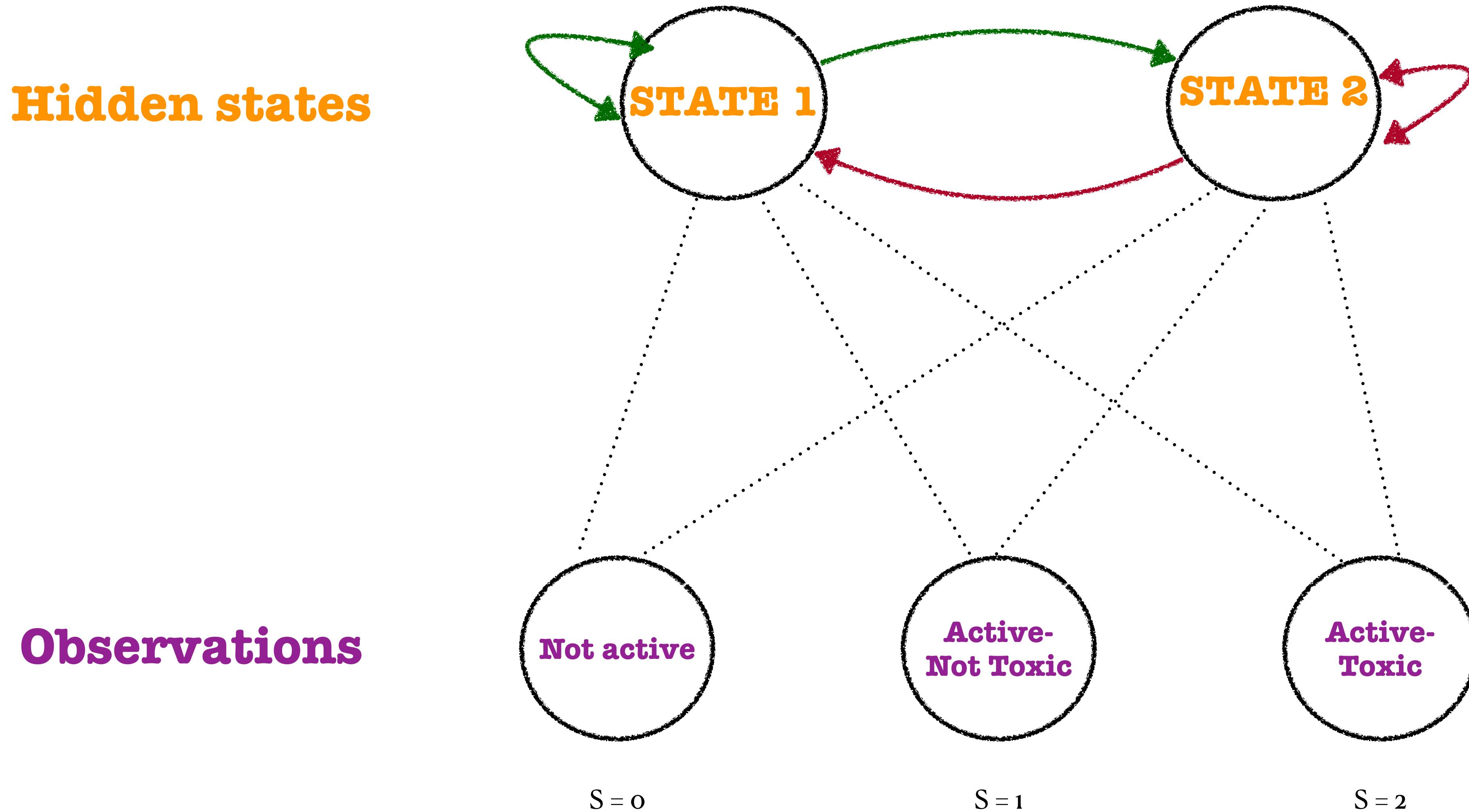
[1, 2, 2,...,0]

**Hidden Markov model:** Given a set of observed conversation sequences, what is the most likely state of the system?

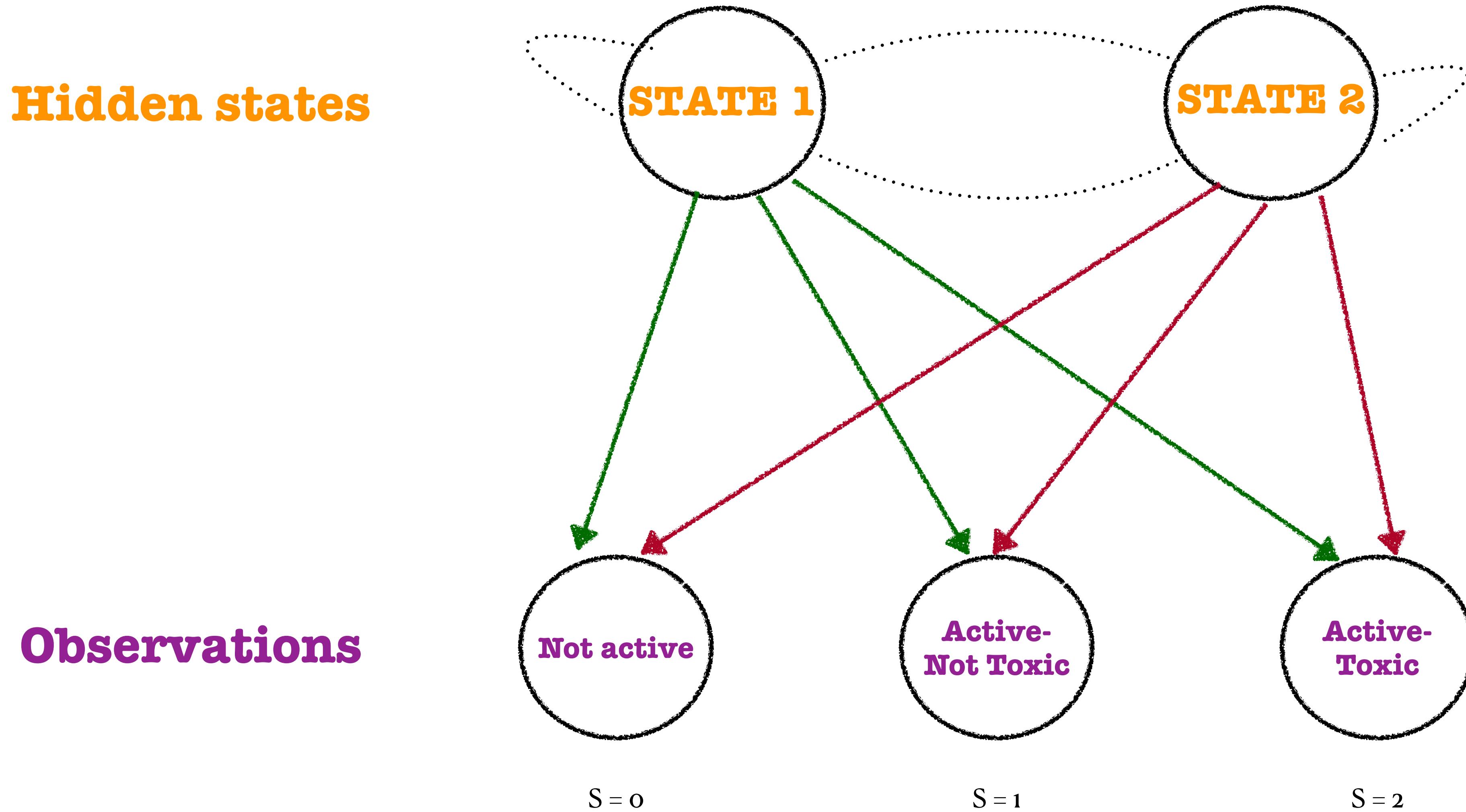
# Hidden Markov model



# Hidden Markov model

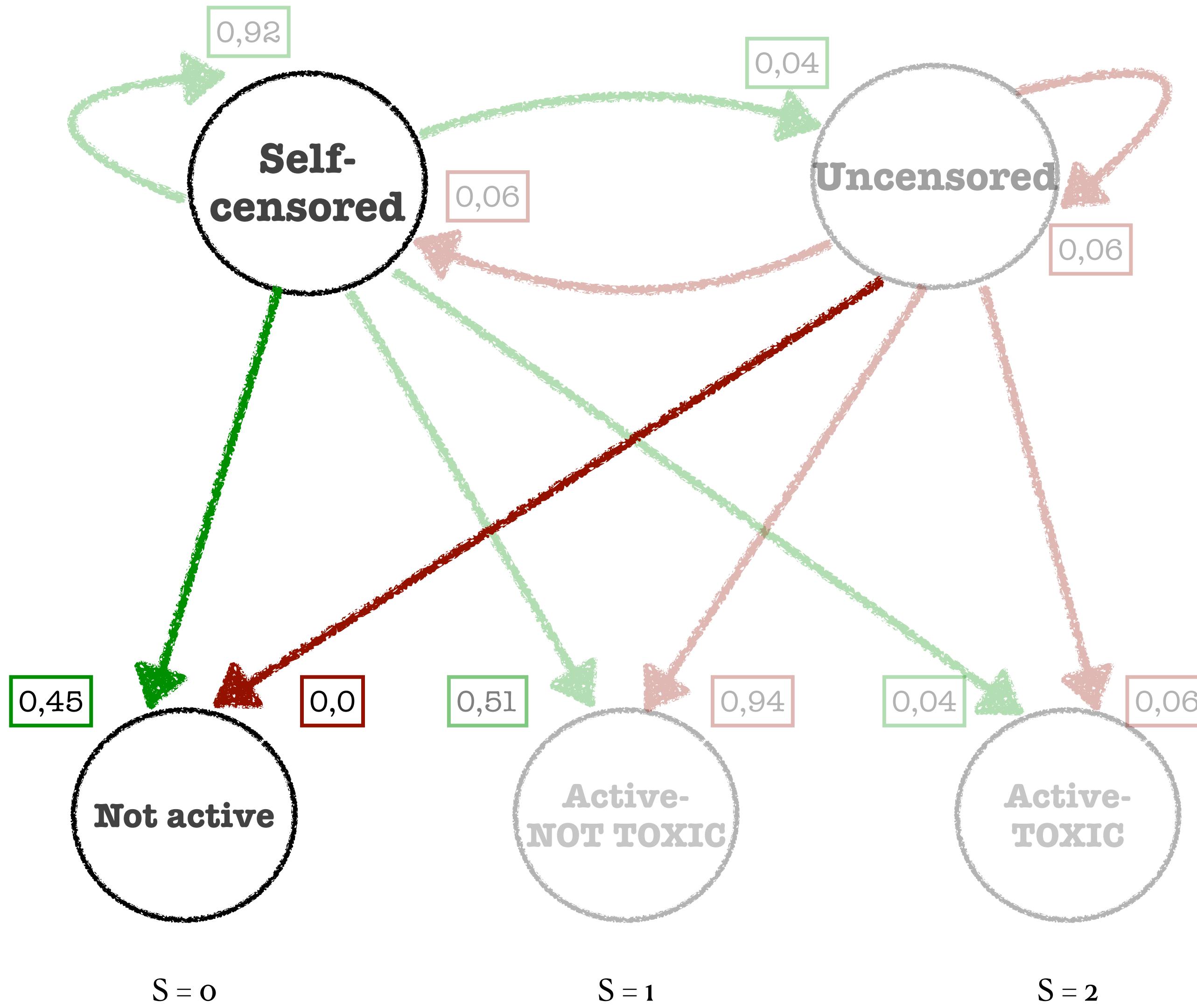


# Hidden Markov model



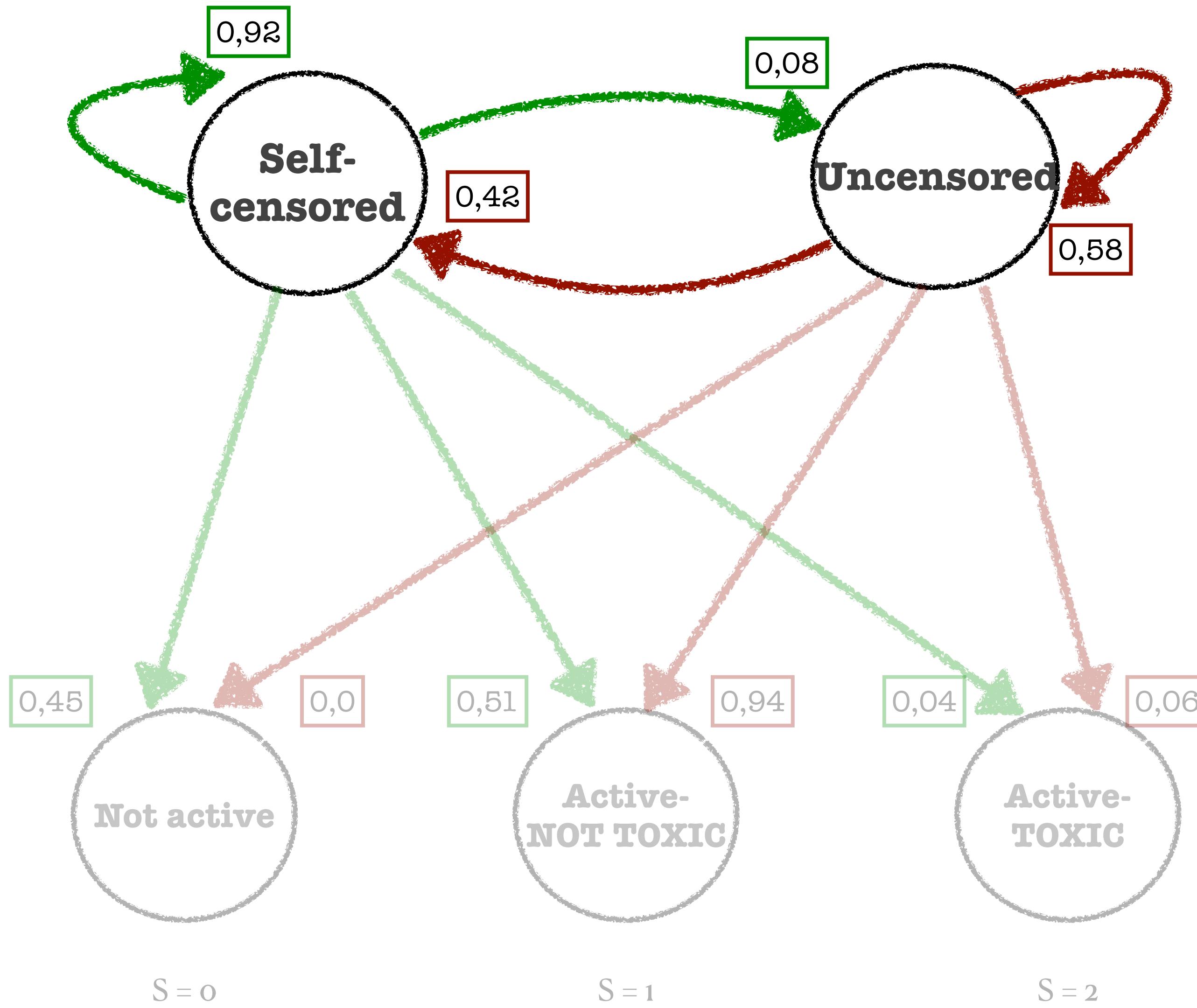
## Result 1

**Self-censored *state*.** Found evidence for a state  
coherent with a silencing strategy



**EMISSION MATRIX**

	NoAct	Act NoToxic	Act Toxic
Self-censored	0,445	0,510	0,044
Uncensored	0,0	0,939	0,061



**TRANSMISSION MATRIX**

	<b>Self-censored</b>	<b>Uncensored</b>
<b>Self-censored</b>	0,921	0,079
<b>Uncensored</b>	0,422	0,578



**Not**  
**Active** Not Toxic Toxic

0,45	0,51	0,04
0,0	0,94	0,06



**Not**  
**Active** Not Toxic Toxic

0,33	0,58	0,09
0,0	0,95	0,04



**Not**  
**Active** Not Toxic Toxic

0,33	0,60	0,07
0,0	0,96	0,04



**Not**  
**Active** Not Toxic Toxic

0,45	0,51	0,04
0,0	0,97	0,03

Self-censored

Uncensored

**Spiral of Silence theory:** Individual & network effects—fear of isolation motivates to conceal true opinions (Hayes and Matthes, 2017)

## Result 2

In some contexts, the self-censored state is a state  
of extremes

# Odds of posting toxic activity when self-censored is not consistently < 1



0,65



2,37



1,81



1,35

	Not Active	Act Not Toxic	Act <b>Toxic</b>
Self-censored	0,45	0,51	0,04
Uncensored	0,0	0,94	0,06

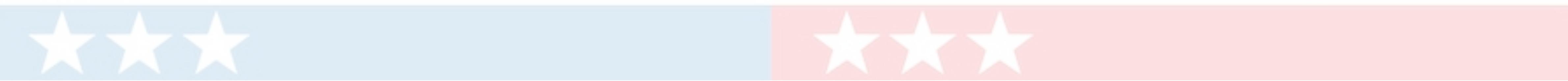
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# Contextual triggers: Influenced into anti-social behaviour [Cheng et al. \(2017\)](#), [Kim et al. \(2021\)](#)



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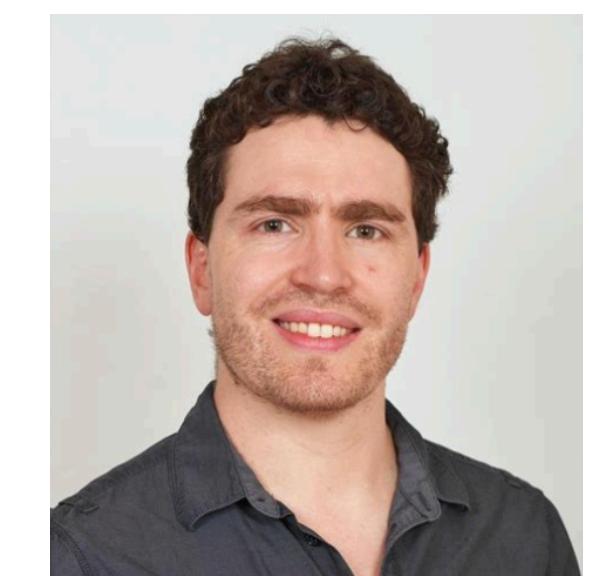
- Identified a state coherent with a silencing strategy, self-censored state
- The self-censored state is more likely to produce toxic content



Taha Yasseri (UCD)

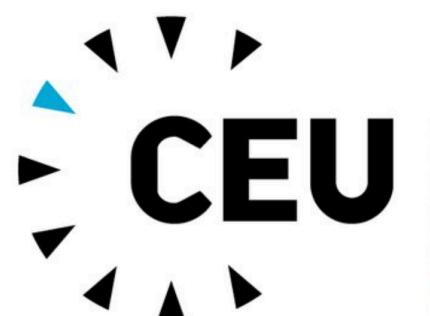


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