

# The Mechanisms of Misinformation

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## INTRODUCTION

Misinformation has emerged as one of the leading problems our society faces in the information age.

Recent research has shown that misinformation spreads differently than non-misinformation on social media.<sup>1,4</sup> This project leverages this insight by modeling the spread of information with diffusion networks.<sup>1</sup>

### diffusion networks

$$G = (V, E)$$

$V$  = Users involved in the spread of an article

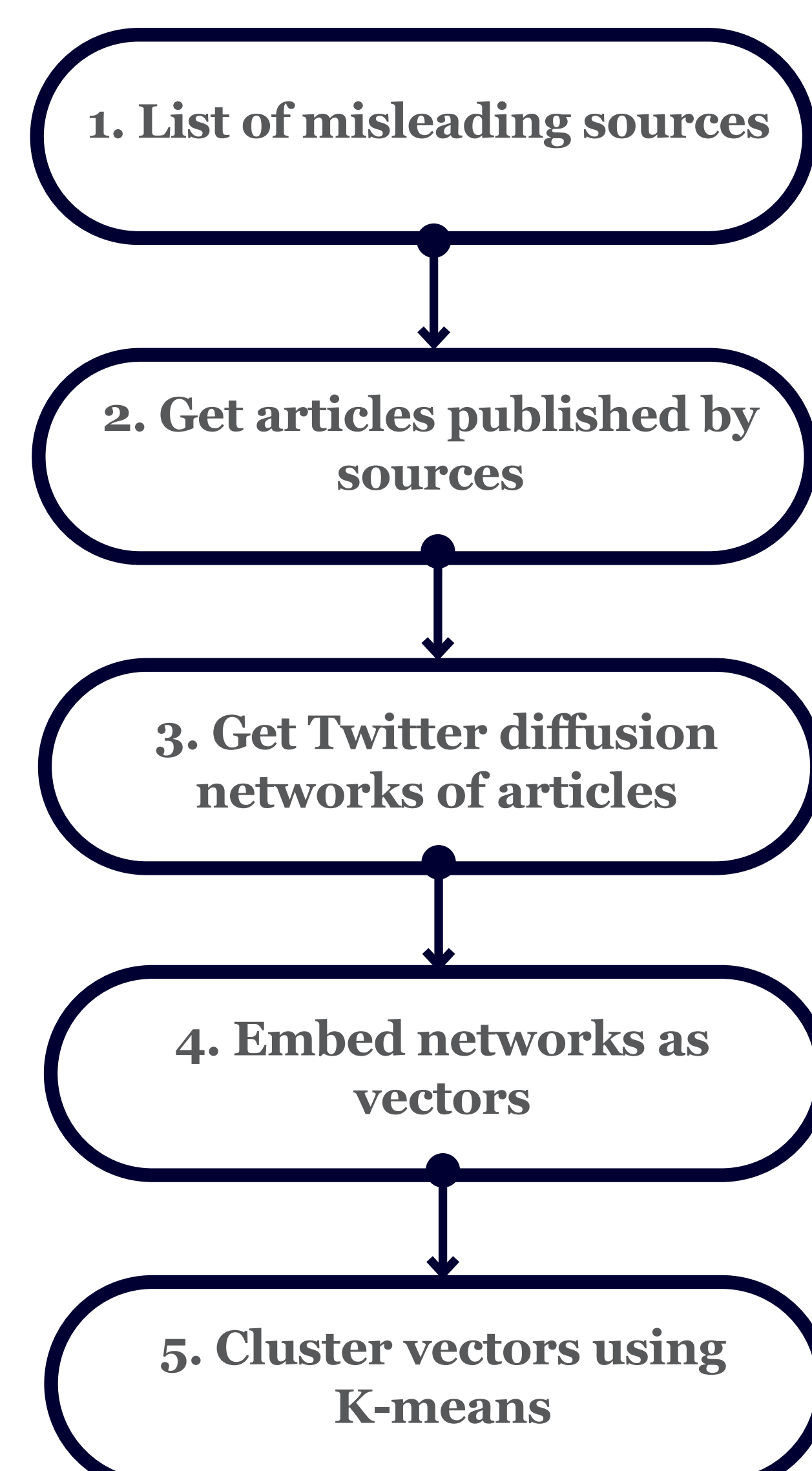
$E$  = Directed edge from a user that gives information to the user that receives information.

Diffusion networks with similar shape means information is spread similarly.<sup>1</sup>

## RESEARCH QUESTIONS

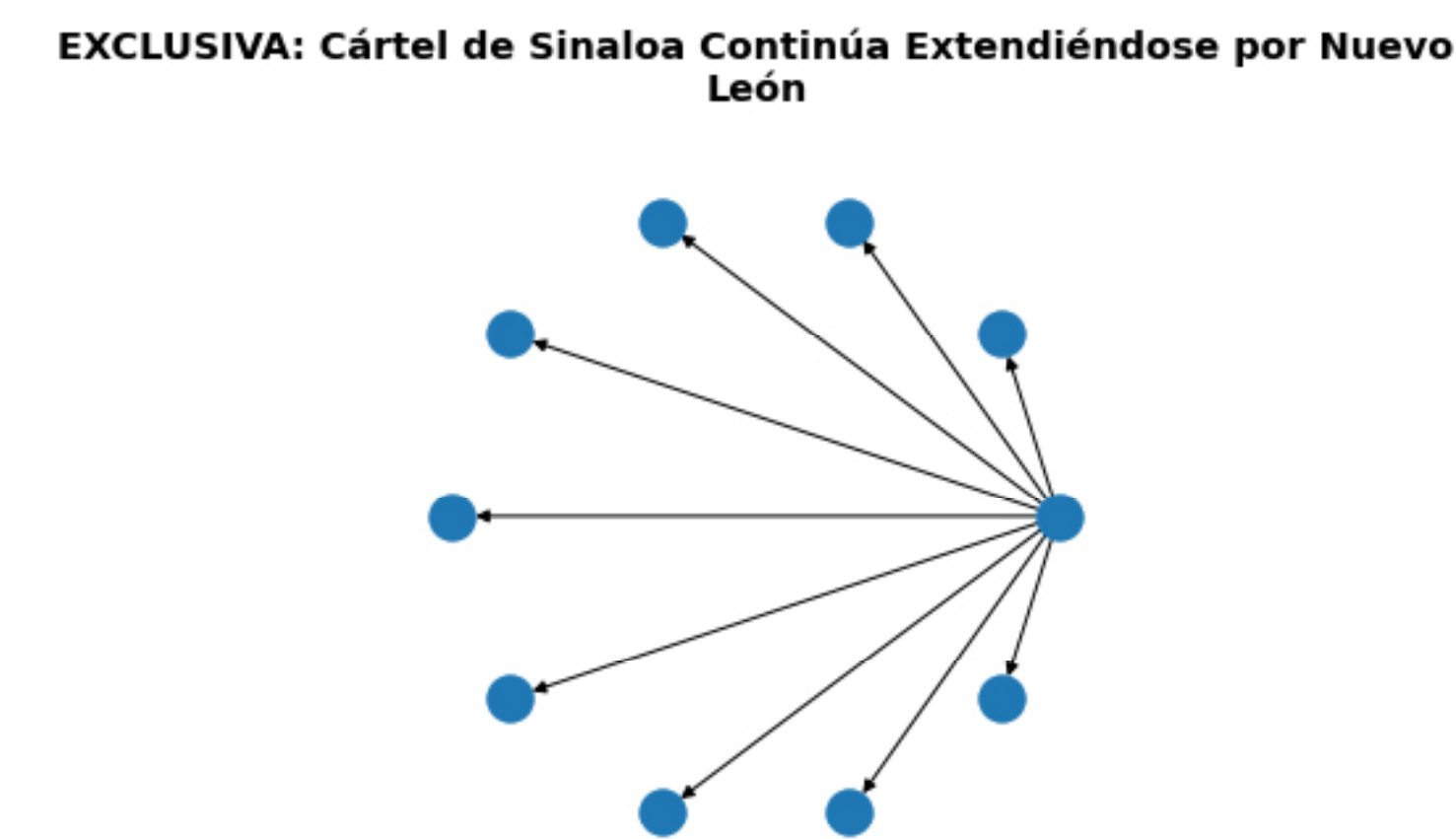
- Can we find a set of ways in which misinformation consistently spreads on social media?
- What do each of these categories tell us about the nature of misinformation on social media?

## METHOD



## RESULTS

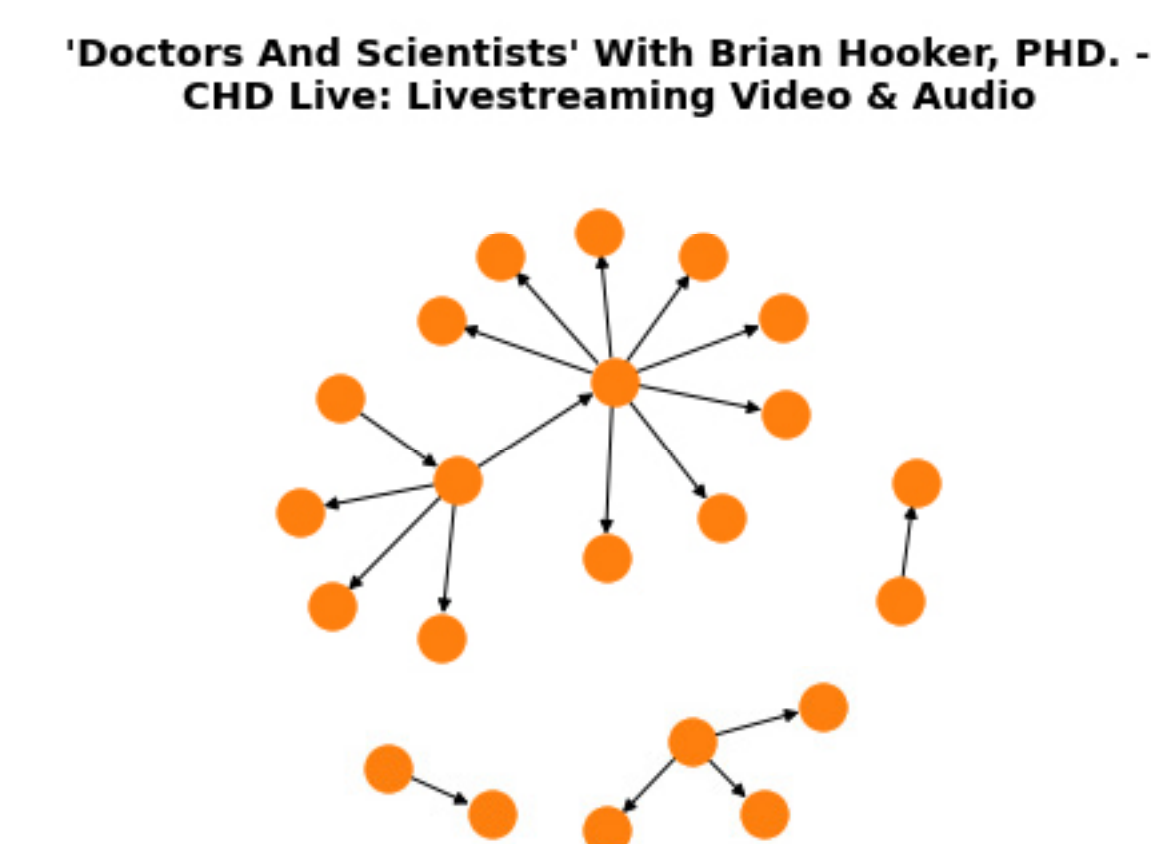
### MECHANISM 0



#### Characteristics

- Single source
- Spreads to fewer users
- Spreads faster

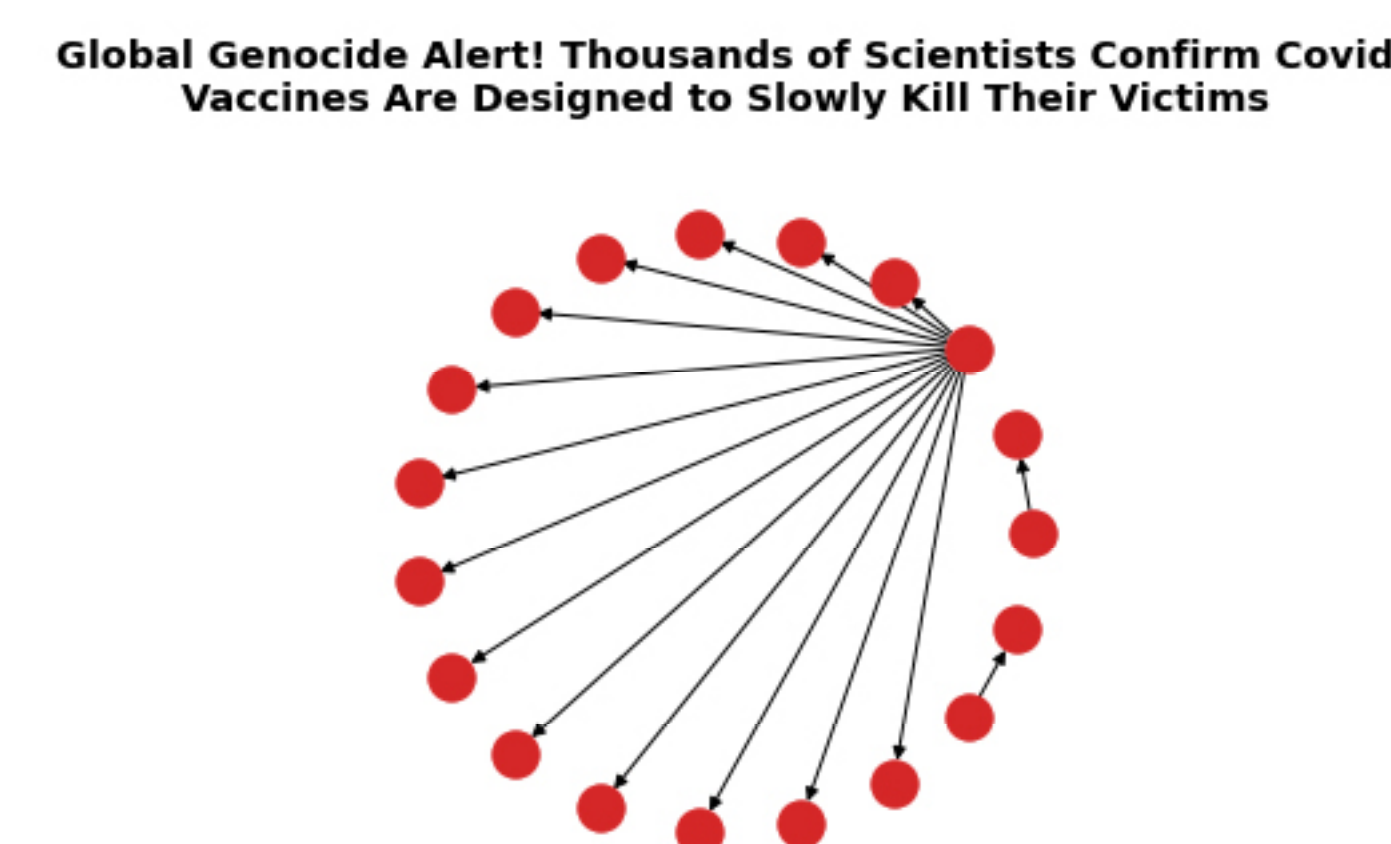
### MECHANISM 1



#### Characteristics

- Many distinct sources
- Diffusion not dominated by a single source
- Spreads slower
- Spreads to more users

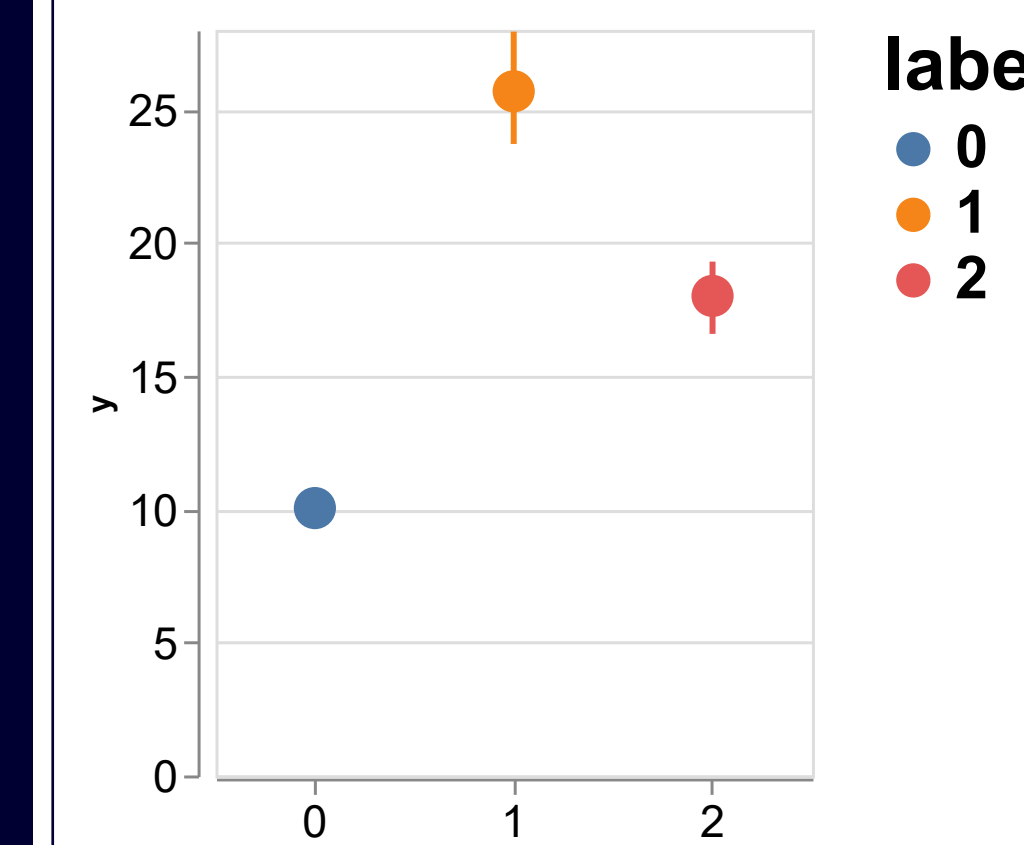
### MECHANISM 2



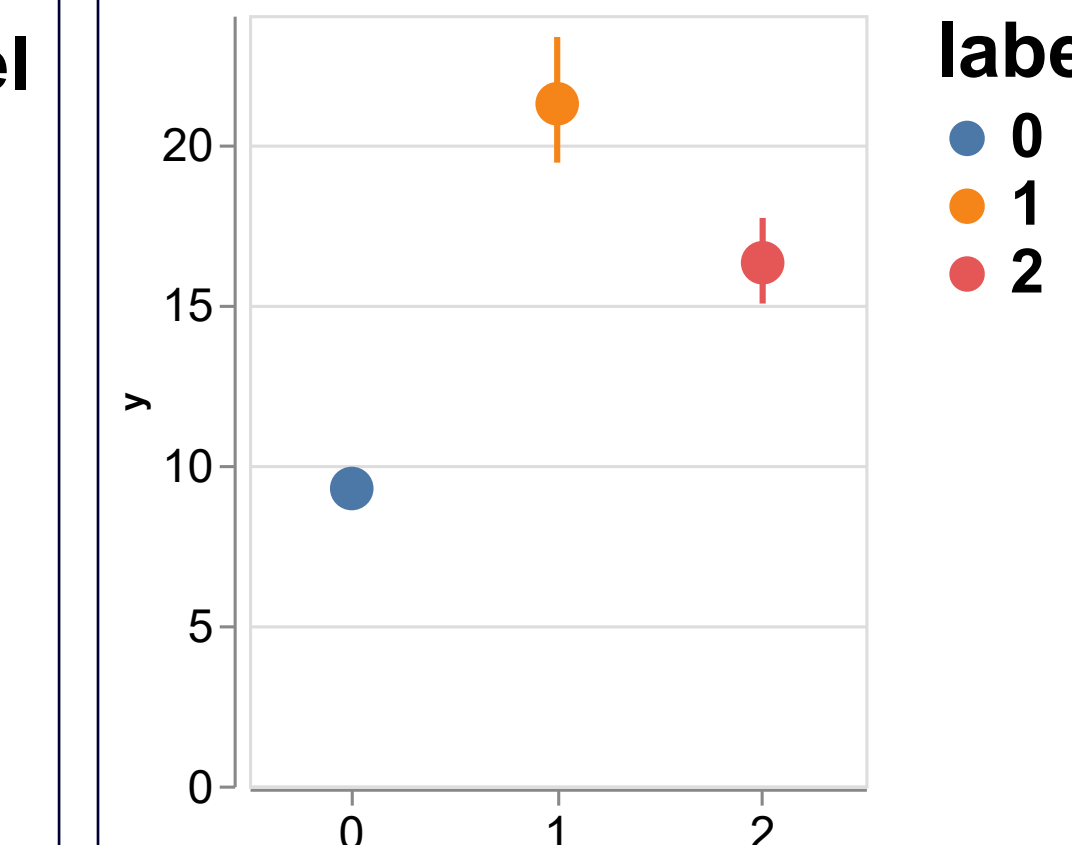
#### Characteristics

- In between mechanisms 0 and 1
- A few distinct sources
- Diffusion is still dominated by a single source

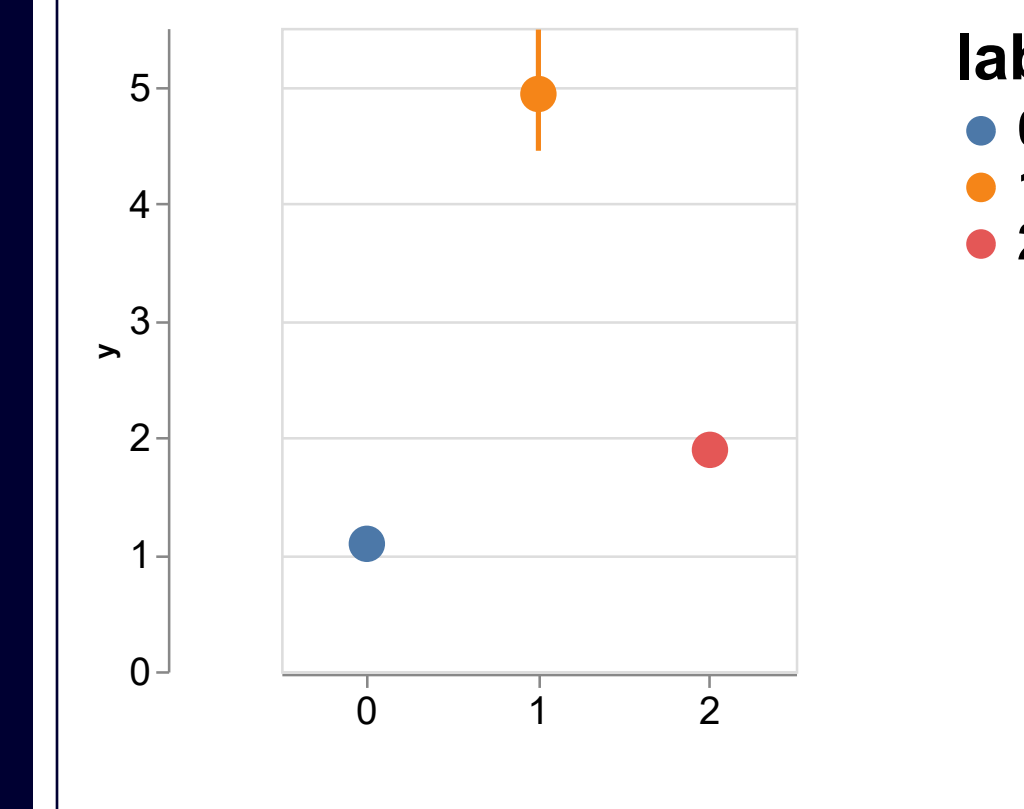
#### Number of Nodes



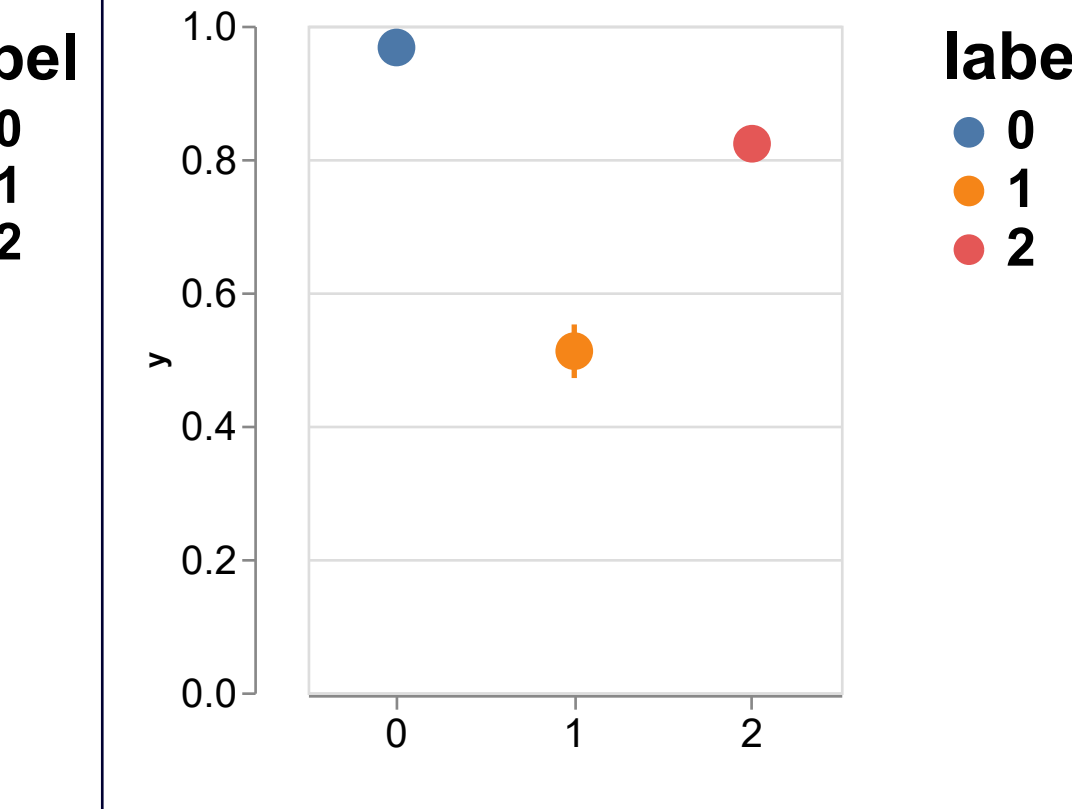
#### Number of Edges



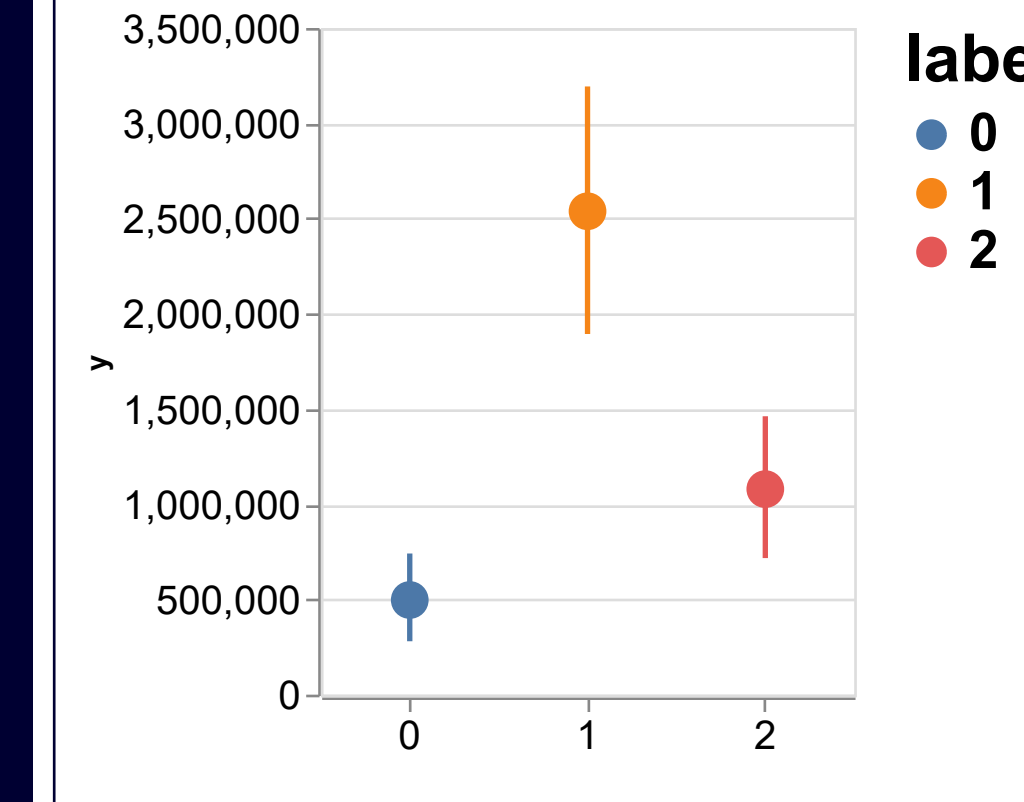
#### Number of Components



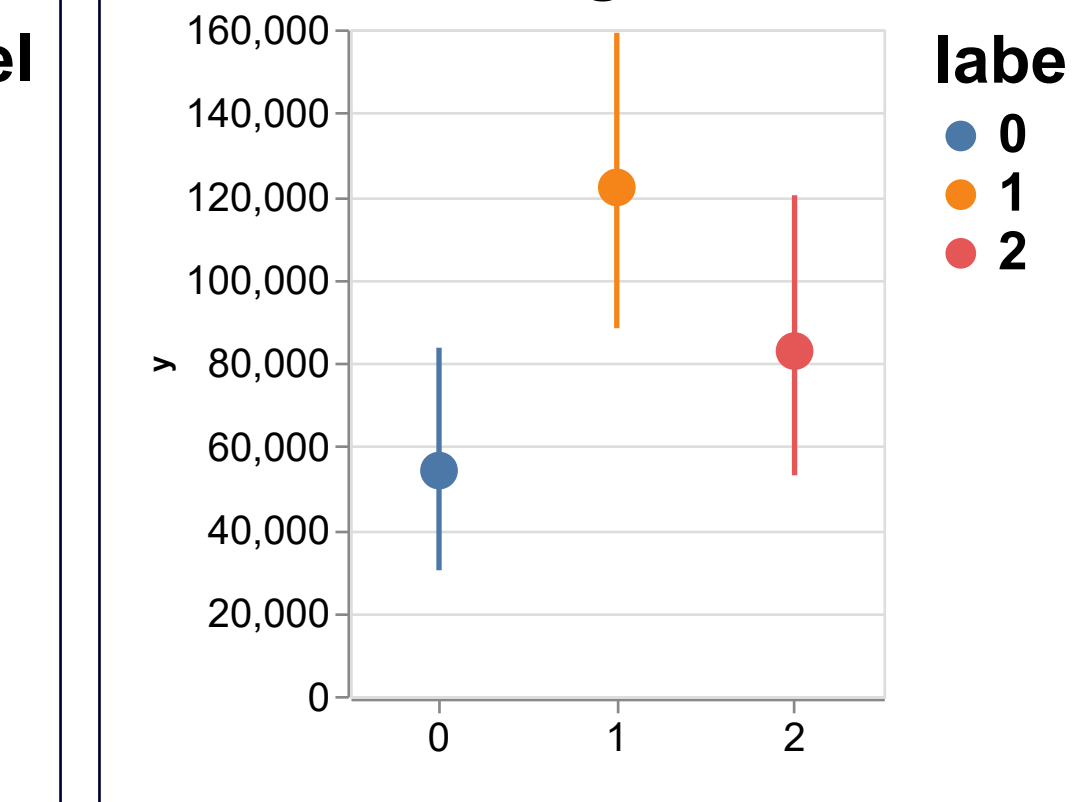
#### Largest Component



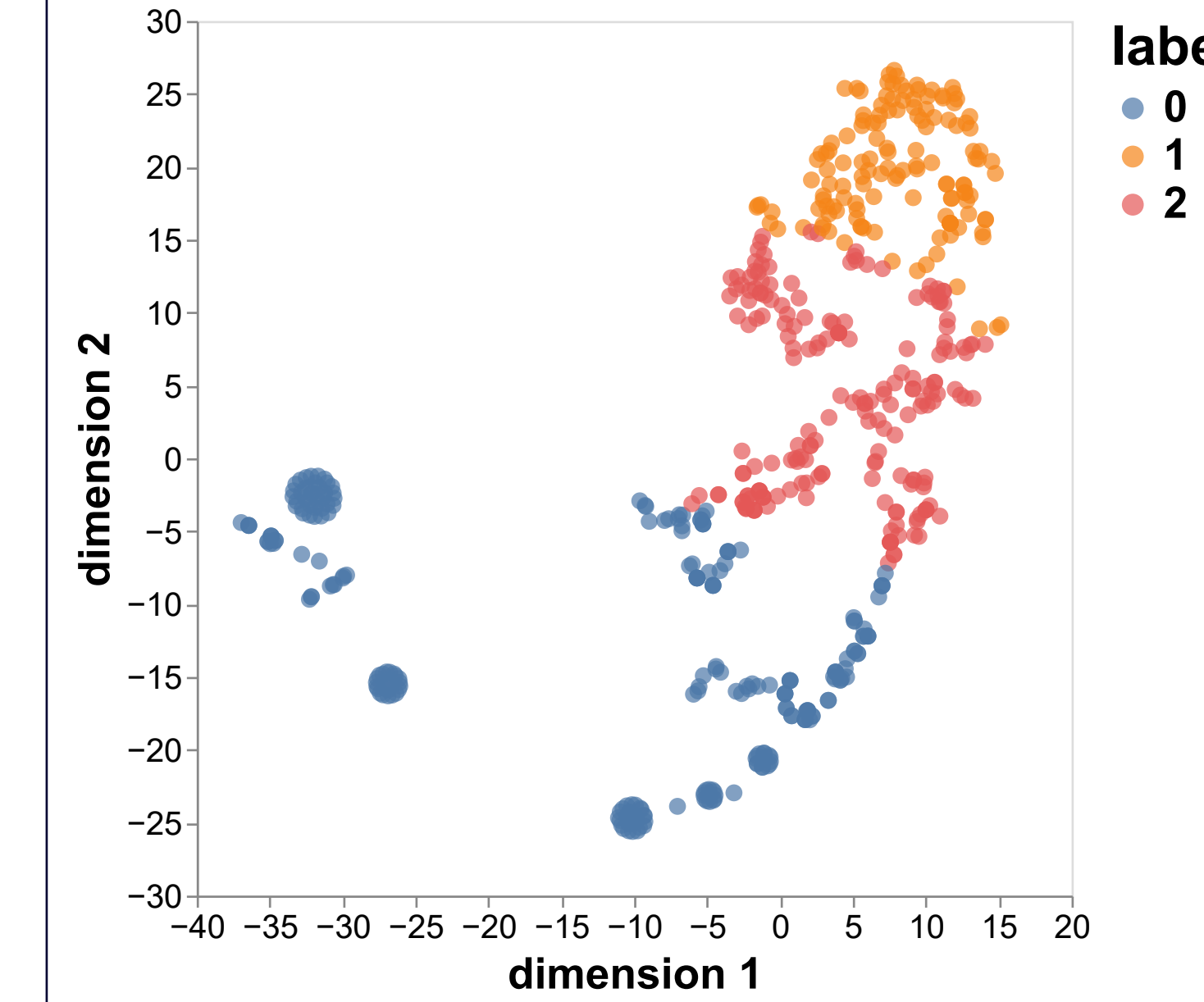
#### Total Time



#### Average Time



#### How Diffusion Networks Vary



## CONCLUSION

- We were able to algorithmically extract differences in the ways misinformation spreads on social media
- **Mechanism 1** could potentially be the most dangerous
  - Information reaches more people
  - Information is spreading for longer durations
  - The separate diffusion networks make it harder to determine who started spreading the information
  - The separate networks could potentially indicate a coordinated attempt to spread misinformation
- **Mechanism 0** contrasts with **Mechanism 1**
  - Mechanism 0 is the simplest way to spread information
  - It is less impactful than Mechanism 1

## IMPLICATIONS

Knowing the ways in which misinformation spreads can guide social media policy to prevent the spread of misinformation and stop those who deliberately aim to spread it.

## FUTURE DIRECTIONS

- Do these patterns generalize?
- Why do these patterns exist? Is it because of problems with social media policy?
- Do these patterns signify strategies used by people who want to spread misinformation?

## REFERENCES

All references can be found on the given handout.

## ACKNOWLEDGEMENTS

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