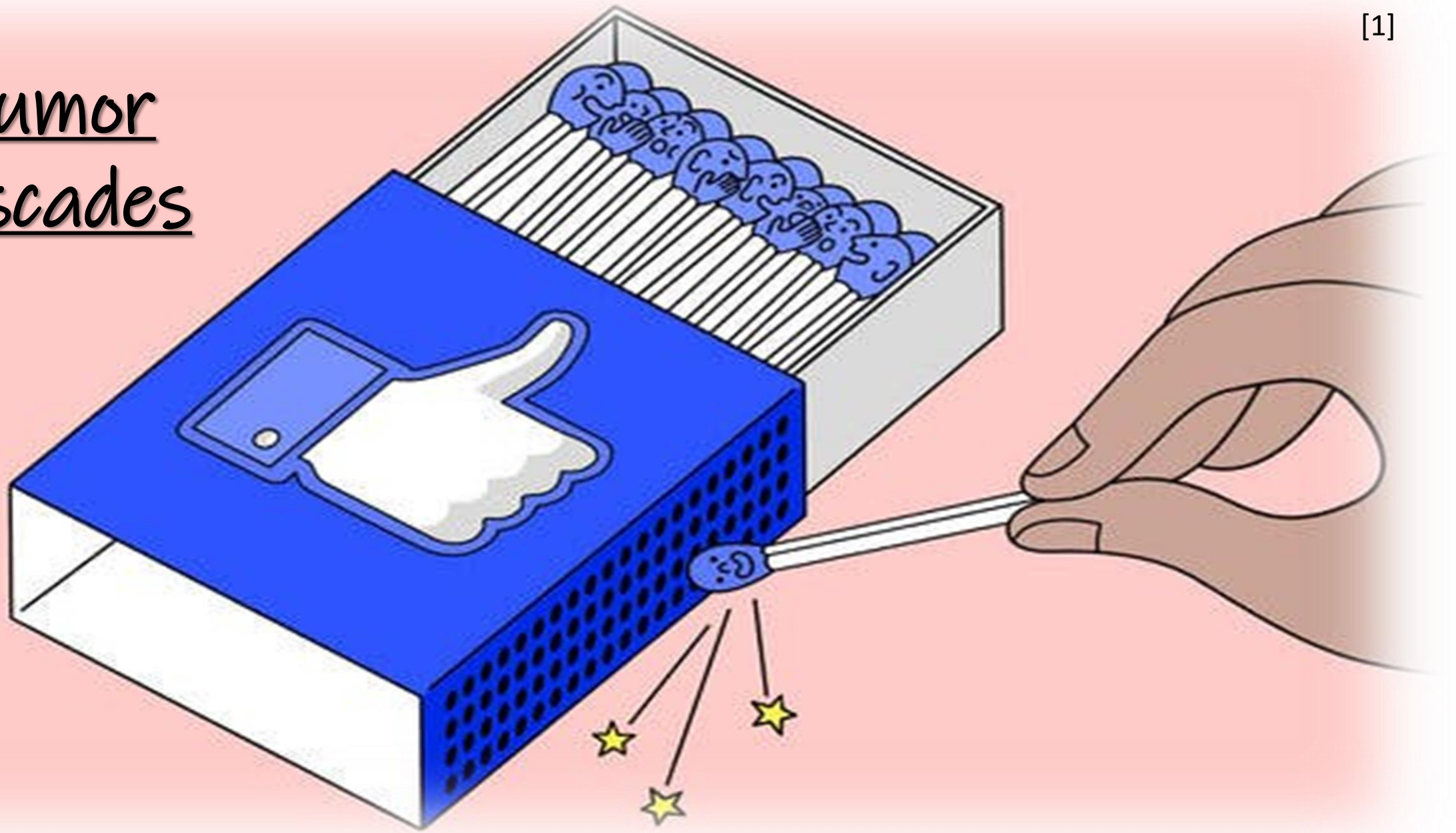


# Rumor cascades



Tara Butler  
Seminar: *How do I lie with statistics?*

# Introduction



Do true or false rumors spread faster & further?

Are rumors with complex, disputed or unknown truth values most contagious?

→ Snopes.com

## **Rumor propagation on Facebook**

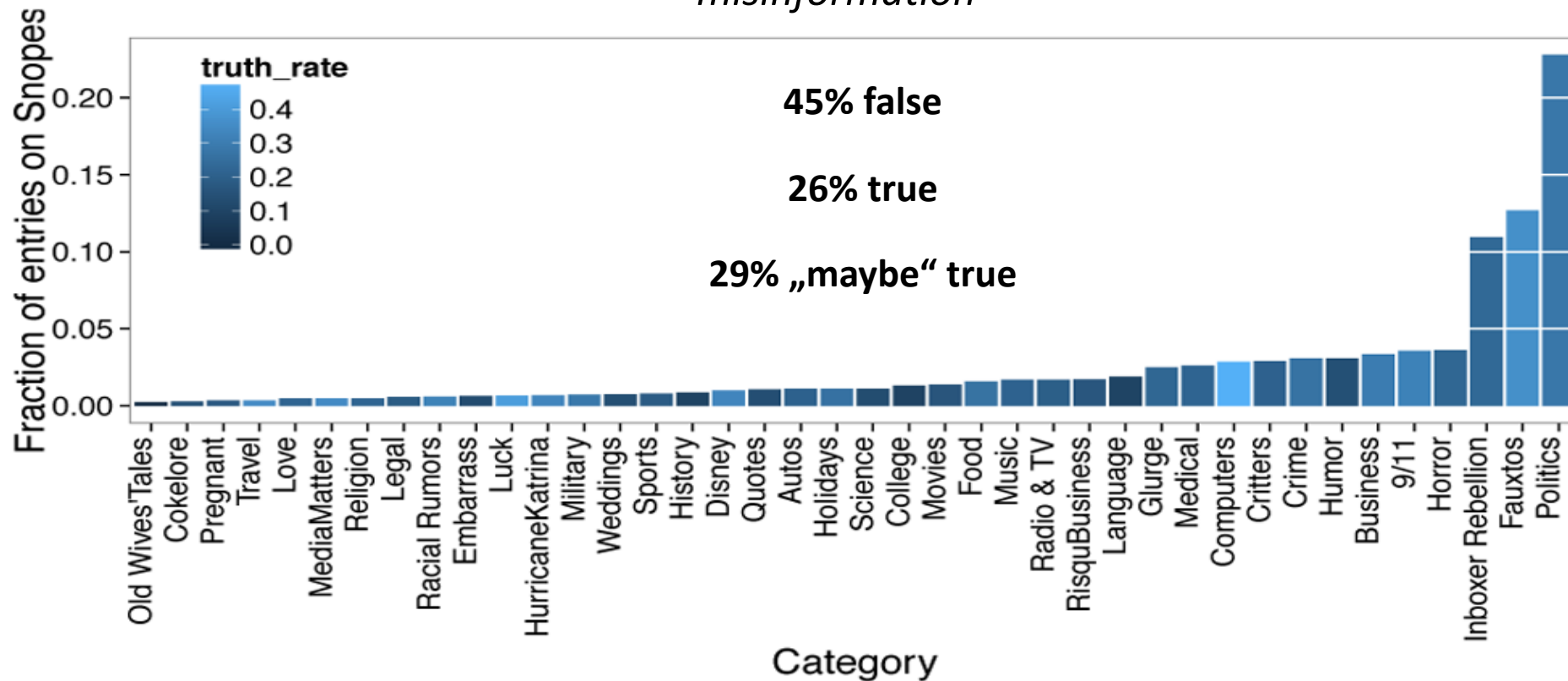
uploading and resharing of photos and copying-and-pasting of text as a text post

# Collecting rumors

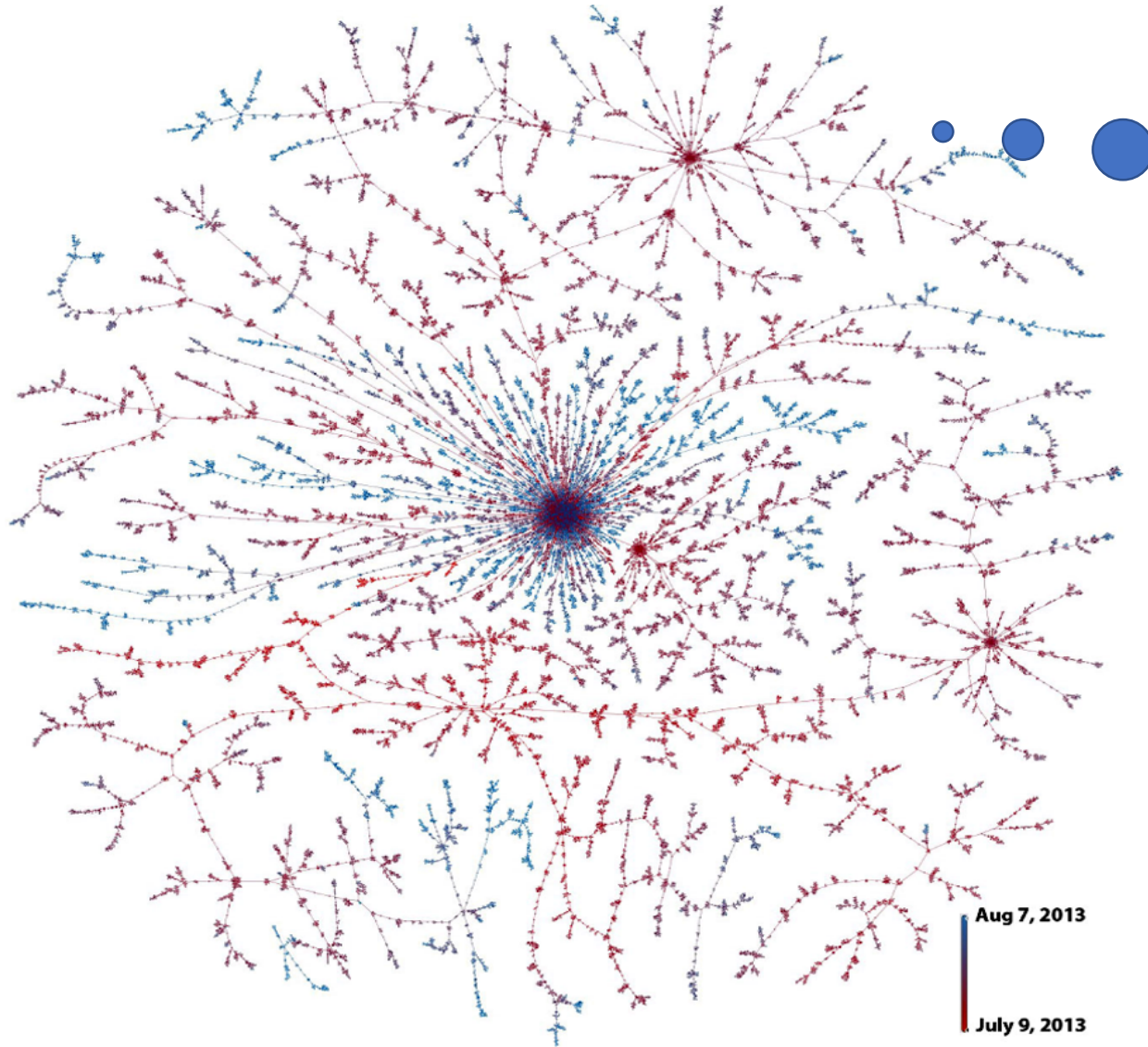
A sample of reshare cascades circulation on Facebook

*„Welcome to Snopes.com, the definitive Internet reference source for urban legends, folklore, myths, rumors, and misinformation“*

A corpus of known rumors



# Sampling rumors propagating as photos



A sample of 249,035  
comments on either photos  
or shares of photos

→ The commenters identified  
the rumor incorrectly

→ The photo propagating is a  
mixture of rumors

# Sampling rumors propagating as photos

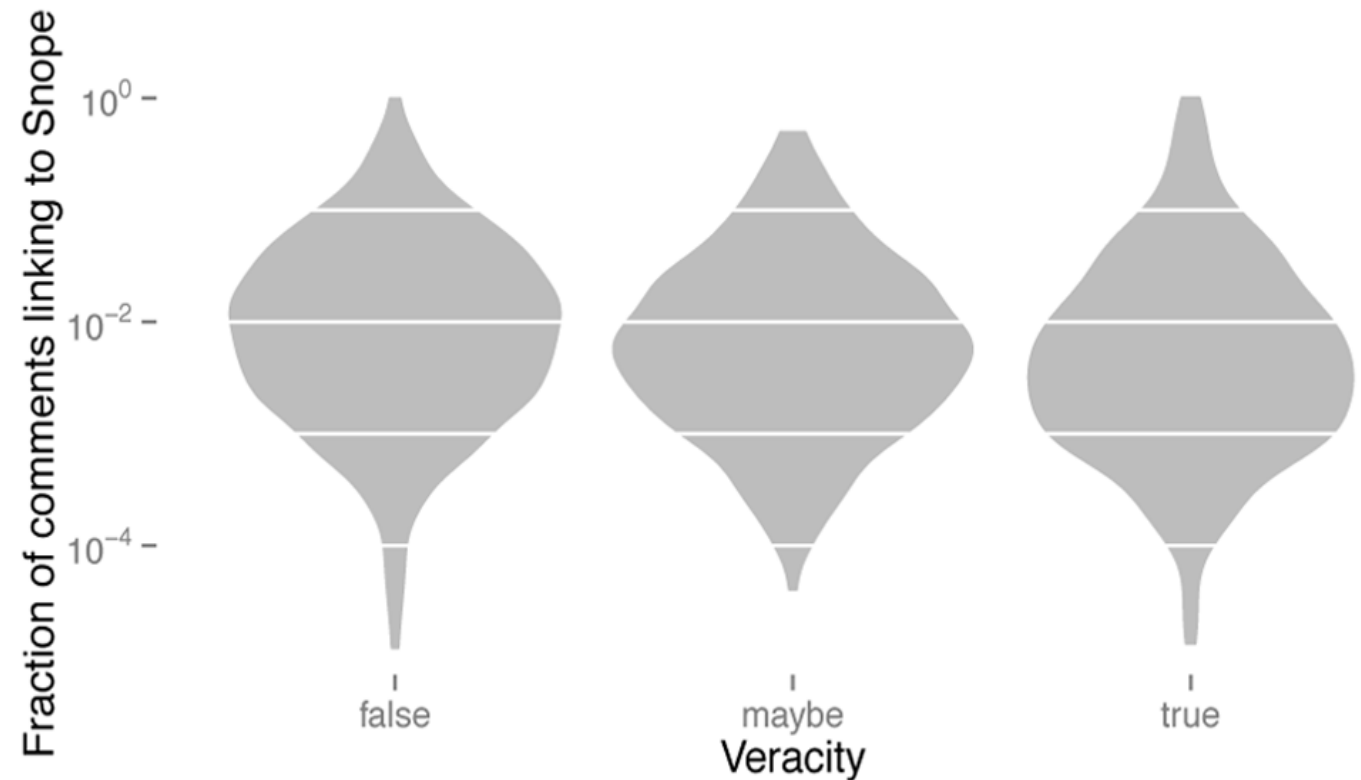
Propability that a cascade and shares is detected:

$$p = 1 - (1 - p_s)^n$$

The rumor is true or false

It is controversial enough for readers to want to know more

The ease with which one can end up reading the Snopes page



# Sampling rumors propagating as photos

How to spot a two-way mirror

*„This year July has 5 Fridays, 5 Saturdays and 5 Sundays. This happens once every 823 years. This is called money bags. So copy this and money will arrive within 4 days. Based on Chinese Feng Shui, the one who does not copy, will be without money. Figured I'd pass this on!“*

Shared:  
140.331

Received  
comments: 20.948

Linked to Snopes:  
1.346

Linked to  
Snopes: 908

Shared:  
1.259.642

Received  
comments:  
174.728



[5]

# Sampling rumors propagating as photos

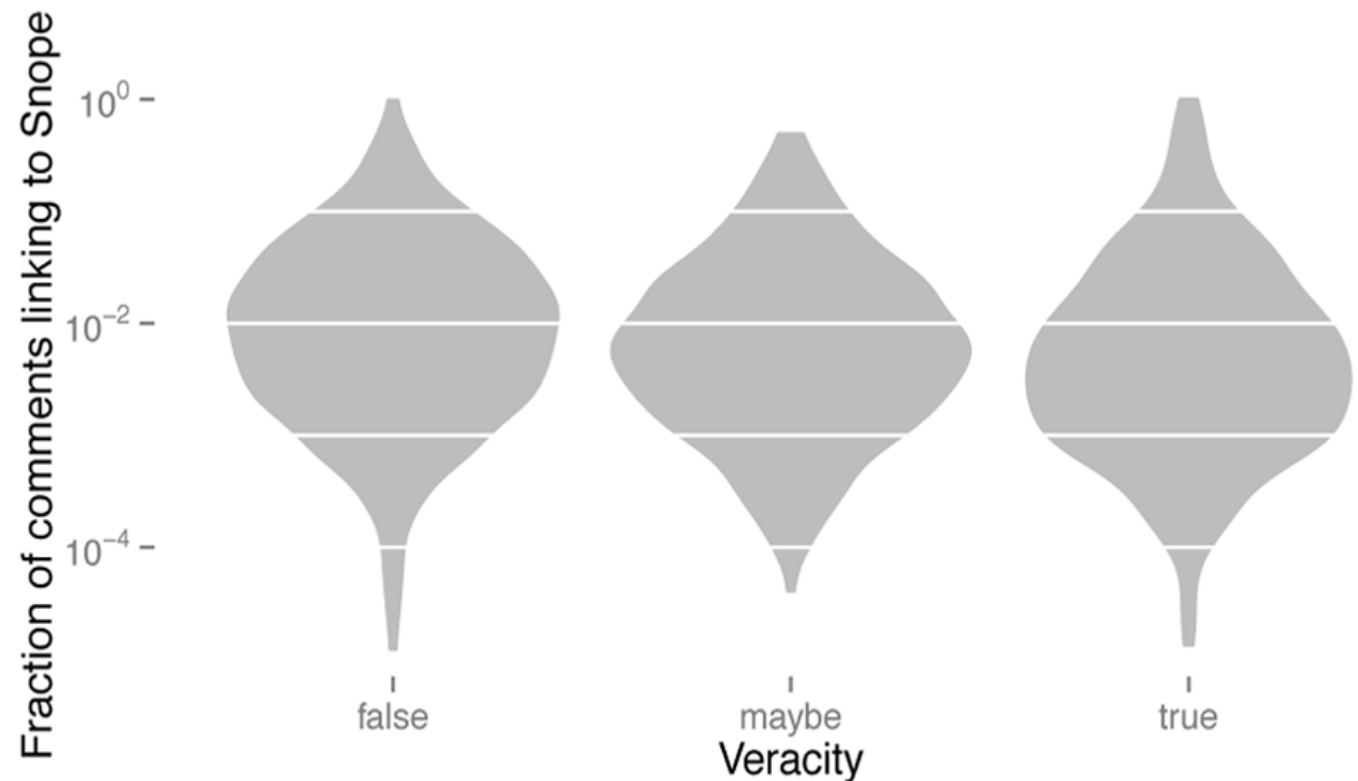
Propability that a cascade and shares is detected:

$$p = 1 - (1 - p_s)^n$$

The rumor is true or false

It is controversial enough for readers to want to know more

The ease with which one can end up



$$p_{true} = 3.03 \times 10^{-3}$$

$$p_{false} = 3.46 \times 10^{-3}$$

$$p_{maybe} = 3.68 \times 10^{-3}$$

# Sampling rumors propagating as photos

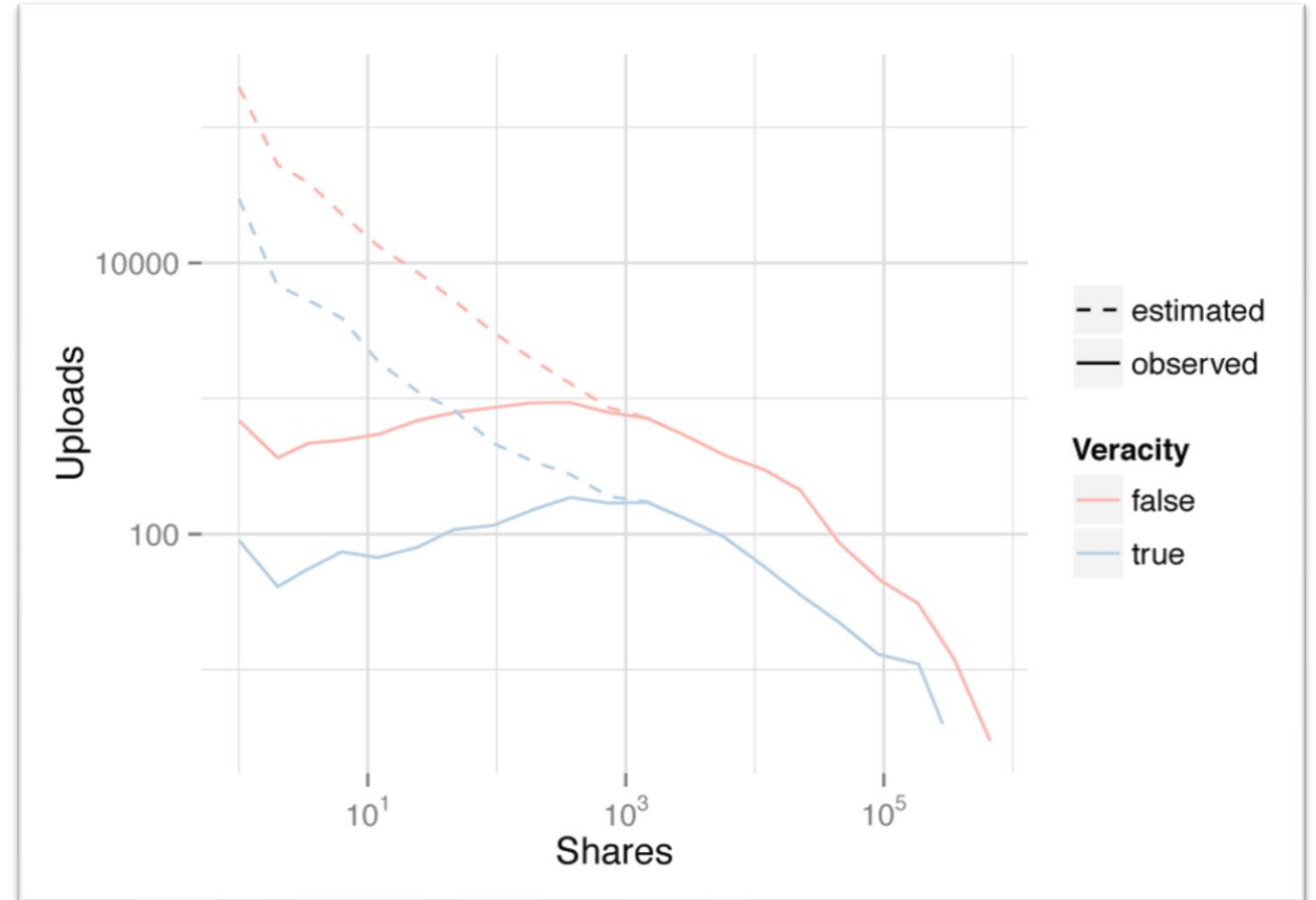
Propability that a cascade and shares is detected:

$$p = 1 - (1 - p_s)^n$$

The rumor is true or false

It is controversial enough for readers to want to know more

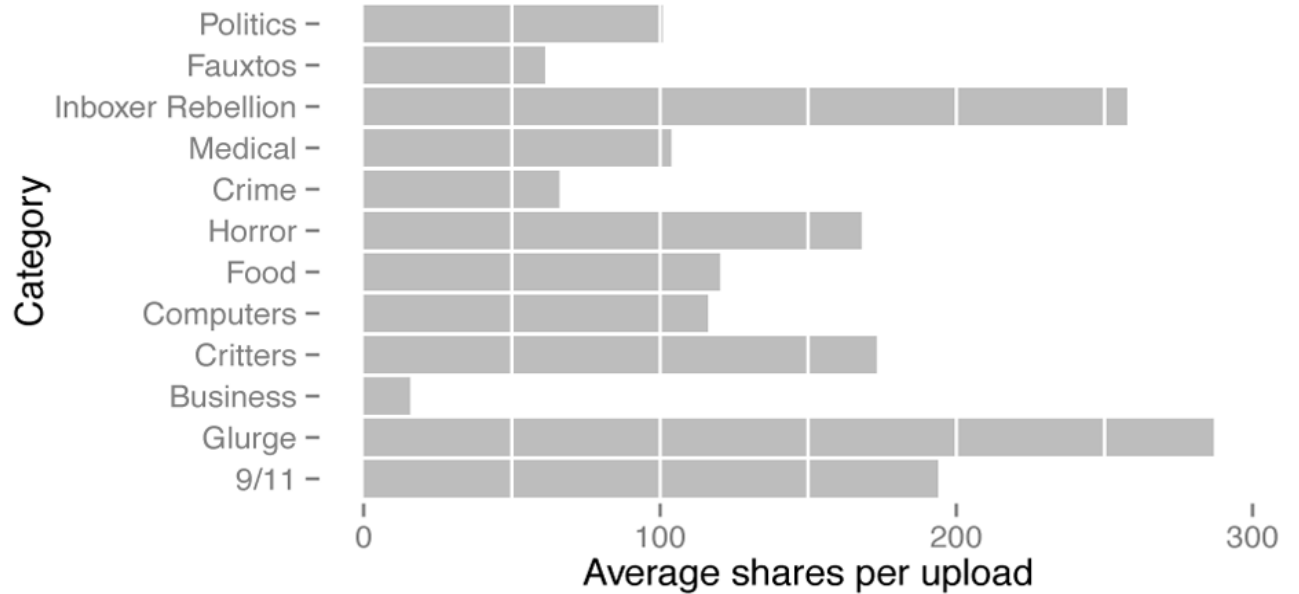
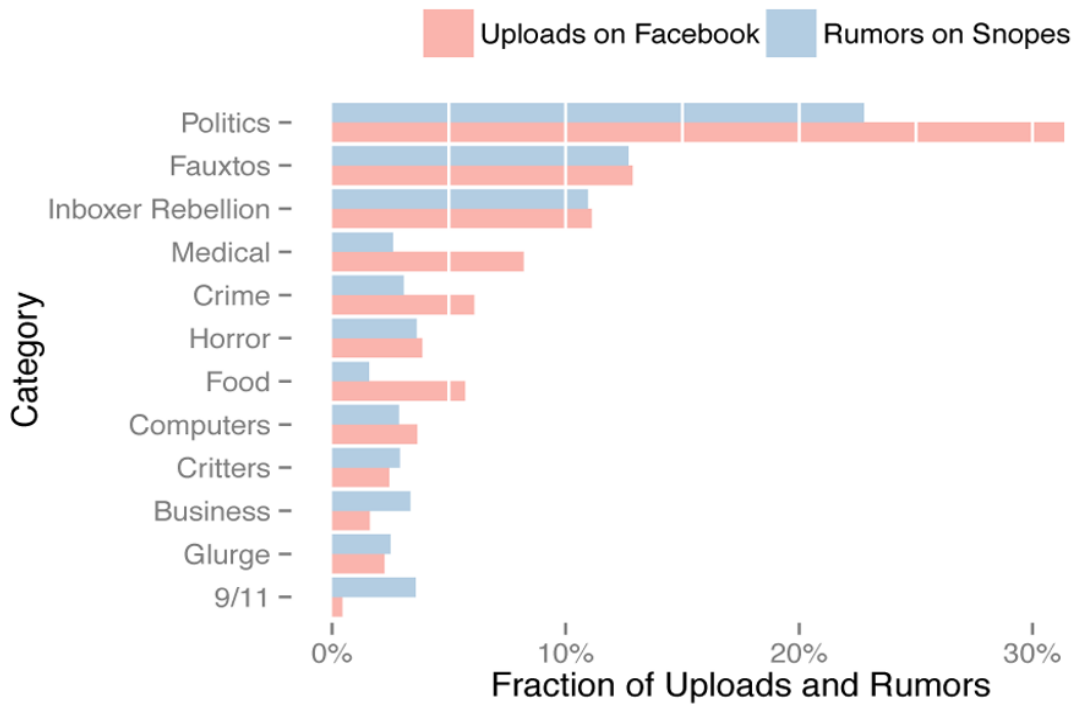
The ease with which one can end up





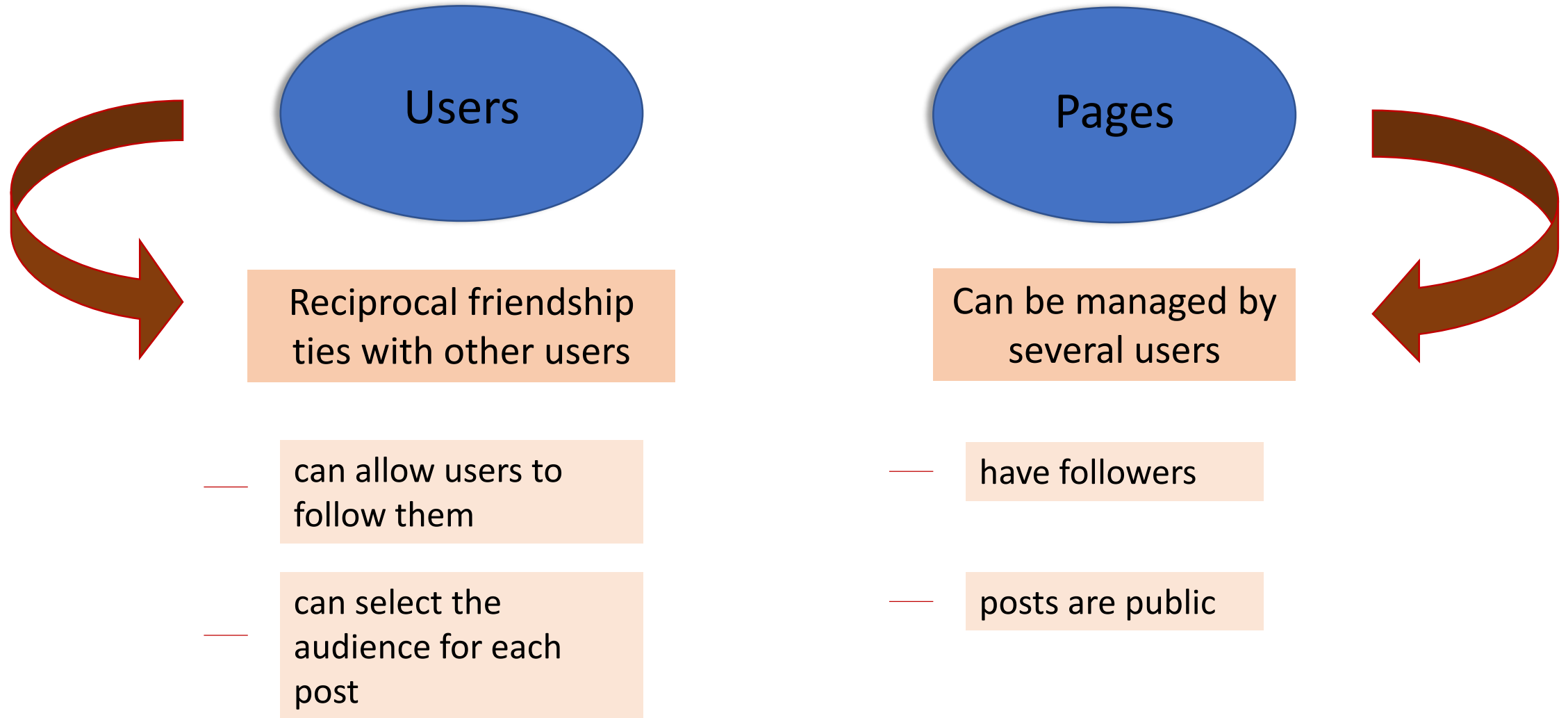
# Presence and virality by category

False rumors are predominant, but true rumors are more viral

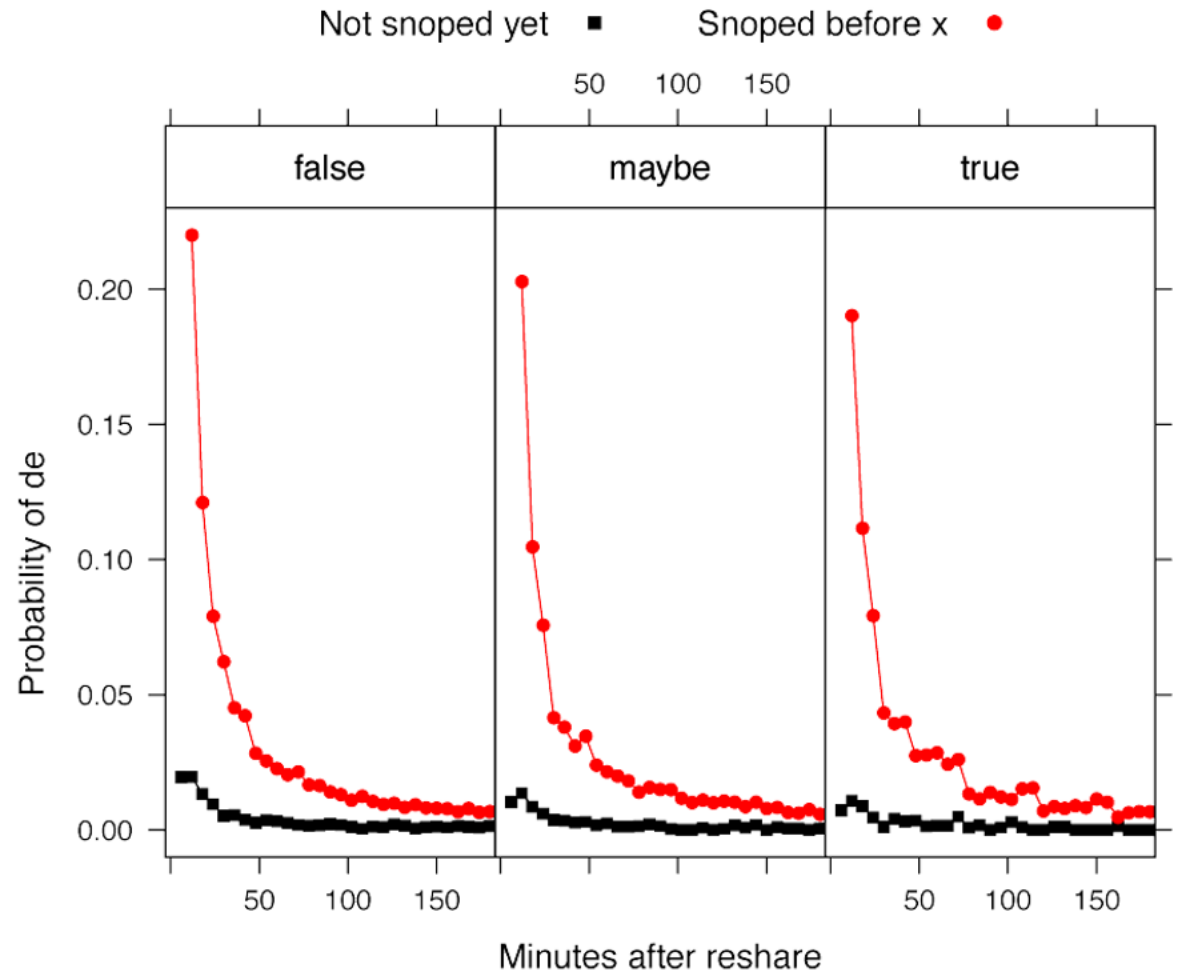
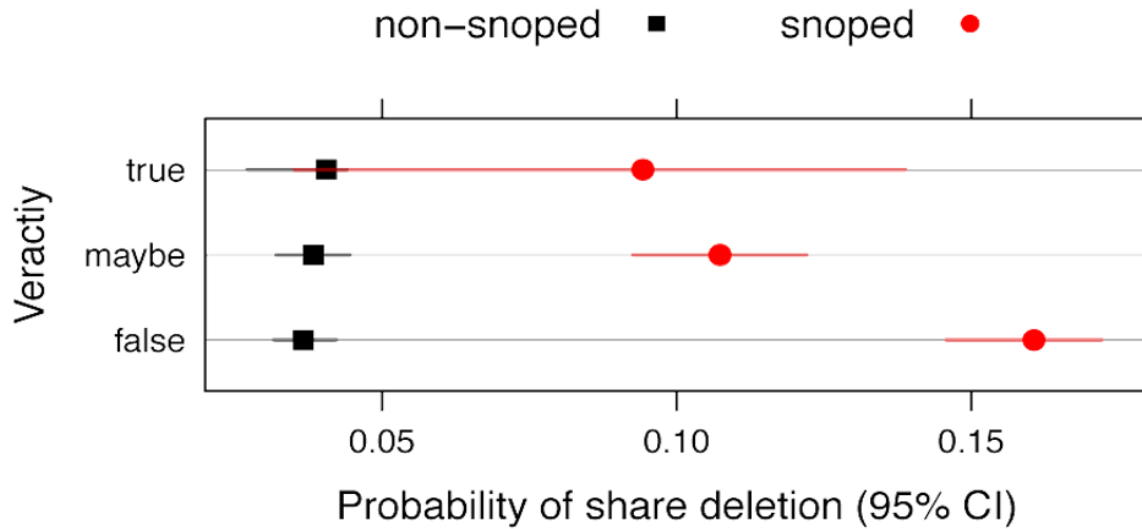


Virality and number of distinct cascades are unrelated

# Cascade characteristics



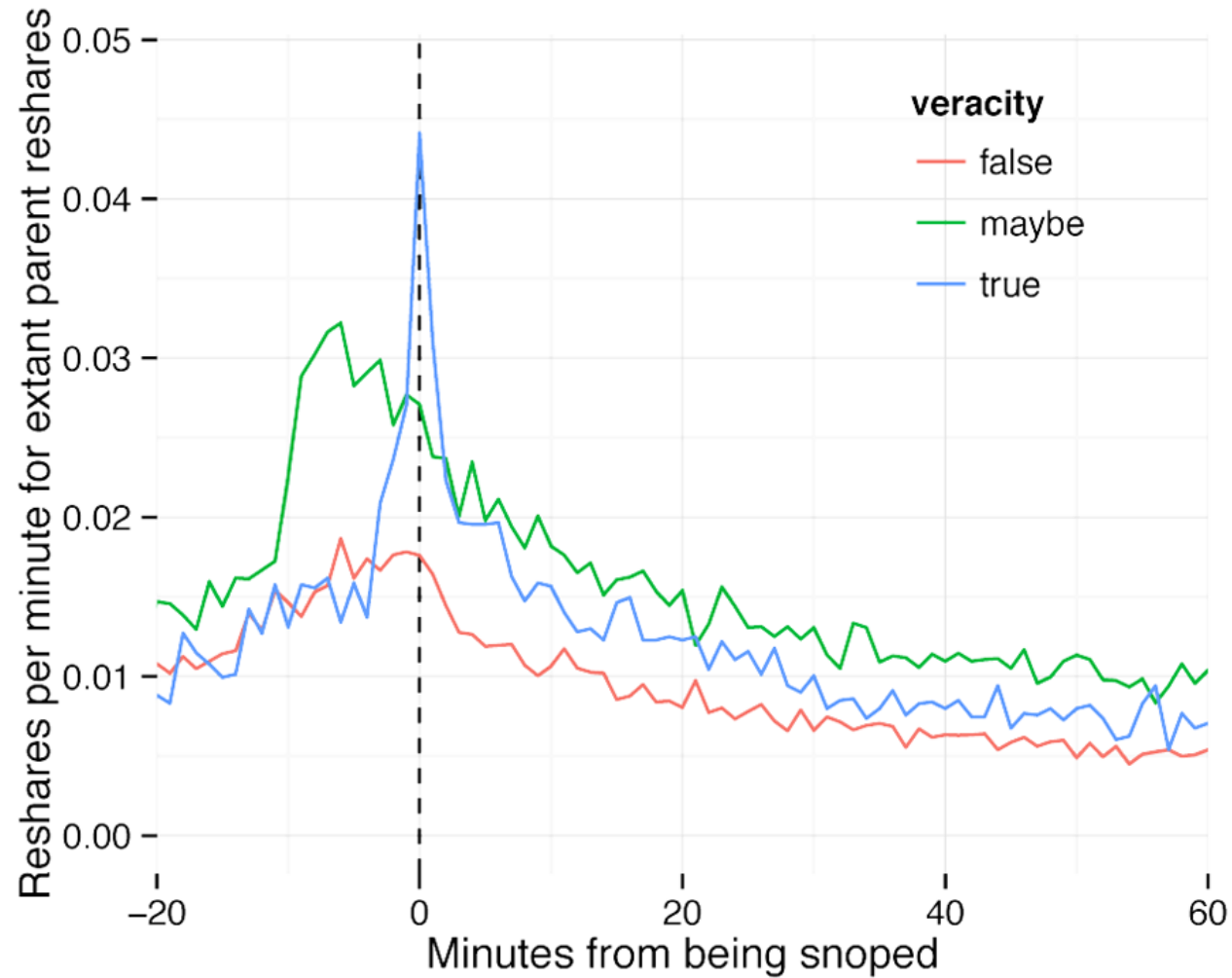
# Reshare deletion



For all three veracity categories, snoped reshares are more likely to be deleted

Reshares that are snoped shortly after posting are very likely to be deleted

# Effects of snoping on resharing



Their high virality can overcome a temporary setback dealt by being snoped

That Snoping has little long-term effect:

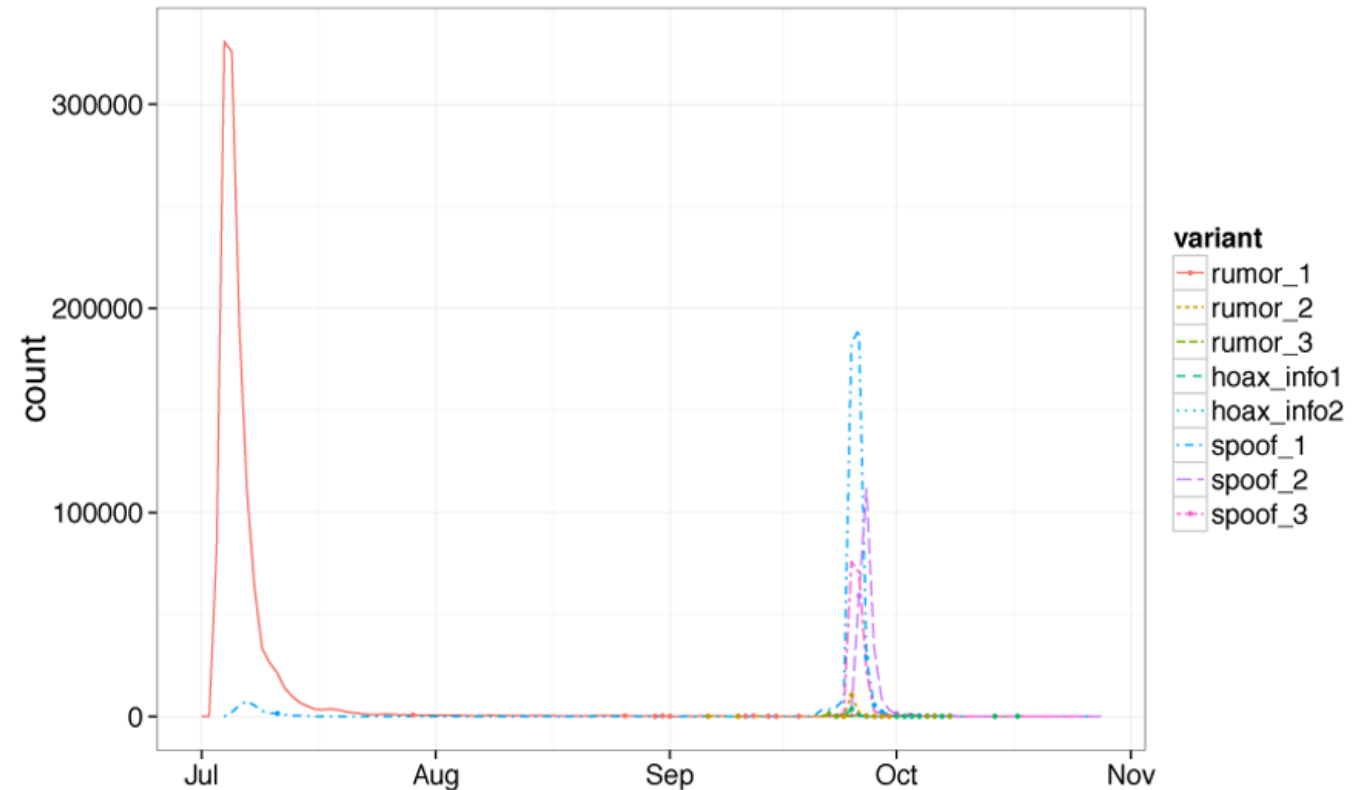
Consistent with not all comments being read by users before resharing

# Counter-rumors

*“It’s official [. . . ] It even passed on TV. Facebook will start charging this summer. If you copy this on your wall your icon will turn blue and Facebook will be free for you. Please pass this message. If not your count will be deleted. P.S. This is serious. The icon turns blue so please put this as your status”.*

*“don’t blindly copy and paste warnings just because your Facebook friend’s status tells you to do so. Although you probably mean well, you could be helping a hoax become more popular”*

*“On September 31st 2011 Facebook will start charging you for your account. To avoid this you must get naked, stand on your dining room table and do the Macarena all the while singing ‘I will survive’ after filming and posting it to your Facebook wall and YouTube then and only then will Mark Zuckerberg come down your chimney to tell you that your account will stay free. Pass it on it must be true because someone on Facebook I hardly know told me.”*



# Conclusion

False rumors were frequently uploaded and snoped

True rumors were most viral and elicited the largest cascades

The cascade overall easily continues to propagate, as there are many more non-snoped reshares than snoped ones

For False & mixed rumors, a majority of reshares occurs after the first snopes comment has already been added

Burstiness of rumors

# Refernces

- [1] <https://www.nytimes.com/2014/09/30/upshot/its-so-much-more-fun-to-spread-rumors-than-the-truth.html> (last visited: Feb. 2020), picture: Tomi Um)
- [2] [https://favpng.com/png\\_view/connect-facebook-social-media-world-globe-advertising-png/AS1kpLuS](https://favpng.com/png_view/connect-facebook-social-media-world-globe-advertising-png/AS1kpLuS) (last visited: Feb. 2020)
- [3] Friggeri et al. (2014): "Rumor Cascades" (PDF) -- network analysis of how rumors spread on Facebook (<https://www.aaai.org/ocs/index.php/ICWSM/ICWSM14/paper/viewFile/8122/8110>)
- [4] <https://www.snopes.com> (last visited: Feb. 2020)
- [5] <http://www.snopes.com/crime/warnings/mirror.asp> (last visited: Feb. 2020)