**The Grim Conclusions of the Largest-Ever Study of Fake News**

**Falsehoods almost always beat out the truth on Twitter, penetrating further, faster, and deeper into the social network than accurate information.**

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**The Atlantic, March 8, 2018**

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“Falsehood flies, and the Truth comes limping after it,” Jonathan Swift once wrote.

It was hyperbole three centuries ago. But it is a factual description of social media, according to an ambitious and first-of-its-kind study published Thursday in *Science*. (…)

The massive new study analyzes every major contested news story in English across the span of Twitter’s existence—some 126,000 stories, tweeted by 3 million users, over more than 10 years—and finds that the truth simply cannot compete with hoax and rumor. By every common metric, falsehood consistently dominates the truth on Twitter, the study finds: Fake news and false rumors reach more people, penetrate deeper into the social network, and spread much faster than accurate stories.

“It seems to be pretty clear [from our study] that false information outperforms true information,” said Soroush Vosoughi, a data scientist at MIT who has studied fake news since 2013 and who led this study. “And that is not just because of bots. It might have something to do with human nature.”

Though Vosoughi and his colleagues only focus on Twitter (…) their work has implications for Facebook, YouTube, and every major social network. Any platform that regularly amplifies engaging or provocative content runs the risk of amplifying fake news along with it.

Though the study is written in the clinical language of statistics, it offers a methodical indictment of the accuracy of information that spreads on these platforms. A false story is much more likely to go viral than a real story, the authors find. A false story reaches 1,500 people six times quicker, on average, than a true story does. And while false stories outperform the truth on every subject—including business, terrorism and war, science and technology, and entertainment—fake news about politics regularly does best.

Twitter users seem almost to *prefer* sharing falsehoods. Even when the researchers controlled for every difference between the accounts originating rumors—like whether that person had more followers or was verified—falsehoods were still 70 percent more likely to get retweeted than accurate news.

And blame for this problem cannot be laid with our robotic brethren. From 2006 to 2016, Twitter bots amplified true stories as much as they amplified false ones, the study found. Fake news prospers, the authors write, “because humans, not robots, are more likely to spread it.”

What makes this study different? In the past, researchers have looked into the problem of falsehoods spreading online. They’ve often focused on rumors around singular events, like the speculation [that preceded the discovery of the Higgs boson](https://www.nature.com/articles/srep02980) in 2012 or the rumors [that followed the Haiti earthquake](https://asu.pure.elsevier.com/en/publications/an-exploration-of-social-media-in-extreme-events-rumor-theory-and) in 2010.

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This new paper takes a far grander scale, looking at nearly the entire lifespan of Twitter: every piece of controversial news that propagated on the service from September 2006 to December 2016. [The researchers] ran a series of analyses, comparing the popularity of the fake rumors with the popularity of the real news. What they found astounded them.

Speaking from MIT this week, Vosoughi gave me an example: There are lots of ways for a tweet to get 10,000 retweets, he said. If a celebrity sends Tweet A, and they have a couple million followers, maybe 10,000 people will see Tweet A in their timeline and decide to retweet it. Tweet A was broadcast, creating a big but shallow pattern.

Meanwhile, someone without many followers sends Tweet B. It goes out to their 20 followers—but one of those people sees it, and retweets it, and then one of *their* followers sees it and retweets it too, on and on until tens of thousands of people have seen and shared Tweet B.

Tweet A and Tweet B both have the same size audience, but Tweet B has more “depth,” to use Vosoughi’s term. It chained together retweets, going viral in a way that Tweet A never did. “It could reach 1,000 retweets, but it has a very different shape,” he said.

Here’s the thing: Fake news dominates *according to both metrics*. It consistently reaches a larger audience, *and* it tunnels much deeper into social networks than real news does. The authors found that accurate news wasn’t able to chain together more than 10 retweets. Fake news could put together a retweet chain 19 links long—and do it 10 times as fast as accurate news put together its measly 10 retweets…

What does this look like in real life? Take two examples from the last presidential election. In August 2015, a rumor circulated on social media that Donald Trump had let a sick child use his plane to get urgent medical care. *Snopes* [confirmed almost all of the tale as true](https://www.snopes.com/fact-check/trump-flies-sick-boy/). But according to the team’s estimates, only about 1,300 people shared or retweeted the story.

In February 2016, a rumor developed that Trump’s elderly cousin had recently died and that he had opposed the magnate’s presidential bid in his obituary. “As a proud bearer of the Trump name, I implore you all, please don’t let that walking mucus bag become president,” the obituary reportedly said. But *Snopes* could not find evidence of the cousin, or his obituary, and [rejected the story as false](https://www.snopes.com/fact-check/trumps-cousins-obituary/).

Nonetheless, roughly 38,000 Twitter users shared the story. And it put together a retweet chain three times as long as the sick-child story managed. (…)

Why does falsehood do so well? The MIT team settled on two hypotheses.

First, fake news seems to be more “novel” than real news. Falsehoods are often notably different from the all the tweets that have appeared in a user’s timeline 60 days prior to their retweeting them, the team found.

Second, fake news evokes much more emotion than the average tweet. The researchers created a database of the words that Twitter users used to reply to the 126,000 contested tweets, then analyzed it [with a state-of-the-art sentiment-analysis tool](http://saifmohammad.com/WebPages/NRC-Canada-Sentiment.htm). Fake tweets tended to elicit words associated with surprise and disgust, while accurate tweets summoned words associated with sadness and trust, they found…

“The key takeaway is really that content that *arouses strong emotions* spreads further, faster, more deeply, and more broadly on Twitter,” said Tromble, the political scientist, in an email. “This particular finding is consistent with research in a number of different areas, including psychology and communication studies. It’s also relatively intuitive.” (…)

“False information online is often really novel and frequently negative,” said Nyhan, the Dartmouth professor. “We know those are two features of information generally that grab our attention as human beings and that cause us to want to share that information with others—we’re attentive to novel threats and especially attentive to negative threats.”

“It’s all too easy to create both when you’re not bound by the limitations of reality. So people can exploit the interaction of human psychology and the design of these networks in powerful ways,” he added. (…)

It suggests—to me, at least, a Twitter user since 2007, and someone [who got his start in journalism](https://www.theatlantic.com/technology/archive/2013/07/how-to-actually-get-a-job-on-twitter/278246/) because of the social network—that social-media platforms do not encourage the kind of behavior that anchors a democratic government. On platforms where every user is at once a reader, a writer, and a publisher, falsehoods are too seductive not to succeed: The thrill of novelty is too alluring, the titillation of disgust too difficult to transcend. After a long and aggravating day, even the most staid user might find themselves lunging for the politically advantageous rumor. Amid an anxious election season, even the most public-minded user might subvert their higher interest to win an argument.

It is unclear which interventions, if any, could reverse this tendency toward falsehood. “We don’t know enough to say what works and what doesn’t,” Aral told me. There is little evidence that people change their opinion because they see a fact-checking site reject one of their beliefs, for instance. Labeling fake news as such, on a social network or search engine, may do little to deter it as well.

In short, social media seems to systematically amplify falsehood at the expense of the truth, and no one—neither experts nor politicians nor tech companies—knows how to reverse that trend. It is a dangerous moment for any system of government premised on a common public reality.

## Tasks

1. Read the article and create a vocabulary with explanations of the underlined words *and* any other words you do not immediately understand.
2. Questions:
	1. What is the topic?
	2. Who is the sender? Who are the receivers?
	3. Why was the article written (what is the context)?
	4. What are the main arguments?
	5. What is the message?
	6. The author writes that the study “suggests (…) that social-media platforms do not encourage the kind of behavior that anchors a democratic government.” Do you agree?
	7. The author also suggests that fact-checking cannot “reverse this tendency toward falsehood”. Do you agree? What else could be done?