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IU Bloomington Newsroom

Social media news consumers at higher risk of 'information bubbles,' IU study says

First large-scale empirical analysis of online news-seeking behavior compares diversity of news found on search, social

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FOR IMMEDIATE RELEASE

BLOOMINGTON, Ind. -- Indiana University researchers have found that people who seek out news and information from social media are at higher risk of becoming trapped in a "collective social bubble" compared to using search engines.

The study, "[Measuring online social bubbles](#)," was recently published in the open-access online journal *PeerJ Computer Science*. The results are based on an analysis of over 100 million Web clicks and 1.3 billion public posts on social media.

"These findings provide the first large-scale empirical comparison between the diversity of information sources reached through different types of online activity," said [Dimitar Nikolov](#), a doctoral student in the School of Informatics and Computing at IU Bloomington, who is lead author on the study. "Our analysis shows that people collectively access information from a significantly narrower range of sources on social media compared to search engines."

To measure the diversity of information accessed over each medium, IU researchers developed a method that assigned a score for how user clicks from social versus search engines were distributed across millions of sites.

A lower score indicated users' Web traffic concentrated on fewer sites; a higher score indicated traffic scattered across more sites. A single click on CNN and nine clicks on MSNBC, for example, would generate a lower score than five clicks on each site.

Overall, the analysis found that people who accessed news on social media scored significantly lower in terms of the diversity of their information sources than users who accessed current information using search engines.

The results show the rise of a "collective social bubble" where news is shared within communities of like-minded individuals, said Nikolov, noting a trend in modern media consumption where "the discovery of information is being transformed from an individual to a social endeavor."

He added that people who adopt this behavior as a coping mechanism for "information overload" may not even be aware they're filtering their access to information by using social media platforms, such as Facebook, where the majority of news stories originate from friends' postings.

"The rapid adoption of the Web as both a source of knowledge and social space has made it ever more difficult for people to manage the constant stream of news and information arriving on their screens," added study co-author [Filippo Menczer](#), professor of informatics and computing, director of the [Center for Complex Networks and Systems Research](#), or CNetS, and a member of the [IU Network Science Institute](#). "These results suggest

the conflation of these previously distinct activities may be contributing to a growing 'bubble effect' in information consumption."

To conduct the study, IU scientists applied their analysis to three massive sources of information on browsing habits. These were an anonymous database compiled by CNetS containing the Web searches of 100,000 users at IU between October 2006 and May 2010; a dataset containing 18 million clicks by over half a million users of the AOL search engine in 2006; and 1.3 billion public posts containing links shared by over 89 million people on Twitter between April 2013 and April 2014. The IU dataset comprised the primary source for the study.

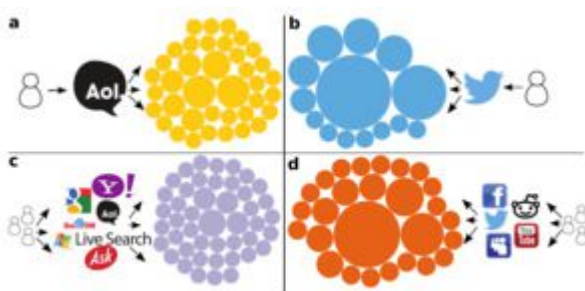
The other datasets, which contained identifiers, enabled the scientists to confirm that information access behavior at the community level reflected the behavior of individual users.

Moreover, to measure the range of news sources accessed by users, the IU scientists used an open directory of news sites, filtering out blogs and wikis, resulting in 3,500 news outlets.

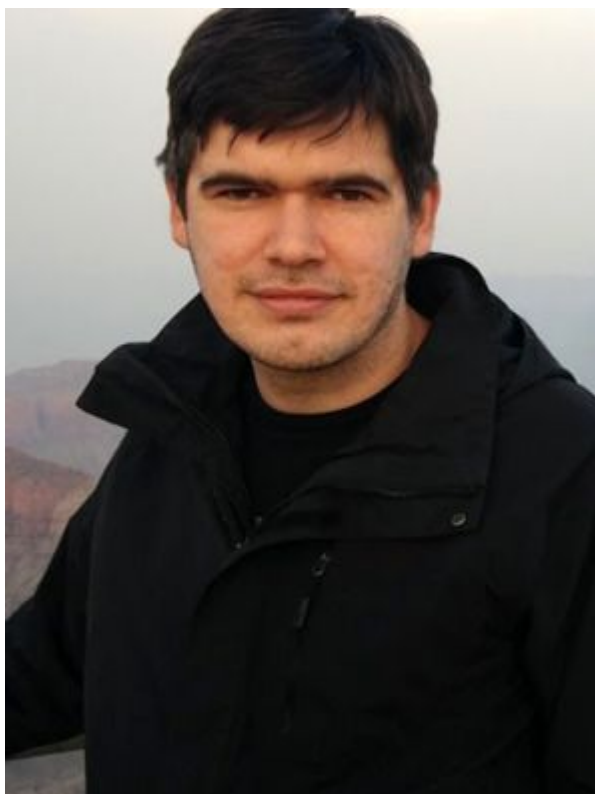
"Compared to a baseline of information-seeking activities, this evidence shows, empirically, that social media does in fact expose communities and individuals to a significantly narrower range of news sources, despite the many information channels on the medium," Nikolov said.

In addition to Nikolov and Menczer, IU scientists on the study were Diego F.M. Oliveira, a postdoctoral fellow, and Alessandro Flammini, associate professor, both of the School of Informatics and Computing.

This research was supported in part by the James S. McDonnell Foundation and the National Science Foundation.



Each circle is proportional to the number of clicks to a website from a single user and group of users, respectively, referred by search engines (A, C) and social media (B, D). | Photo by Dimitar Nikolov



Dimitar Nikolov | Photo by Indiana University

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Web version: <http://news.indiana.edu/releases/iu/2015/12/social-media-bubbles.shtml>

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