

How the Interplay of Google and Wikipedia Affects Perceptions of Online News Sources

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ABSTRACT

Now more than ever, people are encountering unfamiliar news sites on the web through social media and other online platforms. Thus, it is very important that people are able to examine the credibility of news sources efficiently and effectively. To enable beneficial credibility assessments, web literacy experts are suggesting that users engage in “lateral reading”, the process of verifying the credibility of a news source by searching for third-party information about it. The popularity of Google’s search engine makes it a popular choice for users engaging in the lateral reading process. However, little is known about the ways the composition of the Google Search Engine Result Page (SERP) affects users’ credibility assessments. The SERP is composed of organic results, as well as several other panels of information. In this paper, we present two user studies in which we asked participants to make assumptions about the credibility of a news source based only on its Google SERP. Our findings suggest that the presence of Knowledge Panel features is perceived to be important to participants’ credibility determinations. Further, we discuss the Wikipedia-focused initiative launched as a response to the first study summarized in this paper. This initiative has the potential to help users correctly identify legitimate local newspapers.

CCS CONCEPTS

• **Information systems** → **Web search engines**; *Search interfaces*; • **Human-centered computing** → *Empirical studies in HCI*;

KEYWORDS

Google; search; news sources; credibility; user studies; Wikipedia

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1 INTRODUCTION

In the early days of the World Wide Web, the dream that anyone can become a content producer or a news publisher was empowering and democratizing, fueling many of the technological advances that benefit us all, for example, free and easy-to-use publishing platforms such as WordPress. However, in the recent years, the fake news crisis has illustrated a drawback of the relative ease of online content production and distribution. For example, during the 2016 U.S. Presidential election, the impostor news sites *The Denver Guardian* and *The Boston Tribune* adopted names deceptively similar

to the legitimate newspapers *The Denver Post* and *The Boston Globe*, as a way to more effectively spread fake news stories¹, on online platforms. Because of the ease of creating impostor news websites, users are increasingly required to make judgment calls about the credibility of the news sources they encounter, if they don’t want to be fooled by the fake stories on these sites. Historically, the content and the source of a piece of information has defined its believability [3]; however, currently, the main challenge web users face is identifying when and how to assess the reliability of online information, as it is not necessarily subject to any of the traditional forms of review [8]. As suggested by Meola [7], to properly evaluate a website, a user must employ a contextual approach, including corroborating the information found on the website with other information sources.

Further research in news literacy shows that credibility of a source cannot be asserted through “vertical reading” (scanning the page itself), but rather through a process practiced by professional fact-checkers, “lateral reading”. Lateral reading requires online information seekers to open new browser tabs to discover third-party information about the creators of the original article [15]. Google, as the dominant search engine, is often the platform of choice for lateral reading— as stated by a participant in a study about news consumption, “I’ve taken to generally Googling things just to try to get a concept of it” [1].

However, the Google Search Engine Results Page (SERP) has evolved considerably from the traditional page of ten blue links. With the introduction of the Knowledge Graph in 2012, the SERP currently contains panels of information from various third-party sources [11]. This paper aims to understand *the effect enriched SERPs have on users’ credibility assessments of news sources*. We conducted two user studies to explore this topic further.

In our first study, we sought to understand how variations in enriched SERPs affect users’ credibility assessments of news sources. We designed the second study to better understand which of these enriched panels are important in users’ assessments of source credibility. Together, our studies indicate that users find the extra information included in the enriched panels useful in evaluating credibility. Elements composed of information sourced from Wikipedia were particularly valuable. Further, in both studies, we asked participants about their credibility assessment habits, in order to understand whether they practice lateral reading in the wild. We discovered that lateral reading was one of the most common ways for participants to evaluate the credibility of news sources, reinforcing the importance of understanding how these enriched panels influence a user’s credibility assessment.

*These authors contributed equally to the presented work.

¹<https://www.npr.org/sections/alltechconsidered/2016/11/23/503146770/npr-finds-the-head-of-a-covert-fake-news-operation-in-the-suburbs>

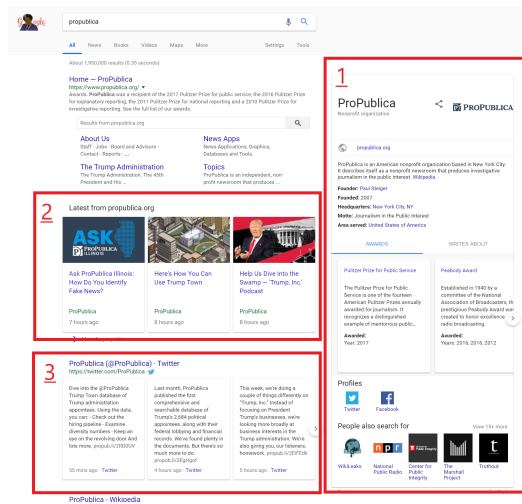


Figure 1: A screenshot of the Google search results page for ProPublica. It contains (1) the Knowledge Panel, (2) a “Top Stories” section, and (3) a section of recent tweets. The Knowledge Panel’s “Awards” tab contains a Pulitzer Prize for Public Service and a Peabody Award.

2 THE STRUCTURE OF THE ENRICHED SERP

When searching Google for the name of a news source, the SERP often includes: recent stories pulled from the source in the “Top Stories” panel, a panel with the latest tweets from the news source, as well as a “Knowledge Panel” (KP). The KP often includes basic information from Wikipedia. Figure 1 shows a screenshot from the SERP of the non-profit investigative news organization, ProPublica. Note that the KP can contain various subpanels, including “Awards” (which displays major awards won by the news source), “Writes about” (which lists topics of previous articles), “Profiles” (which includes link to the news source’s social media profiles), and “People also search for” (which shows similar queries, often other, similar news sources). Furthermore, the presence of these features reduces the number of organic search results.

Previous research has shown that when Wikipedia information is displayed on the KP, traffic to Wikipedia is reduced [6]. However, no previous research has examined the particular effect that the incorporation of Wikipedia information into the KPs has in the process of lateral reading.

3 UNDERSTANDING HOW WEB USERS INTERACT WITH THE ENRICHED SERP

In order to understand whether or not web users consider information on the KPs in their credibility assessments, we conducted two user studies. In both studies, we asked participants to make judgment calls about the reliability of a news source based only on its SERP. This experimental setup aims to emulate the beginning of the lateral reading process.

For the first study, we recruited college students as participants. Through this study, we established baseline information about what parts of the SERP were of particular interest when making a credibility assessment. After analyzing the data from the first study, we

developed a second study on Amazon Mechanical Turk focusing on the ways participants interacted with enriched SERPs. We were interested in what particular regions of the KP were helpful to participants in making their assessments, and whether or not they still evaluated organic search results. In both studies, participants were required to base their judgment by only examining the SERP (i.e. they were not allowed to navigate to external links)².

3.1 Design of Pilot Study 1: Interviews with Students

In the first study, we conducted 30 in-person interviews, each lasting 15-20 minutes, using the think-aloud protocol[13]. All participants were college students, aged 18-22. In addition to the open-ended description of their credibility assessment habits, participants were given three different news sources to evaluate: *The Durango Herald*, *The Tennessean*, and *The Christian Times*. The sources were selected because they are generally unfamiliar to mainstream audiences and for the variance of appearances of their SERPs.

- *The Durango Herald*: The SERP page of the *Durango Herald* includes a detailed Wikipedia snippet on the KP, as well as a “Topics they write about” section. Elsewhere on the SERP there is a “Top Stories” panel and a panel showing the latest tweets of the newspaper.
- *The Tennessean*: Although it contains a detailed KP with “Awards” and “Writes about” subpanels, *The Tennessean* has less information on its Wikipedia snippet than *The Durango Herald*’s snippet. The principal newspaper for Nashville, TN, *The Tennessean* is a daily newspaper.
- *The Christian Times*: Owned by the Christian Media Corporation, *The Christian Times* is an online newspaper without a Wikipedia page; however, there is a KP (that lists an incorrect parent company). The search results on the SERP are not relevant to *the Christian Times*, but rather to the former fake news site “Christian Times Newspaper.”

3.2 Design of Pilot Study 2: Tasks for Mechanical Turkers

We designed a second study for workers on Amazon Mechanical Turk, a platform for users to remotely complete human intelligence tasks in exchange for payment. Participants were compensated \$2 for completing the 10-15 minute task. 66 individuals were recruited, distributed in batches – one in April 2018 and one in June 2018 – and we sampled 34 complete responses to be qualitatively coded, using only individuals who said they have had never heard of either *Newsmax* or *ProPublica*.

The task was centered around evaluating the credibility of two online sources: *ProPublica*³ and *Newsmax*⁴. These two news sources were chosen because both have a rich KP with minor variations between the two KPs – *ProPublica* has an “Awards” panel which is not present for *Newsmax* and *ProPublica*’s KP links to its social media profiles while the KP for *Newsmax* has no such panel. Each participant was asked to evaluate the credibility of both *Newsmax*

² Archived versions of the SERPs and KPs discussed in this paper can be found at <http://cs.wellesley.edu/~credlab/cj19/>

³ www.propublica.org

⁴ www.newsmax.com

and *ProPublica*, given the link to a static copy of both SERPs. Participants were also asked to provide online sources they deemed credible and an explanation for those sites' trustworthiness.

3.3 Results of Pilot Study 1 & Pilot Study 2

3.3.1 Pilot Study 1 Results. Participants were first asked about their habits for establishing the credibility of an unknown news website. 53% of respondents reported engaging in a lateral reading-like behavior. Many participants explicitly referenced searching Google for the news source.

The most frequently mentioned elements of the SERP in this experiment were the Wikipedia snippet (66%), the "Awards" tab (53%), the social media presence of the web sources (53%), the "Top Stories" panel (53%), the date the source was established (visible on the Knowledge Panel) (33%), and the regional location of the sources (also visible on the Knowledge Panel) (23%).

The "Awards" tab on the Knowledge Panel was the most valued piece of information on the SERP for 53% of participants. However, most participants (93%) examined other parts of the SERP before making a credibility assessment for a source with the "Awards" tab. 33% participants also commented that they were more willing to trust sources that had published more recently and with greater frequency. The "Top Stories" panel was used to assess the frequency of publication and recency of articles.

Participants were interested in seeing if sources were Twitter verified, and one participant became skeptical of the *Durango Herald* because of its only three-star Facebook rating which was visible on the Facebook result's rich snippet. Two other participants mentioned the social media rating of the news sources in the rich snippet.

3.3.2 Pilot Study 2 Results. Most participants found both news sources to be credible based on their evaluation of the SERP (see Table 1). Asked about their most highly valued credibility signals, participants referenced a "gut feeling" or their intuition (41%), the site's reputation and the site's political bias (both 35%), and whether the website was secure (32%). The frequently referenced techniques for evaluating credibility included lateral reading (73%) and the social media presence of the site (26%).

For *Newsmax* specifically, participants reported that the elements of the SERP that most influenced their decision were the site's political affiliation (58%), social media (44%), presence of the KP (38%), "gut feeling" or intuition (29%), the date of establishment (21%), and the freshness, or timeliness, of the articles (15%).

For *ProPublica*, the single most referenced credibility signal was the presence of the "Awards" panel (53%), followed by presence of the KP (41%), the social media links – whether on the KP or, in the results list, or on the "Twitter" panel – (26%), the date *ProPublica* was established, also (26%), "gut feeling" or intuition (23%), and the bias of the site (18%).

Furthermore, participants also seriously considered the role of the "Searches related to" panel. Regarding *ProPublica*, one participant mentioned that they found the suggested search term "propaganda bias" worrisome, while another participant found the "what happened to NewsMax" suggested a lack of credibility.

Participants were then asked to evaluate the credibility of *ProPublica* and *Newsmax* overall.

Table 1: Credibility Assessment by Political Affiliation

Political Affiliation	Newsmax Credible	ProPublica Credible
Democrat	11 (61%)	17 (94%)
Republican	3 (75%)	4 (100%)
Other	10 (83%)	12 (100%)

A limitation of the study is that there was an unbalanced political affiliation of our 34 participants. 18 participants self-identified as Democrats, 4 as Republican, 8 as Independents, 3 as Libertarians, and 1 individual said they had no political affiliation. However, as Table 1 shows, the political affiliation hasn't significantly influenced the perceived credibility of the sites.

3.4 Discussion: Components of the Enriched SERP that Users Consider in Credibility Assessments

In both studies, participants responded that their preferred method of assessing the credibility of an article from a news source unknown to them was to use a lateral reading-like technique. In the first study, we asked "if you see a story on an unfamiliar website, how would you test how reliable it is?" and 53% of participants responded with a process that resembled lateral reading. In the second study, participants were prompted to give a methodology they used for investigating the source of an article they were sent a link to, given that the source was unknown to them. 73% said that they engaged in a process that resembled lateral reading. 50% of all respondents explicitly mentioned Google, by expressing something along the lines of "I would google its name to see if there was anything said about it".

These findings underscore the importance of understanding how readers interpret the contents of the SERP page, given the popularity of Google in the United States⁵, making it a likely choice for an individual engaging in lateral reading. Further, it is known that users put a significant amount of inherent trust in the arrangement of results on the Google SERP [9], and based on our findings it is plausible that this trust of SERP results could extend to the elements of the enriched SERP. In the following, we discuss some of the findings related to these elements.

3.4.1 Information from Wikipedia. Previous research has established that Wikipedia enhances the quality of the Google SERP [6] and the information lifted from Wikipedia increases the quality of the SERP. In the first pilot study, the Wikipedia snippet was the most cited element in the SERP (66% of users).

Participants frequently referenced *Newsmax*'s political orientation (58%). However, explicit information about the political affiliation of *Newsmax* was only available in the site description snippet for Wikipedia as a result link on the SERP, rather than on the KP itself. This is an especially large percentage considering that the information was located towards the bottom of the SERP. However, there is also implicit information about the political bias through the "People also search for" panel that lists news source with a similar political bias. In future work, we will run experiments

⁵<https://www.alexa.com/siteinfo/google.com>

to tease out the exact location on the SERP that participants use to extract the political bias of the source.

Participants in both pilot studies believed that sites that have existed for a longer period of time are more credible. Therefore, the Wikipedia information concerning the date of establishment, which was the only source on the SERP that contained information about the longevity of the site, was referenced by participants (33% and 32% for the respective studies).

3.4.2 “Searches related to” and “People also search for”. Our team hypothesized that these two panels, located on the bottom of the SERP and the KP, respectively, would be far more persuasive than what we observed. The “searches related to” feature was mentioned by 18% of participants in Pilot Study 2. *ProPublica* and *Newsmax* were specifically selected because they both displayed the “people also search for” feature. However, only 9% of users commented on this feature, and it was exclusively mentioned when assessing *Newsmax*’s credibility. This leads us to believe that there were either (1) more compelling elements of the *ProPublica* SERP or (2) the *ProPublica* “people also search for” information was not compelling. We believe that it is the former reason, and an explanation of the “Awards” tab persuasiveness will be discussed in detail in the next section.

3.4.3 “Awards” Panel. The “Awards” tab on the KP (see Figure 1) was the most persuasive element on the SERP in both pilot studies. Though the “Awards” tab was only present in the SERP for *The Tennessean* (in Pilot Study 1) and *ProPublica* (in Pilot Study 2), it dominated participants’ assessments (53% in both studies).

After the conclusion of Pilot Study 1, we were interested in understanding why some participants did not value the “Awards” panel and hypothesized that it was possible that they were unfamiliar with the Pulitzer Prize as a signal of journalistic achievement. So, in Pilot Study 2, we asked if people were familiar with the Pulitzer Prize and its purpose. 65% of participants claimed to know the purpose of the Pulitzer Prize. 38% claimed to be familiar with the Pulitzer Prize, but did not reference the “Awards” panel in their evaluation of *ProPublica*’s credibility. Conversely, of those who could not recall the specifics of the Pulitzer Prize, 38% referenced the “Awards” panel. Therefore, we still do not have a clear answer to why the “Awards” panel is not relevant for more people.

3.4.4 Social Media. There has been a great deal of research regarding credibility signals in social networks [12, 14], but next to none about exploring how users evaluate the credibility of a source based on its social media profiles on the SERP. SERPs often feature real-time Twitter feeds (see Figure 1) and include a rich snippet from Facebook results.

In both pilot studies, the social media profiles visible on the SERP played an important role in the credibility assessments of the news sources. The social media feeds were used for two distinct purposes: (1) to evaluate the reputation of the source and (2) to observe the frequency and recency of social media posts on the page.

A few participants asserted *ProPublica* was credible due to its 4.8 star Facebook rating, and in the other pilot study, participants expressed concerns about *the Durango Herald*’s credibility due to its 3 star Facebook page rating. Similarly, *Newsmax* was frequently cited as seeming more credible because of its 1.2 million Facebook

likes. Twitter was used primarily to observe the frequency and freshness of online activity. Participants were also interested in whether or not the sources had verified accounts on Twitter.

26% of participants in Pilot Study 2 mentioned examining the social media pages of an unknown website as a strategy to determine its credibility.

Taken together, these results indicate that users are often looking for shortcuts. Easily discernible features like the number of likes or a star rating serve this purpose well. Unfortunately, these are also some of the most easily gamed signals of credibility, thus, the reliance on them raises concerns about web literacy and critical thinking.

4 FROM RESEARCH TO ACTION

Results of the first pilot study were augmented with a quantitative study that found that only 36% of news sources contained in USNPL⁶, displayed a KP on their SERP page [5]. These findings sparked the interest of researchers and educators in the web literacy community. In particular, Mike Caulfield of Washington State University, Vancouver, was inspired to launch the NOW (Newspapers on Wikipedia) project⁷, which lasted from 30 June - 15 December 2018 as a participation challenge, which focuses on increasing the representation of local newspapers on Wikipedia, in order to help Web users quickly establish the legitimacy of local newspapers when they are engaging in the lateral reading process. We know that much of the information in the KPs for newspapers is sourced directly from Wikipedia (or its related project, Wikidata) and that readers rely heavily on this information. By ensuring that legitimate newspapers have KPs, which typically require a Wikipedia entry, we can make it easier for Web users to make initial steps to differentiate a trustworthy source from a suspicious source.

The goal of the project is to create 1,000 new or overhauled Wikipedia pages for local newspapers. There is a massive need; of 2,835 pages for newspapers found to have a “Top Stories” panel in their Google SERP, 1,307 did not have a KP [5], indicating that Google’s algorithms know the website publishes news, but cannot find a corresponding Wikipedia article to display. For example, *The Wellesley Townsman*, a local newspaper serving Wellesley, MA has been around for 106 years, but had no Wikipedia page before the NOW project.

This project has several important anticipated effects, all of which help lateral readers quickly make a first step in the process of assessing the credibility of a news source:

4.1 Stopping the Wikipedia “Death Spiral”

As documented in [6], the Google SERP siphons views from Wikipedia by providing content for a given Wikipedia page on the KP directly, creating a potential “death spiral” for Wikipedia, as many users are encouraged to become editors by visiting the original Wikipedia page for a given topic. The NOW project does encourage the creation of Wikipedia pages to fuel the KPs, however it does so by encouraging individuals to become long-term Wikipedia editors.

⁶<http://www.usnpl.com/>

⁷<https://www.poynter.org/news/digital-literacy-project-sets-ambitious-goal-wikipedia-pages-1000-local-newspapers>

Anecdotally, a participant in our recent Wikipedia edit-a-thon expressed how much she enjoyed editing a page and how it sparked an interest in becoming a more frequent Wikipedia editor. We hope to conduct further research to see if NOW contributors become long-term editors, or *Wikipedians* [10], who will continue to help provide evidence for credible news sources.

4.2 Preserving Journalistic History

In the current political climate, many media outlets are under attack, particularly by President Trump, who, for example, wrote: "There is great anger in our Country caused in part by inaccurate, and even fraudulent, reporting of the news. The Fake News Media, the true Enemy of the People, must stop the open & obvious hostility & report the news accurately & fairly"⁸ posted on Twitter on October, 29th, 2018. It is important, thus, to record the history of newspapers, past and present, in order to preserve their work and their contributions and assert their history of authentic, truthful news and continuous service to society.

4.3 Improving Wikipedia as an AI Source

Wikipedia entries are commonly used in a number of artificial intelligence services, including many virtual personal assistants, such as Apple's *Siri* and Amazon's *Alexa*⁹, due to the vast knowledge base and public domain license. Another way to engage in lateral reading, that some individuals may prefer to reading the Google SERP, is to ask a virtual assistant and if this assistant uses Wikipedia, clearly having accurate information helps to differentiate between credible and unreliable news sources.

4.4 Alleviating Wikipedia's Editor Gender Imbalance

The NOW project operates through outreach, including edit-a-thons. We have already organized two for the Wellesley College¹⁰ community. As Wellesley is a women's college, the focus of our outreach is female and gender non-binary identifying students since both groups are underrepresented in the Wikipedia editor population. As 2011 study established, that 87% of editors self-identify as male [2]. Unfortunately, in 2018, this imbalance hasn't changed. The number in 2018 is 90%¹¹ male. Wikipedia's gender gap has resulted in a gender-oriented disparity in the content of Wikipedia articles [4]. Finding various entry points (such as interest in journalism) to encourage participation in Wikipedia is a worthy pursuit that can start addressing this imbalance.

5 CONCLUSIONS AND FUTURE WORK

Our two pilot studies (with 30 and 34 participants respectively) indicate that many web users engage in lateral reading activities to establish the credibility of unfamiliar news sources. This lateral reading is performed with the help of Google. Previous studies have established the inherent trust users place in the arrangement of results on a Google SERP[9], so larger studies are necessary to

observe a statistically significant effect of the role of the enriched Google SERP on a user's credibility assessment of news sources.

Additionally, users accord a great deal of value to the panels on an enriched SERP. 66% of participants in the first study referenced the Wikipedia snippet in the body of the KP, while in the second study 53% mentioned the "Awards" panel for *ProPublica* and 58% discussed what they felt to be *Newsmax*'s potential political bias (which could be in reference to either a political leaning inferred from the suggested similar news sources "People also search for" panel or explicitly stated information in the Wikipedia organic search result.)

In future work, we plan to continue to explore the role of Wikipedia in users' credibility assessments for unknown news sources. We also plan to explore the effect of the Newspapers on Wikipedia project, and understand how having thorough, high quality Wikipedia information for local newspapers helps users further assess credibility as well as build trust and appreciation for the value of local journalism.

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⁸<https://twitter.com/realDonaldTrump/status/1056879122348195841>

⁹<https://techcrunch.com/2018/03/24/are-corporations-that-use-wikipedia-giving-back/>

¹⁰<https://www.wellesley.edu/news/2018/stories/node/161316>

¹¹https://en.wikipedia.org/wiki/Gender_bias_on_Wikipedia