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The News and Social Media Algorithms: An Evaluation of Serendipity in the Infosphere

An Honors Thesis submitted in partial fulfillment of the requirements of Honors Studies in
Journalism.

By:
Elizabeth Marie Petrie

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Journalism Advertising–Public Relations
J. William Fulbright College of Arts and Sciences
The University of Arkansas

Kara J. Gould, Ph.D., Assistant Professor
School of Journalism and Strategic Media
University of Arkansas
kgould@uark.edu

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ABSTRACT

This study investigates consumer responses to a theoretical solution to many of the problems facing today's infospheres, including but not limited to echo chamber behaviors, misinformation, and polarization. The solution, conceptualized as the "Architecture of Serendipity," proposes that media platforms tweak their existing algorithms to introduce a threshold of "serendipity," or random and varied content in order to diminish the effects caused by the over-personalization of today's most relevant information systems (Sunstein, 2017). While there is a belief among certain academics that the architecture can prove to be incredibly impactful at diminishing these negative consequences, there is no commentary on how today's consumers would respond to the shift (Reviglio, 2019). Utilizing survey data gathered at a public university, this study concludes that most users would accept more serendipity within their infospheres, and some would even prefer it. These consumer aspirations are relevant as some begin to look to government agencies and media corporations to find solutions to stabilize today's infospheres to reduce polarization and aid in mass informedness.

INTRODUCTION

Technological advances have created severe distrust of the media as individuals find themselves more divided and confused than ever (Baum & Groeling, 2018). While social media allows for much-needed “imitations” in order for users to access information beyond their individual experiences, the space has become more disorienting than informational (Lippmann, 1922; Prior, 2013). These sites have begun to incorporate complex data-collecting algorithms to learn what their readers want to engage with (Lee et al., 2018). This knowledge provides tech and media companies with significant financial profit (Keetaru, 2018). This data is then used to generate personalized advertisements, news stories and information in order for these companies to derive maximum profit by having users stay “engaged” on their platforms (Sang, 2017).

This development has constructed today's infospheres into what is aptly described by American legal scholar Cass Sunstein as the “Daily Me” – personalized digital newspapers where consumers only receive pleasing content with little to no regard for widespread newsworthiness, social importance and in some instances validity (Sunstein, 2017). These platforms serve as breeding grounds for “fake news,” a popularized term defined as information shared that is either inaccurate or misleading with the intent to confuse or deceive (Alcott & Gentzkow, 2017). Increased polarization and the growth of echo chambers have coincided with the growth of personalized information systems, as people revert to these customized sources in lieu of traditional, fact-based journalism (Sunstein, 2017). With over half of the United States population reporting social media as a main news source, “Daily Me” generated behaviors are not small in scope, nor are they irrelevant to American democracy as a whole (Sunstein, 2017).

Declines in public trust in United States institutions have been widespread and well-documented, and journalism being no exception (Vincet, Rousseau, Schwitzer, 2019). Many consumers tie the increase in polarization and fake news to the modern journalist for their inaccurate or poor reportage (Hargreaves, 2003). This criticism is unwarranted, however. A recent study suggests that journalists understand social media algorithms used on Facebook, Instagram and Twitter as filters that decide whether or not audiences see their content based on a variety of factors (Peterson-Salahuddin, Diakopoulos, 2020). The cited factors include previous engagement, engagement-ability of the content, publisher size, payment and political ideology. From the view of the journalist, algorithmic factors bar the public from accessing the objective content that traditional journalism stipulates (Peterson-Salahuddin, Diakopoulos, 2020). All participating journalists in the study noted feeling that they needed to use different strategies to get around these algorithms, including changing “how they frame their stories, tweaking headlines to be more engaging to readers, and being deliberate about the photos and videos they posted alongside their stories,” in order to compete with algorithm-favored content (Peterson-Salahuddin, Diakopoulos, 2020).

There are possible solutions to this problem being circulated in academic circles that show promise. One such solution is conceptualized as the “architecture of serendipity,” an algorithmic tweak that would require a benchmark-level of spontaneity in the types of content and sources delivered to media users (Sunstein, 2017). By establishing a threshold of serendipity into current algorithms, it is possible to see a decrease in the polarization caused by the “Daily Me,” and perhaps more trust in the media as a whole.

A study conducted in 2019 from the University of Bologna revealed promise to this solution. Tenured researchers at the university analyzed a substantial amount of emerging

literature surrounding serendipity in human-computer interactions and concluded that “serendipity can be conceived as an emerging design and ethical principle to strengthen media pluralism,” and consequently combat echo chamber behaviors (Reviglio, 2019). While academics may be convinced of the viability of this solution, it has not yet been discerned how consumers in real-life settings would feel about this tweak to their algorithms. Without consumer approval, or at the very least indifference to this change, it is unlikely media companies will consider altering their algorithms and risk losing consumers and eventually profits.

The purpose of this study is to investigate whether the architecture of serendipity is a palatable algorithmic alteration in the eyes of consumers by asking survey questions regarding respondent media usage, preferences, perceived informedness, perceptions of journalists, as well as current and ideal serendipity in their informational spheres. Advertising and public relations specialists are uniquely positioned to act as intermediaries between consumers and technology companies with which they work closely. If consumers desire more serendipitous feeds, it is the job of advisers and public relations specialists to respond to consumer desires and encourage technology companies to do the same. If consumers are not yet solidified in their position on serendipity within their infospheres, advertising and public relations specialists must properly market and share the concept to both technology companies and consumers to aid the cited epidemic of infosphere isolation and media distrust.

LITERATURE REVIEW

A Need for Accurate “Imitations”:

Certain scholars argue that the genesis of modern media stems from the ideology of Walter Lippmann (Wein, 2017). Lippmann, in his most-notable work, *Public Opinion*, explains how our world is extremely large and growing rapidly as time and technology advances

(Lippmann, 1922). Lippmann notes that people will be inherently limited on what they can observe and understand with their own eyes. Therefore, in order for society to sufficiently understand the entirety of the world around them, it is necessary to support, produce and consume “imitations” (Lippmann, 1922). These “imitations” can be defined as accurate, reliable journalism and media. Lippmann argues these imitations are pillars of American society and democracy, and act as a way to suppress the creation of “pseudo-environments,” spaces where what is conceived internally contradicts reality (Lippmann, 1922). These pillars set by Lippmann have guided modern journalistic standards – to be truthful, accurate, and to do no harm – and thus aid the general public (Wein, 2017).

Modern scholars concur with Lippmann’s notions, noting that “much of our social reality today – much of the meaning in our lives that we experience – is generated through mass-media content,” seen on social media sites like Facebook, TikTok, Twitter and Instagram (Kende et al., 2015). This type of content and the way it is presented has large ramifications, simply because “media messages and images that we view and absorb tend to create, maintain, and transform our social reality,” and actively “cultivate our images of and beliefs about the real world” (Calvert, 2004). With these ramifications in mind, scholars and journalists alike agree that the need for credible and accurate media is critical.

However, in recent years the infosphere has become more disorienting than informative, a worrisome development that is widely acknowledged (Prior, 2013; Choi & Lee, 2021). Social media sites began developing complex data-collecting algorithms to monitor what information their readers were most drawn to in order to learn what kind of information is most popular (Lee et al., 2018). Soon thereafter, these sites recognized the possibility to monetize this information in order to keep users engaged on their platform (Lee et al., 2018). The data collected is used to

generate personalized advertisements, news stories and additional content for users so companies may derive maximum profit by having users stay engaged on their platform (Sang, 2017). Today, this practice is widespread as social media sites have been able to acquire significant financial gains through its utilization, leading to the creation of personalized information systems (Keetaru, 2018).

Problems with Personalized Information Systems:

As the monetization of the infosphere has progressed, scholars have become increasingly concerned about how individuals receive and interpret their information. Among the highest of their concerns are the developments of the “Daily Me,” creation of “echo chambers,” and the proliferation of “fake news” among social media sites (Sunstein 2017; Alcott & Gentzkow, 2017). The “Daily Me” is the progression of social media sites into personalized newspapers, where consumers who access these platforms receive personalized content generated by the site’s engagement-driven algorithm (Sunstein, 2017). This information is selected individually for each reader with hopes of eliciting maximum user-satisfaction, disregarding general newsworthiness, objectivity or social importance (Sunstein, 2017). The development of the “Daily Me” strongly juxtaposes the genesis of mass media dictated by Lippmann and the goals that traditional journalism aspires to meet – open, accurate and objective information (Wein, 2017).

Paired with the “Daily Me” is the development of echo chambers within the infosphere, specifically among social media sites. Online echo chambers are created when users encounter “only beliefs or opinions that coincide with their own, so that their existing views are reinforced and alternative ideas are not considered” (Oxford, 2021). These environments create a breeding ground for echo chambers, as platforms look to please their consumers as much as possible to create loyal, consistent customers which in turn generate consistent financial profit (Sunstein,

2017). While members of these individual echo chambers grow closer to one another ideologically, they grow further apart from other members of their society who fall into different chambers, leading to mass polarization (Geschke et al., 2018). A 2018 study utilizing virtual simulations discovered that as users become more entrenched and trusting in their informational sources, “polarization of society into even more distinct and less interconnected echo chambers” occurred, even when users were not consciously seeking to polarize themselves (Geschke et al., 2018).

The problems created from the “Daily Me” and echo chambers become exacerbated when social media sites serve each echo chamber false, yet user-satisfy content (Sunstein, 2018). This information, popularly branded as “Fake News” is often created with the intent to confuse or deceive readers (Alcott & Gentzkow, 2017). Fake news is increasingly seen and transmitted within these sites in spite of their inaccuracies – usually because they are highly emotional in content or they satiate user desires for confirmatory news which reinforces preexisting beliefs (Sunstein, 2018). Despite their efforts, which have been limited in scale, media platforms have been unable to successfully contain the transmission of fake news with a recent survey citing over half of Americans believing they encounter fake news online regularly (Watson, 2019). This research suggests the public views journalists with low credibility. These developments paired with one another create a dangerous hotbed for miscommunication, misunderstanding and severe polarization as people incorrectly believe themselves to be objectively well-informed (Prior, 2013). To aid the spread of accurate and objective information, it has been proposed for the infosphere to initiate and propagate feeds that are less personalized and more objective (Benkelman, 2019).

H1: Today’s media users perceive themselves as objectively well-informed.

The Impact of Personalized Information Systems on Journalism:

With a significant percentage of the American public aware of their frequent interactions with fake news, many consequently report feeling confused and distrustful of all media (Baum & Groeling, 2018). Many users tie the perceived increase in polarization and fake news to the modern journalist's inaccurate or poor reportage. Around 35 percent of Republicans and 18 percent of Independents perceived the media to be an enemy of the American people (Watson, 2019). This suggests that the public views journalists with low credibility.

This animosity and distrust is unwarranted, however. Journalists are generally aware of the mechanisms functioning within infospheres, specifically the algorithms employed by popular media platforms that prioritize consumer engagement above all (Peterson-Salahuddin, Diakopoulos, 2020). These journalists note that the accuracy and honesty of their reporting was not an algorithmic consideration – rather, previous engagement, engagement-ability of content, publisher size, payment and political ideology were the main factors algorithms considered when generating a news feed for its user (Peterson-Salahuddin, Diakopoulos, 2020). Even if the journalist follows the ethical principles that demand honest and accurate reporting, these algorithms act as roadblocks, disallowing quality reporting to be accessed, displayed and shared quickly and easily. Instead, it prioritizes polarizing, user-satisfying content; essentially rewarding poor journalism while punishing quality journalism.

H2: People do not perceive journalists as very credible.

Serendipity in the infosphere:

While the problems elicited from the use of these algorithms are significant and wide-spread, there are solutions to quell the problem at hand. These solutions, while preliminary in their development, show promise in their ideation. One such solution is conceptualized as the architecture of serendipity (Sunstein, 2017). This solution entails an algorithmic tweak that would generate a certain benchmark-level of spontaneity, or randomness in the content and sources users are exposed to in the infosphere (Sunstein, 2017). Additionally, an “AI Watchdog” could be established to ensure these platforms are incorporating a required threshold of serendipity into their algorithm, “investigate discriminatory AI decisions,” and create real-life consequences for unethical algorithmic practices (Sang, 2017). Whether the watchdog be a government or independent agency is still undecided. However, the goal remains the same: if platforms are required to expose their user to more diverse information, opinions and ideologies, it is possible to begin chipping away at the informational barriers created by modern echo chamber and daily me environments (Sunstein, 2017).

A recent study uncovered promising results whilst examining this solution, finding that “the pursuit for serendipity can help burst filter bubbles and weaken echo chambers” in media platforms (Reviglio, 2019). By conceiving serendipity as both an emerging design and ethical principle, there is potential to strengthen “media pluralism” in the context of online personalization (Reviglio, 2019). While this proposed solution has the potential to address the technical problems created by personalized information systems, it fails to show how consumers and current media users would feel about heightened regulation of their infospheres. The aim of this study is to determine if users would be in favor of an architecture of serendipity on the algorithms guiding their infospheres and see more serendipitous content. If there is a consumer demand for such a tweak, large media platforms may be more inclined to adopt the architecture

with aspirations of pleasing their consumers and ultimately maintaining their financial gains.

RQ1: Do people want more serendipitous news feeds on social media sites and within their infosphere?

METHODOLOGY

Sample

To acknowledge the previously stated hypotheses and research questions, a web survey was drawn from a sample of 159 students and faculty at a public university whose population is relatively diverse in gender, ethnicity, race and current legal residency (University of Arkansas Office of Institutional Research and Assessment, 2021). Respondents volunteered to participate via a link to an anonymous online survey utilizing the University of Arkansas Qualtrics survey website. The link was distributed by faculty to students via email, in RSO student group chats, and via social media accounts, specifically Twitter, Instagram, and Facebook. Respondents were first made aware of the length of the survey, the purpose behind the research, and the estimated time it would take to complete. They were also notified their participation was voluntary, their responses would be recorded, yet would remain private.

Finally, respondents were made aware of their rights as survey takers and provided points of contact to the principal researcher, the advising thesis director, and the coordinator from the University of Arkansas Institutional Review Board for questions or comments. Before continuing, respondents were required to provide their consent by selecting a box titled “I understand.” Then, all participating respondents were asked a series of questions regarding their demographics, political leanings, media preferences and usage and how serendipitous they believe their feeds currently are. They were also asked how well-informed they believed

themselves to be, their perception of journalists, if they have experienced serendipity in their media feeds before, and if they would prefer more serendipity in their feeds.

Measures

Perception of Journalists. To gauge respondents' opinions of contemporary journalists, participants were asked to give their perceived credibility of the average journalist. Four levels were listed: (a) *very credible*, (b) *somewhat credible*, (c) *not credible* or (d) *cannot decide* (Shariff et al., 2017).

Source of Information. To understand where respondents are primarily receiving their information from, participants were asked “What source do you use to find information and/or consume the news?” with six available responses: (a) *Television*, (b) *Radio*, (c) *Newspapers / print media (hard copies)*, (d) *Online newspapers and/or websites*, (e) *social media (Facebook, Twitter, Instagram, TikTok, etc.)*, and (f) *Other _____*, with option (f) accompanied by an optional text entry box.

Informedness. To deduce how well-informed respondents perceive themselves to be, respondents were asked “How well-informed do you consider yourself to be?” on a four-point likert scale, (0 = *Not well informed*; 1 = *Below average*; 2 = *Moderately well*; 3 = *Very well*; 4 = *Extremely well*) (Angelucci, 2020).

Perceived News Feed Serendipity. Three elements were displayed to capture perceived serendipity of content on respondents' preferred media sources. Respondents were asked to rate how much serendipity, or variety, exists on their news feed. The question read, “What level of random or varied content / sources do you see on your preferred news media feed?” and could

select (1) *Sources and content show no variety*; (2) *Sources and content are somewhat varied*; (3) *Sources and content are highly varied*. Participants selected one of these three responses on a 3-point likert scale.

Instances and Increase of Serendipity. Respondents were next asked how they prefer their media feeds to look. Respondents were prompted with, “How much variety in sources / content would you prefer to see on your preferred media feed?” with three response options: (1) *No additional variety*, (2) *Somewhat more variety*, (3) *Significantly more variety*. In order to gauge past and preferred instances of serendipity within respondent infospheres, two questions were asked. The first read “Serendipity is defined as ‘the occurrence and development of events by chance in a happy or beneficial way.’ Have you ever experienced serendipity while viewing content on the preferred media feed?” with three available responses (1) *Yes*, (2) *No*, (3) *Cannot decide*. The final question provided the same definition of serendipity, and then asked “Would you prefer to experience instances of serendipity while viewing content on your preferred media feed?” with three available responses reading (1) *No, never*; (2) *Maybe occasionally*, and (3) *Yes, much more frequently*. These responses were recorded to show the average level of serendipity the typical news consumer wants to experience in their infosphere.

RESULTS

The total sample population for this research included 159 individuals. The ages of these individuals leaned towards the lower end of the scale, with 120 reported to be between 18 to 25 years old, 11 reported to be between 25 and 34, eight of which reported to be between 35 and 44, five being 45-54 with 15 being over the age of 55. An overwhelming majority of respondents identified as female, with 133 reported female as their preferred gender, 24 male, and three specifying non-binary or third gender. Ethnicity was skewed as well, with 139 respondents

reporting to be White or Caasian, seven reporting to be Latinx or Hispanic, three reporting to be Asian, three reporting to be Black, one Native Hawaiian or Pacific Islander, none citing Native American, three reporting two or more of those previously listed, and one citing an unknown or other ethnicity. Additionally, two respondents opted not to specify.

When asked to specify where their home is located, respondents provided a wide range of geographical areas. Considering the University of Arkansas is a highly ranked public research institution, the diversity of geographic background was to be expected. Thirty-three reported to be from the state of Arkansas, 22 from Missouri, 24 from Texas, 44 from Kansas, seven from California, one from Virginia, two from Colorado, two from Oklahoma, one from New York, two from Hawaii, two from Mississippi, two from Louisiana and nine from Tennessee. Seven respondents declined to answer (Figure 1).

Q4 –Where is your home located?

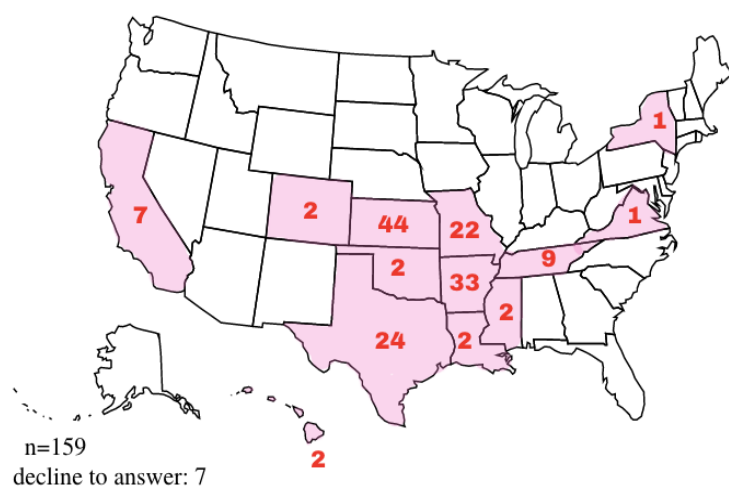


Figure 1: State of origin of all survey respondents.

Level of education completed or intending to complete varied among respondents, with 21 citing High School, 75 citing a Bachelor's degree, 42 citing a Master's degree, and 20 citing a Ph.D or higher as their highest level of current or future education. Meanwhile, one selected Trade school and none selected some High School.

Marital status among this population greatly leaned toward single individuals, with 125 reporting to be single, 30 reporting to be married, two reported to be divorced, and two reported to be separated. When asked if they consider themselves to have a disability, most respondents

cited no. Only nine selected yes, while 149 selected no and one preferred not to respond. Almost all are registered voters, with only 10 out of the total 159 reporting they are not registered, with three reporting they do not know.

The employment status of the population also varied, with 38 reporting to be full-time employees, 72 as part-time, three as contract or temporary workers, 28 as unemployed, 17 indicated “other” while one preferred not to respond. Most respondents who said “other” utilized the provided text box to specify they were either “retired” or a “full-time student.” Additionally, the population was overwhelmingly English-speakers, with 158 selecting English as their primary language and one selecting spanish.

Political viewpoints among this population varied greatly. Given the aforementioned epidemic of political polarization that is exacerbated by echo chamber behaviors, the diversity of the population in this regard was significant. Of the total 159 respondents, 17 consider themselves very conservative, 32 slightly conservative, 39 neutral or neither conservative or liberal, 30 slightly liberal, 39 very liberal, and one preferred not to say (Figure 2). The spread of ideologies in the sample population mirrors the most recent estimates of the political leanings of the American public, which as of February 2022 recorded 26% as Republican, 42% as independent, and 29% as Democrats (Gallup, 2022).

Q11 - What is your political viewpoint?

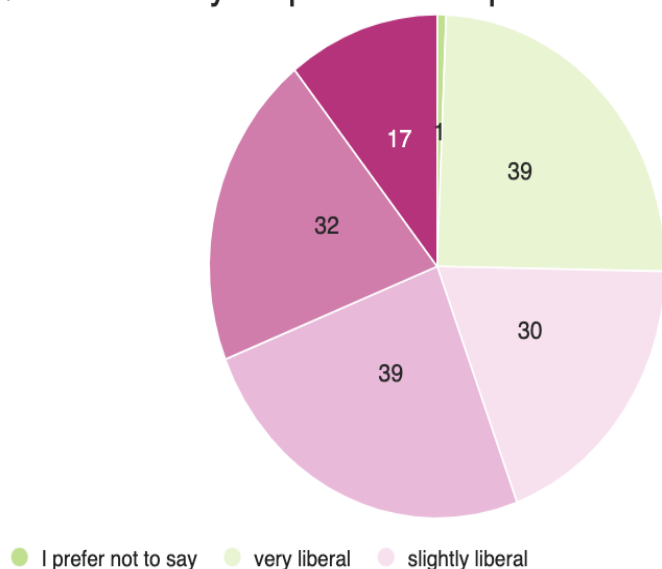


Figure 2:
Respondent political viewpoint distribution

Next, respondents were asked to rate how credible they believe the average journalist is. Most replied they thought journalists were “*somewhat credible*” with 108 responses. The second-most response was “*not credible*” with 34 total responses. Meanwhile 14 believed journalists to be “*very credible*” and three could not decide (Figure 3).

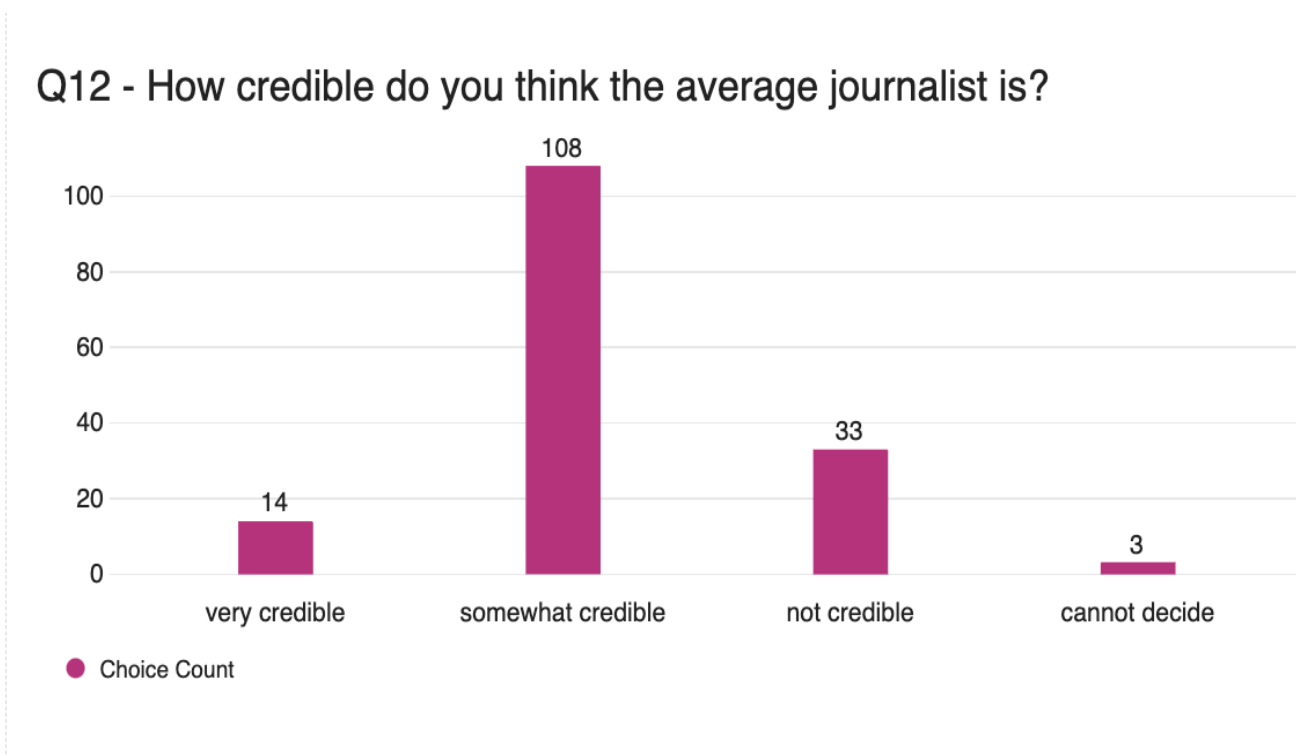


Figure 3: Respondents' perception of journalists

Additionally, a chi-squared test was administered to determine if there was a statistically valid correlation between two important factors: (1) survey respondent political ideology, and (2) perceived credibility of journalist. With a P-value calculated at 0.186, the analysis determined there was no statistically significant relationship between political viewpoint and perception of journalists (Figure 4). This is significant in that it indicates journalists' reputation is not a problem with one political party or another, but rather with the American public as a whole.

There is no statistically significant relationship between Q11: What is your political viewpoint? and Q12: How credible do you think the average journalist is?

Hide statistical test results ▾

Chi-Squared Test (Recommended)

P-Value	0.186
Effect Size (Cramér's V)	0.204
Sample Size	157

Chi-Squared Results ⓘ

Chi Square	19.7
Degrees of Freedom	15

Q12: How credible do you think the average journalist is? ↕

Q11: What...viewpoint? ↕	very credible ↕	somewhat credible ↕	not credible ↕	cannot decide ↕	To
very conservative ↕	7.1%	8.4%	21.2%	0.0%	
slightly conservative ↕	14.3%	24.3%	9.1%	33.3%	
neutral / neither conservati... ↕	7.1%	25.2%	30.3%	33.3%	
slightly liberal ↕	14.3%	17.8%	24.2%	33.3%	
very liberal ↕	57.1%	23.4%	15.2%	0.0%	
I prefer not to say ↕	0.0%	0.9%	0.0%	0.0%	
Total ↕	100.0%	100.0%	100.0%	100.0%	

Figure 4: Chi-squared statistical test of correlation results between Q11 (political viewpoint) and Q12 (journalist credibility).

Respondents were then asked “How well informed do you consider yourself to be” on a likert scale ranging from 0.0, reflecting “not well informed,” and 4.0 reflecting “extremely well”. The mean response gathered was a value of 2.23, which correlated slightly above “moderately well”. The maximum value collected was 4.0 while the minimum collected was 1.0. The standard deviation of these values fell at 0.66, with a variance of 0.43. Two respondents could not decide (Figure 5).

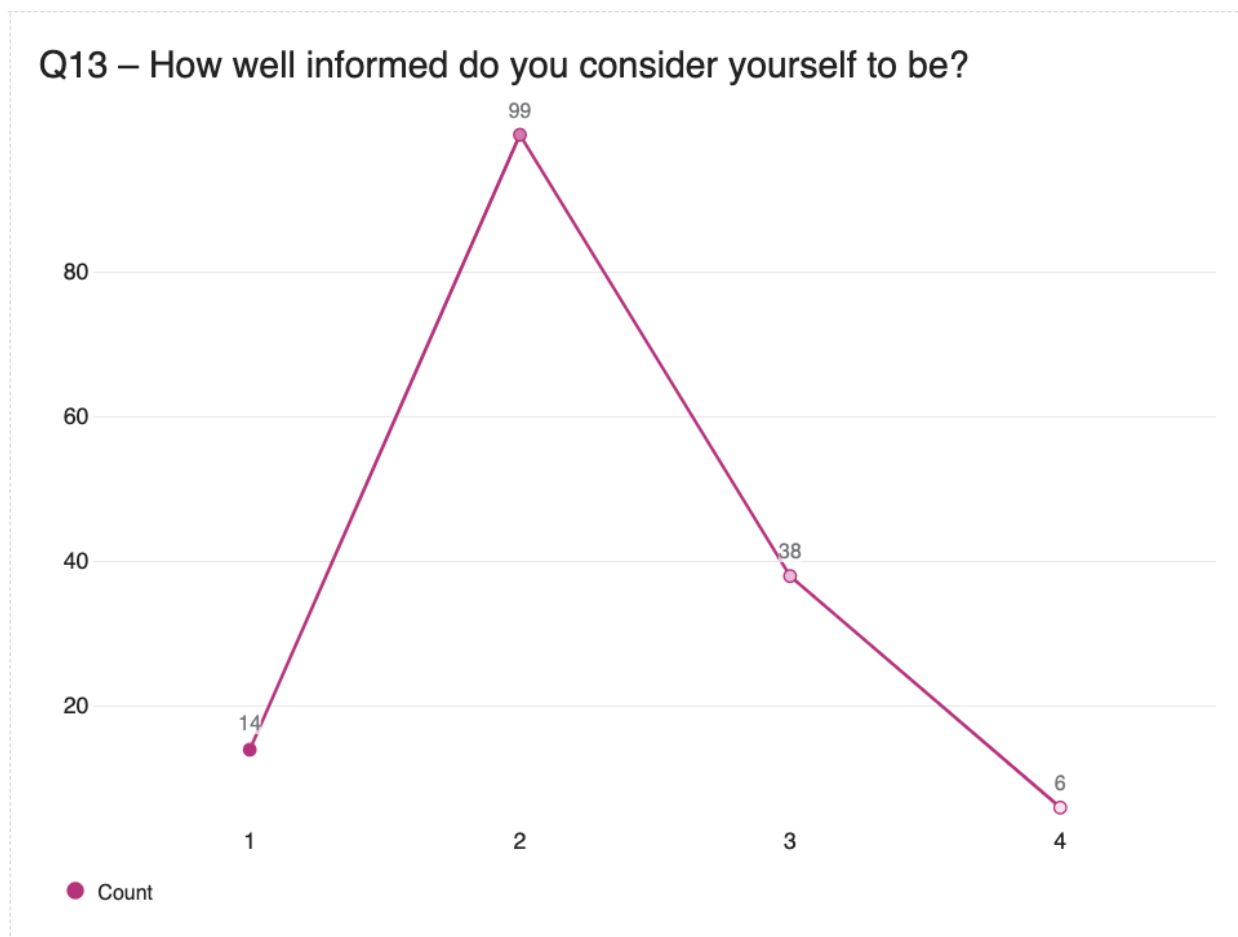


Figure 5: Respondents self-informedness rankings.

When asked what source they use to find information and consume the news, respondents cited leaning heavily on online newspapers, social media (Facebook, Twitter, Instagram, TikTok, etc.) and television. Most claimed to utilize online newspapers and websites, with a total of 58 individuals selecting this option, with 53 selecting social media (Facebook, Twitter, TikTok, etc.), and 24 selecting television. Comparatively, only four said they utilized newspapers or print media (hard copies), one cited radio, and four selected “*other*.” Of those that chose “*other*”, they cited podcasts in the provided text box (Figure 6).

Q14 - What source do you use to find information and/or consume the news? - Selected Choice

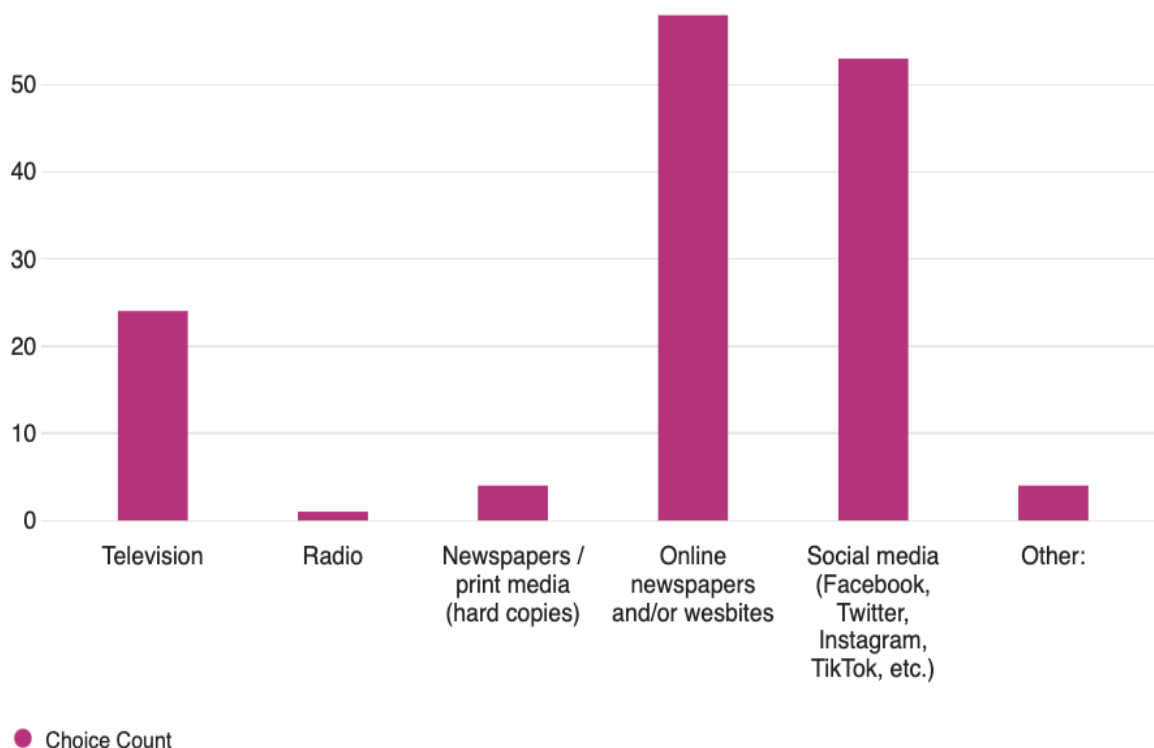


Figure 6: Respondents' preferred infosphere.

Respondents were next asked “What level of random or varied content and sources do you see on your preferred news media feed?” and given a sliding-scale between $0 = \text{sources and content show no variety}$ to $3 = \text{sources and content are highly varied}$. The mean figure collected was approximately 2.14, with a minimum collected value of 1.00 and a maximum of 3.00. The standard deviation amongst these responses was calculated to be 0.45 and a variance value of 0.20.

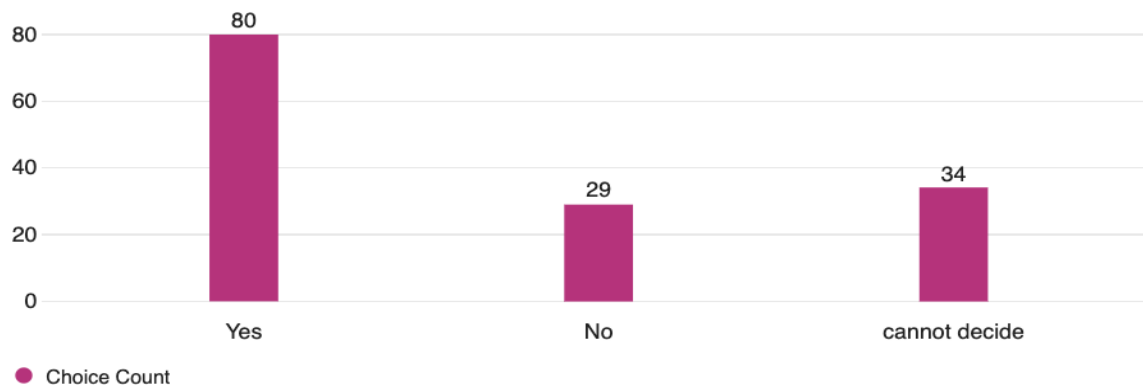
Immediately following, respondents were asked how much variety in sources and content they would prefer to see on their preferred media feed. “Somewhat more variety” gathered the

most responses, with a total of 87 participants choosing this option. Thirty-six opted for “significantly more variety” while 21 said “no additional variety” and 15 could not decide.

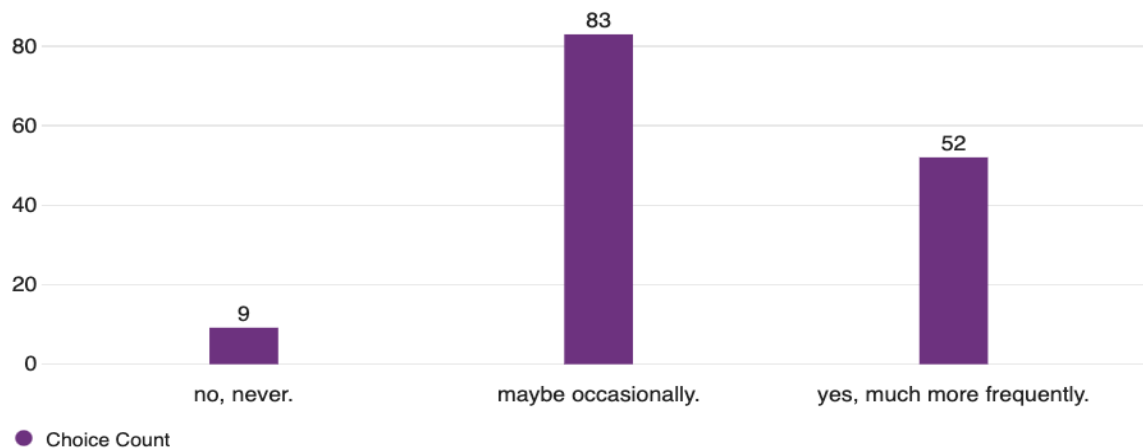
Lastly, respondents were asked two questions about the concept of serendipity within their infospheres. First, respondents were provided the definition of the word “Serendipity”, which read “Serendipity is defined as ‘The occurrence and development of events by chance in a happy or beneficial way.’” Then they were asked “Have you ever experienced serendipity while viewing content on your preferred media feed?”. Eighty replied yes, they have had a serendipitous experience within their infosphere. Twenty-nine cited they had not, and 34 said they could not decide (Figure 7). Immediately after this question, respondents were again provided the definition of serendipity, and asked “Would you prefer to experience instances of serendipity while viewing content on your preferred media feed?” Respondents overwhelmingly replied with two of the three responses – 83 selected “maybe occasionally” whilst 52 selected “yes, much more frequently.” Of the total 159 responses, nine replied “no, never” and 15 declined to respond (Figure 8).

To further explore how political viewpoint interplays with these preferences, a second chi-squared analysis was conducted to determine if there was a statically significant relationship between respondents’ political leanings and their preference towards or against serendipity in their infospheres. With a P-value of 0.0609, the analysis determined there was no statistical relationship between political viewpoint and if a respondent preferred serendipity within their infospheres (Figure 9). These results indicate that the architecture would not serve nor displease any single group of individuals and their politically-similar users; rather, these results indicate that users across political aisles find at least an intermediate level of comfort with increased serendipity within their infospheres.

Q17 - Serendipity is defined as "the occurrence and development of events by chance in a happy or beneficial way." Have you ever experienced serendipity while viewing content on your preferred media feed?



Q18 - Serendipity is defined as "the occurrence and development of events by chance in a happy or beneficial way." Would you prefer to experience instances of serendipity while viewing content on your preferred media feed?



Figures 7 & Figure 8: Respondents' reported prior experiences of infosphere serendipity & respondents' infosphere serendipity preferences.

There is no statistically significant relationship between Q11: What is your political viewpoint? and Q18: Serendipity is defined as "the occurrence...e viewing content on your preferred media feed?"

Hide statistical test results ▾

Chi-Squared Test (Recommended)

P-Value	0.0609
Effect Size (Cramér's V)	0.248
Sample Size	144

Chi-Squared Results

Chi Square	17.7
Degrees of Freedom	10

Q18: Serendipity is defined as "th...tent on your preferred media feed?"

Q11: What...viewpoint?	no, never.	maybe occasionally.	yes, much more frequently.	Total
very conservative	0.0%	14.5%	9.6%	
slightly conservative	11.1%	16.9%	26.9%	
neutral / neither conservati...	33.3%	21.7%	30.8%	
slightly liberal	0.0%	19.3%	21.2%	
very liberal	55.6%	27.7%	9.6%	
I prefer not to say	0.0%	0.0%	1.9%	
Total	100.0%	100.0%	100.0%	

Figure 9: Chi-squared statistical test of correlation results between Q11 (political viewpoint) and Q18 (preferred instances of serendipity within preferred infosphere).

DISCUSSION

The aim of the survey was to gauge media user attitudes and prior experience with serendipity within their infospheres and answer the aforementioned hypothesis and research questions.

H1: Today's media users perceive themselves as objectively well-informed.

Results from the Qualtrics survey indicate that an overwhelming majority of media users surveyed (91.08%) consider themselves to be “moderately well,” “very well,” or “extremely well” informed. Only 14 responded they believed themselves to be at a level 1, which correlated to an informedness level of “below average.” These results echo the idea that media users feel their preferred media platforms keep them moderately well-informed, even considering most platforms operate utilizing personalized algorithms curated for the individual at hand (Swart, 2021). While our respondents agreed that they believed themselves to be well-informed, the Pew Research Center reports that “Americans who rely primarily on social media for news – which describes about 18% of adults in the U.S – tend to know less about the 2020 election, less about the coronavirus pandemic, and less about political news in general” than individuals that utilize traditional print media or a variety of sources (Pew, 2020).

This knowledge paired with the previously discussed literature supports the conclusion that it is likely the respondents, who rely heavily on social media and online websites as their sources of information, are less informed than they believe. The disconnect between perceived and concrete informedness is likely due to the influence of personalized algorithms generating information based on the likelihood of user-satisfaction and less on general newsworthiness or validity.

H2: People do not perceive journalists as very credible.

In answering the next hypothesis proposed in this study, survey respondents were asked to provide their perception of the average journalist. While the literature points to the idea people have poor perceptions of journalists, our population expressed a more intermediate position. Majority of respondents (68.35%) believe journalists to be “somewhat credible.” The second-most popular ranking among our population, however, remained in line with the previously cited literature – “not credible” gathered 20% of the responses. Meanwhile, only 8% of respondents valued the average journalist as “very credible.”

A likely cause for the slightly higher than expected perception of journalists was due to the population sample used for this experiment. The survey link was shared across campus, however, it was also shared by two prominent professors within the University of Arkansas School of Journalism and Strategic Media to their journalism students. It is likely these faculty and their students harbor slightly more positive, trusting opinions towards journalists and the field of journalism as a whole, and respond accordingly. Even with this factor at play, respondents still overwhelmingly selected the intermediate choice in credibility. Given the social, democratic, and epistemic responsibility the modern journalist holds, an intermediate level of credibility feels inadequate. If the respondents perceived journalists as public servants, disseminators of the truth and facts, they would have likely ranked journalists higher. This reinforces the concepts cited in previous literature that trust in journalists and the media in general is lower than it should be.

RQ1: Do people want more serendipitous news feeds on social media sites and within their infosphere?

The average ranking the sample population provided when asked what level of variance they are currently experiencing on their media feeds fell at an intermediate value of 2.14, indicating that they believe their “sources and content are somewhat varied.” When asked if they would prefer more variety, however, most respondents felt there was room for improvement. Sixty percent cited wanting “somewhat more variety” while 25% would prefer significantly more variety. The complex issues surrounding personalized algorithms has become a more well-known topic outside of academia in the past year, primarily due to the rise of TikTok and its infamous “recommendation algorithm” (Zhang, 2021). While discussing popular videos on the app, users have found what seems popular to them is often not popular with other users. It has recently become a common-place language among its users to note their algorithms must be different. With the concept of personalized algorithms and their impact newly permeating popular culture, it is possible a social shift away from hyper-personalized media and towards media with more variety is beginning to be observed.

Slightly over half of respondents (55.95%) indicated that they have experienced an instance of serendipity while viewing content on their media feed. Haphazardly learning something that one identifies as positive or beneficial is a significant aspect behind learning in general – knowing there are things unknown that may one day spark joy is what drives human curiosity and what drives individuals to keep learning and exploring. With only half of the sample population indicating that they understand this feeling while using media proves that users need to be exposed more frequently to information simply by chance. With the other half of the population citing “no” or that they “cannot decide” if they have had this experience within their infosphere, it is clear they are experiencing content which reverberates their pre-existing beliefs, generated by an infosphere echo chamber they unlikely know they are in.

Lastly, respondents overwhelmingly indicated they are open to experiencing an increase in instances of serendipity. Fifty-seven percent claimed they would prefer to have this experience occasionally, 37% cited they would prefer these instances much more frequently, and only 6% responded they would never prefer these instances. These results indicate that establishing a benchmark level of serendipity to increase current levels of random and varied content and sources would be accepted by today's media users. While some would strongly support additional serendipity within their feed, most would currently be comfortable with an intermediate level increase.

These results have significant ramifications for technology and media companies alike – if consumers find additional serendipity within their infospheres palatable and supporting literature by tenured academics conclude this additional exposure can assuage echo chamber behaviors, it is possible the architecture of serendipity poses a partial solution to the current epidemic of misinformation and polarization. This algorithmic tweak does not appear to be opposed by current media users, thus media and technology corporations are not at risk of losing consumers and profits by initiating the architecture. While significant resources go into creating algorithms for these companies, given the potentially culture-shifting effects of the tweak, it would be a missed opportunity for it not to be implemented and tested in real markets. As technology continues to become fully integrated into everyday life, an increased moral, ethical, epistemic, and democratic responsibility falls to technology and media corporations to expose their user to more diverse information, opinions and ideologies to mold more knowledgeable, empathetic, curious citizens.

CONCLUSION

The proliferation of online infospheres has been credited with producing some of the most challenging dilemmas our generation faces today, including polarization, misinformation, social distrust and fake news. It is equally important to recognize the positive attributes of today's ever changing infospheres – they have allowed society to access more information and encounter more “imitations” than ever before (Lippmann, 1922). This privilege is lost on many, however, due to the expansion of personalized information systems which craft echo chambers, often replete with information meant merely to satisfy readers, not inform. Academics have long warned against the consequences of allowing these systems to mold how individuals obtain knowledge, but these consequences have only recently come into view of the average consumer. On January 6, 2021, a mob of right-wing conservatives stormed the United States Capitol Building seeking to overturn the election of current president Joe Biden. Armed with weapons and misinformation acquired on various extreme right-wing infospheres, the group attacked the building leaving five dead. This atrocity stands as “a signature moment in the history of the United States and a testament to the power of misinformation” (Walsh, 2021). With these ramifications in mind, it is clear solutions must be uncovered.

The aim of this study is to determine if current media users would be in favor of one proposed solution – the architecture of serendipity. This solution is conceptualized as both an emerging design and ethical principles technology and media corporations would adopt by establishing a threshold level of “serendipity” into their algorithms. That is, a benchmark of seemingly random, or varied content and sources they would be required to expose their users to in lieu of today’s hyper–personalized algorithm. Current research indicates this architecture has real potential to prove effective in breaking infosphere echo chambers, diminishing polarization

and strengthening “media pluralism” (Reviglio, 2019). However, most media and technology corporations find their user-satisfying algorithms incredibly lucrative, and are thus unwilling to adjust them despite the epistemic and social problems they reinforce. This study aims to understand what current media users think of such an architecture, with hopes of determining if it is a viable solution tech and media companies would consider adopting.

Our sample population indicates an overall even-handed attitude towards the architecture. These individuals, who voluntarily responded, come from diverse geographical areas and political ideologies. Despite these differences, the sample population generally agree they are moderately well-informed and the average journalist is only somewhat credible. Additionally, most agreed that they would prefer “somewhat more” or “significantly more” variety within their infosphere’s content and sources, and would like to experience serendipity occasionally or much more frequently while digesting information on their preferred media source. It is therefore concluded that the architecture of serendipity stands as a viable tool to combat informational barriers created by personalized information systems within today's infospheres. For the time being, consumers find the architecture palatable, and given the survey responses, are unlikely to react negatively if the change occurred within their individual platforms.

This conclusion signals that media and technology corporations alike can consider adopting such an architecture into their existing algorithms to help chip away at the substantial issues caused by hyper-personalized media, including but not limited to polarization and “Daily Me” behaviors. The historic social and political unrest seen in recent years has proven the power misinformation can yield in American democracy, and highlights the increasing moral, ethical and epistemic responsibility which lies with media and tech corporations who construct our infospheres. In coming years, broader research and ideation must arise from these corporations,

government agencies, and academics to ensure the safety and efficacy of our information systems and the American public as a whole.

LIMITATIONS:

While the survey research conducted in this study is sufficient in examining the stated hypotheses and research questions, this methodology does have both sample and nonsampling errors as potential drawbacks. Drawbacks of this method include the inability to control independent variables in respondents' environments, possible wordings confusions, low response rates, user-passivity in answering questions or an unfit respondent being incorporated into the sample. While this study's sample population was relatively limited in gender, ethnicity and age, it remains heavily diverse in political ideology and geographic background, which prove to be essential factors when uncovering preferences on how individuals acquire knowledge.

Perceived informedness is a tested factor that requires further research. Literature indicates that individuals are typically not as well informed as they believe themselves to be, meanwhile, the respondents in this survey ranked themselves as generally well-informed. This study relies on the aforementioned literature and takes the stance that self-reported informedness is likely contrary to true-informedness. A separate study could explore the discrepancy between these two factors to fully determine how different perceived and confirmed informedness is. However, that investigation is beyond the scope of this research.

Age was a factor that was expected to be skewed towards the lower end, as the survey was primarily made available to college students within a campus community. Additionally, our sample population primarily consisted of women. However, studies prove this trend is seen across most survey data, as "women are more likely to participate than men," specifically more educated and affluent women (Smith, 2009). Given that the sample was composed of volunteers

from a public university whose population contains 14,719 females opposed to 12,840 males, the trend comports with those seen in other survey data (University of Arkansas Office of Institutional Research and Assessment, 2021). Additionally, researchers debate the value behind utilizing college campus respondents in research and question the group's ability to generalize to the general population. In this study, the stance that this group does have the ability to be generalized and nonetheless is sufficient in beginning to examine these problems is supported, regardless of debates surrounding external validity.

REFERENCES

- Allcott, Hunt. Gentzkow, Matthew (2017). Social Media and Fake News in the 2016 Election. *Journal of Economic Perspectives*. Retrieved From <https://www.aeaweb.org/articles?id=10.1257/jep.31.2.211>
- Angelucci, C. (2020). *Measuring Voters' Knowledge of Political News: MIT Sloan Research Finds Variations Across Age, Gender, Race and Socioeconomic Status*. Massachusetts Institution of Technology. <https://search.proquest.com/docview/2452977004?accountid8361>.
- Baum, M. & Groeling, T. (2018). New Media and the Polarization of American Discourse. *Political Communication*, 25(4), Retrieved from <https://www.tandfonline.com/doi/pdf/10.1080/10584600802426965?needAccess=true>.
- Benkelman, Susan. (2019, Dec 11). Contending with Polarized Audiences. *American Press Institute*. <https://www.americanpressinstitute.org/publications/reports/strategy-studies/contending-with-polarized-audiences/>
- Calvert, Clay. (2005). *Voyeur Nation – Media, Privacy, and Peering in Modern Culture*. Westview Press.
- Choi, Jihyang. Lee, Jae Kook. (2021, March 24). Confusing Effects of Fake News on Clarity of Political Information in the Social Media Environment. *Journalism Practice*. <https://doi.org/10.1080/17512786.2021.1903971>
- Gallup Inc. (2022, February 17). Party Affiliation Trend since 2004. *New.Gallup.com*. <https://news.gallup.com/poll/15370/party-affiliation.aspx>

- Geschke, Daniel. Lorenz, Jan. Hotz, Peter (2018). The Triple-Filter-Bubble: Using Agent-Based Modeling to Test a Meta-Theoretical Framework for the Emergence of Filter Bubbles and Echo Chambers. *British Journal of Social Psychology*.
- Hargreaves, Ian (2003). *Journalism: Truth or Dare?* Oxford University Press.
- Keetaru, Kalev. (2018, December 15). What Does It Mean For Social Media Platforms To “Sell” Out Data? *Forbes.com*.
<https://www.forbes.com/sites/kalevleetaru/2018/12/15/what-does-it-mean-for-social-media-platforms-to-sell-our-data/?sh=2b3307e2d6c4>.
- Kende, Anna. Ujhelyi, Adrienn. Joison, Adam. Greitemeyer, Tobias. (2015, April 23). Putting the Social (Psychology) Into Social Media. *European Journal of Social Psychology*. 45 (3), 277 – 278. <https://doi.org/10.1002/ejsp.2097>
- Lee, D., Hosanagar, K., Nair, H., (2018). Advertising Content and Consumer Engagement on Social Media: Evidence from Facebook. *Management Science*. 64 (11), 5105–5131.
<https://doi.org/10.1287/mnsc.2017.2902>.
- Lippman, Walter, (1922). *Public Opinion*. New York, NY. Harcourt, Brace and Company
- Oxford Language (2021). *Echo Chambers – Defined*. Oxford University Press.
- Prior, Markus (2013). Media and Political Polarization. *Annual Review of Political Science*. 16 (101), 102-106. [10.1146/annurev-polisci-100711-135242](https://doi.org/10.1146/annurev-polisci-100711-135242)
- Peterson-Salahuddin, Chelsea. Diakopoulos, Nicholas (2020). Negotiated Autonomy: The Role Social Media Algorithms in Editorial Decision Making. *Algorithms and Journalism: Exploring (Re)Configurations*. Retrieved from
<https://www.cogitatiopress.com/mediaandcommunication/article/view/3001/0>

- Pew Research Center (November 16, 2020). *Americans Who Get News Mainly on Social Media Are Less Knowledgeable and Less Engaged*. The Pew Charitable Trusts.
<https://www.pewtrusts.org/en/trust/archive/fall-2020/americans-who-get-news-mainly-on-social-media-are-less-knowledgeable-and-less-engaged>
- Reviglio, U. (2019). Serendipity as an Emerging Design Principle of the Infosphere: Challenges and Opportunities. *Ethics in Informational Technology*, 151-166).
<https://doi.org/10.1007/s10676-018-9496-y>
- Sang Ah, Kim, (2017). Social Media Algorithms: Why you See What You See. *Georgetown Law Technology review*. Washington D.C., Retrieved from
<https://georgetownlawtechreview.org/social-media-algorithms-why-you-see-what-you-see/GLTR-12-2017/>
- Shariff, Shafiza Mohd. Zhang, Xiuzhen. Sanderson, Mark. (2017, October). *On The Credibility Perception of News on Twitter: Readers, Topics and Features*. *Computers in Human Behavior*, Vol (75), 785–796. <https://doi.org/10.1016/j.chb.2017.06.026>.
- Smith, William G. (June, 2009). *Does Gender Influence Online Survey Participation?: A Record-Linkage Analysis of University Faculty Online Survey Response Behavior*. San José State University. <https://files.eric.ed.gov/fulltext/ED501717.pdf>.
- Sunstein, Cass. (2017). *#Republic: Divided Democracy in the Age of Social Media*. Princeton University Press.
- Swart, Joëlle. (April 12, 2021). *Experiencing Algorithms: How Young People Understand, Feel About, and Engage with Algorithmic News Selection on Social Media*. University of Groningen. SageJournals.com. <https://doi.org/10.1177/20563051211008828>.

The University of Arkansas Office of Institutional Research and Assessment. (2021, January).

Enrollment Reports. <https://oir.uark.edu/students/enrollment-reports.php>

Vineet, Arora. Rousseau, David. Schwitzer, Gary (2019). Why Bolstering Trust in Journalism Could Help Strengthen Trust in Medicine. JAMA. doi:10.1001/jama.2019.0636

Walsh, Daniel Robert. (2021). *Neutral Isn't Neutral: An Analysis of Misinformation and Sentiment in the Wake of the Capitol Riots*. West Virginia University Graduate Theses, Dissertations, and Problem Reports. 8055.

https://researchrepository.wvu.edu/etd/8055/?utm_source=researchrepository.wvu.edu%2Fetd%2F8055&utm_medium=PDF&utm_campaign=PDFCoverPages

Watson, Amy. (2019, Oct 23). Frequency of Online New Sources Reporting Fake News U.S. 2018. *Monmouth University*.

Wein, Charlotte (2005, Feb 14). Defining Objectivity within Journalism – An Overview. *Nordicom Review*, 26(2), 3-15. doi: <https://doi.org/10.1515/nor-2017-0255>.

Zhang, Min. (December 22, 2021). *A Commentary of TikTok Recommendation Algorithms in MIT Technology Review 2021*. MIT Technology Review.

<https://doi.org/10.1016/j.fmre.2021.11.015>

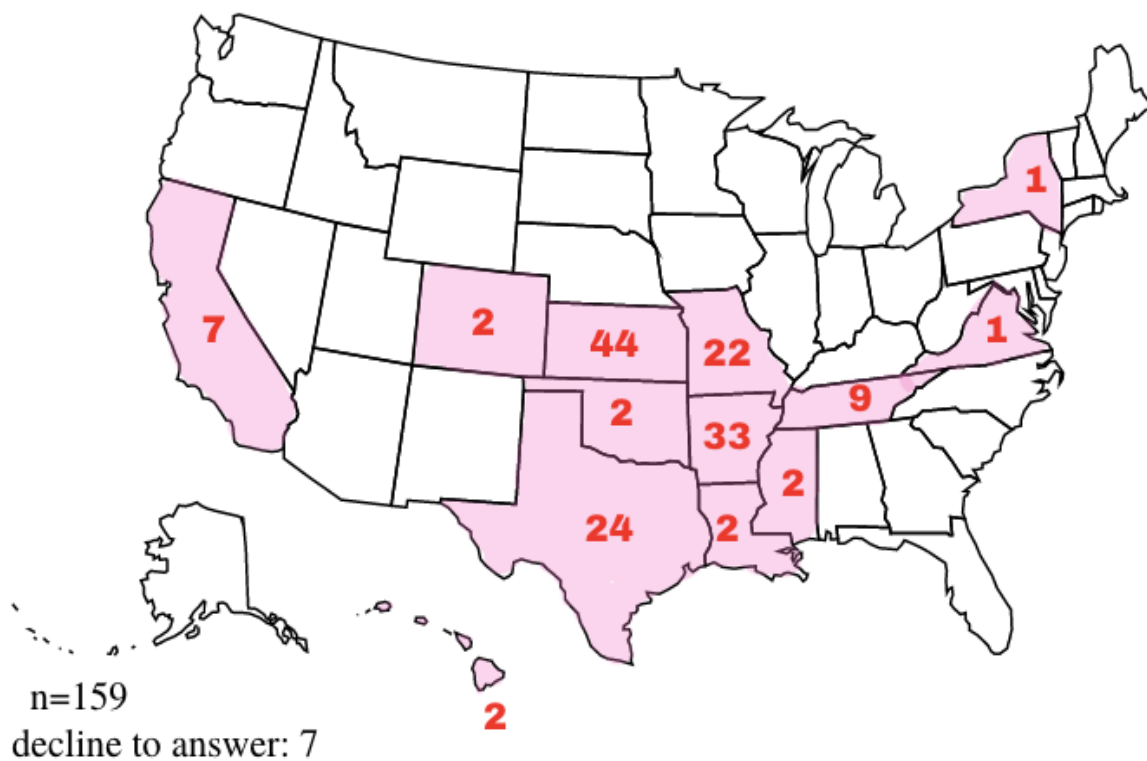
APPENDIX*Figure 1: State of origin of all survey respondents.***Q4 –Where is your home located?**

Figure 2: Respondent political viewpoint distribution

Q11 - What is your political viewpoint?

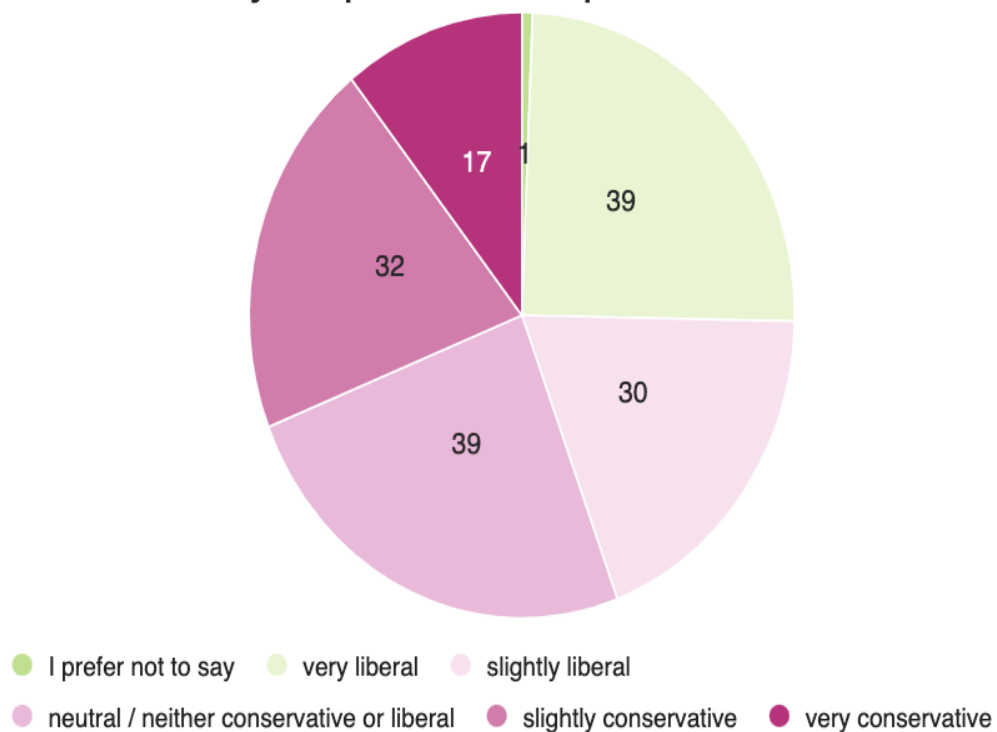


Figure 3: Respondent's perception of journalists.

Q12 - How credible do you think the average journalist is?

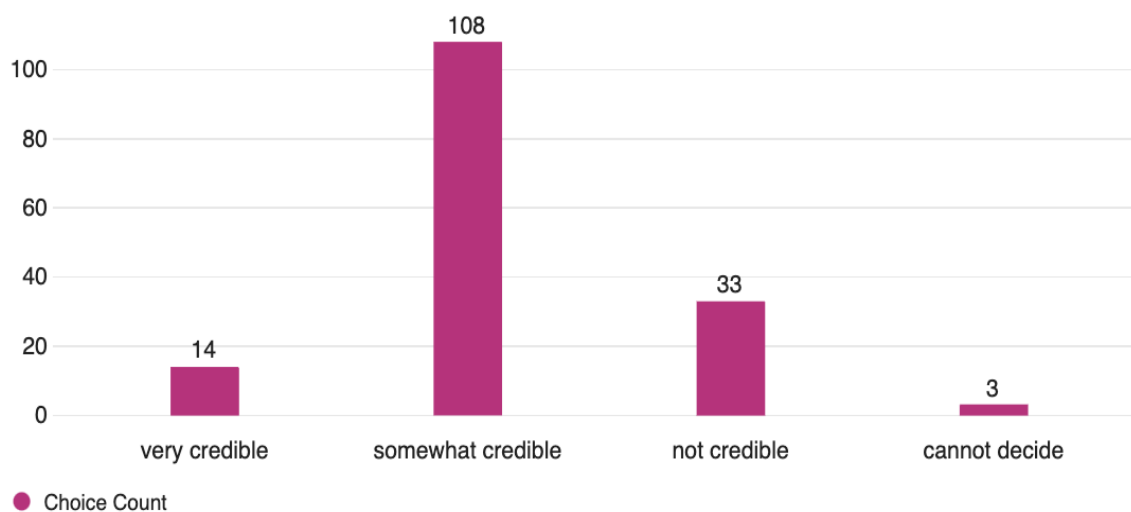


Figure 4: Chi-squared statistical test of correlation results between Q11 (political viewpoint) and Q12 (journalist credibility).

There is no statistically significant relationship between Q11: What is your political viewpoint? and Q12: How credible do you think the average journalist is?

Hide statistical test results ▾

Chi-Squared Test (Recommended)

P-Value	0.186
Effect Size (Cramér's V)	0.204
Sample Size	157

Chi-Squared Results

Chi Square	19.7
Degrees of Freedom	15

Q12: How credible do you think the average journalist is?

Q11: What...viewpoint?	very credible	somewhat credible	not credible	cannot decide
very conservative	7.1%	8.4%	21.2%	0.0%
slightly conservative	14.3%	24.3%	9.1%	33.3%
neutral / neither conservati...	7.1%	25.2%	30.3%	33.3%
slightly liberal	14.3%	17.8%	24.2%	33.3%
very liberal	57.1%	23.4%	15.2%	0.0%
I prefer not to say	0.0%	0.9%	0.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%

Figure 5: Respondents self-informedness rankings.

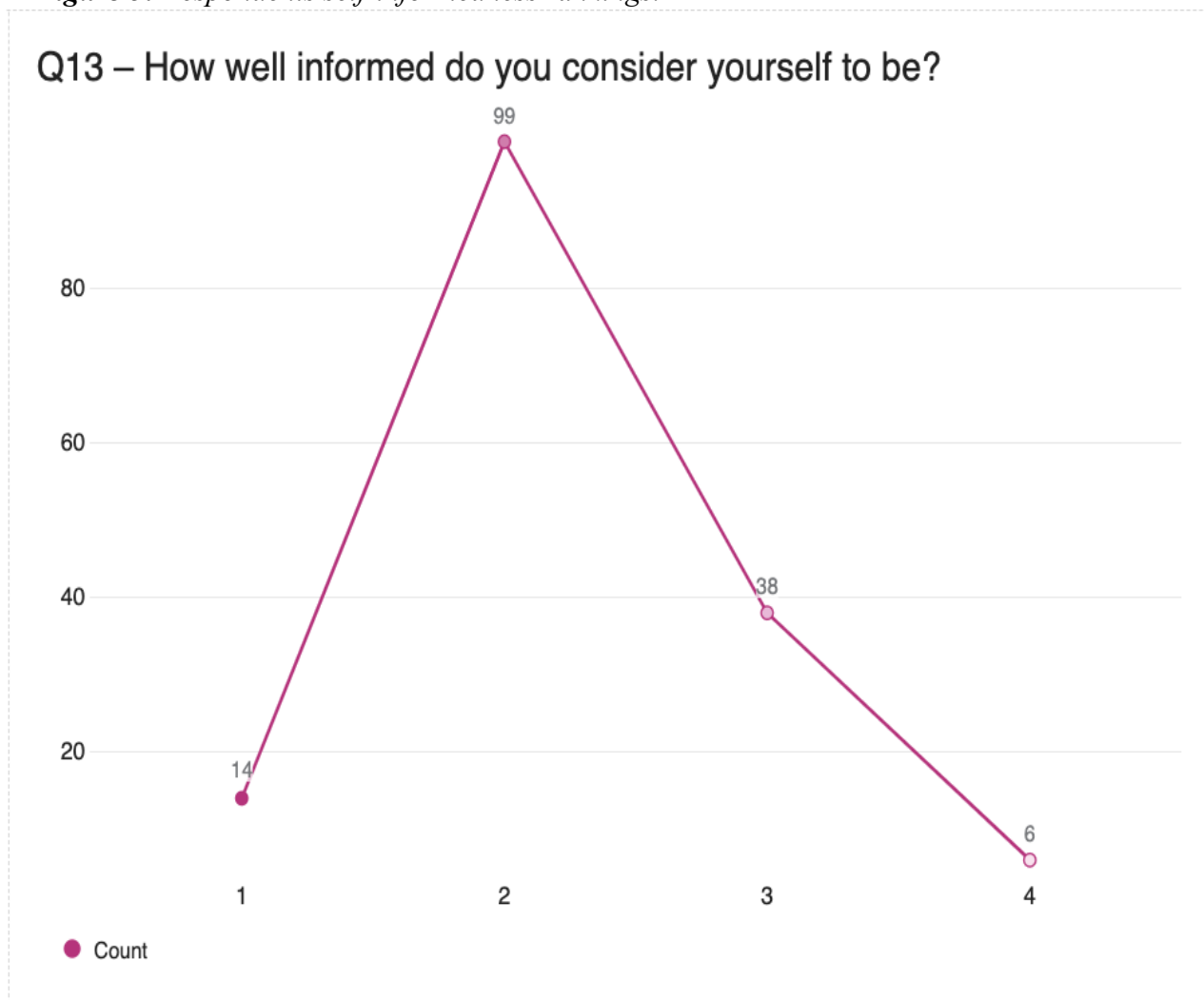


Figure 6: Respondents' preferred infosphere.

Q14 - What source do you use to find information and/or consume the news? - Selected Choice

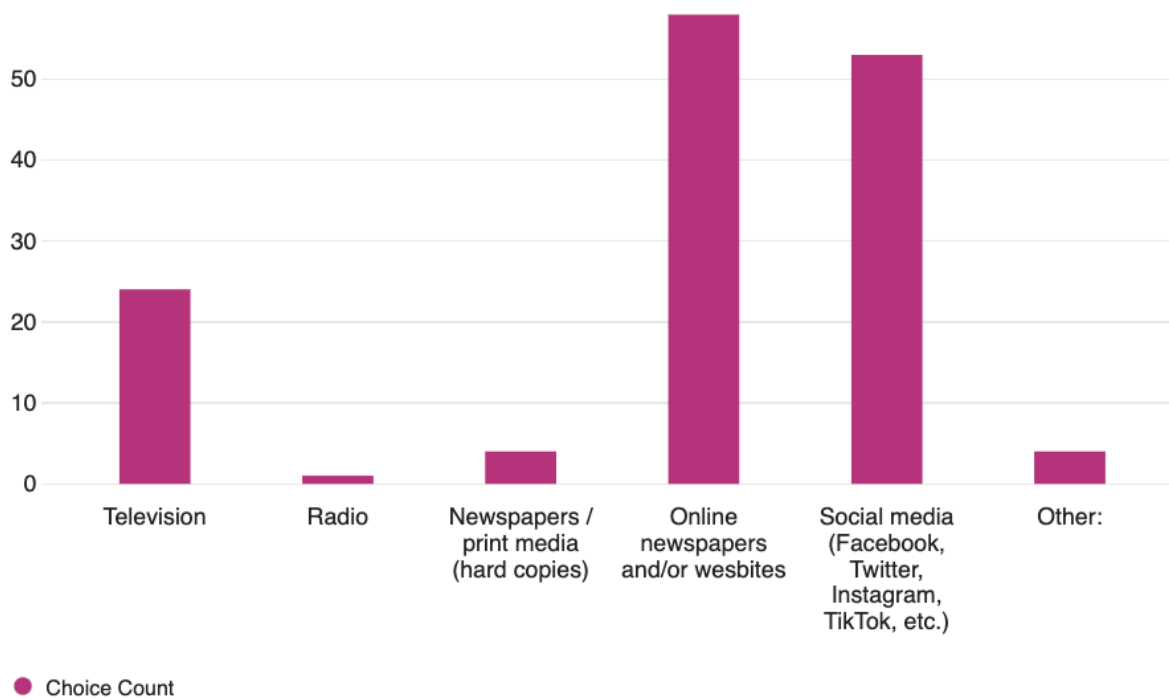


Figure 7: Respondents' reported prior experiences of infosphere serendipity.

Q17 - Serendipity is defined as "the occurrence and development of events by chance in a happy or beneficial way." Have you ever experienced serendipity while viewing content on your preferred media feed?

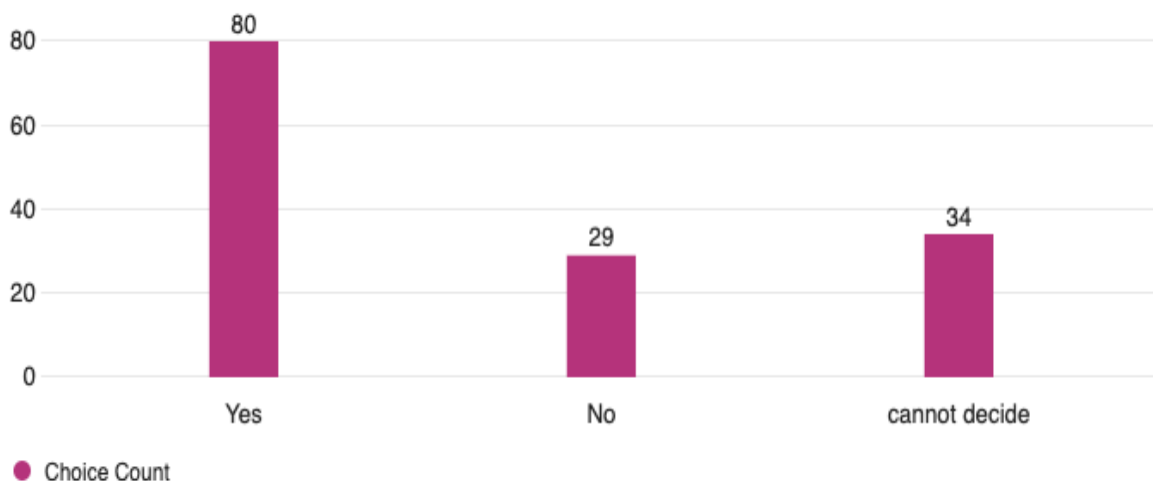


Figure 8: Respondents' infosphere serendipity preferences.

Q18 - Serendipity is defined as "the occurrence and development of events by chance in a happy or beneficial way." Would you prefer to experience instances of serendipity while viewing content on your preferred media feed?

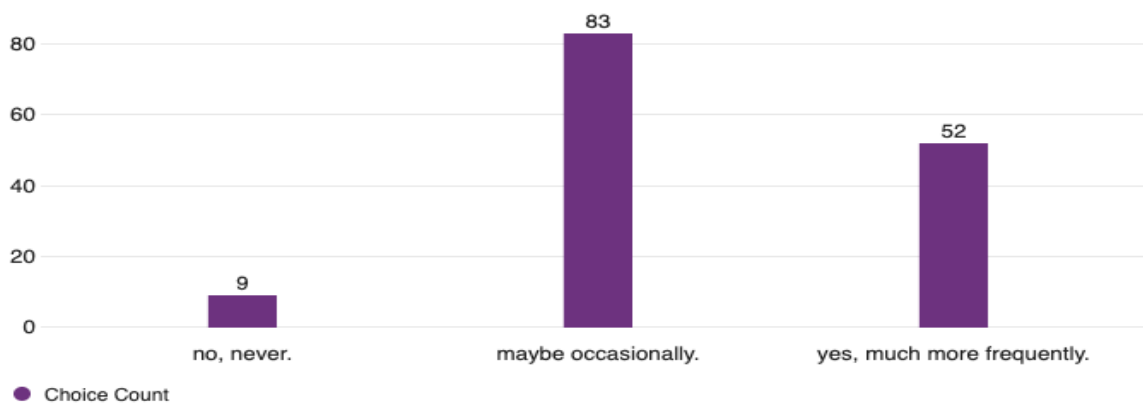


Figure 9: Chi-squared statistical test of correlation results between Q11 (political viewpoint) and Q18 (preferred instances of serendipity within preferred infosphere).

There is no statistically significant relationship between Q11: What is your political viewpoint? and Q18: Serendipity is defined as "the occurrence...e viewing content on your preferred media feed?"

Hide statistical test results ▾

Chi-Squared Test ⓘ (Recommended)

P-Value ⓘ	0.0609
Effect Size (Cramér's V) ⓘ	0.248
Sample Size ⓘ	144

Chi-Squared Results ⓘ

Chi Square	17.7
Degrees of Freedom	10

Q18: Serendipity is defined as "th...tent on your preferred media feed?" ⓘ

Q11: What...viewpoint? ⓘ	no, never. ⓘ	maybe occasionally. ⓘ	yes, much more frequently. ⓘ	Total
very conservative ⓘ	0.0%	14.5%	9.6%	
slightly conservative ⓘ	11.1%	16.9%	26.9%	
neutral / neither conservati... ⓘ	33.3%	21.7%	30.8%	
slightly liberal ⓘ	0.0%	19.3%	21.2%	
very liberal ⓘ	55.6%	27.7%	9.6%	
I prefer not to say ⓘ	0.0%	0.0%	1.9%	
Total ⓘ	100.0%	100.0%	100.0%	

Figure 10: Respondent age distribution.

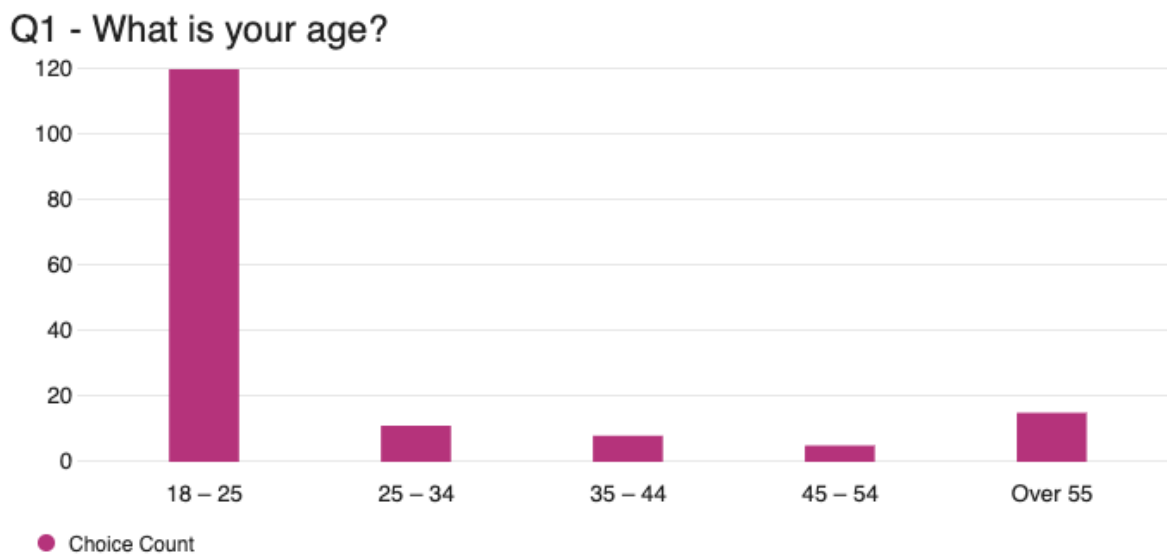


Figure 11: Respondent gender distribution.

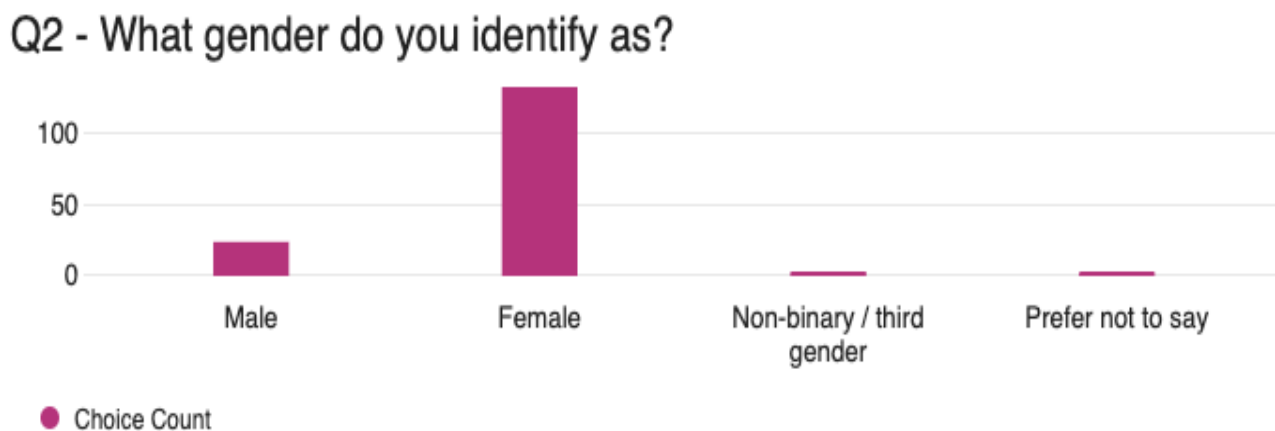


Figure 12: Respondent ethnicity distribution.

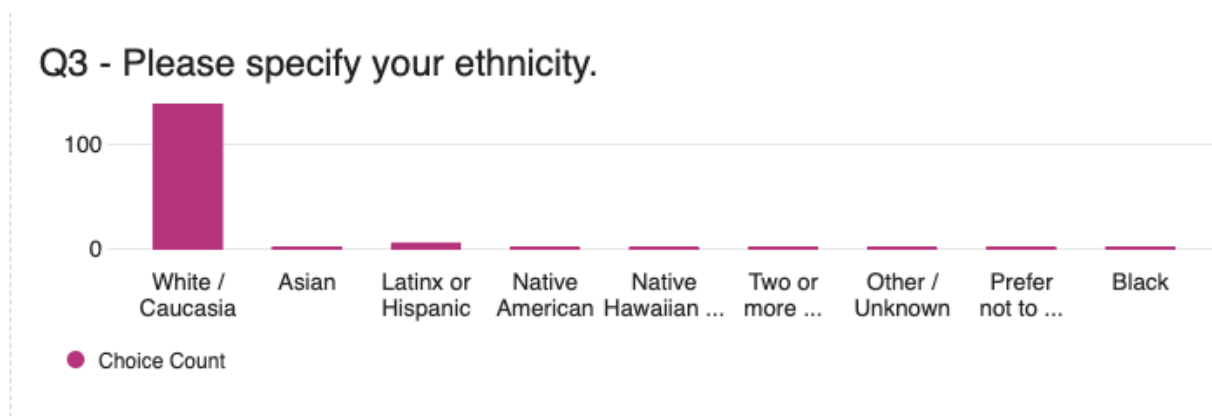


Figure 13: Respondent education distribution.

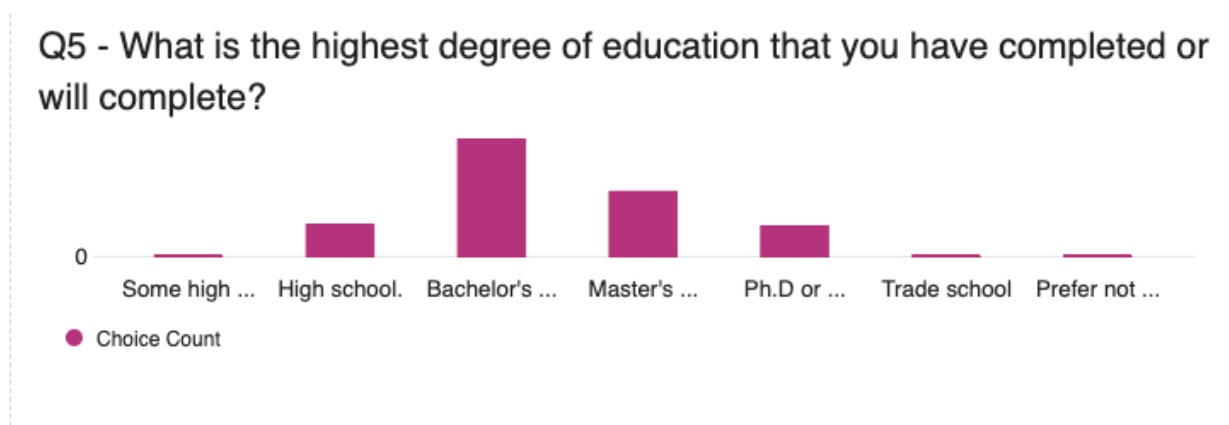


Figure 14: Respondent marital status distribution.

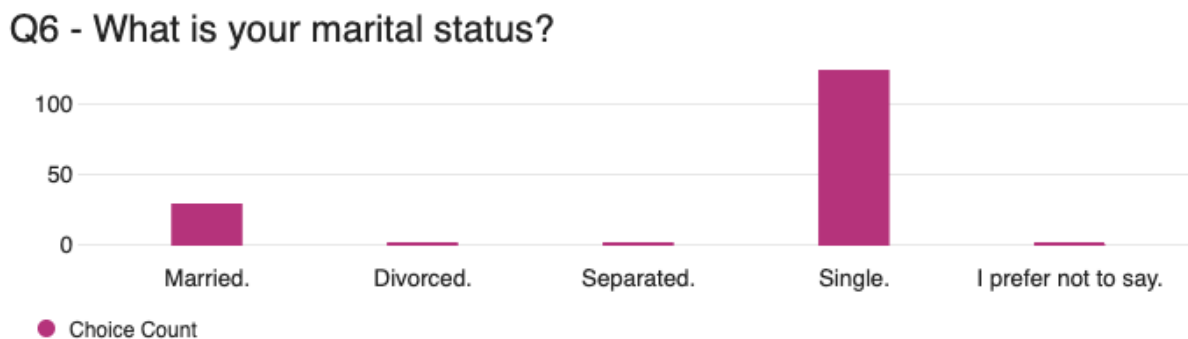


Figure 15: Respondent disability distribution.

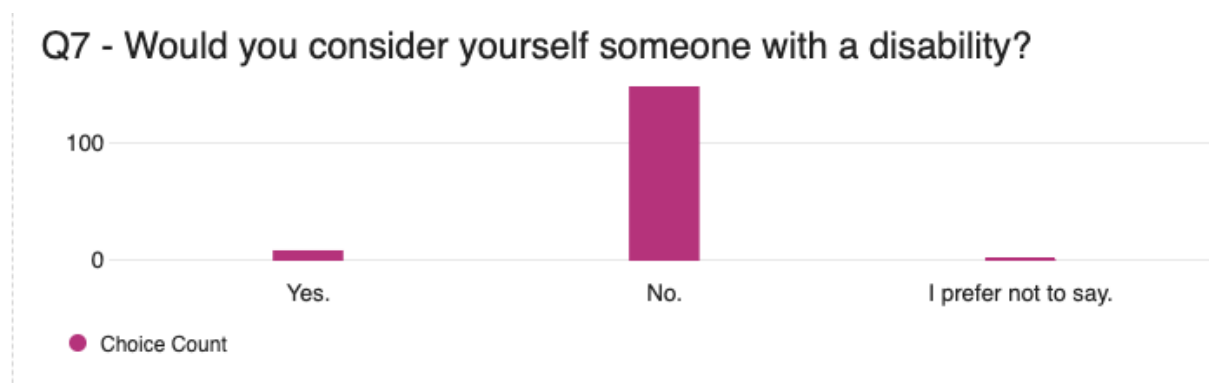


Figure 16: Respondent voting status.

Q8 - Are you a registered voter?

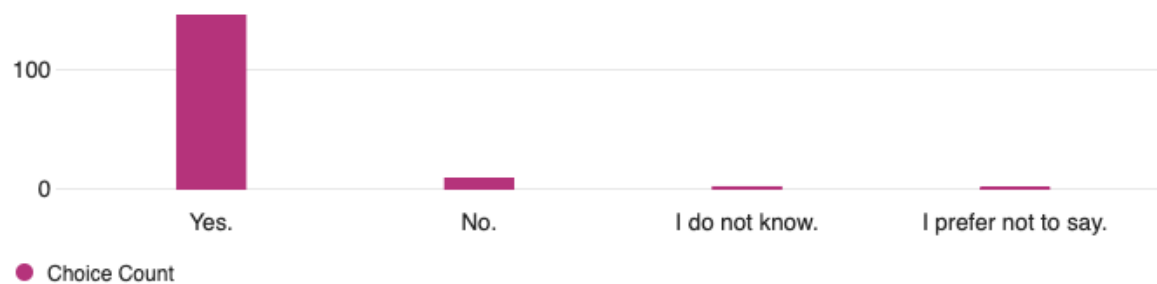


Figure 17: Respondent employment distribution.

Q9 - What is your employment status? - Selected Choice

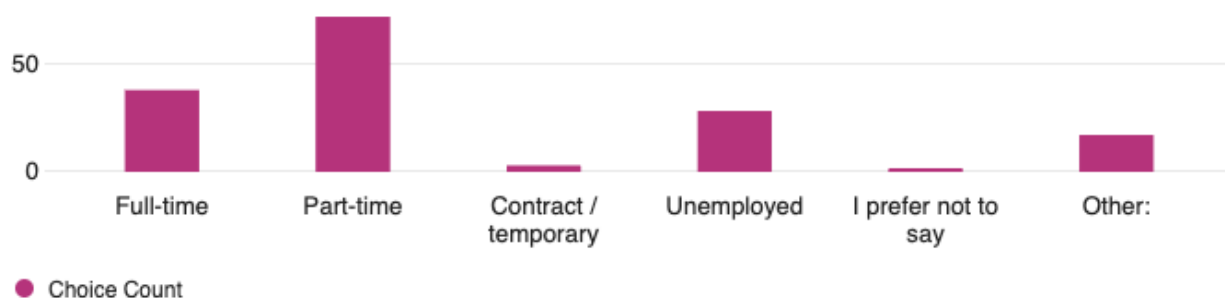


Figure 18: Respondent primary language distribution.

Q10 - What is your primary language? - Selected Choice

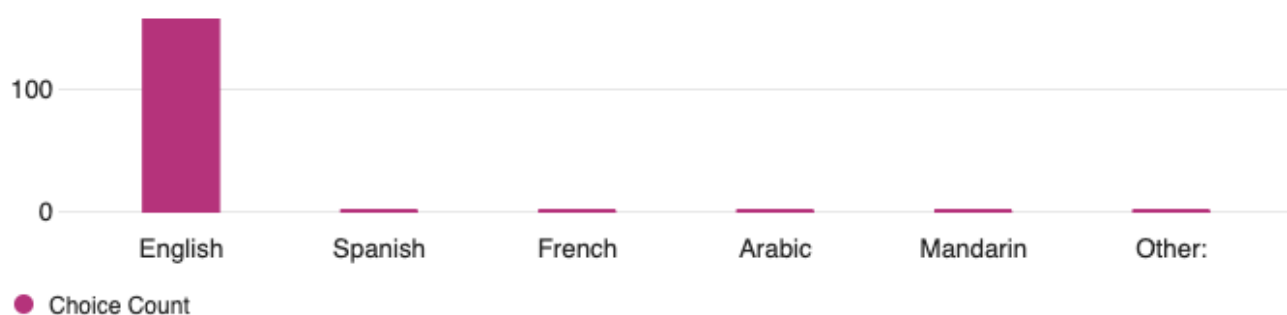


Figure 19: Respondents' preferred infosphere.

Q14 - What source do you use to find information and/or consume the news? - Selected Choice

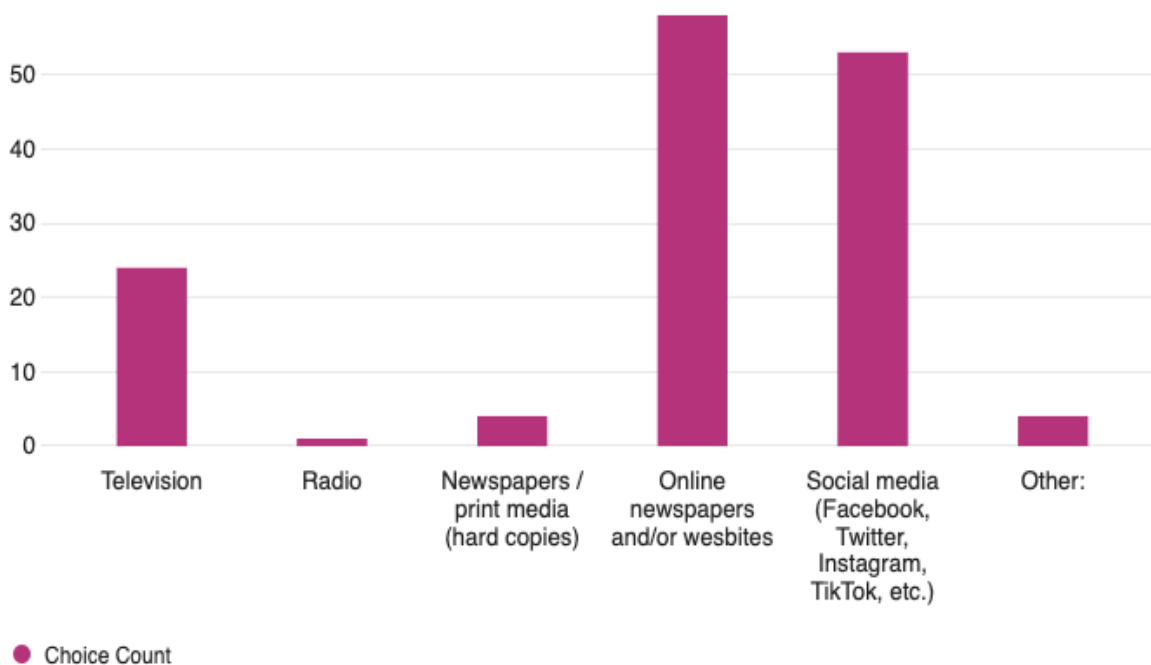


Figure 20: Respondents' reported current level of varied or random content/sources on preferred media platform.

Q15 - What level of random or varied content / sources do you see on your preferred news media feed?

Field	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
Drag to select the appropriate level.	1.00	3.00	2.14	0.45	0.20	143	306.00