How do the French inform themselves on the Internet?

ANALYSIS OF ONLINE INFORMATION AND DISINFORMATION BEHAVIORS

Study by the Fondation Descartes — March 2021

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Information Confiance Démocratie

Contents

Study Overview

1.1 — Presentation of the Study

This study by the Fondation Descartes aims to describe the way in which the French consume news information on the Internet.[1, 2] To achieve this, we asked Respondi, a company specializing in digital data, to record for 30 consecutive days – from September 20 to October 19, 2020[3] – the complete Internet activity of a panel of individuals representative of the French population.[4] The connection data of the 2,372 participants constituting this panel was collected based on their use of various connected devices (computers, mobile phones, tablets). We were then able to analyze these individuals' consultations of 2,946 information sources previously identified by means of a website classification algorithm designed by the company Storyzy.

The information sources identified and tracked in this study both include and far exceed those usually considered in studies of online information consumption in France. They range from the web pages of national print media and public service news channels to those of more confidential "alternative" media, regularly accused of publishing false information, as well as those of men's or women's magazines, tabloids, cultural, sports or entertainment news outlets, and even those of online news aggregators and of digital-only media outlets (such as *L'Internaute*, *Doctissimo*, *01.net*, etc.).

At the end of the study's 30-day period, we forwarded a survey to our participants in order to establish their socio-demographic profile. Furthermore, this survey inquired about their relationship to news information, the online and offline information sources they consult, and the trust they place in them. The innovative methodology employed in this study allowed us to elaborate a rich and unprecedented overview of the way in which the French inform themselves on the Internet.

1. We would like to thank the Observatoire Société et Consommation (https://lobsoco.com) which offered us its expertise in the initial design of this study.

2. By "news information," we mean all political, economic, social, cultural, sports, or international news and current events, or those of more specific topics – celebrity news, science, technology, etc. – as well as opinion pieces or blogs with a social or political scope.

3. This period was chosen because it lies between the first and second sanitary lockdowns of 2020. Thereby, the information behavior of the French on the Internet during this period was more representative than it would have been during a nation-wide lockdown.

4. Recorded Internet activity consists of any and all data transfers between the participants' connected devices and the rest of the global network (excluding Bluetooth transfers). Internet activities considered as information consultation include connection to URLs associated with an information source selected in this study and consultation of mobile applications associated with these information sources. It should be noted that a "time-out" system interrupted the recording of time spent on an information source if participants were inactive for more than three minutes (this does not concern the consultation of audio or video content).

Selected information sources

The sources included in this study regroup 2,295 French-language websites and 651 French-language YouTube channels identified by Storyzy's algorithm as relating to news information and having registered at least 15,000 visitors worldwide during the month preceding our study or, for YouTube channels, having at least 15,000 subscribers at the time the study began.

Some of the 2,295 websites selected also dispose of mobile applications and/or are associated with Facebook and Twitter pages and YouTube channels. We recorded the consultation of these information sources by our study participants through all of these access channels. The set of websites, mobile applications, Facebook and Twitter pages and YouTube channels tracked in this study covers a very large spectrum of the French-language information sources available on the Internet.

We note that the time potentially spent by participants to obtain information from the following sources or through the following access channels was not accounted for in this study: information sources in foreign languages, information sources consulted on connected devices other than their personal devices, information podcasts consulted on sources not included in this study, information content downloaded online but consulted offline, information shared *via* newsletters, push notifications, private messaging (such as WhatsApp) or private social media groups whose consultation does not require visiting an external web page, as well as information shared directly on participants' Facebook "wall" or Twitter "feed" and that can be read without having to visit the website of the media that published it (see Inset 3).

— INSET 1

An innovative hybrid approach

Two annual surveys seem indispensable in understanding online information consumption habits in France: the Reuters Institute's Digital News Report[5] and the Digital Market Barometer conducted by CREDOC and ARCEP.[6] The results of these surveys are regularly interpreted as indicators of the actual consumption of online information in France, when they in fact provide us with information regarding respondents' representation of their information consumption habits on the Internet. Yet, there may well exist a marked discrepancy between the actual information consumption habits of the French on the Internet and their own representation of these habits.

One way of overcoming this significant limitation of declarative studies is to measure Internet user traffic on information-related websites, as the company Médiamétrie does in France. The behavioral – rather than declarative – data collected by Médiamétrie has the merit of providing an overall representation of the consultation of various online information sources in France.

However, this method does not allow us to know who the individuals contributing to the traffic measured on these websites are. In particular, it prevents us from understanding the diversity of individual information consumption habits and from determining whether socio-demographic (gender, age, socioprofessional categories, etc.) or cognitive (interest in current affairs or level of trust in the media, for example) factors affect these habits.

This study by the Fondation Descartes is, to our knowledge, the first to combine behavioral and declarative procedures to study the information practices of the French on the Internet. Owing to this hybrid methodology, we have been able to closely describe these habits, taking into consideration their diversity and relating them to the socio-cognitive profile of individuals and to the representation that these individuals have of the way in which they inform themselves on the Internet.

— INSET 2

1.2 Key Findings

Our study highlights that, as a whole, the French do not devote a large portion of their connected time to the consultation of news information. On average, only 3% of the total time spent online by our study's participants consists of information consumption – which, per participant, corresponds to slightly less than 5 minutes a day. We should note that these values reflect the time our participants spent consulting information sources identified and tracked in this study on their personal devices. They therefore exclude any time spent consuming information on other connected devices (e.g., work computers) or *via* information sources excluded from our analysis, such as foreign language websites (see Inset 1).

3% of the total time spent online by our study's participants was devoted to the consumption of information.

In addition, it is important to note that while, *on average*, the French spend little time informing themselves on the Internet, online information practices can vary greatly between individuals. For instance, while 17% of our study's participants consulted no online information sources throughout the study period, 5% spent a total of over ten hours consulting such sources. We were able to identify a certain number of individual and social characteristics associated with participants' propensity to inform themselves online.

Distribution of connected time
(during the study's 30-day period)
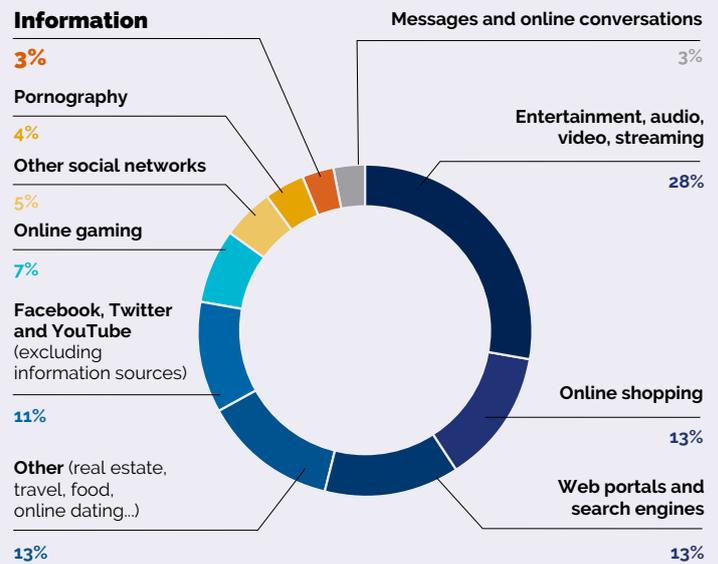
Information 3%
Pornography 4%
Other social networks 5%
Online gaming 7%
Facebook, Twitter and YouTube (excluding information sources) 11%
Other (real estate, travel, food, online dating...) 13%
Messages and online conversations 3%
Entertainment, audio, video, streaming 28%
Online shopping 13%
Web portals and search engines 13%

GRAPH READING: During the study's 30-day period, 3% of the total connected time of all participants was devoted to the consumption of information.

NOTE: A web portal is a website that brings together information from diverse sources – e.g., email, online forums, search engines – in a uniform way.[7] Certain portals, such as Yahoo! and Orange, feature news or information content. In our study, time spent by participants consulting such content within web portals was counted in the "information" category.

5. www.digitalnewsreport.org/
6. www.arcep.fr/uploads/tx_gspublication/rapport-barometre-num-2019.pdf
7. https://en.wikipedia.org/wiki/Web_portal

Among these, the most significant characteristic appears to be participants' age, with individuals 50 and over informing themselves more so on the Internet than others. Nevertheless, the observed correlations between participants' sociodemographic characteristics and their use of the Internet to inform themselves are all relatively weak – these characteristics alone therefore cannot explain our observation of high inter-individual variance in online information behaviors. Other unidentified factors, such as individual curiosity or time available for information consumption, necessarily contribute to this variance.

17% of participants consulted no online information sources throughout the study period, while **5%** consulted such sources for a total of over ten hours.

Meanwhile, we observe that participants who spend a lot of time informing themselves on the Internet do so less by increasing the amount of time spent consulting the same source than by diversifying the sources they consult. Indeed, the more time participants spent informing themselves online during the study period, the greater the number of different sources they consulted.

Evolution of total time spent on the most consulted source according to the number of sources consulted

Total number of sources consulted over the study's 30-day period

■ Most consulted information source   ■ Other information sources
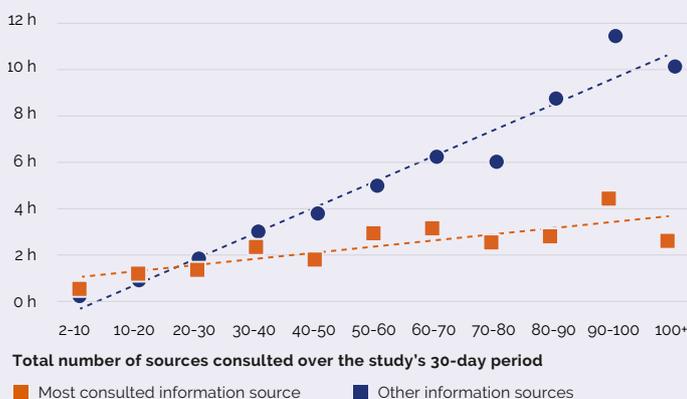
GRAPH READING: The dotted line in orange (regression line) represents the increase in the total time spent on the information source most consulted by each participant as the total number of sources consulted increases. The dotted line in blue represents the corresponding increase in total time spent consulting other information sources.

This reflects a "browsing" behavior among consumers of online information, who seem to switch from one information source to the next often without consulting any one source for a significant amount of time. This is shown by the fact that time consecutively spent on an information source upon each individual consultation is, on average, less than 2 minutes.

Individuals 50 and over inform themselves more on the Internet than others.

Although this value varies significantly among participants, it equals or exceeds 4 minutes for only 6% of participants.

Another element further supports this "browsing" effect: over the 30 days of the study, participants consulted a total of 1,290 different information sources – a number that far exceeds the number of major media outlets present on the Internet, and that therefore highlights the tendency of certain participants to consult lesser-known information sources.

We observe a "browsing" behavior among consumers of online information. As such, participants who inform themselves the most online do so by multiplying the number of sources they consult.

The fact that Internet users display this "browsing" behavior in their consumption of information seems to go against the widespread, but contested,[8] idea that the Internet encloses users in "echo chambers" in which they are only exposed to information that is in line with their expectations and beliefs.

The information sources that were most consulted by participants during the study's 30-day period were those of regional print media. Information sources dedicated to sports news ranked second, followed by information sources associated with national print media. News aggregators ranked fourth, followed by sources of other general news sites.

In examining the online information sources most consulted by our study's participants, we found that the top 26 sources alone accounted for 40% of the time participants dedicated to informing themselves online. This "top 26" is largely made up of online sources belonging to traditional media outlets – a noteworthy exception being Wikipedia, which was the information source consulted by the greatest number of participants over the study's 30-day period.

The online information sources most consulted are those of regional print media, followed by those dedicated to sports news and those of the national print media.

8. www.fondationdescartes.org/en/2020/07/filter-bubbles-and-echo-chambers/

Types of information sources consulted
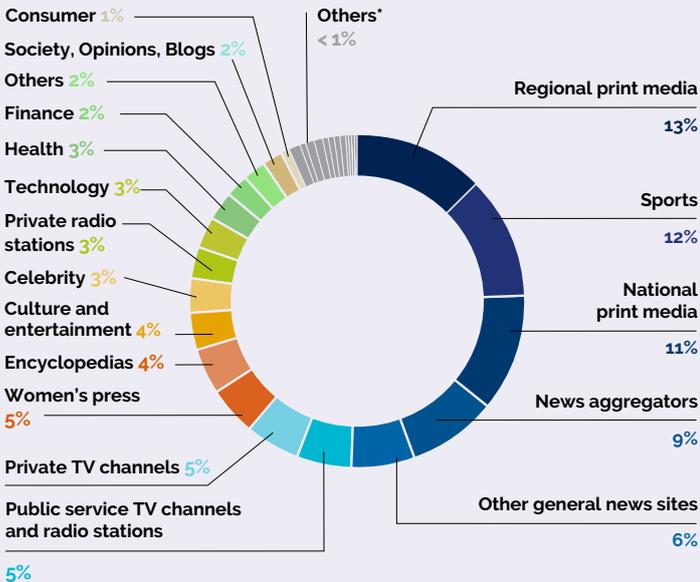
Consumer 1%
Society, Opinions, Blogs 2%
Others 2%
Finance 2%
Health 3%
Technology 3%
Private radio stations 3%
Celebrity 3%
Culture and entertainment 4%
Encyclopedias 4%
Women's press 5%
Private TV channels 5%
Public service TV channels and radio stations 5%

Others* < 1%
Regional print media 13%
Sports 12%
National print media 11%
News aggregators 9%
Other general news sites 6%

*Automobile, Lifestyle, Economy, TV program, Foreign francophone media, Science, Vocational news, Men's press, Cooking, Local news, Environment, Animal, Parenting, Spiritual, Aerospace, Fact-checking

GRAPH READING: Overall, participants spent 13% of their connected time dedicated to information consumption on online sources belonging to regional print media.

NOTE: This graph does not account for online weather forecasts.

Ranking of leading information sources by number of participants having consulted them

Source	%
Wikipédia	42%
Le Figaro	38%
Ouest France	26%
France Info	25%
20 Minutes	25%
Journal des Femmes	23%
Le Parisien	22%
Le Monde	22%
Elle	21%
L'Internaute.com	21%
BFMTV	21%
Voici	19%
Allociné	19%
Femme Actuelle	16%
Actu.fr	16%
Doctissimo	14%
L'Équipe	14%
Capital	14%
Gala	13%
France Bleu	13%
01.net	12%
RTL	12%
LCI	12%
Challenges	12%
Yahoo! Actualités	12%
CNews	11%

0   100   200   300   400   500   600   700   800   900   1,000
Participants

GRAPH READING: 42% of all participants (i.e., 990 participants) consulted Wikipedia at least once throughout the study's 30-day period.

NOTE: This graph does not account for online sources of TV programs or for online weather forecasts.

Major traditional media outlets have therefore succeeded in exploiting their offline reputation to assert themselves as major players in the online information market. It should be noted that the digital-only media present in this "top 26" (*L'Internaute*, *Doctissimo*, etc.) all belong to major media groups, with the exception of Wikipedia.

Another one of our findings that must be emphasized is that participants' reported use of the Internet to inform themselves – whether in terms of the nature of the sources they report consulting, or in terms of the frequency with which they report doing so – only weakly corresponds to their effective online information behavior, as measured by our study. In other words, the French seem to have a relatively fuzzy perception of the way in which they inform themselves on the Internet.

Furthermore, we observed only a weak relationship between the consultation of a given information source and participants' reported level of trust in this source. It is possible that this is a consequence of the "browsing" behavior of the French on the

Internet. Individuals may be switching from one source to another or clicking on a headline appearing on their Twitter "feed" or Facebook "wall," less in an attempt to search for specific information than out of entertainment or intellectual curiosity.

Lastly, we used in this study an algorithm developed by Storyzy in order to sort the selected information sources into two categories: "reliable" and "unreliable." We then compared the results obtained by this procedure to the classification proposed by the newspaper *Le Monde*. This comparison

The **26** online information sources that were most consulted constitute **40%** of the time spent consuming information on the Internet. These mainly consist of online sources belonging to traditional media outlets.

The French seem to have a relatively fuzzy perception of the way in which they inform themselves on the Internet.

showed that the two methods of evaluating the reliability of information sources produce largely compatible results. This categorization of sources allowed us to evaluate the exposure of the French to disinformation on the Internet, whether it be generic disinformation (websites providing social and political information and news content considered to be unreliable), health-related disinformation, pseudo-science, satire or "click-bait" (websites whose content is not intended to inform the reader, but solely to attract their attention in order to generate traffic on their page).

We observed only a very weak relationship between reported trust towards information sources and the consultation of these sources.

We found that, over the study's 30-day period, 39% of participants consulted information sources considered to be unreliable. On average, these participants spent 11% of their daily time dedicated to online information consumption consulting these sources, which equates to 0.4% of their total connected time. Among all participants, 5% of connected time dedicated to information was spent consulting information sources considered to be unreliable, which equates to 0.16% of total connected time. The sources of disinformation that were most consulted were sources of generic disinformation, followed by sources of "click-bait" and sources of health-related disinformation.

Over the study's 30-day period, **39%** of participants consulted information sources considered to be unreliable.

The statistical analyses we subsequently conducted show that men are over-represented among participants who consulted sources of generic disinformation. Within this subsection of our study's participants, we also find proportionately more individuals living alone and more individuals expressing support for or belonging to the Yellow Vests movement. Furthermore, these individuals on average have a low level of trust in institutions, the government and the media, but express on average more interest than other participants in social and political news.

On the contrary, women are over-represented among participants who consulted sources of health-related disinformation, and we find among this particular subgroup of participants a disproportionate number of inactive individuals, including retirees. Additionally, participants who consulted sources of health-related disinformation scored higher than others on a standardized scale intended to evaluate individual inclinations towards belief in conspiracy theories.

Among all participants, **5%** of connected time dedicated to information was spent consulting information sources considered to be unreliable, which equates to **0.16%** of total connected time.

Distribution of time spent on unreliable information sources
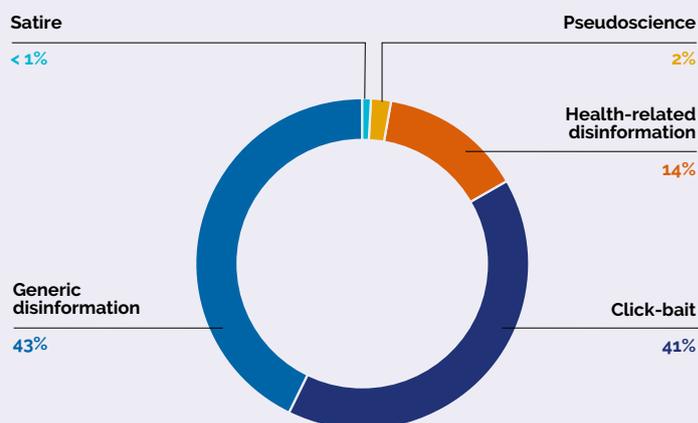
GRAPH READING: 43% of total time spent consulting unreliable information sources was on sources of generic disinformation.

NOTE: N = 921 participants. These are the participants that consulted unreliable information sources throughout the study's 30-day period.

Participants having consulted sources of "click-bait" are characterized first and foremost by being on average older than the average age of all participants. Individuals aged 65 and over are particularly over-represented here, as are inactive individuals and retirees. We further observe that the subgroup of participants who consulted sources of "click-bait" possess, on average, a lower level of education and household income than the rest of participants.

In general, the share of connected time that our participants spent on online information sources considered to be unreliable appears to be relatively low. This seemingly encouraging results may in actuality indicate that disinformation on the Internet today is disseminated more so *via* social networks than *via* established online sources (e.g., websites). The sheer quantity of fake news surrounding the Covid-19 pandemic that have been massively disseminated on Facebook and Twitter serve as an example of this phenomenon. Misleading messages are circulated from person to person by being shared by social network users on their personal "walls" or "feeds." Very often, these pieces of disinformation take on the form of a short text or a commented picture, without referring to an external online source. As a result, we were not able to account for participants' exposure to this type of disinformation in our study.

Social networks in this study

Social networks are, in many respects, "black boxes" for researchers. It is indeed difficult, both for technical reasons and data privacy concerns, to study the nature of the content appearing in private Facebook groups or on users' Facebook "walls" or Twitter "feeds."

Unable to escape this limitation, we did not have access to participants' "walls" or "feeds," nor to the private groups they potentially visited on Facebook. But this in no way means that our study does not account for participants' consultation of information through their social media accounts. Firstly, we recorded the time that participants spent on Facebook and Twitter pages and YouTube channels associated with some of the 2,295 information sources we selected. The time participants spent consulting the 651 "independent" YouTube channels tracked in this study was also recorded (let us recall that YouTube is a social network).

Secondly, upon clicking on a video or article appearing on their "wall" or "feed" or in a private group, social network users are often redirected towards an external webpage which hosts the content in question. Thus, participants in our study who clicked on a news article featured on their Facebook "wall," for instance, were redirected to the website of the media outlet that published that article. The time that these participants spent reading this article on the website of the media outlet in question was therefore accounted for in our study.

However, our study's methodology did not allow us to account for the information that participants may have consulted directly on their Twitter "feeds" or Facebook "walls" or in the private groups they visit, given that in such instances participants were not required to visit an external website. This information can generally be broken down into two groups. First, the headlines of news articles that participants may have seen but did not click on – of these articles, they therefore read at most its title or its summary, in cases where the latter was displayed on social networks. Second, the short videos produced by certain media (e.g., Brut) and specifically designed to be viewed directly on social networks.

We must however note that this limitation to our study probably only had a marginal impact on our results. Indeed, based on the scarce data available on this issue, it would seem that news information only represents a small portion of the content circulating on social networks. For example, on Facebook – which is, alongside YouTube, the most widely used social network in France[9] – only an average of 5% of the content featured on users' "walls" consists of news information (understood in a broad sense).[10] While this value undermines the individual disparities resulting from the personalization of content carried out by Facebook's algorithm,[11] it does indicate that news information remains relatively marginal on France's foremost social network. This phenomenon stems in part from Facebook's policy to actively limit the amount of news information visible on its pages.[12]
— **INSET 3**

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9. Nearly two-thirds of French Internet users use Facebook (https://fr.wikipedia.org/wiki/Facebook).
Over the study's 30-day period, 67% of participants used Facebook, and 24% used Twitter.

10. https://www.buzzfeednews.com/article/alexkantrowitz/facebook-wont-release-its-5-of-news-feed-content-is-news.
This estimate includes political, social, economic and international news information, as well as entertainment or lifestyle news.

11. According to the only study that, to our knowledge, directly investigates the composition of Facebook content, 50% of the "walls" of a sample of users featured no information-related content among the first ten pieces of content displayed,23% featured only one information-related piece of content, 16% featured two information-related pieces of content and the remaining 11% featured more than two.
https://www.niemanlab.org/2017/12/how-much-news-makes-it-into-peoples-facebook-feeds-our-experiment-suggests-not-much/

12. https://www.buzzfeednews.com/article/alexkantrowitz/facebook-wont-release-its-5-of-news-feed-content-is-news.

2
Methodology

Methodology

2.1 — Study Participants

Our study's participants consist of the 2,372 individuals that make up Respondi's French Access panel.[13] Respondi continuously records, with their consent, all of the Internet connection data originating from their computers, tablets and cell phone usage. These individuals were assembled by Respondi so as to constitute a panel that is representative of the French population aged 18 and over. The panel is regularly tested and renewed to ensure its representativeness.

For the purpose of this study, we analyzed the connection data of the 2,372 members of Respondi's French access panel during a period of 30 consecutive days, from September 20 to October 19, 2020. It should be noted that, throughout the study period, only 48% of panel members were monitored on their cell phone, in addition to their other connected devices – 52% refused to be tracked on their cell phones or did not own a cell phone.[14] In contrast, 24% of participants were monitored only on their cell phones, which corresponds exactly to the proportion of the French population that does not own a personal computer.[15]

2.2 — Selection of Information Sources

In order to describe the information behaviors of the French on the Internet, we sought to measure our panel members' access to the widest possible range of French-language information sources. To this end, we asked Storyzy,[16] a company specializing in the classification of Internet pages, to provide us with a list of all of the French-language websites detected by their algorithm as pertaining to information. Storyzy sent us a database of 5,715 domain names, as well as their associated YouTube channels, Facebook and Twitter pages and mobile applications.

In an effort to strike a balance between the sheer volume of available data and our ambition to develop the most accurate possible representation of online information behavior in France, we chose to retain only those domains that had registered at least 15,000 visitors worldwide during the month preceding our study. To establish the number of visitors of each domain, we used the estimates provided by Alexa, a service operated by Amazon and in part dedicated to such measurements.[17] In following this selection criterion, the list of selected information sources was reduced from 5,715 to 2,295 (we recall that this list only contains French-language information sources). We note that weather forecasting websites, along with a certain number of websites

of TV programs, are absent from this list due to them failing to meet our threshold of 15,000 monthly visitors.

Our selection criterion of a minimum of 15,000 monthly visitors, although arbitrary, allowed us to streamline our analysis of the data collected while simultaneously ensuring the incorporation of a large part of the information sources potentially consulted by participants. The 2,295 information sources that were retained constitute a larger database than those used in leading studies on this subject, whether they be English-language (Allen *et al.*, 2020; Yang *et al.*, 2020; Tewksbury, 2005) or French-language (Institut Montaigne, 2019) studies. The inclusion of a vast number of information sources had, among other things, the advantage of increasing the probability of detecting traffic on more niche media outlets, which are more likely to relay low-quality information than regional or national media (Allcott & Gentzkow, 2017; Martens *et al.*, 2018).

In an effort to further increase the scope of monitored sources, we expanded our database with YouTube channels relating to information that had not been counted among those associated to the initial list of 2,295 websites (close to 30% of these websites have an associated YouTube channel). Indeed, the significant number of channels present on the platform, as well as the sheer volume of Internet traffic it receives, has made it such that YouTube's importance can no longer be ignored. For instance, YouTube received 43,087,000 visitors from France in August 2020 alone, and many media outlets are now present on the platform.

To select which YouTube channels were to be added to our database, we asked Storyzy to provide us with a list of all of the French-language YouTube channels considered by their algorithm as dealing with news information and current events. Storyzy sent us the URLs of 3,142 YouTube channels,

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13. www.respondi.com/EN/access-panel

14. In 2019, 77% of the French population owned a smartphone. www.vie-publique.fr/en-bref/272039-barometre-du-numerique-95-des-francais-disposent-dun-telephone-mobile

15. In 2019, 76% of the French population owned a personal computer. www.vie-publique.fr/en-bref/272039-barometre-du-numerique-95-des-francais-disposent-dun-telephone-mobile

16. https://storyzy.com/ Storyzy trained an algorithm to automatically identify and classify, according to the nature of their content, several tens of thousands of websites, blogs, and video channels in several languages. This classification also concerns the reliability of these online sources (*cf. infra*). Storyzy's database of online sources deemed unreliable currently includes more than 30,000 websites, blogs and video channels.

17. www.alexa.com/siteinfo

in addition to those associated with the 2,295 websites initially selected. Here again, in order to avoid unnecessarily burdening our database with channels that would likely not have been consulted by our study's participants, we retained only those channels that had at least 15,000 subscribers in the month preceding our study. In the end, 651 YouTube channels were added to our database.

In the remainder of this report, unless otherwise stated, the use of the term **"information sources"** refers to: 1) the 2,295 information websites constituting our database along with, where applicable, their associated YouTube channels, Facebook and Twitter pages and mobile applications, and 2) the 651 information-related YouTube channels considered to be "independent" (i.e., not associated with the aforementioned websites).

The set of websites, mobile applications, Facebook and Twitter pages and YouTube channels tracked in this study covers a very large spectrum of the French-language information sources available on the Internet. It ranges from the web pages of national print media and public service news channels to those of more confidential "alternative" media, regularly accused of publishing false information, as well as those of men's or women's magazines, celebrity press, cultural, sports or entertainment news outlets, and even those of online information aggregators and of digital-only media outlets (such as *L'Internaute*, *Doctissimo*, *01.net*, etc.). The 2,946 information sources identified and tracked in this study both include and far exceed those usually considered in studies of online information consumption in France, such as the ONENEXT 2021 study conducted by the Alliance for press and media figures (*Alliance pour les chiffres de la presse et des medias* – ACPM). The only online information sources included in the ACPM study that are not included in ours are those visited by fewer than 15,000 people worldwide in the month preceding our study's data collection period.

We note that the time potentially spent by participants in obtaining information from the following sources or through the following access channels was not accounted for in this study: information sources consulted on connected devices other than their personal devices, information sources in foreign languages, information podcasts consulted on sources not included in this study, information content downloaded online but consulted offline, information shared *via* newsletters, push notifications, private messaging (such as WhatsApp) or private social media groups whose consultation does not require visiting an external web page, as well as information shared directly on participants' Facebook "wall" or Twitter "feed" and that can be read without having to visit the website of the media that published it (see Inset 3 in the first section of this report).

2.3 Measurement of the Consultation of Selected Information Sources

We selected two variables to measure participants' use of the information sources included in our database. First, we registered any access to these sources. As a result, when a participant visited a given source (or its YouTube channel, its Facebook or Twitter page or its mobile application, where applicable), they were recorded as having consulted that source. The number of times that a given participant visited the same information source throughout the study period was also recorded. The same procedure was applied to "independent" YouTube channels – each time a participant viewed a video belonging to one of these channels, he or she was recorded as having consulted the YouTube channel in question.

Second, we recorded the time spent by each participant on each information source in our database. The time spent by a participant on each information source every time they consulted that source was added together to reflect the total time spent by that participant on that source during the study period.

Let us note that in order to avoid artificially inflating the time spent on an information source by participants who may have opened a page on their browser but who did not stay in front of their screen to consult it, the recording of time spent was automatically interrupted if participants remained inactive on the same page for more than three minutes (this does not concern the consultation of audio or video content).

It should also be noted that a distinction was drawn between the informative and non-informative sub-domains of certain selected information sources. The websites of major television channels (TF1, M6, etc.), for instance, allow users to view live or recorded broadcasts of a multitude of programs, including news programs, but also fictional shows or films or entertainment programs unrelated to news information. In this study, whenever possible – and this was the case for all of the information sources most consulted by our participants – we only recorded the visits and time spent by participants on the sub-domains of these sources specifically dedicated to information.

2.4 Classification of Information Sources in Terms of Reliability

So as to be able to assess participants' exposure to online information considered to be unreliable, we classified each of the information sources selected in this study according to their reliability. To do so, we asked the company Storyzy to provide us with information regarding the reliability of each of the information sources in our database (including, therefore, "independent" YouTube channels).

Storyzy has developed an algorithm that allows for the classification of information-related Web pages according to their reliability. The algorithm carries out this classification mainly on the basis of the existing relationships between domains (content authors, links, citations, reuse of content, etc.). Thus, a domain closely related to other domains that have, after an initial manual evaluation, been deemed unreliable will also be itself considered unreliable. Storyzy's algorithm also proposes a classification of the nature of the problematic content featured on domains considered to be unreliable: conspiracy theory, false information, "click-bait" and satire.

The binary categorization proposed by Storyzy (i.e., reliable and unreliable) was applied to all of the sources tracked in this study. After having visited each of the sources deemed unreliable by Storyzy, we identified the principal topic of each of these sources. We thus arrived at the following classification of information sources deemed unreliable: [18]

�ం *Generic disinformation.* These are the sources deemed unreliable by Storyzy that provide information and news content on principally political and social topics. These domains are considered to be unreliable because at least some of the published content contributes to conspiracy theories or consists of false information.

▟ *Health-related disinformation.* These are the sources deemed unreliable by Storyzy that offer content focused on health-related issues. These sources are considered unreliable because at least some of the published content contributes to conspiracy theories or consists of false information.

▟ *Click-bait.* These are the sources deemed unreliable and considered to belong to the "click-bait" category by Storyzy. "Click-bait" sources are those whose content is not intended to inform the reader, but solely to attract their attention in order to generate traffic on their page. "Click-bait" sources employ various deceptive methods: intentionally shocking or sensationalist titles, content that does not correspond to the title of an article, off-topic or falsified header images, etc. These websites attract Internet users by purchasing advertising spaces for their articles, particularly on the websites of media outlets deemed reliable, such as those of major national newspapers.

▟ *Pseudoscience.* These are the sources considered unreliable by Storyzy which primarily feature content claiming to be of a scientific nature.

▟ *Satire.* Satirical sources are considered unreliable by Storyzy's algorithm. The relevance of this categorization is debatable, in that satirical sources generally differentiate themselves from other unreliable sources by explicitly warning their readers of the comedic intent behind the false information featured on their page. However, this has no effect on our study's findings, given that, as will be discussed in the Results section of this report, the "satire" category accounts for less than one percent of all participant traffic on all sources deemed unreliable.

So as to not exclusively rely on the categorization of information sources offered by Storyzy's algorithm, we compared it to the categorization proposed by the *Décodeurs* of the newspaper *Le Monde*. The *Décodeurs* (i.e., the "Decrypters") are a group of professional journalists specialized in fact-checking who provide the public with a Web-based tool to evaluate the degree of reliability of online sources: the *Décodex*.[19] The classification of online sources proposed by the *Décodex* is the result of the numerous evaluations of content carried out by the *Décodeurs*. This classification is not binary (i.e., reliable and unreliable), but instead establishes four categories delineated *via* a color code:[20]

▟ red: for websites that regularly publish false information;

▟ orange: for websites whose reliability or approach is doubtful (poorly referenced sources, concealed militant approach, etc.);

▟ blue: parodical websites;

▟ uncolored: reliable websites.

Our procedure in comparing the classifications proposed by Storyzy and the *Décodex*, was as follows. First, we identified the 366 sources that had been both selected for our study and previously evaluated by the *Décodeurs* (the *Décodeurs* having provided us with an updated version of their database in December 2020).[21] Second, we translated the color code used by the *Décodex* into a binary classification: "reliable" and "other." We classified the "uncolored" websites in the "reliable" category, and the "red," "orange" and "blue" into the "other" category.

We were then able to statistically compare the *Décodex* and Storyzy's categorization of these 366 websites (the *Décodex* categorization: other = 0, reliable = 1; Storyzy categorization: unreliable = 0, reliable = 1). From this statistical analysis, it appears that the consistency between the Decodex and Storyzy categorizations on this common sample of 366 websites is excellent (Cohen's kappa = 0.896). It therefore seemed appropriate to use Storyzy's categorization for all of the online information sources retained for our study.

18. Each source belongs to only one category. We note that certain "click-bait" sources feature a significant amount of health-related content. These were, however, considered to belong to the "click-bait" category, in that they also featured information relating to other topics, and that they exhibited the typical characteristics of "click-bait" sources: sensationalist titles, content that does not correspond to the title, misleading illustrations, etc.

19. www.lemonde.fr/verification/

20. www.lemonde.fr/les-decodeurs/article/2017/01/23/l-annuaire-des-sources-du-decodex-mode-d-emploi_5067719_4355770.html

21. The database of the *Décodex* contains a total of just over a thousand evaluated Internet sources. The fact that only 366 of these were found among our list of selected information sources can be explained by three reasons: 1) many of the Internet sources evaluated by the *Décodex* did not reach the threshold of 15,000 unique visitors that we set as a criterion for inclusion in our database; 2) the database of the *Décodex* also contains foreign-language sources, which were therefore not included in our study; 3) the database of the *Décodex* contains, in addition to websites, Facebook pages and YouTube channels that are beyond the scope of our study.

2.5 End-of-Study Survey

Following the study's 30-day data collection period, we asked our participants to complete a self-administered online survey to establish their political and socio-demographic profile. Moreover, this survey inquired about their relationship to news information, the online and offline information sources they consult and the trust they place in them Of the 2,372 participants in our study, 1,614 completed this end-of-study survey.

As will be discussed in the Results section of this report, we used the responses to this survey to determine:
1) if the participants have an accurate representation of the way in which they inform themselves on the Internet;
2) whether participants' consultation of information sources is a function of their reported level of trust in these sources;
3) if the participants who inform themselves more than others on the Internet, or those who consult unreliable sources of information, exhibit any particular characteristics.

Statistical tests used in this study

Two types of statistical tests were used to describe and analyze some of the data collected in this study:

1 — Linear correlation analysis.
This test is used to determine whether two variables are linearly related to each other and to quantify the degree of association between them. The correlation coefficient (described as R), which is between 0 and 1, indicates this degree of association: the closer it is to 0, the weaker the relationship between the two variables; the closer it is to 1, the stronger the relationship. When the two correlated variables tend towards opposite directions, the R value is negative. Furthermore, the relationship between two variables, independent of its correlation coefficient, can be considered to be statistically significant or not. It is significant when the probability that the two variables are not linearly related is below a conventional threshold, expressed by the p-value. In this sense, we generally consider that a correlation between two variables is significant when $p < 0.05$ (a threshold of $p < 0.10$ is also sometimes used).

2 — T-tests.
This test is used to determine whether the means of two data sets differ significantly from one another, i.e., if $p < 0.05$ (or $p < 0.10$). When such a statistical difference is observed, the magnitude of the difference, also known as the "effect size," can be measured. In particular, the effect size can be measured using Hedges' g (when the two data sets are of different sizes, as will be the case in our analyses).
By convention, we generally consider that a Hedges' g of around 0.2 corresponds to a small effect, of around 0.5 to a medium effect and of around 0.8 to a large effect.   — **INSET 4**

3
Results
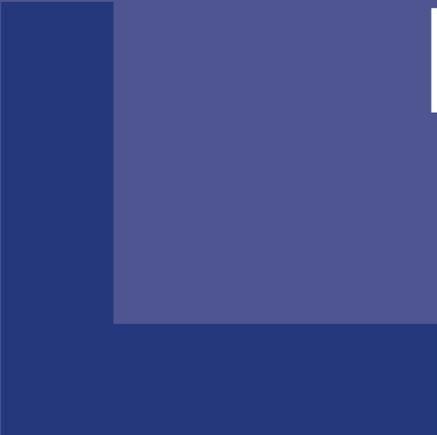
Results

3.1 — Internet Usage

The total amount of time each participant spent connected to the Internet during the study's 30-day period was, on average, 65.3 hours (median = 41 hours). This connected time, which corresponds to the time that our participants spent connected to and active on the Internet, regardless of their access channel (computer, tablet or cell phone) and of the activities they engaged in, varies greatly between participants, as is shown in the following figure.

Total time connected to the Internet
(during the study's 30-day period)

Number of participants
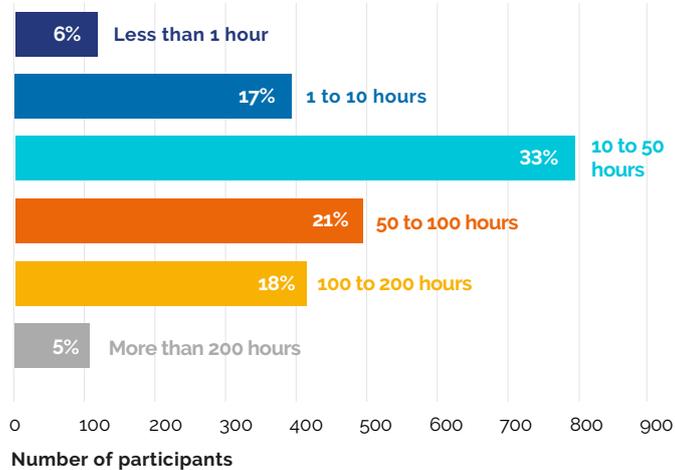
FIG. 1 — GRAPH READING: 33% of participants spent 10 to 50 hours on the Internet during the study's 30-day period.

Daily connected time
(only considering days of Internet usage)

Number of participants
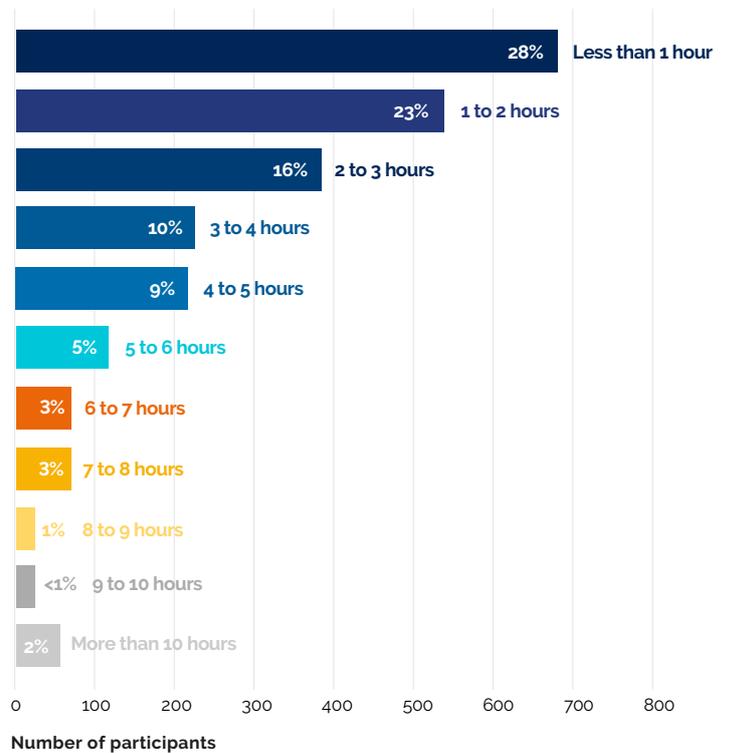
FIG. 2 — GRAPH READING: 23% of participants spent an average of 1 to 2 hours on the Internet on the days during which they used the Internet.

Not all participants connected to the Internet on a daily basis. On average, they connected to the Internet on 21 out of the 30 days of the study (median = 25 days).

The average daily connected time of individual participants, considering only the days on which they connected to the Internet, is 2.6 hours (median = 1.9 hours). Here again, there is considerable variation between participants, as the following figure shows.

It must be noted that members of Respondi's access panel have the option of disabling the recording of data at any time. We therefore cannot disregard the possibility that our participants' connected time exceeded that which was recorded during the study's 30-day period. However, if we refer to the figures published by Médiamétrie, a company specializing in audience measurement, the Internet usage values recorded in our study are very similar to those of the French population as a whole. Indeed, according to Médiamétrie, the French connected to the Internet on average 22 days a month in 2019, with an average daily connected time of 2.12 hours.[22] The Internet connection data collected in our study is therefore consistent with that of the French population as a whole.

What online activities did our participants engage in throughout the 30 days of the study? The following figure depicts the way in which the total connected time of all participants is distributed according to the nature of the sources consulted.

22. www.mediametrie.fr/fr/lannee-internet-2019

Distribution of connected time
(during the study's 30-day period)

Information
3%

Pornography
4%

Other social networks
5%

Online gaming
7%

Facebook, Twitter
and YouTube
(excluding
information sources)
11%

Other (real estate,
travel, food,
online dating...)
13%

Messages and online conversations
3%

Entertainment, audio,
video, streaming
28%

Online shopping
13%

Web portals and
search engines
13%
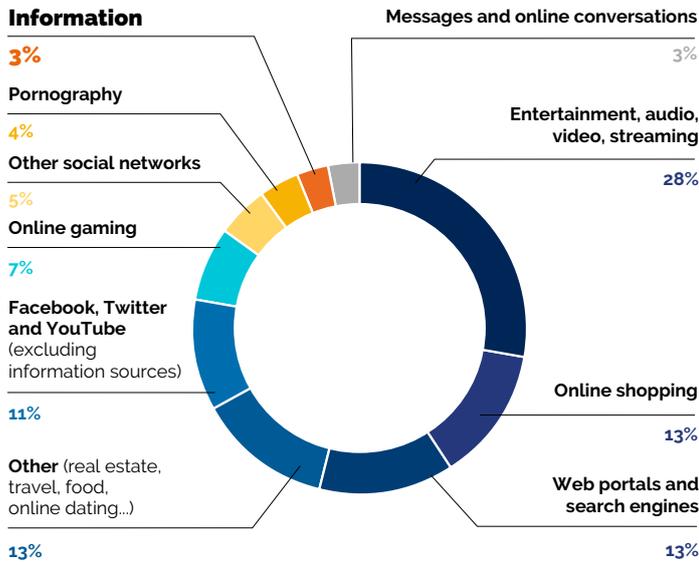
FIG. 3 — GRAPH READING: During the study's 30-day period, 3% of the total connected time of all participants was spent on information sources.

NOTE: A web portal is a website that brings together information from diverse sources – e.g., email, online forums, search engines – in a uniform way.[23] Certain portals, such as Yahoo! and Orange, feature news or information content. In our study, time spent by participants consulting such content within web portals was counted in the "information" category.

3.2 — Information Consumption on the Internet

3.2.1 – Overview of Effective Consumption

As the preceding figure shows, 3% of participants' total connected time was devoted to the consultation of information sources tracked in this study (this value is 3.5% for participants whose smartphone usage was not monitored).[24] This corresponds to an average of 2.1 hours per participant over the study's 30-day period (median = 43.3 minutes). If we only consider the days on which participants connected to the Internet, we see that participants spent an average of 4.9 minutes per day consulting online information sources (median = 1.3).

23. https://en.wikipedia.org/wiki/Web_portal

24. Participants who were tracked on their personal computers but not on their smartphones therefore spent a greater proportion of their connected time consulting online information sources than participants who were tracked on both types of devices. However, in absolute terms, the latter spent 1.8 times as much time consulting information sources than the former, with their total connected time on all tracked devices being 2.3 times greater.

3% of participants' total connected time was spent on information sources.

However, these average values conceal a large degree of variation in the online information behaviors of participants. Indeed, over the study's 30-day period, 17% of participants (N = 409) consulted no online information sources, 46% (N = 1,099) spent a total of less than one hour consulting online information sources, and 5% (N = 118) consulted online information sources for more than ten hours in total.

We observe a large degree of variation in online information behaviors.

Total number of hours spent consulting online information sources (during the study's 30-day period)

17%	0 hours
46%	Less than 1 hour
12%	1 to 2 hours
11%	2 to 4 hours
9%	4 to 10 hours
5%	More than 10 hours

0   200   400   600   800   1,000   1,200

Number of participants
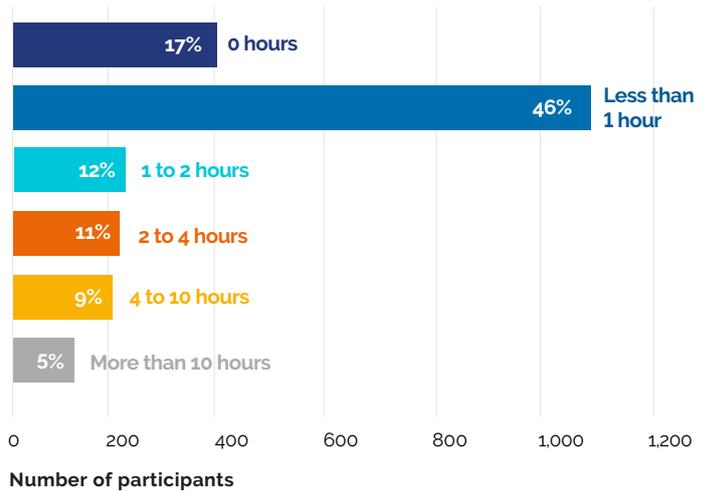
FIG. 4 — GRAPH READING: 46% of participants spent a total of less than one hour consulting online information sources during the study's 30-day period.

In examining the frequency with which participants consulted information sources, we observe that, on average, they visited at least one source on 45% of the days they connected to the Internet (median = 40%). The following figure displays this value as it pertains to each participant.

In total, over the study's 30-day period, 43.8% of the 2,946 information sources in our database were visited at least once by at least one of the 2,372 participants – which corresponds, in detail, to 51% of the 2,295 information sources centered around a website and 18.3% of the 651 "independent" YouTube channels appended to our database (see section 2.2).

## Percentage of each participant's days of connection during which they consulted online information
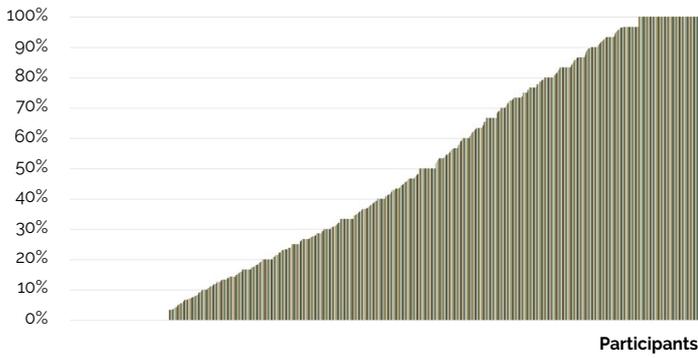
FIG. 5 — GRAPH READING: Each vertical line of color represents a participant. The height of each line indicates the percentage of days of connection on which the corresponding participant consulted at least one information source. Participants reaching 50%, for instance, are those who consulted one or more information source(s) on every other day of connection.

NOTE: The white area to the left of the graph corresponds to the 409 participants who did not consult any online information sources throughout the study period.

Over the study's 30-day period, **43.8%** of the 2,946 information sources tracked in this study were visited at least once by at least one of the 2,372 participants.

As a whole, participants consulted an average of 15 different information sources throughout the study period (median = 8). The following figure highlights the heterogeneous behavior of participants as regards the number of different information sources they consulted.

Number of information sources consulted
(throughout the study's 30-day period)

Number of participants
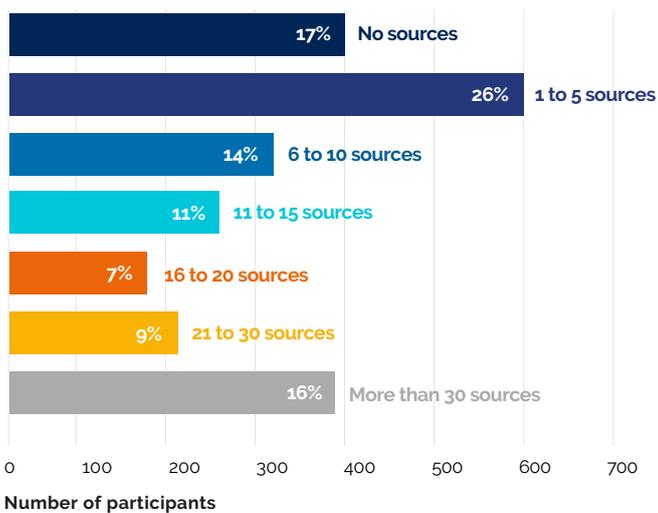
FIG. 6 — GRAPH READING: 26% of participants consulted 1 to 5 different information sources throughout the study's 30-day period.

The average duration of consultation of an information source was 1.9 minutes per visit (median = 1.4 minutes). This average duration varies significantly between participants, as is shown in the following figure.

Average duration of consultation of an information source

Number of participants
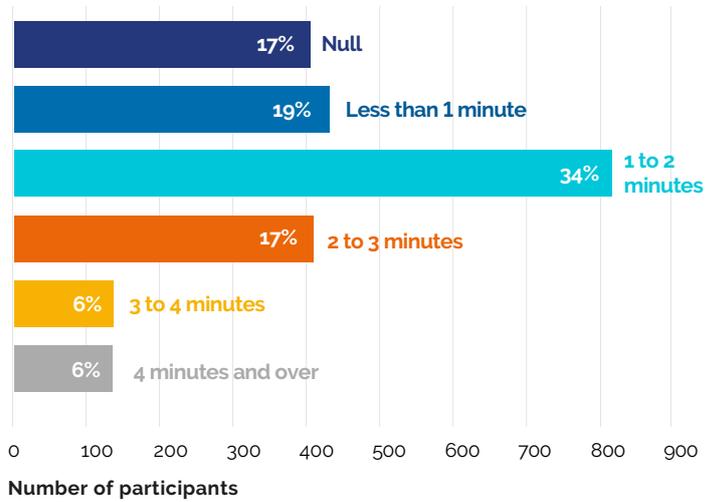
FIG. 7 — GRAPH READING: 34% of participants spent an average of one to two consecutive minutes per consultation of an information source.

Predictably, we observe that the more time participants spent informing themselves online during the study period, the greater the number of different information sources they consulted. This suggests that individuals who spend a lot of time informing themselves online do so less by increasing the amount of time spent consulting the same source than by diversifying the sources they consult.

Relationship between time spent on information and the number of information sources consulted

Total number of sources consulted during the study's 30-day period
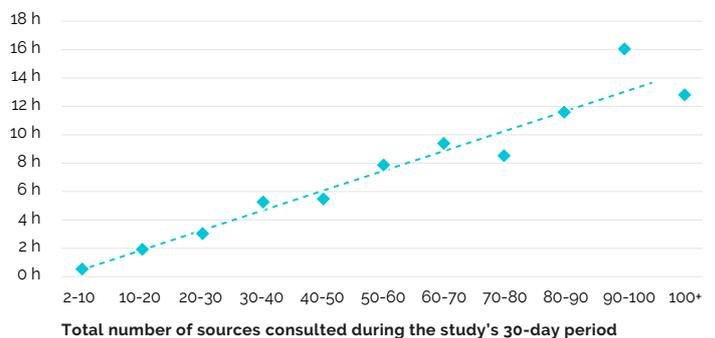
FIG. 8 — GRAPH READING: Participants who consulted 2 to 10 different information sources during the study's 30-day period spent on average 0.74 hours informing themselves online. Those who consulted 90 to 100 different information sources spent on average 16.01 hours informing themselves online. There exists a quasi-linear relationship between the average time spent consuming online information and the number of different information sources consulted.

This interpretation is supported by the fact that, as the following figure shows, the proportion of total time spent on the most consulted information source tends to decrease as the number of different information sources consulted increases.

Proportion of total time spent on the most consulted information source according to the number of sources consulted
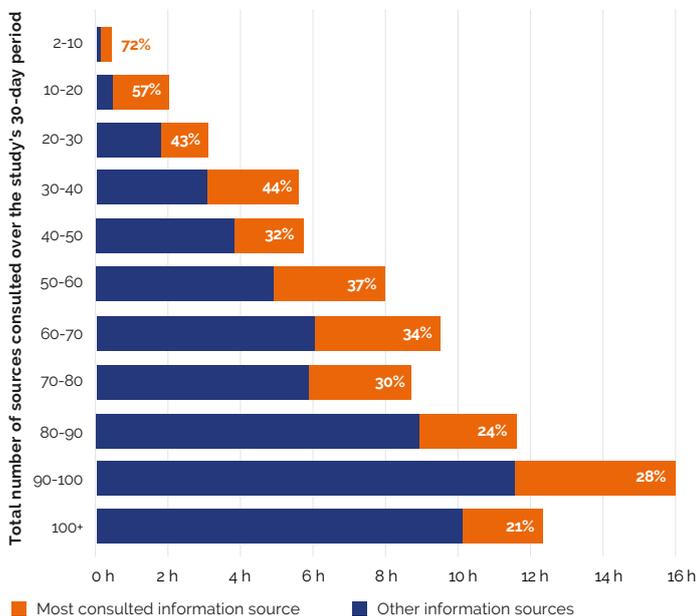
FIG. 9 — GRAPH READING: Participants who visited between 50 and 60 different information sources over the study's 30-day period spent 37% of their time on their most consulted source.

It should be noted that participants who spent a lot of time informing themselves online nonetheless spent, on average, more total time consulting their primary information source. This is shown in the following figure.

Evolution of total time spent on the most consulted source according to the number of sources consulted
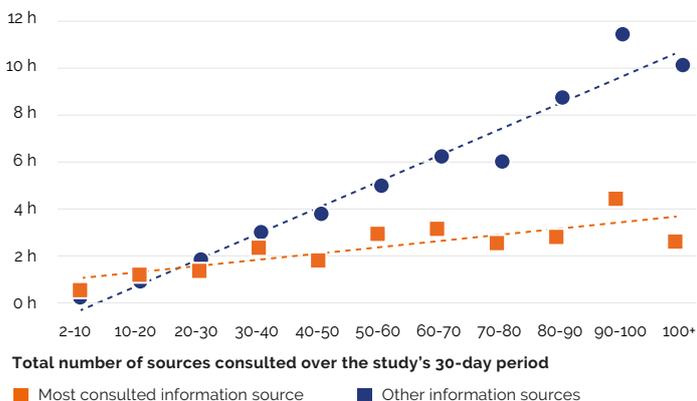
FIG. 10 — GRAPH READING: The dotted line in orange (regression line) represents the increase in the total time spent on the information source most consulted by each participant as the total number of sources consulted increases. The dotted line in blue represents the corresponding increase in total time spent consulting other information sources.

3.2.2 — Use of Applications for Information

As discussed in the Methodology section of this report, the 2,295 information sources selected (excluding the 651 "independent" YouTube channels appended to our database) correspond to a website as well as, where applicable, an associated YouTube channel, Facebook and Twitter page and mobile application. The following figure shows that the vast majority of the time spent by participants on these sources of information was spent on their websites.

> The vast majority of the time spent by participants on sources of information was spent on the websites of these sources.

Method of consultation of information sources
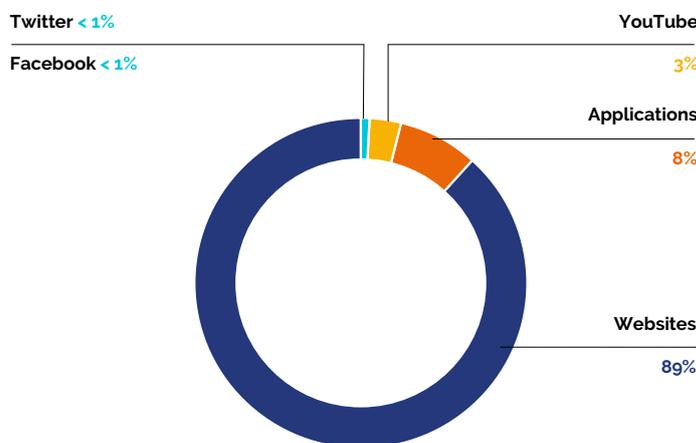
FIG. 11 — GRAPH READING: 89% of the time spent by participants on information sources was spent on the website of these sources, as opposed to 8% for their mobile applications.

NOTE: This graph excludes the applications of major generalist television channels.

It is important to note that our analyses partially underestimate participants' use of applications for information for two reasons. First, only 48% of participants were monitored on their cell phones, in addition to their other connected devices. In other words, we were able to measure the use of information-related mobile applications by slightly less than half of the study's participants.

Second, our analyses do not take into account the mobile applications of major generalist television channels (M6 and TF1, in particular). Indeed, the tool used in this study to monitor connection to mobile applications does not allow us to determine the nature of the content consulted by participants on these applications, and therefore prevents us from knowing whether or not said content is related to information. However, the data we collected on the websites

of major generalist television channels shows that the vast majority of traffic on these websites concerns entertainment programs and television series, not information. Contrary to our procedure with regards to the websites of these television channels, it was not possible for us to sort through the data collected from their mobile applications so as to retain only the data pertaining to the consultation of information-related content. Consequently, it appeared preferable to exclude the mobile applications of these television channels from our analysis, in order to avoid artificially inflating the role played by mobile applications in the online consumption of information.

Of the 48% of participants who were monitored on their cell phone, only 215 (18.7%, or 9.1% of the entire panel) used at least one information-related application over the study's 30-day period. If we limit our analyses to this particular sub-group of participants, we observe that mobile applications are, to these participants, a privileged means of access to information. Indeed, these participants spent an average of 48.1% of their online time dedicated to information consumption on these applications (median = 45%).

Method of consultation of information sources among users of applications

Websites, Facebook, Twitter and YouTube

52%

Applications

48%

Overall, only **4.4%** of the connected time our participants dedicated to online information consumption was spent on YouTube.

The following figure presents a ranking of the top ten information-related applications used by these 215 participants.

Ranking of information-related applications by number of users

23%	L'Équipe
12%	20 Minutes
9%	RMC
9%	France Info
8%	Le Monde
7%	BFMTV
7%	Ouest France
5%	RTL
5%	Le Parisien
4%	Le Figaro

Number of users
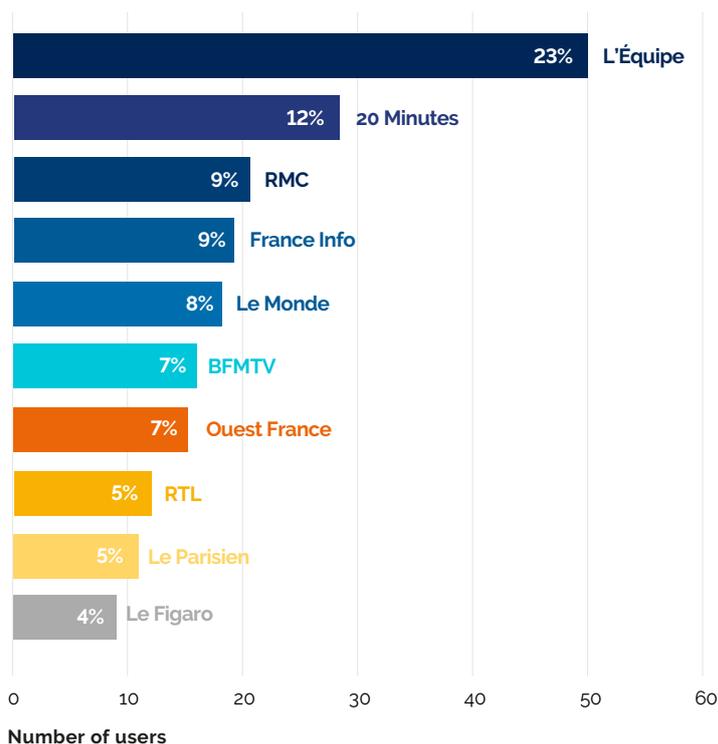
FIG. 13 — GRAPH READING: Of the 215 participants who used an information-related mobile application, 23% used the application of the newspaper l'Équipe, and 9% used the application of France Info.

NOTE: This graph excludes the applications of major generalist television channels and those of weather forecasting services.

3.2.3 — Use of YouTube for Information

Overall, only 4.4% of the connected time our participants dedicated to online information consumption was spent on YouTube. This proportion of time spent on YouTube includes both the viewing of channels belonging to the information sources initially considered in this study and the viewing of the "independent" channels subsequently added to our database (see section 2.2). The consultation of these two types of YouTube channels can be broken down as follows:

⌐ 325 participants (13.7% of our panel) visited at least once a YouTube channel belonging to the information sources initially selected for this study. Throughout the study period, these participants spent an average of 64 seconds per connected day consulting these channels.

⌐ 143 participants (6% of our panel) visited an "independent" YouTube channel at least once. These participants spent an average of 89 seconds per connected day consulting these channels.

Contrary to what we might expect, the consultation of information on YouTube does not appear to be related to

the age of participants. This is shown by a correlation analysis we conducted between the age of participants and the time spent consulting all of the YouTube channels included in our study's database: $R = -0.04$, $p = 0.06$, $N = 2,372$.

3.2.4 — Types of Information Sources Consulted

In order to evaluate the type of information consumed by participants, we manually categorized each of the 2,946 information sources included in our database according to the nature of their content. The categories identified, as well as the proportion of time spent by participants on each category, are shown in the following figure.

Types of information sources consulted

*Automobile, Lifestyle, Economy, TV program, Foreign francophone media, Science, Vocational news, Men's press, Cooking, Local news, Environment, Animal, Parenting, Spiritual, Aerospace, Fact-checking
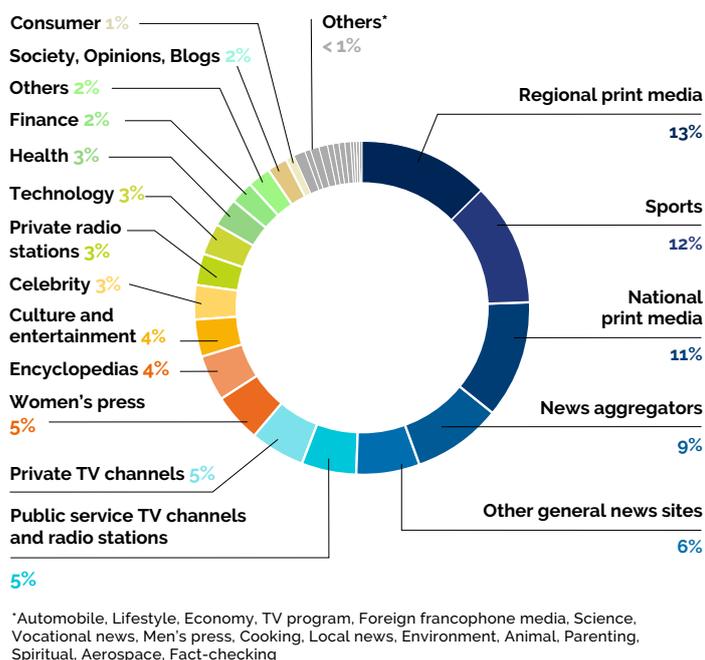
FIG. 14 — GRAPH READING: Overall, participants spent 13% of their connected time dedicated to information consumption on online sources belonging to regional print media.

As the above figure shows, **the information sources that were most consulted by participants during the study's 30-day period were those of regional print media.** The online sources of *Ouest France*, of the *Dépêche* and of *L'Est Républicain* lead this category, followed by those of the *Parisien*, the *Télégramme* and *Sud-Ouest*. The online sources of these six daily newspapers alone account for more than 50% of total traffic in their category. **Information sources dedicated to sports news ranked second in terms of the time spent by participants consuming online information**. The success of this category is in large part due to the high volume of traffic on the website and, to a lesser extent, the mobile application associated to the newspaper *L'Équipe*.

The online sources of national print media are positioned in third place. The sources of *20 Minutes*, of *Le Figaro* and of *Le Monde* stand out significantly from other sources in this category in terms of the frequency of consultation by participants. News aggregators are, for their part, in fourth position, followed by the sources of other general news sites.

The following table details the consultation of the eight types of information sources most consulted by our study's participants. We observe that while information sources dedicated to sports news ranked second in terms of total consultation time, they were consulted by less than half the number of participants who consulted sources of regional or national print media – the latter nevertheless coming in third place of this ranking. This therefore indicates that the average time spent by participants on an information source depends, at least to some extent, on the nature of the source in question. The same is true for news aggregators, whose total consultation time appears to be particularly high when compared to the number of participants having consulted such sources throughout the study's 30-day period. This phenomenon can likely be explained, at least in part, by the fact that the articles compiled by aggregators are freely available, as opposed to those of print media outlets, which often require a subscription to be read online. Internet users who consult a paid article without having subscribed to the corresponding media will therefore only stay on the web page in question for the time it takes them to realize that they do not have access to its content.

	Number of visitors	Number of visits	Average consultation time (in minutes)	Total consult. time (in hours)	Most consulted sources (according to total consultation time)
Regional print media	1,211	16,114	2.4	633.7	• **Ouest France** • **La Dépêche** • **L'Est Républicain**
Sports	560	13,404	2.6	589.5	• **L'Équipe** • **sports.fr** • **footmercato.net**
National print media	1,300	14,495	2.4	567.9	• **20 minutes** • **Le Figaro** • **Le Monde**
News aggregators	511	5,377	4.8	431.1	• **MSN Actualités** • **Orange Actualités** • **Yahoo! Actualités**
Other general news sites	1,076	8,458	2.2	313.0	• **Planet.fr** • **Actu.fr** • **L'Internaute.fr**
Public services TV channels and radio stations	862	7,685	2.1	264.4	• **France Info** • **France Inter** • **France Bleu**
Private TV channels	780	5,185	3	258.9	• **BFMTV** • **CNEWS** • **M6**
Women's press	1,024	7,043	2.1	242.6	• **Le Journal des Femmes** • **Elle** • **Femme Actuelle**

TABLE 1

3.2.5 — Leaders of the Online Information Market

The follow figure illustrates the top 26 sources information that were consulted by the greatest number of participants throughout the study's 30-day period.

Ranking of leading information sources by number of participants having consulted them
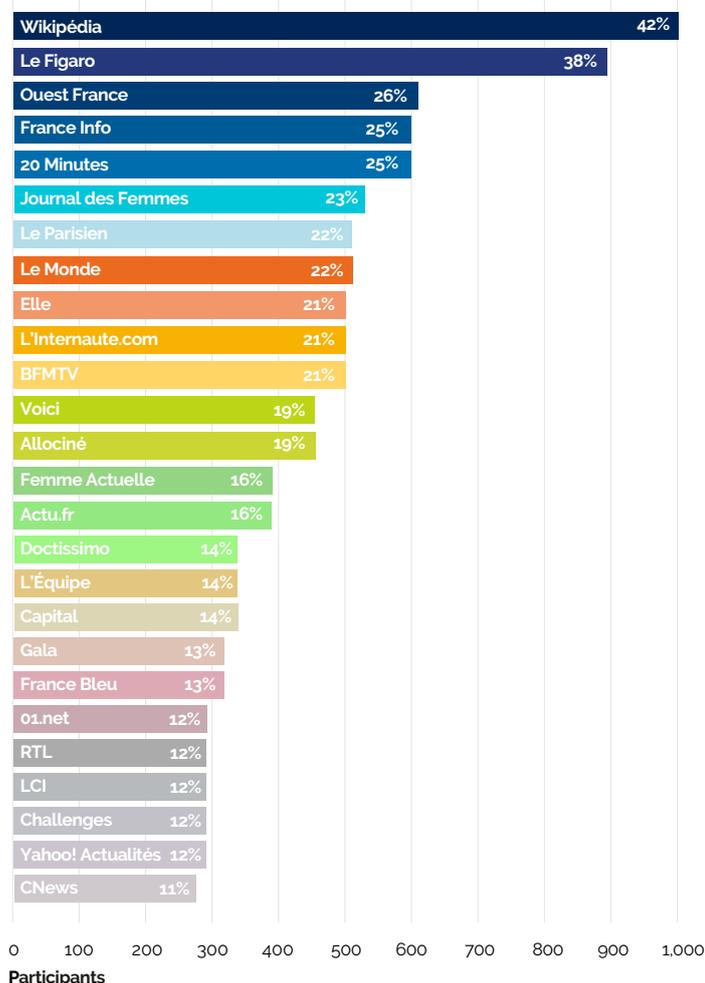
FIG. 15 — GRAPH READING: 42% of all participants (i.e., 990 participants) consulted Wikipedia at least once throughout the study's 30-day period.

NOTE: This graph does not account for online sources of TV programs or online weather forecasts.

We first observe that Wikipedia is at the top of this ranking. While Wikipedia is an encyclopedia, and therefore not strictly speaking a source of news information, we chose to include it in our study because its website is updated in near real-time by a highly active community of contributors and features a vast number of pages relating to news information (court cases, political and social news, biographies of prominent figures, etc.). Going far beyond its initial purpose as a universal and participatory online encyclopedia, Wikipedia can therefore be used as a significant source of news information. Wikipedia's popularity among our study's participants is likely

due in part to the fact that Wikipedia pages often appear at the top of search engine results for queries both related and unrelated to news information. **Overall, these "top 26" information sources largely consist of online sources belonging to traditional media outlets, and alone constitute 40% of the time participants spent informing themselves online.**

If the leading information sources are ranked not by the number of participants having consulted them, but by their total consultation time over the study's 30-day period, the composition of the "top 26" changes little, while the order of sources in the ranking is slightly altered, as can be observed in the following figure. Here, the "top 26" account for 50.4% of the time participants spent informing themselves on the Internet.

Ranking of leading information sources by total consultation time
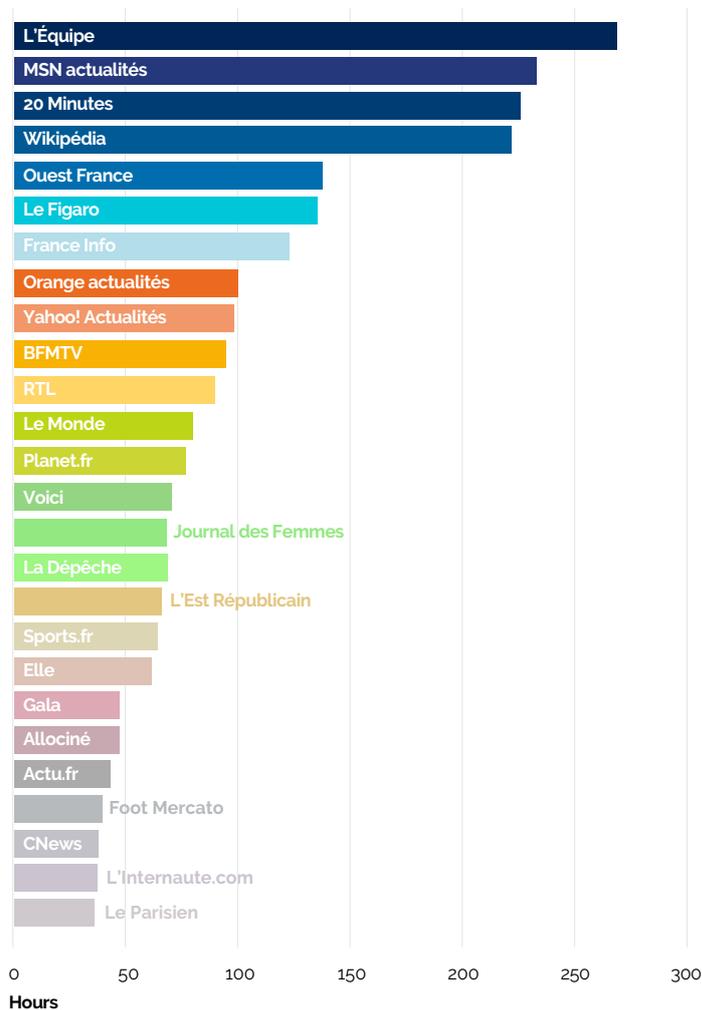
FIG. 16 — GRAPH READING: Overall, participants spent a total of 266 hours consulting the sports news source L'Équipe throughout the study's 30-day period.

NOTE: This graph does not account for online sources of TV programs or online weather forecasts.

3.3 — Characteristics of Consumers of Online Information

As discussed in Section 3.2.1 of this report, there exists a large degree of variation in the online information consumption behaviors of our study's participants. Does there exist a relationship between participants' individual or social characteristics and the extent to which they used the Internet to inform themselves?

To answer this question, we conducted several correlation analyses between the proportion of connected time that participants dedicated to the consultation of online information sources and the following characteristics:

- ⌐ Age.
- ⌐ Gender.
- ⌐ Socioprofessional category (CSP).[25]
- ⌐ Level of education.
- ⌐ Income level.
- ⌐ Household income level.
- ⌐ Composition of household (whether or not they live alone and the number of children in their household).
- ⌐ Reported interest in news, in general, and in political and social news, in particular.
- ⌐ Reported frequency of information consumption *via* television, radio, print media or the Internet.
- ⌐ Reported level of trust in institutions (army, police, justice system, education system), in the media, in the government and in the scientific community.
- ⌐ Reported political leaning (on a spectrum ranging from far-left to far-right).
- ⌐ Attitude towards the Yellow Vests movement (on a spectrum ranging from reported hostility towards this movement to self-identification as a member of this movement).
- ⌐ Score on a standardized scale intended to evaluate adherence to conspiracy theories (Bruder *et al.*, 2013).
- ⌐ Daily connected time.
- ⌐ Number of information sources consulted per day.

The results of these correlation analyses are shown in the following tables.

Correlation between the proportion of connected time dedicated by participants to information consumption and these following characteristics:

Characteristics	R	Characteristics	R
Women	-0.10	Daily connected time	-0.01
Age	0.20	Number of information sources consulted per day	0.35
18-24 years old	-0.07	Reported interest in general news	0.13
25-34 years old	-0.10	Reported interest in social and political news	0.13
35-49 years old	-0.05	Reported frequency of information consumption *via* television	0.02
50-64 years old	0.10	Reported frequency of information consumption *via* radio	0.05
65 years old and over	0.11	Reported frequency of information consumption *via* print media	0.08
Upper CSP	-0.02	Reported frequency of information consumption *via* Internet	0.15
Intermediary CSP	-0.02	Reported level of trust in institutions	0.04
Lower CSP	-0.06	Reported level of trust in the media	0.03
Inactive (all)	0.09	Reported level of trust in government	0.04
Students	-0.07	Reported level of trust in scientific institutions	0.04
Unemployed	0.00	Reported political leaning	-0.03
Retired	0.15	Political extremism (far-left and far-right)	-0.02
Level of education	0.02	Reported attitude towards the Yellow Vests movement	-0.05
Income level	0.09	Self-identifies as a member of the Yellow Vests movement	-0.03
Household income level	0.07	Level of adherence to conspiracy theories	-0.01
Lives alone	0.04		
No. of children in household	-0.06		

TAB. 2 — TABLE READING: Age is positively correlated with the proportion of connected time dedicated to information consumption (*R* = 0.20).

NOTE: Correlation coefficients (*R*) in grey are insignificant (p ≥ 0.05). For those in red, *R* ≥ 0.10. These analyses are based on the 1,614 participants who completed the end-of-study survey.

These analyses show that a certain number of individual and social characteristics are related to participants' use of the Internet to inform themselves. The most significant of these characteristics appears to be the age of participants, with individuals 50 and over informing themselves more on the Internet than others. Nevertheless, the observed correlations between participants' sociodemographic characteristics and their use of the Internet to inform themselves are all relatively weak – these characteristics alone therefore cannot explain our observation of high inter-individual variance in online information behaviors.

3.4 — Comparison Between Reported and Effective Consumption of Information

Following the study's 30-day period, we asked our participants to complete a survey inquiring about their relationship to information, the access channels through which they inform themselves and their online information behaviors (frequency of consultation and type of sources consulted, among other things). Of the 2,372 participants in our study, 1,614 completed this end-of-study survey. The following analyses therefore concern these 1,614 participants.

Through which access channel do these participants say they primarily consume information? The following figure shows that participants' preferred channel for accessing information remains television, with 72% reporting that they inform themselves through this channel "more or less every day." **The Internet comes in second position, ahead of radio and print media, with 56% of participants reporting that they connect to the Internet more or less every day in order to consult information.**
23% reported informing themselves *via* the Internet "at least once a week," 11% "at least once a month" and 10% "never."

Reported frequency of information consumption by access channel
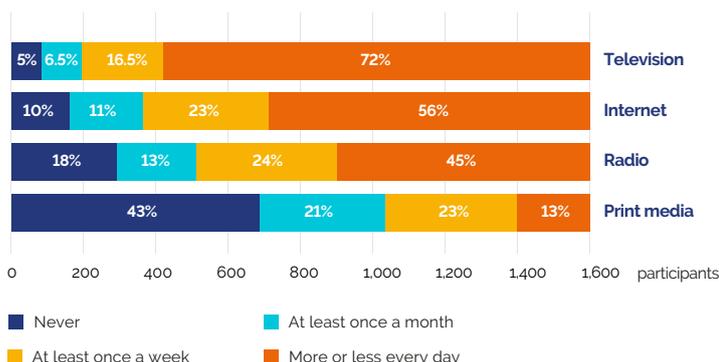
FIG. 17 — GRAPH READING: 56% of participants report using the Internet "more or less every day" to inform themselves, 23% "at least once a week," 11% "at least once a month" and 10% "never."

NOTE: N = 1,614 participants.

Does participants' representation of the frequency with which they inform themselves *via* the Internet correspond to their effective behavior, as measured in this study? To determine this, we calculated for each of these 1,614 participants the ratio of the number of days on which they consulted at least one information source over the number of days they connected to the Internet over the study period. We were then able to compare this individual ratio to the frequency with which each participant reported using the Internet to inform themselves. To do so, we conducted a correlation analysis between the ratios of effective consultation of online information of all 1,614 participants, on the one hand, and the frequency with which each participant reported informing themselves online, on the other.

As shown in the following figure, there exists a positive and statistically significant correlation between these two variables (R = 0.17, p < 0.001). This correlation is, however, relatively weak. This indicates that many participants overestimate the frequency with which they inform themselves online, whereas other participants underestimate this frequency. In other words, **participants as a whole seem to have a relatively fuzzy perception of the actual frequency with which they use the Internet to inform themselves.**
We must note, however, as was indicated in Inset 3 of this report, that we were not able to account for the consumption of information occurring directly on participants' social media "walls" or "feeds." It is therefore possible that the correlation between the reported and effective frequency of online information consumption is in fact slightly stronger than that which is observed here.

Correlation between reported and effective frequency of online information consumption
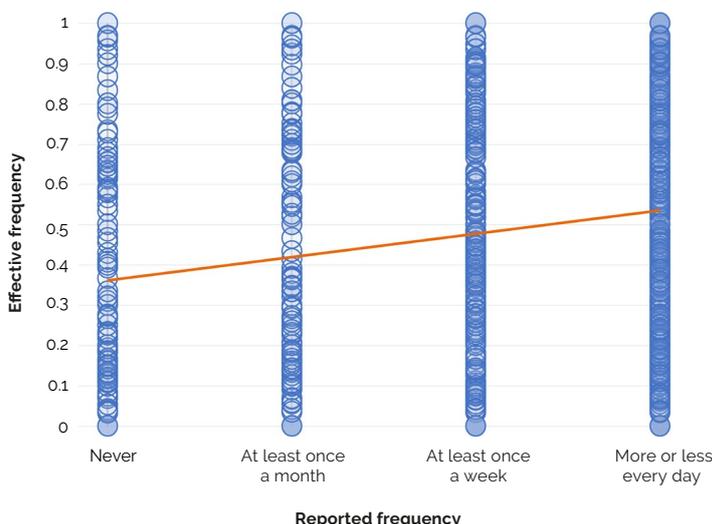
FIG. 18 — GRAPH READING: A small blue circle situated at "never" on the horizontal axis and 0 on the vertical axis corresponds to a participant who reported never having used the Internet to inform themselves during the study's 30-day period and who effectively did not consult any online information sources during this period. On the contrary, a circle situated at "more or less every day" on the horizontal axis and 1 on the vertical axis corresponds to a participant who reported having used the Internet more or less every day to inform themselves during the study's 30-day period and who, in effect, consulted at least one information source each day they connected to the Internet during this period.
When several circles are superimposed, their surface appears darker.
The red line indicates the overall relationship between reported and effective frequency of online information consumption for all participants (R = 0.17, P < 0.001, N = 1,614).
Reported frequency: answer to the question *"In the last 30 days, how often did you inform yourself on the Internet, including on the websites of TV channels, radio stations and print media?"*
Effective frequency of consultation: from 0 = consulted no information sources during connected days to 1 = consulted at least one information source every connected day.

In order to further develop these analyses, we selected fifteen sources of information and asked participants whether or not they consulted these sources online and, when applicable, how often they consulted them. Twelve of the fifteen sources selected correspond to the information sources that the French report consulting the most on the Internet (according to Reuters' 2020 study). The remaining three sources correspond to sources that were not included in the preceding twelve but that were most consulted by the panel members tracked in our study during the month preceding our study's data collection period.

The following figure provides a visual comparison of the ranking of these sources in terms of reported consultation, on the one hand, and of effective consultation, on the other. Each of these information sources was considered as having been effectively consulted by a participant if they visited the source in question at least once during the study's 30-day period.[26]

We observe significant variations between the reported and effective consultation of certain information sources. As concerns *Brut*, this variation can at least in part be explained by the underestimation of effective consultation resulting from our study's methodology (see the note below the preceding figure). But the same cannot be said for the online sources of TF1 and M6, whose consultation is significantly overreported by participants. This probably stems from the fact that many participants obtain information from these sources *via* television, rather than the Internet. It is therefore possible that these participants reported informing themselves on the online sources of these channels, when in realty they did so *via* their television. It should also be noted that the only three information sources whose consultation was underreported are those of *Ouest France*, *Voici*, and *Le Figaro*.

We then conducted a correlation analysis using the same model as that shown in Figure 18. We calculated for each of the 1,614 participants the ratio of the number of days on which they consulted each of the 15 information sources over the number of days they connected to the Internet throughout the study period. We were then able to compare this individual ratio to the frequency with which each participant reported consulting each of these 15 sources.

Reported consultation / Effective consultation

FIG. 19 — GRAPH READING: Figure left: 39% of participants reported consulting *20 Minutes* on the Internet to inform themselves during the study's 30-day period. Figure right: 28% of participants did effectively consult *20 Minutes* at least once during this period, corresponding to a 26.7% decrease.

NOTE: N = 1,614 participants. The effective consultation of *Brut* is underestimated in our study. This is because *Brut* publishes short videos meant to be viewed directly on the personal "walls" or "feeds" of social network users (contrary to articles that are "shared" on social networks, but whose consultation requires users to visit the website of the media that published the article in question). However, in our study, we were unable to account for participants' consultation of information directly on their social media "walls" or "feeds" (see Inset 3 of this report).

26. Note that the consultation of live and recorded programs featured on the websites of TF1 and M6 were accounted for. These websites propose a categorization of their programs. For the purpose of this study, only programs belonging to the *"Info, mag, et sport"* (News, magazine, and sport) category on MYTF1.fr and *"Info et Société"* (News and Society) and *"Sport"* (Sport) category on 6play.fr were taken into account. Programs broadcasting sports events, as opposed to sports news, were excluded from the data.

Correlation between reported and effective frequency of consultation of 15 information sources
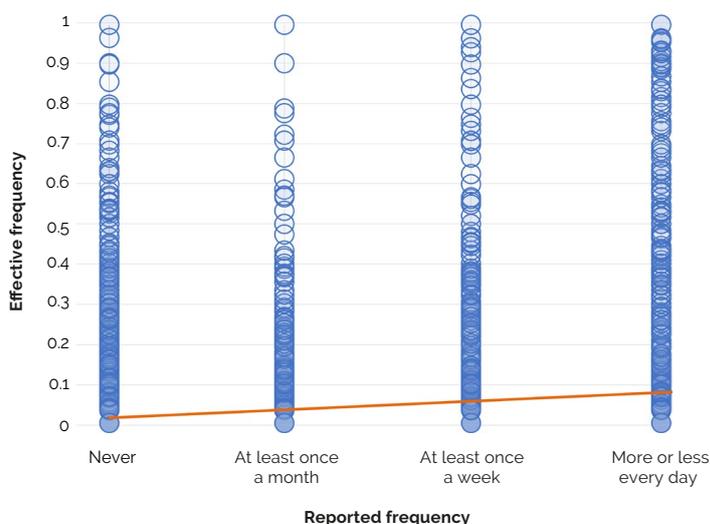
FIG. 20 — GRAPH READING: A small blue circle situated at "never" on the horizontal axis and 0 on the vertical axis corresponds to a participant who reported never having informed themselves on one of the 15 online information sources during the study's 30-day period and who effectively did not consult any of these sources during this period.
When several circles are superimposed, their surface appears darker. Given that participants evaluated their consultation of each of the 15 different information sources, the figure features 15 circles per participant. The red line indicates the overall relationship between reported and effective frequency of consultation of the 15 sources for all participants (R = 0.22, P < 0.001, N = 24,210 responses, 1,614 participants). Reported frequency for each of the 15 information sources: answer to the question *"In the last 30 days, how often did you inform yourself on the Internet on the following sources: [list of the 15 sources]?"* Effective frequency of consultation: from 0 = source never consulted during connected days to 1 = source consulted every connected day.

As is shown in the previous figure, there exists a positive and statistically significant correlation between these two variables ($R = 0.22$, $p < 0.001$). Here again, we must remark that this correlation is rather weak, which confirms that participants do not have a very clear perception of their own information consumption behaviors on the Internet.

3.5 — Relationship Between Level of Trust and Consultation of Information Sources

Is the frequency with which participants consult a given source of information related to the level of trust they report having in this source? To determine this, we used our end-of-study survey to measure participants' level of trust in the 15 information sources for which they had been asked to report their frequency of consultation (see the previous section for an explanation of how these information sources were selected).

To establish this measurement, we asked participants to indicate their level of trust in each of these sources on a scale of 1 = "completely distrust" to 4 = "completely trust." Participants also had the possibility of answering that they had "no opinion" regarding each of these sources. The figure below presents the average results of this measurement.

Reported level of trust in 15 information sources

Source	Score
Channels of the France Télévisions group	3.06
Le Monde	2.97
Ouest France	2.86
M6 channel	2.84
TF1 channel	2.79
20 Minutes	2.76
Le Figaro	2.75
Mediapart	2.74
Le Parisien	2.73
Huffington Post	2.56
Brut.	2.48
BMTV channel	2.45
MSN Actualités	2.34
Yahoo! Actualités	2.28
Voici	1.90

Average reported level of trust
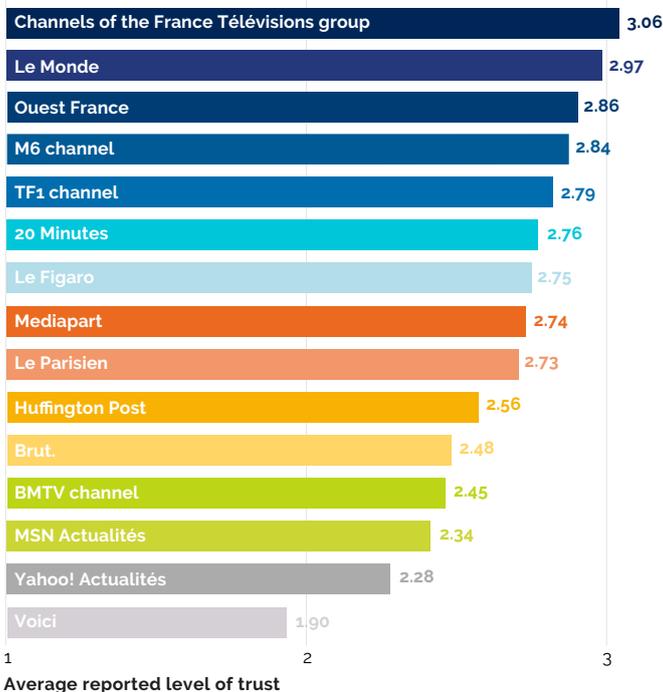
FIG. 21 — GRAPH READING: The channels of the France Télévision group were the source that participants reported trusting most, with an average score of 3.06 (3 = "somewhat trust"). Scale of trust: from 1 = "completely distrust" to 4 = "completely trust."
NOTE: N = 17,931 responses, 1,614 participants.

In its 2020 study, Reuters similarly surveyed French people's level of trust in a certain number of information sources, ten of which were also considered in our study. Interestingly, we note that, as is shown in the following figure, there exists a very close correlation between the average trust scores attributed to each of these ten sources by the participants of Reuters' study and those attributed by the participants of our study.

Reported trust in 10 sources of information: comparison of Reuters 2020 and Fondation Descartes results

R = 0.95, p = 2.5e-0.5

Reuters results

Fondation Descartes results
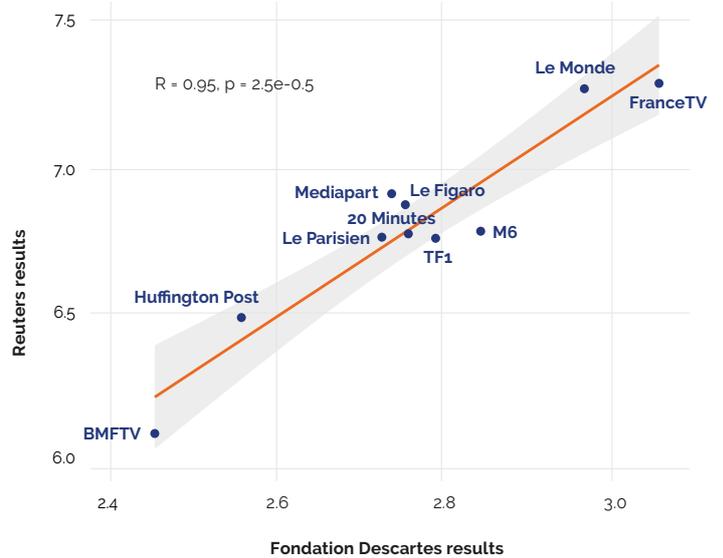
FIG. 22 — GRAPH READING: Correlation between the average trust scores attributed to each of the 10 common sources by Reuters 2020 study participants and those attributed by our participants.
Scale used in the Reuters study: 0 = "not at all trustworthy" to 10 = "completely trustworthy." Scale used in our study: from 1 = "completely distrust" to 4 = "completely trust."
The red line represents the correlation between the two variables ($R = 0.95$, $p < 0.001$, N = 10).

What is the relationship between participants' reported level of trust in each of the 15 information sources evaluated in this study and the frequency with which they report consulting theses sources on the Internet? To determine this, we conducted a correlation analysis between these two declarative variables. As the following figure shows, there exists a positive, statistically significant, but moderate ($R = 0.35$) correlation between these two variables.

Correlation between trust and reported frequency of consultation

This positive correlation between trust and frequency of online consultation of an information source diminishes drastically if we no longer consider reported frequency of consultation, but *effective* frequency of consultation. As the following figure shows, the correlation coefficient is reduced from R = 0.35 to R = 0.07 (*p* < 0.001).

## Correlation between trust and effective frequency of consultation
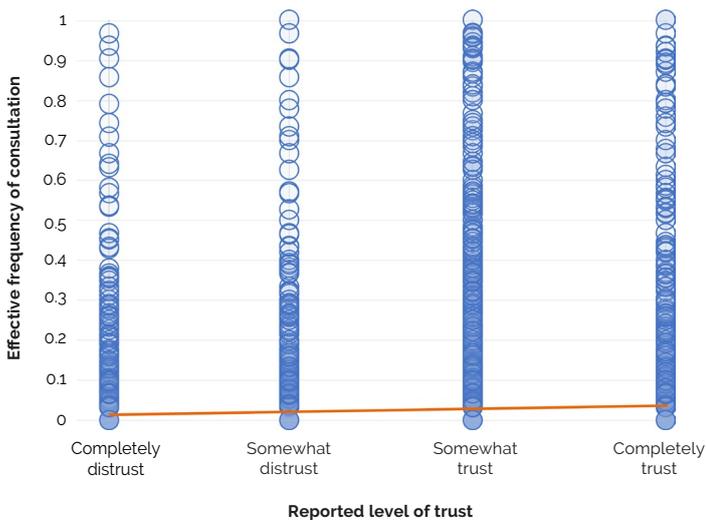
information and who never consulted this source throughout the study's 30-day data collection period. When several circles are superimposed, their surface appears darker. The red line indicates the overall relationship between trust and effective frequency of consultation (R = 0.22, P < 0.001, N = 24,210 responses, 1,614 participants). Reported level of trust: answer to the question *"To what extent do you trust the following sources of information: [list of 15 sources]?"* Effective frequency of consultation: from 0 = source never consulted during connected days to 1 = source consulted every connected day.

As is shown in the following figure, if the level of trust attributed to each of the 15 information sources is compared not to the effective frequency of online consultation of these sources, but to the share of online time dedicated to information spent on each of these sources, the correlation coefficient falls further to R = 0.05 (p < 0.001).

Correlation between level trust in an information source and share of time spent on this source

As we can see, **the relationship between the level of trust in an information source and the fact of consulting this source more or less regularly, or for a more or less significant amount of time, seems tenuous at best.**

3.6 — Disinformation Consumption

As indicated in the Methodology section of this report, some of the information sources included in our study's database were categorized as being unreliable. This categorization is based on that which is proposed by Storyzy's algorithm, which was shown to be coherent with the manual classification performed by the journalists of the *Décodex*.

After having visited each of the sources considered to be unreliable, we identified the principal topic of each of these sources. We thus arrived at the following classification of information sources considered to be unreliable: generic disinformation, health-related disinformation, "click-bait," pseudoscience and satire (see Methodology section).

Among all participants (N = 2,372), time spent consulting information sources deemed unreliable corresponds to 5% of total connected time dedicated to information, or 0.16% of total connected time. However, not all participants consulted such sources during the study's 30-day period. Indeed, only 39% of participants consulted information sources considered to be unreliable. These participants visited such sources for an average of 40 seconds per day (median = 7 seconds), which represents on average 10.9% of their daily connected time dedicated to information (median = 3.7%), or 0.4% of their total connected time.

The following figure illustrates the distribution of time spent by these participants on different types of unreliable sources.

Distribution of time spent on unreliable information sources
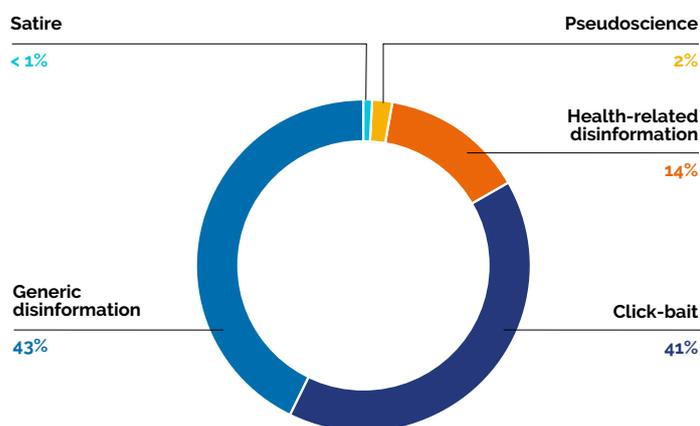
FIG. 26 —GRAPH READING: 43% of total time spent consulting unreliable information sources was on sources of generic disinformation.

NOTE: N = 921 participants. These are the participants that consulted unreliable information sources throughout the study's 30-day period.

Over the study's 30-day period, **39%** of participants consulted information sources considered to be unreliable.

3.6.1 — Risk Factors for Exposure to Generic Disinformation on the Internet

We sought to determine whether the participants who consulted a source of generic disinformation *at least once* throughout the study's 30-day period displayed a particular profile. To do so, statistical analyses were conducted on the 1,614 participants who complete the end-of-study survey. Out of these 1,614 participants, 163 (10.1%) visited a source of generic disinformation at least once during the study's 30-day period. The average time they spent on these sources was 1,616 seconds (26.93 minutes), with a median time of 120 seconds (2 minutes). The substantial discrepancy between the average and median values indicates that some of the participants in question spent significantly more time than others consulting these sources. In fact, while 49 participants spent less than a minute on these sources throughout the study's 30-day period, the 20 participants who consulted them the most did so for an average of 4 hours.

First, our analysis reveals a positive correlation between the fact of having visited a source of generic disinformation *at least once* and the following factors:

◨ Average daily connected time (R = 0.25, $p < 0.001$).

◨ Average number of information sources (all categories included) visited per connected day (R = 0.38, $p < 0.001$).

◨ The fact of having visited *at least once* a *reliable* general news site or a *reliable* opinion blog (R = 0.10, p = 0.001).

◨ The fact of having visited *at least once* a "click-bait" source (R = 0.16, $p < 0.001$, see Table 8), a source of health-related disinformation (R = 0.16, $p < 0.001$, see Table 8) and a social network[27] (Facebook: R = 0.17, $p < 0.001$; Twitter: R = 0.22, $p < 0.001$; YouTube: R = 0.20, $p < 0.001$).

Individuals who spend the most time on the Internet, those who "browse" through a large number of information sources and social network users therefore seem to be particularly at risk of being exposed to sources of generic disinformation.

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27. Participants are considered to have visited a given social network at least once if they consulted at least one page on the platform that is not associated with the information sources tracked in this study.

Second, we compared the profile of the 163 participants who visited a source of generic disinformation at least once with that of the 1,451 participants who did not visit any throughout the study's 30-day period. The criteria for comparison were the following characteristics:

❏ Gender.

❏ Age.

❏ Level of education.

❏ Socioprofessional category (CSP).

❏ Income level.

❏ Household income level.

❏ Composition of household (whether or not they live alone and the number of children in their household).

❏ Reported political leaning (on a spectrum ranging from far-left to far-right).

❏ Attitude towards the Yellow Vests movement (on a spectrum ranging from reported hostility towards this movement to self-identification as a member of this movement).

❏ Reported level of trust in institutions (army, police, justice system, education system), in the media, in the government and in the scientific community.

❏ Reported interest in news, in general, and in political and social news, in particular.

❏ Reported frequency of information consumption *via* television, radio, print media or the Internet.

❏ Score on a standardized scale intended to evaluate adherence to conspiracy theories (Bruder *et al.*, 2013).

The following table presents the statistically significant differences between these two subgroups of participants that emerge from our analyses.

As we can see, men are overrepresented among participants who consulted sources of generic disinformation, as are participants who live alone, those who report being supportive of the Yellow Vests movement and those who self-identify as members of this movement. Likewise, these individuals have a particularly low level of trust in institutions, the government and the media, and on average report being more interested than other participants in social and political news.

Individuals who consult sources of generic disinformation have a particularly low level of trust in institutions, the government and the media.

We then sought to determine whether these characteristics are specific to participants who consulted sources of generic disinformation or if they are, more generally, those of participants who consulted general news websites or blogs. To do so, we identified among the 1,614 participants who completed the end-of-study survey those who had visited at least once a general news site and/or an opinion blog or website, regardless of whether or not these sources were considered to be reliable. A total of 824 participants met this selection criterion.

These 824 participants were then separated into two groups: those who never consulted a source of generic disinformation (N = 661), on the one hand, and the 163 participants who consulted a source of generic disinformation at least once during the study period, on the other (101 out of 163, or 62%, also consulted a reliable general news site or a reliable opinion blog at least once). Are there any observable differences between these two groups?

Compared to other participants (N = 1,451), those who visited a source of generic disinformation *at least once* (N = 163)…		Significance (*p*-value)	Effect size (Hedges' g)
Gender	**… are more likely to be men** (63.2%, compared to 49.1% in the other group)	*p* < 0.001	g = 0.28
Composition of household	**… are more likely to live alone** (28.2%, compared to 18.5% in the other group)	*p* = 0.003	g = 0.25
	… have on average fewer children	*p* = 0.014	g = 0.20
Attitude towards the Yellow Vests movement	**… report on average being more supportive of the Yellow Vests movement**	*p* < 0.001	g = 0.28
	… are more likely on average to self-identify as a member of this movement (12.9%, compared to 5.2% in the other group)	*p* < 0.001	g = 0.32
Reported level of trust	**… report on average a lower level of trust in:**		
	· institutions	*p* = 0.007	g = 0.22
	· the government	*p* < 0.001	g = 0.33
	· the media	*p* = 0.004	g = 0.24
Reported interest in news	**… report on average being more interested in:**		
	· news in general	*p* = 0.008	g = 0.22
	· social and political news	*p* < 0.001	g = 0.28
Reported information channels	**… report on average informing themselves more on the Internet**	*p* < 0.001	g = 0.34

TAB. 3 — NOTE: Bilateral t-test. None of the other characteristics measured differed significantly (at *p* < 0.10) between these two subgroups of participants.

In focusing our analyses on these two subgroups of participants (N = 824 in total), we first observe a positive correlation between the fact of having visited *at least once* a source of generic disinformation and the following the factors:

❐ Average daily connected time ($R = 0.24$, $p < 0.001$).

❐ Average number of information sources (all categories included) visited per connected day ($R = 0.36$, $p < 0.001$).

❐ The fact of having visited *at least once* a source of "click-bait" ($R = 0.12$, $p < 0.001$), a source of health-related disinformation ($R = 0.16$, $p < 0.001$) and a social network (Facebook: $R = 0.17$, $p < 0.001$; Twitter: $R = 0.21$, $p < 0.001$; YouTube: $R = 0.22$, $p < 0.001$).

Second, using the same criteria as those used in the previous analysis, we compared the characteristics of the members of these two subgroups of participants. The following table presents the statistically significant differences between these two subgroups of participants that emerge from our analyses.

As can be seen, the results of these analyses are very similar to those previously shown in Table 3. This indicates that participants who visited a source of generic disinformation at least once during the study period exhibit, on average, certain characteristics that distinguish them not only from study participants as a whole, but also from those who consulted online information sources that are of a similar kind but are considered reliable.

Compared to the participants who only visited news or opinion websites or blogs considered to be reliable (N = 661), those who (also) visited a source of generic disinformation *at least once* (N = 163)...		Significance (*p*-value)	Effect size (Hedges' g)
Gender	... are more likely to be men	$p = 0.012$	$g = 0.22$
Composition of household	... are more likely to live alone	$p = 0.039$	$g = 0.18$
	... have on average fewer children	$p = 0.014$	$g = 0.22$
Attitude towards the Yellow Vests movement	... report on average being more supportive of the Yellow Vests movement	$p < 0.001$	$g = 0.31$
	... are more likely on average to self-identify as a member of this movement	$p < 0.001$	$g = 0.30$
Reported level of trust	... report on average a lower level of trust in:		
	· institutions	$p = 0.005$	$g = 0.25$
	· the government	$p < 0.001$	$g = 0.33$
	· the media	$p = 0.001$	$g = 0.29$
Reported interest in news	... report on average being more interested in:		
	· news in general	$p = 0.076$	$g = 0.16$
	· social and political news	$p = 0.021$	$g = 0.20$
Reported information channels	... report on average informing themselves more on the Internet	$p = 0.002$	$g = 0.27$
	... report on average informing themselves less *via* television	$p = 0.052$	$g = 0.17$

TAB. 4 — NOTE: Bilateral t-test. None of the other characteristics measured differed significantly (at $p < 0.10$) between these two subgroups of participants.

3.6.2 — Risk Factors for Exposure to Health-Related Disinformation on the Internet

Similar analyses were conducted to determine whether the individuals who visited a source of health-related disinformation *at least once* during the study's 30-day period displayed a particular profile. Of the 1,614 participants who completed the end-of-study survey, 298 (18.5%) visited a source of health-related disinformation at least once. These participants spent an average time of 339 seconds (5.65 minutes) consulting these sources, with a median time of 102 seconds (1.70 minutes).

First, our analyses show a positive correlation between the fact of having visited *at least once* a source of health-related disinformation and the following factors:

- Average daily connected time (R = 0.25, p < 0.001).

- Average number of information sources (all categories included) visited per connected day (R = 0.31, p < 0.001).

- The fact of having visited *at least once* a *reliable* source of health-related information (R = 0.13, p < 0.001).

- The fact of having visited *at least once* a source of "click-bait" (R = 0.22, p < 0.001, see Table 8), a source of generic disinformation (R = 0.16, p < 0.001, see Table 8) and a social network (Facebook: R = 0.21, p < 0.001; Twitter: R = 0.15, p < 0.001; YouTube: R = 0.22, p < 0.001).

Here again, the individuals who spend the most time on the Internet, those who browse through a large number of information sources and social network users seem to be particularly at risk of being exposed to sources of health-related disinformation.

Second, we compared the profile of the 298 participants who visited a source of health-related disinformation at least once with that of the 1,316 participants who did not visit any. In doing so, we focused on the same characteristics as those listed in the previous section. The table below presents the statistically significant differences between these two subgroups of participants that result from our analyses.

Compared to other participants (N = 1,316)**, those who visited a source of health-related disinformation *at least once* (N = 298)...**		Significance (p-value)	Effect size (Hedges' g)
Gender	**... are more likely to be women** (56%, compared to 48% in the other group)	p = 0.012	g = 0.16
Age	**... are on average older**	p = 0.024	g = 0.15
	... are more likely to be in the 50-64 age group	p = 0.042	g = 0.13
	... are less likely to be in the 25-34 age group	p < 0.001	g = 0.22
CSP	**... more likely to be inactive, including retirees**	p = 0.051	g = 0.13
Belief in conspiracy theories	**... have a higher average score on a scale intended to measure belief in conspiracy theories**	p = 0.021	g = 0.15
Reported information channels	**... report on average informing themselves more on the Internet**	p = 0.079	g = 0.11

TAB. 5 — NOTE: Bilateral t-test. None of the other characteristics measured differed significantly (at p < 0.10) between these two subgroups of participants.

As can be seen, **women are overrepresented among participants who consulted sources of health-related disinformation**, as are the elderly and inactive individuals, including retirees. Furthermore, participants who visited sources of health-related disinformation obtained higher scores on a standardized scale intended to measure belief in conspiracy theories.

We then sought to determine whether these characteristics are specific to participants who consulted sources of health-related disinformation or if they are, more generally, those of participants who are interested in health-related issues. To do so, we identified among the 1,614 participants who complete the end-of-study survey all of those who consulted a source of health-related information at least once, regardless of whether these sources were deemed reliable. In total, 671 participants met this selection criterion.

These 671 participants were then separated into two groups: those who never consulted a source of health-related disinformation (N = 373), on the one hand, and the 298 participants who consulted a source of health-related disinformation at least once during the study period, on the other (129 out of these 298, or 43.3%, also consulted a reliable source of health-related information). Are there any observable differences between these two groups?

In focusing our analyses on these two subgroups of participants (N = 671 in total), we first observe a positive correlation between the fact of having visited *at least once* a source of health-related disinformation and the following the factors:

- Average daily connected time (R = 0.20, p < 0.001).

- Average number of information sources (all categories included) visited per connected day (R = 0.26, p < 0.001).

- The fact of having visited *at least once* a source of "click-bait" (R = 0.19, p < 0.001), a source of generic disinformation (R = 0.17, p < 0.001) and a social network (Facebook: R = 0.20, p < 0.001; Twitter: R = 0.11, p = 0.004; YouTube: R = 0.22, p < 0.001).

We then compared the characteristics of the members of these two subgroups of participants using the same criteria as those previously used. The following table presents the statistically significant differences between these two subgroups of participants that result from our analyses.

Compared to the participants who only visited sources of health-related information considered to be reliable (N = 373), those who (also) visited a source of health-related disinformation *at least once* (N = 298)...		Significance (p-value)	Effect size (Hedges' g)
Gender	**... are more likely to be women**	$p = 0.011$	$g = 0.20$
Age	**... are less likely to be in the 25-34 age group**	$p = 0.010$	$g = 0.20$
CSP	**... are more likely to be inactive, including retirees**	$p = 0.069$	$g = 0.14$
Level of education	**... have on average a lower level of education**	$p = 0.080$	$g = 0.14$
Belief in conspiracy theories	**... have a higher average score on a scale intended to measure belief in conspiracy theories**	$p = 0.076$	$g = 0.14$

TAB. 6 — NOTE: Bilateral t-test. None of the other characteristics measured differed significantly (at $p < 0.10$) between these two subgroups of participants.

This analysis allows us to clarify the results previously discussed and shown in Table 5. More specifically, it would seem that, among individuals who consult online sources of health-related information, being young (i.e., in the 25-34 age group) diminishes the risk of being exposed to health-related disinformation, whereas a having a lower level of education escalates this risk.

3.6.3 — Risk Factors for Exposure to "Click-Bait" on the Internet

Lastly, we conducted similar analyses to determine whether the individuals who visited a source of "click-bait" *at least once* during the study's 30-day period displayed a particular profile. Of the 1,614 participants who complete the end-of-study survey, 491 (30.4%) visited a source of "click-bait" at least once. The average time they spent on these sources was 560 seconds (9.33 minutes), with a median time of 168 seconds (2.8 minutes).

First, our analyses indicate a positive correlation between the fact of having visited *at least once* a source of "click-bait" and the following factors:

⌐ Average daily connected time ($R = 0.31$, $p < 0.001$).

⌐ Average number of information sources (all categories included) visited per connected day ($R = 0.47$, $p < 0.001$).

⌐ The fact of having visited *at least once* a source of generic disinformation ($R = 0.16$, $p < 0.001$, see Table 8), a source of health-related disinformation ($R = 0.22$, $p < 0.001$, see Table 8) and a social network (Facebook: $R = 0.26$, $p < 0.001$; Twitter: $R = 0.24$, $p < 0.001$; YouTube: $R = 0.22$, $p < 0.001$).

Once more, the individuals who spend the most time on the Internet, those who "browse" between a large number of information sources and social network users appear to be particularly at risk of visiting sources of "click-bait."

Second, we compared the profile of the 491 participants who visited a source of "click-bait" at least once with that of the 1,123 participants who did not visit any. In doing so, we focused on the same characteristics as those listed in section 3.6.1. The following table presents the statistically significant differences between these two subgroups of participants that result from our analyses.

Compared to other participants (N = 1,123), those who visited *at least once* a source of "click-bait" (N = 491)...		Significance (p-value)	Effect size (Hedges' g)
Age	**... are on average older**	$p < 0.001$	$g = 0.20$
	... are more likely to be in the 65 and over age group	$p = 0.036$	$g = 0.11$
	... are less likely to be in the 25-34 age group	$p = 0.021$	$g = 0.12$
CSP	**... are more likely to be inactive, including retirees**	$p = 0.002$	$g = 0.17$
	... are more likely to be retirees	$p = 0.008$	$g = 0.14$
	... are less likely to belong to an upper CSP	$p = 0.026$	$g = 0.12$
	... are less likely to belong to an intermediary CSP	$p = 0.043$	$g = 0.11$
	... are less likely to be students	$p = 0.003$	$g = 0.16$
Level of education	**... have on average a lower level of education**	$p = 0.046$	$g = 0.11$
Income level[28]	**... have on average a lower household income level**	$p = 0.050$	$g = 0.11$
Reported information channels	**... report on average informing themselves more on the Internet**	$p = 0.002$	$g = 0.17$
	... report on average informing themselves more *via* television	$p = 0.038$	$g = 0.11$

TAB. 7 — NOTE: Bilateral t-test. None of the other characteristics measured differed significantly (at $p < 0.10$) between these two subgroups of participants.

These analyses illustrate the fact that the audience of "click-bait" sources is primarily characterized by a higher average age than that of participants as a whole. Individuals 65 and over are particularly overrepresented, as are inactive and retired individuals. Moreover, participants who visited sources of "click-bait" have, on average, a lower level of education and a lower household income level than the rest of participants.

The following table highlights the fact that a more or less significant share of participants who visited one of the three types of unreliable sources of information considered in this study also visited unreliable sources of information belonging to the other two types.

The audience of "click-bait" sources is primarily characterized by a higher average age than the rest of participants.

28. N = 1,495, because participants who completed the survey (N = 1,614) had the possibility of not disclosing the income level of their household. In total, 1,495 chose to indicate their household income level, of which 1,047 belong to the subgroup of participants who never visited a "click-bait" source and 448 belong to the subgroup of participants who visited a "click-bait" source at least once during the study period.

		Consulted at least…		
		One source of generic disinformation	One source of health-related disinformation	One source of "click-bait"
Also consulted at least…	One source of generic disinformation	–	37.4%	52.1%
	One source of health-related disinformation	20.5%	–	52%
	One source of "click-bait"	17.3%	31.6%	–

TAB. 8 — TABLE READING: 52.1% of participants who consulted a source of generic disinformation at least once over the study's 30-day period also consulted a source of "click-bait" at least once.
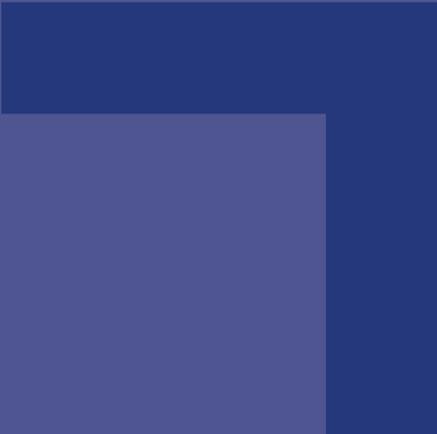
4

Discussion of Results

Discussion of Results

4.1 — Information Consumption on the Internet

Our study highlights that, as a whole, the French do not devote a large portion of their connected time to the consultation of news information. On average, only 3% of the total time spent online by our study's participants consists of information consumption – which, per participant, corresponds to slightly less than 5 minutes a day. In contrast, TF1's 8 p.m. newscast, which brings several million French people to their TV screens every night,[29] lasts approximately 30 minutes, and the individual listening time of major TV newscasts for individuals 15 and over is of 20 minutes per day.[30]

This low consumption of online information may seem surprising, especially considering that 56% of our study's participants report consulting information on the Internet "more or less every day." However, our study's results indicate that we must be cautious in interpreting the perceptions that individuals may have of their own online information behaviors. Indeed, we have seen that participants' reported use of the Internet to inform themselves – whether in terms of the nature of the sources they report consulting, or in terms of the frequency with which they report doing so – only weakly corresponds to their actual online information behaviors, as measured by our study.

Of course, we cannot completely exclude the possibility that a part of our study's participants may have consumed information on sources other than those included in our database. That this would have led us to massively underestimate the information consumption of all participants is, however, unlikely. Indeed, our database covers a very large spectrum of information sources, more than half of which did not receive any visits from participants throughout the study's 30-day period. Furthermore, our database includes all of the information sources that appear in the ACPM's list of most frequently visited websites.[31]

We must nonetheless note that we were not able to account for the consultation of information occurring directly on participants' social media "walls" or "feeds." Yet, certain online media, such as *Brut.*, specialize in the publication of short videos meant to be viewed directly on social networks. The time potentially spent by participants viewing such videos on their Facebook "walls," for instance, could not be accounted for in this study.

But this does not mean that our study in no way accounts for information shared on social networks. Indeed, in addition to the 651 "independent" YouTube channels tracked in this study, we also monitored the time that participants spent on Facebook and Twitter pages as well as on YouTube channels associated with the information sources included in our database. But most importantly, the fact of clicking on an article that has been shared on social networks redirects users to the website of the publishing media. The time that a participant may have spent viewing an article in this way was therefore taken into account, as long as the publishing media in question belonged to the list of selected information sources.

However, it is in effect likely that participants who use social networks saw the titles of numerous press articles without clicking on them – a study has incidentally shown that the majority of articles shared by Twitter users are shared without having been read (Gabielkov *et al.*, 2016). In this context, the use of social networks can perhaps give users the impression of consulting information, even though this information is often limited to the titles of articles or, at best, to their summaries. This could help explain why participants have a relatively fuzzy perception of the online information sources they effectively consult, and of the effective frequency with which they use the Internet to inform themselves.

4.1.1 — Consuming Information by "Browsing" on the Internet

Another significant finding of our study is that while, on average, participants did not inform themselves much on the Internet, there is in fact a great degree of variation in participants' online information behaviors. For instance, while 17% of our study's participants consulted no online information sources throughout the study period, 5% spent a total of over ten hours consulting such sources.

29. www.ozap.com/tag/audiences_t14/1

30. *"Youth and Information,"* 2018 press release, Médiamétrie and the Ministry of Culture. http://traduction.culture.gouv.fr/url/Result.aspx?to=en&url=https://www.culture.gouv.fr/Presse/Communiques-de-presse/Les-jeunes-et-l-information-une-etude-du-ministere-de-la-Culture-vient-eclairer-les-comportements-des-jeunes-en-matiere-d-acces-a-l-information

31. www.acpm.fr/Les-chiffres/Frequentation-internet/Classement-des-Sites?periode=202010

We were able to identify a certain number of individual and social characteristics associated with participants' propensity to inform themselves online. Among these, the most significant characteristic appears to be participants' age, with individuals 50 and over informing themselves more so on the Internet than others. Nevertheless, the correlations between participants' characteristics and their use of the Internet to inform themselves are all relatively weak. These characteristics alone therefore cannot explain our observation of high inter-individual variance in online information behaviors.

Meanwhile, we observe that participants who spend a lot of time informing themselves online do so less by increasing the amount of time spent consulting the same source than by diversifying the sources they consult. Indeed, the more time participants spent informing themselves online during the study period, the greater the number of different sources they consulted. This reflects a "browsing" behavior among consumers of online information, who seem to switch from one information source to the next often without consulting any one source for a significant amount of time.

This is shown by the fact that time consecutively spent on an information source upon each individual consultation is, on average, less than 2 minutes. Although this value varies significantly among participants, it equals or exceeds 4 minutes for only 6% of participants. Another element further supports this "browsing effect": throughout the study's 30-day period, participants consulted a total of 1,290 different information sources – a number that far exceeds the number of major media outlets present on the Internet, and that therefore highlights the tendency of certain participants to consult lesser-known information sources.

The fact that Internet users display this "browsing" behavior in their consumption of information seems to go against the widespread, but contested,[32] idea that the Internet encloses users in "echo chambers" in which they are only exposed to information that is in line with their expectations and beliefs. Indeed, if we consider the participants who consulted the Internet sources of nation-wide media outlets generally seen as "center-left," such as *Le Monde* or, more to the left, *Mediapart*, we remark that a significant part of them also consulted the Internet sources of nation-wide media outlets generally seen as "right-wing," such as *Le Figaro* or, more to the right, *Valeurs actuelles*, and vice versa.

		N participants (total N = 1,614)	% of panel	Average time (sec.)	Median time (sec.)
Consulted…	*Le Monde*	389	24%	468.15	119
	Mediapart	48	3%	310.02	40
	Le Figaro	694	43	516.79	130
	Valeurs actuelles	79	5%	703.10	127

TAB. 9 — TABLE READING: description of participant traffic on the online sources of *Le Monde*, *Mediapart*, *Le Figaro* and *Valeurs Actuelles* over the study's 30-day period.

32. www.fondationdescartes.org/en/2020/07/filter-bubbles-and-echo-chambers/

This finding, presented in the following table, is hardly compatible with the idea that the Internet consists of nothing more than a juxtaposition of echo chambers within which individuals spare their cognitive comfort by avoiding confrontation with political worldviews that could conflict with their own. However, the question of the existence of informational echo chambers in which some of our study participants could be enclosed deserves to be explored further and will consequently be the subject of complementary analyses.

		also consulted…			
		Le Monde	*Mediapart*	*Le Figaro*	*Valeurs actuelles*
Consulted…	*Le Monde*	–	9.3%	72%	13.9%
	Mediapart	75%	–	83.3%	22.9%
	Le Figaro	40.4%	5.8%	–	9.7%
	Valeurs actuelles	68.4%	13.9%	84.8%	–

TAB. 10 — TABLE READING: 72% of participants who consulted the Internet source of *Le Monde* at least once over the study's 30-day period also consulted at least once the Internet source of *Le Figaro*.

4.1.2 — The Place of Traditional Media on the Internet

In examining the online information sources most consulted by our study's participants, we found that the top 26 sources alone accounted for 40% of the time participants dedicated to informing themselves online. This "top 26" is largely made up of online sources belonging to traditional media outlets – a noteworthy exception being Wikipedia, which was the information source consulted by the greatest number of participants over the study's 30-day period.

Major traditional media outlets have therefore succeeded in exploiting their offline reputation to assert themselves as major players in the online information market. It must however be noted that only 10% of the French population report that they pay for access to an online information source (Reuters, 2020). The growth of the Internet has thus weakened print media outlets, whose revenues have been in constant decline since 2008.[33] While radio and television have been less affected by the shift towards digital media, their revenues have also declined over this period. Hence, the digital shift of traditional media is somewhat paradoxical: revenues of most media groups have declined, while the Internet has at times helped to increase their audiences.

It should be noted that the digital-only media present in this "top 26," with the exception of Wikipedia, all belong to major media groups: *Journal des femmes* and *L'Internaute* to Figaro Group, *0.1net* to NextRadioTV (BFM, RMC), *Doctissimo* to TF1 Group, *Allociné* to Webedia Group and *YahooNews* to the American group Verizon Media.[34]

33. Ministry of Culture, Key Figures 2020.

34. Content aggregators usually limit themselves to offering articles produced by other media outlets, without themselves producing any content.

Another one of our study's findings that must be emphasized is that we observed only a weak relationship between the consultation of a given source of information and participants' reported level of trust in this source. While Tsfat and Capella (2005), in a regularly commented article, showed that it is not uncommon for individuals to consult information sources they distrust, the reasons behind this behavior remain unclear. With regards to our study, it is possible that this is once again a consequence of participants' "browsing" behavior. They may indeed have been switching from one source to another or clicking on a headline appearing on their Twitter "feed" or Facebook "wall," less in an attempt to search for specific information than out of entertainment or intellectual curiosity.

4.2 — Risk Factors for Exposure to Disinformation and "Click-Bait"

Firstly, our analyses of disinformation consumption show, somewhat predictably, that the risk of exposure to unreliable sources of information is partly a function of time spent on the Internet. We indeed observed a positive correlation between average daily connected time and the fact of visiting sources of disinformation or "click-bait." We remark that participants who consulted such sources on average reported using the Internet more than others to obtain information – a claim that is confirmed by their effective behavior. This could in part explain why they spend more time on the Internet, and further indicates that using the Internet as a principal access channel to information may increase the risk of exposure to unreliable information.

Secondly, our analyses show that the use of social networks is also correlated with an increased risk of exposure to unreliable information on the Internet outside of these said networks. Social networks are therefore not only places where unreliable information circulates, but also gateways towards external sources of malicious ("click-bait" sources) or misleading (sources of generic or health-related disinformation) information.

Thirdly, our analyses suggest that the profile of individuals who are overexposed to unreliable information on the Internet differs according to the nature of the source in question. In this way, we see that men are overrepresented among individuals who consult sources of generic disinformation, as are participants who live alone, those who report being supportive of the Yellow Vests movement and those who self-identify as members of this movement. Likewise, these individuals have a particularly low level of trust in institutions, the government and the media, and on average report being more interested than other participants in social and political news.

On the contrary, women are overrepresented among participants who consulted sources of health-related disinformation, as are the elderly and inactive individuals, including retirees. Individuals in the 25-34 age group are, in turn, underrepresented. Lastly, participants who visited sources of health-related disinformation on average obtained higher scores on a standardized scale intended to measure belief in conspiracy theories (Bruder *et al.*, 2013). These characteristics distinguish participants who consulted sources of health-related disinformation not only from study participants as a whole, but also from those who consulted sources of reliable health-related information. In other words, these characteristics are not those of individuals who are interested in health-related issues in general, but indeed those of participants who specifically visited sources of health-related disinformation.

As for sources of "click-bait," their audience is primarily characterized by a higher average age than that of participants as a whole. Individuals 65 and over are particularly overrepresented, as are inactive and retired individuals. Moreover, participants who visited sources of "click-bait" have, on average, a lower level of education and a lower household income level than the rest of participants.

It is important to note that the statistically significant associations between the participant characteristics mentioned above and the consultation of a certain type of unreliable information source are all rather weak. This means, for instance, that while the audience of "click-bait" sources is on average older than the whole of participants, it is only slightly older (the various Hedges' g values – a statistical measurement of the effect size of a variable – indicated in the previous sections are all rather low). Consequently, the results presented above should not be interpreted as "snapshots" of the individuals who consult a given type of unreliable information source on the Internet. Rather, these characteristics represent risk factors associated with exposure to malicious or misleading content.

In this sense, being 65 or older is associated with an increased risk of getting caught in the web of "click-bait" sources. This is probably due to the fact that individuals in this age group, having embraced the Internet at a later point in their lives, are not as familiar with its workings, its rules and its pitfalls than individuals aged 25-34 who grew up with the Internet.

Similarly, individuals aged 25-34 are less at risk of being seduced by sources of health-related disinformation than inactive individuals, including retirees. On the contrary, women are more likely to consult these sources – a finding that can be linked to the fact that, both in France and elsewhere, women are more likely to consume alternative and complementary medicine than men (see, for example, Grimaldi-Bensouda et al, 2012; Mayer-Lévy, 2010; Thiriat, 2012). Alternative and complementary medicines are based on theories that are at best unproven, and often false or misleading, if not supernatural or paranormal, and may lead to the refusal or delay of conventional medical care (see, for example, Cordonier, Cafiero & Bronner, in sub.). The supernatural facet of some alternative and complementary medicines is echoed in many sources

of health-related disinformation, which could explain why these sources attract individuals with an above-average tendency to believe in conspiracy theories. Indeed, several studies have established a link between inclinations towards supernatural or paranormal beliefs and adherence to a wide variety of conspiracy theories (for example, Bruder *et al.*, 2013; Lobato *et al.*, 2014).

The risk factors associated with the consumption of generic disinformation on the Internet are, for their part, of a more political nature. Indeed, we observe among the audience of generic disinformation an overrepresentation of individuals favorable towards the Yellow Vests movement and of individuals who self-identify as members of this movement. Furthermore, this audience displays a significantly lower level of trust in institutions, the government and the media than the average participant – a point that they have in common with members of the Yellow Vest movement. (Algan *et al.*, 2019; Wagner-Egger *et al.*, in sub.).

A pronounced distrust of institutions and the media undoubtedly constitutes an important motivation to seek information on online sources existing in opposition to traditional public or private media outlets, including on websites or blogs considered to be unreliable. These "alternative" media outlets, with questionable and often radical content, publish information that is likely to further nourish their audience's lack of trust in institutions and the media.

Lastly, it is interesting to note that only 9.4% of all study participants visited sources of generic disinformation. Moreover, half of these participants spent in total only a very short amount of time consulting these sources (the median time spent on these sources over the study's 30-day period is 1.92 minutes). Additionally, participants who consulted sources of generic disinformation do not overwhelmingly

appear to be enclosed in echo chambers that would only expose them to unreliable sources of information. Indeed, 68% of these participants also consulted the online source of a traditional nation-wide media outlet at least once throughout the study period.

In general, the time that the French spend on online information sources considered to be unreliable appears to be relatively low. In fact, while 39% of participants consulted a source of information deemed unreliable at least once in 30 days, these participants on average spent only 11% of their daily time dedicated to online information consumption consulting these sources, which equates to 0.4% of their total connected time. It should, however, be noted, that these values vary greatly between individuals – for example, about 10 participants to our study spent a total of more than two and a half hours on sources of generic disinformation.

Moreover, it is more than likely that disinformation on the Internet today is disseminated more so *via* social networks than *via* established online sources (e.g., websites). The sheer quantity of fake news surrounding the Covid-19 pandemic that have been massively disseminated on Facebook and Twitter serve as an example of this phenomenon.[35] Misleading messages are circulated from person to person by being shared by social network users on their personal "walls" or "feeds." Very often, these pieces of disinformation take on the form of a short text or a commented picture, without referring to an external online source. As a result, we were not able to account for participants' exposure to this type of disinformation in our study.

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35. For example: www.francetvinfo.fr/sante/maladie/coronavirus/coronavirus-un-faux-message-d-infirmiere-circule-sur-les-reseaux-sociaux_3887911.html

Bibliography

Bibliography

Algan, Y., Beasley, E., Cohen, D., Foucault, M., & Péron, M. (2019). *Qui sont les Gilets Jaunes et leurs soutiens ?* Observatoire du Bien-être du CEPREMAP et CEVIPOF, n° 2019-03.

Allcott, H., & Gentzkow, M. (2017). *Social media and fake news in the 2016 election.* Journal of economic perspectives, 31(2), 211-36.

Allen, J., Howland, B., Mobius, M., Rothschild, D., & Watts, D. J. (2020). *Evaluating the fake news problem at the scale of the information ecosystem.* Science Advances, 6(14), eaay3539.

AVAAZ (2020). *Why is YouTube broadcasting climate misinformation to millions?* Report available *via* : https://secure.avaaz.org/campaign/en/youtube_climate_misinformation/

Baye, M. R., De los Santos, B., & Wildenbeest, M. R. (2016). *Search engine optimization: what drives organic traffic to retail sites?* Journal of Economics & Management Strategy, 25(1), 6-31.

Bruder, M., Haffke, P., Neave, N., Nouripanah, N., & Imhoff, R. (2013). *Measuring individual differences in generic beliefs in conspiracy theories across cultures: Conspiracy Mentality Questionnaire.* Frontiers in psychology, 4, 225.

Cordonier, L., Cafiero, F., & Bronner, G. (in sub.). *The side-effects of Complementary and Alternative Medicines. Monitoring the link between CAM and vaccine coverage using Internet queries data.*

Gabielkov, M., Ramachandran, A., Chaintreau, A., & Legout, A. (2016). *Social clicks: What and who gets read on Twitter?* Proceedings of the 2016 ACM SIGMETRICS international conference on measurement and modeling of computer science, 179-192.

Grimaldi-Bensouda, L., Engel, P., Massol, J., Guillemot, D., Avouac, B., Duru, G., … & Abenhaim, L. (2012). *Who seeks primary care for sleep, anxiety and depressive disorders from physicians prescribing homeopathic and other complementary medicine?* Results from the EPI3 population survey. BMJ open, 2(6).

Institut Montaigne (2019). *Media polarization "à la française"? Comparing the French and American ecosystems.* Report available *via* : www.institutmontaigne.org/publications/media-polarization-la-francaise

Li, H. O. Y., Bailey, A., Huynh, D., & Chan, J. (2020). *YouTube as a source of information on Covid-19: a pandemic of misinformation?* BMJ Global Health, 5(5), e002604.

Lobato, E., Mendoza, J., Sims, V., & Chin, M. (2014). *Examining the relationship between conspiracy theories, paranormal beliefs, and pseudoscience acceptance among a university population.* Applied Cognitive Psychology, 28(5), 617-625.

Martens, Be., Aguiar, L., Gomez-Herrera, E. & Mueller-Langer, F. (2018). *The digital transformation of news media and the rise of disinformation and fake news.* Digital Economy Working Paper 2018–02, Joint Research Centre Technical Reports. https://ssrn.com/abstract=3164170.

Mayer-Lévy, C. (2010). *Recours aux Médecines Complémentaires et Alternatives parmi les patients de Médecine Générale à Paris.* Th. Méd. : Université Paris 5.

Newman, N., Fletcher, R., Schulz, A., Andi, S., & Nielsen, R. (2020). *Digital news report 2020.* Reuters Institute for the Study of Journalism.

Ribeiro, M. H., Ottoni, R., West, R., Almeida, V. A., & Meira Jr, W. (2020, January). *Auditing radicalization pathways on YouTube.* In Proceedings of the 2020 Conference on Fairness, Accountability, and Transparency (pp. 131-141)

Tewksbury, D. (2005). *The seeds of audience fragmentation: Specialization in the use of online news sites.* Journal of broadcasting & electronic media, 49(3), 332-348.

Thiriat, F. (2012). *Le recours aux médecines complémentaires et alternatives en milieu rural.* Th. Méd. : Université de Lorraine.

Tsfati, Y., & Cappella, J. N. (2005). *Why do people watch news they do not trust? The need for cognition as a moderator in the association between news media skepticism and exposure.* Media psychology, 7(3), 251-271.

Wagner-Egger, P., Adam-Troian, J., Cordonier, L., Cafiero, F., & Bronner, G. (in sub.). *The Yellow Vests in France. Psychosocial determinants and consequences of the adherence to a social movement in a representative sample of the population.*

Wardle, C., & Derakhshan, H. (2017). *Information disorder: Toward an interdisciplinary framework for research and policy making.* Council of Europe report, 27.

Yang, T., Majo-Vazquez, S., Nielsen, R. K., & González-Bailón, S. (2020). *Exposure to News Grows Less Fragmented with Increase in Mobile Access.* Available at SSRN 3564826.

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The Fondation Descartes

The Fondation Descartes is an interdisciplinary think-tank dedicated to the challenges related to information and public debate in the age of the Internet and social networks. Founded in 2019 and based in Paris, it is a non-partisan, independent, citizen-based and European initiative. Its aim is to contribute to research on questions related to information and public debate and to promote the need for sincere information as the basis for a healthy democracy.

The Fondation Descartes is administered by an Executive Board of nine members, chaired by Jean-Philippe Hecketsweiler. The Scientific Committee of the Fondation Descartes is chaired by Gérald Bronner. The research team of the Fondation Descartes is headed by Laurent Cordonier.

The Fondation Descartes is currently established in the form of an Endowment Fund under French law. It is financed by private contributions.

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