PRIVACY INTERNATIONAL

Your mental health for sale

How websites about depression share data with advertisers and leak depression test results

September 2019

Table of Content

Executive Summary *3*

Introduction *7*

Methodology *8*

Data sampling and page collection **8**

Detecting third-party services in 136 depression-related URLs **8**

Examining traffic of online depression tests **9**

Limitations *10*

Findings *11*

Findings Part I: Detecting third-party services in 136 web pages **11**

Findings Part II: Traffic analysis of online depression tests **13**

PasseportSanté 16

Depression.org.nz (UK) 17

Doctissimo 17

National Health Service (NHS) (UK) 19

Legal analysis *23*

What happens to user data is opaque **23**

Users data is processed in ways they wouldn't expect **23**

Users often have no real choice **23**

Consent should be obtained before installing third-party marketing cookies **24**

Depression test results should not be shared with third parties **25**

Programmatic advertising and RTB on health websites raise serious concerns **25**

Conclusion and recommendations *26*

Appendix *28*

Appendix 1 – all web pages scanned for France **28**

Appendix 2 – all web pages scanned for Germany **30**

Appendix 3 – all web pages scanned for the UK **33**

Appendix 4 – top three depression test websites per country **36**

Appendix 5 - depression test websites findings **36**

Appendix 6 – company responses **37**

Executive Summary

According to the World Health Organisation (WHO), 25% of the population in Europe experience depression or anxiety each year, yet about 50% of people with major depression remain untreated. [1] Shame and silence around mental health problems can be as bad as the problem itself and Privacy International supports campaigns that aim to change the way we all think and act about mental health.

Given how prevalent depression is in Europe, millions of people are looking for information about depression online every week - whether they are seeking help and support for themselves, or whether they are trying to understand how best to support others. Opening up about depression to friends, family, colleagues and medical professionals can be crucial for getting help and support. But when data brokers, advertisers and online tracking companies collect data about our mental health without our knowledge or consent, this is highly intrusive. Information that reveals when exactly someone is feeling low or anxious - especially if combined with other data about their interests and habits - can be misused to target people when they are at their most vulnerable.

This is not the world we want to live in. Privacy International fights for a world in which people are in control of their data and the technology they use, and in which governments and companies are no longer able to use technology to monitor, track, analyse, profile, and ultimately manipulate and control us.

To understand how data relating to mental health is currently protected, Privacy International analysed 136 popular mental health web pages[2] (41 that were listen on Google France, 44 on Google Germany and 51 on the UK version of Google) related to depression using the open-source tool webxray[3]. The websites analysed were selected from Google search results based on queries of depression-related terms in French, German and English and included advertised links and featured pages. This allowed us to identify websites that people who are seeking help online could realistically come across. We also included the most visited mental-health related websites according to SimilarWeb[4] for each country.

Our findings raise serious concerns about the ways in which websites about depression treat people's data. We found that:

- **97.78% of all web pages we analysed contained a third-party element**, such as third-party cookies, third-party JavaScript or an image hosted on a third-party server. The average web page we analysed contained 23.32 third-party elements for France, 8.84 for Germany and 13.47 for the UK. We understand and acknowledge that some third-party elements provide useful features, such as fonts or visual effects and are not primarily designed to collect data from the users visiting the page that load these resources. That said, **integrating third-party services comes with an inherent privacy risk for users**. Websites that contact third parties typically communicate the fact that a particular browser has opened a specific URL (often, in combination with more data related to the operating system, browsers, language settings etc.). Mental health websites often reveal lots of information, simply because it is contained in the URL (i.e. /symptoms/depression/help)

- **While third parties can provide useful services, our research shows that the predominant motivation to include third-party elements on mental health websites seems to be tracking for advertising and marketing purposes.** According to webxray's classification, 76.04% of web pages contained third-party trackers for marketing purposes. For the pages we analysed in France the number is 80.49%, for Germany 61,36% of all pages we analysed contained third-party trackers for marketing purposes, while the number was 86.27% for the UK.

[1] http://www.euro.who.int/en/health-topics/noncommunicable-diseases/mental-health/news/news/2012/10/depression-in-europe/depression-in-europe-facts-and-figures

[2] As a result of our sampling method, multiple web pages of some websites were included in our sample.

[3] https://webxray.org/

[4] https://www.similarweb.com/top-websites/

- **Google, Facebook and Amazon trackers were present on many of the web pages we scanned**, **which shows how hard it is to escape these companies.** Google's advertising services DoubleClick and AdSense are used by the vast majority of web pages we analysed. 70.39% of all web pages we analysed use trackers by DoubleClick. Other Google products such as Google Analytics, Google Tag Manager and Google Fonts are also widely used by websites. 87.8% of web pages in France had a Google tracker, 84.09% in Germany and 92.16% in the UK. **Facebook is the second most common third-party tracker after Google**. 48.78% of all French web pages we analysed shared data with Facebook, while the number is 22.73% for Germany, and 49.02 % for the UK. **Amazon was also one of the most common third parties used on the mental health web pages we analysed**. While many websites use Amazon Web Servers to host their content, Amazon Marketing Services were used by 24.39% of web pages we analysed in France, 13.64 % in Germany and 11.76% in the UK.

- **Mental health web pages also used a large number of third-party tracking cookies, which were placed before users were able to express (or deny) consent.** On average, mental health web pages placed 44.49 cookies in France, 7.82 for Germany and 12.24 for the UK. **This raises serious questions about compliance** with EU data protection (General Data Protection Regulation) and ePrivacy law (the ePrivacy Directive 2002/58/EC, as implemented by Member State laws).

- **Websites that use third-party cookies for marketing purposes typically enable third parties to track users across the web via a unique identifier**. The depression test on the German site netdoktor.de, for instance, places a tracking cookie by the AdTech company Criteo (and other third parties). As a result, Netdoktor.de shares with Criteo the ULR of the depression test web page the user has visited. Criteo is a personalised retargeting company that works with internet retailers to serve personalized online advertisements to consumers who have previously visited the advertiser's website. Privacy International complained about Criteo to CNIL, the French data protection authority in November 2018.[5]

- **Numerous mental health websites include trackers from known data brokers, and AdTech companies, some of which engage in programmatic advertising, a practice that is under increasing scrutiny by European regulators and which raises specific privacy concerns when used on health-related websites.** The companies include AppNexus, LiveRamp (formerly owned by the data broker Acxiom), Rubicon Project, Criteo, Oracle, as well as the native advertising platforms Outbrain and Taboola. All of these companies perform different roles in the complex AdTech ecosystem. What they have in common is that they place cookies with unique identifiers on people's browsers, which allow them to track users across the web and across different devices to create granular user profiles, including the fact that people have visited mental health websites.

- **The consent flow on many depression test websites (a subset of websites we further analysed manually) does not meet the standard set out by the EU's General Data Protection Regulation (GDPR) and the ePrivacy law[6]**. We found that three out of nine depression test websites don't show a cookie banner, even though they are placing third-party cookies. We also found websites that ask for consent, but don't offer a straightforward option to reject consent (four of the six websites that have a cookie banner).Most notable is the French website Doctissimo.fr, which does not offer a clear option to reject consent, where the consent box disappears the moment the user takes any action on the site (such as scrolling), and where this is interpreted as consenting to targeted advertising, and to data sharing with 448 advertising partners. A similar pattern can be observed on passeportsante.net, as we will explain in more detail in the report.

To further understand which data is exchanged between websites and third parties, we selected a small sub-set of depression-related websites for additional analysis. We chose the first three Google search results for "depression test" in France, Germany and the UK and used the open-source software HTTP

[5] https://privacyinternational.org/legal-action/challenge-hidden-data-ecosystem
[6] Specifically Article 5(3) of the E-Privacy Directive 2002/58/EC and Articles 4(11), 6(1)(a) and 7 of GDPR

toolkit[7], as well as the built-in developer tools of Firefox and Chrome to intercept HTTP(S) requests, explore and examine cookies, as well as traffic on websites that offer free depression tests.

We found that[8]:

- **Some depression test websites (Netdoktor.de, passeportsante.net and doctissimo.fr) use programmatic advertising with Real-Time Bidding (RTB).** RTB is subject to complaints across Europe and Privacy International has complained about the practices of companies involved in RTB.[9] That is because websites that use programmatic advertising with RTB risk sharing data relating to health with hundreds of companies in the RTB ecosystem. Typically, this includes information about the device used, or where a user is located. We found that in the case of some depression test websites we analysed this also included granular information about the exact web page people visited, and, as a result, what health conditions they been looking at. For example, as part of an RTB prebid request, the French website Doctissimo.fr sends content keywords (such as 'dépression', 'déprimé' (depressed), or 'quizz'), the page URL (psychologie/tests-psycho/tests-psychologiques/coup-de-blues-ou-depression), as well as information about the page content ('psychologie', 'test psychologiques', 'coup de blues ou dépression ?') to the page https://europe-west1-realtime-logging-228816.cloudfunctions.net/realtime-logs (a cloud function hosted by Google that will process the request).

- **A number of depression test websites store user's answers to the test as variables (e.g. 1 = yes, and 0 = no) and share answers, as well as test results with third parties in the URL**. Two websites (PasseportSanté and depression.org.nz[10]*)* stored test results as variables in the URL, which is being shared with all third parties that the website contacts.

- **Doctissimo.fr shares data with a third party directly**. The website sends test answers, together with a unique identifier, to player.qualifio.com. Because Qualifio provides the test form, the company knows the test's questions and answers. As a result, the company knows how uniquely identifiable individuals have responded to each question of the depression test. Because the request is sent in HTTP, instead of HTTPS, the request is potentially susceptible to interception.

- **Finally, we observed that two depression test websites (the NHS mood test and depression.org.nz) use Hotjar, a company that provides "Session replay scripts" that can be used to log (and then playback) everything users typed or clicked on a website.**

It's been more than a year since the GDPR came into effect. Fundamentally, the GDPR strengthens rights of individuals with regard to the protection of their data, imposes more stringent obligations on those processing personal data, and provides for stronger regulatory enforcement powers. Another consequence of GDPR is that it raised the bar for valid consent under existing ePrivacy laws. In practice, the real test for GDPR will be in its enforcement.

In November 2018, Privacy International complained about a wide-scale and systematic infringements of data protection law by seven data brokers, credit-referencing agencies and AdTech (advertising technology) companies to Data Protection Authorities in Ireland, the UK, and France.[11] As a result of our submission, the Irish Data Protection Commission (DPC) has now opened a formal probe into Quantcast's (i.e. one of these companies) data practices and the UK Information Commissioner (ICO) is looking more

[7] https://github.com/httptoolkit
[8] This section is just a summary, each finding is explained in more detail below
[9] https://privacyinternational.org/adtech-complaints-timeline
[10] As explained later in the report, despite having performed the search from Google UK and in the UK, a New Zealand website appeared in the top results
[11] https://privacyinternational.org/legal-action/challenge-hidden-data-ecosystem

closely at AdTech, in particular RTB. The ICO's update report into AdTech and RTB sets out that many current practices are unlawful.[12]

In December 2018, Privacy International published research on third-party tracking on mobile Android devices by analysing which data some of the world's largest apps share with third parties, more specifically Facebook. The report considered the legal obligations of the different actors involved and in response to this report a number of companies have updated their practices.[13]

Our findings of this report show that many mental health websites don't take the privacy of their visitors as seriously as they should. **This research also shows that some mental health websites treat the personal data of their visitors as a commodity, while failing to meet their obligations under European data protection and privacy laws**.

All website providers have a responsibility to protect the privacy of their users and comply with existing laws, but this is particularly the case for websites that share unusually granular or sensitive data with third parties. Such is the case for mental health websites.

For website owners we recommend the following:

- Websites should be transparent about third-party tracking, limit third-party tracking to what is strictly necessary, and obtain the valid and informed consent of users, by offering them a genuine choice.
- For websites that want to use a select number of third parties, we recommend that they remove the *referer* header to avoid sharing the webpage currently visited.
- We also recommend that websites that cover potentially sensitive issues, such as mental health, refrain from using programmatic advertising, especially involving RTB, on health-related websites.
- Websites sometimes unknowingly share a lot more data than visitors can reasonably expect. We recommend that websites that offer tests should change the way the results are stored so that they are not shared with any third parties.

The burden should be on websites to protect user privacy by design and by default. We know that many are still falling short, which is why we recommend the following to anybody looking for help and support online:

- Block third party cookies on your browsers
- Use ad-blockers and anti-tracking add-ons
- Before completing an online test for a mental health condition, make sure the website is trustworthy. If in doubt, seek out information from public health bodies, medical professionals or qualified charities.
- In the UK, Samaritans can be contacted on 116 123. In Australia, the crisis support service Lifeline is on 13 11 14. In the US, the suicide prevention lifeline is 1-800-273-8255. Other international helplines can be found at www.befrienders.org.

Privacy International continues to expose data exploitation and seek action by the Data Protection Authorities that will protect individuals from wide-scale and systematic infringements of the GDPR and ePrivacy.

[12] https://ico.org.uk/media/about-the-ico/documents/2615156/adtech-real-time-bidding-report-201906.pdf
[13] See update from March 2019, https://privacyinternational.org/campaigns/investigating-apps-interactions-facebook-android

Introduction

Trackers by third parties are now included in most apps, on most websites, online shops, email newsletters and increasingly also "smart" devices like TVs. In practice, this means that user behaviour on a growing number of devices is being shared with third parties.

Websites and apps include content from third-party services for a number of reasons: to track crash reports, use compliance tools, measure user engagement (analytics), connect to social networks (for instance, by allowing users to share photos on Facebook from the app), and to generate revenue by monetising user data and display targeted ads.

Third-party services can be useful for developers, but those very same tools and tracking technologies can also enable third parties to collect user data for their own uses. Since third parties have positioned themselves as middle-men, they have access to incredibly detailed insights into the lives millions of people (who will have often never even heard of them). Third parties whose code is embedded in a large number of apps and websites receive data about users that can be linked and combined into a fine-grained profile about people's habits, interests, whereabouts, and states of minds.

This sharing of user data is highly problematic from a privacy perspective. One reason for this is that awareness about the existence of trackers remains low. An AdTech market research report by the UK's Information Commissioner's Office (ICO) from 2019 found that 63% of the 2,300 respondents asked found it acceptable that ads funded free content. However, when given an explanation of how targeted advertising, specifically a practice called Real Time Bidding (RTB) works, this number fell to 36%[14]. A report by the think tank doteveryone from 2018 reported that 45% of people surveyed were unaware that information they enter on websites and social media can help target ads.[15]

European data protection and privacy laws[16] require that websites and apps obtain user consent before placing cookies on devices (or using similar technologies), subject to limited exemptions. Research indicates, however, that many cookie notices fail to meet the bar that the ePrivacy laws and the General Data Protection Regulation (GDPR) require.[17] For consent to be valid it has to be freely given, specific, informed and unambiguous, by way of a clear affirmative action. It should also be as easy to withdraw as to give consent.[18] If special category data is processed (for instance, data concerning health), the consent also needs to be explicit.[19] Despite these requirements many consent notices do not offer choices, but instead only ask for confirmation.[20]

The purpose of this research is to further illustrate and understand how websites share data with third parties. We focussed on mental health websites that users in France, Germany and the UK would find through a Google search about depression. We used Google, as it is most commonly used search engine in these three countries.

[14] https://ico.org.uk/media/about-the-ico/documents/2614568/ico-ofcom-adtech-research-20190320.pdf
[15] https://doteveryone.org.uk/report/digital-understanding/
[16] Specifically Article 5(3) of the E-Privacy Directive 2002/58/EC and Articles 4(11), 6(1)(a) and 7 of GDPR
[17] Utz, T Degeling, M., Fahl, S., Schaub, F., Holz, T., 2019, '(Un)informed Consent: Studying GDPR Consent Notices in the Field', *ACM Conference on Computer and Communications Security (CCS)*, London, November.
[18] Article 4(11) and 7(3) of GDPR
[19] Article 9(1) and (2)(a) of GDPR. Whilst there are other exceptions for the processing of special category personal data, explicit consent is likely the only relevant one in the context of the processing which is the focus of this research
[20] Utz, T Degeling, M., Fahl, S., Schaub, F., Holz, T., 2019, '(Un)informed Consent: Studying GDPR Consent Notices in the Field', *ACM Conference on Computer and Communications Security (CCS)*, London, November.

Methodology

Data sampling and page collection

We noted, using Google Trends[21] for the UK, Germany and France, that the top three depression-related key words for the past five years were:

France	Germany	UK
dépression	Depression	depression
symptomes dépression	Symptome depression	anxiety depression
dépression traitement	Depression Test	depression test
dépression test	Anzeichen Depressionen	depression help

We then searched Google for "depression", as well as the respective top three related key words in French, German and English on regional versions of Google[22], using a VPN to set our location to the adequate country.

We decided to include advertised and featured searches in our sample in order to ensure that the results are a realistic representation of the kinds of websites that a user searching for depression would discover. We have listed all web pages we analysed in the appendix.

In addition to websites that we obtained through Google search, we also saved the URLs of the top five mental health websites for Germany, France and the UK using SimilarWeb's top website ranking[23]. SimilarWeb provide web analytics and rank websites by category and number of visits. We picked the top five websites in each country in the category "mental health" and added these URLs to the list of websites we analysed.

Using these two methods, we selected the following web pages[24]:

	France	Germany	UK
Total number of pages selected (including ads)	41	44	51
Total number of ads	4	17	9
Sub-set of depression test web pages selected for further traffic analysis	3	3	3

Detecting third-party services in 136 depression-related URLs

We used the open-source software tool webxray[25] to detect third-party HTTP requests and cookies. We conducted our analysis on 8 July 2019. Webxray is designed to analyse third-party content on webpages

[21] https://trends.google.com/trends/?geo=US
[22] google.fr, google.de and google.co.uk
[23] https://www.similarweb.com/top-websites/
[24] Note that for some websites, multiple web pages were included in the study, see Limitations section
[25] https://webxray.org/

and identify the companies that are collecting user data. It is an open-source tool that has been used in prior web privacy measurement studies.[26] [27] [28] [29]

Webxray uses a custom library of domain ownership[30] to chart the flow of data from a given third-party domain to a corporate owner, and, if applicable, to parent companies. For example, webxray will tell you that the domain "doubleclick.net" is owned by the DoubleClick service, which is a subsidiary of Google, which is a subsidiary of Alphabet. The webxray library also categorises domain ownership to evaluate why a website could have chosen to include content for the given service (e.g. audience measurement, marketing, social media, compliance or content hosting) [31].

Once the sets of pages are established, webxray is given a list of URLs and loads each page in the Chrome web browser, closely reflecting the real behaviour of a user. During page loading the browser waits 45 seconds to allow page scripts to download and execute. For each page load, webxray creates a fresh Chrome user profile which is free of prior browsing history and cookie data. During page loading no interaction takes place, meaning that notifications to accept cookies are not acted on, and all cookies are set without express user consent. Once a website has been scanned, webxray stores the data that is collected (third-party elements loaded, cookies stored, JavaScript, etc.) in a database. Webxray then produces an analysis of the data collected and generates analytical reports including information about the percentage of pages using third-party elements, number of cookies stored, third party most often detected or number of unsecure connections to third parties (non-SSL connections). A complete list of the default reports generated by webxray can be found on the official webxray website[32].

Examining traffic of online depression tests

After we detected third-party services on a list of 136 depression-related websites in France, Germany and the UK, we further examined the traffic of a selected sub-set of websites, including ads (see appendix 4).

We decided to further analyse depression tests, since we wanted to find out whether user input or test scores are being shared with third parties. We selected these websites by searching for "depression + test" in French, German and English on regional versions of Google[33], using a VPN to set our location to the adequate country. From each search results, we selected the top three websites, including ads. We used the open-source HTTP toolkit[34] to intercept HTTP(S) and explore and examine traffic of the websites we identified. We also used Firefox and Chrome built-in developer tools to observe the cookies stored. We conducted our analysis on 12 July 2019.

The analysis consisted of the following steps:

- Open HTTP toolkit and launch the embedded version of Firefox. The interception starts automatically

[26] Libert, T., 2015. Exposing the hidden web: An analysis of third-party HTTP requests on 1 million websites. *arXiv preprint arXiv:1511.00619*.
[27] Libert, T., 2014. Privacy implications of health information seeking on the web. *arXiv preprint arXiv:1404.1951*.
[28] Libert, T., 2018, April. An automated approach to auditing disclosure of third-party data collection in website privacy policies. In *Proceedings of the 2018 World Wide Web Conference* (pp. 207-216). International World Wide Web Conferences Steering Committee.
[29] Libert, T. and Binns, R., 2019, June. Good News for People Who Love Bad News: Centralization, Privacy, and Transparency on US News Sites. In *Proceedings of the 10th ACM Conference on Web Science* (pp. 155-164). ACM.
[30] https://github.com/timlib/webXray_Domain_Owner_List
[31] Third party classification is a feature that was available on webxray until May 8, 2019 and the commit 868f649f516672f3454342becddbaa8e0864e379. This feature was removed with this update.
[32] https://webxray.org/#reports
[33] google.fr, google.de and google.co.uk
[34] https://github.com/httptoolkit

- Open the selected website
- Answer test questions and submit the test (if possible)
- Look at the requests, which are collected by HTTP toolkit in the view section
- Isolate POST requests and inspect the data sent
- Use the HTTP toolkit search to search for relevant keywords in the GET requests (within the URL). Keyworks include:
    - Terms related to the test mechanics such as “question”, “answers”, “response”, “A=”, “R=”, “score” etc.
    - “RTB”, “bid”, “pre-bid” to find RTB-related queries
    - Literal answers to test question such as “Vrai” (true in French)
    - Other terms related to mental health (such as “depression”)
- Use https://www.urldecoder.org/ to make the URLs more readable[35]
- Analyse the cookies stored in the Firefox browser use by the HTTP Toolkit, or alternatively open website in a clean instance of Chrome and inspect cookies through the browser’s developer tools

Limitations

Our sampling method comes with a number of limitations.

Google AdWords is Google's advertising system in which advertisers bid on certain keywords in order for their clickable ads to appear in Google's search results. The ads that users see in response to their search queries are dynamic and as a result, the findings that our searches generated are not replicable.

For some websites, multiple web pages were included in the study (for instance, when a website’s depression test and a page with general information about depression both appeared in the top then Google search results for the term “depression”). Also note that certain pages appeared twice, once as feature or an advertisement and then again as an organic search result). As a result, aggregate numbers for all URLs analysed within a given country will contain multiple URLs from the same website.

Even though we searched for websites on French, German or UK versions of Google, some websites that appeared in the top search results were not necessarily targeted at visitors from the EU. A good example is the website Depression.org.nz, which appeared in the top three search results for “depression test” on Google in the UK. The website is part of the New Zealand government’s approach to suicide prevention.

It is also worth noting that our analysis is merely scratching the surface. We only analysed a small number of depression test sites with HTTP toolkit and we only looked at what happens between the client and the website visited or the client and third parties. Data that is exchanged directly between the website and the third parties are not publicly accessible but could be another avenue for data sharing.

[35] URLs are encoded to replace unsafe ASCII characters such as spaces by a "%" followed by two hexadecimal digits (%20 for a spacve). This makes the data included in the URL hard to read and decoding makes the string more readable.

Findings

Findings Part I: Detecting third-party services in 136 web pages

Of the 136 web pages we analysed to detect third-party HTTP requests and cookies**, the vast majority contained at least one third-party element (97.78% on average)**[36], such as third-party cookies, third-party JavaScript or an image hosted on a third-party server.

Mental health web pages used a large number of third-party tracking cookies. On average, the mental health web pages we analysed placed 44.48 cookies in France, and 12.24 cookies in the UK and of 7.82 cookies in Germany.

Due to the setup of webxray, no interaction with the website took place during page loading. As a result, **all of the cookies that we detected were placed before users were able to express consent, if this was available as an option in the first place**.

	France	Germany	UK
% with third-party element	97.56	97.73	98.04
% with third-party cookie	87.8	52.27	88.24
% with third-party JavaScript	92.68	86.36	98.04
Average number of third-party domains	23.32	8.84	13.47
Average number of third-party cookies	44.49	7.82	12.24

In order to further understand the intended purpose of the third-party elements that we detected in the websites we analysed, we relied on webxray's automatic categorisation of domains (e.g. audience measurement, marketing, social media, compliance or content hosting)[37]. **We found that the vast majority of websites contact third-party domains for marketing purposes.**

Third-party use category (determined by webxray)	France percentage of pages with use	Germany percentage of pages with use	UK percentage of pages with use
Audience measurement	97.56	70.45	88.24
Marketing	80.49	61.36	86.27
Social media	51.22	27.27	50.98

[36] 97,73% for Germany, 97,56% for France and 98,04% for the UK

[37] See previous comment on this. Third party classification is a feature that was available on webxray until May 8, 2019 and the commit 868f649f516672f3454342becddbaa8e0864e379. This feature was removed with this update.

We also noted that Google trackers are present on 88.02% of all web pages we scanned. Websites make use of a range of Google products, including Google Analytics, Google Tag Manager and Google Fonts. Google's advertising services DoubleClick and AdSense are used by the vast majority of web pages we analysed. 70.39% of all web pages we analysed use trackers by DoubleClick.

Facebook is the second most common third-party tracker after Google. 40.18% of all web pages we analysed contained a tracker by Facebook.

Amazon is also a commonly used third-party service on the mental health web pages we analysed. While many websites use Amazon Web Servers to host their content, Amazon Marketing Services were used by 24.39 % of pages we analysed for France, 13.64 % for Germany and 17.65% for the UK.

Owner	Percentage of pages tacked France	Percentage of pages tracked Germany	Percentage of pages tracked UK
Google	87.8	84.09	92.16
Google Analytics	85.37	68.18	72.55
DoubleClick	75.61	59.09	76.47
Facebook	48.78	22.73	49.02
Amazon Marketing Services	24.39	13.64	11.76
Amazon Web Services	36.59	13.64	17.65

Numerous mental health websites include trackers from known data brokers and AdTech companies, including AppNexus, LiveRamp (formerly owned by the data broker Acxiom), Rubicon Project, Criteo, Oracle, as well as the native advertising platforms Outbrain and Taboola. All of these companies perform different roles in the complex AdTech ecosystem. What they have in common is that they use cookies and similar technologies to track users across the web and across different devices to create granular user profiles.

Owner	Percentage of pages tracked France	Percentage of pages tracked Germany	Percentage of pages tracked U.K.
AppNexus	46.34	6.82	9.8
LiveRamp	4.88	N/A	9.8
Rubicon Project	41.46	N/A	3.92
Criteo	31.71	9.09	5.88
Oracle	29.27	11.36	17.65
Outbrain	14.63	4.55	N/A
Taboola	12.2	2.27	N/A

Findings Part II: Traffic analysis of online depression tests

To further understand the data that websites share with third parties, we selected a subset of websites that offer free depression tests for further analysis.

We found that the consent flow on many depression test websites does not meet the standard set out by the EU's General Data Protection Regulation (GDPR) and ePrivacy laws[38]. We found websites that don't ask for user consent before placing third-party marketing cookies on their browser. We also found websites that appear to ask for consent, but don't offer a straightforward option to reject consent, despite the requirement that consent be freely given and as easy to withdraw as to give. Most notable is the French website Doctissimo.fr:



Figure 1 - cookie banner that the website doctissimo.fr depression test[39] displays at the bottom when you first visit it

The website does not offer a clear option to reject consent and the cookie banner disappears the moment the user takes any action on the site (such as scrolling). The cookie banner merely notifies the user that data might be shared with third parties for "analytics, content personalisation, sharing on social network, audience measurement, profiling and targeted advertising".



Figure 2 - Extended cookie banner on doctissimo.fr after clicking on the cookie parameters link

[38] Specifically Article 5(3) of the E-Privacy Directive 2002/58/EC and Articles 4(11), 6(1)(a) and 7 of GDPR
[39] http://www.doctissimo.fr/psychologie/tests-psycho/tests-psychologiques/coup-de-blues-ou-depression

When opening the websites' cookie preferences ("paramétrer les cookies") at the bottom of the website, after the cookie banner has disappeared, or by clicking the second hyperlink on the cookie banner, we noticed pre-ticked consent boxes that indicated that Doctissimo assumes the user has consented to its partners placing cookies in the user's browser in order to customise content, target advertising, audience measurement and to share with advertising partners. Doctissimo lists an extraordinary number of 448 partners that may process the user's personal data.[40]

We also found that depression test websites make extensive use of third-party cookies. Websites that use third-party cookies for marketing purposes typically enable third parties to track users across the web. The depression test on the German site netdoktor.de, for instance, places a tracking cookie by the AdTech company Criteo.

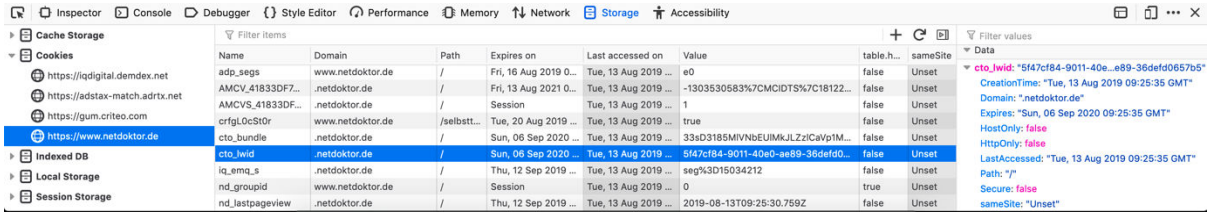


Figure 3 - Screenshot of the Criteo cookie stored on netdoktor.de



Figure 4 - Screenshot from Criteo's documentation detailing the role of this cookie[41]

Netdoktor.de shares the URL of the depression test web page the user has visited with Criteo, a personalised retargeting company that works with Internet retailers to serve personalized online display advertisements to consumers who have previously visited the advertiser's website. Privacy International complained about Criteo to CNIL, the French data protection authority in November 2018.[42]

We also found that the depression test websites we analysed share personal data with third parties. The data that is shared by default includes:

1. Basic device information transmitted via the Header of the HTTP request such as the OS version, browser name and version, IP address, origin URL, browser language.

2. The origin URL, which typically contained the word "depression" (or its translation in the appropriate language) and in 7 out 9 times included the word "test" (the two other URLs included "quiz" and "mood assessment"). This URL is sent in the *referer* request Header.[43]

[40] The exact wording is: "Je sais que seuls Doctissimo et ses partenaires utilisent vos données et je peux personnaliser mes choix ci-dessus ou continuer à utiliser notre site si je suis d'accord. Voir la liste complète des partenaires.""

[41] https://ailab.criteo.com/cookie-declaration/

[42] https://privacyinternational.org/legal-action/challenge-hidden-data-ecosystem

[43] "The Referer request header contains the address of the previous web page from which a link to the currently requested page was followed. The Referer header allows servers to identify where people are visiting them from and may use that data for analytics, logging, or optimized caching, for example." - https://developer.mozilla.org/en-US/docs/Web/HTTP/Headers/Referer

3. The browser/OS language

This is the basic data that is transferred when only using a GET request (one of the most common HTTP methods, used to request used to request data from a specified resource).

Some depression test websites (Netdoktor.de, passeportsante.net and doctissimo.fr) use programmatic advertising with Real-Time Bidding (RTB). RTB is subject to complaints across Europe and Privacy International complained about the practices of companies involved in RTB.[44] Through RTB, vast amounts of personal data exchange hands between a large number of players a billion times a day. Any mental health websites that uses RTB could potentially share personal data with thousands of third parties.

Again, Doctissimo.fr illustrates this issue. The screenshot below shows the data that is included in a prebid request on Doctissimo.fr, which is sent to https://europe-west1-realtime-logging-228816.cloudfunctions.net/realtime-logs (a cloud function hosted by Google that will process the request).



Figure 5 – Extract of a POST request sent from Doctissimo.fr to a Google cloud function

Prebid requests are typically used for header bidding for display and video ads on a publisher's website.[45] Header bidding is a form of programmatic advertising, in which a website shares its visitor's personal data with one or more advertising exchange. These exchanges then broadcast the data to hundreds of partner companies. Header bidding typically involves the broadcasting of personal data, but the sharing of health-related data is especially concerning.

Doctissimo.fr share content keyword such as 'dépression', 'déprimé' (depressed), or 'quizz', the page URL (psychologie/tests-psycho/tests-pstchologiques/coup-de-blues-ou-depression), as well as information about the page content ('psychologie', 'test psychologiques', 'coup de blues ou dépression ?'with https://europe-west1-realtime-logging-228816.cloudfunctions.net/realtime-logs. These keywords clearly communicate that a user is looking for information about depression and is possibly taking a depression test.

Other websites were found to load trackers from companies providing programmatic advertising services. Netdoktor.de sends request to Amazon Publisher Services (a marketplace which integrates RTB[46]), Criteo (previously mentioned) and Zemanta, an Outbrain company which "power[s] programmatic-native content marketing"[47].

[44] https://privacyinternational.org/adtech-complaints-timeline
[45] http://prebid.org/overview/intro.html
[46] https://aps.amazon.com/aps/solutions-for-programmatic-bidders/
[47] http://www.zemanta.com/products/native-content-distribution/

Finally, we found that the following four depression test websites share test answers with third parties. This either happens because test results, answers or score are stored in the URL of the test page as a variable, or because websites share the results with third parties directly.

A few specific websites are detailed below to illustrate these issues.

PasseportSanté

PasseportSanté stores all answers to the test in the URL of the test page:

```
https://www.passeportsante.net/fr/VivreEnSante/Test/
faites-vous-une-depression-48?*Q=12&R1=0&R2=0&R3=1&R4=0&R5=1&R6=1&R7=0&R8=1&R9=0&R10=1&R11=1&Resultat=1
```

Figure 6 – Screenshot of the URL of the PasseportSanté website when completing a depression test

R1=0 means that the answer to question 1 was 0 (no), R3=1 means that the answer to question 3 was 1 (yes), while Q=12 means that the last question answered was question 12 and Resultat=1 means that the user is currently viewing the results page.

As described above, this means that all the answers are shared with all third parties requested by the client since it is included in the HTTP Header. Therefore, all third parties that are loaded when visiting the page are receiving the full URL of the web page that the user is visiting, including all the answers to each question. PasseportSanté contacts 41 third-party services when taking the test.

Below is the example for how test results are being shared with a third party, in this case the AdTech company Rubicon project:

URL

```
https://eus.rubiconproject.com/usync.html?&geo=eu&co=uk
```

HEADERS

+ accept:	text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
+ accept-encoding:	gzip, deflate, br
+ accept-language:	en-GB,en;q=0.5
+ connection:	keep-alive
+ host:	eus.rubiconproject.com
+ referer:	https://www.passeportsante.net/fr/VivreEnSante/Test/faites-vous-une-depression-48?*Q=12&R1=0&R2=0&R3=0&R4=0&R5=0&R6=0&R7=0&R8=0&R9=0&R10=1&R11=0&Resultat=1
+ upgrade-insecure-requests:	1
+ user-agent:	Mozilla/5.0 (Macintosh; Intel Mac OS X 10.14; rv:68.0) Gecko/20100101 Firefox/68.0

Figure 7 – Screenshot of the URL being shared with Rubicon project

PasseportSanté's cookie notice is similar to that of Doctissimo, in that it disappears as soon as the user takes any action of the page and does not offer a straightforward option to reject consent.

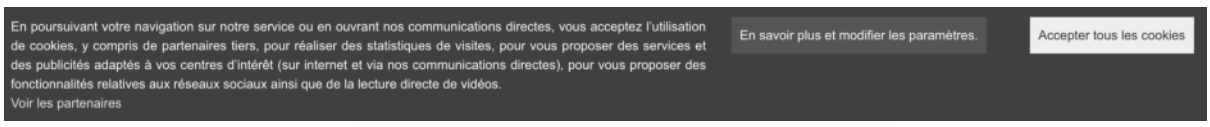


Figure 8 - PasseportSanté's cookie notice which appears during the first visit to the page

Depression.org.nz (UK)

Similar to PasseportSanté, *depression.org.nz* stores all test answers and the final test score in the URL. It also stores the final score. Since the website contacts ten third-party services, this means that all of these receive test answers and the final test score.

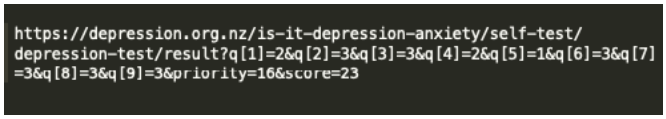


Figure 9 - Depression.org.nz URL after taking the depression test

We can clearly see above the answer to each question, as well as the final score. Even if the questions are not explicitly transmitted, a high final score in itself indicates a high probability of depression or anxiety.

Using a tracking pixel, each answer and the final score is also sent to Google via a proxy hosted on hpa.org.nz.

URL

```
https://freeproxy.hpa.org.nz/analytics/collect?v=1&_v=j72&a=1285000091&t=event&
ni=0&_s=1&dl=https%3A%2F%2Fdepression.org.nz%2Fis-it-depression-anxiety%2Fself-
test%2Fdepression-test%2F&ul=en-gb&de=UTF-8&dt=Depression%20test%20%7C%20Depres
sion%20and%20Anxiety&sd=24-bit&sr=2560x1440&vp=1401x1143&je=0&ec=PHQ&ea=Q4&el=2
&ev=2&_u=SCCACEABB~&jid=&gjid=&cid=383233602.1562852834&tid=UA-77666427-1&_gid=
543526453.1562852834&gtm=2wg6q1K74QJC&z=476923610
```

Figure 10 - URL requested by depression.org.nz including the question just answered and the answer (from 0 "not at all" to 3 "nearly every day")

URL

```
https://freeproxy.hpa.org.nz/analytics/collect?v=1&_v=j72&a=1285000091&t=event&
ni=0&_s=1&dl=https%3A%2F%2Fdepression.org.nz%2Fis-it-depression-anxiety%2Fself-
test%2Fdepression-test%2F&ul=en-gb&de=UTF-8&dt=Depression%20test%20%7C%20Depres
sion%20and%20Anxiety&sd=24-bit&sr=2560x1440&vp=1401x1143&je=0&ec=PHQ&ea=score&e
l=23&ev=23&_u=SCCACEABB~&jid=&gjid=&cid=383233602.1562852834&tid=UA-77666427-1&
_gid=543526453.1562852834&gtm=2wg6q1K74QJC&z=314967128
```

Figure 11 - Final score sent to Google analytics (freeproxy.hpa.org.nz/analytics redirects to https://marketingplatform.google.com/about/analytics/)

Doctissimo

Doctissimo also shares test answers as variables and in clear text with a third party. When taking a depression test on Doctissimo.fr, answers to the test's questions are sent to player.qualifio.com.

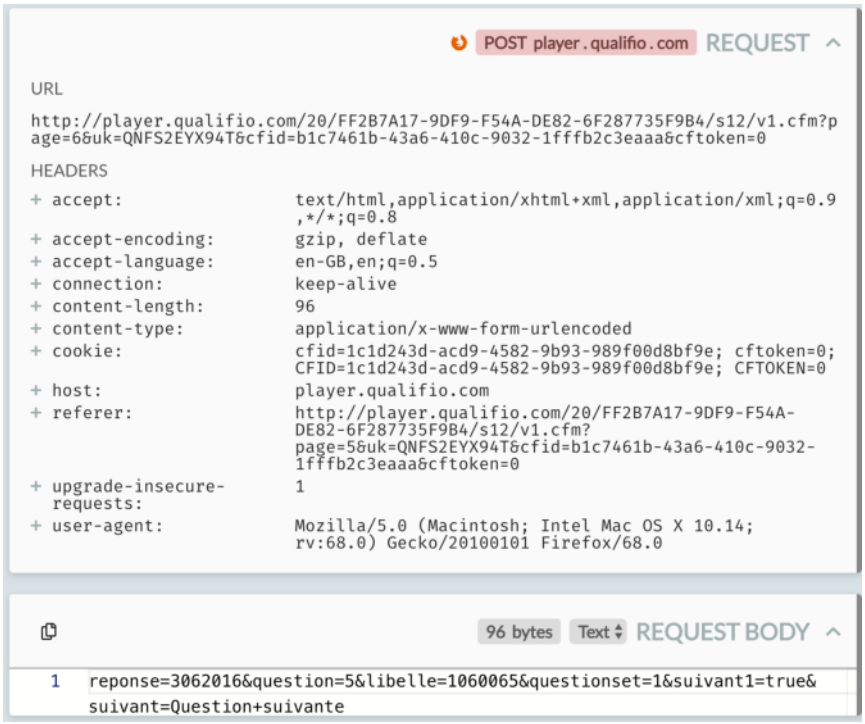


Figure 12 - POST request to Qualifio observed in HTTP Toolkit

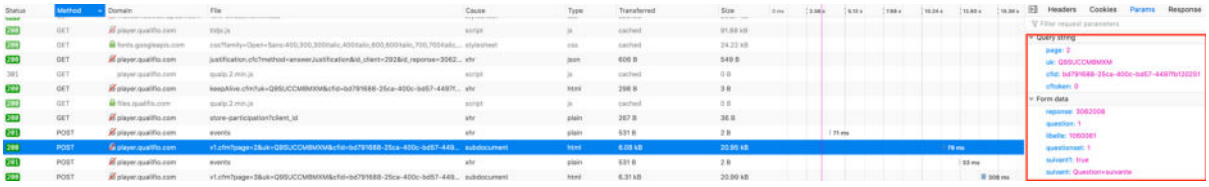


Figure 13 – Similar POST request observed in Firefox, data are transmitted in clear text over HTTP. We can also observe the unique identifier CFID

As we can see above, a POST request is sent to qualifio.com and contains the data “reponse=3062016”. If we change the answer to this specific question, the value changes consistently. Because the request is sent in HTTP, instead of HTTPS, the request is potentially susceptible to interception.

Because Qualifio provides the test form, the company knows the test’s questions, as well as which answer is associated with the response value. Below is a GET request to Qualifio returning the question (which translates to: "Do you feel sad, in a dark mood?"), as well as the answer that the user transmitted.

URL

```
http://player.qualifio.com/20/ws/cfc/justification.cfc?method=answerJustification&id_client=292&id_reponse=3062010&id_question=1060062&displayCorrectAnswer=0&displayAnswerLabel=0&label_correct=Bonne+r%C3%A9ponse%26nbsp%3B!&label_bad=Mauvaise+r%C3%A9ponse&label_good_answer=La+bonne+r%C3%A9ponse+%C3%A9tait%26nbsp%3B%3A
```



Figure 14 - Response from Qualifio to a GET request sent by doctissimo.fr

Qualifio places a cookie in the user's browser, which contains a unique identifier. As a result, the answers to the depression test questions that Doctissimo sends to Qualifio, can be linked to a uniquely identifiable individual by the third party.

National Health Service (NHS) (UK)

The NHS's mood self-assessment quiz shares individual answers, test score, as well as the URL of the test with Adobe. Below is a screenshot of a user's anxiety and depression score after taking the test.

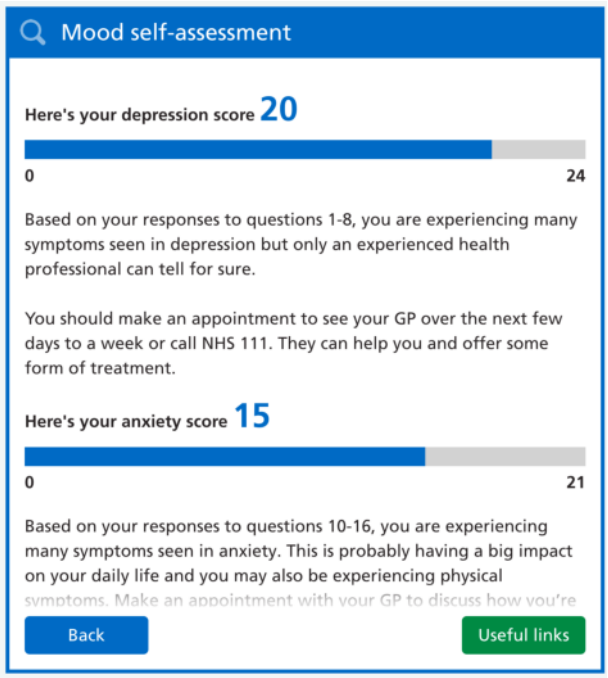


Figure 15 - Test results after taking a depression test on the NHS website

The NHS website shares the URL https://www.nhs.uk/conditions/stress-anxiety-depression/mood-self-assessment/, the test name 'Mood self-assessment quiz', as well as the final test score with Adobe. Below is a screenshot of a GET request sent to omtrdc (an Adobe tracking server[48]) containing the question number and the answer.

[48] https://helpx.adobe.com/uk/analytics/kb/determining-data-center.html



Figure 16 - GET request sent to omtrdc (an Adobe tracking server[49]) containing the question number and the answer

The highlighted part decoded looks like this:

> pageName=nhs:web:conditions:stress-anxiety-depression:mood-self-assessment&
> g=https://www.nhs.uk/conditions/stress-anxiety-depression/mood-self-assessment/&
> cc=GBP&v11=18&v16=Mood_self-assessment&v17=Self assessments&
> pe=lnk_o&**pev2**=18&c.&a.&activitymap.&
> page=nhs:web:conditions:stress-anxiety-depression:mood-self-assessment&
> link=**Something bad that happened recently**

We can see that the answer to the question is shared in the form of a variable. Based on the observation of multiple request, we can also deduce that the parameter pev2 is the question number associated with this answer.

The screenshot below shows a similar request sharing the final score with the same server.



Figure 17 - Data received after a GET request from the NHS websites to the Adobe server

[49] https://helpx.adobe.com/uk/analytics/kb/determining-data-center.html

Once decoded, this reads: "`score points: 20|score GAD: 15`"; the score we got when taking the test (see figure above). Both requests also share a common parameter *mcorgid* at the end of the GET request, which appears to be a unique ID to identify the user.

Adobe's documentation page for tracking servers suggests that the purpose of this tracking is measurement or analytics, rather than advertising or marketing, even though this is a service that Adobe also offers.[50]

When we shared key findings with the NHS, we received the following clarification via e-mail[51]:

"NHS.UK is committed to transparency and to meeting both the letter and the spirit of the law and users are already able to see and opt-out of all third party cookies and analytics cookies on our website. In July 2019 the Information Commissioner's Office published updated guidance about cookie policies and we are in the process of ensuring that we translate this guidance into practice on the site. This work will be completed by the end of September 2019 and, from this point, users will be automatically opted out from all analytic and third party cookies. Users will be specifically asked if they would consent to opt-in, in order to support us to continue to develop the service so that it best meets user needs." […]

"It is not possible to identify any individual from the data collected in the mood self-assessment quiz and no data is shared with any third parties. All analytics data and test scores are linked to a unique, anoymised user ID which cannot be traced back to an individual - it is not linked to an IP address and is randomly generated. In order to ensure privacy of visitors to our website, IP addresses are anonymised."

Finally, we observed that two depression test websites (the NHS mood assessment test and depression.org.nz) use Hotjar, a company that provides "Session replay scripts" that can be used to log (and then playback) everything the user typed or clicked on a website.

The NHS uses a first-party cookie (that they implement), which seems to provide the company HotJar with a unique user ID.

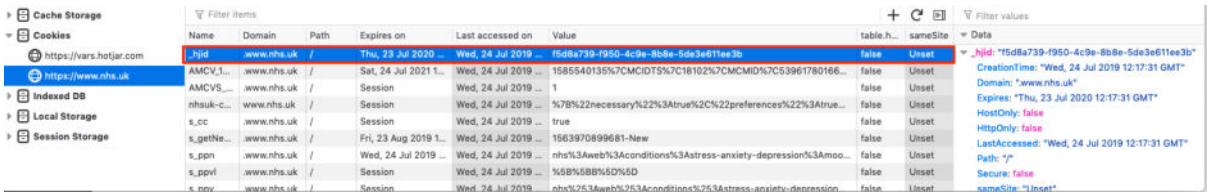


Figure 18 - Screenshot of the cookies stored when visiting the NHS' depression test, the Hotjar cookie is highlighted

'hjid' is the name of the Hotjar ID, according to Hotjar's own documentation,[52] and Hotjar JavaScript is loaded when visiting the NHS's mood assessment test page. However, it appears under the domain nhs.co.uk, which means it is set by the NHS, and users are unable to block it through third-party cookie blocking.

Depression.org.nz also embeds the Hotjar cookie previously spotted on the NHS website:

[50] https://helpx.adobe.com/uk/analytics/kb/determining-data-center.html#id_42876
[51] See appendix 6 for full response
[52] https://help.hotjar.com/hc/en-us/articles/115011639927-What-is-the-Hotjar-Tracking-Code-

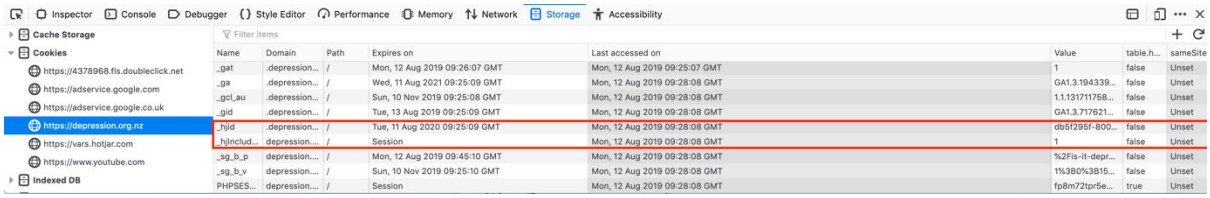


Figure 19 - Screenshot of the cookies stored when visiting depression.org.nz depression test, the Hotjar cookie is highlighted

Hotjar provides different services to website owners, including:

- **Heatmaps**: visualisation of the most clicked area by users as well as scrolling behaviour. In Hotjar's own words, the purpose is to: "[u]nderstand what users want, care about and do on your site by visually representing their clicks, taps and scrolling behaviour – which are the strongest indicators of visitor motivation and desire"[53]

- **Visitor recordings**: "[e]liminate guesswork with Recordings of real visitor behaviour on your site. By seeing your visitor's clicks, taps and mouse movements you can identify usability issues on the fly and issues they encounter."[54]

Session-replay scripts are particularly intrusive. Researchers at the Princeton Center for Information Technology Policy (CITP) have argued that data, which is collected through session-replay scripts, can easily be linked back to identifiable individuals.[55]

When we shared key findings with the NHS, we received the following clarification via e-mail[56]:

"Analytics cookies can be switched off by users through our website. Any information collected through this tool is anonymised, cannot be used to identify an individual and is not shared with any third parties. We do not record the session using Hotjars 'session replay scripts' when a user starts to complete the 'mood self assessment quiz'."

"We do use Hotjar on other parts of the website to collect information, which users can opt out of on our website. From the end of September 2019 this functionality will be automatically disabled, with users able to opt-in should they wish to."

[53] https://www.hotjar.com/tour
[54] Ibid.
[55] https://freedom-to-tinker.com/2017/11/15/no-boundaries-exfiltration-of-personal-data-by-session-replay-scripts/
[56] See appendix 6 for full response

Legal analysis

As noted above, the practices identified through this research raise questions as to compliance with data protection and privacy laws in the EU, namely GDPR (as supplemented by Member State legislation) and the ePrivacy Directive (as implemented by Member State legislation). Those responsible for websites about depression are what is known as data controllers (they determine the purpose and means of the processing of personal data) and must comply with the obligations the GDPR imposes on them.[57] For example, the very first data protection principle, in Article 5(1)(a) of GDPR, requires personal data to be "processed lawfully, fairly and in a transparent manner in relation to the data subject ('lawfulness, fairness and transparency')."

Despite this requirement, we found that many mental health websites process people's personal data in ways that aren't transparent or fair, and that lack a lawful basis under GDPR and ePrivacy.

What happens to user data is opaque

Under the principle of transparency and specifically Articles 13 and 14 of the GDPR, an individual is entitled to know among other things, the purpose for which their data will be used and the recipients or categories of recipients of their personal data, including to whom the personal data have been or will be disclosed. However, the manner in which website users' data is processed described in this research are opaque to users themselves and instead are only identifiable to the extent set out in this report with the use of in-depth technical analysis and understanding. Furthermore, the information provided in the information notices accompanying any cookie banners and/or in the website privacy policies is also limited and lacks meaningful explanation. This is in spite of the requirements under Article 12 of GDPR to provide information to people in a concise, transparent, intelligible and easily accessible form, using clear and plain language.

Users data is processed in ways they wouldn't expect

The lack of transparency i.e. people not knowing who is processing their data, how and for what purposes is intrinsically linked to fairness. The principle of fairness includes the requirement to consider the reasonable expectations of individuals, the effect that the processing may have on them and their ability to exercise their rights in relation to that information. As noted above, studies have shown that even though most people's understanding of the extent of online tracking is limited and when it is explained to them many had concerns.[58] This research shows that it is exceedingly difficult for individuals to seek mental health information and for example take a "depression test" with information about this being shared with hundreds of third parties with no clear indication of the potential consequences.

Users often have no real choice

As noted above, the first data protection principle in Article 5(1)(a) requires that personal data be processed lawfully and Article 6 of the GDPR sets out an exhaustive list of legal bases on which personal data can be processed. Given the overlap with ePrivacy laws, the only basis applicable to the sharing of this data with third parties is consent, and in the case that it is special category personal data under Article 9(1) of the GDPR, i.e. personal data revealing data concerning health, this would be explicit consent. However, in this research, we found that many mental health websites don't provide users with a genuine or free

[57] Recently, the Court of Justice of the European Union (CJEU) ruled that companies that use third party plug-ins on their websites are jointly liable with these third parties for violations of data protection laws. Although the case related to an operator of a website featuring a Facebook like button, the implications could be applied by analogy to cookies and other tracking technologies. In practice, the ruling means that website operators will need to ensure that third-party plug-ins, cookies, tracking implemented on the pages they operate comply with the strict standards set by the GDPR.

[58] The ICO commissioned Harris Interactive to undertake research into online advertising. 63% of the 2,300 participants indicated they found it acceptable that ads funded free content; however, when they were given an explanation of how RTB works, this fell to 36%. The survey is available here: https://ico.org.uk/media/about-the-ico/documents/2614568/ico-ofcom-adtech-research-20190320.pdf.

choice. This is particularly concerning since visiting health-related websites can reveal very specific information about the user's health. Such is the case when taking a depression test online.

Article 4(11) of the GDPR defines 'consent' for the purposes of the GDPR as: "any freely given, specific, informed and unambiguous indication of the data subject's wishes by which he or she, by a statement or by a clear affirmative action, signifies agreement to the processing of personal data relating to him or her."

Recital (32) of the GDPR explicitly bans pre-ticket opt-in boxes:

"Consent should be given by a clear affirmative act establishing a freely given, specific, informed and unambiguous indication of the data subject's agreement to the processing of personal data relating to him or her […] **Silence, pre-ticked boxes or inactivity should not therefore constitute consent.**" (emphasis added)

Recitals (42) to (43) expand on the concerns underlying these requirements:

"[…] For consent to be informed, the data subject should be aware at least of the identity of the controller and the purposes of the processing for which the personal data are intended. Consent should not be regarded as freely given if the data subject has **no genuine or free choice** or is unable to refuse or withdraw consent without detriment. […] **Consent is presumed not to be freely given if it does not allow separate consent to be given to different personal data processing operations despite it being appropriate in the individual case, or if the performance of a contract, including the provision of a service, is dependent on the consent despite such consent not being necessary for such performance**." (emphasis added)

To the extent that websites are relying on consent for processing personal data and for sharing it with third parties, there are serious concerns whether they have obtained valid consent under GDPR, if the website does not offer a genuine choice to its visitors. The GDPR places the burden on the controller to prove that consent was obtained validly and that it signals an unambiguous and voluntary indication of the data subject's wishes (see Article 7(1) GDPR) as well as making it as easy to withdraw as it was to give (see Article 7(3) GPDR).

Consent should be obtained before installing third-party marketing cookies

The findings of the report raise not only GDPR questions but also specific questions about ePrivacy. Among other things, the ePrivacy Directive governs confidentiality of communications which includes storing information in or gaining access to information stored in the terminal equipment[59] of a subscriber or user. This is the so-called "Cookie Law", which requires that subject to certain exceptions[60], users must be provided with clear and comprehensive information and provide their consent.

Since GDPR took effect, the definition and conditions of consent under ePrivacy is now equivalent to GDPR, meaning that consent has to be freely given, specific, informed and unambiguous with a clear affirmative action. According to the UK Information Commissioner Office's (ICO) guidance on cookies and similar technologies, valid consent "must involve some form of unambiguous positive action – for example, ticking a box or clicking a link – and the person must fully understand that they are giving you consent. You cannot show consent if you only provide information about cookies as part of a privacy policy that is hard to find,

[59] "Terminal equipment" is defined in another EU Commission Directive 2008/63/EC on competition in the markets in telecommunications terminal equipment as: "equipment directly or indirectly connected to the interface of a public telecommunications network to send, process or receive information; in either case (direct or indirect), the connection may be made by wire, optical fibre or electromagnetically; a connection is indirect if equipment is placed between the terminal and the interface of the network."

[60] "technical storage or access for the sole purpose of carrying out or facilitating the transmission of a communication over an electronic communications network, or as strictly necessary in order to provide an information society service explicitly requested by the subscriber or user." – Article 5(3) of the Directive.

difficult to understand, or rarely read. Similarly, you cannot set non-essential cookies on your website's homepage before the user has consented to them."[61]

Furthermore, consent is needed, given that first- and third-party cookies for advertising purposes are unlikely to meet the threshold requirement by the exemption for cookies that are "strictly necessary". Opinion 04/2012 on Cookie Consent Exemption by the Article 29 Data Protection Working Party states on page 11:

"The working party recalls that third-party advertising cookies cannot be exempted from consent, and further clarifies that consent would also be needed for operational purposes related to third-party advertising such as frequency capping, financial logging, ad affiliation, click fraud detection, research and market analysis, product improvement and debugging. While some operational purposes might certainly distinguish one user from another, in principle these purposes do not justify the use of unique identifiers."[62]

As a result, mental health websites that are unable to obtain valid user consent for cookies and similar tracking technologies for the purposes of third-party marketing, analytics or advertising will fall short of their obligations under EU privacy laws – both GDPR and ePrivacy.

Depression test results should not be shared with third parties

We found that four out of nine depression test websites share test answers and test results with third parties, either as variables or directly. Answers to depression tests and results of depression tests clearly constitute personal data concerning health, as these are shared with third parties together with unique identifiers that are associated with users. In other words, a third party that receives this data could easily tell that, for example, user 274873873 answered yes to the question "have you had trouble getting out of bed?". As noted above, in recognition of the sensitive nature of data relating to health it constitutes special category data under the GDPR.

Article 9(1) of the GDPR defines special category as "personal data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership, and the processing of genetic data, biometric data for the purpose of uniquely identifying a natural person, **data concerning health** or data concerning natural person's sex life or sexual orientation". As noted above, it prohibits the processing of such data, unless, among others, data subjects have "given explicit consent to the processing of those personal data for one or more specified purposes".

However, from our research none of the four websites that have shared people's test results with third parties have obtained valid consent, let alone explicit consent, for processing and sharing personal data, including special category data. Only the NHS website has a clear banner allowing user to accept or refuse cookies, but it failed to inform users that their answers would be shared and stored on an Adobe server (Adobe Analytics is only mentioned in the privacy policy).

Programmatic advertising and RTB on health websites raise serious concerns

RTB is subject to complaints across Europe[63], and Privacy International has complained about the practices of companies involved in RTB.[64] On June 20, 2019, the Information Commissioner's Office released an Update Report into AdTech and Real Time Bidding[65]. The report raises serious concerns relating to transparency and consent, as well as the data supply chain more broadly, but placed a special focus on

[61] https://ico.org.uk/for-organisations/guide-to-pecr/cookies-and-similar-technologies/
[62] https://ec.europa.eu/justice/article-29/documentation/opinion-recommendation/files/2012/wp194_en.pdf
[63] https://privacyinternational.org/adtech-complaints-timeline
[64] https://privacyinternational.org/advocacy/2426/our-complaints-against-acxiom-criteo-equifax-experian-oracle-quantcast-tapad
[65] https://ico.org.uk/about-the-ico/news-and-events/news-and-blogs/2019/06/blog-ico-adtech-update-report-published-following-industry-engagement/

data fields that constitute special category data, which require the explicit consent of the data subject. According to the report, "A proportion of bid requests involves the processing (either directly or by inference) of special category data, either at the point of collection or subsequently."

The ICO states that:

"data protection law is clear that processing of this data (regardless of which of these two purposes it is for) is prohibited, unless a condition within Article 9 of the GDPR[66] applies. The only applicable condition is explicit consent."[67]

In our research we observed websites that share content keywords, such 'dépression', 'déprimé' (depressed), or 'quizz', the page URL (psychologie/tests-psycho/tests-pstchologiques/coup-de-blues-ou-depression), as well as information about the page content ('psychologie', 'test psychologiques', 'coup de blues ou dépression?') with https://europe-west1-realtime-logging-228816.cloudfunctions.net/realtime-logs .

The processing of this kind of special category data by Doctissimo.fr lacks transparency and, as far as we have observed in our research, does not seek valid, free, specific, informed and unambiguous consent from users. Moreover, not ensuring proper consent - let alone explicit consent - would mean that they have no legal basis to process special-category data, under Articles 6 and 9 of the GDPR as mentioned above.

Conclusion and recommendations

It's been more than a year since the GDPR came into effect. Fundamentally, the GDPR strengthens rights of individuals with regard to the protection of their data, imposes more stringent obligations on those processing personal data, and provides for stronger regulatory enforcement powers – in theory. In practice, the real test for GDPR will be in its enforcement. Another consequence of GDPR is that it raised the bar for valid consent under existing ePrivacy laws.

In November 2018, Privacy International complained about a wide-scale and systematic infringements of data protection law by seven data brokers, credit-referencing agencies and AdTech (advertising technology) companies to Data Protection Authorities in Ireland, the UK, and France.[68] As a result of our submission, the Irish Data Protection Commission (DPC) has now opened a formal probe into Quantcast's (i.e. one of these companies) data practices and the UK Information Commissioner (ICO) is looking more closely at AdTech, in particular RTB. The ICO's update report into AdTech and RTB sets out that many current practices are unlawful.[69] In December 2018, Privacy International published research on third-party tracking on mobile Android devices by analysing which data some of the world's largest apps share with third parties, more specifically Facebook. The report considered the legal obligations of the different actors involved and in response to this report a number of companies have updated their practices.[70]

Our findings of this report show that many mental health websites don't take the privacy of their visitors as seriously as they should. **This research also shows that some mental health websites treat the personal data of their visitors as a commodity, while failing to meet their obligations under European data protection and privacy laws**.

[66] The Schedule 1 conditions in the DPA 2018 enable reliance on exceptions within Article 9, specifically 9(2)(b), (g), (h), (i) and (j) for Part 1 of Schedule 1 and 9(2)(g) (public interest) for part 2 of Schedule 1. None of these include 9(2)(a) (explicit consent), nor do the cited Article 9 provisions apply in the context of online advertising.
[67] Ibid.
[68] https://privacyinternational.org/legal-action/challenge-hidden-data-ecosystem
[69] https://ico.org.uk/media/about-the-ico/documents/2615156/adtech-real-time-bidding-report-201906.pdf
[70] See update from March 2019 https://privacyinternational.org/campaigns/investigating-apps-interactions-facebook-android

All website providers have a responsibility to protect the privacy of their users and comply with existing laws, but this is particularly the case for websites that share unusually granular or sensitive data with third parties. Such is the case for mental health websites.

For website owners we recommend the following:

- Websites should be transparent about third-party tracking, limit third-party tracking to what is strictly necessary, and obtain the valid and informed consent of users, by offering them a genuine choice.
- For websites that want to use a select number of third parties, we recommend that they remove the *referer* header to avoid sharing the webpage currently visited.
- We recommend that websites that cover potentially sensitive issues, such as mental health, refrain from using programmatic advertising, especially involving RTB, on health-related websites.
- Websites sometimes unknowingly share a lot more data than anyone can reasonably expect. We recommend that websites that offer tests change the way the results are stored so that they are not shared with any third parties. Ideally, they should not store test results at all.

The burden should be on websites to protect user privacy by design and by default. We know that many are still falling short, which is why we recommend the following:

- Block third party cookies on your browsers
- Use ad-blockers and anti-tracking add-ons
- Before completing an online test for a mental health condition, make sure the website is trustworthy. If in doubt, seek out information from public health bodies, medical professionals or qualified charities.
- In the UK, Samaritans can be contacted on 116 123. In Australia, the crisis support service Lifeline is on 13 11 14. In the US, the suicide prevention lifeline is 1-800-273-8255.

Appendix

Appendix 1 – all web pages scanned for France

This list includes duplicates. After removing duplicates, we ended up with 41 unique web pages

Site	Search team used	Google Ad	Google Featured
http://www.psychomedia.qc.ca	N/A – top 5 mental health website in France		
https://www.psychologue.net	N/A –		
https://www.psychologytoday.com/	top 5 mental health website in France		
https://www.mes15minutes.com	N/A –		
http://www.psycom.org	top 5 mental health website in France		
https://www.passeportsante.net/fr/Maux/Problemes/Fiche.aspx?doc=depression_pm	Depression		YES
www.info-depression.fr/	Depression		
http://www.doctissimo.fr/html/dossiers/depression/depression.htm	Depression		
http://www.doctissimo.fr/html/sante/mag_2000/mag0908/dossier/sa_2268_deprime_ou_depression.htm	Depression		
https://www.ameli.fr/assure/sante/themes/depression-troubles-depressifs/comprendre-depression	Depression		
https://www.frcneurodon.org/la-depression/	Depression		
https://www.santemagazine.fr/sante/maladies/maladies-mentales/depression/6-symptomes-de-depression-171482	Depression		
https://www.etat-depressif.com/depression/symptomes/	Depression		
https://www.pourquoidocteur.fr/MaladiesPkoidoc/56-Depression-une-maladie-du-cerveau-et-de-la-pensee	Depression		
https://www.quebec.ca/sante/problemes-de-sante/sante-mentale-maladie-mentale/depression/	symptomes dépression		YES
https://www.passeportsante.net/fr/Maux/Problemes/Fiche.aspx?doc=depression_pm	symptomes dépression		
http://www.doctissimo.fr/html/dossiers/depression/articles/9032-deprime-signes.htm	symptomes dépression		
https://www.quebec.ca/sante/problemes-de-sante/sante-mentale-maladie-mentale/depression/	symptomes dépression		
http://ladepressionfaitmal.ca/fr/about/symptoms.aspx	symptomes dépression		

https://www.santemagazine.fr/sante/maladies/maladies-mentales/depression/6-symptomes-de-depression-171482	symptomes dépression	
https://www.etat-depressif.com/depression/symptomes/	symptomes dépression	
http://www.info-depression.fr/spip.php?rubrique13	symptomes dépression	
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3038827/	symptomes dépression	
https://www.sciencesetavenir.fr/sante/cerveau-et-psy/les-9-symptomes-de-la-depression_19524	symptomes dépression	
https://www.la-depression.org/comprendre-la-depression/symptomes-de-la-depression/	symptomes dépression	
https://www.passeportsante.net/fr/Maux/Problemes/Fiche.aspx?doc=depression-pm-traitements-medicaux-de-la-depression	Dépression traitement:	YES
http://www.doctissimo.fr/html/dossiers/depression/niv2/traitement-depression.htm	Dépression traitement:	
https://eurekasante.vidal.fr/maladies/psychisme/depression-adulte.html?pb=traitements	Dépression traitement:	
http://sante.lefigaro.fr/sante/maladie/depression/quels-traitements	Dépression traitement:	
https://www.etat-depressif.com/depression-meilleur-traitement/	Dépression traitement:	
https://www.sciencesetavenir.fr/sante/depression-10-traitements-performants_19527	Dépression traitement:	
http://www.depression.ch/fr/traiter-et-faire-face-a-la-depression	Dépression traitement:	
https://www.mes15minutes.com/depression/traitement-de-la-depression/	Dépression traitement:	
https://www.santemagazine.fr/medecines-alternatives/approches-naturelles/comment-soigner-la-depression-autrement-174262	Dépression traitement:	
https://www.pourquoidocteur.fr/Articles/Question-d-actu/25538-Depression-nouvelle-piste-traitement-effets-secondaires	Dépression traitement:	
http://www.doctissimo.fr/psychologie/tests-psycho/tests-psychologiques/coup-de-blues-ou-depression	Dépression test	YES
https://www.mes15minutes.com/online-test-en-ligne-stress-anxiete-depression-burnout/	Dépression test	
https://www.passeportsante.net/fr/VivreEnSante/Test/faites-vous-une-depression-48	Dépression test	
http://www.psychomedia.qc.ca/depression/test-de-depression-echelle-de-depression-de-hamilton	Dépression test	
http://sante.lefigaro.fr/article/test-souffrez-vous-d-une-depression-/	Dépression test	
https://eurekasante.vidal.fr/maladies/psychisme/depression-adulte.html?pb=test	Dépression test	
https://www.notretemps.com/sante/actualites-sante/deprime-depression-test-difference,i4922	Dépression test	
http://www.centredeladepression.org/ou-en-etes-vous/	Dépression test	
http://psychologie-ge.ch/Test_Depression_Goldberg.html	Dépression test	
http://www.apsytude.com/fr/est-ce-que-je-fais-une-depression/	Dépression test	

Appendix 2 – all web pages scanned for Germany

This list includes duplicates. After removing duplicates, we ended up with 44 unique web pages

Site	Search team used	Google Ad	Google Featured
hilferuf.de	N/A – top 5 mental health website in Germany		
http://neurologen-und-psychiater-im-netz.org	N/A – top 5 mental health website in Germany		
http://therapie.de	N/A – top 5 mental health website in Germany		
https://www.palverlag.de	N/A – top 5 mental health website in Germany		
https://www.psychic.de	N/A – top 5 mental health website in Germany		
https://www.neurologen-und-psychiater-im-netz.org/psychiatrie-psychosomatik-psychotherapie/erkrankungen/depressionen/was-ist-eine-depression/	depression		YES
https://www.deutsche-depressionshilfe.de/depression-infos-und-hilfe/was-ist-eine-depression	depression		
https://de.wikipedia.org/wiki/Depression	depression		
https://www.psychenet.de/de/psychische-gesundheit/informationen/depressionen.html	depression		
https://www.msdmanuals.com/de-de/heim/psychische-gesundheitsstörungen/affektive-störungen/depressionen	depression		
https://www.netdoktor.de/krankheiten/depression/	depression		
https://www.patienten-information.de/kurzinformationen/psychische-erkrankungen/depression	depression		
https://www.apotheken-umschau.de/Depression	depression		
https://ifightdepression.com/de/fuer-alle/anzeichen-und-symptome-einer-depression	depression		
https://www.myhandicap.de/gesundheit/psychische-behinderung/depression/definition-symptome-klassifikation-who/?gclid=EAIaIQobChMIr_TC1tXj4gIVx-N3Ch3DJwufEAAYASAAEgKGDfD_BwE	depression	YES	
https://www.rehazentrum-bb.de/tests/depression-test-online.html	depression test		YES
https://www.deutsche-depressionshilfe.de/depression-infos-und-hilfe/selbsttest-offline	depression test		

https://www.netdoktor.de/selbsttests/depressionstest-nach-goldberg/	depression test		
https://www.therapie.de/psyche/info/test/depressionen/depression-test/#_	depression test		
https://www.oberbergkliniken.de/behandlung-therapie/indikationen/depressionen/selbsttest-depression/	depression test		
https://www.schoen-klinik.de/formulare/selbsttest/depression	depression test		
https://www.novego.de/selbsttest/	depression test		
https://www.rhein-jura-klinik.de/indikationen-therapie/indikationen/depressionen/selbsttest-depression/	depression test		
https://nie-mehr-depressiv.de/depressionstest/	depression test		
https://www.palverlag.de/depressionen-symptome.html	depression test		
https://www.myhandicap.de/gesundheit/psychische-behinderung/depression/test-selbsttest-symptome/?gclid=EAIaIQobChMIkLehpdbj4gIVi-d3Ch0aMwQIEAAYASAAEgJL0fD_BwE	depression test	YES	
https://www.frnd.de/infos/depression/?gclid=EAIaIQobChMIkLehpdbj4gIVi-d3Ch0aMwQIEAAYAiAAEglhJfD_BwE	depression test	YES	
https://www.neurologen-und-psychiater-im-netz.org/psychiatrie-psychosomatik-psychotherapie/erkrankungen/depressionen/was-ist-eine-depression/	depressionen		YES
https://www.deutsche-depressionshilfe.de/depression-infos-und-hilfe	depressionen		
https://de.wikipedia.org/wiki/Depression	depressionen		
https://www.netdoktor.de/krankheiten/depression/	depressionen		
https://www.psychenet.de/de/psychische-gesundheit/informationen/depressionen.html	depressionen		
https://www.rehazentrum-bb.de/tests/depression-test-online.html	depressionen		
https://www.apotheken-umschau.de/Depression	depressionen		
https://www.gesundheitsstadt-berlin.de/das-sind-untruegliche-anzeichen-fuer-eine-echte-depression-12854/	depressionen		
https://www.patienten-information.de/kurzinformationen/psychische-erkrankungen/depression	depressionen		
https://www.volkskrankheit.net/a_z/depression-ueberwinden/?gclid=EAIaIQobChMIz9jq4tbj4gIVV-R3Ch2GTwjeEAAYASAAEgJX-fD_BwE	depressionen	YES	
https://www.nexusklinik.de/depressionen.html?gclid=EAIaIQobChMIz9jq4tbj4gIVV-R3Ch2GTwjeEAAYAiAAEgK2HfD_BwE	depressionen	YES	
https://www.wachhypnose-berlin.de/?gclid=EAIaIQobChMIz9jq4tbj4gIVV-R3Ch2GTwjeEAAYAyAAEgJZE_D_BwE	depressionen	YES	
https://www.betterhelp.com/start/?utm_source=AdWords&utm_medium=Search_PPC_c&utm_term=depression_e&utm_content=71566866718&network=g&placement=&target=&matchtype=e&utm_campaign=1904930114&ad_type=text&adposition=1t4&gclid=EAIaIQobChMIz9jq4tbj4gIVV-R3Ch2GTwjeEAAYBCAAEgIjQvD_BwE&not_found=1&gor=helpme&go=true	depressionen	YES	

https://www.smarter.com/de/web?qo=semQuery&ad=semA&q=hilfe%20für%20depressive&o=758095&ag=fw&an=google_s&rch=intl1167&gclid=EAIaIQobChMIz9jq4tbj4gIVV-R3Ch2GTwjeEAMYASAAEgIHTPD_BwE	depressionen	YES	
https://lp-artofliving.org/depression-kurs?campaignid=1465955238&adgroupid=62260503247&gclid=EAIaIQobChMIz9jq4tbj4gIVV-R3Ch2GTwjeEAMYAiAAEgI-1PD_BwE	depressionen	YES	
https://www.myhandicap.de/gesundheit/psychische-behinderung/depression/definition-symptome-klassifikation-who/?gclid=EAIaIQobChMIz9jq4tbj4gIVV-R3Ch2GTwjeEAMYAyAAEgKwsfD_BwE	depressionen	YES	
https://www.neurologen-und-psychiater-im-netz.org/psychiatrie-psychosomatik-psychotherapie/stoerungen-erkrankungen/depressionen/fruehsymptome/	Anzeichen depression		YES
https://www.rehazentrum-bb.de/tests/depression-test-online.html	Anzeichen depression		
https://www.netdoktor.de/krankheiten/depression/	Anzeichen depression		
https://ifightdepression.com/de/fuer-alle/anzeichen-und-symptome-einer-depression	Anzeichen depression		
https://www.gesundheitsstadt-berlin.de/das-sind-untruegliche-anzeichen-fuer-eine-echte-depression-12854/	Anzeichen depression		
https://www.patienten-information.de/patientenleitlinien/patientenleitlinien-nvl/html/depression/kapitel-4	Anzeichen depression		
https://www.apotheken-umschau.de/Depression	Anzeichen depression		
https://www.gesundheitsinformation.de/anzeichen-fuer-eine-depression.2125.de.html?part=symptome-hq	Anzeichen depression		
https://www.palverlag.de/depressionen-symptome.html	Anzeichen depression		
https://www.deutsche-depressionshilfe.de/depression-infos-und-hilfe/was-ist-eine-depression/diagnose-der-depression	Anzeichen depression	YES	
https://www.bewegtegestalt.de	Anzeichen depression	YES	
https://www.minddoc.de/?gclid=EAIaIQobChMI7sD5udfj4gIVDc53Ch023gmUEAAYAiAAEgJ8u_D_BwE	Anzeichen depression	YES	
https://www.wachhypnose-berlin.de/?gclid=EAIaIQobChMI7sD5udfj4gIVDc53Ch023gmUEAAYAyAAEgJEu_D_BwE	Anzeichen depression	YES	
https://www.langemedia.de/dr-med-hans-grunn-einfach-zuhoren-und-sich-von-depressionen-befreien-2-cds.html?gclid=EAIaIQobChMI7sD5udfj4gIVDc53Ch023gmUEAAYBCAAEgLnIPD_BwE	Anzeichen depression	YES	
https://www.amazon.de/s?k=therapie+bei+depressionen&adgrpid=73762900489&gclid=EAIaIQobChMI7sD5udfj4gIVDc53Ch023gmUEAMYAiAAEgJmUPD_BwE&hvadid=352841639279&hvdev=c&hvlocphy=1003854&hvnetw=g&hvpos=1o2&hvqmt=b&hvrand=9548256878033811745&hvtargid=kwd-596755779&hydadcr=24095_1739936&tag=googhydr08-21&ref=pd_sl_58qdjj4wyl_b	Anzeichen depression	YES	
https://www.tcm-praxis-berlin.de/?gclid=EAIaIQobChMI7sD5udfj4gIVDc53Ch023gmUEAMYAyAAEgJhWfD_BwE	Anzeichen depression	YES	

Appendix 3 – all web pages scanned for the UK

This list includes duplicates. After removing duplicates, we ended up with 51 unique web pages

Site	Search team used	Google Ad	Google Featured
https://www.psychologytoday.com/	N/A – top 5 mental health website in the UK		
https://www.mind.org.uk	N/A – top 5 mental health website in the UK		
https://www.verywellmind.com	N/A – top 5 mental health website in the UK		
https://www.lifehack.org	N/A – top 5 mental health website in the UK		
https://www.headspace.com	N/A – top 5 mental health website in the UK		
https://www.nhs.uk/conditions/stress-anxiety-depression/mood-self-assessment/	Anxiety depression		
https://adaa.org/understanding-anxiety/depression	Anxiety depression		YES
https://www.psycom.net/anxiety-depression-difference	Anxiety depression		
https://www.bupa.co.uk/newsroom/ourviews/2017/10/anxiety-depression	Anxiety depression		
https://www.webmd.com/depression/features/anxiety-depression-mix#1	Anxiety depression		
https://www.mayoclinic.org/diseases-conditions/depression/expert-answers/depression-and-anxiety/faq-20057989	Anxiety depression		
https://www.mind.org.uk/information-support/your-stories/how-treatment-helped-me-to-live-with-depression-and-anxiety/#.XQDOdS-ZPUI	Anxiety depression		
https://www.healthline.com/health/mental-health/depression-and-anxiety	Anxiety depression		
https://depression.org.nz/is-it-depression-anxiety/anxiety/	Anxiety depression		
https://www.everydayhealth.com/anxiety/anxiety-and-depression.aspx	Anxiety depression		
https://www.nhs.uk/conditions/clinical-depression/symptoms/	Symptoms depression		YES

https://www.nhs.uk/conditions/clinical-depression/	Symptoms depression		
https://www.helpguide.org/articles/depression/depression-symptoms-and-warning-signs.htm	Symptoms depression		
https://www.mind.org.uk/information-support/types-of-mental-health-problems/depression/symptoms/#.XQDSjy-ZPUI	Symptoms depression		
https://www.nhsinform.scot/illnesses-and-conditions/mental-health/depression	Symptoms depression		
https://www.webmd.com/depression/guide/depression-symptoms-and-types	Symptoms depression		
https://www.webmd.com/depression/guide/detecting-depression#1	Symptoms depression		
https://www.priorygroup.com/mental-health/depression-treatment/depression-symptoms	Symptoms depression		
https://www.blf.org.uk/support-for-you/dealing-with-your-mental-health/depression/symptoms	Symptoms depression		
https://www.psycom.net/depression-seven-surprising-symptoms	Symptoms depression		
www.benenden.co.uk	Depression test	YES	
www.e-counseling.com/depression/test	Depression test	YES	
https://ssmed.iljmp.com/8/kpwee?kw=depression%20test&device=c&lp=https://www.e-counseling.com/certified-depression-quiz/&gclid=EAIaIQobChMIko-Nxd_j4gIVV53VCh1_1gbrEAAYASAAEgLG7vD_BwE	Depression test		YES
https://www.nhs.uk/conditions/stress-anxiety-depression/mood-self-assessment/	Depression test		
https://depression.org.nz/is-it-depression-anxiety/self-test/depression-test/	Depression test		
https://www.psycom.net/depression-test/	Depression test		
https://www.familyaware.org/help-someone/take-the-depression-and-bipolar-test/	Depression test		
https://thiswayup.org.au/take-a-test/	Depression test		
https://www.depression-anxiety-stress-test.org/take-the-test.html	Depression test		
https://screening.mentalhealthamerica.net/screening-tools/depression	Depression test		
https://www.psychologytoday.com/gb/tests/health/depression-test	Depression test		
https://www.blackdoginstitute.org.au/clinical-resources/depression/depression-self-test	Depression test		
https://psychcentral.com/quizzes/depression-quiz/	Depression test		
www.betterhelp.com	Depression help	YES	
www.psychiatrycentre.co.uk	Depression help	YES	
www.priorygroup.com/Depression/London	Depression help	YES	
www.benenden.co.uk	Depression help	YES	
https://www.nhs.uk/conditions/clinical-depression/	Depression help		
https://www.nhs.uk/conditions/stress-anxiety-depression/dealing-with-depression/	Depression help		
https://www.mind.org.uk/information-support/types-of-mental-health-problems/depression/self-care/#.XQDXPS-ZPUI	Depression help		
https://www.moodjuice.scot.nhs.uk/Depression.asp	Depression help		
https://www.helpguide.org/articles/depression/coping-with-depression.htm	Depression help		

https://www.helpguide.org/articles/depression/helping-someone-with-depression.htm	Depression help		
https://www.priorygroup.com/mental-health/depression-treatment	Depression help		
https://www.nhsinform.scot/illnesses-and-conditions/mental-health/depression	Depression help		
https://www.nhsinform.scot/self-help-guides/mental-health-self-help-guides/depression-self-help-guide	Depression help		
https://youngminds.org.uk/find-help/conditions/depression/	Depression help		
www.samaritans.org	Depression help		YES
www.lifeeffects.teva	Depression help	YES	
www.geraldwoolfson.co.uk	Depression help	YES	
www.thewelllnessshop.co.uk	Depression help	YES	

Appendix 4 – top three depression test websites per country

France

- http://www.doctissimo.fr/psychologie/tests-psycho/tests-psychologiques/coup-de-blues-ou-depression
- https://www.mes15minutes.com/online-test-en-ligne-stress-anxiete-depression-burnout/
- https://www.passeportsante.net/fr/VivreEnSante/Test/faites-vous-une-depression-48

Germany

- https://www.rehazentrum-bb.de/tests/depression-test-online.html
- https://www.deutsche-depressionshilfe.de/depression-infos-und-hilfe/selbsttest-offline
- https://www.netdoktor.de/selbsttests/depressionstest-nach-goldberg/

U.K.

- https://www.e-counseling.com/certified-depression-quiz/?imt=1&gclid=EAIaIQobChMIko-Nxd_j4gIVV53VCh1_1gbrEAAYASAAEgLG7vD_BwE
- https://www.nhs.uk/conditions/stress-anxiety-depression/mood-self-assessment/
- https://depression.org.nz/is-it-depression-anxiety/self-test/depression-test/

Appendix 5 - depression test websites findings

URL	COUNTRY	COOKIE BANNER EXISTS	COOKIE BANNER CONTAINS EASILY ACCESSIBLE OPTION TO REJECT COOKIES	NUMBER OF THIRD-PARTY SERVICES CONTACTED (BEFORE CONSENT IS PROVIDED)
DOCTISSIMO.FR	France	Yes	No	48
MES15MINUTES.COM	France	Yes	Yes	5
PASSEPORTSANTE.NET/FR	France	Yes	No	27
REHAZENTRUM-BB.DE	Germany	Yes	No	5
DEUTSCHE-DEPRESSIONSHILFE.DE	Germany	No	N/A	4
NETDOKTOR.DE	Germany	Yes	No	30
E-COUNSELING.COM	U.K.	No	N/A	8
NHS	U.K.	Yes	Yes	6
DEPRESSION.ORG.NZ	U.K.	No	N/A	10

Appendix 6 – company responses

As it is our strong desire to present as accurate an assessment as possible prior to the publication of our report, we reached out to Netdoctor.de, doctissimo.fr, the NHS and PasseportSanté via email on 29 August 2019 to provide the companies with the opportunity to respond to queries related to the key statements we made in this report. We followed up on 2 September 2019. We also reached out to the Health Promotion Agency of New Zealand on 2 September 2019.

So far, we have only heard from the following organisations:

Statement from an NHS Digital spokesperson on 2 September 2019 vie e-mail to Privacy International:

NHS.UK is committed to transparency and to meeting both the letter and the spirit of the law and users are already able to see and opt-out of all third party cookies and analytics cookies on our website. In July 2019 the Information Commissioner's Office published updated guidance about cookie policies and we are in the process of ensuring that we translate this guidance into practice on the site. This work will be completed by the end of September 2019 and, from this point, users will be automatically opted out from all analytic and third party cookies. Users will be specifically asked if they would consent to opt-in, in order to support us to continue to develop the service so that it best meets user needs.

It is not possible to identify any individual from the data collected in the mood self-assessment quiz and no data is shared with any third parties. All analytics data and test scores are linked to a unique, anoymised user ID which cannot be traced back to an individual - it is not linked to an IP address and is randomly generated. In order to ensure privacy of visitors to our website, IP addresses are anonymised.

Analytics cookies can be switched off by users through our website. Any information collected through this tool is anonymised, cannot be used to identify an individual and is not shared with any third parties. We do not record the session using Hotjars 'session replay scripts' when a user starts to complete the 'mood self assessment quiz'.

We do use Hotjar on other parts of the website to collect information, which users can opt out of on our website. From the end of September 2019 this functionality will be automatically disabled, with users able to opt-in should they wish to.