

# GDI

Global  
Disinformation  
Index

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## The Quarter Billion Dollar Question: How is Disinformation Gaming Ad Tech?

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**The Global Disinformation Index** is a UK-based not-for-profit that operates on the three principles of neutrality, independence and transparency. Our vision is a world in which we can trust what we see in the media. Our mission is to restore trust in the media by providing real-time automated risk ratings of the world's media sites through a Global Disinformation Index (GDI). For more information, visit [www.disinformationindex.org](http://www.disinformationindex.org)



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# Introduction

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**Those who seek to disinform have taken advantage of an increasingly connected world to push online narratives that sow division and spark conflict.**

Disinformation is harmful on and offline. The people who spread disinformation have various motives. They might use it to seek attention, promote an ideology, sway an opinion, or receive financial gain.<sup>1</sup> The issue of financial motivation is particularly problematic when it comes to programmatic advertising.

Programmatic advertising is the practice of using software to buy and sell advertising space on the web.<sup>2</sup> It constitutes a major part of the digital media world, accounting for an estimated two-thirds of all global digital ad spend in 2019. This currently amounts to over US\$ 89.5 billion a year.<sup>3</sup> Digital advertising is on track to overtake traditional advertising by the year 2021, and likely will continue to rise.<sup>4</sup> Yet one area many programmatic ad tech companies may have to contend with is the risk of ads ending up on domains that seek to disinform.

In this report, we present an analysis of the programmatic advertising on 20,000 disinforming domains gathered from around the web. Our objectives were to assess which ad tech companies are servicing the largest number of disinforming domains, and how much money each company is inadvertently funneling to these sites. Our findings show that nearly a quarter billion dollars (US\$ 235 million) worth of advertising ends up on domains that have been flagged for disinformation. This report is a snap shot in time of a problem that goes beyond 20,000 sites - and likely includes many more. Our numbers are estimates. Only the ad exchanges know the amount that they have paid disinformation domains. The GDI invites them to work with us to effectively scope and stop the funding of disinformation.

# Our dataset

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**We gathered a dataset of approximately 20,000 domains that were previously reported to be disinforming the public.**

These domains were collected from respected sources such as PolitiFact and Le Monde as well as from our own open web collection.<sup>5</sup> From this dataset we extracted a sample of over 1,700 domains that have been flagged by multiple other disinformation-focused organisations. We conducted a detailed assessment of their metadata and the parts of the ad tech ecosystem with which they interacted. Some examples of the domains in our sample include RT.com, twitchy.com, sputniknews.com and zero hedge.com.

# Our method

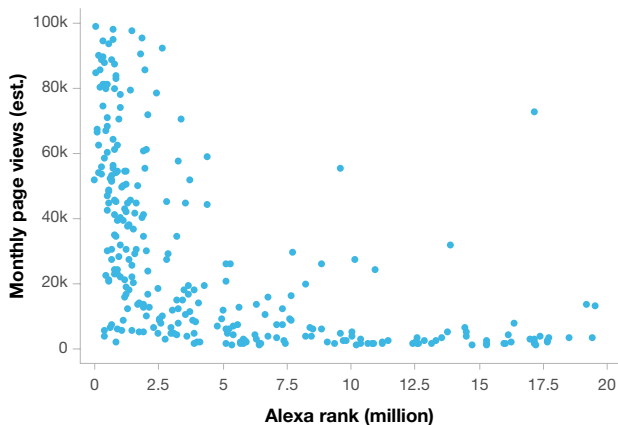
For the sample of over 1,700 domains, we used Alexa rankings to estimate the number of views per month for each domain. This approach provides a reasonable proxy for estimating the volume of site traffic for our sample (see Figure 1).<sup>6</sup>

Next, we estimated the CPM (cost per mille) for each domain in the sample using a market average figure of US\$ 0.70 (US\$ 0.70 per 1,000 pageviews). This

estimate is conservative; other studies have calculated the market average CPM to be as high as US\$ 2.80 per 1,000 pageviews. In other cases, a CPM for a site may be as low as US\$ 0.01.<sup>7</sup>

We then used these figures to estimate revenues for our sample of domains. Extrapolating those results to our full dataset of 20,000 disinforming domains yielded at least an estimated US\$ 235 million from advertising each year that brands unwittingly place on disinforming domains.<sup>8</sup>

**Figure 1.** Distribution of GDI sample by page view and Alexa ranking



Source: GDI and Alexa.com

After arriving at this number, we sought to understand exactly who was funneling this money to disinforming domains. We automatically crawled each header bid in our sample and identified which ad exchange participated in the real-time auction for ad space on that domain (see Figure 2). Header bidding is an automated process by which publishers offer up their inventory to multiple ad exchanges simultaneously, which results in greater competition and potentially more revenue for the publishers.<sup>9</sup> Our methodology assumed a uniform chance of winning the auction by each competing exchange.

When a page loads, a header bidding script solicits bids for ad space from various ad exchanges that are placing adverts for brands. This process appears as a series of external domain calls from the page's JavaScript, as illustrated in the timeline below (see Figure 2).<sup>10</sup>

**Figure 2.** Sample of external JavaScript call to a DoubleClick ad server



Source: GDI

**Note:** An example timeline of all external JavaScript calls from a media website. The bottom left blue highlight shows a call to a DoubleClick ad server, which is detailed on the bottom right.

# Key findings

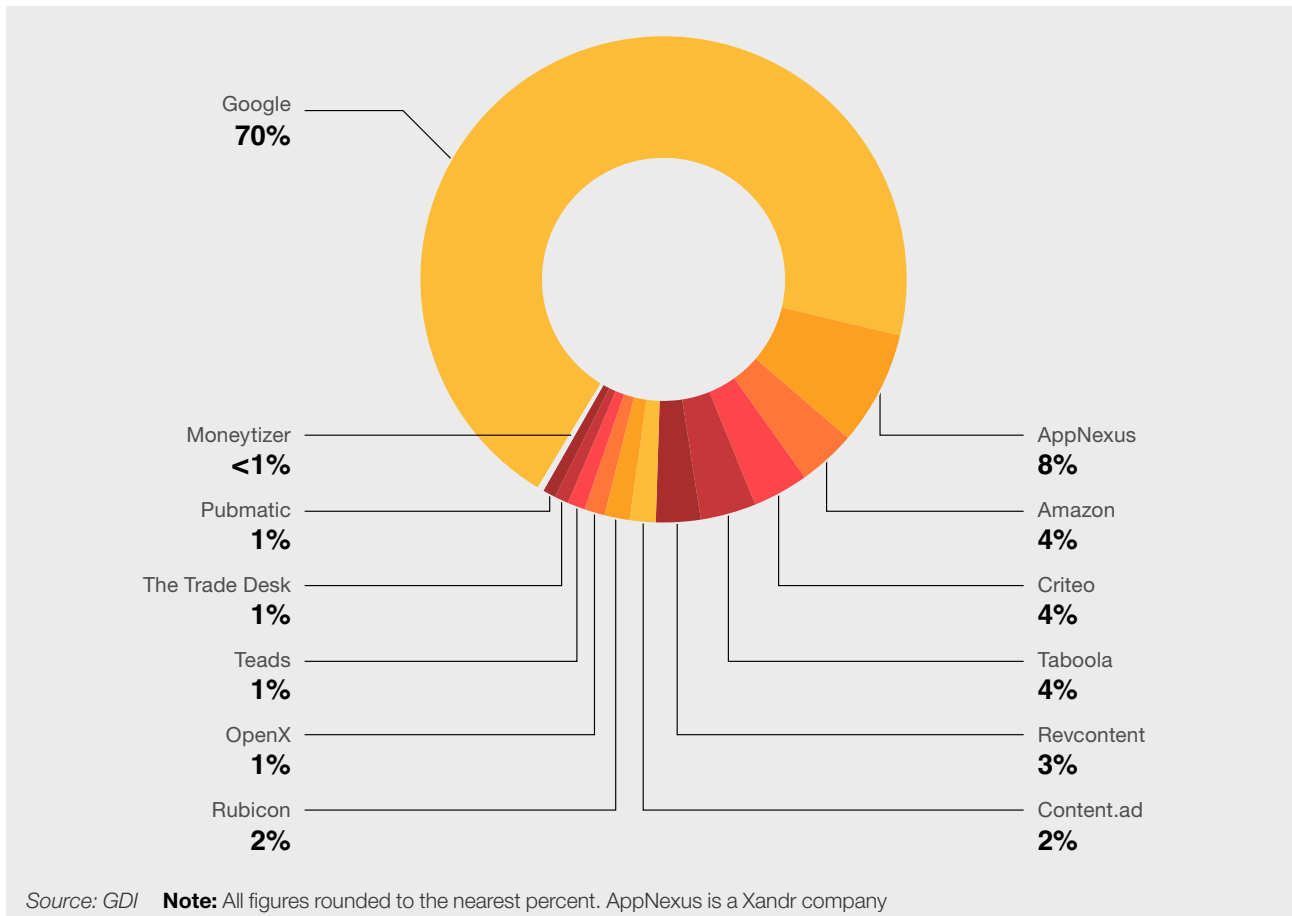
The GDI has taken this data and analysed it by exchange to better understand the scope of the quarter billion dollar problem. The key finding across the board is that this is a market-wide problem which will require a market-wide solution. The following section explores some of the main parameters that we assessed: market shares, revenue splits and some sector comparables.

These findings are estimates. Only the ad exchanges know which bids they have won. We invite the ad exchanges to help us refine the findings and improve the overall transparency of programmatic advertising.

## Ad exchanges ranked by volume of domains

Based on our sample, Google provides programmatic adverts to the largest portion (70 per cent) of domains that we assessed. It was followed by AppNexus (8 per cent), Amazon (4 per cent), Criteo (4 per cent) and Taboola (4 per cent), respectively (Figure 3).

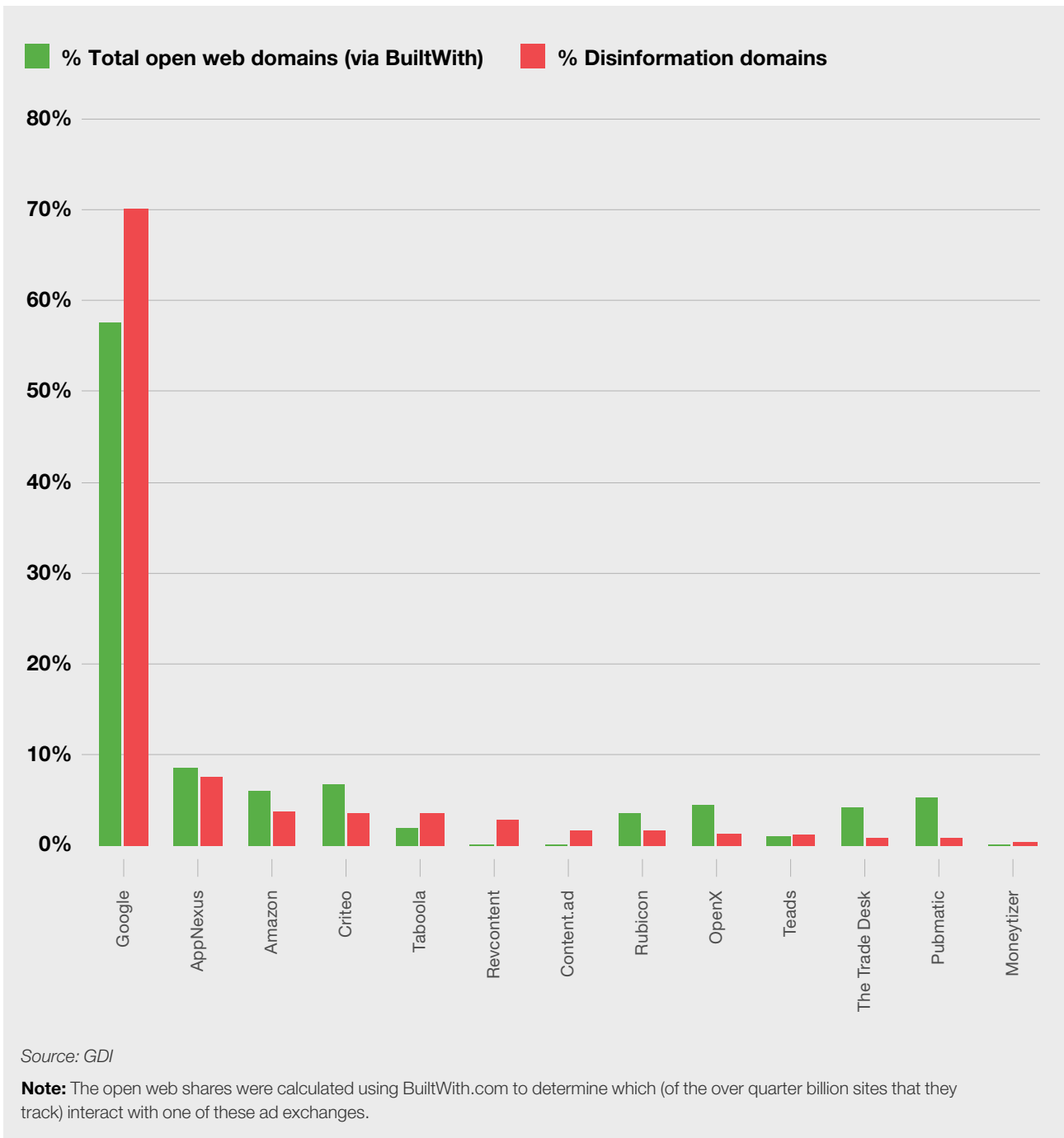
**Figure 3.** Share of sample domains serviced with programmatic ads, by ad exchange



**Key findings**

Among our sample of disinformation domains, companies like Google, Taboola and Revcontent are over-represented when compared to their overall market dominance on the open web (see Figure 4). This suggests that they are servicing more disinformation domains by volume than their overall market share would indicate. In contrast, most of the other ad tech companies covered by our study are mostly underrepresented relative to their market share among all domains. AppNexus, Amazon and Criteo are examples of ad exchanges that are used relatively less frequently by the disinformation domains in our sample when compared to their use across all sites.

**Figure 4.** Overall market share of ad exchange, by sample domains and all domains



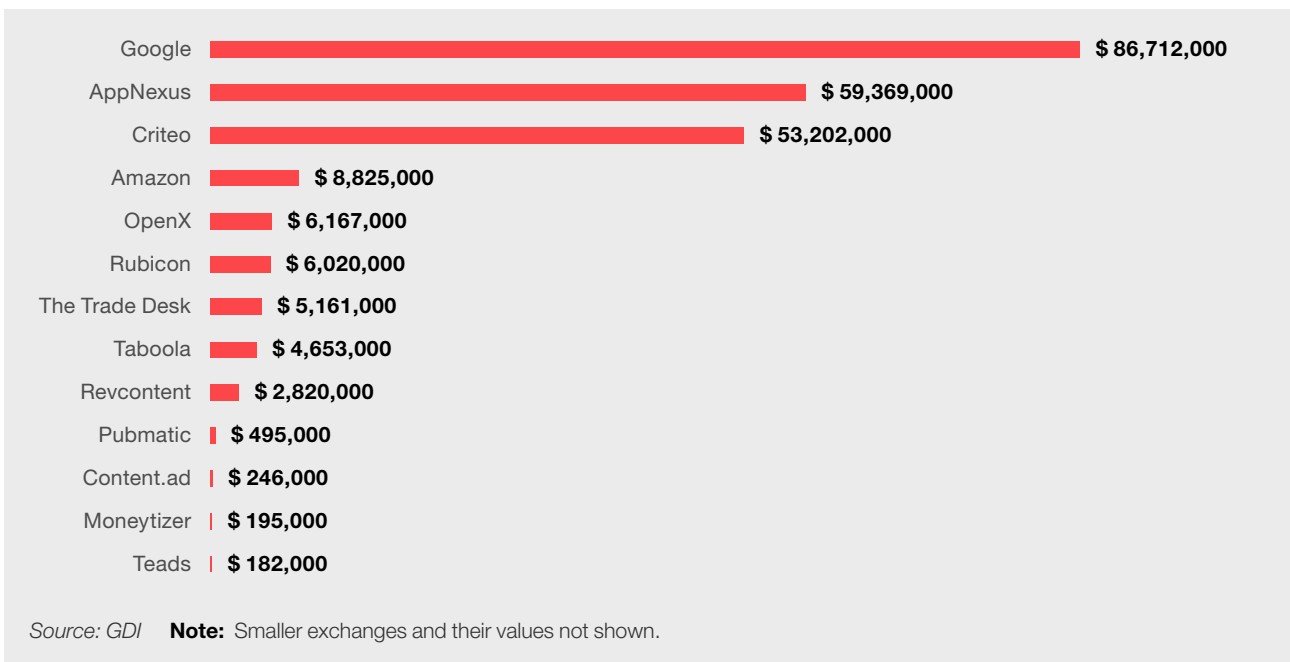
## Ad exchanges ranked by revenues paid to domains

Similar to their overall high market share, Google also accounts for the highest amount of revenues paid to disinforming domains in our sample. The next largest exchanges by revenue are Criteo and AppNexus. Other ad exchanges in our sample provide disinforming domains with concerning amounts of revenue - but far less when compared to the top three exchanges (see Figure 5).

This finding suggests that while Google is the exchange of choice for more domains, AppNexus and Criteo tend to be the principal exchange of preference for a limited number of high-traffic and financially lucrative disinformation domains.

These domains include addictinginfo.com, RT.com, twitchy.com, sputniknews.com and zerothedge.com, among others. All revenue figures are based on estimates for the full data set of 20,000 disinforming domains.

**Figure 5.** Estimated yearly revenue (US\$) paid to domains, by ad exchange



The figures below show the number and revenue shares for our sample domains serviced by each exchange - in this case Google and Criteo. A few large blocks of colour suggests that the exchange services a low number of high traffic, high revenue domains. A more complicated picture with many small blocks - as noted in Figure 6 for Google - indicates the exchange serves the long tail of low traffic, low revenue domains. (See annex for additional figures).

**Figure 6.** Google



Source: GDI

**Figure 7.** Criteo



Source: GDI



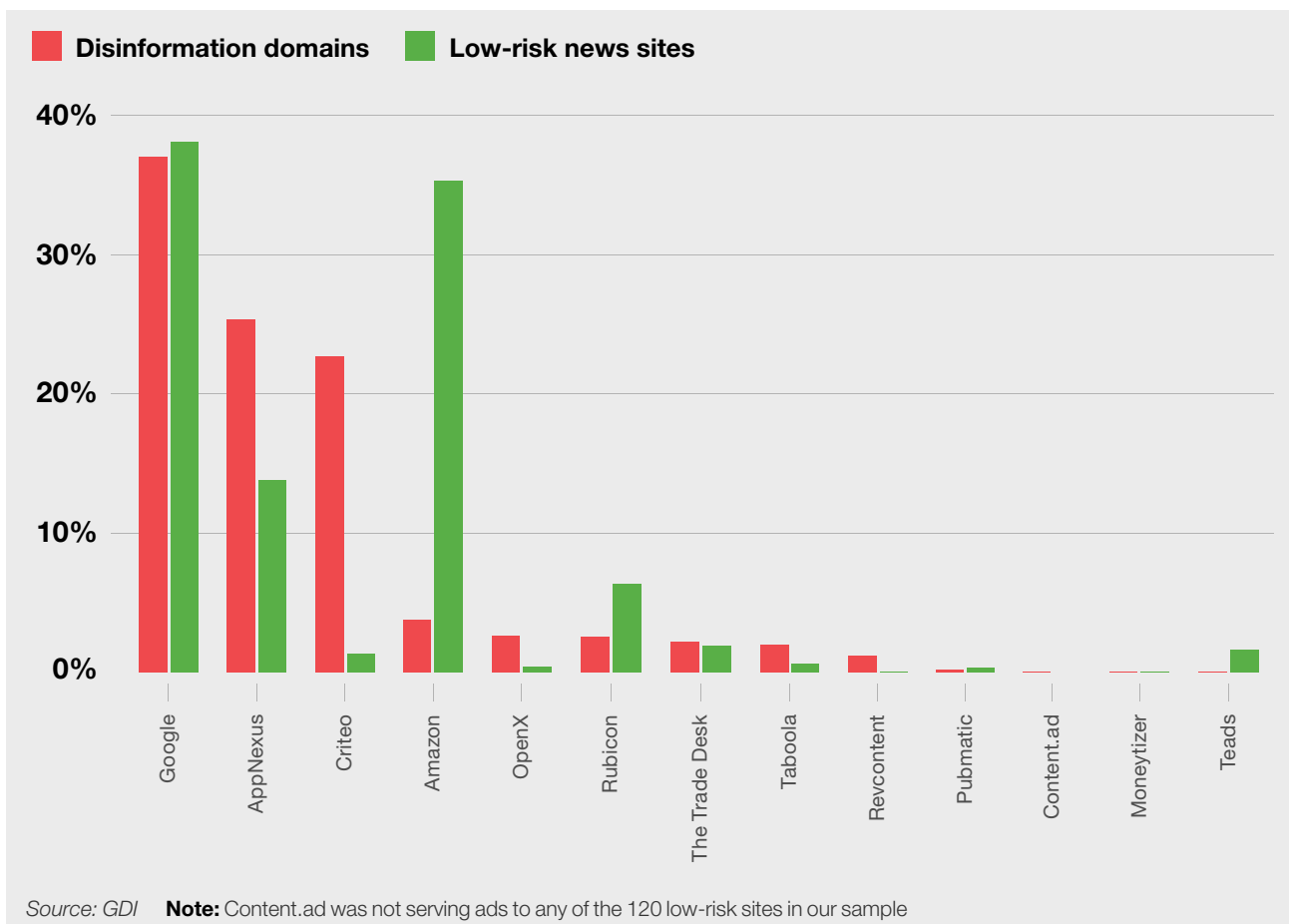
# Comparison to low-risk sites

For the sake of comparison, we repeated our analysis on a dataset of 120 international news sites commonly agreed to have low disinformation risks.

These news domains include the BBC, the Chicago Tribune, ABC Australia, Al Jazeera, and Le Monde, among others.

We found that among our sample, some larger ad tech companies funnel proportionally more money to disinformation domains relative to the quality news outlets that we assessed. Based on our sample, AppNexus, Criteo, OpenX and others provide revenue flows to a relatively greater number of disinformation domains when compared to the low-risk domains that we analysed. For example, Criteo provides 22 per cent of the revenue to the disinforming domains in our sample but only one per cent of the revenue to the low-risk sites on which these ad exchanges pay for the placement of programmatic advertising (see Figure 8).

**Figure 8.** Comparison of revenue shares paid to sample set (low-risk and disinformation domains), by ad exchange



# Examples of adverts on disinformation domains

Current models of brand safety use block lists for a narrow set of categories specific to an advertiser. We are hoping to change that to include disinformation news domains.

The nature of programmatic advertising and the internet itself means that predicting ad placement with certainty is a constant challenge.

Some disinformation websites are easy to spot, often comprising little more than a hastily assembled page full of clickbait headlines designed to grab attention and ad revenue. But others, such as the examples pictured below, are becoming slicker and putting increased effort into posing as reputable media outlets.

To illustrate our point, here are some examples of real ads for prominent brands, juxtaposed with content on domains that others have flagged for disinformation (Please see the annex for additional examples of adverts).

## RT AND AUDI

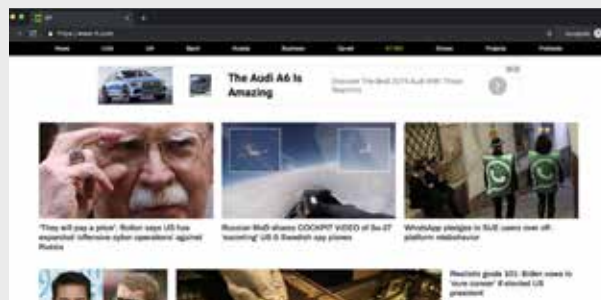
RT (formerly called Russia Today) is an English-language news site founded in 2005 by the Russian government-funded news agency RIA Novosti, which operates under the purview of the Russian Ministry of Communications and Mass Media.<sup>11</sup>

Now rebranded as 'RT', the site is rated as a 'questionable source' by Media Bias Fact Check. This is defined as exhibiting 'one or more of the following: extreme bias, consistent promotion of propaganda/conspiracies, poor or no sourcing to credible information, a complete lack of transparency and/or is fake news.'<sup>12</sup>

Yet an advert from Audi appears prominently on the RT site (see Figure 9), which means that a portion of Audi's marketing budget has been routed directly to this Russian government news agency.

Figure 9. Screenshot from RT News

Source: GDI, taken on 13-Jun-2019 16:45 BST



## ANTI-VAXXERS AND BONHAMS AUCTION HOUSE

In this example, we have an ad for Bonhams Fine Art Auctioneers & Valuers appearing at the top of The Common Sense Show, a website known for publishing conspiracy theories and pseudoscience (see Figure 10).<sup>13</sup>

In this case it's an article about the supposed dangers of vaccinating children. With anti-vaccine disinformation widely blamed for a 300 per cent rise in global measles outbreaks,<sup>14</sup> brands have already voiced concern about their adverts appearing alongside such content.<sup>15</sup>

**Figure 10.** Screenshot from The Common Sense Show

Source: GDI, taken on 13-Jun-2019 16:50 BST



## BIG AMERICAN NEWS AND EGNYTE

In this example, an ad for Egnyte, a Google-backed business solutions company, appears prominently displayed next to a disinforming headline (see Figure 11). This juxtaposition might be enough to pose a risk to brand safety for Egnyte and raise concerns for their clients. Egnyte is a privately held, US-based company that provides support services to businesses around the globe.

**Figure 11.** Screenshot from Big American News

Source: GDI, taken on 13-Jun-2019 16:40 BST



## AD MONIES AND ABCNEWS.COM.CO

There are all types of disinformation news domains - including those that are deliberately ripping off existing mainstream media sites. They include this fake version of ABC News, which used a very similar domain address (abcnews.com.co) to deceive readers (see Figure 12).<sup>16</sup>

**Figure 12.** Screenshot from abcnews.com.co



Source: *The Washington Post*, 18-Nov-2016.

In a blog post<sup>17</sup>, Adbeat dug into the numbers behind the fake ABC News domain. They revealed that this single domain had netted approximately US\$ 500,000 over a six-month period – all earned via ad tech companies placing ads on the domain (see Figure 13). This works out to over US\$ 80,000 per month, earned by just one domain.

**Figure 13.** Screenshot of Publisher Profile for website abcnews.com.co



Source: *adbeat.com*

**Note:** Graph changes represent monthly ad spend (y-axis) by network from June to December (x-axis). In this example, Google represents the largest ad spend on the site abcnews.com.co.

In contrast, our own numbers for views are conservative – both for our sample and the estimates made for our full dataset of 20,000 disinformation domains. This is partly because we are only measuring CPM (i.e. not clicks), as we currently have no reliable way to estimate costs per click. Accordingly, our estimates represent a lower bound of the revenues – the total dollar amount funneled to our 20,000 domains is likely to be much larger than we quote here.

# Conclusion

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**It's time to remove the incentive to disinform by cutting the funding that the programmatic advertising industry is inadvertently providing to disinformation purveyors.**

**Disinformation is an industry-wide problem requiring industry-wide solutions on the part of ad exchanges and brands. The following recommendations set out how to do this:**

- 1. Be transparent about where ad exchanges and brands are placing their adverts.** Shining a light on the relationship between brands, ad tech companies and the domains carrying their ads is an important first step in going after the sources of disinformation funding. Increased transparency will also give ad tech companies more control over the domains on which they bid.
- 2. Get real-time updates of disinformation domains.** There is a need to find a way to automatically classify domains containing disinformation. This could be done by creating a real-time list of risky domains so that ad buyers can choose whether to include them in their spend. GDI is developing a ratings tool that gives ad tech firms a reliable and unbiased indicator of site risk, enabling them to direct money away from domains that have a higher risk of carrying disinformation. This brings increased control and offers real-time information on potentially risky domains. Already, the GDI is speaking with ad exchanges to trial such a tool.
- 3. Target ad spend directly to quality news domains.** By brands using lists of junk news domains to shape their ad spend, they will also help to direct more ad monies to low-risk, better quality news domains. In the process, brand safety will be boosted and brands will have more control over ad placements based on a domain's disinformation risk levels.

Cutting disinformation's sources of funding improves the online information environment for everyone. By starting with those who pay for adverts, brands will be able to make better informed choices about what ad space they are buying online and what sites they are funding. Having a trusted assessment about the disinformation risk levels of news domains is a key first step. The GDI is working to develop a neutral, transparent and independent assessment of such disinformation risks. We hope industry leaders and members - from ad tech companies to household brands - join us in these efforts to ensure ad monies stop inadvertently funding disinformation and the harms that it creates.

# Annex

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## TREE MAPS

The figures below show the number and proportion of our sample domains serviced by each exchange. A few large blocks of colour suggests that the exchange services a low number of high traffic and hence high revenue domains. A more complicated picture with many small blocks such as those for Google (see below) indicates the exchanges serve the long tail of low traffic, low revenue domains. Please note that Pubmatic, Content.ad, Moneytizer and Teads are not included here as their values were too small to meaningfully visualise.

### Google



Source: GDI

### OpenX



Source: GDI

### AppNexus



Source: GDI

### Criteo



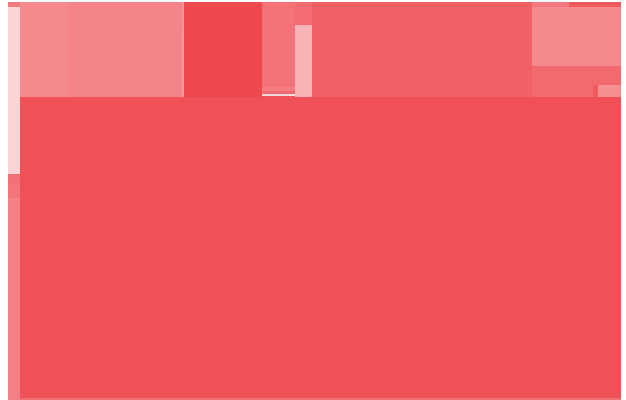
Source: GDI

**Amazon**



Source: GDI

**Rubicon**



Source: GDI

**The Trade Desk**



Source: GDI

**Taboola**



Source: GDI

**Revcontent**



Source: GDI

## EXAMPLES OF ADVERTS ON DISINFORMATION DOMAINS

Below are examples taken from disinforming sites that we have flagged in our analysis. These examples show how well-known brands who have placed their programmatic ad spend with ad exchanges are inadvertently having their adverts appear on high-risk disinformation sites.

Screenshot from Big American News

Source: GDI, taken on 05-Sep-2019 12:48 BST




The screenshot shows the homepage of 'Big American News'. The main headline reads 'BARACK OBAMA IS TO BLAME FOR INFLAMING RACIAL TENSIONS AS FIRST BLACK PRESIDENT'. A video player below the headline shows a man speaking. To the right, there is a sidebar with a 'TRENDING' section and an advertisement for 'AirPass' by American Airlines. The website navigation includes 'HOME', 'NEWS', 'ENTERTAINMENT', 'LIFESTYLE & CULTURE', 'OPINION', and 'COMMUNITY'.

**Note:** Advert for American Airlines.

Screenshot from Big American News

Source: GDI, taken on 05-Sep-2019 10:19 BST



The screenshot shows the homepage of 'Big American News'. The main headline reads 'OBAMA ARRESTS 3 INNOCENT WHITE POLICE OFFICERS, TAKES FIRST STEPS TO CREATE NEW AGE OF LIBERAL DARKNESS'. A video player below the headline shows three men. To the right, there is a sidebar with a 'TRENDING' section and two advertisements: one for 'Sprint 5G Trunking' and another for 'Faster Java startup & consistent performance with Zing ReadyNow' by Azul Systems. The website navigation includes 'HOME', 'NEWS', 'ENTERTAINMENT', 'LIFESTYLE & CULTURE', 'OPINION', and 'COMMUNITY'.

**Note:** Adverts for Sprint and Azul Systems.



Screenshot from Sputnik

Source: GDI, taken on 05-Sep-2019 10:19 BST




The screenshot shows a news article on the Sputnik website. The main headline reads "No Logic, Just Ideology: Right-Wing Media Explain How They Ended Up on Google's New Blacklist". Below the article, there is a red-bordered advertisement for OfficeMax, featuring images of office equipment like laptops and printers.

**Note:** Advert for OfficeMax.

Screenshot from ZeroHedge

Source: GDI, taken on 05-Sep-2019 12:18 BST

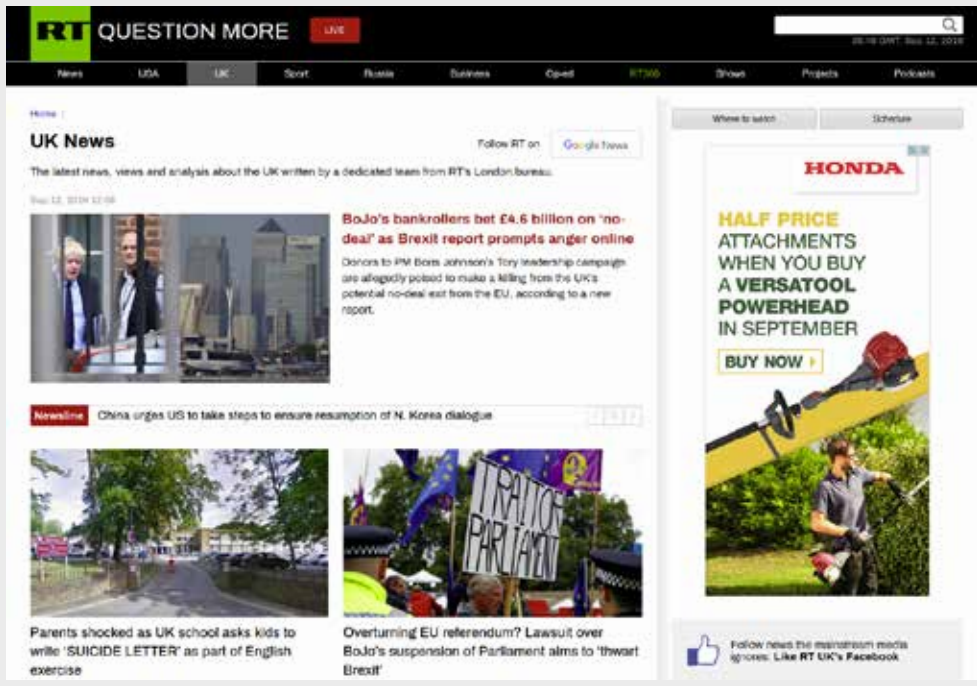


The screenshot shows a ZeroHedge article titled "The US-UK Deep State Empire Strikes Back: 'It's Russia! Russia! Russia!'". The article features a photo of a man speaking. To the right of the article is a red advertisement for Cummins, with the text "PUSHING LIMITS WITH CUMMINS INTEGRATED POWER" and "FIND OUT MORE".

**Note:** Advert for Cummins.

Screenshot from RT

Source: GDI, taken on 12-Sep-2019 09:50 BST



The screenshot shows the RT website's "UK News" section. The main article is titled "BoJo's bankrollers bet £4.6 billion on 'no-deal' as Brexit report prompts anger online". Below this, there are other news items, including one about a school exercise and another about a referendum. On the right side of the page, there is a large advertisement for Honda, featuring a yellow power tool and the text "HALF PRICE ATTACHMENTS WHEN YOU BUY A VERSATOOOL POWERHEAD IN SEPTEMBER".

**Note:** Advert for Honda.

Screenshot from Twitchy

Source: GDI, taken on 05-Sep-2019 13:02 BST

The screenshot shows the Twitchy website interface. At the top, there are navigation links for 'NEWS', 'MEDIA', 'ENTERTAINMENT', and 'CARTOONS'. The main article is titled 'SNAPI! Ted Cruz likens Bernie Sanders to another genocidal maniac bent on controlling the population and it's PERFECT'. Below the article, there are social media sharing buttons for Facebook and Twitter. A tweet from Noah Rothman is visible, discussing the article's content. To the right of the article, there is an advertisement for 'Allen Brothers Steaks' featuring images of various cuts of meat. Below that is an advertisement for a '2018 Honda Civic' with a 'Learn More' button. A 'Trending' section is also visible on the right side of the page.

**Note:** Adverts for Allen Brothers Steaks and Honda Motor Company.

Screenshots from Addicting Info

Source: GDI, taken on 13-Sep-2019 08.30.

Source: GDI, taken on 16-Sep-2019 05.32.

The screenshot shows the Addicting Info website. The header includes the site name 'Addicting Info' with the tagline 'The Knowledge You Crave' and 'Est. 2010'. There are navigation links for 'About Us', 'Contact Us', 'Creative Commons License', 'Privacy Policy', and 'Terms of Service'. The main content area features a large advertisement for 'Casper' mattresses. Below the ad, there is a news article titled 'Foreign-Based Hackers Who Stole Thousands Of Documents From SEC Indicted'. The article is dated 'By Rachel Marks on January 17, 2019 12:42 pm'. A search bar and a 'From the Web' section are also visible on the right side of the page.

**Note:** Advert for Casper.

The screenshot shows the Addicting Info website with a focus on an advertisement for Oxford University/Saïd Business School. The header is identical to the previous screenshot. The main content area is dominated by an advertisement titled 'Manage AI in business'. The ad features an image of hands and text that reads 'Learn from industry thought leaders and esteemed Oxford academics on the potential of AI'. Below the ad, there are navigation links for 'NEWS', 'MEDIA', 'DISSENTING OPINION', 'DISSEMINATED BY OTHER', 'HISTORICAL INFORMATION', and 'POLITICAL NEWS'.

**Note:** Advert for Oxford University/Saïd Business School.

# Endnotes

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- 1 The GDI defines 'to disinform' as: to purposely and/or maliciously mislead by spreading inaccurate information (in terms of the content itself and the context)." For more information on the definition and disinformation's connection to ad tech, see: [https://disinformationindex.org/wp-content/uploads/2019/05/GDI\\_Report\\_Screen\\_AW2.pdf](https://disinformationindex.org/wp-content/uploads/2019/05/GDI_Report_Screen_AW2.pdf).
- 2 <https://digitalmarketinginstitute.com/en-eu/blog/2017-11-29-the-beginners-guide-to-programmatic-advertising>.
- 3 [https://www.warc.com/newsandopinion/news/65\\_of\\_digital\\_media\\_will\\_be\\_programmatic\\_in\\_2019/41341](https://www.warc.com/newsandopinion/news/65_of_digital_media_will_be_programmatic_in_2019/41341).
- 4 <https://www.emarketer.com/content/emarketer-total-media-ad-spending-worldwide-will-rise-7-4-in-2018>.
- 5 We curated these from sources including Storyful, PolitiFact, Le Monde, Open Brand Safety, OpenSources and NewsTracker. Due to proprietary information, we are not able to publish the full list.
- 6 Traffic ranking on the web follows an exponential distribution, meaning the top ranked sites garner exponentially more traffic than the so-called "long tail" of lower-ranked sites. By calibrating a small number of Alexa ranks to publicly released traffic numbers both at the top end of the distribution and in the long tail, we are able to fit an exponential model to the data. From there we are able to infer estimated monthly traffic numbers given an Alexa rank. The results of this fit are shown in Figure 1 of this report.
- 7 However, as our goal is to obtain a lower bound of financial flows, we have adopted the most conservative assumptions at each step in the analysis, including in estimating the CPM.
- 8 These figures are an estimated minimum and are based on advertising placed at the time of the analysis on the sample set of domains.
- 9 <https://digiday.com/media/wtf-header-bidding/>.
- 10 Our data collection system captured all of the external domains called from each of our sample domains, which we then correlated to ad exchanges using open-source lists contained in popular ad blocking software. From there, we were able to identify which ad exchanges served which domains, allowing us to estimate which ad exchanges were involved in buying programmatic adverts on them.
- 11 [https://en.wikipedia.org/wiki/RIA\\_Novosti](https://en.wikipedia.org/wiki/RIA_Novosti).
- 12 <https://mediabiasfactcheck.com/rt-news/>.
- 13 <https://mediabiasfactcheck.com/the-common-sense-show/>.
- 14 <https://www.marketwatch.com/story/unicef-blames-anti-vaxxers-for-the-300-spike-in-global-measles-outbreaks-2019-04-25>.
- 15 <https://www.buzzfeednews.com/article/carolineodonovan/youtube-just-demonetized-anti-vax-channels>.
- 16 <https://www.washingtonpost.com/news/the-intersect/wp/2016/11/18/this-is-how-the-internets-fake-news-writers-make-money/>.



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