

Briefing Note: Programmatic Digital Advertisements and Climate Disinformation

Introduction

From October 1, 2021 to September 30, 2022 the Climate Action Against Disinformation (CAAD) coalition and its solution partners Dewey Square Group analysed 113 top US climate disinformation sites to determine the extent to which major online ad networks are monetizing climate disinformation by deploying advertising on climate disinformation content.

The major online networks – to include Google, Taboola, Outbrain and Criterio – all have policies which restrict the display of their advertising on sites that publish "fake news" or other kinds of intentionally-misleading content. Google even has a clear policy on climate disinformation, prohibiting ads and the monetization of content that "contradicts well-established scientific consensus around the existence and causes of climate change", which they proudly announced in October 2021.

However, despite these policies and efforts by some major advertising and media platforms (particularly Google) to portray themselves as proactive on the climate emergency and actively engaged in efforts to de-monetize and algorithmically penalize climate disinformation, the findings from this study clearly show that it is the same major advertising and media platforms who are actively funding and profiting from climate disinformation in the United States.

This study is a product of collaboration between CAAD, Dewey and FOE.

Dewey Square Group – This study was conducted by CAAD's solution partners, Dewey.

[Climate Action Against Disinformation \(CAAD\)](#) – CAAD is a global coalition of leading climate and anti-disinformation organisations.

[Friends of the Earth \(FOE\)](#) – Contributing partner to the study.

Summary

- We analyzed 113 top US climate disinformation sites from October 1, 2021 to September 30, 2022 to determine the extent to which major online ad networks are monetizing climate disinformation by serving up advertising on climate disinformation content. These sites collectively receive approximately 56.6 million weekly US visits.
- Almost 80% of the climate disinformation sites identified were displaying some kind of advertising from one or more of the major ad networks – meaning that major advertising networks like Google, Amazon, and Taboola are profiting from and funding climate disinformation.
- Google was by far the largest advertising network utilized by climate disinformation sites, with Google’s display ad network representing 49% of estimated outgoing US ad traffic.
- Of the 50 top sites in estimated weekly traffic, 39 of them (78%) were displaying ads from the Google Display network.
- 68 of the 113 sites (60%) of the websites contain code that would enable them to display Google ads (AdSense, AdWords, or Doubleclick). Amazon, MGID, Taboola, and Outbrain were also heavily utilized by climate disinformation sites.
- 83 of the 113 sites (69.75%) show that they have Google as an authorized seller of ads in their ad.txt files. These ad.txt files are created by each website owner and show that these sites have authorized Google to resell their ad inventory.
- To give a sense of scale: if advertisers bought ads on these climate disinformation sites at an industry median price cost-per-click, then Google would potentially have pulled in \$7.67 million in display advertising revenue over the past year from such sites.
- Advertising platforms continue to monetize and profit from climate disinformation despite many major platforms like Google, Criteo, and Taboola having policies against their ads appearing next to false or intentionally-misleading information or (in the case of Google) climate disinformation specifically.

Methodology

Over the past three years, we have been collecting a curated list of over 3,800 serial “bad actor” websites which we call the “Rosetta Stone Dataset” — sites that are involved in disinformation, misinformation, skewed news, mob harassment, militia or paramilitary organizing, or other dishonest or abusive practices. Where possible, we have also been categorizing these sites according to content type, geographic scope, and topics according to a taxonomic rubric we have developed.

As part of our ongoing research workflow, we are consistently adding to and updating the Rosetta Stone Dataset. We are also utilizing third-party tools to gather data about the sites in the dataset — specifically, their approximate weekly and monthly traffic and the technologies that are referenced in their available page source code.

Where possible, we also programmatically gather the sites’ public web content on an ongoing basis, analyzing posts on these sites for taxonomic categories such as topic areas, keywords, and entities (people, organizations, etc.) that are named in their content. For this study, we compiled a new dataset of all of the sites in our Rosetta Stone Dataset of websites that fulfilled one of the following two criteria:

1. The site was tagged by our analysts who have determined that climate change was one of the main topics the site was focused on; or
2. Our scans showed that at least one of the site’s posts mentioned the word ‘climate’ at some point between September 8, 2022 and October 7, 2022.

After compiling this list, we filtered out any sites with fewer than 1,000 weekly US-based visits (as estimated by a third-party data source, Similarweb), as low-traffic sites would provide negligible advertising revenue.

We then manually reviewed the content on the remaining sites to determine whether they contained any of three narratives we identified as “climate disinformation”:

- **Denialism:** Outright denial of the existence or the scientific consensus of the severity of the risk of climate change, or minimization of human causes of climate change.

- **Conspiracy:** Arguments claiming that scientific research on climate change should be discounted as it results from an “elite” conspiracy to manipulate global industry, culture, or the economy.
- **Doomerism:** Arguments that climate change cannot be slowed or stopped by individual, organizational, business, or governmental efforts and that such efforts represent a waste of energy and resources that could be used instead to adapt to the inevitability of a changing climate.

Sites whose content did not include one of those three narratives were filtered out of the list of sites to analyze, even if they reported on anti-climate policies or published content criticizing climate scientists or activists.

Once the list of sites was filtered, we combined data from NerdyData and Similarweb to provide a machine-based review of the various advertising technologies being utilized by the sites with a manual review of the sites’ estimated advertising traffic over the past year enabled by each ad network. We then used those results, along with advertising-industry cost-per-click estimates (where available) for the various advertising networks, to estimate the potential amount of revenue being pulled in by advertising networks on climate disinformation sites.

All the ad traffic data and ad network data we used in this study came from Similarweb, which is commonly cited by internet and online advertising research. Their data is reliable and trusted but is based on their data-sources scanning billions of web pages, so it is partial. The actual number of online ads and ad traffic is likely larger still.

To further analyze these 113 websites, we also scanned all of the sites’ public HTML and JavaScript coding to see what ad technologies have been coded into each site.

Finally, we reviewed each site’s publicly-available ads.txt files. ads.txt is a file published by the owner of a website serving ads via advertising networks. Our review of each site’s ads.txt file specifically focused on whether they had authorized Google as one of the authorized websites to resell their ad inventory.

Findings

Overall, we found that **79.7% (90/113) of the climate disinformation sites we analyzed displayed online advertising through one or more ad networks.** The 23 sites that did not include such advertising platforms tended to be clustered toward the bottom of the weekly visit rankings, responsible for less than 1% of the total weekly visits to all climate disinformation sites we analyzed.

Only three (6%) of the top 50 sites by weekly traffic had no advertising, and two of those three sites are associated with religious groups.

Google's various display ad networks (DoubleClick, AdWords, and AdSense) were by far the most widely used on these websites, monetizing 49.6% of all sites and accounting for 97.7% of the projected weekly visits.

The top climate disinformation sites in our dataset were generating huge volumes of both site visits and ad clicks. Each "ad visit" below represents one user clicking on an individual ad hosted on the site.

Top 10 Climate Disinformation Sites by Weekly Traffic

Site	Est. Weekly US Visits	Outgoing US Ad visits, 10/2021-09/2022
Fox News	21,800,000	47,780,000
Breitbart	5,647,765	2,300,000
Daily Wire	5,188,795	246,800
The Gateway Pundit	5,083,617	608,700
The Epoch Times	3,984,460	134,300
Western Journal	2,217,308	317,600
The Blaze	2,182,872	231,900

The Daily Caller	1,584,000	421,700
RedState	1,557,983	155,000
PJ Media	1,000,270	149,700

As indicated above, **Google’s display ad networks were by far the most prominent in the climate disinformation dataset**, being seen by sites representing **over 97% of weekly visitors of users viewing sites in the dataset**.

Also prominent were Outbrain (which displays “related article” boxes driving traffic off-site underneath and next to articles) being seen on sites responsible for more than 87% of weekly visits, and Amazon Ads being seen on sites responsible for more than 71% of weekly visits.

Top Advertising Networks Monetizing Climate Disinformation Sites

Network	# of Sites	% of Sites	Est. # of Weekly Visitors, Sites w/ Ad Network	Est. % of Weekly Visitors, Sites w/ Ad Network	Est. # of Outgoing Ad Visits, 10/2021-09/2022	Est. % of Outgoing Ad Visits, 10/2021-09/2022
Google Display	59	49.58%	56,023,217	97.70%	12,186,846.20	21.51%
MGID	30	25.21%	15,373,364	26.81%	892,808.58	1.58%
Criteo	24	20.17%	20,488,103	35.73%	355,646.75	0.63%
AdSupply	21	17.65%	12,563,111	21.91%	2,155,989.75	3.81%
RTB House	19	15.97%	24,131,069	42.08%	104,066.96	0.18%
Amazon	18	15.13%	41,069,216	71.62%	1,167,803.79	2.06%
Outbrain	18	15.13%	50,408,526	87.91%	7,659,930.24	13.52%
Taboola	14	11.76%	12,202,724	21.28%	19,101.25	0.03%
Yahoo	12	10.08%	34,279,251	59.78%	26,297,167.62	46.42%

Infolinks	8	6.72%	10,332,180	18.02%	257,012.60	0.45%
Adroll	7	5.88%	5,946,625	10.37%	27,578.05	0.05%
AdMedia	4	3.36%	6,877,086	11.99%	18,319.31	0.03%
Skimlinks	4	3.36%	5,663,610	9.88%	18,224.60	0.03%

Notably, Yahoo is responsible for almost 50% of total outgoing ad visits over the last 12 months, **but this is almost entirely due to a single website, Fox News**, which is responsible for about 54.9% of whose ad clicks over the past 12 months were served by Yahoo Ads.

Climate Disinformation Sites Serving Yahoo Ads

Site	Est. # of Outgoing Ad Visits, 10/2021-09/2022	% of Outgoing Ad Visits Served by Yahoo	Est. # of Outgoing Ad Visits Served by Yahoo, 10/2021-09/2022
Fox News	47,780,000	54.88%	26,221,664
The Daily Caller	421,700	15.57%	65,659
Clarion News	5,000	100.00%	5,000
Daily Wire	246,800	0.89%	2,197
IJR	53,000	2.41%	1,277
The Blaze	231,900	0.20%	464
RedState	155,000	0.20%	310
Zero Hedge	958,300	0.03%	287
Louder with Crowder	6,100	1.52%	99
The Burning Platform	30,300	0.26%	79
Natural Health News and Scientific Discoveries	17,600	0.43%	76
The Liberty Daily	26,100	0.24%	63

It is worth noting, however, that Fox News appears to have heavily de-emphasized Yahoo advertising since sometime in July 2022.

When we exclude the single site of Fox News (with its massive traffic and click numbers) and this now-outdated Yahoo skew from the dataset, we get a clearer picture of just how dominant the Google Display networks are in monetizing and profiting from sites that feature climate disinformation:

Google, whose display ad networks are the dominant players in the display advertising sector generally, is by far the most significant advertising supplier on websites that promote climate disinformation both in terms of the share of sites they enable and the ad traffic they monetize.

Additional scans to see what ad technologies were in the HTML and JavaScript code on each site found the number of sites that display code relating to Google's ad platforms to be even higher than the Similarweb data, with code from one of Google's three display advertising platforms being used in 60% of all climate disinformation websites. Some of that code may be inactive (sites that formerly showed Google display advertising but have not yet removed the code from their sites), but this is another metric indicating the scale of Google's advertising penetration into web traffic overall and specifically into the climate disinformation space.

As a final measure, we analyzed each of the site's ads.txt files - if they published one - to see what each website owner listed as authorized resellers of the ad inventory. We found that **83 of the 113 sites (69.75%) show that they have Google as an authorized seller of their ads.**

The scale of Monetization

To offer a sense of the potential scale of this monetization and to use Google as the example:

If we were to assume that the approximately 12.1 million ad clicks that these Google display network-enabled websites saw over the past year were sold in accordance with industry standards for the average cost-per-click and to use an average industry

standard for 2022 median cost of \$.63 per click -- **then Google would have made about \$7.6 million dollars from these climate disinformation websites.**

While actual cost-per-click, ad-buy methods, costs per action, view, and acquisition can vary, but this brings an overall sense of scope to the issue.

Conclusion

Despite efforts by some major advertising and media platforms (particularly Google) to portray themselves as part of the climate-change fight and actively engaged in efforts to de-monetize and algorithmically penalize climate disinformation, we have solid evidence that major advertising platforms are actively funding and actively profiting from climate disinformation in the United States.

Advertising platforms represent a key part of the economics of climate disinformation:

- The disinformation is generated and published on the sites we highlight above.
- The articles from those sites are shared by major influencers in the climate denial and political ecosystem.
- Posts from those influencers are algorithmically boosted by social media platforms like Facebook and Twitter.
- The algorithmically-boosted posts drive users back to the climate disinformation sites.
- On those sites, advertising platforms sell the users' attention, gain revenue for themselves, and send a certain percentage back to site owners, enabling them to generate and publish even more climate disinformation.

As we have seen, the Google Display networks are the platform most heavily involved in the monetization of climate disinformation, **with Google Display ads on nearly half of all the disinformation sites we tracked, and that are responsible for over 97% of all weekly visits across all the websites we studied.**

Our findings here reinforce other past research specific to climate disinformation. This includes [this research from GDI](#) finding that Google ad platforms were monetizing **38.8 percent of climate disinformation** tracked across 98 websites they studied, and [this 2021 study from Lia Bozarth and Ceren Budak at the University of Michigan](#) finding that **“48.0% and 32.0% of all weighted ad traffic on fake and low-quality sites are delivered through Google alone.”**

It is particularly striking that Google continues to monetize and profit from climate disinformation despite [Google’s clear policy](#) that “prohibit[s] ads for, and monetization of, content that contradicts well-established scientific consensus around the existence and causes of climate change,” which they announced with great fanfare in October 2021. Other advertising platforms’ policies do not explicitly mention climate misinformation but do restrict the display of their advertising on sites that publish “fake news” or other kinds of false or intentionally-misleading content:

- [Taboola](#): “Ads must not promote or disseminate anything that qualifies as fake news or any information that is at high risk of being false.”
- [Outbrain](#): “Content on websites must not include: [...] Fake News [...] Extreme political views.”
- [Criteo](#): Prohibits ads on any site that “shares mistruths and falsehoods” or “shares or propagates false information or fabricated information designed to deceptively imitate news media content.”

The publishers of these climate disinformation sites would certainly defend their content by arguing that they are publishing legitimate criticisms of climate science, or providing alternative viewpoints and allowing the reader to make up their own mind.

However, it is an open question as to whether advertising platforms and advertisers themselves want to continue to associate their brands with climate denialism, doomerism, or conspiracy theories, particularly as the scientific consensus grows only more overwhelming and the evidence for anthropogenic climate change, and what governments, corporations, and individuals can do to slow or stop it.

Insofar as these platforms and advertisers purport to be good corporate citizens who are having a positive influence on the world, public pressure may lead them to reconsider their brand association with climate denialism, doomerism, and conspiracy theories.

Our findings indicate that researcher [Craig Silverman's quote](#) that "Google is in a lot of ways the financial engine for fake news" remains true for climate disinformation and denialism.

This study aims to add to the better view of climate disinformation and the ad platforms and advertisers that are funding and profiting from it. Google and the other ad platforms in this study owe their customers, their advertisers, the consumers of their ads, and the health of our ecosystem itself far better.