InfluenceMap

Climate Change and Digital Advertising

Climate Science Disinformation in Facebook Advertising

October 2020

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Contents

Glossary

- **Ad –** An ad being run on at least one of Facebook's platforms. Two separate ads with the same content are treated as separate by this research if they are also treated as such by Facebook. One ad can run on multiple platforms, for example on Facebook and Instagram.

- **Impressions -** The number of times an ad was viewed.

- **Facebook Page -** A Facebook profile.

- **Targeting -** Facebook enables its customers to target ads at users using user information including age, gender, location, connections, behavior, education and interests.

- **Demographic Distribution -** The demographic distribution of people reached by ads. It differs from but is informed by the targeting of the ads.

- **Regional Distribution -** Regional distribution of people reached by ads. It differs from but is informed by the targeting of the ads.

- **Microtargeting –** Microtargeting is a form of online targeted advertising that analyses personal data to identify the interests of a specific audience or individual in order to influence their actions. Microtargeting is often used to offer a personalized message to an individual or audience using an online service such as social media.

- **Organic Content –** Organic content refers to digital content made by an organization or individual that is not spread through paid advertising.

- **Facebook News Feed –** The main content feed on Facebook's platform.

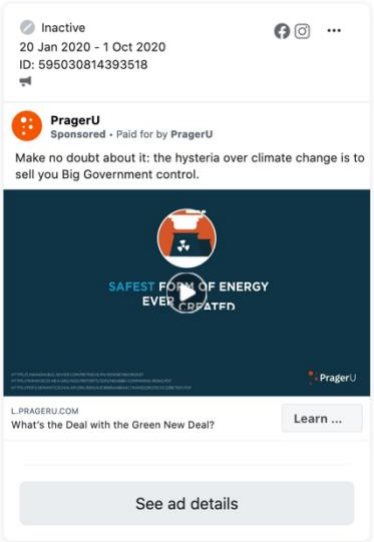
- **Climate Misinformation -** Information on climate change that is initially presented as true but later found to be false. Misinformation is agnostic as to the motive of the source. (*Cook, 2019*)

- **Climate Disinformation -** Refers to false information on climate change disseminated with deceptive intent. (*Cook, 2019*)

Executive Summary

Key Findings

- On the 14th of September 2020, Facebook launched its *Climate Science Information Center* and stated it is "committed to tackling climate misinformation" through its existing fact-checking program. However, new research from InfluenceMap reveals that even under the current program and the new Climate Science Information Center, anti-climate groups are using Facebook's advertising platform and unique targeting abilities to spread disinformation, intentionally seeding doubt and confusion around the science of climate change. Two ads identified in this research (both from a campaign run by the US conservative nonprofit *PragerU*) started on January 23rd, 2020, and ran up to October 1st, 2020 - the entirety of their scheduled lifespan and over two weeks after Facebook made its announcement. The content of the two ads is identical and shown below (*link to archive in the Facebook Ad Library* as of October 3rd, 2020).



- This research comes amid the growing concern at the influence and reach of social media platforms in swaying public opinion on key societal issues. Several US Senators *wrote to Facebook* on the issue of climate disinformation in August 2020. InfluenceMap's work feeds into numerous shareholder processes (such as the *Climate Action 100+* engagements) with global institutional investors now highly concerned at the influence the corporate sector has in holding back urgently needed progress on climate regulations. InfluenceMap's widely recognized *methodology* for assessing corporate lobbying includes the use of advertising and social media.

- Facebook works with third-party organizations to fact-check organic content and ads, including for climate disinformation, on its platforms. However, the company has stated that the fact-checking program is *"not meant to interfere with individual expression, opinions and debate"*. InfluenceMap's research suggests

that this policy is likely to allow some forms of climate disinformation to be exempt from fact-checking. Of the 51 climate science disinformation ads that were identified, Facebook had only taken down one at the time of research. The rest of the 50 ads were able to run through the entirety of their planned lifespan. It is unclear exactly why most of the ads identified were allowed to run but it may be due to Facebook's policy on expression, opinion and debate.

- According to Facebook's Ad Library, there are currently around 250,000 Facebook pages in the US that use paid-for ads to promote political messages. Using a list of 95 advertisers *known* to have previously promoted climate disinformation, InfluenceMap identified 51 climate disinformation ads in the US, across a 6-month period starting January 2020, which have gained an estimated 8 million impressions (individual views). Extrapolated over the last five years, this would equate to over 70 million impressions on climate disinformation ads since the drafting of the Paris Agreement.

- Within an era of increasing political and consumer concern for climate change, public-facing companies have veered away from direct climate science disinformation. Instead, this research shows climate disinformation is being propagated on Facebook's platforms by groups with often opaque funding. These include well-known non-profits such as PragerU, The Mackinac Center for Public Policy, Texas Public Policy Foundation, and the Competitive Enterprise Institute among others. Collectively, the groups identified by InfluenceMap as using Facebook advertising to spread climate disinformation have a total revenue of around $68M per year, according to their latest US tax disclosures.

- This research show these groups are using a range of disinformation strategies to sow doubt and confusion around the science of climate change. The most common strategy is to attack the credibility of climate science and climate science communicators, often by targeting the United Nation's Intergovernmental Panel on Climate Change (IPCC). Arguments used to do so include denying the widespread consensus on climate science, suggesting there is a high degree of uncertainty, and promoting alternative sources of information. At the end of 2018, the IPCC released a report (*Global Warming of 1.5C*) urging governments to act decisively and quickly with policy measures on climate.

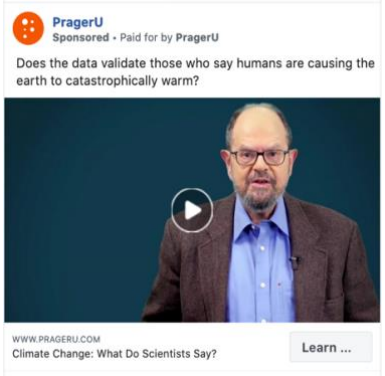
- This research also shows how groups spreading climate disinformation are taking advantage of Facebook's powerful targeting tools to reach specific audiences. Facebook allows advertisers to *target ads* using user information such as age, gender, location, connections, behavior, education and interests. This research shows climate disinformation ads are being heavily distributed in rural US states and to males over the age of 55. Regarding the geographic spread, the largest intensity of impressions per person was found in Texas and Wyoming. Additionally, climate disinformation ads are being distributed more to males than females across all age groups. While 18-34-year old were shown more ads contesting the predicted future consequences of climate change, 55+ were more likely to be shown ads contesting the causes of climate change.

Examples of Climate Disinformation Ads on Facebook

Below are three screengrabs of climate disinformation ads identified by InfluenceMap. They illustrate three of the common aims of climate disinformation: to **question the reality of climate change**, **undermine confidence in climate science** and **to question the impact of climate change**. These three ads were allowed by Facebook to run the course of their campaign. The announcement of the Climate Science Information Center did not specify changes to the way Facebook currently treats climate science disinformation or if such ads will link to the Center. Facebook's own climate commitment contrasts sharply with the content of these ads, *according to its website* (September 2020):

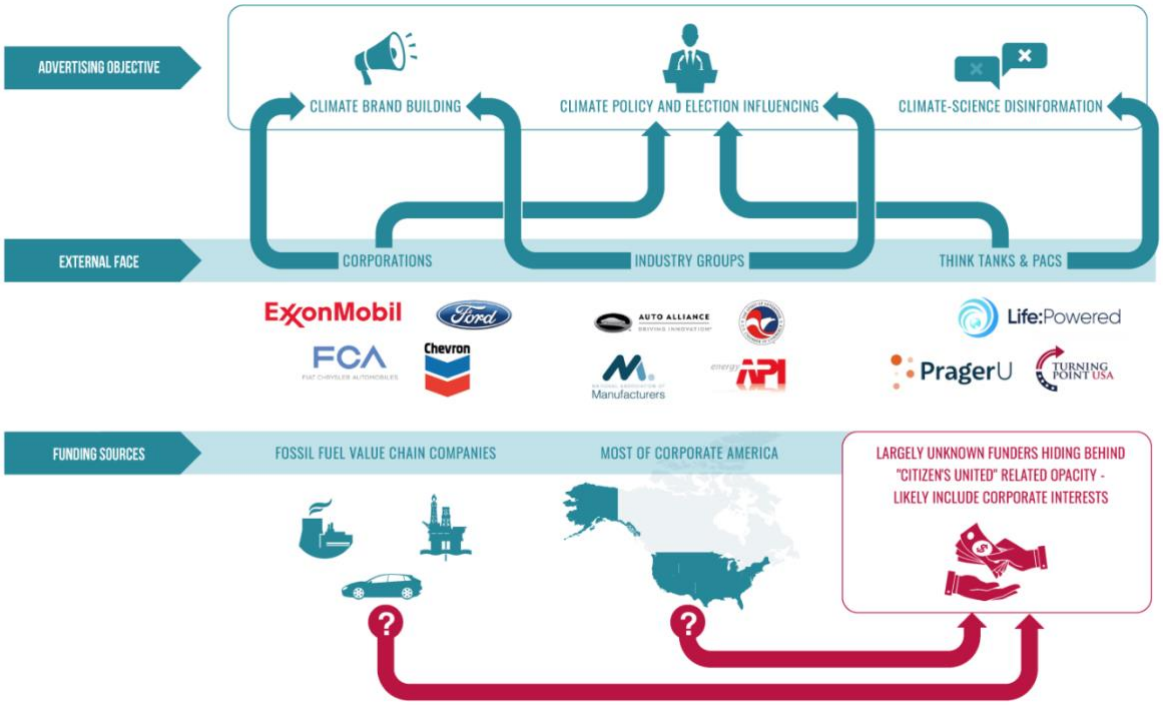
"*Science tells us that the next 10 years will be the defining decade for dramatic emissions reductions to limit the worst impacts of climate change. Facebook is committed to tackling climate change through our global operations*."

Screenshots of three recent ads are shown below, with links to the Facebook Ad Library working as of October 3rd, 2020.

April 2020, Turning Point USA	June 2020, Life: Powered	May 2020, PraguerU
		
Link to Facebook Ad Library	*Link to Facebook Ad Library*	*Link to Facebook Ad Library*

The Agenda to Delay Climate Action

Climate science disinformation is part of a range of advertising strategies being used by a variety of actors seeking to delay action on climate change, as shown below. Overtly negative messaging on climate change has become increasingly difficult for corporations to be directly associated with. Hence climate science disinformation propagation is now largely limited to think tanks and other entities whose sources of funding are highly opaque. Corporations, including the oil majors, appear to be investing heavily in ad campaigns designed to link their brands to positive action on climate while many of the industry associations they fund engage in policy lobbying largely misaligned with the Paris Agreement (see *Big Oil's Real Agenda on Climate Change*, March 2019).InfluenceMap is planning two more reports covering these other two advertising objectives: climate brand building, and climate policy influencing.



Introduction

Background

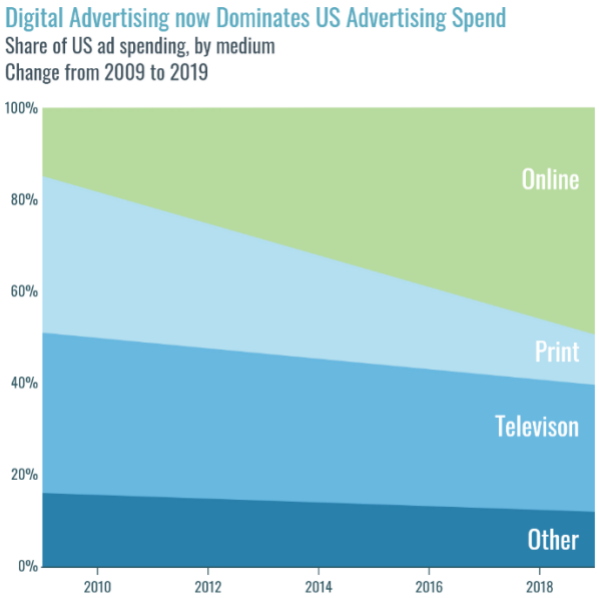
The United Nations (UN) Intergovernmental Panel on Climate Change (IPCC)'s October 2018 *Special Report on Global Warming of 1.5°C* laid out the urgency to act on climate. It highlighted the limited role for thermal coal power beyond 2030 and the need for decisive policy interventions by governments around the world to drive the energy transition towards lowering greenhouse gas emissions. The UN Environment Program (UNEP) in its *Emissions Gap Report* of 2019 stated that Nationally Determined Contributions (NDCs) to the Paris Agreement remain insufficient in their policy responses to meet the Agreement's goals.

In response to concern at the role of corporations in the blockage of climate policy, in 2015 InfluenceMap developed the world's leading platform analyzing corporate policy engagement on climate policy. It currently covers 300 of the world's largest industrial companies and 200 leading industry associations. It is used to inform the global institutional investor community on this key aspect of corporate climate performance. InfluenceMap provides technical expertise to the *Climate Action 100+* investor engagement process, made up of 450 investors who collectively manage over $40 trillion in assets, as part of its Technical Advisory Group. InfluenceMap analysis has appeared in over *1,500 media articles*, particularly in the financial and business press.

As a benchmark for its methodology, InfluenceMap uses the 2014 UN *Guide for Responsible Corporate Engagement in Climate Policy* as its definition of what constitutes corporate influencing of policy. The guide notes a range of corporate activities that define influencing from advertising, PR, regulatory lobbying to the funding of external groups. The huge rise in the use of social media has warranted a detailed analysis of its use by corporations and their agents in InfluenceMap's platform. InfluenceMap looks at three objectives for the use of advertising on climate change by corporations and their agents: **Climate-science disinformation**, **Climate brand building** and **Climate policy and election influencing**. Each of these is discussed in detail in the next section. This report focuses on the climate-science disinformation objective. These three categories form a continuum with corporations, industry associations and think tanks deploying social media to some extent for all three objectives. That said, the corporate sector is increasingly trying to distance itself directly from overtly negative climate activity with the external groups, often with undisclosed funding, occupying this role.

Digital Advertising and Climate Influencing

Over the last decade, online advertising has significantly increased as print and television advertising has declined, as shown in the figure below. With the migration of ads online, Facebook and Alphabet (Google) have emerged as the dominant recipients of ad spend globally. With ad revenue making up a large majority of their profits, Facebook and Alphabet currently receive *61% of US digital ad spending*.



Ongoing analysis by InfluenceMap has noted an increase since 2015 in the use of social media and digital advertising by corporations and other entities seeking to influence the climate agenda. In response, InfluenceMap has built a proprietary set of data tools to enable deep-dive assessments of this issue, covering the following three categories of climate influence.

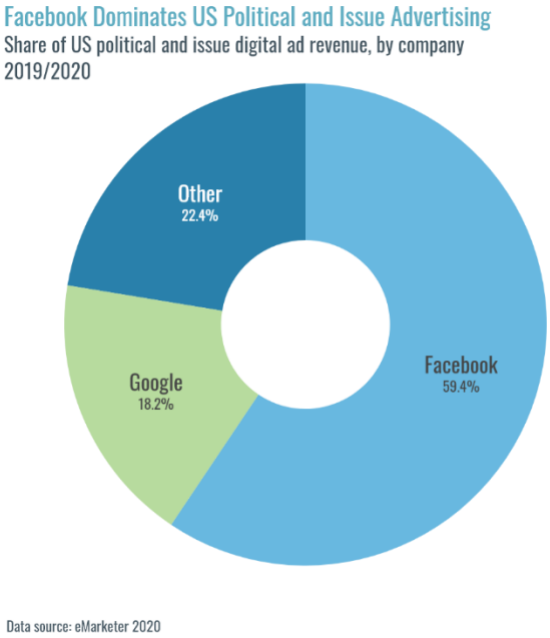
- **Climate-science disinformation**: Including but not limited to climate denial, this category covers the propagation of varied and increasingly nuanced messaging techniques intended to create doubt, confusion or mistrust in the science of climate change, as generated by the Intergovernmental Panel on Climate Change (IPCC).

- **Climate brand building:** Brand building refers to efforts to craft a narrative of climate ambition or climate-friendly initiatives by the corporate sector. ExxonMobil's biofuel algae campaign, for example, triggered a *lawsuit in 2019* from the Massachusetts Attorney General. It argued that Exxon's social media ads were misleading in that they ignored the overwhelming fossil-fuel intensive nature of the company.

- **Climate policy and election influencing:** This consists of attempts by corporations and their agents to sway the public perception of climate policy issues, such as the energy mix, the role of gas in the energy transition, and the role of technologies like carbon capture and storage (CCS) in various climate pathways. Additionally, it includes attempts to sway the perception of, and support for, specific policies such as the CAFE standards and the Green New Deal. It also covers advertising specifically directed at climate issues in play during elections, such as advertising by the oil majors around the 2018 Washington State carbon tax ballot initiative which was defeated (see *Big Oil's Real Agenda on Climate Change*, March 2019).

The Role of Facebook

As a social network, Facebook has a wealth of information on its 2.7 billion monthly active users (*July 2020*), presenting advertisers with unparalleled opportunities to promote a brand or a message in a highly targeted and effective manner. Reaching users beyond a brand's direct 'followers', *Facebook enables* advertisers to target new audiences based on information such as demographics, location, interests, connections and behavior. Due to the wealth and politically relevant nature of Facebook's data, the platform accounts for a huge *59% of total US political and issue digital advertising revenue*, as shown in the figure below.



Facebook has become a uniquely powerful platform for the influencing of policy agendas and elections, as such, there has been increasing scrutiny of how Facebook's platform and user information could be used for nefarious purposes. In 2018, the *Cambridge Analytica scandal* came to light, where, without consent, political campaigns used Facebook Data for microtargeting political ads. More recently, in 2020, Facebook has received criticism for its perceived role in promoting racism and allowing hate speech. The Stop Hate for Profit campaign has led to a number of brands *withdrawing their advertising campaigns* from Facebook's platform.

Facebook's Fact-checking Mechanism

Facebook works with third-party *fact-checking organizations* to identify and reduce the spread of disinformation, including on climate science, vaccines and COVID-19. *According to Facebook*, the fact-checking process works by first identifying potential disinformation using signals, like feedback from users, and making the content available to fact-checkers. Fact-checkers can also identify content to review on their own. The content is then reviewed by the fact-checkers, who rate its accuracy and can label the content as False, Altered, Partly False, Missing Context, Satire or True. This process is carried out independently from Facebook and may include calling sources, consulting public data, authenticating videos and images, and more.

If a piece of organic content is identified and rated as False, Altered or Partly False by one of the fact-checking organizations, Facebook attaches a warning label to the post and reduces its spread. Facebook *states* that if an ad is rated as being False, Partly False, Altered or Missing Context then it is not allowed to run and pages that repeatedly share disinformation may have their permission to advertise revoked. However, Facebook's *policy* includes the provision that "the program is not meant to interfere with individual expression, opinions

and debate", which may provide an exception for certain forms of climate disinformation. In June 2020, it was *reported by E&E News* that Facebook allowed a post, that contained disinformation on the science of climate change, to be classified as an 'opinion' and therefore, exempt from the fact-checking procedures.

Facebook's platforms have enabled the spread of misinformation on critical health issues, including the safety of vaccinations, as covered in this *article by The Lancet*, and more recently, according to *a report* by the activist group Avaaz, COVID-19. In response, Facebook has started *directing users towards authoritative information*, including from the World Health Organization (WHO), in addition to the usual steps taken in addressing disinformation. In the case of COVID-19, Facebook enhanced their policy to show messages in the News Feed to people who have liked, reacted, or commented on harmful misinformation, connecting them to a page on COVID-19 myths which have been debunked by the WHO. In April 2020, this policy led to Facebook marking about *20 million pieces* of content related to COVID-19 with warning labels and *600 million* users clicking through to the COVID-19 Information Center.

On the 14th of September 2020, Facebook *released* its *Climate Science Information Center*, which displays information from the Intergovernmental Panel on Climate Change and other trusted sources. The information center approach is designed to put less pressure on evaluating each individual post, in favor of directing users to a resource with the correct information on climate science. In the announcement, Facebook reaffirmed its intention to tackle climate science misinformation through its existing fact-checking scheme. The announcement did not mention any changes to the way Facebook currently treats climate science disinformation on its platforms or if climate misinformation will link to the Climate Science Information Center.

Disclosure by Digital Advertising Platforms

This research has been enabled by data provided via Facebook's Ad Library. Facebook launched its Ad Library in May 2018 following controversy over the *Cambridge Analytica scandal* and Facebook's role in elections. The disclosure platform allows users to view the content of all ads across Facebook's platforms (Facebook, Instagram, WhatsApp and Messenger). The Ad Library specifically provides data on political and issue advertising, including ads related to climate change. This data includes spend, impressions, demographic and regional distribution related to each advert. By accessing this data through the Facebook Ad Library application programming interface (API), InfluenceMap is able to aggregate these metrics across multiple ads, as well as search the contents of the ads for evidence of climate related messaging.

The table below shows the current state of disclosure around political and issue advertising for the major digital advertising platforms. Due to Facebook's size and the availability of data, this research focuses on data from Facebook. Should Alphabet or Twitter disclose data on climate related ads, InfluenceMap will expand its analysis to include their data in future reports on digital advertising.

Company (all platforms)	Total Revenue, Financial Year 2019 ($Bn,USD)	Advertising Disclosure Platform Exists?	Discloses Data on Ads (Includes Spend and Impressions)	
			Ads about Politics and Elections	Ads about Issues (e.g. climate change)
Alphabet (Google, YouTube)	162	Yes	Yes	No
Facebook	71	Yes	Yes	Yes
Twitter	3	Yes	Banned	Banned with exceptions*

**Twitter does not classify climate ads from corporations and industry groups as political or issue advertising, and they are therefore not banned from the platform.*

Methodology

Disinformation and Misinformation

This report aims to examine the extent to which climate science disinformation is propagated via paid-for social media advertising on Facebook. In terms of content on Facebook, InfluenceMap has been careful to distinguish between organic content and advertising. This research only covers advertising content. The following definitions are used to distinguish climate ***mis***information from climate ***dis***information.

- **Climate Misinformation:** Information on climate change that is initially presented as true but later found to be false. Misinformation is agnostic as to the motive of the source. (*Cook, 2019*)

- **Climate Disinformation:** Refers to false information on climate change disseminated with deceptive intent. (*Cook, 2019*)

The methodology, therefore, follows several steps whereby Facebook ads are first tested for climate misinformation. Next, the source of the ad is examined to reflect on the intent of the ad. While intent is naturally difficult to prove, InfluenceMap considers information being spread by an entity, through paid advertising or organic content, to show intent on behalf of the entity to spread that information. In the case of this research, that implies that any climate misinformation being spread through advertising is a form of disinformation unless the advertiser spreading the information is unaware that the content contains misinformation. InfluenceMap also considers any organization that communicates information on climate science to be expected to reasonably foresee whether that information is aligned, or misaligned, with climate science ratified by the Intergovernmental Panel on Climate Change (IPCC). Hence, InfluenceMap defines any climate **mis**information being spread, via paid advertising or organic content, by any such organization to be climate **dis**information.

Research Process

To test for the existence of climate science disinformation techniques on paid-for social media advertising, InfluenceMap followed these steps.

Scope & Data Collection

- According to Facebook's Ad Library, there are currently around 250,000 Facebook pages in the US alone that use paid-for Facebook advertising to promote political messages. As an initial scoping exercise, InfluenceMap used Desmog's *Global Warming Disinformation Database*, which provides a list of 233 organizations known to have propagated climate science disinformation in the past. These groups were then run against Facebook's Ad Library database to see which were advertising on the platform. This yielded a list of 95 entities, which formed the sample set used in this study. The sample therefore only represents a proportion of the potential overall climate-science disinformation advertising worldwide.

- Data on all political and issue ads from the organizations in this list were obtained via Facebook's Ad Library API. All ads from these groups that started running in the first six months of this calendar year (2020) were then filtered using a list of climate-science related terms to help find relevant ads.

Assessing for Climate Misinformation

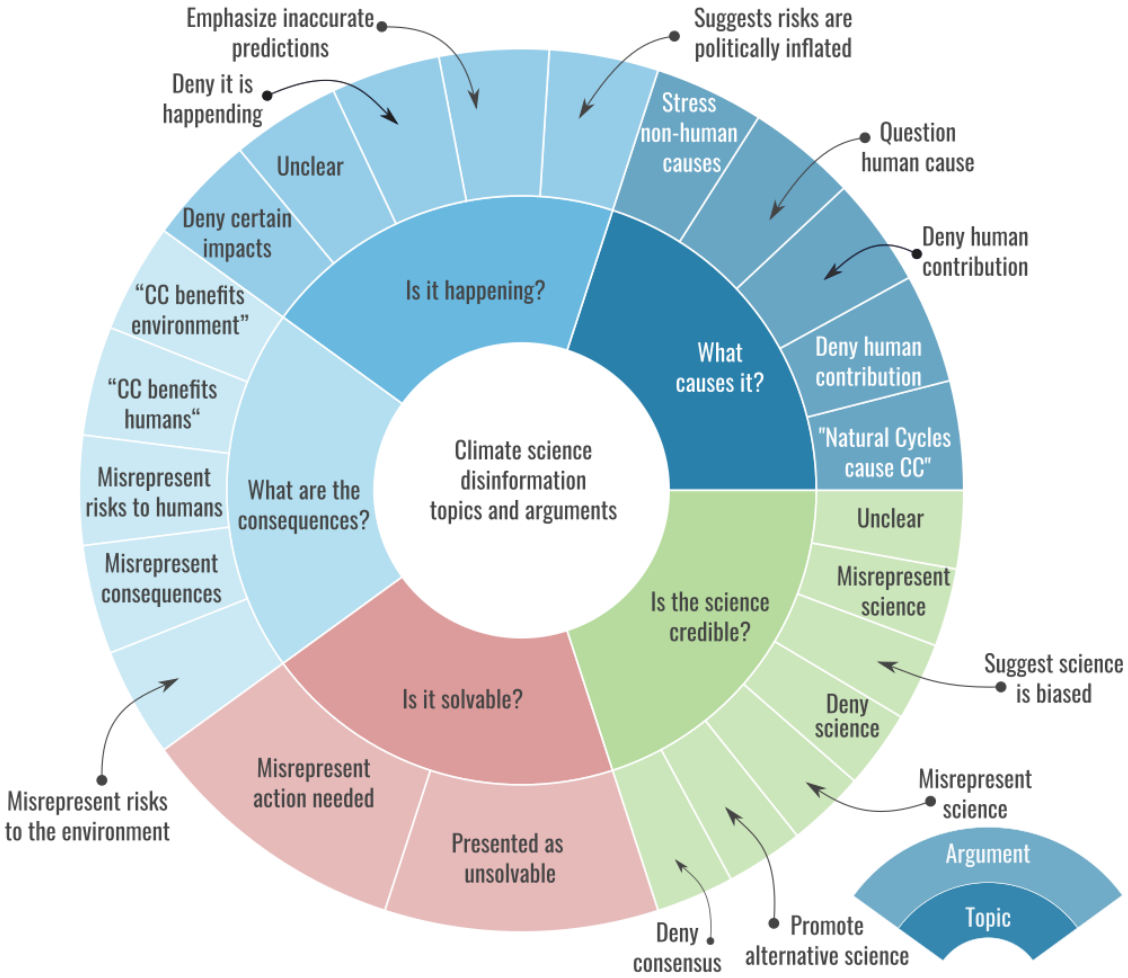
- Each ad obtained in the above process was then further assessed by InfluenceMap analysts to detect the presence of climate misinformation.

- The potential forms of climate misinformation were defined according to a series of queries drawn from *Supran and Oreskes (2017)* research on historic ExxonMobil climate change communications; 1. What causes climate change?; 2. Is climate change happening?; 3. What are the consequences of climate change?; 4. Is climate change solvable? Following the initial analysis of the data set, an additional query was added to capture statements regarding the validity of climate science and IPCC as the foremost communicators on the science of climate change; 5. How credible is climate science?

- Within each topic, a series of sub-arguments were developed using previous academic research, such as Supran and Oreskes (2017) as referenced above. These were then cross-matched with the ads found in the results to develop the framework illustrated in the graphic on the next page.

Topics and Arguments in InfluenceMap's Climate Science Disinformation Framework

Topics represent the aspect of climate science being questioned



Conflation Strategies

- In addition to the ads identified strictly as climate-science disinformation, InfluenceMap identified two other climate-science messaging tactics utilized by the groups considered in this study, categorizing these as 'Conflation Strategies'. The first involved the omission of 'climate change' when talking about the environmental impacts of fossil fuels and energy. This messaging instead focused on improvements in air and water pollution levels to suggest environmental issues overall were improving, obscuring the problem climate change presents. The second set of tactics is associated with conflating politics and climate science. Such ads sought, for example, to associate climate science with "leftist" rhetoric, or the claims of "alarmist" campaign groups.

- While these ads did not fit under the relatively strict definition of climate disinformation used in this analysis, they are notable still for their potential to undermine public trust in the science and thus for their supporting role to the more direct forms of climate disinformation identified above.

Collating the Results

- All ads that did not contain climate science misinformation were filtered out to provide a dataset of categorized misinformation ads. This dataset includes data on the demographic reach, impressions and spend of each advert. All ads were then analyzed in aggregate to research the state of climate science misinformation advertising in the US. Using this data, InfluenceMap was able to look at the trends in age, gender and regional distribution, as well as the prominence of topics and arguments across the entire sample.

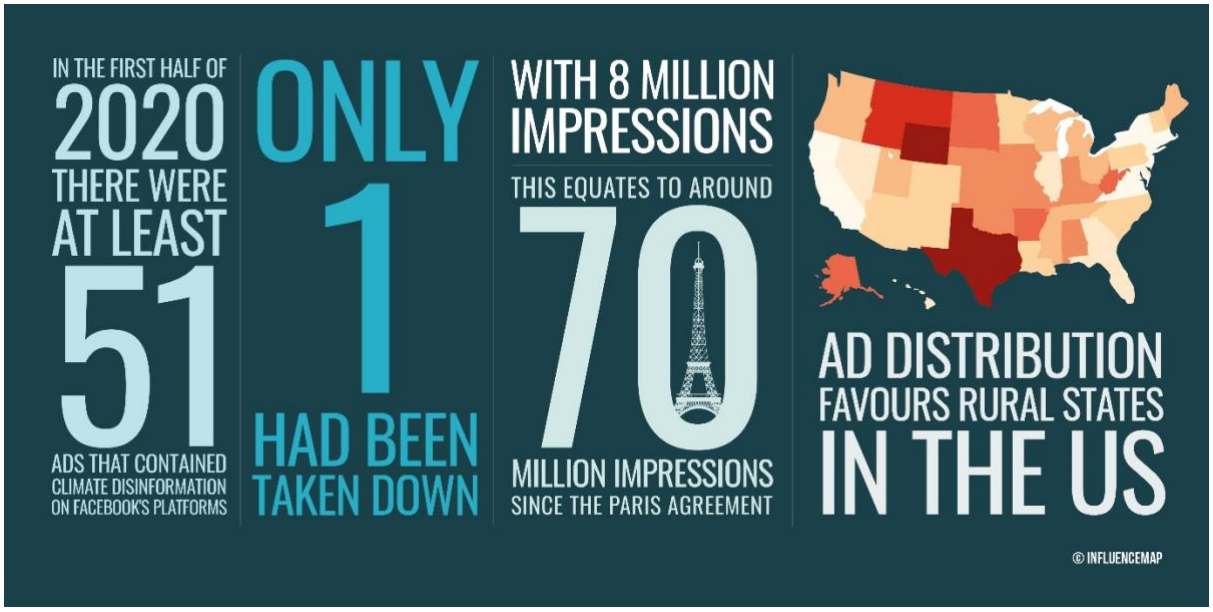
Testing for Climate Disinformation

- Each entity from the sample set found to be producing ads containing climate misinformation was then assessed against the definition of 'Disinformation' explained above. All climate misinformation ads analyzed in this process were found to meet the definition and were labeled as climate disinformation.

Results

Overview

For the first half of 2020, InfluenceMap found 51 ads classified as climate-science disinformation, on Facebook's platforms in the US. As of the 1st October 2020, only one of the 51 ads identified by InfluenceMap has been taken down by Facebook and the 50 remaining ads were able to run throughout the entirety of their scheduled lifetime. In total, the 51 climate disinformation ads found gained 8 million impressions over the 6-month period. If this rate of impressions per month is indicative of the last five years, then it would equate to over 70 million impressions on climate disinformation ads since the drafting of the Paris Agreement. InfluenceMap's research shows how Facebook advertising allows advertisers to spread climate disinformation out to millions of highly targetable viewers. In addition, 30 more ads were found which used the conflation strategies discussed in the Methodology.



The cost to the advertisers of placing these climate science disinformation ads assessed by InfluenceMap is $42k for all 51 ads collectively. The spending on the climate disinformation ads assessed equates to just over an average of $200 a day. This total is small in comparison to the advertising spend on Facebook from groups such as the American Petroleum Institute and ExxonMobil, which spent an estimated $4k and $14k a day over the same period respectively, these campaigns are not aimed at challenging climate science but tend to be directed at climate brand building and climate policy influencing. These forms of advertising, which often seek to influence the public perception of the fossil fuel industry's role in climate change or influence policy, will be explored in more depth in InfluenceMap's next two reports in the *Climate Change and Digital Advertising* series.

The Sources of Disinformation

Explicit attempts of fossil fuel value chain corporations and their industry associations to distort the science of climate change in the past have been well documented, such as *ExxonMobil's ads* in the New York Times on 'Unsettled Science'. However, within an era of increasing political and consumer concern for climate change, the corporate sector has generally abandoned such direct attacks.

Accompanying this trend, there has been a surge in spending by non-profit organizations with the sources of funding undisclosed as a result of the *2010 Citizens United* court ruling. According to OpenSecrets, in the decade following the Citizens United court ruling, there has been a *ten-fold increase* in the amount of "gray or dark money" spending on US elections compared to the decade prior. As well as direct election influencing, some of these groups have been used by their unknown funders to influence the climate agenda, including propagating climate disinformation, as *reported* by the Guardian and others.

This research has found that 9 of the 233 groups previously identified by Desmog's *Global Warming Disinformation Database* are actively using Facebook's advertising tools to distribute climate disinformation in 2020. As detailed in the table below, all of these groups take advantage of weakened US funding disclosure laws to hide sources of their funding.[1]

While the IRS Tax Code requires **501(c)(3) organizations** (nonprofit groups) to disclose on their substantial donors in annual returns, the use of third-party 'donor-advised fund' accounts - such as those used by Donors Trust or Donors Capital Fund - ensure that the ultimate identity of original donors remains anonymous. Non-profits classed as **501(c)(4)** groups, unlike 501(C)(3)s, are permitted to engage in political advocacy and, following a 2018 change to US Treasury regulations, do not need to disclose donor information in their tax filings.

Collectively, the groups identified by InfluenceMap as using Facebook advertising to spread climate disinformation have a total revenue of around $68 million per year, based on their latest tax filings shown below. However, the ultimate sources of funding for the climate disinformation ads identified on Facebook's platform in this analysis remain largely unknown. As indicated in the table, most have in the past received funding from donor-advised funds, designed in part to hide the ultimate source of the funding.

[1] *"Dark Money', Jane Mayer (Doubleday, 2016)* provides an extensive account *of how the 2010 Citizens United ruling greatly enhanced the ability of 501(c)(4) organizations to fund raise with weakened disclosure requirements as to the sources of the funds.*

Name of Entity Placing Ads	Total Political and Issue Ad Spend, Jan -July 2020 ($k)	Org Type	Donor-Advised, Donors Trust (DT) & Donors Capital Fund (DCF), Funding Most Recent Available Year* ($k)	Total Revenue, ($k)
PragerU	1,790	501(c)(3)	DT (2017): 36	18,600 (*2018*)
The Mackinac Center for Public Policy	364	501(c)(4)	DT (2018): 2,361 DCF (2016): 360	11,321 (*2018*)
Turning Point USA**	142	501(c)(4)	DT (2017): 25 DCF (2016): 100	11,008 (*2018*)
Life: Powered (Texas Public Policy Foundation)	59	501(c)(3)	DT (2017): 208 DCF (2016): 318	13,665 (*2018*)
Capital Research Center	29	501(c)(3)	DT (2017): 4 DCF (2017): 80	2,943 (*2018*)
Washington Policy Center	13	501(c)(3)	DT (2018): 67 DCF (2016): 35	3,337 (*2018*)
Clear Energy Alliance	7	Foreign LLC***	NA***	NA***
Competitive Enterprise Institute	5	501(c)(3)	DT (2017): 547 DCF (2016): 205	6,398 (*2017*)
CO_2 Coalition	1	501(c)(3)	Not found	572 (*2018*)

** Funding levels based on available data assembled by DeSmog.*

*** Receives direct funding from CEO of PragerU, CEO of the Independent Petroleum Association of America Barry Russel is an advisory council member.*

**** A foreign LLC (limited liability company) is a company initially formed in one state which has since registered to do business in another. In the US, private companies including foreign LLCs are not required to disclose their financial information.*

Analysis of Climate-Science Disinformation Messaging

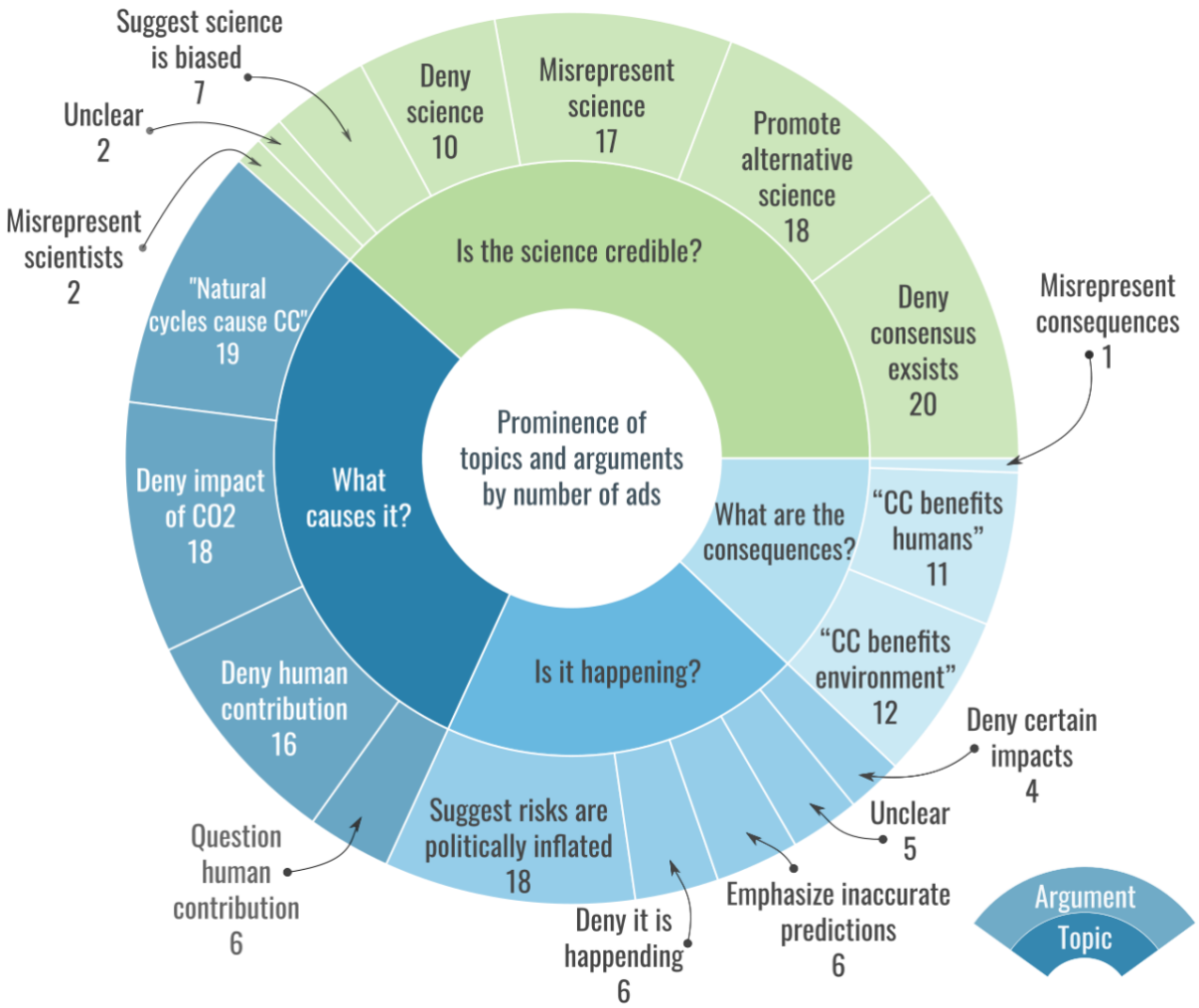
The graph below illustrates how frequently different types of messaging were deployed in ads identified by InfluenceMap as distributing climate-science disinformation. The size of each segment represents the frequency of use. Each category and sub-category of climate-science disinformation, along with the IPCC-based benchmarks used to make the assessments, are explained in detail in Appendix B.

The figure below highlights the range, spread and sophistication of disinformation messaging tactics deployed via Facebook's advertising platform, by groups looking to seed doubt and confusion with regards to the science of climate change and suggests that contesting this disinformation on the merits of the individual arguments would be very challenging.

The Prominence of Topics and Arguments in Climate Science Disinformation Ads

Size represents the number of ads the argument appears in

Multiple arguments can appear in one ad



Ads targeting the credibility of climate science and the IPCC as a climate science communicator were the most common. On a more granular level, such ads most commonly focused on denying the fact that there is a wide consensus on the science of climate change; they commonly suggested that there is a high degree of uncertainty in climate science and promoted alternative sources of climate science information.

The second largest category of climate-science disinformation ads contested that climate change is predominantly caused by the anthropogenic burning of fossil fuels releasing greenhouse gases. Within this, the main argument was that climate change is caused by natural factors rather than human activity. In addition to this, a significant portion of ads focused on contesting the role of CO_2 in causing climate change.

This analysis identified some ads challenging the extent to which climate change is real and already happening or the extent to which it poses serious threats to human and natural systems, though these were less common. No ads attempting to question the solvability of climate change were found.

Analysis of Climate-Science Disinformation Messaging Distribution

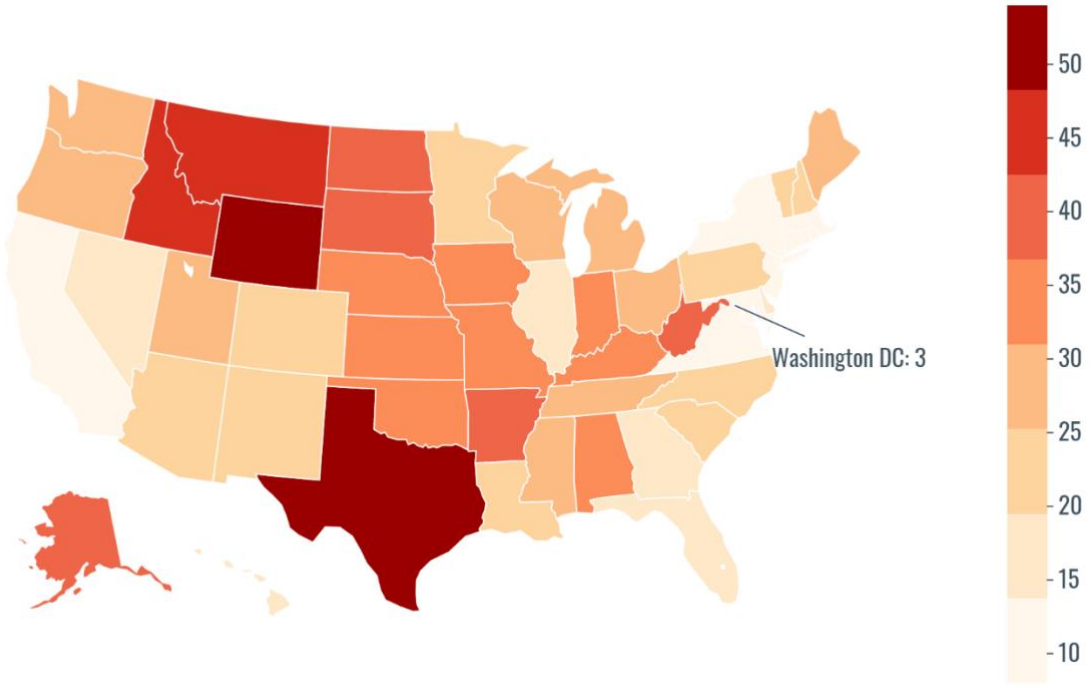
Facebook enables its customers to *target ads* using user information including age, gender, location, connections, behavior, education and interests. Using data obtained via Facebook's Ad Library API (application programming interface), InfluenceMap has further analyzed the distribution of the climate-science disinformation. The evidence overviewed below provides strong evidence that groups looking to subvert public trust in the science of climate change are actively taking advantage of Facebook's powerful targeting capabilities to do so.

By Region

The graph below illustrates this distribution at the state-level in the US. Notably, the ad distribution appears divided along rural-urban lines. As evidenced in the figure below, the country's seven most dense states by population (New Jersey, Rhode Island, Massachusetts, Connecticut, Maryland, Delaware, and New York, in order) see the lowest level of ad impressions per 1,000 people. Wyoming, the second-most rural state in the US, shows the highest number of impressions per 1,000 people, comparable only to Texas. A growing body of research following the 2016 US election suggests the *urban-rural divide* has become an increasingly important focus for electoral and public policy outcomes.

Regional Distribution of Climate Science Disinformation Ads

Impressions per a thousand people



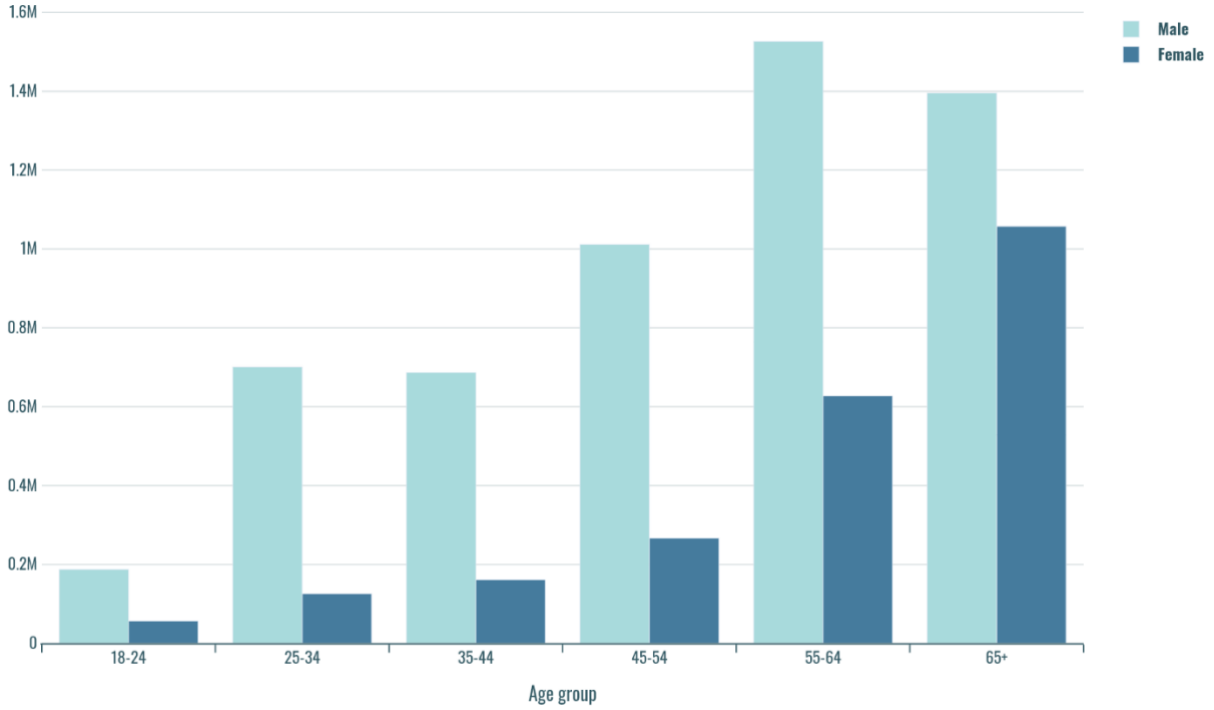
Data source: Facebook Ad Library API

By Age and Gender

The next plot shows the distribution of climate-science disinformation across different age and gender demographics in the US. Climate disinformation ads were more likely to be shown to males across all ages than females. Most male impressions are found over the age of 55, however, there is a slight uptick in the number of impressions amongst males between the ages of 25-34. Females are less likely to be shown climate disinformation then their male counterparts, however, impressions also significantly increase among those aged 55+.

Gender and Age Distribution of Climate Science Disinformation Ads

Impressions by gender and age



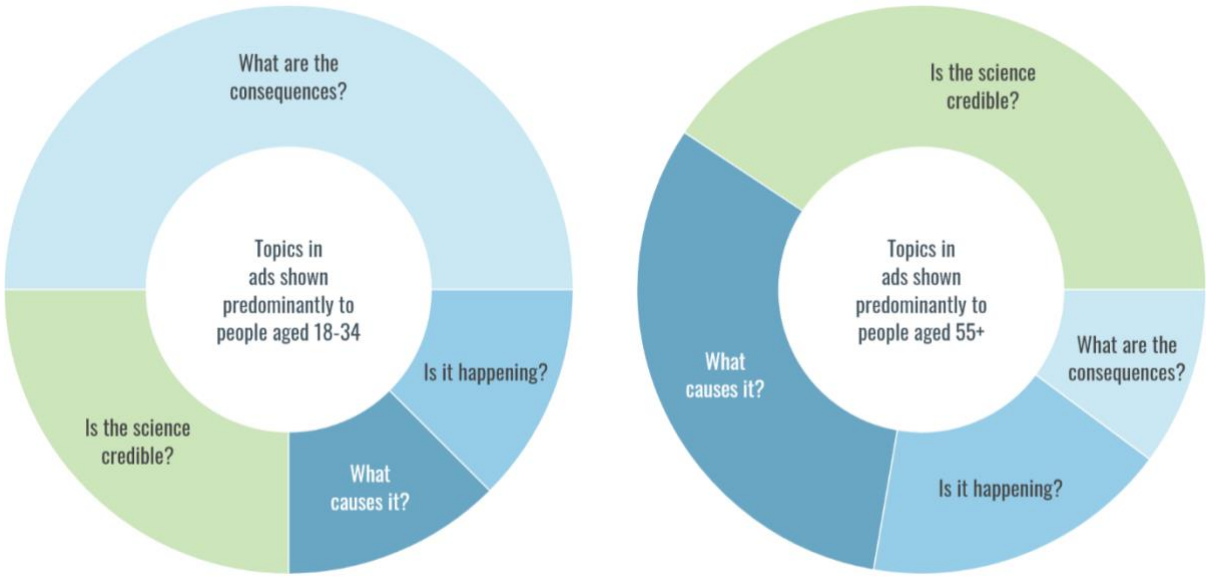
Data source: Facebook Ad Library API

Messaging by Age

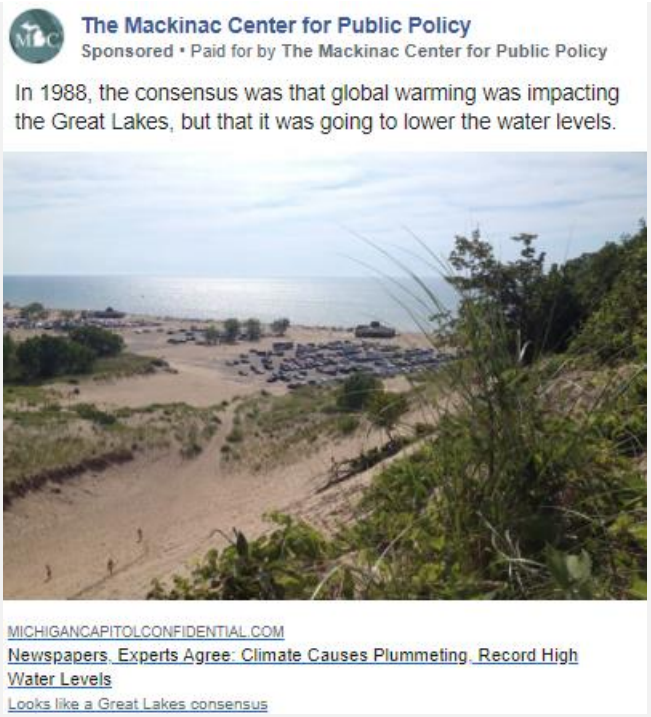
The final plot below looks at the different types of messaging shown to different age demographics. The analysis shows that ads contesting the reality of climate change and casting doubt on the validity of the science as ratified by the IPCC remain consistent. The most significant difference comes from the proportion of ads relating to the causes and impacts of climate change. Ads mostly viewed by those over 55+, tend to have a greater emphasis on contesting the causes of climate change, specifically whether climate change is caused by natural cycles or CO_2 levels, and whether it results from the human use of fossil fuels. In contrast, these types of arguments were less common among the 18-34 age group. Instead, arguments contesting the likely impacts of climate change were most common, while they were the smallest category among the 55+ age group.

Prominence of Topics in Climate Science Disinformation Ads by Age Group

Size represents how common a topic is in ads shown predominately to the relevant age group

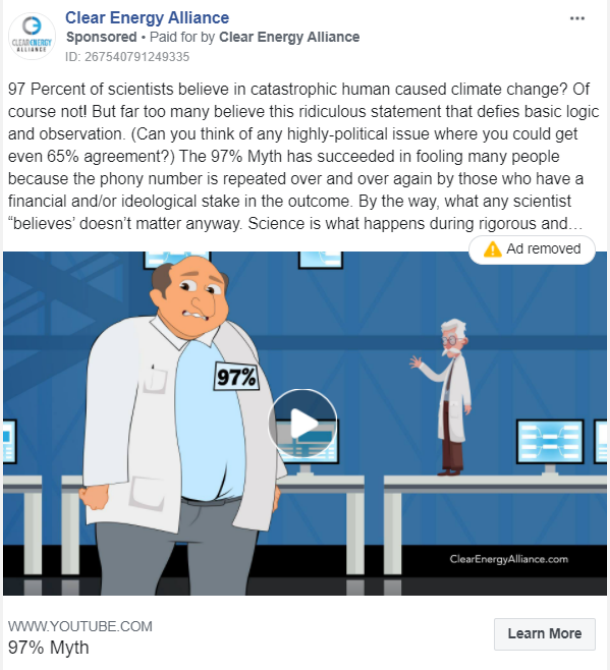


Appendix A: Examples of Climate Disinformation Ads

Advertiser	Ad Campaign Dates & Number of Ads Run	Ad Contents from the Facebook Ad Library, links working as of October 3rd 2020
PragerU	02/01/2020 - 01/10/2020 (27)	
The Mackinac Center for Public Policy	21/02/2020 - 06/03/2020 (4)	

Turning Point USA	23/04/2020 - 28/04/2020 (1)	
Life: Powered / Texas Public Policy Foundation	20/01/2020 - 25/06/2020 (9)	

Capital Research Center	19/05/2020 – 19/06/2020 (2)	
Washington Policy Center	19/03/2020 – 31/03/2020 (1)	

Clear Energy Alliance	10/06/2020 – 16/06/2020 (1) - this ad was removed by Facebook before planned campaign end	
Competitive Enterprise Institute	09/01/2020 – 14/01/2020 (1)	

CO_2 Coalition	14/01/2020 – 04/02/2020 (5)	

Appendix B: Detailed Assessment Framework

The following tables demonstrate the scoring framework for the five queries used in the research. They include an explanation of the query, the benchmark used (based on the IPCC's Special Report on 1.5C), the potential arguments used, and the relevant score.

Query 1	What causes climate change?		
Explanation	In this query InfluenceMap looked for statements addressing whether climate change refers to the warming of the atmosphere and the source of this warming is greenhouse gases, particularly CO_2, generated from the burning of fossil fuels for human use.		
IPCC Benchmark	The overarching context of this report is this: human influence has become a principal agent of change on the planet, shifting the world out of the relatively stable Holocene period into a new geological era, often termed the Anthropocene. Human influence on climate has been the dominant cause of observed warming since the mid-20th century, while global average surface temperature warmed by 0.85°C between 1880 and 2012, as reported in the **IPCC Fifth Assessment Report, or AR5 (IPCC, 2013b).** The spread of fossil-fuel-based material consumption and changing lifestyles is a major driver of global resource use, and the main contributor to rising greenhouse gas (GHG) emissions **(Fleurbaey et al., 2014)**		
Score	Potential Arguments		
	A	B	C
-1	**Question Human Impact:** Statement suggests uncertainty that the human use of fossil fuels (and subsequent production of GHGs) is the predominant cause of current global warming.	**Stress non-human causes:** Statements suggesting there are multiple reasons why the planet is warming, thereby diminishing the importance of the human use of fossil fuels as the predominant cause	
-2	**Promote Natural Cycles:** Statements arguing climate change is a natural	**Deny CO_2 Impact:** Statements denying or dismissing the significance	**Deny Human Impact:** Statements denying human contribution to climate

	phenomena. e.g. climate change is caused by natural cycles	of rising CO_2 and its effects on the temperature of the planet.	change. E.g. Human use of fossil fuels does not contribute to climate change.

Query 2	Is climate change happening?		
Explanation	IIn this query InfluenceMap looked for statements addressing whether climate change is currently happening, including to what extent it has already occurred, and whether this will continue to increase in line with predicted trajectories as ratified by the IPCC.		
IPCC Benchmark	Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a **likely** range of 0.8°C to 1.2°C. Global warming **is likely** to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate. (**high confidence**) Impacts on natural and human systems from global warming have already been observed (**high confidence**) Warming greater than the global annual average is being experienced in many land regions and seasons, including two to three times higher in the Artic. Warming is generally higher over land than over the ocean (**high confidence)**		
Score	Potential Arguments		
	A	B	C
0	**Unclear:** Position unclear		
-1	**Emphasize Past Inaccuracies** Statement suggests uncertainty in current scientific prediction through pointing to inaccuracies in previous predictions without reference to the	**Suggest Risk Politically Inflated** Statement suggests the science of climate change has been exaggerated for the purpose of elite agendas and climate alarmists. These	

	nature of scientific predictions or the much broader body of accurate previous predictions.	statements suggest climate change has been purposely exaggerated rather than suggest it does not exist	
-2	**Deny Impacts** Statements deny links between climate change and current/previous natural disasters or phenomena. This includes statements like denying the connection between climate change and increased frequency of wild fires.	**Deny Existence** Statement opposes the existence of climate change. The statements include those calling climate change a hoax or a conspiracy.	

Query 3	What are the consequences of climate change?
Explanation	In this query InfluenceMap looked for statements addressing the predicted future impacts of climate change on natural and human systems. This includes effects on health, livelihoods and economic growth among human populations, and the effects on the frequency of more extreme weather conditions, sea level rise, and increasing extinction rates for example, regarding natural systems. This query looks for the impact of rising temperature and therefore does not include a statement about the likelihood of increasing temperatures (see query 2). This query also looks for comments on the increasing level of risk association with increasingly high temperatures.
IPCC Benchmark	Climate-related risks for natural and human systems are higher for global warming of 1.5C than at present, but lower than at 2°C (**high confidence**). Climate models project robust differences in regional climate characteristics between present-day and global warming of 1.5°C, 8 and between 1.5°C and 2°C.8 These differences include increases in: mean temperature in most land and ocean regions (**high confidence**), hot extremes in mos inhabited regions (**high confidence**), heavy precipitation

	in several regions (**medium confidence**), and the probability of drought and precipitation deficits in some regions (**medium confidence**). Overshoot trajectories result in higher impacts and associated challenges compare to pathways that limit global warming to 1.5C with no or limited overshoot (**high confidence**) Climate-related risks to health, livelihoods, food security, water supply, human security and economic growth are projected to increase with global warming of 1.5C and increase further with 2°C.

Score	Potential Arguments		
	A	B	C
-1	**Misrepresent risks to environment:** Statement suggests uncertainty about how significant the increasing level of risk there is to the natural system.	**Misrepresent risks to humans:** Statement suggests uncertainty about how significant the increasing level of risk there is to human systems.	**Misrepresenting consequences:** Statement misrepresents the future consequences of climate change e.g. We're not going to have a planet to live on in 10 years' time.
-2	**Climate change benefits environment:** Statement argues or suggests climate change is either a) good for or b) will have limited-no effect on natural systems. This includes statements such as CO_2 is good for plant growth.	**Climate change benefits humans:** Statement argues climate change is either a) good for or b) will have limited-no effect on human systems.	

Query 4	Is climate change solvable?

Explanation	In this query InfluenceMap looked for statements addressing whether climate change **can** be mitigated. It is important to note this query does not deal with statement on whether we **should** mitigate climate change, just whether it is scientifically possible.
IPCC Benchmark	In model pathways with no or limited overshoot of 1.5C, global net anthropogenic CO_2 emissions decline by about 45% from 2010 levels by 2030 (40-60% interquartile range), reaching net zero around 2050 (2045-2055 interquartile range). For limiting global warming to below 2°C CO_2 emissions are projected to decline by about 25% by 2030 in most pathways (10-30% interquartile range) and reach net zero around 2070 (2065-2080). Non- CO_2 emissions in pathways that limit global warming to 1.5C show deep reductions that are similar to those in pathways limiting warming to 2°C (**high confidence)** The lower the emissions in 2030, the lower the challenge in limiting global warming to 1.5C after 2030 with no or limited overshoot (**high confidence**) Under emissions in line with current pledges under the Paris Agreement (known as Nationally Determined Contributions, or NDCs), global warming is expected to surpass 1.5°C above pre-industrial levels, even if these pledges are supplemented with very challenging increases in the scale and ambition of mitigation after 2030 - Most 1.5C consistent pathways show more stringent emissions reductions by 2030 than implied by the NDCs Anthropogenic emissions up to the present are **unlikely** to cause further warming of more than 0.5C over the next two or three decades (**high confidence)** or on a century time scale (**medium confidence**)

Score	Potential Arguments		
	A	B	C
-1	**Limited solvability:** Statement suggests we can limit future global warming, however not feasibly to 1.5-2°C.		
-2	**Unsolvable:** Statement suggests we cannot limit global warming. This includes statements such as 'it's too late'.		

Query 5	How credible is climate science?
Explanation	In this query, InfluenceMap looked at statements which address the accuracy and validity of the science of climate change as ratified by the IPCC in its special report on 1.5C. This includes not only the accuracy of the science as currently understood but also the presence of a strong consensus on the science by the scientists of the IPCC. Additionally, it includes comments on whether the IPCC is the globally leading communicator on the science of climate change.
IPCC Benchmark	**This benchmark was taken from the 'About' *page* on the IPCC's website.** The objective of the IPCC is to provide governments at all levels with scientific information that they can use to develop climate policies. For the assessment reports, IPCC scientists volunteer their time to assess the thousands of scientific papers published each year to provide a comprehensive summary of what is known about the drivers of climate change, its impacts and future risks, and how adaptation and mitigation can reduce those risks An open and transparent review by experts and governments around the world is an essential part of the IPCC process, to ensure an objective and complete assessment and to reflect a diverse range of views and expertise. Through its assessments, the IPCC identifies the strength of scientific agreement in different areas and indicates where further research is needed. The IPCC does not conduct its own research. A balanced assessment of the full range of scientific views, protected from the influence of special interests, is supported through the method of author team selection, multiple rounds of review of each report, and IPCC's Conflict of Interest Policy PCC does not conduct its own research, run models or make measurements of climate or weather phenomena. Its role is to assess the scientific, technical and socio-economic literature relevant to understanding climate change, its impacts and future risks, and options for adaptation and mitigation. Author teams critically assess all such information from any source that is to be included in the report. Approval' is the process used for IPCC Summaries for Policymakers. Approval signifies that the material has been subject to detailed, line-by-line discussion, leading to agreement

	among the participating IPCC member countries, in consultation with the scientists responsible for drafting the report. This process strengthens the SPM by ensuring that SPM statements are as direct, clear and unambiguous as possible in summarizing the material contained in the corresponding Working Group Assessment Report or Special Report. Participation of assessment authors ensures that any changes to the SPM are consistent with the underlying report and are scientifically robust.

Score	Potential Arguments		
	A	B	C
0	**Unclear:** Position unclear		
-1	**Promotes alternative science:** Statement promotes alternative source of climate science which promotes different findings to that of the IPCC	**Misrepresent science:** Statement over-emphasizes or misrepresents uncertainty in science. This includes statements emphasizing that predictions of future impacts are not 100%, without explaining the nature of uncertainty within scientific predictions.	**Misrepresent scientists:** Statement misrepresents the words of a scientist/s, for example by taking them out of context.
-2	**Deny science:** Statement argues the science of climate change ratified by the IPCC is incorrect	**Deny consensus:** Statement argues that the consensus on climate science is a myth/ exaggeration/ inaccurate	**Suggest science is biased:** Statement suggests/argues that the IPCC and/or scientific facts ratified by the IPCC as biased or political.