**The Untapped Potential of Climate Communication:**

# Harnessing Health to Drive Action

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## ABOUT THE IFL

The Information Futures Lab (IFL) at Brown University School of Public Health is a new type of university hub. Interdisciplinary researchers work alongside organizations, journalists, civic society leaders, and other sources of trusted information to respond to the information crisis as a civic and public health threat. Recognizing information as a social determinant of health, we create an evidence base and work with our partners to improve information ecosystems and strengthen the capacity of citizens to effectively access, create, and make sense of information that is crucial to their wellbeing.

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# Executive Summary

This report presents a new data analysis from the Information Futures Lab (IFL) at Brown University's School of Public Health, in partnership with Climate Week NYC and supported by The Rockefeller Foundation, revealing that only 3.1 percent of online content which mentions climate change makes any connection to health-related impacts. Research shows that communicating the health impacts of climate change can strengthen public engagement with climate issues and generate support for climate resilience policies and action. Yet, the analysis of more than 2.4 million English-language social media posts and news headlines demonstrates a significant gap: In 96.9 percent of social media and news content touching on climate change, health is not mentioned at all.

**As the climate crisis and its widespread consequences to human health worsen, communicators and advocates are missing a key opportunity to galvanize the public to support climate action.**

Other key findings of the report include that heat, mental health, and 'diseases, infections and illness' were most often mentioned in content that makes connections between climate change and health. On TikTok and X/Twitter specifically, mental health topics saw strong engagement.

The research also shows that among the social media posts that received the most engagement, purely negative messaging that offered no solutions or action was prevalent across all platforms, and especially widespread among accounts operated by news media or journalists. This finding poses difficult questions, as fear-based messaging can drive online sharing and is often rewarded by platform algorithms but is less effective in inspiring action. The analysis also showed that 11 percent of the most popular climate-related health content on social media included messages skeptical of climate change or its health impact, with X/Twitter leading this type of contrarian content (25 percent).

The researchers highlight significant opportunities for improving climate change and health communication and advocacy strategies based on these findings.

**Organizations, leaders and activists should take advantage of health as a great unifier, and communicate about the health impact of climate change – everywhere, all the time.**

In doing so, communication products are most effective when they avoid general messaging and mention the specific health risk or threat exacerbated by climate change; share stories to build a personal connection; move past "doom and gloom"-only framing and offer actionable solutions; and include conservative audiences in targeted communication strategies by applying conservative framings. Whenever possible, content should be co-created with trusted messengers and regular users who have a significant voice online. By applying these tools consistently, individuals and institutions, especially climate organizations, can effectively incorporate health messaging into their communications strategies to galvanize public action.
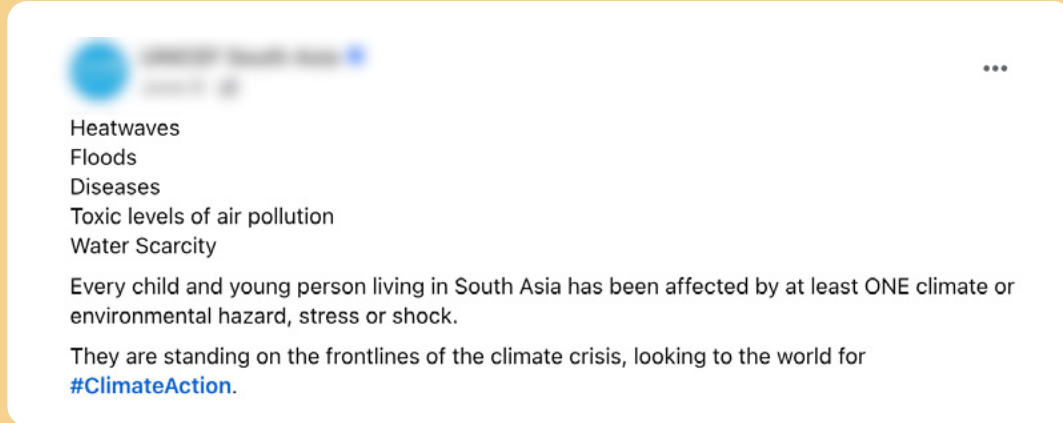
# 1

## Why connecting climate change to health matters

Global action to reduce the effects of climate change is currently underlined moving too slowly to reduce the predicted cataclysmic weather events, environmental changes and widespread health impacts that will result if CO2 emissions are not significantly reduced. Public sentiment and citizen activism can incentivize governments to take action on climate change, and climate action across communities can drive collective impact. But galvanizing the public to engage on these issues can be hamstrung by various factors, including lack of education about the ways in which climate change affects us.

**Research shows that communicating the health impacts of climate change can strengthen public engagement with climate issues and generate support for climate policies and action.**



Heatwaves
Floods
Diseases
Toxic levels of air pollution
Water Scarcity

Every child and young person living in South Asia has been affected by at least ONE climate or environmental hazard, stress or shock.

They are standing on the frontlines of the climate crisis, looking to the world for #ClimateAction.

Example of a social media post communicating about the health impact of climate change.

Health-framed messaging can be about any of the many ways in which human health is affected by climate change: for example increasing heat impacts our cardiovascular system and is a particular risk for seniors and people with underlying health conditions; ticks and mosquitos are moving to new regions and bringing with them illnesses such as EEE and Lyme disease; and severe droughts are leading to food insecurity and migration in affected regions of the world.

Connecting climate to health has been found to strengthen support for climate action across the political spectrum as well as among those who tend to be less concerned about climate change. But it is unclear how much information about the health impacts of climate change reaches the broader public, and whether the messaging is delivered in ways that effectively educate and inspire action.

To shed light on these questions, our research team at the Information Futures Lab at Brown University mapped the extent to which the health impacts of climate change were mentioned within English language posts on social media platforms — Facebook, Instagram, X/Twitter, TikTok, Youtube — and within the news headlines of the most popular English-speaking media organizations

between January 1, 2023 and July 1, 2024. The team also analyzed the most popular health content on the social media platforms to understand if accounts, including the accounts of climate change and public health institutions, employed messaging strategies and communication best-practices when communicating about the connections between climate change and health.

Social media has become a major source of information for a majority of people around the world. At the same time, news organizations still have agenda-setting influence. We explored the prevalence of health content across these platforms to better understand how extensively the health impacts of climate change are being communicated online, as well as how much engagement this content is receiving.

**In short, understanding both the extent to which and how the connections between climate change and health are communicated in news headlines and on social media is key to developing effective strategies for increasing support for climate action.**

# 2

## Missed opportunities and untapped potential to galvanize action

The core finding of our social media and news headline analysis is that by and large, health content is either absent or invisible among the greater climate change discourse online. When taking a closer look at the content of social media posts, we also found for example that a majority of content applies negative messaging without offering solutions, and that contrarian posts – posts that are skeptical of, shed doubt on, or downplay the severity of climate change or its associated health impacts as established by the current scientific consensus — make up 11 percent of popular content. This section features six key findings from our research.

# Key Findings at a glance

**1** Health issues are largely absent from climate conversations online. We found that only 3.1 percent of social media posts and news headlines connect climate change and health.

**2** In spite of including a focus on health for the first time, the United Nations climate conference COP28 did not result in a meaningful increase in online content about the health impact of climate change.

**3** Content making a connection to health, while still small, increased in spring 2024, driven by a renewed focus on heat-related messaging.

**4** Heat, mental health, and 'diseases, infections and illness' were the three leading topics among health-related climate posts. On TikTok and X/Twitter, mental health topics see strong engagement.

**5** Accounts from news media are the most frequent source of popular social media posts connecting climate and health overall. But there are significant variations across social media platforms.

**6** Climate skeptic posts make up 11% of the most popular climate-related health content analyzed.

# 1. Health issues are largely absent from climate conversations online. We found that only 3.1 percent of social media posts and news headlines connect climate change and health.
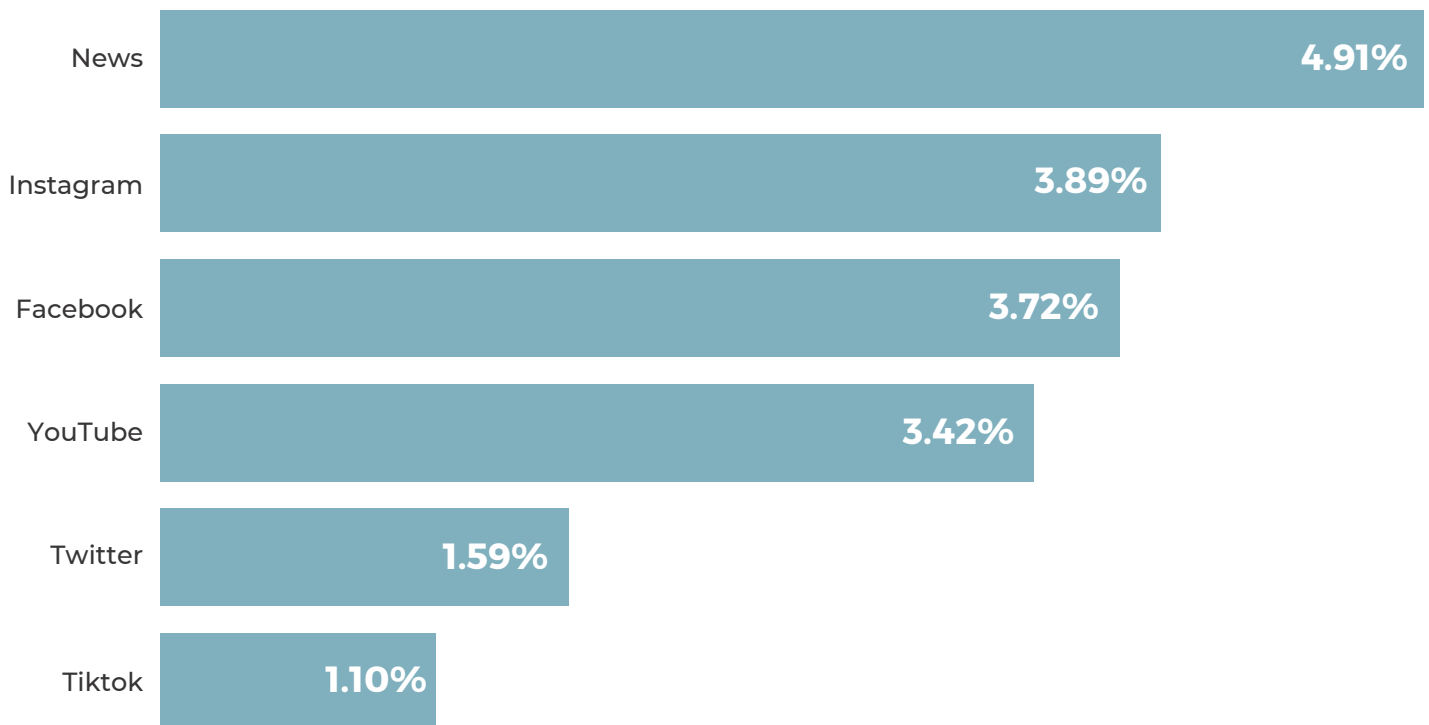
Our team identified around 2.4 million news headlines or posts on Facebook, YouTube, TikTok, Instagram, and X/Twitter that mention 'climate change', 'climate crisis' or 'global warming' between January 1, 2023 and July 1, 2024.

**Within this large data set, overall only 3.1 percent of posts or headlines make a connection between climate change and health.**

Looking at the number of posts by platform, we find that news headlines have the greatest percentage of climate change content that mention health impacts (4.91 percent), followed closely by Instagram (3.89 percent) and Facebook (3.72 percent). Twitter and TikTok have the lowest percentage of posts mentioning connections between climate change and health.

**FIGURE 1** **On average 3.1% of posts make a connection between climate change and health**

The chart shows the percentage of climate change-related posts for each platform that mention the health effects of climate change.



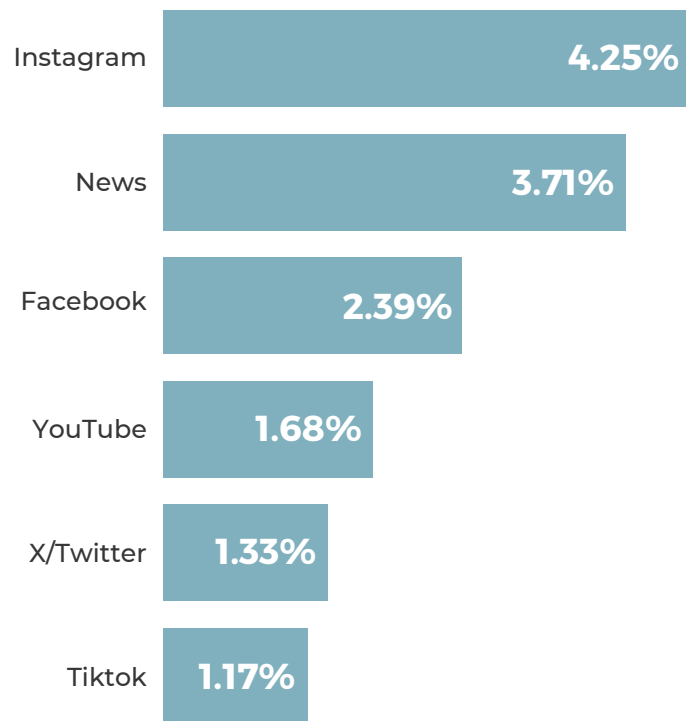| Platform | Percentage |
|---|---|
| News | 4.91% |
| Instagram | 3.89% |
| Facebook | 3.72% |
| YouTube | 3.42% |
| Twitter | 1.59% |
| Tiktok | 1.10% |

Another way to assess social media data is by looking at engagement – how people are interacting with content once it is posted. Social media data, and online information more broadly, tend to be highly stratified: A few posts, organizations or individuals account for the majority of engagement and visibility online.

Could it be that while health posts make up a small percentage of content they account for a disproportionately large share of engagement? The short answer is: No.

Within our dataset of climate change-related posts, health posts accounted on average for only 2.41 percent of total engagement. However, there was variation among platforms: on Instagram, posts connecting climate and health generated 4.25 percent of engagement while for TikTok that number falls to 1.17 percent.

**FIGURE 2** **Health posts drive 2.4% of Climate Change engagement**



| Platform | Percentage |
|----------|-----------|
| Instagram | 4.25% |
| News | 3.71% |
| Facebook | 2.39% |
| YouTube | 1.68% |
| X/Twitter | 1.33% |
| Tiktok | 1.17% |



## MAKING SENSE OF TWO KEY METRICS: NUMBER OF POSTS VS. ENGAGEMENT

Throughout this report, we reference two different social media metrics that help illuminate different aspects of online content:

1. **The total number of posts refers** to how many items of content were posted online within a period of time. For example, we collected a total of almost 208,491 Instagram posts for this analysis of climate change related content. This 'number of posts' metric shows us how many messages were put into the online information ecosystem.

2. **Engagement measures** refer to something very different – it's the number of interactions these posts or headlines generate, once they have been posted online. For Facebook and Instagram, this includes likes, shares, comments, and emoji reactions, and for X/Twitter, TikTok, and YouTube this means views. The engagement metric shows us how people are interacting with the content that's present in the ecosystem.

Note that engagement numbers should be interpreted with caution: Sometimes, high engagement comes from just one post by one very popular account, or a post that may have been boosted by the algorithm of the specific platform – so the post may not actually represent broader levels of interest in the topic.

## 2. In spite of including a focus on health for the first time, the United Nations climate conference COP28 did not result in a meaningful increase in online content about the health impact of climate change.

During the United Nations' climate conference COP28 in November 2023, for the first time an entire day was dedicated to the health impacts of climate change. However, our analysis shows that while there were some statistically significant increases on Twitter, TikTok, and Instagram in the percentage of content related to the health impacts of climate change during COP28 compared to before the event, these increases were modest. In summary, the proportion of posts mentioning the health impacts of climate change during COP28 remained low when compared to the other climate-related content, falling short of what may have been expected from such a historical and unprecedented event.

# 3. Content making a connection to health increased in spring 2024, driven by a heightened focus on heat-related messaging.

As heat-related illness and deaths are rising in the United States and other Western nations, we wanted to understand if there is an impact on the information ecosystem as public health departments are increasing their efforts to reach vulnerable populations. Also, more broadly, are there any detectable changes over time in the volume of content connecting climate change to health?
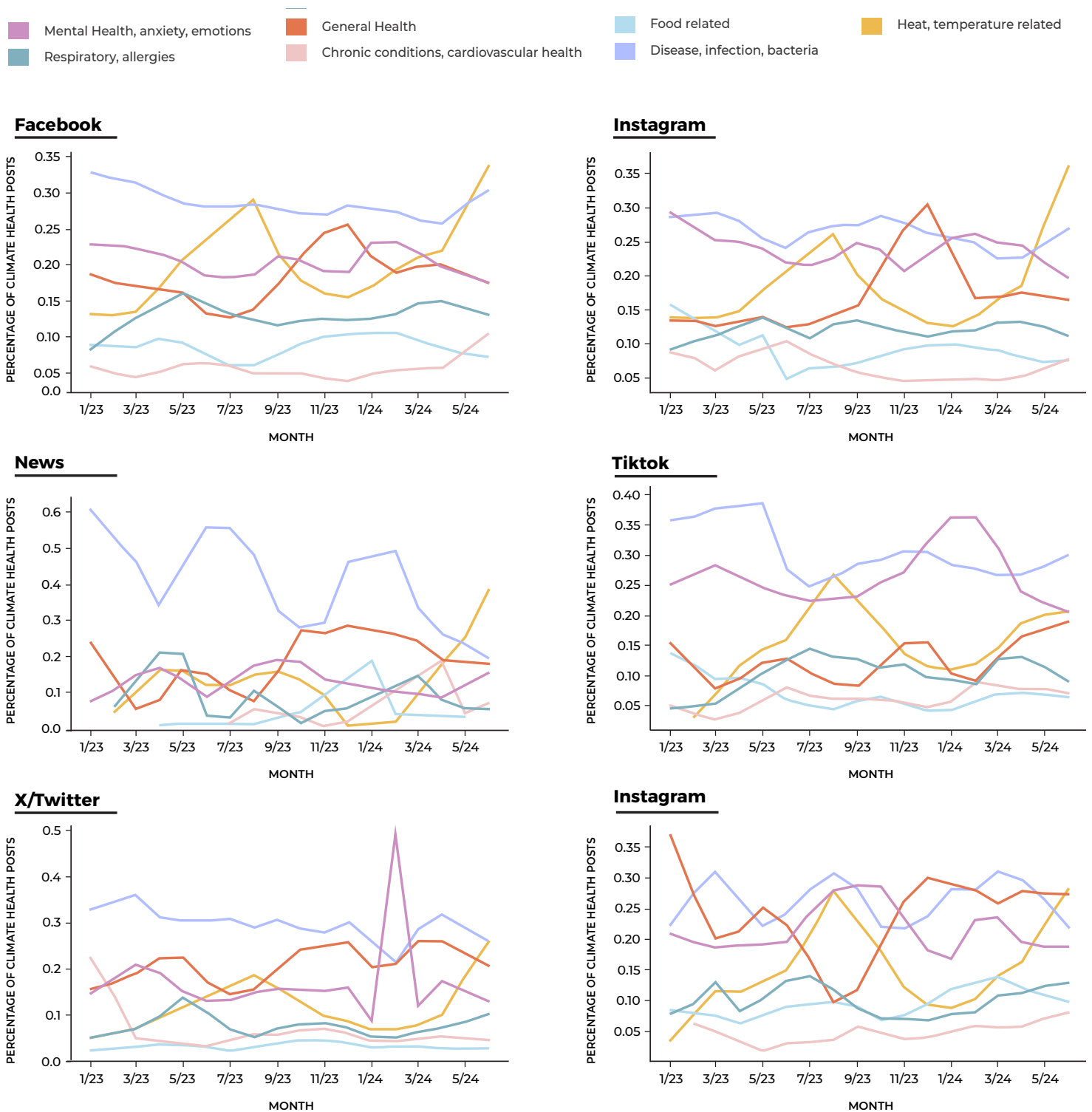
We found that over the 1.5 year period captured in our dataset, posts connecting climate and health reached their highest level during spring and early summer 2024 – higher than during the same period in 2023, and highest overall (with the exception of YouTube).

FIGURE 3 **Percentage of climate change posts and headlines mentioning health impacts**
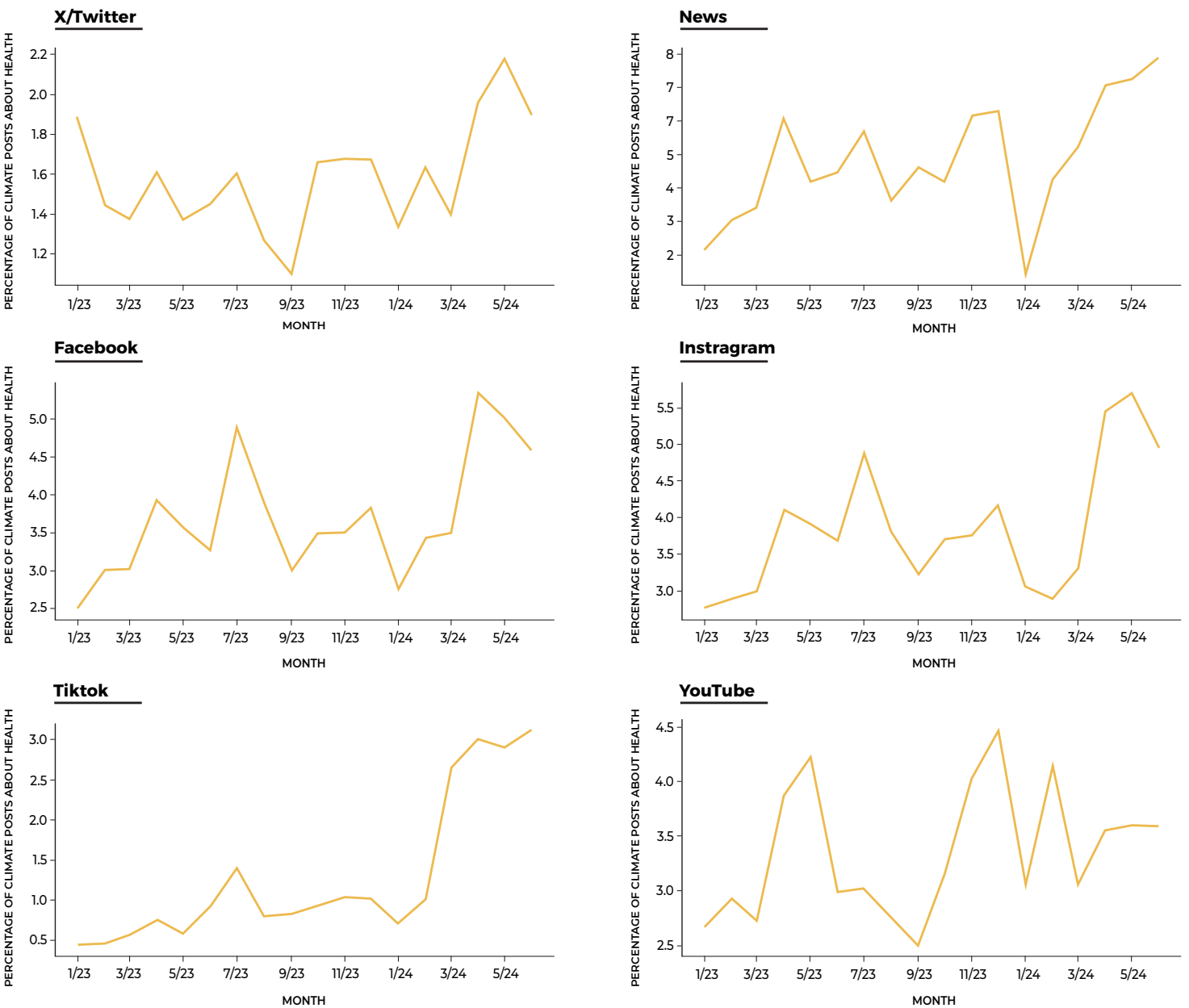
The increase in health-related posts was driven in large part by spikes in posts featuring heat-related content in the spring of 2024. The graphs below show the different health topics as a percentage of posts mentioning the health impacts of climate change over the 18 months time frame.

**Trends in health topics related to climate change across the studied platforms**



Legend:
- Mental Health, anxiety, emotions
- Respiratory, allergies
- General Health
- Chronic conditions, cardiovascular health
- Food related
- Disease, infection, bacteria
- Heat, temperature related

# 4. Heat, mental health, and 'diseases, infections and illness' were the three leading topics among health-related climate posts. On TikTok and X/Twitter, mental health topics saw strong engagement.

When connecting climate change to health, social media posts can reference different topics, such as the migration of diseases, allergies, or mental health. To understand in more detail how connections between climate and health are made online, our team created a list of health-related topic areas and mapped the prevalence of these topics in two ways: by looking at the total number of posts that mentioned a specific topic, and by looking at the engagement these topics received.

Across platforms, we found content related to diseases, infections and illness was the leading health topic mentioned in the context of climate change, followed by extreme heat and mental health. With respect to engagement, however,

mental health discussions stood out, driven by high engagement on TikTok and X/Twitter.

**For example, on TikTok, the topic 'mental health/anxiety/emotions' is found in just over 20 percent of health-related posts but it accounts for over 60 percent of health engagement on the platform.**

The charts below show the distribution of top health topics among social media posts mentioning the health effects of climate change.
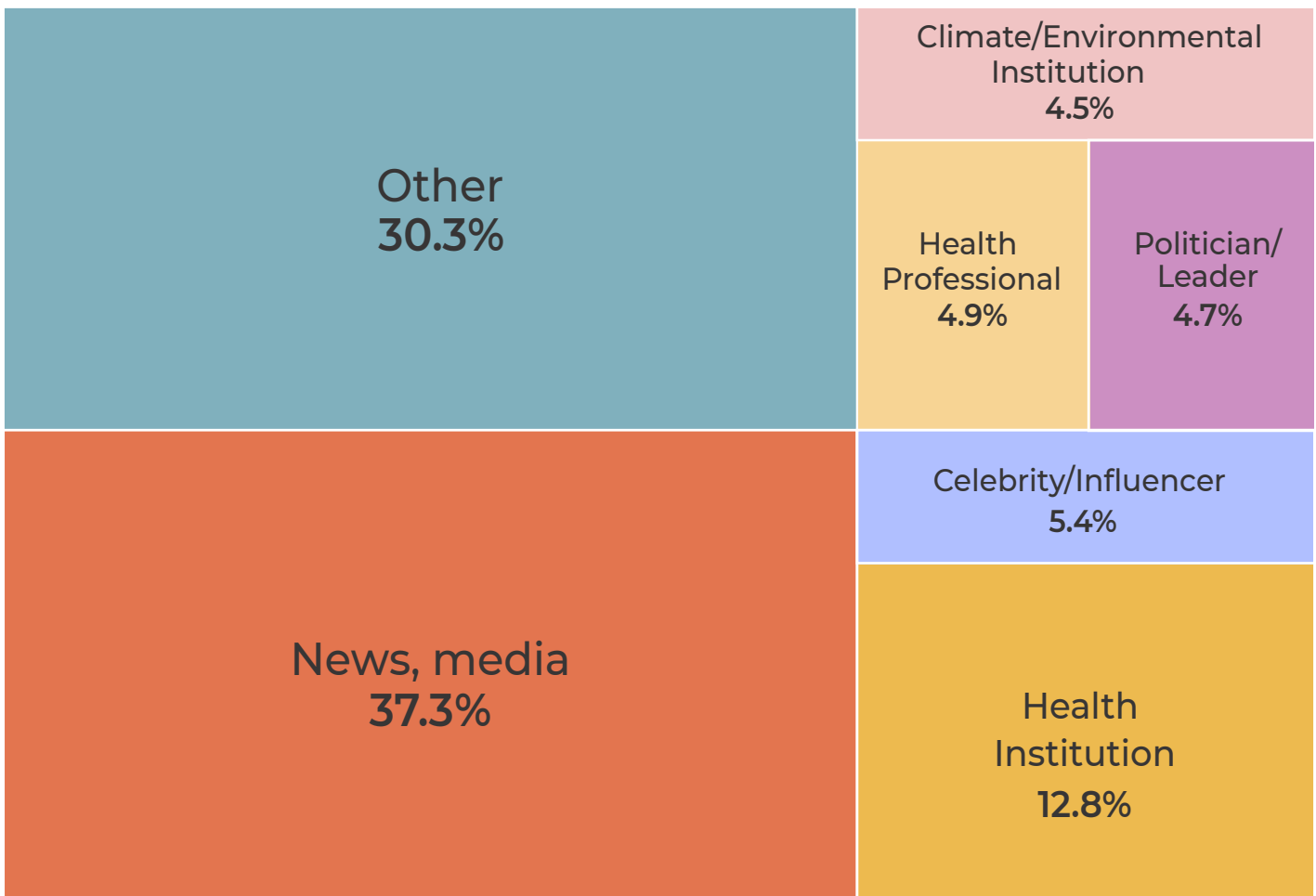
**FIGURE 5**
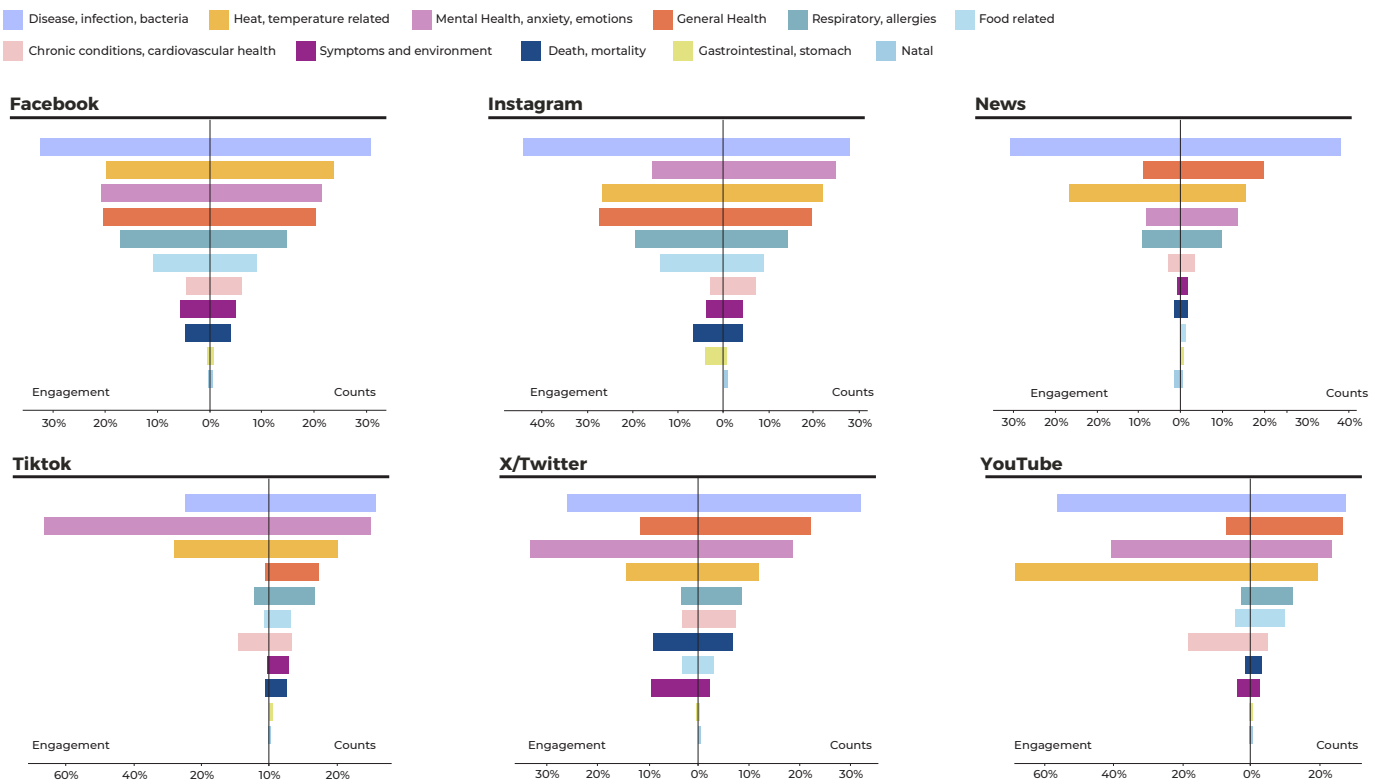


**Understanding this data:** Each chart is split down in the middle: on the left side, the bars represent the percentage of total engagement that each topic received. On the right side, the bars represent the percentage of total posts shared on each platform. The side-by-side comparison of these two metrics allowed us to see how frequently each topic appears in posts as well as how much attention or engagement those posts generate.

## 5. Accounts from news organizations are the most frequent source of popular social media posts connecting climate and health overall. But there are significant variations across social media platforms.

To understand the climate change content that makes a connection to health in more depth, we also looked at the 100 top posts on each platform that attracted the most engagement (500 posts total). Among these most-engaged-with posts, we found that posts from news media accounts stood out as the major source of posts mentioning climate change and health (37.3 percent). 'Other'

users made up the second largest source of climate and health information (30.3 percent), and health institutions the third (12.8 percent). Note that the category 'other' includes regular individual users and accounts with not enough information to identify them as any of the other categories tracked, such as politician/leader or celebrity/influencer.
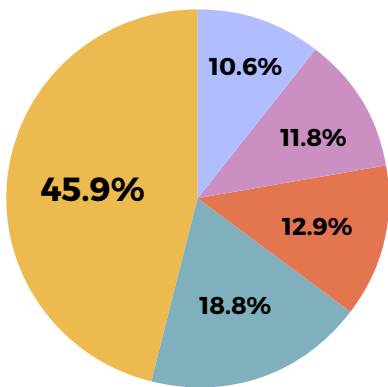
**FIGURE 6** **Sources of top social media posts connecting climate change and health**



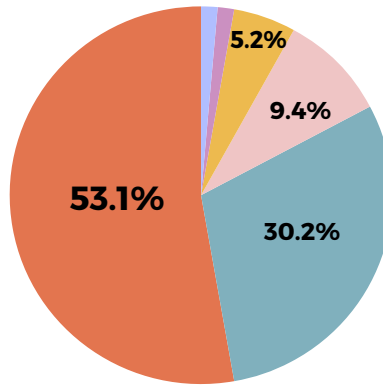| Other 30.3% | Climate/Environmental Institution 4.5% | |
| | Health Professional 4.9% | Politician/ Leader 4.7% |
| News, media 37.3% | Celebrity/Influencer 5.4% | |
| | Health Institution 12.8% | |

When further zooming in on this data on the major sources of climate and health information, we found that there are significant variations between platforms. Health institutions dominated the discourse on Facebook; news media accounts received high engagement on its content on Instagram and YouTube; and 'other accounts', including regular users, drive the conversation on TikTok and also have a sizable share on Instagram and YouTube.

**FIGURE 7** **Sources of top posts highlighting the health impacts of climate change for each platform**
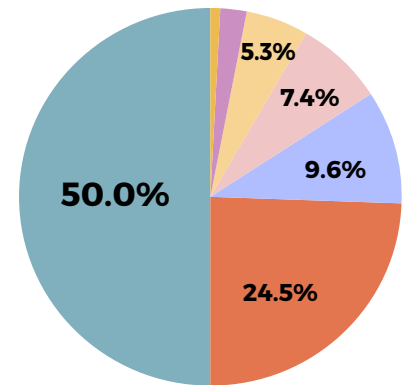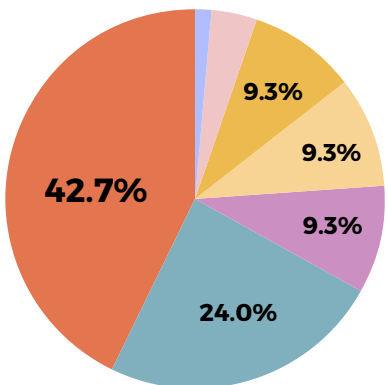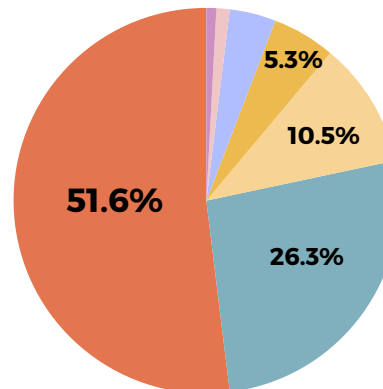


**Facebook**
- 10.6%
- 11.8%
- 45.9%
- 12.9%
- 18.8%

**Instagram**
- 5.2%
- 9.4%
- 53.1%
- 30.2%

**Tiktok**
- 5.3%
- 7.4%
- 9.6%
- 50.0%
- 24.5%

**Twitter**
- 9.3%
- 9.3%
- 42.7%
- 9.3%
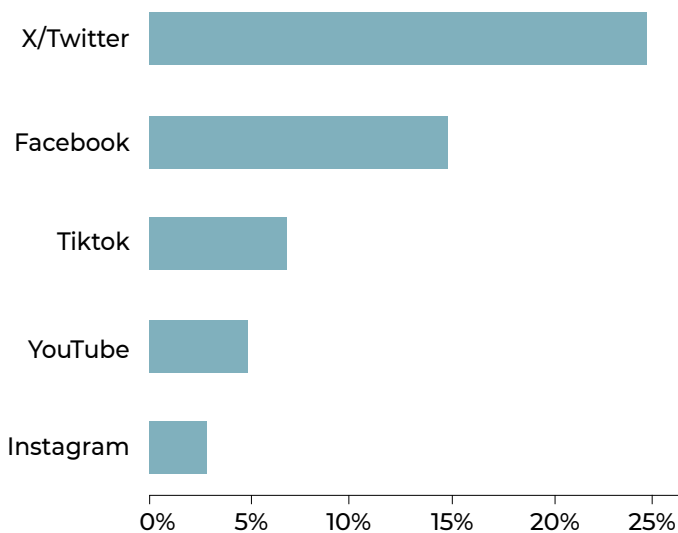- 24.0%

**YouTube**
- 5.3%
- 10.5%
- 51.6%
- 26.3%

Legend:
- Health Institutions
- News, Media
- Other
- Politician, Leader
- Celebrity, Influencer
- Climate/Environmental Institutions
- Health Professional

## 6. Climate skeptic posts make up 11% of the most popular climate-related health content analyzed.

Among the 500 most popular posts that mention the health effects of climate change, we found that 11 percent were either climate denialist, contrarian, or downplayed the effects and severity of climate change or its associated health impacts. These contrarian posts were particularly prominent on X/Twitter and Facebook, where 25 and 15 percent, respectively, of the top posts cast doubt on the science of climate change or green policy, or climate change's impacts on public health.

Content and campaigns aiming to shed doubt on the science that shows how human activity is exacerbating climate change have been around for decades. Our findings show that climate skepticism is now also actively being applied to discussions about the health impacts of climate change.

To provide a concrete example of such posts: In February 2024, several highly engaged-with tweets — including this one, which has since received 1.8 million views — aimed to discredit the US Assistant Secretary for Health Rachel Levine for explaining climate change's disproportionate impact on the health of African Americans.

FIGURE 8 **Contrarian posts among top posts on each platform.**

# 3
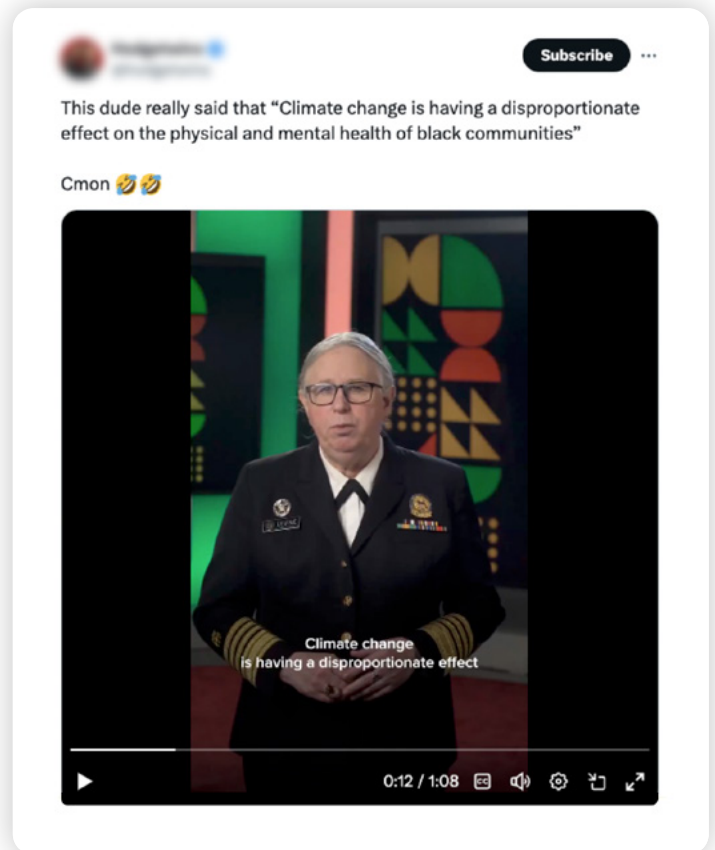
## Too much 'doom and gloom', not enough solutions and storytelling

In our analysis, we also wanted to understand what communication strategies appeared in social media posts connecting climate change to health. To map this out, we reviewed 301 academic papers that focused on climate change communication strategies and techniques, and consolidated a list of 11 broad climate change communications strategies that have been shown to influence belief, attitudes and engagement. These strategies include using storytelling techniques, providing actionable solutions, or mentioning the health impacts of climate change on children (for a full list, see Appendix). We then investigated the extent to which these 11 strategies were employed in the 500 most popular health posts. This section features three key findings from this in-depth investigation.

# Communications strategies findings at a glance:

**1** Among the top social media posts, purely negative messaging is prevalent across all platforms, and especially widespread among accounts operated by news media or journalists.

**2** A silver lining: Solution-based framing and showing a health benefit were also frequently used strategies.

**3** Health institutions and climate institutions are getting some things right, but are leaving major opportunities for connecting with audiences on the table.
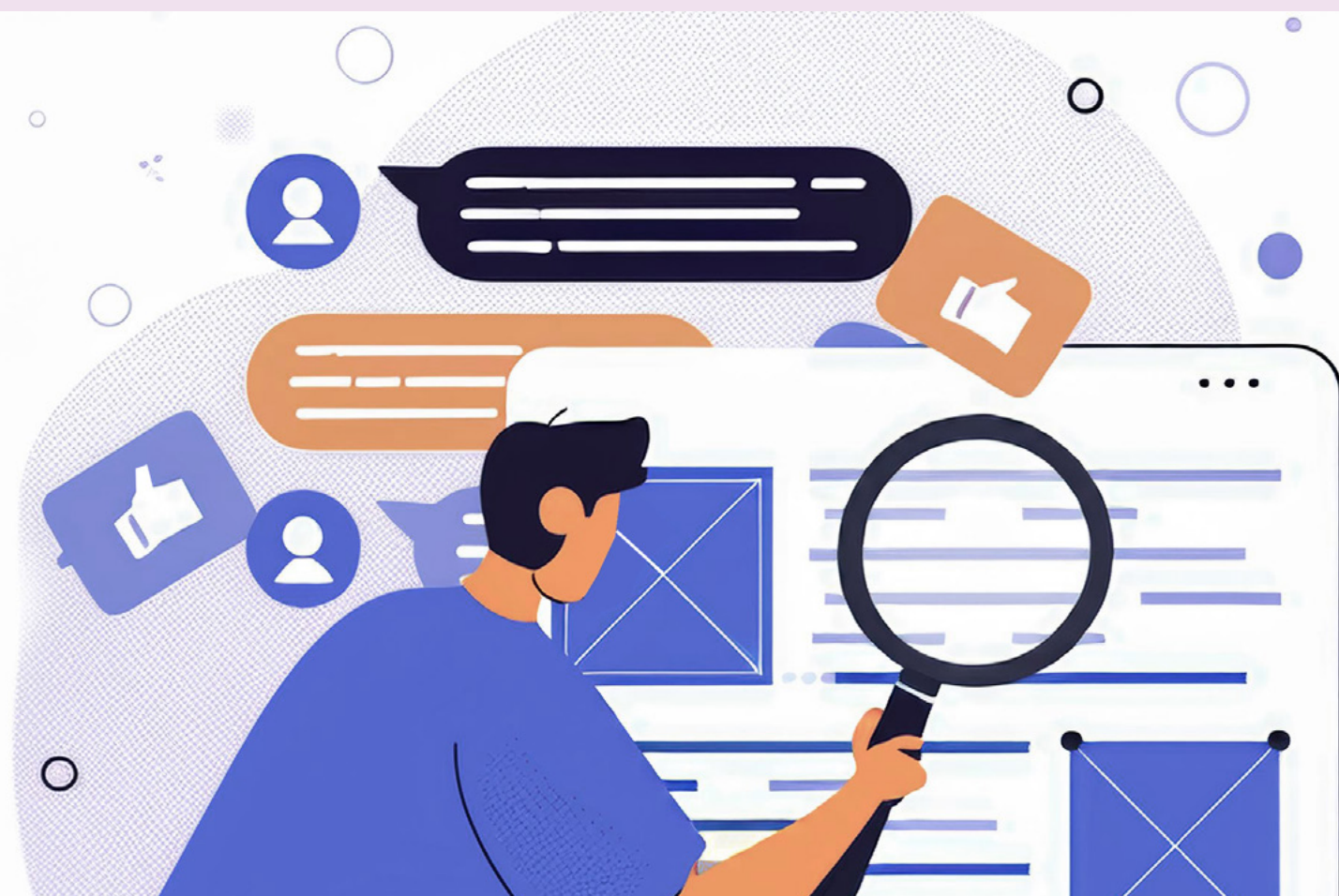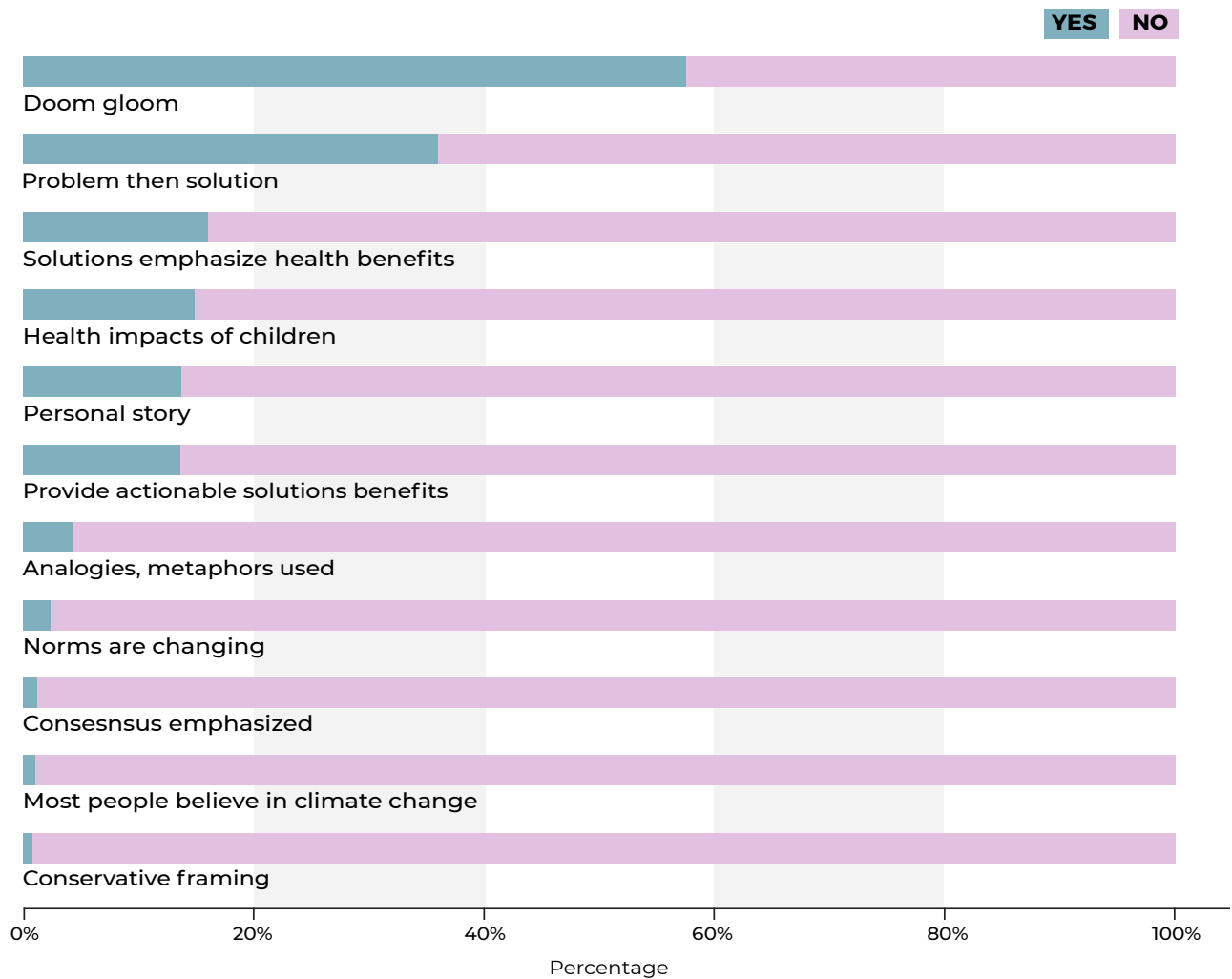
# 1. Among the top social media posts, purely negative messaging is prevalent across all platforms, and especially widespread among accounts operated by news media or journalists.

Across the five social media platforms, we found that 57.5 percent of the most-engaged-with posts highlighted only the negative connections between climate change and health without providing any solutions, whether actionable or not. While this type of messaging, sometimes called "doom and gloom", tends to spread quickly on social media, research indicates it is less effective in changing beliefs and fostering behavioral changes than other strategies.

FIGURE 9 **Communication techniques or framings present among top posts across all platforms**



YES  NO

- Doom gloom
- Problem then solution
- Solutions emphasize health benefits
- Health impacts of children
- Personal story
- Provide actionable solutions benefits
- Analogies, metaphors used
- Norms are changing
- Consesnsus emphasized
- Most people believe in climate change
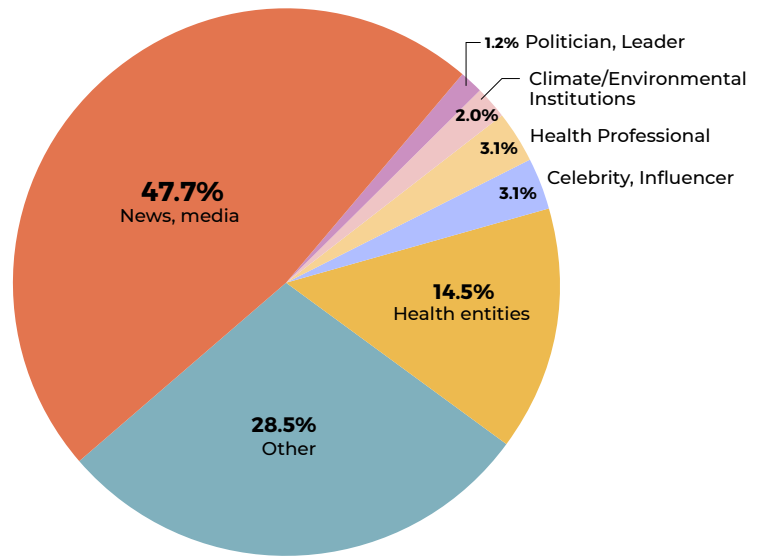- Conservative framing

Percentage

An example of an X/Twitter post connecting climate change to health through a negative framing without offering solutions or opportunities to act.

This is not surprising, given that news media are the leading source of information that connects climate change to health in our analysis, and that traditionally, news organizations are focused more on describing challenges than featuring solutions.

FIGURE 10 **"Doom-and-gloom" messaging among top posts by sources**



- 1.2% Politician, Leader
- 2.0% Climate/Environmental Institutions
- 3.1% Health Professional
- 3.1% Celebrity, Influencer
- 47.7% News, media
- 14.5% Health entities
- 28.5% Other

Looking at each platform specifically, we found that "doom and gloom" messages had the highest concentration on Instagram (72 percent of posts), followed by Youtube (59 percent) and Twitter (60 percent). Popular content was much less likely to rely on negative messaging on TikTok (46 percent).

Given this outsized presence of negative messaging, we wanted to understand what we could learn from mapping out the sources of the "doom and gloom" messaging specifically. Here, we found that social media accounts by news media are the leading source of messaging that portrays climate change's negative impacts on health without providing readers with any advice or solutions. Over 47 percent of the negative-framing posts came from news outlets or journalists.

Overall, the abundance of content focusing exclusively on the negative impacts of climate change reveals a core challenge inherent in our contemporary information ecosystems:

**The ways in which social media platforms reward negative content, and potentially amplify it, can increase incentives to post "doom and gloom" messaging – and discourage the creation of hopeful, solution-based messages, even though such content is more effective in inspiring action.**

## 2. A silver lining: Solution-based framing and showing a health benefit were also frequently used strategies.

The second most common strategy applied across content connecting climate change to health was 'describing the problem and then sharing a solution', followed by 'solutions that emphasize a health benefit'. Evidence shows that both of these strategies can be effective at fostering agency, empowering people to take action, and engaging the public and building political will.

Two other key evidence-based strategies, however, were largely missing in the online dialogue. Social media posts that provide actionable solutions and posts that use storytelling techniques and share the experiences of real people made up only a small sliver of the top social media posts.

The graph below shows, in percentages, the extent to which each of the 11 communications techniques identified by the team appeared in the most popular posts on each platform.

**FIGURE 11** Communication techniques found in top posts for each platform
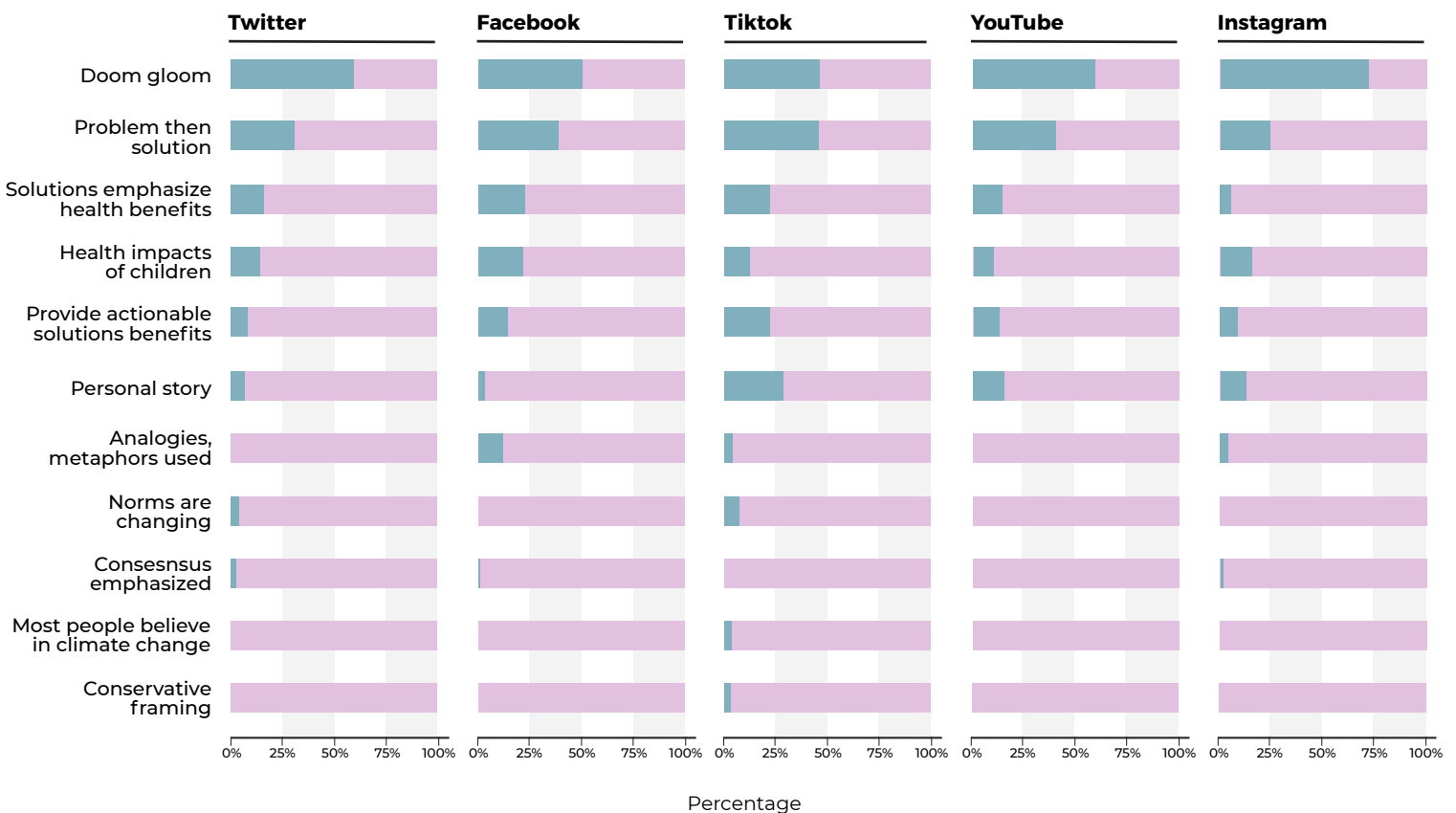
## 3. Health and climate entities are getting some things right, but are leaving major opportunities for connecting with audiences on the table.

Major climate change organizations and leading health organizations can reach large audiences worldwide. They also have experience with the challenges and opportunities of communicating about topics as complex as climate change and health. So, what strategies are these key communicators of climate change and health applying? Are they communicating differently?

Considering that both health and climate organizations are very active on Facebook, we annotated a separate set of 200 Facebook posts — 100 from climate change-focused entities and 100

from health-focused entities – to explore this question. Both types of organizations are getting a few key strategies right: We found low prevalence of "doom and gloom"-only messaging, and consistent use of the "explain the problem, then share a solution" technique.
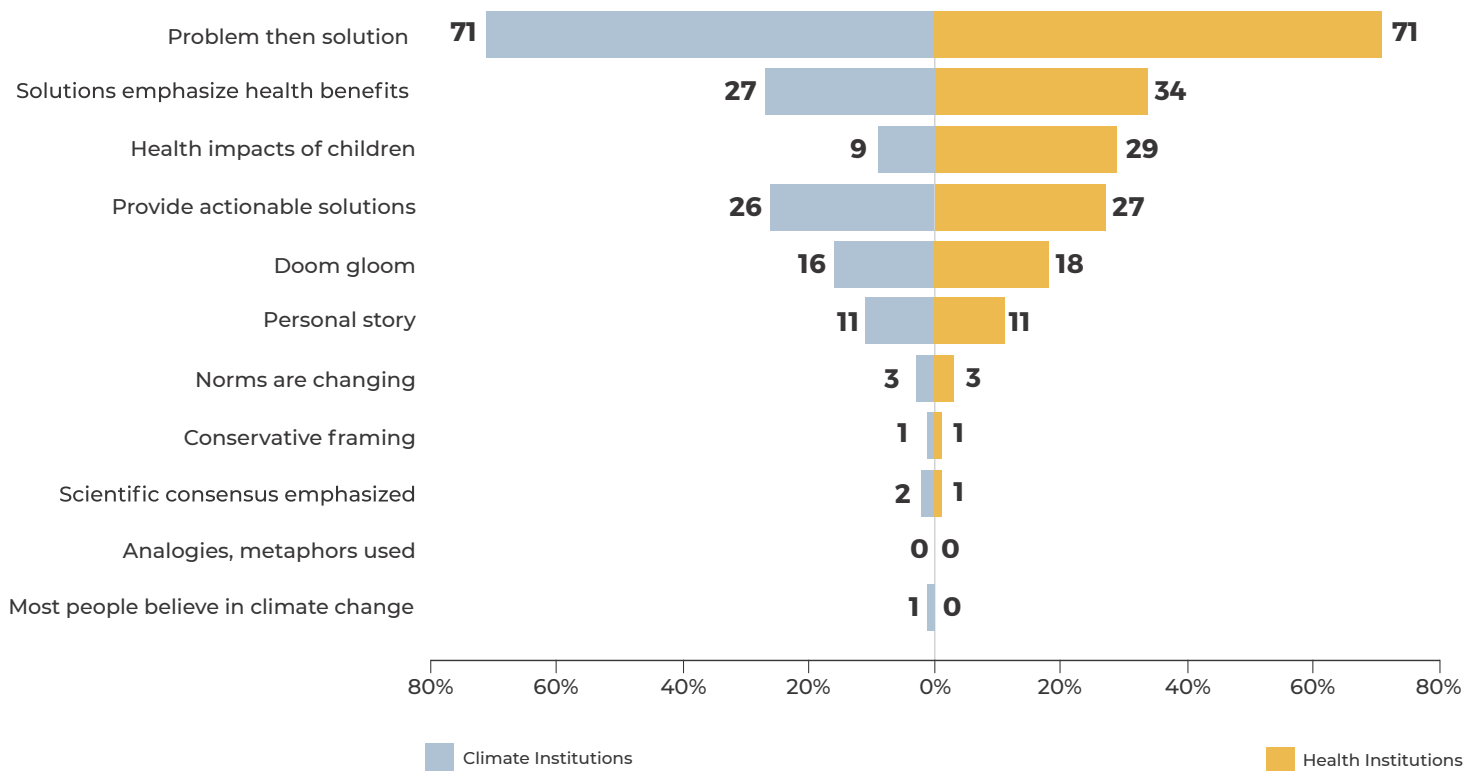
While content providing actionable solutions and messages that emphasize health benefits were present, these essential and effective strategies for initiating people into learning more about climate change and its impact on health should be used more frequently.



Example of a post sharing actionable solutions to an immediate health concern linked to the climate crisis.

**Our biggest surprise was the low usage of storytelling by both organizations – only 11 percent of top Facebook messages by either a climate or a health organization used personal stories, in spite of their well-established power to make complex topics easier to understand and to evoke emotions that can motivate people to take action.**

Communication techniques and framings used in Facebook posts by climate and health institutions



| | Climate Institutions | Health Institutions |
|---|---|---|
| Problem then solution | 71 | 71 |
| Solutions emphasize health benefits | 27 | 34 |
| Health impacts of children | 9 | 29 |
| Provide actionable solutions | 26 | 27 |
| Doom gloom | 16 | 18 |
| Personal story | 11 | 11 |
| Norms are changing | 3 | 3 |
| Conservative framing | 1 | 1 |
| Scientific consensus emphasized | 2 | 1 |
| Analogies, metaphors used | 0 | 0 |
| Most people believe in climate change | 1 | 0 |

Climate Institutions        Health Institutions

# 4 RECOMMENDATIONS

## Communicate about health impacts, be specific, and offer solutions

At a time of need to galvanize public and political actions that can minimize the harm of climate change on people and the planet, our findings underscore the urgent need for a shift in how leaders, organizations, and activists communicate about climate change. Our key recommendations include centering health in climate change communication broadly; making messages specific and actionable; and co-creating content with those who people already trust.

# Recommendations at a glance:

**1** Communicate about the health impact of climate change – everywhere, all the time. Especially if you are a climate organization or institution.

**2** Avoid general messaging and mention the specific health risk or threat exacerbated by climate change.

**3** Share stories to build a personal connection.

**4** Move past "doom and gloom"-only framing and offer actionable solutions.

**5** Include conservative audiences in your communication by applying conservative framings.

**6** Co-create content with trusted messengers and regular users who have a voice online.

### One message doesn't fit all: Know your audience.

Note that one core principle underlies all the recommendations in this report: **Effective communication requires tailored and targeted approaches**. Communicators should strategically leverage the platforms and spaces, both online and offline, where their unique audiences turn to for information. It is critical that information shared is accessible and relevant, by applying techniques such as using language free of technical jargon or overly complex ideas, incorporating visual elements, and translation into the audience's primary language.

# 1. Communicate about the health impact of climate change – everywhere, all the time. Especially if you are a climate institution.

Research shows that communicating the health impacts of climate change is particularly effective at engaging the public on climate issues, with the potential to increase support for climate change mitigation policies and to motivate people to take action themselves. Yet, only 3.1 percent of social media posts and news headlines in our study made a connection between climate change and health.

**To empower more people to actively participate in protecting the climate and their health, organizations, government agencies, and advocacy groups — what we refer to as institutions — should start prioritizing health messaging in their communication strategies immediately.**

**Climate institutions have an especially important role to play.** Our analysis of social media posts shows that only 4.5 percent of posts making a connection between climate change and health came from climate institutions. That's lower than the amount of climate and health content shared by politicians or celebrities/influencers, and less than a third of content shared by health institutions. On Facebook and YouTube, climate institutions are barely or not at all present among sources of most-engaged-with content on climate and health.

Climate institutions should start integrating health impacts as a core communications strategy to deepen the public's concern about the warming climate and motivate people to take action.
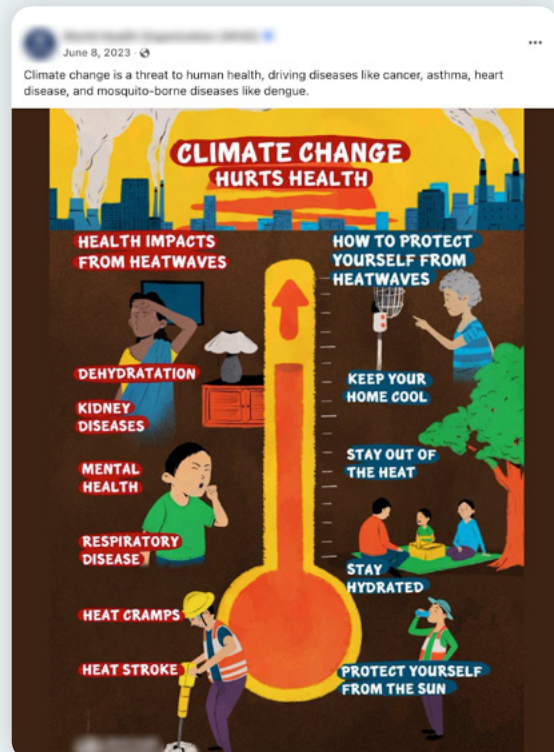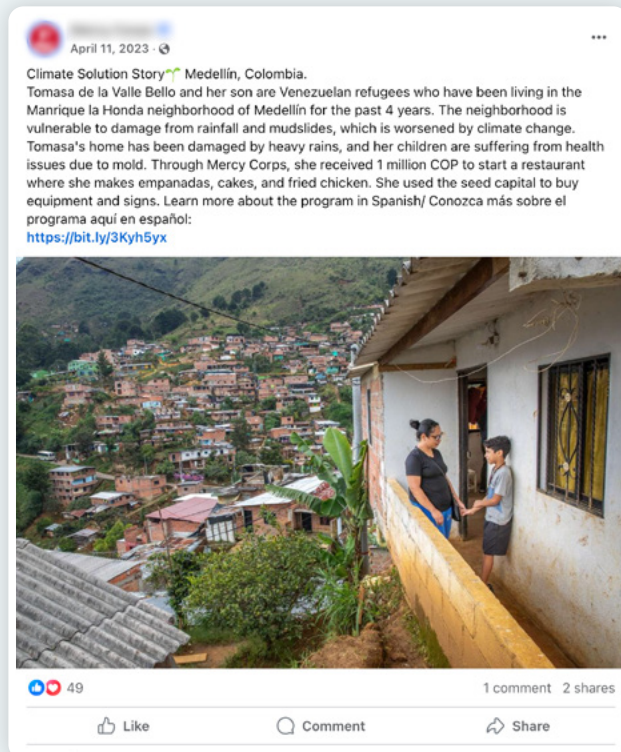
## 2. Avoid general messaging and mention the specific health risk or threat exacerbated by climate change.

In our analysis, we found content that makes general statements about the health impacts of climate change, such as "Climate crisis harms our health!" was common across most platforms.

While it is important to highlight the broad impacts of climate change on human health, messaging is more effective in changing attitudes and engaging audiences when it is more concrete rather than abstract. Research has found that concrete language is more easily processed than abstract language, making complex ideas more understandable. Precise and specific language helps people visualize a concept, making it feel more real and tangible.
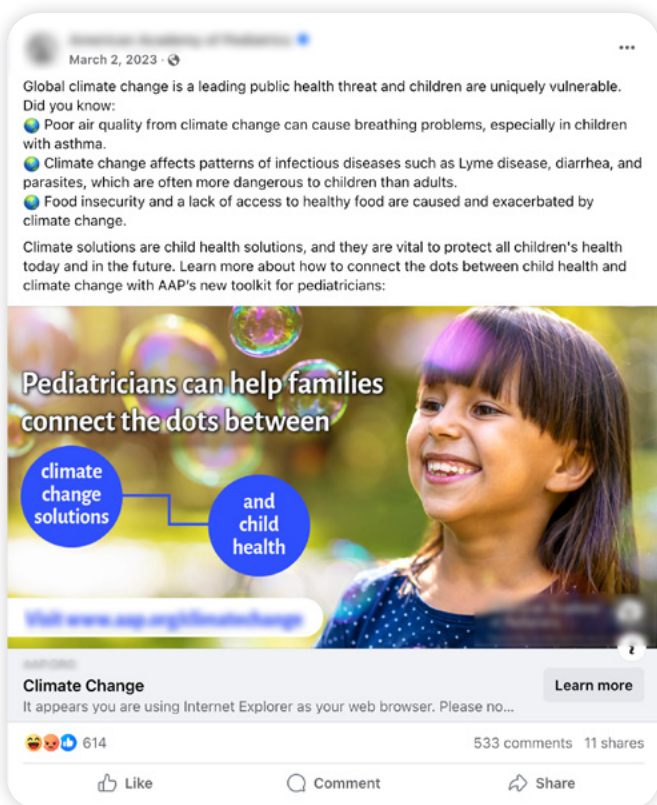




Messages should underline a particular health impact or threat of climate change, such as "Did you know: Poor air quality from climate change can cause breathing problems, especially in children with asthma." When content shares how a specific health issue caused or exacerbated by climate change poses a concrete risk to humans — such as an increase in tick-borne illnesses such as EEE or Lyme disease — people have more incentive to become engaged on the issue.

# 3 Share stories to build a personal connection

On average, only 13.7 percent of the most popular health-related climate content on social media featured stories of people whose health has been impacted by climate change (also see finding 7). Further analysis of Facebook posts from health and climate institutions showed an even lower usage of this communications technique: only 11 percent of health or climate institutions used personal narratives.
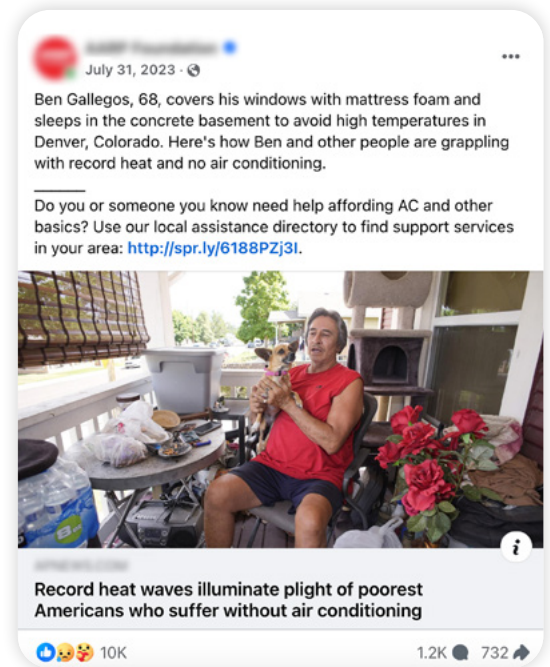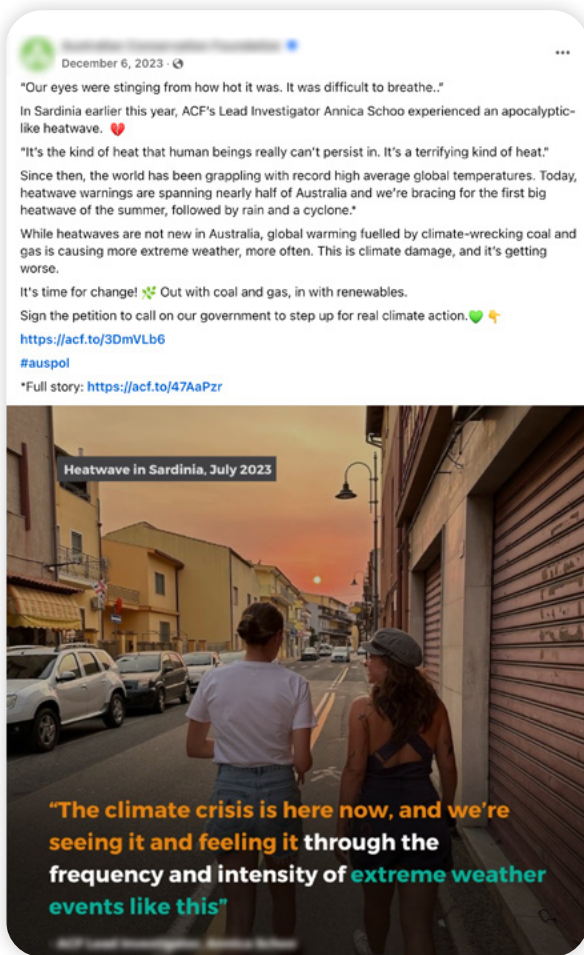






To engage more people in climate change conversations and action, communicators should use storytelling techniques more often. Personal narratives and storytelling are powerful instruments for connecting with audiences by making information personally relevant. By weaving facts together with real-life experiences of individuals affected, complex information is easier to understand and absorb, remembered longer than facts alone and can evoke the emotions that motivate people to take action. Whether through text or images or combinations of both, personal stories are an easy-to-implement strategy to help audiences grasp the tangible health consequences of a changing climate.

# 4. Move past "doom and gloom"-only framing and offer actionable solutions.

Almost 60 percent of the most-engaged-with climate and health content highlighted only the negative connections between climate change and health, without offering solutions or opportunities to act. News outlets or journalists had the largest share of this type of content (47.7 percent). At the same time, less than 15 percent of all climate and health related content offered any actionable solutions to either climate change or the associated health impact.

This data points to concrete opportunities for climate change communications: Evidence shows that hope and solution-oriented messaging, such as, providing actionable solutions and emphasizing the near-term health benefits of acting against climate change, effectively engages audiences on climate change issues.





**Whenever possible, communications should provide information that individuals, communities, policy makers, businesses and others can act on straightforwardly in moments of decision making.**

For news media specifically, including more solutions-based coverage is essential to engaging audiences in learning more about climate change and how the impact of people and the planet can be mitigated.

## 5. Include conservative audiences in your communication by applying conservative framings.

In our analysis, we found almost no message framings tailored for conservative audiences, showing how commonly conservatives are excluded from climate communications. This oversight is particularly crucial in countries like the US, which has considerable influence in shaping the global climate agenda and is home to a substantial conservative population that is largely still undecided about climate change.

Successfully mitigating climate change and its impact on health requires the inclusion of conservative America. Research has shown that messages with conservative framings — including those which evoke patriotism, highlight climate change as a national security issue or feature solutions that fit with conservative values like sustainable agriculture — can lower conservative Americans' resistance to climate science and motivate them to take action. Organizations should include conservative audiences in their communications strategies, and apply messages that specify the health impacts of climate change, utilize conservative framings and align with policy preferences, to positively influence conservative attitudes regarding climate change and inspire action.
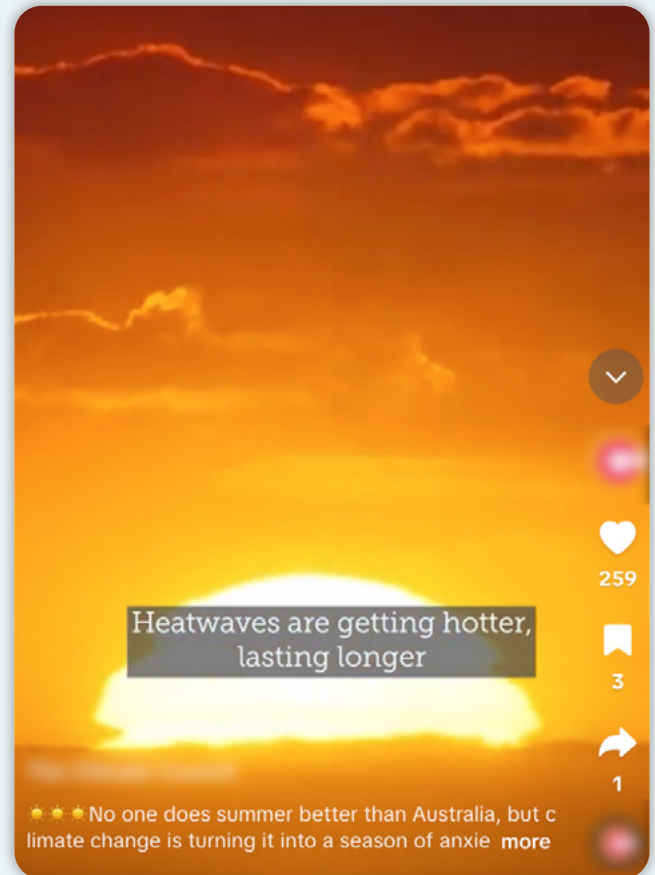
## 6. Co-create content with trusted messengers, initiatives, and regular users who have a voice online.

Strikingly, our analysis reveals that only 22 percent of the most-engaged-with climate and health posts came from accounts that may be considered subject-matter specialists, such as health professionals, climate and environmental groups and experts, and public health organizations and institutions. More than 30 percent, however, came from people, efforts or organizations we grouped as ;other.' While the 'other' category includes some unidentifiable accounts, it shows the importance of regular users and small organizations or initiatives (also see finding 6).

Communicators should be collaborating and co-creating with these online voices who may not be experts but have a substantial following. They can support communities, organizations and institutions in crafting and amplifying tailored messages that connect new audiences with climate and health content. Such partnerships could broaden the information's reach, and engage audiences who might not typically interact with expert-driven climate content but are more likely to engage with a messenger with existing relationships to their community and who they find relatable.

# 5

**METHODS**

## How we mapped climate change & health conversations online

By taking an information ecosystem approach and using mixed methods, our team was able to identify key challenges and opportunities for climate change and health communications across platforms. Below is a brief description of the approach that underlies the data and findings shared in this report, organized by each research question we were seeking to answer. We discuss the limitations of our methods in the appendix.

## Measuring Prevalence

- **Research questions:** *What percentage of climate-related social media posts make a connection to health? What percentage of climate-related news headlines make a connection to health? And are there changes or trends over time?*

- **Key metric:** Percentage of posts on social media platforms and news headlines that connected climate change to health.
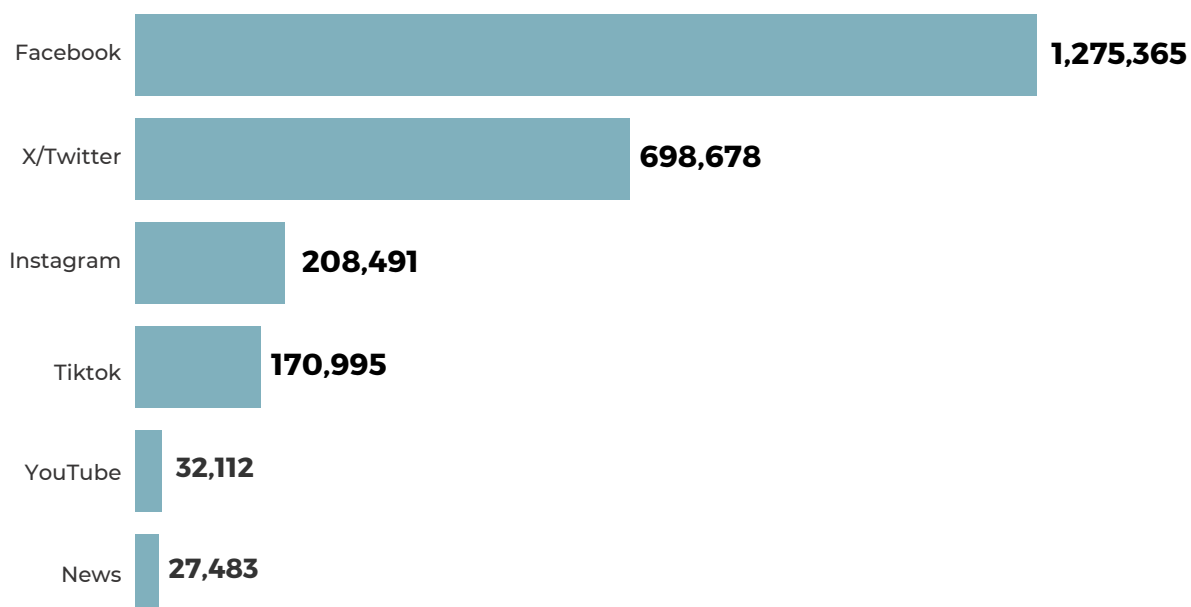
To calculate the prevalence of content that connects climate change to health, the team gathered data from Facebook, Instagram, Tiktok, X/Twitter, and YouTube (content was in English) from January 1, 2023 to July 1, 2024, using various public or academically accessible application programming interfaces (APIs). We collected news headlines separately using Meltwater, a media monitoring platform that maintains a large dataset of news sources.

**We included any post or headline that used the terms "climate change", "global warming", or "climate crisis". In total, we gathered just over 2.4 million social media posts and news headlines.**

Through a review of the literature on the health impacts of climate change, the team assembled a list of nearly 600 health terms, which was used to further filter the dataset. The team then annotated a dataset of 3,100 posts and used this dataset to train a support vector classifier (SVC) to identify chunks of texts in which the health impacts of climate change were mentioned. The classifier was deployed on available text fields for social media posts on each platform and on news headlines to identify health-related posts. . Once classified, we used summary statistics and data analysis to calculate the percentage of social media posts and news headlines connecting climate change and health.

**FIGURE 13** **Number of climate change-related posts gathered for each platform**

Number of total posts, videos, news headlines collected that included either "climate crisis", "climate change", or "global warming" from Jan 1, 2023 to July 1, 20

| Platform | Count |
|---|---|
| Facebook | 1,275,365 |
| X/Twitter | 698,678 |
| Instagram | 208,491 |
| Tiktok | 170,995 |
| YouTube | 32,112 |
| News | 27,483 |

# Measuring Engagement

- **Research question**: *How much engagement do posts and news headlines connecting climate change and health receive?*

- **Key Metric:** Percentage of engagement that posts and news headlines connecting climate change and health receive.

Engagement refers to the number of interactions the posts or headlines we gathered generated, once they were posted online. For Facebook and Instagram, this includes likes, shares, comments, and emoji reactions, and for X/Twitter, TikTok, and YouTube this means views. For news headlines, engagement was calculated by adding the total number of Facebook, Twitter, and Reddit interactions each article received. These metrics were provided by Meltwater.

Similar to above, we used summary statistics and data analysis to calculate the percentage of engagement received by social media posts and news headlines connecting climate change and health.

# Identifying health topics mentioned

- **Research question:** *Research question: When social media posts and news headlines make a connection between climate change and health, what health topics are they covering?*

- **Key Metric:** Health topics are expressed as a percentage of posts and news headlines that connect climate change and health.To generate data on what health topics were mentioned in both posts and headlines about the health impacts of climate change, we created a dictionary of topics and keywords. To do so, we used our list of keywords derived from the literature (see above), and sourced other keywords from the data (by using a

combination of network graphs and word counts for health posts on each platform). Informed by literature and using domain expertise, we categorized keywords by health topic and mapped them onto posts that had been classified as mentioning the health effects of climate change. For each piece of content — social media post or headline — there could be multiple health topics.. Health topics were converted into percentages to make comparisons between platforms more meaningful. Percentages were calculated from posts or news headlines (depending on the platform) that connected climate change to health.

# Identifying sources, skeptical posts, and techniques among the most engaged-with climate change and health content:

- **Research questions:** *What are the sources of social media posts that connect climate and health and receive the most engagement? Are climate skeptic and contrarian posts present among the most engaged-with posts, and to what extent? What are the communications techniques and strategies applied by social media posts that connect climate and health and receive the most engagement?*

- **Key metrics**: Percentage of social media posts by source. Percentage of social media posts presenting a contrarian/skeptic view. Percentage of social media posts applying each of 11 communications techniques.

To answer these questions, we examined the 100 most engaged-with health posts for each platform (a total of 500 posts), as determined by the classifier (see above). Two team members qualitatively coded the 500 most engaged-with health posts across the five social media platforms looking at the following: (a) source of the post, (b) whether posts were climate contrarian/skeptical, and (c) climate change

communication framings and techniques.

In order to identify sources, the team inspected the accounts posting the content and any auxiliary information within the account description. Posts were deemed contrarian/skeptical if the content of the post made claims that ran contrary to, were skeptical of, or downplayed the severity of the current scientific consensus on climate change and on the health impacts of climate change.

To code for relevant communications framings and techniques, we first reviewed 301 papers published from 2020 onwards that focused on climate change communication framings, strategies, or techniques. We cast a wide net and included gray literature and different kinds of academic papers — whether observational, theoretical, experimental, or other — provided they concentrated on assessing or discussing strategies used in communicating about climate change. After reviewing the literature, the team consolidated a list of 11 broad climate change communications strategies and framings that had been shown to influence belief, attitudes and engagement. You can find these in the appendix. Posts were then coded for the presence of these techniques.



# Comparing climate organizations and health organizations key communication techniques:

- ▶ **Research question**: *What framings and strategies do climate and health institutions employ when communicating about the health impacts of climate change??*
- ▶ **Key Metric:** Percentage of Facebook posts from climate and health institutions that employ each of the 11 communications techniques.

In an additional assessment, the team qualitatively analyzed whether health or climate institutions (either organizations, governmental bodies or departments, or advocacy groups working primarily in those respective fields) communicated differently about the health impacts of climate change. To do this, two team members annotated a separate set of 200 Facebook posts — 100 from climate change-focused entities and 100 from health-focused entities. The Facebook pages for these entities were identified from the larger social media dataset using a combination of keyword searching in the Facebook page description field as well as manual investigation. In cases of uncertainty, team members vetted the Facebook pages and associated online homepages available in the Facebook page description to clarify whether they represented a health or climate entity.

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[1]Meltwater maintains a large "news" database whose sources vary from traditional media organizations to academic journals and PR aggregators. Because our focus was on headlines from popular news websites, we created a list of the 300 most visited English-speaking news websites. Website traffic was determined using Similarweb, which has metrics on monthly online traffic.

[2]The text of social media posts can vary greatly in length. Some can be extraordinarily long and talk about myriad subjects and others can be quite short. If a post discussed various topics but included even a small section of text that mentioned the health impacts of climate change, the classifier would code the entire post as a match. traffic was determined using Similarweb, which has metrics on monthly online traffic.

# APPENDIX

1. **Table of communications strategies**
2. **Limitations**

## Table of communications strategies identified in a review of [XYZ] articles published in academic journals [descriptor].

| FIELDS | EXPLANATION | EXAMPLES |
|---|---|---|
| norms_are_ changing | Whether a message conveys that social norms are changing and more and more people, communities, businesses, etc. are concerned and taking action. | Global health bodies are demanding international governments urgently phase out fossil fuels and fast-track renewable energy as health professionals increasingly see patients suffering from harm caused by climate change. The world's leading GP and health bodies representing more than three million health professionals worldwide will deliver an open letter on Saturday calling for urgent action against climate change to protect the health of communities.<br><br>https://www.facebook.com/100064499750520/posts/716257920534193 |
| scientific_ consensus_ emphasized | Whether the message explicitly underlines that most climate scientists or public health experts understand that climate change is real and is resulting in health impacts. | Hundreds of the world's leading climate scientists expect global temperatures to rise to at least 2.5C (4.5F) this century, blasting past internationally agreed targets and causing catastrophic consequences for humanity and the planet, an exclusive Guardian survey has revealed.<br><br>https://www.instagram.com/p/C6tPOH7t7lC/?img_index=1 |
| most_people_ believe_in_climate_ change | Messages that convey how the majority of people are concerned about climate change, and willing to change their behavior and support climate change policies. | With 70% of young people worried about climate change and its effects, it's important they are taking positive actions to combat this feeling.<br><br>https://www.facebook.com/watch/?v=1813298302504935 |
| problem_then_ solution | This field examines if a message's communication strategy includes providing information on health risks posed by climate change, and then outlining potential solutions. | University of Bath psychotherapist Caroline Hickman […] argues that climate anxiety is a healthy response to the climate crisis. She advises anyone experiencing it to make contact with others who feel the same way, and to collaborate with them on practical steps to address the crisis. "These difficulties are not going away, so we need to learn how to face them.<br><br>https://www.facebook.com/100069291996604/posts/678942897758771 |

| FIELDS | EXPLANATION | EXAMPLES |
|--------|-------------|----------|
| provide_actionable_solutions | This field inspects if a message has provided solutions that provide clear and actionable guidelines on how to execute them by the targeted audience, i.e. individuals, communities, businesses, policy-makers, etc. | Ben Gallegos, 68, covers his windows with mattress foam and sleeps in the concrete basement to avoid high temperatures in Denver, Colorado. Here's how Ben and other people are grappling with record heat and no air conditioning.<br>_____<br>Do you or someone you know need help affording AC and other basics? Use our local assistance directory to find support services in your area: http://spr.ly/6188PZj3I.<br><br>https://www.facebook.com/100064847104119/posts/679284567576441 |
| solutions_emphasize_health_benefits | Whether the solution articulates the health benefits of adapting or employing that action. | Dangers of heat stress, UV radiation exposure and air pollution are just some of the known risks we face at work. Don't miss the International Labour Organisations live stream, as they discuss how to protect workers and respond to this global challenge<br><br>https://bitly.ws/3ghwC<br>https://www.facebook.com/100066619662363/posts/793763949520920 |
| personal_story | This field examines whether a message has utilized personal narratives or stories. | Achiek Abach, 35, is rolled onto his side by his siblings and others as he struggles with malaria in Dhiam Dhiam, South Sudan, on October 26, 2021. That year parts of South Sudan experienced some of the worst flooding in six decades, exacerbating most of the illnesses commonly seen and transmitted in the rainy season: malaria, acute respiratory infections, and diarrhea.<br><br>https://www.instagram.com/p/Cqf9wTSunMS/ |
| analogies_metaphors_used | This field inspects whether a message includes an analogy or metaphor, which has been shown to reduce barriers to understanding abstract scientific findings. | The food we eat.   The air we breathe.   The water we drink.   The environment we live in.   Climate change, plastic pollution and destruction of natural habitats. All of these impact our health. Health For All: means protecting nature<br><br>https://www.facebook.com/100064481988528/posts/672364108256316 |
| health_impacts_of_children | Using messages that focus on the impacts of climate change on children, including the health impacts. | Children have played no part in creating the climate crisis, yet they are the ones paying the biggest price. Their bodies and minds are uniquely vulnerable to pollution, deadly diseases and extreme weather as compared to adults. As the #ClimateCrisis worsens in South Asia and around the world, children need to be at the centre of policies and action.<br><br>https://www.facebook.com/100064352362735/posts/733669982121407 |

| FIELDS | EXPLANATION | EXAMPLES |
|--------|-------------|----------|
| doom_gloom | This field checks if a message only highlights the negative consequences of climate change and often includes negative emotions. | For every degree Celsius rise in temperature, the risk of stillbirths increases by 5%. Heat and soaring temperatures are not new to South Asia, but climate change is causing more heat waves, putting children and pregnant mothers at higher risk.<br><br>https://www.facebook.com/100064352362735/posts/863625019125902 |
| conservative_framing | Examines whether the message employs framings that have been shown to resonate with conservative audiences, such as appealing to values like loyalty, authority, patriotism, purity, and national security concerns. | Climate change is driving longer, hotter and more frequent heatwaves, severe droughts, flooding and other extreme weather events.<br><br>But there's still time to save our summer.<br><br>Let's band together and do more to tackle climate change.<br><br>https://www.tiktok.com/@theclimatecouncil/video/7307433787942587666 |

# Limitations

The research has several limitations. First, we only used the words "climate change", "global warming", and "climate crisis" as keywords to source relevant posts and scrape data. While these are three of the most popular words to describe the issue, specifically "climate change", different communities and audiences may have additional ways of talking about climate change that don't use these specific terms.

**More research needed on "proxy conversations"**

Given the large amounts of data we were able to gather, and the prominence of these three key terms to describe the climate change phenomenon, we believe that the data gathered provides an accurate and representative account of the extent to which the health effects of climate change are being discussed online.

However, this iteration of the research made no attempt at capturing what we call "proxy conversations" about the health impacts of climate change: online conversations that don't use specific climate change terminology, but that indirectly describes issues related to the health impacts of climate change. For example, people or accounts online may talk about their need for an air-conditioning unit amid sweltering heat. While this doesn't directly link climate change to a subsequent health impact, it is suggestive of people taking precautionary health measures — installing an AC unit — to protect themselves from extreme heat. For health experts and policy makers, capturing these conversations should be an important part of their monitoring mandates as it allows for protective public health measures to be implemented and future research should explore ways of identifying this content.

Because the classifier was trained on text data and because of API limitations — transcript data is not available for most TikTok videos and the availability of YouTube transcripts is also unpredictable — TikTok and YouTube content was classified using available text metadata fields, primarily the title and descriptions of the videos. While the combination of title and description fields is generally a reliable heuristic to determine the substance of video content, it's possible that we may have missed

videos where neither the title nor description mentioned the health impacts of climate change but was instead embedded solely in the video content.

**The need to incorporate audience data**

Because of both API limitations and privacy concerns we were unable to get segmented data on population and demographic data. A hallmark of best communication practices is understanding who your audience is and designing communication strategies that take audience characteristics into consideration. Because we don't have any audience data, we can only offer a relatively flattened analysis from our qualitative research, which looked at the specific communication framings and strategies enacted in posts detailing the health impacts of climate change. That is, we were forced to examine the framings and strategies that popular posts as well as posts from climate and health entities employed without understanding the characteristics of the audiences who saw these posts or to whom these posts were targeted. While such a general analysis is a useful first step to understand communication trends, future research should aim to incorporate audience data into the analysis of employed communication framings and techniques. This kind of robust analysis would allow us to better assess the overall efficacy of messages detailing the health impacts of climate change.

We employed relatively straightforward statistical methods — the Kruskal-Wallis test and Dunn's test — to detect any significant differences in the percentage of health content between the time periods before, during, and after COP28. And we used descriptive statistics — comparing means, medians, and interquartile ranges — to evaluate the extent to which the percentage of health content between periods differed. While this is a direct and parsimonious approach to understanding whether there were any noteworthy increases in online health content during COP28, more research, potentially employing advanced methods in time series analyses and multivariate models, is needed to understand whether COP28 has had any large and meaningful impact on increasing or mainstreaming conversations online about the health impacts of climate change in the long run.