Primetime in a Warming World:
Can Medical Dramas Prepare Us for Extreme Heat?

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STUDY OVERVIEW

Television medical dramas have long reflected the realities of our everyday lives. As the climate crisis drives more extreme weather events that threaten public health and strain our healthcare systems, these shows – where medicine, science, and human emotion converge – may offer more than compelling stories. Can they help audiences see weather not as a trivial, abstract issue, but as a pressing, personal one? And can they deliver potentially life-saving information and inspire support for critical solutions in a warming world?

To explore how entertainment can shape public understanding of climate-related health risks, Rare's Entertainment Lab studied the impact of an extreme heat storyline in the long-running cultural landmark *Grey's Anatomy*.

In the Season 21 episode "Drop It Like It's Hot," staff at Grey Sloan Memorial Hospital respond to a record-breaking heat wave. Though climate change is never mentioned explicitly, the episode vividly depicts the cascading effects of extreme heat: power outages, overwhelmed emergency services, and difficult triage decisions. **This provided a unique opportunity to test whether a dramatic medical storyline could shift perceptions about heat waves, their public health risks, and climate change more broadly.**

The results were clear: the episode effectively raised awareness about heat-related health risks and significantly increased concern about the impacts of extreme heat.

The episode boosted:

- **Perceived likelihood of heat wave exposure,** or how likely viewers think they or their community will experience a severe heatwave this summer
- **Perceived threat severity of heat waves**, or how worried viewers are about severity of heat waves, and the amount of harm they might cause
- **Perceived threat of heat waves to health**, or how worried viewers are about how severe heat waves can impact their health
- **Knowledge** about the specific health impacts of exposure to extreme heat
- **Support** for heat-adaptive policies, such as investments in hospital infrastructure and the expansion of public cooling centers

In addition to evaluating the episode on its own, the study also examined a **multiplatform condition**, which assessed the combined impact of the episode and a complementary social

media campaign. Half of the viewers were randomly assigned to watch one of four short-form videos immediately after the episode. Produced independently by an environmental organization, these social media videos explicitly linked the episode's events to climate science and included calls to action for health system resilience.

The strongest and most lasting effects were observed among viewers who saw both the episode and the follow-up social media videos. Additionally, this combined condition boosted:

- **Perceived personal impacts of climate change**, including the belief that climate change will have a significant impact on daily life and it will do so sooner
- **Support** for action on climate change broadly

We found that many of the positive shifts in viewer attitudes **persisted even two weeks after viewing the episode** or the episode and the social media video together – providing empirical evidence of short-to-mid term impact.

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Notably, through a series of interviews, we found that these gains came without sacrificing entertainment value. Viewers:

- Connected the on-screen heatwave to their personal experiences with extreme heat and its serious health impacts within their own families.
- Felt better prepared for the threats of extreme heat. One interviewee said it was a reminder "how serious the heat is, and how it is deadly, and to not underestimate it...[the episode] makes you realize, 'Hey, I could very well be in that situation, and I shouldn't play around with it and always be prepared.'"
- Commended the show for depicting real-world issues like heat waves, and praised the show's legacy of addressing social issues. One interviewee remarked that the show "does the world a service by… incorporating real-life national issues into the storyline."
- Highlighted real-world medical techniques – such as "using body bags and filling them with ice" to cool patients – as especially memorable. One mother, for instance, shared that she now knows to quickly cool down her overheated two-year-old by placing him in a cold bath—an insight she credited to what she saw on screen.

It is important to acknowledge the areas where attitudes remained unchanged. The episode alone did not move most measures related to climate change broadly, like the perceived personal impacts of **climate change** (as opposed to the impacts of **severe heat waves**). This lack of movement is perhaps unsurprising, given that the episode did not explicitly reference climate change and the larger issue may not have been top of mind for viewers. Additionally, we did not find any significant effects on perceptions of healthcare workers' responsibility to raise awareness about heat-related health risks.

Nevertheless, these findings demonstrate the powerful potential of entertainment to both engage and educate, making complex public health and environmental issues feel immediate

and personal. These findings also examine the added benefits (and potential risks) of complementary multiplatform campaigns that can more explicitly link climate change to human health and extreme weather events. As the climate crisis deepens, integrating accurate, emotionally-resonant stories into popular film, TV, and social media may be one of the most impactful tools for life-saving public awareness and action.

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METHODOLOGY

Quantitative Methodology

The study recruited ~5000 U.S.-based participants whose demographic characteristics were matched using Nielsen data to resemble viewers of *Grey's Anatomy* Season 21. Our final sample closely matched the target demographic across most dimensions (gender, ethnicity, US region, and household income), with the primary deviation being a younger age distribution. Therefore these results are most applicable to the younger segments (under age 45) of the typical *Grey's* audience. Participants were randomly assigned to a Heat Wave Episode Group; a Multiplatform Group, and a Control Group:

- **HEAT WAVE EPISODE GROUP** watched Season 21, Episode 8 ("Drop It Like It's Hot"), in which a severe heat wave disrupts hospital operations and patient care.
- **MULTIPLATFORM GROUP** watched the same episode as the Heat Wave group, followed by social media content tying the episode content to climate change. This allowed us to study the joint effect of viewing content along with complementary social media campaigns.
- **CONTROL GROUP** watched Season 21, Episode 6 ("Night Moves"), which includes no mention of heat waves.

To track the impact of the content over time, we measured participants at three different points:

- Baseline (7-10 days prior to viewing) [N=4830]
- Immediately after watching the show [N=3575]
- 15-20 days after watching the show [N=3219]

At each point, participants completed a survey measuring perceptions of heat waves, knowledge of heat-related health risks, confidence in taking protective actions, support for relevant policy measures, and beliefs about climate change's relevance to daily life.

Participants

We employed a three-arm, longitudinal randomized controlled design across three waves of data collection. At Wave 1, participants (N = 4,830) were quota-sampled using Nielsen data to match the demographic profile of *Grey's Anatomy* Season 21 viewers on age, sex, race/ethnicity, income, and region. Given the large sample size, towards the end of recruitment, we used Connect's "relax quotas" feature which allowed participants to enter if they met most (but not all) of the recruitment quota categories.

Data were collected via Cloud Research Connect online survey platform, and participants were compensated at above market rates. Compensation increased across waves to minimize participant attrition. Attrition was high between baseline and the viewing assignment (~30%), with 3,454 participants returning to view the episode. This high rate of attrition is likely due to the survey length at Wave 2, which required participants to watch a 40-min episode and then complete an 8-10 minute survey. We saw much lower attrition (~7%) between Wave 2 and Wave 3, with 3,204 out of 3,454 returning to complete the final post-viewing survey.

Experimental Conditions

Participants were randomly assigned to one of three groups:

- **HEAT WAVE EPISODE GROUP (N = 1,091):** Viewed Season 21, Episode 8 ("Drop It Like It's Hot"), in which a severe heat wave disrupts hospital operations and patient care.
- **MULTIPLATFORM GROUP (N = 1,073)** (*aka Heat Wave Episode + Social Media*)**:** Viewed the same episode as the Heat Wave group, followed by one of four climate-related social media videos developed to contextualize the episode's content within broader climate-health dynamics. Each participant was randomly assigned one of the four videos.
- **CONTROL GROUP (N = 1,040)** (*aka Non-Climate or Weather-Related Episode*): Viewed Season 21, Episode 6 ("Night Moves") – a narrative episode with no reference to climate or extreme heat.

Social Media Content: Instagram Videos

The four climate-related social media videos used in the Multiplatform Condition (*Heat Wave Episode + Social Media*) were commissioned and distributed by Action for the Climate Emergency (ACE), a youth-led U.S. climate-advocacy nonprofit. These short-form Instagram reels featured social media content creators discussing heat-related health impacts and climate adaptation strategies as part of ACE's #DangerDome impact campaign, which was specifically designed to:

- Amplify the *Grey's Anatomy* storyline for viewers who had just watched the episode; and
- Translate the drama into clear climate science take-aways about extreme heat, health risks, and community preparedness

Study Design

We employed a longitudinal design to assess both immediate and sustained effects of the viewing experience. Participants completed surveys at three time points: a baseline assessment prior to viewing, an immediate post-viewing survey, and a follow-up survey approximately 15-20 days later to examine whether any observed effects persisted over time. Over 3000 participants completed all three waves.

- **Wave 1 - Baseline Survey (N = 4,830):** Administered 7-12 days prior to viewing, assessing demographics, media habits, and key outcome variables.
- **Wave 2 - Post-Viewing Survey (N = 3,575):** Participants watched the assigned episode (and, for the multiplatform group, a social media video). After having seen the content, participants responded to a survey assessing perceived heat risk, health system impacts, climate beliefs, policy preferences, and behavioral intentions.
- **Wave 3 - Survey Measuring Durability of Effects (N = 3,219):** A follow-up survey, administered 15-20 days post-viewing, helped assess how long the effects of viewing heat-related content persists in the short-to-medium run.

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Survey Measures

We assessed outcomes by adapting established measures from climate and heat-risk communication research, including perceived heat wave risk, threat severity, heat wave worry and harm perception (Howe et al., 2019), social norms and behavioral intentions (Leiserowitz et al., 2025), perceived self-efficacy, support for heat-adaptation policies, and knowledge about the heat impacts of heat waves. These domains were measured with multi-item scales that captured key factors such as perceived threat of heat waves, knowledge of heat-related health risks, support for relevant policy measures, responsibility of healthcare workers, personal impact of climate change, and support for climate action. See full survey instrument for item wording.

Participants who failed comprehension checks, provided non-substantive responses to open-text prompts, or viewed less than 85% of the assigned episode were excluded from analysis, leaving a final sample of 3,048. Analyses were pre-registered. Responses to individual survey items were aggregated into scales and sub-scales using pre-registered hierarchical models. Analyses of individual survey items were pre-registered as exploratory. Statistical tests were performed using FDR (False Discovery Rate) corrections to account for multiple comparisons.

This study contributes to a growing body of work assessing the potential role of entertainment in shifting public norms and attitudes related to climate impacts.

Qualitative Methodology

Participants

We recruited 20 participants from User Interviews in two waves. Wave 1 (n = 11) took place before the quantitative portion of the study; Wave 2 (n = 9) followed and was informed by quantitative findings. The average age was 38.6, and most participants were female (n = 15). The sample included individuals identifying as White (n = 11), Hispanic or Latino (n = 4), Asian (n = 3), and Black or African American (n = 2). Participants were primarily from the South (n = 11), with others from the Northeast (n = 4), Midwest (n = 3), and West (n = 2). Eight reported having previously watched *Grey's Anatomy* - ranging from loyal fans to viewers who had watched most seasons. Wave 2 primarily focused on more politically-conservative leaning participants, with the sample consisting of 5 Republicans, 2 Independents, and 2 Democrats.

Procedure

Participants completed ~80-minute one-on-one Zoom interviews. Wave 1 interviews were conducted before the quantitative survey and focused on reactions to the heat wave episode. Wave 2 interviews were conducted after the survey and were informed by key quantitative findings. All participants watched the same episode; a subset of Wave 2 participants also viewed one the Instagram campaign videos following the episode.

Measures

Wave 1 interviews focused on participants' initial, unaided reactions to the heat wave episode. Measures included general impressions of the episode, entertainment value, perceived realism, and recall of the heatwave storyline. Participants were asked to summarize the plot, identify heat-related medical emergencies, and reflect on whether the episode taught them anything new about extreme heat as a health risk. Additional measures probed personal relevance (e.g., past experiences with extreme heat), perceived hospital preparedness, and suggestions for improving the episode's messaging. Participants also provided feedback on the study experience itself.

Wave 2 interviews were designed to explore reactions and interpretations of quantitative survey findings. Participants reflected their own belief shifts and their thoughts on the results showing increases in heat-related health knowledge and policy support among viewers. Measures captured reactions to these findings and explanations for observed political differences. Participants compared messaging frames for both adaptation measures and general climate messages, evaluated their effectiveness, and reflected on whether the episode or findings might influence their own behavior or conversations with others. Those who viewed an Instagram video were also asked about source credibility and message reception. As in Wave 1, participants provided advice for show writers and feedback on the interview experience.

KEY FINDINGS

Overall, the heat wave episode of *Grey's Anatomy* effectively increased viewer understanding of heat-related health risks, heightened concern about the impacts of extreme heat, and boosted support for heat-adaptive policies. Notably, through interviews with viewers, we found that these impacts occurred without diminishing the show's entertainment value. For most (but not all) of the measures, the combination of the episode and the social media videos produced the strongest and most lasting effects.

Perception and Knowledge of Heat Waves

Perceived Likelihood of Heat Wave Exposure

We surveyed viewers, "How likely is it that you, your family, or your community will be seriously impacted by at least one severe heat wave this summer?"

The multiplatform condition significantly increased perceived likelihood, with gains evident immediately after viewing and sustained 15 days later. The heat wave episode condition showed a modest, marginal increase in perceived likelihood, but those effects faded over time.

Our one-on-one interviews confirmed that viewers had greater perceptions of heat wave likelihood. One viewer remarked, "Wow…This is going to be more common, you know, every single year. Right? There are going to be more heat waves in places that are not prepared or not used to heat waves."

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Perceived Threat Severity of Heat Waves

Both the heat wave episode and the multiplatform conditions significantly increased perceived threat severity—boosting concern about potential harm to personal well-being, family, and community, as well as the likelihood of taking extra precautions and checking in on vulnerable individuals. The multiplatform condition produced the strongest effects immediately after viewing.

In our interviews, one viewer remarked: "I would personally show [the episode] to my own parents. I feel like there's times where they just don't realize, and they'll like, stand outside and water their plants and like they don't realize how much time they're spending outside. No protection, like nothing."

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Perceived Threat of Heat Waves on Health

Viewers who watched the episode—especially those in the multiplatform condition—expressed significantly greater concern about the health impacts of heat waves. This included increased

worry about risks to their own health and that of loved ones, as well as heightened awareness of how extreme heat can strain local hospital systems. These effects persisted 15 days after viewing, suggesting that both the episode alone and the multiplatform campaign fostered lasting awareness that could support better preparedness and protective behaviors during future heat waves.

One interviewee remarked that the episode was “a reminder to me how serious the heat is, and how it is deadly, and to not underestimate it, to be prepared…." She further elaborated, "It makes you realize like, ‘Hey, I could very well be in that situation, and I shouldn't play around with it and always be prepared.’"

Another said that, inspired by the episode, she would “call my family, making sure I check in on them, and when it's super hot outside, and tell them to look out for the different health risks that are being discussed [in the episode].”

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Knowledge of Heat Wave Health Impacts

The heat wave episode boosted viewer understanding of the serious health risks associated with extreme heat – including the risk of organ failure, heart attacks among the vulnerable, premature labor in pregnant women, and increased violent crime, all of which were included in the episode. While the multiplatform condition produced outcomes that were comparable or slightly stronger, differences between the two groups were minimal and largely not statistically significant. Excitingly, the knowledge gains persisted 15 days after viewing, indicating that the knowledge gained had lasting impact.

In our interviews, one viewer found that the episode helped her understand that individuals "prone to heart problems" require more "heat protection" during hot weather. She emphasized that she did not fully realize "heart attack, organ failure... all of these things" were not connected to heat until watching the episode.

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Policy Support and Healthcare Worker Responsibility

Policy Support by Political Affiliation

The heat wave episode increased viewer support for heat-adaptive policies, such as investments in hospital infrastructure and the expansion of public cooling centers – but the effects varied markedly by political affiliation.

Among Democratic viewers, baseline support for these policies was already high (81–82%), leaving little room for movement with the episode alone. However, when paired with supplemental social media videos in the multiplatform condition, support rose modestly to 83–84%, suggesting that explicit messaging linking climate science and policy solutions reinforced attitudes within an already receptive audience.

Republican viewers began with much lower baseline support (52–55%) but showed the strongest response to the episode alone. Support increased by 10 percentage points to 63%, a shift that remained statistically significant even two weeks later – indicating that the episode's focus on hospital strain and public health challenges during extreme heat resonated with this audience.

However, this effect was not sustained in the multiplatform condition. While Republican viewers in the combined multiplatform group initially showed a similar boost, those gains faded by the two-week follow-up – and in some cases, support dropped below baseline. This suggests that the explicit framing provided in the supplemental videos may have inadvertently triggered resistance or disengagement. While anecdotal, interviews with some Republican viewers suggested that the specific use of the phrase "climate change" in at least one of the social media videos was perceived as unwelcomed or polarizing. One interviewee, a self-identified conservative, said "the moment that she [the content creator in the social media video] said, quote climate change end quote...I instantly almost discard it as being a political message." He elaborated that "climate change has become sadly too political... it's been so muddied by politics that people aren't hearing each other anymore." He felt the inclusion of "climate change" in a statement is "instantly assigning blame to the occurrences" and causes the conversation to go "in a whole different direction." Meanwhile, he felt the episode (which again, does not use the term "climate change") maintained a "balance of entertainment and message." He was "entirely entertained" and "wasn't focused on 'Hey, there's a message being given to me here,' which is a good thing."

The unusual pattern here shows no disengagement or reactance immediately after viewing (where presumably, the effect of the episode is at its maximum and therefore softening any sort of adverse reaction to the social media videos), followed by an apparent backlash 15-20 days later. However, since this was an exploratory analysis in our pre-registration, we would recommend caution when interpreting these results.

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Different audiences require different approaches – especially when designing supplemental or impact-driven social media content. While Democratic viewers may have needed explicit climate change and health connections to boost policy support, Republican viewers were moved by emotionally grounded, human-centered storytelling. These findings highlight the limitations of one-size-fits-all strategies, but they also underscore the unique potential of audience-tailored messaging in strategic, multiplatform media campaigns that bring together film and TV with social media.

Healthcare Worker Responsibility

No significant effects were observed on perceptions of healthcare worker responsibility—either toward the public or policymakers—suggesting that the episode did not influence viewers' expectations about the role of medical professionals in addressing climate-health issues.

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Climate Change Connections

Climate Change Impacts and Support for Climate Action

Participants in the multiplatform group were more likely to attribute heat waves to climate change. They also perceived greater concern about climate change among others. This matters because people often underestimate the climate concern of those around them, a form of pluralistic ignorance that can discourage individual action or reduce support for climate policies.

These attribution effects were stronger in the multiplatform condition than with the episode alone and remained statistically significant 15 days later, suggesting that the supplemental social media videos effectively reinforced connections between the episode's storyline and broader climate science.

The multiplatform condition also increased support for climate action, particularly in normative beliefs ("Do you think that people should take action to address climate change because it is the right thing to do?") and self-reported intention to take some action to address climate change in the next 12 months. These effects were modest but consistent.

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Climate Change Temporal Proximity

Participants in the multiplatform group were also more likely to believe that the impacts of climate change would affect their daily lives more imminently – over a year sooner when surveyed immediately after viewing. While we did see similar effects immediately after viewing the episode, those effects did not persist for the episode-only group.

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It's important to note that the episode itself did not reference climate change. Given this, it is not surprising that the episode alone did not significantly increase climate attribution for heat waves or shift broader climate-related beliefs.

Impact of the Social Media Campaign on Episode's Entertainment Value

Critically, there was no significant difference between the heat wave episode only and multiplatform groups in participants' reported likelihood of recommending *Grey's Anatomy* after

viewing the episode. The addition of impact-focused social media content did not reduce or enhance entertainment value, demonstrating that these campaigns can be added without compromising the viewing experience.

Health Framing of Climate Adaptations

In progress

The Role of Film and TV in Addressing Social Issues

In conversation with viewers, we found strong support for film and television engaging with real-world social issues—provided it's done without overt preaching. One interviewee praised the show, and particularly creator Shonda Rhimes and her team, for their legacy of tackling topical issues. She said the show "does the world a service by… incorporating real-life national issues into the storyline."

Another viewer noted, "it just makes it more fun to watch because … it feels like a real universe, not just like a TV show." Others appreciated how addressing such topics can heighten entertainment value by allowing viewers to "connect with something that's real."

Several conversations suggested that strong storytelling and compelling narratives can bridge political divides. As one viewer put it: "I do think that talking about social issues is great, and especially in the form of a TV show, where it's not like necessarily being shoved down your face like, 'Vote for this person because of this'…I think it kind of opens people's minds a little bit, and makes them think like, 'Oh, could that be me? Could that be my daughter… my grandson, my granddaughter?'"

One participant also emphasized the potential for television to spark meaningful discussions, noting that certain shows can "get the conversation rolling" about topics like climate change. In her experience, such conversations often start casually, with a simple, **"Did you see that on TV?"**

Resources

Link with interactive graphs

Primary and Exploratory Analyses

Supplementary: ATE vs. AME Comparison