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# An Evaluation of EPA Communication on Climate Change From 1997 to 2022

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Honors Thesis

AN EVALUATION OF EPA COMMUNICATION ON CLIMATE CHANGE FROM 1997 TO  
2022

by  
Adam Royal Johnson

Submitted to Brigham Young University in partial fulfillment of graduation requirements for  
University Honors

Political Science Department  
Brigham Young University  
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## ABSTRACT

Because the United States is responsible for such a large percent of the world's emissions, its actions to combat climate change is especially significant. As the main speaker for the U.S. on climate change, it is important the EPA uses effective communication strategies. In this paper we evaluated the effectiveness of the EPA's communication. To do so, we evaluated publicly available press releases from the EPA from 1997 to 2022. To measure effectiveness, we incorporated a range of factors that climate communication experts have identified as particularly important. Our analysis found that the EPA effectively communicates in light of some of these measures: it leverages partnerships, frames climate change as a national interest, references vulnerable populations, and focuses on upsides of taking climate action outside of addressing global warming. However, we also found the EPA can improve its communication by using more apolitical messengers, quoting more experts, referencing more specific events, framing climate action as a gain or loss, focusing on reducing greenhouse gases, and drawing application to individuals' lives.

## ACKNOWLEDGMENTS

I express my appreciation to Brigham Daniels for his invaluable help in developing the idea for this thesis and for his guidance, mentorship, and friendship along the way. I am also grateful to Adam Brown for his contributions as a reader and editor, and for his invaluable assistance in bringing this work to its final form. Finally, I am deeply thankful to my wife for her constant love and support, which has been the foundation of my life. Her unwavering encouragement and support have been instrumental in making this thesis a reality.

## Introduction

The United States is one of the biggest polluters in the world, second only to China.<sup>1</sup> The U.S. produces nearly 6000 million metric tons (13.2 trillion pounds) of carbon dioxide equivalents each year.<sup>2</sup> Because the United States is responsible for such a large percent of the world's emissions, its actions to combat climate change are especially significant.<sup>3</sup> Beyond direct government action and direct regulation, the stakes are also high when it comes to the U.S. communicating to individuals, businesses in the U.S., and the world about climate change and the need to support U.S. action along with taking voluntary action. Official US communications directly impact how people view and act on climate change.

The Environmental Protection Agency (EPA) plays an important role in this communication. The EPA is responsible for implementing and enforcing environmental regulations, establishing and announcing partnerships, and producing reports regarding climate change. Because of the centrality of the EPA in U.S. climate action, we posit that the way the EPA communicates about climate change is important and worthy of academic inquiry.

Recently a vast amount of research suggests that some forms of communication are better than others regarding climate change. For example, people are more receptive when a message comes from a person that they trust rather than an expert,<sup>4</sup> people are more willing to act when

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<sup>1</sup> Vanessa, *Which countries are the world's biggest carbon polluters?*, CLIMATE TRADE (2021), <https://climatetrade.com/which-countries-are-the-worlds-biggest-carbon-polluters/> (last visited Nov 18, 2022).

<sup>2</sup> OAR US EPA, *Climate Change Indicators: U.S. Greenhouse Gas Emissions*, (2016), <https://www.epa.gov/climate-indicators/climate-change-indicators-us-greenhouse-gas-emissions> (last visited Nov 18, 2022).

<sup>3</sup> Building Public and Political Will for Climate Change Action, YALE SCHOOL OF THE ENVIRONMENT (2020), <https://environment.yale.edu/news/article/building-public-and-political-will-for-climate-change-action> (last visited Nov 18, 2022).

<sup>4</sup> Adam Corner et al., *How do young people engage with climate change? The role of knowledge, values, message framing, and trusted communicators*, 6 WIREs CLIM. CHANGE 523 (2015).

they see direct application to their life,<sup>5</sup> and stories are generally an effective way to convince people that climate change is real.<sup>6</sup> This then raises the question, to what extent is the EPA communicating effectively?

To answer this question, we evaluated the EPA's use of best practices in press releases. We chose to use press releases as our medium because they are aimed to get the widest possible coverage by disseminating information to the largest number of people.<sup>7</sup>

Our analysis concluded that the EPA is effective at leveraging partnerships, framing press releases as a national interest, referencing vulnerable populations, and focusing on upsides of taking climate action outside of addressing global warming. Our analysis also showed that the EPA can improve communication practices by using more apolitical messengers, quoting more experts, referencing more specific events, framing climate action as gain or loss, focusing on reducing greenhouse gases, and drawing application to individuals' lives.

## Literature Review

Research surrounding the sorts of strategies that have worked to prompt action on climate change have focused on two major categories--strategies relating to messengers and strategies related to message content. Of course, every message has both a messenger and content, so much of this research focuses on both categories. To the extent we can, however, we will try to separate the review of findings about messengers and content and discuss each in turn.

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<sup>5</sup> Susanne C. Moser, *Communicating climate change: history, challenges, process and future directions*, 1 WIREs CLIM. CHANGE 31 (2010).

<sup>6</sup> Mithra Moezzi, Kathryn B. Janda & Sea Rotmann, *Using stories, narratives, and storytelling in energy and climate change research*, 31 ENERGY RES. SOC. SCI. 1 (2017).

<sup>7</sup> OITA US EPA, *Public Participation Guide: Press and Media*, (2014), <https://www.epa.gov/international-cooperation/public-participation-guide-press-and-media> (last visited Nov 25, 2022).

## Messengers

The effectiveness of climate communications is largely dependent on who distributes the message or is referenced in the message. A wealth of research has shown that apolitical messengers, the messenger's credentials, and partnerships are important and contribute to an increased likelihood that people will be prompted to action or accept a message.

In the last two decades climate change has become an increasingly partisan issue.<sup>8</sup> The Republican Party's business-friendly reputation, often leads them to downplay the impacts of climate change to try to protect businesses interests. The Democrat Party on the other hand have become the champions of addressing climate change. This partisan divide makes both Democrat and Republican elected and appointed officials' ineffective messengers of climate change, especially to the opposing party.

Much more effective than political figures are climate brokers. Climate brokers are individuals with credibility among Democrats and Republicans.<sup>9</sup> These brokers can include religious leaders, famous individuals, and business owners.<sup>10</sup> Hoffman suggests brokers are needed to overcome distrust of politicized messengers.<sup>11</sup> Climate brokers often frame climate change as a story.<sup>12</sup> This helps people understand climate change in simple terms which often leads to increased trust in the messengers. Brokers also tell stories that address the impacts of

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<sup>8</sup> Climate Change Used to Be a Bipartisan Issue. Here's What Changed, TIME, <https://time.com/4874888/climate-change-politics-history/> (last visited Nov 25, 2022).

<sup>9</sup> ANDREW J. HOFFMAN, HOW CULTURE SHAPES THE CLIMATE CHANGE DEBATE (2015).

<sup>10</sup> HOFFMAN, *supra* note 9.

<sup>11</sup> Adam Hodges, *The Climate Change Messenger Matters as Much as the Message*, ANTHROPOLOGY NEWS (2019), <https://www.anthropology-news.org/articles/the-climate-change-messenger-matters-as-much-as-the-message/> (last visited Nov 25, 2022).

<sup>12</sup> ANNIKA ARNOLD, CLIMATE CHANGE AND STORYTELLING: NARRATIVES AND CULTURAL MEANING IN ENVIRONMENTAL COMMUNICATION (2018).

climate change outside of politics. This helps avoid the political divide that exists when government leaders act as messengers.

Another vein of research suggests that individuals with expert credentials are essential to climate communication.<sup>13</sup> One groups of these individuals are climate scientists. Americans' confidence in climate scientists vary depending on political orientation. Liberal Democrats are much more trusting of climate scientists than Republicans, particularly conservatives. 67% of Americans say climate scientists should have a major role in policy decisions regarding climate change, more than the public and more than political leaders.<sup>14</sup> There are still major barriers to the public's trust in climate scientists; less than half of Americans have "a lot" of trust in information from climate scientists (39%),<sup>15</sup> but climate scientists are far more effective in communicating than those without expert credentials.

It is not surprising that the most effective forms of communication are joint statements between groups, particularly apolitical groups. The most comprehensive analysis of climate attitudes across the United States by far is the work done by the Yale Program on Climate Communication. For the last 14 years, this program has surveyed Americans and compiled data of American attitudes at the county level.<sup>16</sup> Through years of research, the program eventually came to understand American attitudes about climate change by splitting up attitudes into six broadly defined groups: alarmed, concerned, cautious, disengaged, doubtful, and dismissive.<sup>17</sup>

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<sup>13</sup> Bruno Takahashi et al., *Climate Change Reporting in Great Lakes Region Newspapers: A Comparative Study of the Use of Expert Sources*, 11 ENVIRON. COMMUN. 106 (2017).

<sup>14</sup> Cary Funk, 1. *Public views on climate change and climate scientists*, PEW RESEARCH CENTER SCIENCE & SOCIETY (2016), <https://www.pewresearch.org/science/2016/10/04/public-views-on-climate-change-and-climate-scientists/> (last visited Nov 25, 2022).

<sup>15</sup> *Id.*

<sup>16</sup> Global Warming's Six Americas, YALE PROGRAM ON CLIMATE CHANGE COMMUNICATION, <https://climatecommunication.yale.edu/about/projects/global-warmings-six-americas/> (last visited Nov 25, 2022).

<sup>17</sup> *Id.*



These groups are most effectively reached by different stakeholders depending on their attitude.<sup>18</sup> Joint statements allow messages to reach multiple groups, and thus a broader audience.

## **Content**

Equally if not more important than the messenger is the actual content of the message. The content of the climate communication is often the deciding factor whether the message will be received. Research on message content in climate communication has examined the effectiveness of citing specific events, framing communication as a gain or loss, referencing national interests, referencing vulnerable populations, emphasizing resilience, drawing application to individuals' lives, and referencing an upside of acting outside of addressing climate change.

Among the public, meteorologists, and others in the scientific community there is often widespread confusion about linkages between climate change and extreme weather events. For years people tried to attribute specific events to climate change. Linking specific events to climate change however is difficult and often not accurate. Because specific events are sometimes attributed to climate change, many politicians do not trust scientists and claim they cannot tie extreme weather to climate change.<sup>19</sup>

In recent years the scientific community has adopted a new strategy of explaining underlying factors of specific events rather than attributing specific events to climate change.<sup>20</sup>

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<sup>18</sup> Global Warming's Six Americas: A Review, YALE PROGRAM ON CLIMATE CHANGE COMMUNICATION, <https://climatecommunication.yale.edu/publications/global-warmings-six-americas-a-review/> (last visited Dec 7, 2022).

<sup>19</sup> (Un)Natural Disasters: Communicating Linkages Between Extreme Events and Climate Change, (2016), <https://public.wmo.int/en/resources/bulletin/unnatural-disasters-communicating-linkages-between-extreme-events-and-climate> (last visited Nov 25, 2022).

<sup>20</sup> *Id.*

For example when a large flood occurs, it is not directly attributed to climate change. Instead, we know through scientific analysis that climate change increases the chance of rainfall by 43%.<sup>21</sup> Hotter air is warmer and holds more moisture which leads to heavy rainfall and more flooding.<sup>22</sup> Thus climate change increases the likelihood of floods in general. This new strategy is helping people regain trust in the scientific community.

It is important specific events are referenced in climate communications. Learning about and experiencing extreme weather and climate events are the primary way people experience climate change. Extreme weather is increasing throughout the world.<sup>23</sup> It is a social responsibility to report on these events so people can make informed decisions about actions to limit risks posed by climate change.<sup>24</sup> Increased public understanding of the link between climate change and the underlying cause of extreme weather is essential for policy making surrounding climate change mitigation and adaptation.<sup>25</sup>

Another way to increase public understanding of climate change is to teach people about the impacts of it on their personal lives. A 2015 study highlighted the need to better inform people about the harmful effects of climate change on their health.<sup>26</sup> Whether people realize it or not climate change affects our lives every day. Increasing temperatures due to climate change are causing people to sleep worse. Roughly 62% of people worldwide feel like they do not sleep

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<sup>21</sup> Nathalie Schaller et al., *Human influence on climate in the 2014 southern England winter floods and their impacts*, 6 NAT. CLIM. CHANGE 627 (2016).

<sup>22</sup> *Id.*

<sup>23</sup> Highlights of Climate Change Impacts in the United States: The Third National Climate Assessment, GLOBALCHANGE.GOV, <https://www.globalchange.gov/browse/reports/highlights-climate-change-impacts-united-states-third-national-climate-assessment> (last visited Nov 25, 2022).

<sup>24</sup> (Un)Natural Disasters, *supra* note 19.

<sup>25</sup> Peter Berglez & Walid Al-Saqaf, *Extreme weather and climate change: social media results, 2008–2017*, 20 ENVIRON. HAZARDS 382 (2021).

<sup>26</sup> Edward W. Maibach et al., *Do Americans Understand That Global Warming Is Harmful to Human Health? Evidence From a National Survey*, 81 ANN. GLOB. HEALTH 396 (2015).

well.<sup>27</sup> People are experiencing more intense allergies and experiencing allergies more often.<sup>28</sup> This is due to the increased number of hot days and increased air pollution and suspended particulate pollutants.<sup>29</sup> Climate change is disrupting supply chain increasing scarcity of food.<sup>30</sup> We are losing natural spaces. High temperatures and lack of precipitation are causing river levels to fall, ponds to dry up, and natural vegetation to thin.<sup>31</sup> The same fossil fuels that contributes to climate change also leads to respiratory disease.<sup>32</sup> The World Health Organization estimates that pollution kills 7 million people worldwide per year.<sup>33</sup> Climate change is increasing the mental health pandemic.<sup>34</sup> Warmer temperatures caused by climate change are linked to a 2 percent increases in mental health issues such as stress, anxiety, and PTSD.<sup>35</sup> Some groups claim that climate change is causing the increase of housing prices. Lumber prices are increasing due to a lack of lumber caused by climate change.<sup>36</sup> The list goes on how climate change is affecting people's day to day lives.

When people understand climate change or have a direct experience with it, they are more likely to act. These experiences though only have a short-lived effect on people. If an extreme event was experienced more than three months ago, an individual's attitude towards

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<sup>27</sup> The impacts of climate change that you suffer in your everyday life without realising, <https://www.santander.com/en/stories/the-impacts-of-climate-change-that-you-suffer-in-your-everyday-life-without-realising> (last visited Nov 25, 2022).

<sup>28</sup> *Id.*

<sup>29</sup> Patrick L. Kinney, *Climate Change, Air Quality, and Human Health*, 35 AM. J. PREV. MED. 459 (2008).

<sup>30</sup> The impacts of climate change that you suffer in your everyday life without realising, *supra* note 27.

<sup>31</sup> *Id.*

<sup>32</sup> How Climate Change Is Affecting Our Lives, CLIMATE REALITY PROJECT, <https://www.climaterealityproject.org/blog/how-climate-change-affecting-our-liv...> (last visited Nov 25, 2022).

<sup>33</sup> Air pollution, <https://www.who.int/health-topics/air-pollution> (last visited Nov 25, 2022).

<sup>34</sup> Charmian M. Bennett & Anthony J. McMichael, *Non-heat related impacts of climate change on working populations*, 3 GLOB. HEALTH ACTION 5640 (2010).

<sup>35</sup> Nick Obradovich et al., *Empirical evidence of mental health risks posed by climate change*, 115 PROC. NATL. ACAD. SCI. 10953 (2018).

<sup>36</sup> The impacts of climate change that you suffer in your everyday life without realising, *supra* note 27.

climate change returns to what it was previously.<sup>37</sup> This tells us that to change people's behavior and attitude towards climate change people must be reminded of the impacts on their life either through experience or learning at least every three months.

Although not everyone recognizes the effects of climate change on their personal lives, it is hard to ignore the impacts climate change has had on the most vulnerable populations including native American tribes, racial/minority groups,<sup>38</sup> and people that belong to the poorest socioeconomic bracket.<sup>39</sup> Climate change disproportionately affects vulnerable populations by exposing them to negative effects of climate change, increasing their susceptibility to damage caused by climate change, and decreasing their ability to rebuild after damage suffered.<sup>40</sup> Climate change increases the risk for illness, injury, and death particularly if the vulnerable populations lack financial, social, or community resilience that is needed to cope from stressors or events caused by climate change.<sup>41</sup>

Empirical studies show that focusing on morality and climate justice in climate communication can serve as a bridge to climate cooperation in some circumstances; in other circumstances it can act as a barrier.<sup>42</sup> In depth interviews with vulnerable populations showed that they are interested in immediate-term advice on health management and protective behaviors related to the effects of climate change but cared less about collective action to stop or slow climate change.<sup>43</sup> Regardless, actions taken to protect themselves can also help slow climate

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<sup>37</sup> (Un)Natural Disasters, *supra* note 19.

<sup>38</sup> Brenda D. Phillips & Betty Hearn Morrow, *Social Science Research Needs: Focus on Vulnerable Populations, Forecasting, and Warnings*, 8 NAT. HAZARDS REV. 61 (2007).

<sup>39</sup> *Id.*

<sup>40</sup> S Nazrul Islam & John Winkel, *Climate Change and Social Inequality*, 32.

<sup>41</sup> Jennifer M. Kreslake, Katherine M. Price & Mona Sarfaty, *Developing effective communication materials on the health effects of climate change for vulnerable groups: a mixed methods study*, 16 BMC PUBLIC HEALTH 946 (2016).

<sup>42</sup> Adam R. Pearson, Corinne G. Tsai & Susan Clayton, *Ethics, morality, and the psychology of climate justice*, 42 CURR. OPIN. PSYCHOL. 36 (2021).

<sup>43</sup> Kreslake, Price, and Sarfaty, *supra* note 41.d

change. Vulnerable populations are benefited when they learn about how climate change affects health conditions and how to engage in protective adaption behavior.<sup>44</sup>

Another important element of climate communication is framing. Framing is setting a message with appropriate context to achieve a desired interpretation from an audience.<sup>45</sup>

Recently climate communication has centered around two types of framing, gain and loss.

People with a promotion focus are focused on achieving goals or maximizing gains.<sup>46</sup> Gain

framing is most effective on them. People with a prevention focus are more concerned about

maintaining the status quo and avoiding risks. Loss framing is most effective on them.<sup>47</sup> Current

research is still testing what kind of framing is most effective for specific demographics in

climate communication, but rapid strides are being made to answer this question. For example, a

recent study of 368 farmers showed that gain-framed messages are more effective and have a

stronger impact on their behavior toward climate change than loss-framed messages. Farmers are

more willing to make changes when exposed to gain-framed messages.<sup>48</sup> As more research is

produced framing will continue to become an important tool in climate communication.

Generally, in climate communication, messages are framed with an emphasis on either

national interests or global interests. Most countries determine global goals (or interests) based

off how well they align with national interests.<sup>49</sup> Some countries take this to an extreme and

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<sup>44</sup> *Id.*

<sup>45</sup> CRED Guide | The Psychology of Climate Change Communication, <http://guide.cred.columbia.edu/guide/principles.html> (last visited Nov 26, 2022).

<sup>46</sup> *Id.*

<sup>47</sup> *Id.*

<sup>48</sup> Chinh Cong Ngo, P. Marijn Poortvliet & Laurens Klerkx, *The persuasiveness of gain vs. loss framed messages on farmers' perceptions and decisions to climate change: A case study in coastal communities of Vietnam*, 35 CLIM. RISK MANAG. 100409 (2022).

<sup>49</sup> National Interest, Global Interest, and Science, SCIENCE & DIPLOMACY, <https://www.sciencediplomacy.org/editorial/2021/national-interest-global-interest-and-science> (last visited Nov 26, 2022).

adopt zero-sum view of international relations where they only are concerned with self-interest and make no effort to lower emissions or slow climate change.<sup>50</sup> This leads to a lack of progress on climate change. The United Nations provides a good example of how to frame national interests as part of global interests in its 2030 sustainable development agenda.<sup>51</sup> Research is limited that explains how emphasizing national versus global interests in communication influences individual action.

One thing that does drive individual action is whether acting will lead to short-term or long-term benefits. When deciding whether to act on climate change people must decide between short-term and long-term benefits. Research on temporal discounting shows that humans typically overvalue benefits of the short term relative to benefits of the long term.<sup>52</sup> This means that communicating short-term upsides of addressing climate change is likely to help people act. Addressing climate change has many advantages aside from creating a sustainable future and preventing a climate catastrophe. Addressing climate change will lead to economic opportunity and innovation in the green energy industry.<sup>53</sup> Addressing climate change also improves food security<sup>54</sup> and access to clean water.<sup>55</sup> Focusing on these shorter-term benefits of addressing climate change make people more likely to act.

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<sup>50</sup> *Id.*

<sup>51</sup> Martin, *The Sustainable Development Agenda*, UNITED NATIONS SUSTAINABLE DEVELOPMENT, <https://www.un.org/sustainabledevelopment/development-agenda/> (last visited Nov 26, 2022).

<sup>52</sup> Art Markman, *Why People Aren't Motivated to Address Climate Change*, HARVARD BUSINESS REVIEW, 2018, <https://hbr.org/2018/10/why-people-arent-motivated-to-address-climate-change> (last visited Nov 26, 2022).

<sup>53</sup> How will acting on climate change affect the economy?, IMPERIAL COLLEGE LONDON, <https://www.imperial.ac.uk/grantham/publications/climate-change-faqs/how-will-acting-on-climate-change-affect-the-economy/> (last visited Nov 26, 2022).

<sup>54</sup> Chapter 5 : Food Security — Special Report on Climate Change and Land, <https://www.ipcc.ch/srccl/chapter/chapter-5/> (last visited Nov 26, 2022).

<sup>55</sup> Water, sanitation and hygiene (WASH) and climate change, <https://www.unicef.org/wash/climate> (last visited Nov 26, 2022).

While early research on climate communication focused on the polarization of climate communication and climate change denial, research has recently shifted to communicating climate risks and coping with climate risks.<sup>56</sup> For many people learning about climate change causes both a cognitive and emotional reaction. Sometimes emotional reaction cause people to be overwhelmed with the magnitude of the problem of climate change. Communicating about climate adaptation and resilience rather than mitigation helps some people engage that would otherwise be overwhelmed. Some people fear that focusing on adaptation undermines support for mitigation, but to date no evidence has confirmed this fear.<sup>57</sup> In fact evidence suggests that adaptation and resilience makes mitigation comparatively easier.<sup>58</sup>

## Data and Coding

The EPA regularly issues press releases that reference climate change. These press releases generally focus on grants that address climate change, environmental regulations, recognitions and awards to nonprofits, companies, and individuals, events caused by climate change, or partnerships. The EPA released 521 press releases that use the words “climate change” between October 1, 1997, and September 6, 2022.

To measure the EPA’s efficacy of communicating through these press releases we measured indicators in 99 of these press releases. We randomly selected 99 of the 521 press releases. We coded 10 indicators in these press releases.

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<sup>56</sup> Susanne C. Moser, *Communicating Climate Change Adaptation and Resilience*, in OXFORD RESEARCH ENCYCLOPEDIA OF CLIMATE SCIENCE (2017), <http://climatescience.oxfordre.com/view/10.1093/acrefore/9780190228620.001.0001/acrefore-9780190228620-e-436> (last visited Nov 26, 2022).

<sup>57</sup> *Id.*

<sup>58</sup> *Id.*

These indicators fell into two categories, messengers, and messages. To measure if the EPA was using messengers effectively, we coded if the press releases was apolitical, if the EPA partnered with another organization, and if the press release used expert credentials. To measure the efficacy of the message in each press release we measured if the press release cited specific events, if the EPA framed the purpose of climate action as a gain or loss, if the gain or loss was a national or global interest, if the press release referenced vulnerable populations, if resilience was mentioned, if there was application to individual lives, what was reported on, and if an upside outside of combatting global warming was mentioned. To view the full codebook, refer to the appendix.

## **Finding and Analysis**

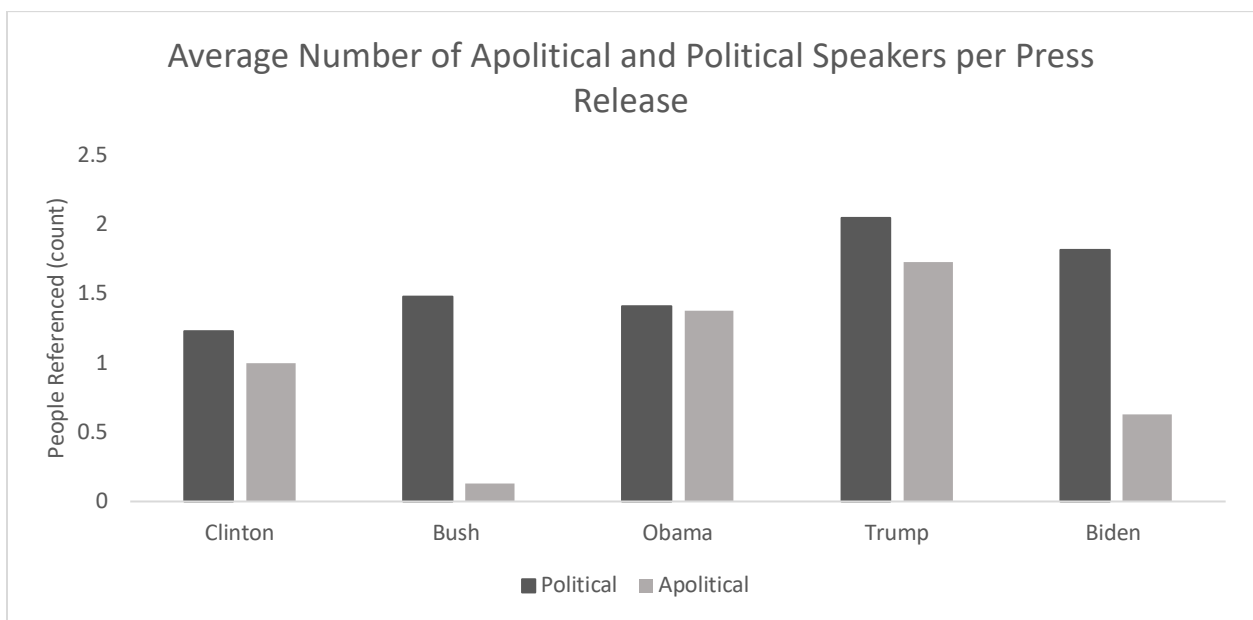
My results showed that the EPA utilizes some communication strategies effectively, while underusing other strategies. Use of strategies varies depending on the party of the president in power, the president's environmental strategy, and how recently the press release was released. We will examine each indicator individually and provide explanations for the frequency each indicator is employed. We will begin by examining indicators relating to messengers and then indicators relating to content.

### **Messengers**

The first indicator we measured relating to messengers was the frequency the EPA references or quotes apolitical individuals in its press releases. To do this, we measured on average how many people referenced or quoted in a press release were elected or appointed officials (political messengers) and how many people referenced or quoted in a press release



were not elected or appointed officials (apolitical messengers). We found that over time the EPA is referencing more political messengers. The EPA under President Donald Trump’s administration particularly used elected officials to provide reasons why deregulation policy was in the interest of the country. There does not appear to be a pattern when it comes to the use apolitical messengers. Our data does show that the EPA under Biden’s administration utilizes apolitical speakers less than previous administrations. We also found that every administration referenced or quoted more political messengers than apolitical messengers.

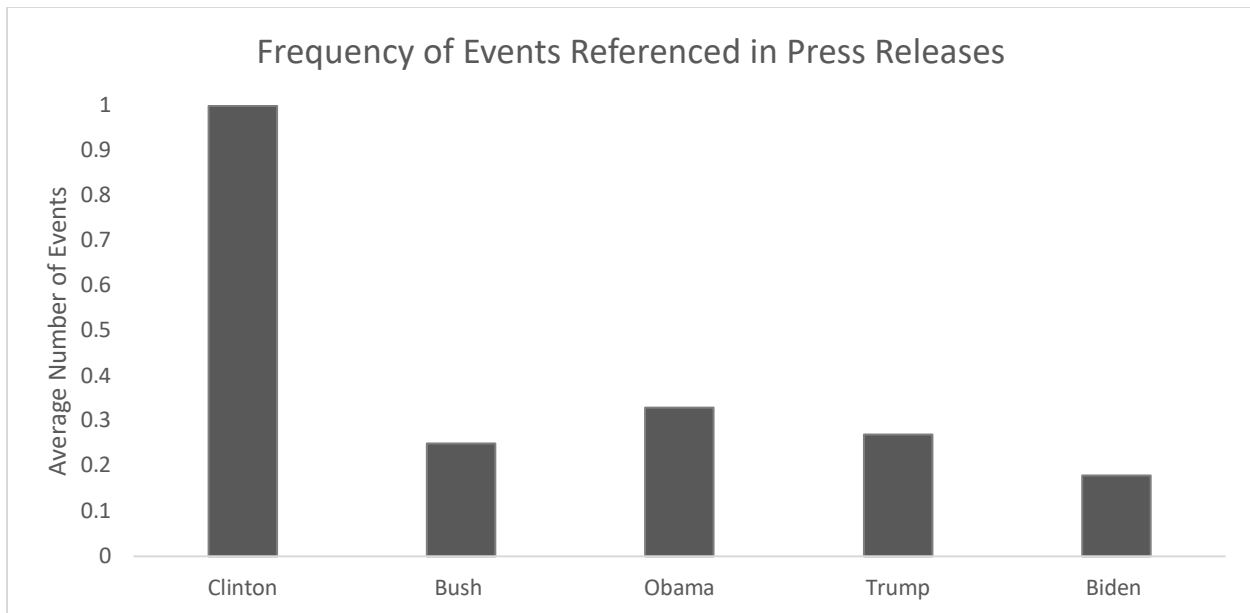


Next, we measured how often the EPA referenced a partnership or released a joint statement with a nonprofit, business, foreign country, or government entity separate than the EPA. Our findings showed that the EPA referenced a partnership or released a joint statement on average about half the time (see figure 1). The data did not show that EPA was increasingly or decreasingly utilizing partnerships over time. The EPA’s consistent use of this communication strategy causes us to believe they are reaching a larger subset of the population than if they only released statements independently.

Finally, we measured how often the EPA used expert credentials in its press releases. This includes academic and professional titles of non-elected or appointed individuals. We found that expert credentials are used in less than half of press releases. We observed no pattern that indicated expert credentials were being used more or less over time. We also observed no difference between how often the EPA used expert credentials under Republican versus Democratic administrations. Because the public is more likely to trust individuals with expert credentials than government or elected officials, public trust should increase if the EPA quotes more experts in press releases.

## **Content**

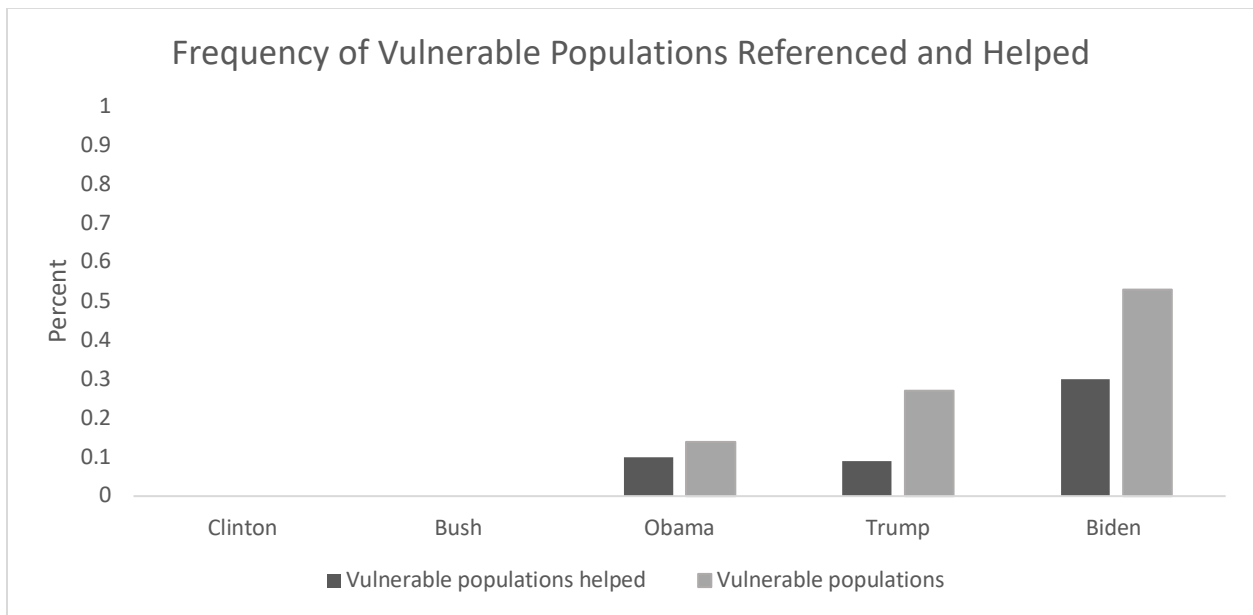
The first communication strategy regarding content we measured was how often the EPA cites specific events in press releases. We found that events are cited less than one third of the time by the EPA under the Bush, Obama, Trump, and Biden administrations (see figure 2). We also observed events are cited less and less as time goes on (see figure 2). Our analysis showed that EPA press releases tend to focus more highly on grants, recognitions, and partnerships than specific events, particularly under the Biden administration. If this trend continues individuals could feel more aloof from extreme weather events caused by climate change.



Next, we measured the EPA’s use of framing in press releases. We measured how often press releases were framed as a gain, a loss, or did not use framing. We observed that under every administration the EPA frames more messages as a gain than a loss. Loss framing is consistently used less than 20% of the time (see figure 2). We also observed that under Democratic administrations the EPA is more likely to use framing as a gain or loss than not using framing, while under Republican administrations the EPA used gain or loss framing less often than using no framing (see figure 2). This means in context of gain/loss framing, the EPA under Democratic administrations, is more effective at communicating than under Republican administrations.

We then examined how often the EPA frames climate action as a national interest or global interest or doesn’t use framing. Most of the press releases frame messages with national or global interests rather than not using framing (see figure 2). The EPA frames national interests more than global interests (see figure 2). This makes sense because the EPA’s primary responsibility is to report on the United States rather than the world.

We also measured how often the EPA references populations that are particularly vulnerable to the impacts of climate change and specific instances when they were helped. Vulnerable populations include racial/minority groups, native American tribes, and individuals living in poverty. We found that over time the EPA has begun to reference vulnerable populations more often, from 0% under the Clinton and Bush administrations to 52.6% under the Biden administration. This upward trend is likely a result of the socially progressive movement that has become more present in politics over time. The EPA references specific actions taken to help vulnerable populations significantly less than referencing the negative effects of climate change on the population. This is likely because it is easier to talk about a population than to craft and carry out policy to help them.



Another indicator we measured for was resilience, more specifically does the press release focus on the need to reduce greenhouse gases or the need to make society more resilient to the impacts of climate change. Our data showed that the EPA has always mentioned reducing greenhouse gases more than resilience, except for Trump's presidency when the need to reduce greenhouse gases was mentioned 9% of the time and resilience was mentioned 18% of the time

(see figure 2). Over time resilience is being referenced more often, while reducing greenhouse gases is being mentioned less. This could indicate the EPA is shifting its focus to helping society cope with the impacts of climate change.

Next, we measured if press releases drew application to individuals' lives. We found that the EPA rarely draws application to individuals in press releases. There is not an upward or downward trend in this strategy.

Finally, we measured how often the EPA referenced an upside of taking action outside of addressing global warming. Upsides include job creation, disaster prevention, jump-starting high-tech economy, food security, and access to clean water. We observed that from Clinton administration to the Trump administration that upsides of acting on climate change were mentioned in about 50% of press releases (see figure 2). Under the Biden administration the EPA significantly increased its references to upsides of taking action to 73.6% (see figure 2).

## **Implications**

In conclusion, we will discuss areas where the EPA is communicating effectively and areas where it can improve communication. We will provide some general recommendations to improve the EPA's climate communication to the public.

### **EPA Communication Strengths and Recommendations**

Our data shows that the EPA is consistently communicating with partners through joint statements or referencing a specific partnership (see figure 1). Partnerships are important because every person responds differently to different messengers.<sup>59</sup> Utilizing partnerships with a wide

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<sup>59</sup> Moser, *supra* note 5.

set of nonprofits, government entities, and businesses helps reach a larger subset of the American population. Partnerships help give credibility to the EPA's messages. We recommend the EPA continues to engage in partnerships, broadcast its involvement in partnerships, and release joint statements to Americans.

We also observed that the EPA usually frames climate action as a national or global interest rather than framing it without an interest. The EPA frames climate actions as a national interest six times more often framing climate action as a global interest (see figure 2). When considering the EPA's responsibility is to communicate with Americans, it makes sense the EPA frames climate action as a national interest more often than a global interest.<sup>60</sup> Americans are also more likely to be receptive to messaging if it plays to their interests. There is still value in framing climate action as a global interest occasionally because the EPA represents the US' policy towards climate change and sets an example for the rest of the world. Overall, the EPA is framing its messages effectively; they could improve messaging slightly by making sure all messages frame climate action with either a national or global interest.

The EPA historically has been ineffective at referencing policies that help vulnerable populations and referencing vulnerable populations; under the Clinton and Bush administrations the EPA referenced vulnerable populations zero times (see figure 2). Since then, the EPA has progressively referenced vulnerable populations more often. We anticipate that this upward trend will continue. As a result, we are confident that the EPA will continue to reference vulnerable populations and the EPA will continue to utilize this effective communication strategy. We recommend the EPA continues to increase the number of references to vulnerable populations.

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<sup>60</sup> OA US EPA, *Our Mission and What We Do*, (2013), <https://www.epa.gov/aboutepa/our-mission-and-what-we-do> (last visited Dec 28, 2022).

Finally, the EPA is effective at referencing upsides of the US taking climate action outside of addressing global warming. The EPA referenced a national upside about 50% of the time under every administration until the Biden the administration. Under the Biden administration the EPA increased the number of references to national upsides to 74% of press releases. Referencing an upside for the US of taking climate action creates an increased number of incentives for Americans to act on climate change. For example, some people are more likely to act to improve the economy while others are more likely to act to increase food security. We believe the EPA's frequency of referencing upsides is high enough that most Americans have a reason to act outside of addressing climate change.

### **EPA Communication Weaknesses and Recommendations**

Our data shows that the EPA does a poor job utilizing apolitical messengers in press releases. Our literature review shows that apolitical messengers are much more effective communicators than political messengers such as elected or appointed individuals. However, under every administration the EPA has referenced or quoted more political messengers than apolitical messengers (see figure 1). By simply increasing the number of apolitical messengers referenced in press releases the EPA could significantly improve its communication. Our data also showed the EPA often relies on the same messenger throughout multiple press releases. By diversifying the messengers, the EPA could appeal to people with different characteristics and reach more people. We recommend the EPA increase the number of apolitical messengers and use different messengers more often in press releases.

The EPA quotes or references individuals with expert credentials in less than half of its press releases. People are more likely to trust individuals that have academic or professional

credentials than those who do not. By not referencing expert credentials the EPA limits its credibility. We recommend that the EPA works to reference or quote at least one individual with expert credentials in every press release.

Specific events are gradually being referenced less in press releases (see figure 2). Understanding that an increasing number of extreme weather events are occurring due to climate change helps people understand the urgency of climate change, even when the events do not directly impact them. Being unaware of specific events risks people feeling distant from the effects of climate change. If people are unaware of specific events, they are less likely to act. Referencing events such as climate conventions or government meetings also help people know the government is taking action to address climate change. We recommend the EPA improves its communication by increasing references to a specific event in at least 50% of press releases. This leaves room for press releases that are focused on things unrelated to events such as grants, awards, and partnerships.

Framing climate action as a pursuit of a gain or loss is another important way to reach different groups of people. Some people are motivated by reaching benchmarks while others are motivated by threats to the status quo. Our data shows that the EPA is inconsistent about how often they use framing. We do observe that the EPA under Democratic administrations use framing over not framing slightly more often than the EPA under Republican administrations. This shows that the EPA under Democrat administrations are slightly more effective than the EPA under Republican administrations. We recommend that the EPA, especially Republican administrations, make sure that all press releases frame climate action as a pursuit of a gain or a loss in addition to addressing global warming.



In our data we observe that overtime the EPA is referencing resilience more often and the need to reduce greenhouse gases less often. At this point in time the EPA is still referencing the need to reduce greenhouse gases more than resilience, but if the trend continues, we fear that people will be less inclined to take climate action. People are more likely to act on climate change when they feel like there it can be reversed. When the EPA talks about resilience, some interpret it as climate change is irreversible and thus not worth acting on. We recommend the EPA continue to talk about the need to reduce greenhouse gases in all press releases, even when the press release also focuses on resilience.

Press releases rarely focus on the connection between climate change and its impacts on individuals' lives. We recommend the EPA does this more frequently by giving examples of individuals or making more references to specific subpopulations in the US. This will help people feel more vulnerable to the impacts of climate change and make them more willing to act.

## **Conclusion**

The EPA is key actor in encouraging people to take climate action nationally and globally. Through our analysis we conclude that the EPA is utilizing some communication strategies to encourage climate action including leveraging partnerships, framing press releases as a national interest, referencing vulnerable populations, and focusing on upsides of taking climate action outside of addressing global warming. To improve communication practices, we recommend the EPA focuses on using apolitical messengers, quoting experts, referencing specific events, framing climate action as gain or loss, focusing on reducing greenhouse gases, and drawing application to individuals' lives.

# Appendix

## Operational Codebook

### Messengers

1. Is the press release apolitical?
  - a. Count the number of people referenced or quoted that are political appointees or elected officials and record the number.
    - i. EPA administrators are considered political appointees
  - b. Count the number of people referenced that are not political appointees or elected officials and record the number.
2. Is the EPA partnering with another organization?
  - a. If the press release is a joint statement or partnership code a 1.
    - i. If the press release references a partnership with a nonprofit, private business, government agency, or government of another country code a 1.
    - ii. If a private or public organization uses an EPA grant to complete a project code a 1.
  - b. If the press release does not meet the criteria above code a 0.
    - i. Referencing another organization does not count for a partnership.
3. Does the press release use expert credentials?
  - a. If the press release referred to a spokesperson by their academic title code a 1.
    - i. Examples are, but not limited to, Doctor or Professor
  - b. If the press release references a spokesperson's organization code a 1.
  - c. If the press release does not meet the criteria above code a 0.
  - d. Do not code a 1 if the expert is a political appointee or elected official.

### Content

4. Does the press release cite specific events?
  - a. If the press release references a specific event code a 1.
    - i. This can include a natural disaster, award ceremony, etc.
  - b. If the press release does not reference a specific event code a 0
    - i. Code a 0 if the event it refers to is an announcement.
5. Does the EPA frame the purpose of climate action as pursuit of a loss or gain?
  - a. If the press release is framed as a loss code 0.
  - b. If the press release is framed as a gain code a 1.
    - i. This can be indicated by recognitions, awards, or referencing benchmarks being met.
  - c. If the press release doesn't use specific framing code a 2.

6. Is the EPA referencing the gain/loss of climate action as national interest(s) or global interests(s)?
  - a. If the press release refers to a global interest code 0.
  - b. If the press release refers to a national interest code 1.
  - c. If the press release does not use specific framing code 2.
7. Note the reason the press release gives to act on climate change.
  - a. For example, to improve economy, promote clean air, create jobs, or no reason to act
8. Does the EPA reference vulnerable populations?
  - a. Does the press release reference vulnerable populations receiving help?
    - i. A vulnerable population refers to a minority race, female population, Native American tribes, or low socioeconomic class.
    - ii. Code 1 for yes
    - iii. Code 0 for no
  - b. Does the press release reference vulnerable populations?
    - i. Code 1 for yes
    - ii. Code 0 for no
9. Does the messaging focus on the need to reduce greenhouse gases, the need to make us more resilient to climate change's impacts, or both?
  - a. Code a 1 if the messaging focuses on the need to reduce greenhouse gases.
  - b. Code a 2 if the messaging focuses on the need to make us more resilient to climate change's impacts.
  - c. Code a 3 if the messaging focuses on both.
  - d. Code a 4 if the messaging focuses on neither.
10. Does the press release draw application to individuals' lives?
  - a. If the press cites a specific impact of climate change on individuals code a 1.
  - b. If the press release does not meet the criteria above code a 0.
11. What is the EPA reporting on?
  - a. Mark a 1 in the applicable topics and 0 if the topic is not applicable
    - i. Grants: 1
    - ii. Regulations: 2
    - iii. Awards: 3
    - iv. Events: 4
    - v. Partnerships: 5
    - vi. Appointees 6
    - vii. Other: 7

12. Is the EPA referencing an upside of taking action outside of addressing global warming?
  - a. If the press release highlights U.S interests, code 1.
    - i. Examples are, but are not limited to, job creation, disaster prevention, safety, jump-starting high-tech economy, food security, clean water.
  - b. If the press release does not highlight US interests, code 0.
    - i. This could include highlighting global interests instead.

### Messengers (Figure 1)

	<b>Clinton</b>	<b>Bush</b>	<b>Obama</b>	<b>Trump</b>	<b>Biden</b>
Elected or appointed	1.23	1.48	1.41	2.05	1.82
Not elected or appointed	1.00	0.13	1.38	1.73	0.63
Partner	1.00	0.75	0.52	0.45	0.51
Expert Credentials	0.50	0.13	0.33	0.45	0.33

### Message Content (Figure 2)

	<b>Clinton</b>	<b>Bush</b>	<b>Obama</b>	<b>Trump</b>	<b>Biden</b>
Events referenced	1.00	0.25	0.33	0.27	0.18
Loss	0.50	0.00	0.14	0.09	0.19
Gain	0.50	0.38	0.52	0.18	0.53
No framing	0.00	0.63	0.33	0.73	0.28
Global	0.00	0.13	0.10	0.18	0.11
National	1.00	0.63	0.67	0.55	0.67
No framing	0.00	0.25	0.24	0.27	0.23
Vulnerable being helped	0.00	0.00	0.10	0.09	0.30
Reference vulnerable pops	0.00	0.00	0.14	0.27	0.53
Reduce Greenhouse Gases	0.50	0.63	0.48	0.00	0.42
Resilient	0.50	0.13	0.19	0.09	0.22
Both	0.00	0.13	0.05	0.09	0.11
Neither	0.00	0.13	0.29	0.82	0.26
Application to individual	0.00	0.13	0.14	0.00	0.14
Upside to addressing global warming	0.50	0.50	0.48	0.45	0.74

**Observations (Figure 3)**

	<b>Clinton</b>	<b>Bush</b>	<b>Obama</b>	<b>Trump</b>	<b>Biden</b>	<b>Total</b>
Number of observations in sample	2	8	21	11	57	99
Number of press releases since 1997	13	29	110	57	312	521

