METHODS SUPPLEMENT

# Framing the Social Implications of AI

MAY 2026

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# Research Methods and Samples

To arrive at the recommendations in this brief, we applied Strategic Frame Analysis®, an approach to communications research and practice that yields strategies for shifting the discourse around social issues. This approach has been shown to increase understanding of, and engagement in, conversations about scientific and social issues.

This work builds on earlier research we conducted that involved interviews with members of the public as well as with experts and advocates working on the social implications of AI and technology for the public interest more broadly, which are described in a separate brief and methods appendix.

Below, we describe the research we conducted, in which we designed and tested frames to address the challenges and leverage the opportunities in public thinking about AI and its social implications. These frames were tested in various stages from December 2022 to August 2024 and refined using three methods: (1) on-the-screen (OTS) interviews, short one-on-one pre/post interviews conducted both in the first and last stages of this research phase; (2) peer discourse sessions (PDS), which are a type of focus group; and (3) survey experiments with a nationally representative sample. In total, 8,255 people from across the United States were included in this research.

# Frame Design

To identify effective ways of communicating about the social implications of AI, FrameWorks Institute researchers developed a set of tasks the frames needed to address and then brainstormed potential reframing strategies that might accomplish one or more of these tasks (for example, metaphors, values, and issue frames). After generating a list of candidate framing ideas to test, researchers solicited feedback on these ideas from an advisory group, consisting of both experts who work on the impacts of AI on social issues and our project partners, to ensure the frames were both apt and potentially usable for those working on advancing AI for the public interest. Based on this feedback, researchers refined a set of frames and brought them into empirical testing.

# On-the-Screen Interviews

Frame design was followed by a set of OTS interviews conducted to explore potential framing tools with members of the public. FrameWorks researchers conducted 50 brief one-on-one interviews over Zoom in December 2022 and a second round with another 50 participants over Zoom in August 2024. In each round, a diverse sample of participants was recruited in terms of age, gender, race and ethnicity, household income, education level, geographical location, and political party identification.

In both rounds of OTS, we first asked participants to respond to open-ended questions about AI and its social impacts. Participants were then presented with different frames and asked questions that explored the frames' abilities to open new ways of thinking about AI and its social implications. In the first round of OTS, these frames were metaphors, and they can be found in Appendix A. In the second round of OTS, these frames consisted of two different types of issue frames that were written in three different iterations to highlight different aspects of that issue and the values surrounding that issue. The issue frames we tested in the second round of OTS are itemized in Appendix E.

# Pilot Survey

Prior to beginning experimental work, we conducted a pilot survey to better understand how the general public defines AI; that is, how people generally understand what AI is and how it works. This was particularly important, given that our findings from the first phase of research demonstrated that the public did not have a good grasp on what AI is or how it functions. In order for the subsequent waves of the survey experiment to be effective, we needed to use a consistent, accurate, and effective definition of AI.

A total of 250 participants were recruited via Prolific, and the survey was hosted through the Qualtrics platform. Participant demographic data were not collected, and participants were paid $2.50 for their time. First, participants were asked to define AI themselves, using an open-ended response format. After this, participants were asked nine questions, rated on a seven-point Likert-type scale, to measure their understanding of AI. After answering these nine questions, participants were shown a series of distractor questions.

After the distractor questions, participants were randomly assigned to see one of five definitions of AI. All definitions were focused on how AI is used to identify patterns in large amounts of data, each with slight adjustments to structure or wording. After reading a definition, each participant was asked whether their understanding of AI had changed. Participants who answered "yes" were then asked to describe how their definition of AI had changed. After this, participants were asked the same nine questions to measure their understanding of AI. All survey items and tested definitions can be found in Appendix B.

After data collection was completed, we used a mixed-methods analytic approach. We ran a repeated-measures analysis of variance on the quantitative data to determine if there were any significant differences in participants' understanding of AI from pre- to post-test. We found a main effect of time, meaning that simply seeing a definition of AI *as a process used to detect patterns in large amounts of data* is enough to improve people's understanding of what AI is and does.

We used thematic analysis to analyze the open-ended questions from pre- and post-test. There were four themes that emerged from participants' pre-test definitions of AI:

1. AI mimics human intelligence—it can do what humans do.
2. AI is created by humans—it requires human input, programming, and design.
3. AI is computation—machine learning, mathematical algorithms, and so on.
4. AI is a sentient, autonomous entity.

From pre- to post-test, 21 percent of participants said that their understanding of AI had changed. The two most effective definitions (Definition 1 and Definition 5, which can be found in Appendix B) increased understanding that AI detects patterns in data and reduced participants' focus on AI as sentient or conscious.

# Peer Discourse Sessions

After an analysis of the pilot survey and the first wave of the survey experiment was conducted, FrameWorks researchers retested and refined frames that had tested well in PDS. PDS are group-based, facilitated conversations that identify patterns of reasoning about a topic and explore the ability of reframing strategies to shift discussion and thinking in productive directions. The sessions capture the effects of frames in social settings by exploring intergroup negotiations around an issue.

Six PDS were conducted with a total of 36 participants—six sessions of six participants each. These sessions were conducted virtually over Zoom between August 7 and 10, 2023. A diverse sample of participants was recruited from across the United States in terms of age, gender, race and ethnicity, household income, education level, geographical location, and political party identification. These two-hour-long sessions included a variety of discussion prompts and activities designed to evaluate how the frames were taken up in a social context and their usability during conversations with peers. We tested definitions, values, and contextual explanations. The frames we tested in PDS are itemized in Appendix C.

# Experimental Surveys

After synthesizing data from OTS, the pilot survey, and PDS, FrameWorks researchers refined a set of frames to bring forward for testing in the survey experiment. Three online experimental surveys involving a total sample of 7,867 US adults (wave 1: n = 1,557; wave 2: n = 2,931, wave 3: n = 3,379) were conducted between July 2022 and March 2023 to test the effectiveness of frames on shifting public understanding of AI and support for programs and policies to prevent AI from causing harm. Target quotas were set according to national benchmarks for age, sex, race and ethnicity, household income, education level, and political party affiliation. See Table 1 for more information about the sample composition for each experiment. Data were not weighted.

**Table 1**[1]

| Variable | Level | Wave 1, % | Wave 2, % | Wave 3, % |
|---|---|---|---|---|
| *Gender* | Male | 49 | 48 | 49 |
| | Female | 52 | 52 | 51 |
| | Nonbinary or other | <1 | <1 | <1 |
| *Age, Wave 1, years* | 18–34 | 23 | | |
| | 35–49 | 26 | | |
| | 50–64 | 26 | | |
| | 65+ | 26 | | |
| *Age, Waves 2 & 3, years*[2] | 18–29 | | 16 | 17 |
| | 30–44 | | 29 | 29 |
| | 45–59 | | 25 | 25 |
| | 60+ | | 30 | 30 |
| *Income* | $0–$24,999 | 23 | 18 | 19 |
| | $25,000–$49,999 | 25 | 22 | 22 |
| | $50,000–$99,999 | 31 | 32 | 32 |
| | $100,000–$149,999 | 14 | 16 | 17 |
| | $150,000 or more | 8 | 11 | 11 |
| *Education* | High school diploma or less | 37 | 32 | 30 |
| | Some college or associate's degree | 30 | 29 | 30 |
| | Bachelor's degree | 20 | 24 | 23 |
| | Graduate degree | 13 | 16 | 16 |

1 Percentages listed may equal more than 100% due to rounding.

2 Between waves 1 and 2, age brackets were changed.

| Variable | Level | Wave 1, % | Wave 2, % | Wave 3, % |
|---|---|---|---|---|
| *Race & Ethnicity* | White (non-Hispanic/Latino) | 63 | 59 | 60 |
| | Hispanic or Latino | 18 | 16 | 15 |
| | Black or African American | 11 | 15 | 14 |
| | Asian | 3 | 6 | 6 |
| | American Indian or Alaska Native | 2 | 1 | 1 |
| | Hawaiian or Pacific Islander | <1 | <1 | <1 |
| | Other/biracial or multiracial | 3 | 3 | 3 |
| *Political Affiliation* | Republican/closer to the Republican Party | 39 | 40 | 40 |
| | Democrat/closer to the Democratic Party | 49 | 49 | 48 |
| | Independent/other | 13 | 11 | 12 |

Participant recruitment and survey hosting were completed by Dynata. Participants were recruited from some combination of the following sources: proprietary loyalty panels; open invitation; and integrated channels that recruit from partnerships with external sources, such as publishers or social networks. All participants opted in to complete the survey. Participants with Dynata earn points for completing surveys, which they can then exchange for various rewards. These rewards vary by panel and recruitment method but may include things such as airline miles or gift cards.

Participants with Dynata are required to verify their identity at multiple points during survey enrollment and routing. Dynata uses various methods, such as third-party validation and digital fingerprinting, to detect fraud, identify bots, and monitor and detect suspicious activity from participants.

Participants were not allowed to complete the survey more than once. Participants who did not fully complete the survey were removed from the data and were not paid. In addition, participant data were removed if they completed the survey within one-third of the median survey time, if they gave the same rating to each survey item, or if they provided nonsensical responses to the open-ended questions included in the survey.

After providing consent to participate, participants were randomly assigned to one of several experimental conditions. All frame treatments focused on understanding AI and the bias that exists within it. All tested frames can be found in Appendix D. Each experiment also included a null control condition. Participants assigned to these conditions did not read any messages but instead moved immediately to the survey questions.

Participants assigned to an experimental condition were asked to read a short message, which they were required to view for at least 30 seconds, before answering a series of survey questions. These questions were designed to measure specific outcomes of interest. Each battery consisted of multiple questions, which were primarily measured using Likert-type items with five- or seven-point response scales. To prevent order effects, the order of batteries shown to participants was randomized, and all survey items within each battery were also randomized. Prior to any inferential analysis, we conducted a series of randomization checks. Chi-square analyses indicated that all target demographics were evenly distributed across conditions. Final survey items from the experiments can be found in Appendix D.

Exploratory factor analysis with oblique promax rotation was used to determine the psychometric quality of each battery. Items with rotated factor loadings below |.40| were dropped from each battery. After concluding psychometric testing, Cronbach's alpha ($\alpha$) was used to assess internal consistency among the items in each battery. Given that there are various heuristics for determining acceptable internal consistency, we determined that batteries with internal consistency scores approaching .60 or above would be considered acceptable.[i] After assessing internal consistency, items within each battery were combined into composite scores that indicated participants' average level of agreement with the statements that articulate the core assumptions of each mindset, attitude, or opinion. All composites have been transposed to a 100-point scale, so 50 represents the midpoint of the scale ("neither agree nor disagree"). As scores get closer to zero, this indicates increasingly strong disagreement with the statements. As scores get closer to 100, this indicates increasingly strong agreement with the statements.

After conducting the preliminary analyses described above, we used multiple regression analysis to determine whether there were significant differences in the outcomes between each of the experimental frame conditions and the null control condition. A threshold of $P < .05$ was used to determine whether the experimental frame conditions had any significant effects. Significant differences were understood as evidence that a term influenced a particular outcome (for example, collective efficacy). We also used $P < .10$ to determine whether the experimental frame conditions had any marginal effects. Although we don't typically make recommendations based on marginal effects, we do consider these effects as part of a holistic approach to understanding broader patterns across results.

As with all research, it is important to remember that results are based on a sample of the population, not the entire population. As such, all results are subject to margins of error.

APPENDIX A

# OTS Interviews—Round 1

## Tested Metaphor Iterations

**Amplifier:** Artificial intelligence (AI) amplifies society's biases. AI is a computer system that is trained to recognize patterns and make predictions and decisions. Like amplifiers boost sound, AI boosts the ability of computers to make predictions. But just as amplifiers can overload the microphone and distort the sound, AI can distort the perception of reality. AI amplifies certain patterns in the data, which turns up the volume of any biases that exist in that data.

**Steroids:** Artificial intelligence (AI) puts society's biases on steroids. AI is a computer system that is trained to recognize patterns and make predictions and decisions. Like steroids boost muscle growth, AI boosts the ability of computers to make predictions. But just as steroids have negative side effects, so can AI. AI pumps up certain patterns in the data, which puts any biases that exist in that data on steroids.

**Telescope:** Artificial intelligence (AI) magnifies society's biases. AI is a computer system that is trained to recognize patterns and make predictions and decisions. Like a telescope boosts images, AI boosts the ability of computers to make predictions. But just as a telescope can distort an image, AI can distort the perception of reality. AI magnifies certain patterns in the data, which makes any biases that exist in that data more prominent.

**Film Plot:** Artificial intelligence (AI) makes predictions in the same way we predict what will happen in the plot of a film. AI is trained by developers to recognize patterns in data and tell a story about what will happen next. Just like we learn how a rom-com or a cop drama will usually unfold in a certain way, AI is trained to pick up on patterns. However, just like in a film, where we can tell who the 'bad guy' is supposed to be because of the way they look, AI can reflect human bias. If there is bias in the data, or in the people who develop the algorithms, then this will affect how AI makes predictions.

**Credit Score:** Artificial intelligence (AI) makes predictions in the same way credit scores predict if someone is likely to pay back a loan. AI is trained by developers to recognize patterns in data and tell a story about what will happen next. Just like a credit score will look through someone's habits and history to conclude whether or not to give them a loan, AI is trained to pick up on patterns. However, just like credit scores can reflect past discriminatory lending practices, AI can reflect human bias. If there is bias in the data, or in the people who develop the algorithms, then this will affect how AI makes predictions.

**Rigged Game:** Artificial intelligence (AI) makes predictions in the same way that a rigged game predicts the winner. AI is trained by developers to recognize patterns in data and tell a story about what will happen next. Just like a game where the rules are written in a way that always leads to particular winners and losers, AI is trained to pick up on patterns. However, just like a rigged game reveals the favoritism of those designing the game, AI can reflect human bias. If there is bias in the data, or in the people who develop the algorithms, then this will affect how AI makes predictions.

**Router Saw/Grooves:** Artificial intelligence (AI) makes grooves for society's decision-making processes. Just like a high-precision saw is calibrated to cut a groove through wood, AI uses algorithms to recognize patterns in data and automate decisions. Just like a saw needs to be carefully set up to cut the correct angle, depth, and direction, AI developers train algorithms using data. If there is anything incorrect or biased in the initial data or training, then AI will follow a groove that goes increasingly off course. In this way, much like a saw, AI must be corrected early and often to make the most helpful decisions.

APPENDIX B

# Pilot Survey

## Definitions Tested:

1. AI is a computer process that is used for identifying patterns in large amounts of data.
2. AI is a computer process that is used to make connections in large amounts of data.
3. AI can be used to process large amounts of data and identify patterns within it.
4. AI can be used to process large amounts of data and identify patterns within it, but cannot make meaning or make predictions like humans can.
5. AI can be used to process large amounts of data and identify patterns within it, but does not have awareness or consciousness like humans do.

## Battery: Basic Information and Misconceptions About AI

*How much do you agree or disagree with the following statements? (7-point Likert scale)*

1. AI can think and reason just like humans can.
2. AI can do everything that humans can.
3. AI can develop a consciousness.
4. AI is completely autonomous and doesn't need humans to function. (Reversed Item)
5. AI is a computer process designed by humans.
6. AI is designed to search for patterns in data.
7. Results from AI are always accurate. (Reversed Item)
8. AI is only as good as the data it is given.
9. AI will always produce unbiased results. (Reversed Item)

APPENDIX C

# Peer Discourse Sessions

## Contextual Explanations

**Session 1—Health care.** Health insurance companies use AI computing processes to assess health care risk and determine which patients would need treatment in the future. AI processes data that include a patient's past spending on health care to determine the future risks and thus the need for extra care. Higher spending equals lower future risk. Spending on health care for Black families in the United States has historically been lower than for non-Black families because of historical lower incomes and access to resources in Black communities. When AI-generated data use spending data as their criteria, Black patients are often categorized as high-risk and disqualified from receiving extra care despite Black Americans having the nation's highest cancer death rate and being more likely to be diagnosed with diabetes when compared to white Americans.

**Session 2—Policing.** Police officers use AI computing processes to assess where crime is likely to happen and therefore where to assign patrol units. AI processes data including zip codes and historical arrest rates in those areas. Zip codes with high Black populations have historically been over-policed and, thus, have higher arrest rates. When AI-generated data indicate the likelihood that crime will occur based on a zip code and past arrest data, the over-policing of Black communities is perpetuated, even if law enforcement officers using the AI do not intend such harm.

**Session 3—Child welfare.** Social workers use AI computing processes designed to calculate the risk that a child will be placed in foster care in the future. AI processes data that include receipt of public benefits, such as Medicaid, and mental health diagnoses, among other government data sets. A high rate of parents with disabilities have a need for additional support and services, including from public benefits programs. When AI-generated data use benefits data to calculate whether a child is at risk to be placed in foster care, it could result in the disproportionate removal of children from families with disabilities, even if the social workers do not intend such harm.

## Values

**Equity/Fairness:** because all people should have opportunities appropriate for their needs. Our goals should be to create equitable conditions so everyone can reach their full potential, regardless of where they started.

**Civil Rights:** because all Americans have the same rights guaranteed by the Constitution. These civil rights must be protected so that people don't experience discrimination or destruction of property.

**Justice:** because all people must be treated impartially, fairly, and reasonably. There are communities in our country that have experienced historical injustices, and this cannot continue today and in the future.

**Human Rights:** because all human beings in the world are entitled to the same rights. As a society, we have an obligation to protect human rights and maintain safe and humane living conditions for all.

APPENDIX D

# Survey Experiment

## Wave 1

### Tested Frames:

1. **Definition 1**
   Artificial intelligence (AI) is a computer process that is used for identifying patterns in large amounts of data.

2. **Definition 2**
   Artificial intelligence (AI) is a computer process that is used for identifying patterns in large amounts of data, but it does not have awareness or consciousness like humans do.

3. **Amplify 1**
   Artificial intelligence (AI) can amplify bias in society. AI is a computer process used for identifying patterns in large amounts of data. However, AI processes cannot recognize or correct biased data. If the data given to an algorithm are biased, then the outcomes generated by that algorithm will also be biased. And when people use these outcomes to make decisions, they end up amplifying existing biases in society and can cause real harm.

4. **Amplify 2**
   Artificial intelligence (AI) can amplify bias in society. AI is a computer process that is used for identifying patterns in large amounts of data, but it does not have awareness or consciousness like humans do. This means that AI processes cannot recognize or correct biased data. If the data given to an algorithm are biased, then the outcomes generated by that algorithm will also be biased. And when people use these outcomes to make decisions, they end up amplifying existing biases in society and can cause real harm.

5. **Shred 1**
   Artificial intelligence (AI) is a computer process that is used for identifying patterns in large amounts of data. However, AI processes can't recognize when they are generating misleading results. AI processes break data down into shreds and use the rules of an algorithm to tape those shreds of information back together. If there is any bias programmed into the algorithm, the outcomes generated by that algorithm will also be biased. These outcomes then present a distorted version of the original data and can cause real harm in society.

6. **Shred 2**

Artificial intelligence (AI) is a computer process that is used for identifying patterns in large amounts of data, but it does not have awareness or consciousness like humans do. This means that AI processes cannot recognize when they are generating misleading results. AI processes break data down into shreds and use the rules of an algorithm to tape those shreds of information back together. If there is any bias programmed into the algorithm, the outcomes generated by that algorithm will also be biased. These outcomes then present a distorted version of the original data and can cause real harm in society.

## Dependent Variables

### Battery A: Bias in AI

Please rate how much you agree or disagree with the following statements. *[7-point scale: 1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neutral, 5 = somewhat agree, 6 = agree, 7 = strongly agree]*

A1. AI processes are inherently unbiased. (Reversed item)

A2. Algorithms can't be biased. (Reversed item)

A3. The results of AI processes always lead to fair outcomes. (Reversed item)

A4. The outcomes generated by AI are always accurate. (Reversed item)

A5. AI processes ignore biased data. (Reversed item)

A6. AI algorithms have safeguards against bad data. (Reversed item)

A7. Biased AI processes can cause harm to racial and ethnic minorities.

A8. Biased outcomes generated by AI can increase discrimination against people of color.

A9. Biased AI outcomes disproportionately affect people of color.

A10. Racial and ethnic minority groups are most negatively affected by biased AI results.

### Battery B: Policy Support

Please rate how much you oppose or support the following policies. Please note that some of these policies may involve an **increase in state or federal taxes.**

B1. Drastically limit the amount of data that corporations are allowed to accumulate.

B2. Strictly regulate the types of data that can be used to develop AI.

B3. Require federal approval of data before companies can use it to train or develop AI.

B4. Impose severe financial penalties on companies who do not make their AI data publicly available.

B5. Legally require companies developing AI technology to publish two independent audits of all data sources used to train their AI products.

B6. Establish a US Department of Artificial Intelligence that will strictly enforce the legal and ethical use of AI.

B7. Legally require companies to publish details about the data they plan to use before they develop any AI systems.

B8. Legally require companies to obtain permission before using individuals' personal data to train AI systems.

### Battery C. Collective Efficacy

Please rate how much you agree or disagree with the following statements. *[7-point scale: 1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neutral, 5 = somewhat agree, 6 = agree, 7 = strongly agree]*

### Proxy Efficacy (Proxy = Government)

C1. I am optimistic that the government will pass laws that will reduce bias in AI.

C2. It is realistic to believe that our government can reduce bias in AI.

C3. I am confident that our government can create effective policies to reduce bias in AI.

C4. I don't believe that our government will work to limit bias in AI. (Reversed item)

### Proxy Efficacy (Proxy = Corporations)

C5. It is realistic to believe that corporations will reduce the bias in their AI technologies.

C6. I am confident that corporations can reduce bias in AI.

C7. I am optimistic that companies will work to limit bias in their AI technologies.

C8. I don't believe that companies will reduce bias in their AI technologies. (Reversed item)

### Collective Efficacy

C9. I am optimistic that we, as a society, can reduce bias in AI.

C10. It is realistic to think that we, as a society, can reduce bias in AI.

C11. I am confident that we, as a society, will support measures to reduce bias in AI.

C12. I am not confident that we, as a society, can reduce bias in AI. (Reversed item)

### Battery D: Salience

Ethical Impact Assessment: *an independent assessment that would identify and assess the benefits, concerns, and risks of AI systems, specifically regarding the system's impact on human rights and fundamental freedoms for at-risk populations and people in vulnerable situations.*

D1. How much do you support requiring an independent *ethical impact assessment* for all **new** companies seeking to develop and deploy AI systems? *[5-point scale: 1 = not at all, 2 = a little, 3 = a moderate amount, 4 = a lot, 5 = very much]*

D2. How much do you support halting the use and development of AI for **existing** companies until an independent *ethical impact assessment* is completed and all concerns are addressed? *[5-point scale: 1 = not at all, 2 = a little, 3 = a moderate amount, 4 = a lot, 5 = very much]*

D3. How much would you support a political candidate who had a record of supporting *ethical impact assessments* for AI? *[5-point scale: 1 = not at all, 2 = a little, 3 = a moderate amount, 4 = a lot, 5 = very much]*

D4. If one political candidate has a record of supporting *ethical impact assessments* for AI and a second candidate does not, how likely would you be to vote for the **first candidate over the second**? *[5-point scale: 1 = not at all likely, 2 = somewhat unlikely, 3 = neither likely nor unlikely, 4 = somewhat likely, 5 = extremely likely]*

D5. Please rank the following issues in terms of how important they are to you personally. Place the most important issue at the top of the list and the least important issue at the bottom of the list:

1. Data security
2. Online harassment
3. Misinformation on social media
4. Internet addiction
5. Cybersecurity
6. Bias in AI

### Battery E. Misconceptions About AI

Please rate how much you agree or disagree with the following statements. *[7-point scale: 1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neutral, 5 = somewhat agree, 6 = agree, 7 = strongly agree]*

E1. AI can think and reason just like humans can.

E2. AI can do everything that humans can do.

E3. AI can develop a consciousness.

E4. AI can feel emotions just like humans.

E5. AI does not need human input.

E6. AI is a totally independent software.

E7. AI can do everything it needs on its own.

E8. AI doesn't need humans to help it function.

# Wave 2

## Tested Frames:

1. **Collective Responsibility**

   As a society, we have a collective responsibility to ensure that AI is used to benefit and protect the wellbeing of the general public. But right now, we are failing in this responsibility. AI is being used in ways that are harmful, and Black, Brown, and low-income communities are most affected. To fulfill our obligation and make sure that AI is helpful for all of us and doesn't cause harm, we need to advocate for AI regulations that prioritize the public's best interests.

   We can live up to our responsibility by calling for more transparency in how companies develop AI and demanding ethical guidelines for how AI is used. By demanding more accountability, we can fulfill our obligations and make sure that AI doesn't cause harm.

2. **Government Responsibility**

   Our government has a responsibility to ensure that AI is used to benefit and protect the wellbeing of the general public. But right now, the government is failing in this responsibility. AI is being used in ways that are harmful, and Black, Brown, and low-income communities are most affected. To fulfill this obligation and make sure that AI is helpful for all of us and doesn't cause harm, the government must implement AI regulations that prioritize the public's best interests.

   Our government can live up to its responsibility by legally requiring more transparency in how companies develop AI and enforcing ethical guidelines for how AI is used. By legally requiring more accountability, our government can fulfill its obligations and make sure that AI doesn't cause harm.

3. **Vision + Process**

   Together, we can create a better future where AI is used to benefit and protect the wellbeing of the general public. In this future, when we make collective decisions about how AI is developed, we will require that corporations use unbiased data and keep AI from causing harm that is often felt most in Black, Brown, and low-income communities. When we set up policies around how AI is used, we will put the public interest ahead of corporate profit. In this world, all of our decisions about AI will aim to improve quality of life for everyone. By working together now, we will be on our way toward a future where AI is helpful for all of us and isn't used to cause harm.

4. **Vision + Outcome**

   Together, we can create a better future where AI is used to benefit and protect the wellbeing of the general public. In this future world, corporations that develop AI are transparent about where they get their data from and make their data available for public review. And corporations are held accountable for the AI they develop and have to meet regulations that keep their technologies from disproportionately harming Black, Brown, and low-income communities. In this world, AI benefits the public interest and improves quality of life for all. By working together now, we can create a better future where AI is helpful for all of us and isn't used to cause harm.

5. **Critique of Status Quo**

   AI should be used to benefit and protect the welfare and wellbeing of the general public. Unfortunately, this isn't the world we live in. Right now, private interests and profits are put above the public's best interests. There are very few regulations on how AI can be developed and used, so companies can create AI for just about anything, with any data they choose, using low standards or irresponsible programming practices. And developers and users of AI technologies are not held accountable for the decisions they make that cause harm, which is often felt most by Black, Brown, and low-income communities.

   Our society is failing us all—and especially Black, Brown, and low-income communities—by putting corporate profits above public interest when it comes to AI. We must act now to fix this.

6. **Vision + Process + Critique**

   AI should be used to benefit and protect the welfare and wellbeing of the general public. Unfortunately, this isn't the world we live in. Right now, private interests and profits are put above the public's best interests. There are very few regulations on how AI can be developed and used, so companies can create AI for just about anything, with any data they choose, using low data standards or irresponsible programming practices. And developers and users of AI technologies are not held accountable for the decisions they make that cause harm, which is often felt most by Black, Brown, and low-income communities.

   Together, we can create a better future where AI is used to benefit and protect the wellbeing of the general public. In this future, when we make collective decisions about how AI is developed, we will require that corporations use unbiased data and keep AI from causing harm that is often felt most in Black, Brown, and low-income communities. When we set up policies around how AI is used, we will put the public interest ahead of corporate profit. In this world, all of our decisions about AI will aim to improve quality of life for all. By working together now, we will be on our way toward a future where AI is helpful for all of us and isn't used to cause harm.

7. **Vision + Outcome + Critique**

   AI should be used to benefit and protect the welfare and wellbeing of the general public. Unfortunately, this isn't the world we live in. Right now, private interests and profits are put above the public's best interests. There are very few regulations on how AI can be developed and used, so companies can create AI for just about anything, using low data standards or irresponsible programming practices. And developers and users of AI technologies are not held accountable for the decisions they make that cause harm, which is most often felt by Black, Brown, and low-income communities.

   Together, we can create a better future where AI is used to benefit and protect the wellbeing of the general public. In this future world, corporations that develop AI are transparent about where they get their data from and make their data available for public review. And corporations are held accountable for the AI they develop and have to meet regulations that keep their technologies from disproportionately harming Black, Brown, and low-income communities. In this world, AI benefits the public interest and improves quality of life for all. By working together now, we can create a better future where AI is helpful for all of us and isn't used to cause harm.

8. **Garbage In = Garbage Out**

AI is only as good as the data it's trained on. When the data used to develop and train AI are biased or incomplete, the computer process can replicate and intensify this bias in its results. These biased results can cause real harm, and is most often felt by Black, Brown, and low-income communities.

AI can be used for the public good, but only if it is developed properly. If we want to prevent AI from causing harm, we must demand stricter regulations around what data can be used to develop and train AI.

9. **Garbage In = Garbage Out +**

AI is only as good as the data it's trained on. When the data used to develop and train AI are biased or incomplete, the computer process can replicate and intensify this bias in its results. These biased results can cause real harm, and is most often felt by Black, Brown, and low-income communities.

But biased data aren't the only problem with AI. Even with good data and responsible development, AI can still be used in ways that cause harm. Because humans have to interpret the results produced by AI, our own biases influence how we make decisions about these results, even if we don't mean them to.

AI can be used for the public good, but only if it is developed and used properly. If we want to prevent AI from causing harm, we demand stricter regulations around what data can be used to develop and train AI as well as what AI can be used for.

10. **Fairness**

As a society, we believe that all people should have what they need to do well, regardless of where they come from, the color of their skin, or how much money they make. As AI becomes more widely available, we need to make sure that it is used fairly, to benefit all of us.

Right now, AI is not being used fairly. Private interests and profits are put above the public's best interests, which means that AI can be developed and used in ways that keep resources and opportunities from certain people and places. This is particularly true for Black, Brown, and low-income communities.

We need to make sure that AI is being used to distribute resources and opportunities fairly across communities. This is why we must come together and demand corporate accountability for how AI is developed and used. If we do this, we can make sure that AI is fair and beneficial to us all.

11. **Rights**

As a society, we believe that all people have fundamental rights, regardless of where they come from, the color of their skin, or how much money they make. As AI becomes more widely available, we need to make sure that it is used in ways that protect our rights.

Right now, AI is not being used to protect our rights. Private interests and profits are put above the public's best interests, which means that AI can be developed and used in ways that end up violating these rights. This is particularly true for people in Black, Brown, and low-income communities.

We need to make sure that AI is not used to violate anyone's rights. This is why we must come together and demand corporate accountability for how AI is developed and used. If we do this, we can make sure that AI protects our rights and is beneficial to us all.

**12. Justice**

As a society, we believe that all people must be treated impartially, fairly, and reasonably, regardless of where they come from, the color of their skin, or how much money they make. As AI becomes widely more available, we need to make sure that it is used in ways that do not further harm historically oppressed communities.

Right now, AI is being used in ways that cause disproportionate harm to Black, Brown, and low-income communities. Private interests and profits are put above the public's best interests, which means that AI can be developed and used in ways that help some communities, but cause harm to the very communities that have been historically discriminated against.

We need to make sure that AI is being used in ways that promote justice. This is why we must come together and demand corporate accountability for how AI is developed and used. If we do this, we can make sure that AI is used to advance justice and benefit us all.

## Dependent Variables[3]:

### Battery A: Bias in AI *(label items A1-A10)*

Please rate how much you agree or disagree with the following statements. *[7-point scale: 1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neutral, 5 = somewhat agree, 6 = agree, 7 = strongly agree]*

A1. AI processes are inherently unbiased. (Reversed item)

A2. Algorithms can't be biased. (Reversed item)

A3. The results of AI processes always lead to fair outcomes. (Reversed item)

A4. The outcomes generated by AI are always accurate. (Reversed item)

A5. AI processes ignore biased data. (Reversed item)

A6. AI algorithms have safeguards against bad data. (Reversed item)

A7. Biased AI processes can cause harm to racial and ethnic minorities.

A8. Biased outcomes generated by AI can increase discrimination against people of color.

A9. Biased AI outcomes disproportionately affect people of color.

A10. Racial and ethnic minority groups are most negatively affected by biased AI results.

*A11. AI can be used to create realistic-looking images that increase discrimination.*

*A12. Realistic-looking videos created by AI can be used to spread misinformation.*

3 Only batteries that changed from wave 1 to wave 2 are shown. *Italicized items* indicate items that are new or adjusted from wave 1.

*A13. AI generates text, images, and videos that replicate the existing bias in our society.*

*A14. AI can generate outcomes that make negative stereotypes worse.*

### Battery B: Policy Support *(label items B1-B6)*

Please rate how much you oppose or support the following policies. Please note that some of these policies may involve an **increase in state or federal taxes.** *[7-point scale: 1 = strongly oppose, 2 = oppose, 3 = somewhat oppose, 4 = neither oppose nor support, 5 = somewhat support, 6 = support, 7 = strongly support]*

*B1. Allow citizens to sue companies whose AI products cause harm.*

*B2. Limit the amount of personal data that corporations are allowed to accumulate.*

*B3. Restrict the types of data that can be collected and used to develop AI.*

*B4. Legally require companies to annually evaluate their AI products for bias.*

B5. Legally require companies developing AI technology to publish two independent audits of all data sources used to train their AI products.

*B6. Increase funding for the Federal Trade Commission to enforce bans on racially biased AI products.*

B7. Legally require companies to publish details about the data they plan to use before they develop any AI systems.

B8. Legally require companies to obtain permission before using individuals' personal data to train AI systems.

*B9. Create and fund a Federal Digital Platform Commission that is responsible for regulating AI.*

*B10. Legally require companies to investigate and fix issues that arise from the use of their AI products.*

# Wave 3

## Tested Frames

1. **All the ways AI is present in everyday life (definition 1)**
   AI is a computer process that is used for identifying patterns in large amounts of data. AI has become a regular part of how we live—working in the background to do things like categorize emails as spam, alert us to potential bank fraud, and recommend new movies or songs we might enjoy. Other AI processes are used to predict everything from health outcomes to traffic patterns to potential crime. With AI technology so present in our daily lives, we need to be sure it isn't used to cause harm.

2. **AI is present in everyday life + bias (definition 1)**

   AI is a computer process that is used for identifying patterns in large amounts of data. AI has become a regular part of how we live—working in the background to do things like categorize emails as spam, alert us to potential bank fraud, and recommend new movies or songs we might enjoy. Other AI processes are used to predict everything from health outcomes to traffic patterns to potential crime.

   AI is only as good as the data it's trained on, so when the data used to develop and train AI are biased or inaccurate, the computer process reproduces that bias in its results. Biased AI results can strengthen harmful stereotypes, make inaccurate predictions, and cause real harm, most of which is felt by Black, Brown, and low-income communities. With AI technology so present in our daily lives, we need to be sure it isn't used to cause harm.

3. **All the ways AI is present in everyday life + bias + generative AI (definition 1)**

   AI is a computer process that is used for identifying patterns in large amounts of data. AI has become a regular part of how we live—working in the background to do things like categorize emails as spam, alert us to potential bank fraud, and recommend new movies or songs we might enjoy. Many other AI processes are used to predict everything from health outcomes to traffic patterns to potential crime.

   AI is only as good as the data it's trained on, so when the data used to develop and train AI are biased or inaccurate, the computer process can reproduce that bias in its results. Biased AI results can strengthen harmful stereotypes, make inaccurate predictions, and cause real harm, most of which is felt by Black, Brown, and low-income communities.

   Right now, generative AI—computer processes that use existing data to create new content, like ChatGPT and DALL-E—is becoming more common. These generative AI systems have the potential to support creativity, as well as the potential to produce biased or harmful results. With AI technology so present in our daily lives, we need to be sure it isn't used to cause harm.

4. **At every stage there is human involvement (definition 2)**

   AI is a computer process that is used for identifying patterns in large amounts of data, but it does not have awareness or consciousness like humans do. It is only through human design and interpretation that AI can create meaningful results.

   Behind every AI process, there is a team of humans responsible for making it work. There are people responsible for choosing the data that will train the AI, while others clean and process that data before training begins. There are people responsible for designing, programming, and adjusting the AI, while others monitor the AI results and ensure it is working as designed. And, eventually, humans are required to interpret AI results and put them to use in the real world.

   AI doesn't work without the people who design, test, and use it. As AI technology becomes more and more common, we must have policies in place to ensure that AI is developed in ways that benefit society and can't cause harm.

5. **At every stage there is human *bias* (definition 2)**

   AI is a computer process that is used for identifying patterns in large amounts of data, but it does not have awareness or consciousness like humans do. It is only through human design and interpretation that AI can create meaningful results.

   Behind every AI process, there is a team of humans responsible for making it work. There are people responsible for choosing the data that will train the AI, while others clean and process that data before training begins. There are people responsible for designing, programming, and adjusting the AI, while others monitor the AI results and ensure it is working as designed. And, eventually, humans are required to interpret AI results and put them to use in the real world.

   But we live in a biased society, and these biases affect AI results and cause real harm—even if we don't mean them to. AI doesn't work without the people who design, test, and use it, which means that our societal biases are embedded in AI. As AI technology becomes more and more common, we must have policies in place to ensure that AI is developed in ways that benefit society and can't cause harm.

6. **Rigged system—general**

   In America, we live in a system that is rigged to benefit a few people at the expense of the many. Our system concentrates power and wealth in the hands of the few, and they use this influence to increase their own power and wealth. People with wealth and power often have high stakes in the development of new technology, like AI. Their investments into this technology mean they maintain control over information, data, and how AI is developed and used. In this way, the rich and powerful can create AI that helps maintain their status while leaving the rest of us behind, and this is especially harmful for Black, Brown, and low-income communities.

   Our system is rigged by the wealthy and powerful, but it doesn't have to be this way. Together, we can start unrigging the system by holding the wealthy and powerful accountable for their investments in new AI technology, regulating the use of data, and demanding that AI be used only to benefit and protect the wellbeing of the general public.

7. **Rigged system—corporations**

   In America, we live in a system that puts corporate profits over public interests. Our system concentrates power and wealth in the hands of big corporations, and they use this influence to increase their own power and wealth. Big corporations control the development of most new technology, including AI. This monopoly means that corporations maintain control over information, data, and how AI is developed and used. In this way, corporations can create AI that increases their profits while ignoring the harms it can cause in society—harms most often felt by Black, Brown, and low-income communities.

   Our system is rigged to put profits over people, but it doesn't have to be this way. Together, we can start unrigging the system by holding corporations accountable for their AI technologies, regulating the use of data, and demanding that AI be used only to benefit and protect the wellbeing of the general public.

8. **Data autonomy—individual rights**

AI is a computer process that is used for identifying patterns in large amounts of data. But AI is only as good as the data it's trained on. In today's digital world, we are required to share our personal data on a daily basis, and sometimes our data are collected and used in undetectable ways—often without our full knowledge, understanding, or consent.

This is concerning because when the data used to develop and train AI are biased or incomplete, the computer process can replicate and intensify that bias in its results. These biased results can cause real harm in our society, which is most often felt by Black, Brown, and low-income communities. To prevent our data from being used in harmful ways, we need guaranteed rights over our personal data, who can access it, and how it can be used.

9. **Data autonomy—government protection**

AI is a computer process that is used for identifying patterns in large amounts of data. But AI is only as good as the data it's trained on. In today's digital world, we are required to share our personal data on a daily basis, and government policies are not in place to protect us. Sometimes, our data are collected and used in undetectable ways—often without our full knowledge, understanding, or consent.

This is concerning because when the data used to develop and train AI are biased or incomplete, the computer process can replicate and intensify that bias in its results. These biased results can cause real harm in our society, which is most often felt by Black, Brown, and low-income communities. To prevent our data from being used in harmful ways, we need the government to protect our rights over our personal data, who can access it, and how it can be used.

10. **Echo (bias)**

AI is a computer process that is used for identifying patterns in large amounts of data, but it does not have awareness or consciousness like humans do. This is why humans are crucial to AI—deeply involved in data collection, development, testing, and use. But we live in a biased society, which means that these biases are often echoed in AI results. And because AI processes cannot recognize when results are echoing social biases, we end up with AI processes unintentionally causing real harm that reverberates through our society.

11. **Echo (bias + power)**

AI is a computer process that is used for identifying patterns in large amounts of data, but it does not have awareness or consciousness like humans do. This is why humans are crucial to AI—deeply involved in data collection, development, testing, and use. But we live in an unbalanced society, where the powerful have lots of control and the rest of us have very little. In this way, AI echoes the interests of people in positions of power. And because AI processes cannot recognize when results are echoing social biases, we end up with AI processes reflecting current systems of power and unintentionally causing real harm that reverberates through our society.

**12. Amplify (bias)**

AI is a computer process that is used for identifying patterns in large amounts of data, but it does not have awareness or consciousness like humans do. This is why humans are critical to AI—deeply involved in data collection, development, testing, and use. But we live in a biased society, which means that these biases are often amplified in AI results. And because AI processes cannot recognize when results are amplifying bias, we end up with AI processes that unintentionally increase real harm in society.

**13. Amplify (bias + power)**

AI is a computer process that is used for identifying patterns in large amounts of data, but it does not have awareness or consciousness like humans do. This is why humans are critical to AI—deeply involved in data collection, development, testing, and use. But we live in an unbalanced society, where the powerful have lots of control and the rest of us have very little. In this way, AI amplifies the interests of people in positions of power. Because AI processes cannot recognize when results are amplifying bias, existing systems of power get boosted and unintentionally increase real harm in society.

**14. Data Mining (bias)**

AI is a computer process that mines large amounts of data to identify patterns, extract information, and make predictions. In this way, AI is only as good as the data it's trained on. But data left untapped doesn't have much value—it's only when we're able to process and interpret that data that they become usable. The value of data is in the information that can be extracted from them and the decisions that are made based on that information.

Because humans are crucial to AI—deeply involved in data extraction, processing, and use—the motivations and interests of corporations, governments, and individual users can cause harm, even if it's unintentional. By demanding stronger rules around what data can be mined and processed to develop AI, we can reduce the amount of human bias involved and ensure that AI is only used for the public good.

## Dependent Variables[4]:

### Battery D: Salience

*D1. How much do you agree that it should be an **urgent priority** for the government to reduce potential harms caused by AI technologies?*

*[5-point Likert: 1 = not at all, 2 = agree a little bit, 3 = somewhat agree, 4 = agree, 5 = strongly agree]*

*D2. Compared to all the things you care about, how much do you personally care about the issue of bias in AI?*

*[5-point Likert: 1 = not at all, 2 = a little, 3 = some, 4 = a considerable amount, 5 = a substantial amount]*

*D3. When considering which political candidates to vote for, how much does their stance on regulating AI matter to you?*

4 Only batteries that changed from wave 2 to wave 3 are shown. *Italicized items* indicate items that are new or adjusted from wave 2.

*[5-point Likert: 1 = not at all, 2 = a little, 3 = some, 4 = a considerable amount, 5 = a substantial amount]*

*D4. How much attention do you believe policymakers should devote to addressing the issue of biased AI? [5-point Likert: 1 = none at all, 2 = a little, 3 = some, 4 = a considerable amount, 5 = a substantial amount]*

### Battery E. Misconceptions About AI

Please rate how much you agree or disagree with the following statements. *[7-point scale: 1 = strongly disagree, 2 = disagree, 3 = somewhat disagree, 4 = neutral, 5 = somewhat agree, 6 = agree, 7 = strongly agree]*

E1. AI can think and reason just like humans can.

E2. AI can do everything that humans can do.

E3. AI can develop a consciousness.

E4. AI can feel emotions just like humans.

E5. AI does not need human input.

*E7. AI can do everything it needs without humans.*

*E8. Humans aren't necessary to develop AI.*

*E9. Humans are involved in all aspects of AI. (Reversed item)*

APPENDIX E

# OTS Interviews—Round 2

## Tools Tested for AI OTS

### Systems of Power 1

AI is a computer process that is used for identifying patterns in large amounts of data, but it does not have awareness or consciousness like humans do. AI technology has become a regular part of how we live—working in the background in household devices and online search engines as well as being used in areas of public interest, such as policing, health care, and child welfare.

Powerful corporations control the development of most new technology, including AI, as well as the information and data used to develop AI. That means corporations can create AI that increases their profits while ignoring the harms it can cause in society. Together, we can hold corporations accountable for their AI technologies and the use of data and demand that AI be used for the interests of the general public.

### Systems of Power 2

AI is a computer process that is used for identifying patterns in large amounts of data, but it does not have awareness or consciousness like humans do. AI technology has become a regular part of how we live—working in the background in household devices and online search engines as well as being used in areas of public interest, such as policing, health care, and child welfare.

The powerful in our society have control over the development and use of data in AI. This often means that AI data contain biases that favor those with power and produce results rigged against our communities, especially Black, Brown, and low-income communities. We need to make sure that everyone has rights over their data, who can access them, and how they can be used with AI.

### Systems of Power 3

AI is a computer process that is used for identifying patterns in large amounts of data, but it does not have awareness or consciousness like humans do. AI technology has become a regular part of how we live—working in the background in household devices and online search engines as well as being used in areas of public interest, such as policing, health care, and child welfare.

The powerful in our society have control over the development and use of data in AI. This means that AI data echo the biases of society and particularly the biases of those with more power. This causes harm that reverberates through our society, especially in Black, Brown, and low-income communities. We need to make sure that AI technology is used in ways that empower our communities and advance justice and benefits for all.

## Human Impact 1

AI is a computer process that is used for identifying patterns in large amounts of data, but it does not have awareness or consciousness like humans do. AI technology has become a regular part of how we live—working in the background in household devices and online search engines as well as being used in areas of public interest, such as policing, health care, and child welfare.

People are involved at every stage of AI processes, and because we live in a biased society, social biases are echoed in AI technologies. These biases in AI cause real harm to people that reverberates through our society, especially in Black, Brown, and low-income communities. As AI becomes widely more available, we have a collective responsibility to ensure that AI is used to benefit and protect the wellbeing of the general public.

## Human Impact 2

AI is a computer process that is used for identifying patterns in large amounts of data, but it does not have awareness or consciousness like humans do. AI technology has become a regular part of how we live—working in the background in household devices and online search engines as well as being used in areas of public interest, such as policing, health care, and child welfare.

AI technology can only create meaningful results through human design and interpretation. Behind every AI process, there are human workers responsible for choosing the data to train the AI and designing and applying AI results in human societies. We need to make sure that AI technology is not used to violate anyone's human or civil rights by guaranteeing rights over our personal data, who can access our data, and how our data can be used.

## Human Impact 3

AI is a computer process that is used for identifying patterns in large amounts of data, but it does not have awareness or consciousness like humans do. AI technology has become a regular part of how we live—working in the background in household devices and online search engines as well as being used in areas of public interest, such as policing, health care, and child welfare.

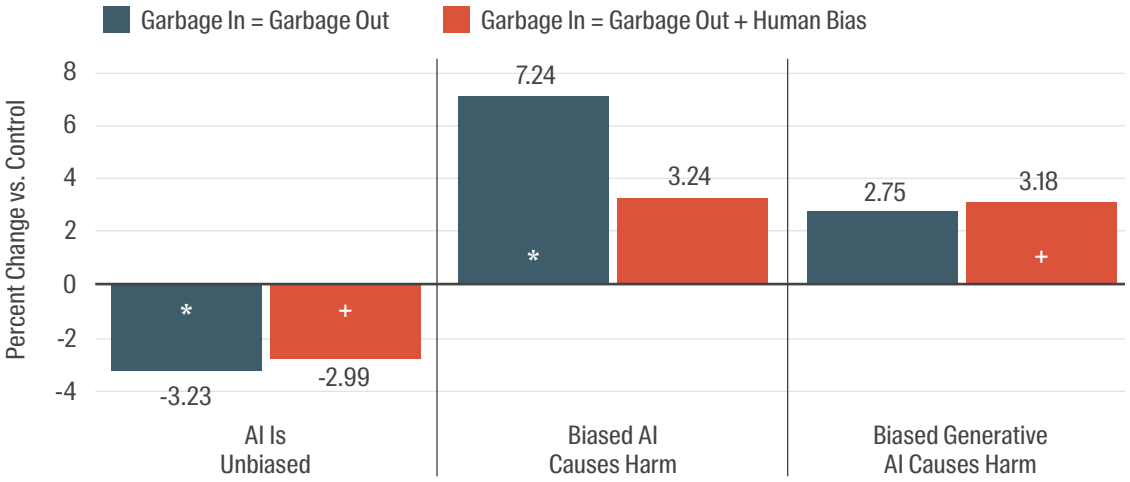
People develop AI from data that contain the biases of society. That means that AI processes carry biases that can cause real harm to people, especially in Black, Brown, and low-income communities. As AI becomes widely more available, we need to make sure that it is used in ways that do not further harm historically oppressed communities and that AI is used to advance justice and benefits for all.

APPENDIX F

# Quantitative Data Supporting Recommendations

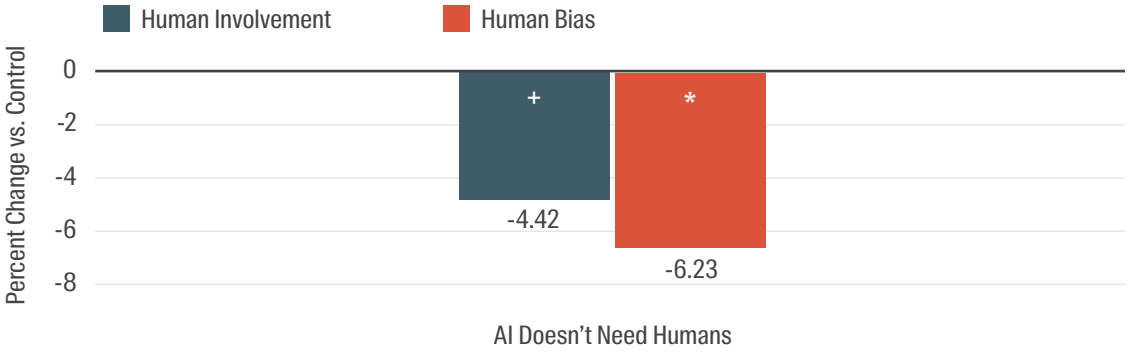
## Framing data as socially produced increases understanding of bias in AI.

**Graph 1. Show the role of systemic bias in AI by explaining how data used in AI technology are socially produced.**



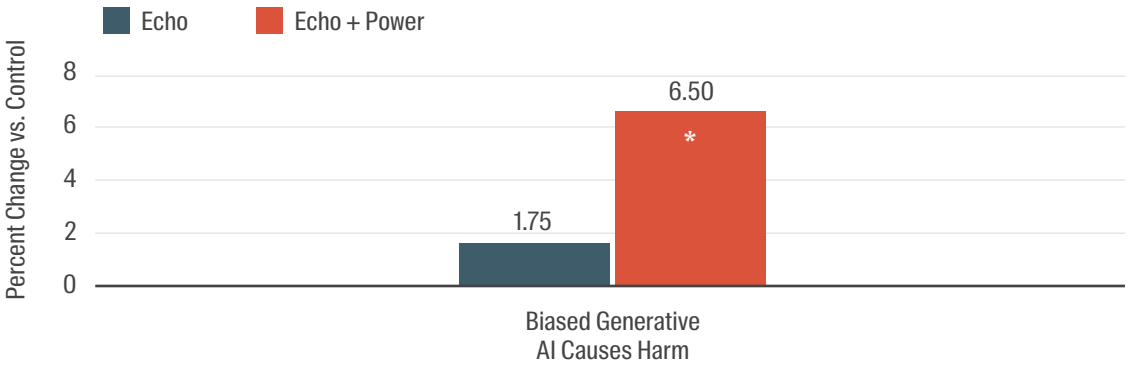

## Explaining human involvement in AI helps correct the misconception that AI doesn't need humans to function.

**Graph 2. Describe the extent of human involvement at every stage in the development of AI.**



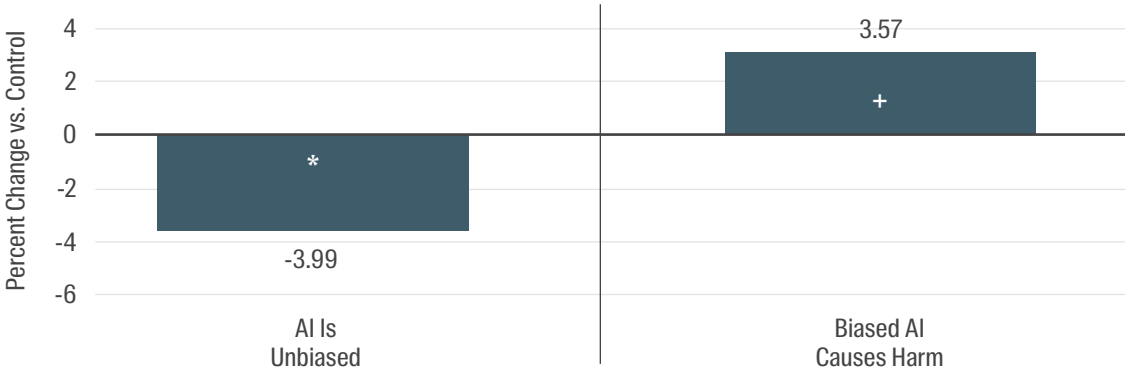
## When tied to systems of social power, the “echo” metaphor increases understanding of bias in AI.

**Graph 3. Use the natural language metaphor of an “echo” to talk about how AI data can reflect the biases of our society.**




## The “amplification” metaphor increases understanding of bias in AI.

**Graph 4. Use an “amplification” metaphor to talk about how AI technology can increase the harm to already marginalized communities in our society.**



# Endnote

1. Taber, K.S. (2011). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48, 1273–1296.

# About FrameWorks

The FrameWorks Institute is a nonprofit think tank that advances the mission-driven sector's capacity to frame the public discourse about social and scientific issues. The organization's signature approach, Strategic Frame Analysis®, offers empirical guidance on what to say, how to say it, and what to leave unsaid. FrameWorks designs, conducts, and publishes multi-method, multidisciplinary framing research to prepare experts and advocates to expand their constituencies, to build public will, and to further public understanding. To make sure this research drives social change, FrameWorks supports partners in reframing through strategic consultation, campaign design, FrameChecks®, toolkits, online courses, and in-depth learning engagements known as FrameLabs. In 2015, FrameWorks was named one of nine organizations worldwide to receive the MacArthur Award for Creative and Effective Institutions.

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# Framing the Social Implications of AI



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