

# The “Fake News” Effect: Experimentally Identifying Motivated Reasoning Using Trust in News

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Analysis Plan

May 25, 2020

## Introduction and Theory of Motivated Reasoning

When people receive information about controversial issues such as immigration policies, upward mobility, and racial discrimination, the information often evokes both what they currently believe and what they are motivated to believe. In this project, the theory of *motivated reasoning* posits that people distort their processing of information in the direction of their motivated beliefs.

The primary outcome is a constructed measure of motivated reasoning that looks at the directional deviation from Bayes’ rule, and is described in more detail below. Secondary outcomes include belief polarization, overconfidence, and overprecision on politicized and performance-relevant topics.

## Identifying Motivated Reasoning Using News Veracity Assessments

The primary goal of the experimental design is to identify motivated reasoning from Bayesian updating. On many issues studied in this experiment (Table 1), people may have preconceived beliefs that differ and reflect something about what they are motivated to believe. As such, the experiment is designed to take people’s current beliefs and construct an environment in which they have the same priors over a state and receive information with the same subjective likelihood, but different hypothesized motivated beliefs.

To test the hypothesis that subjects bias their updating in the direction of their political preference, we see whether subjects find news more trustworthy if it says they should change

their beliefs even more in the “Pro-Motive” versus the “Anti-Motive” direction, and to argue that this trust discrepancy is due to motivated reasoning. Potential motives in this study relate to politics and performance.

The main test of this in the experiment involves three steps. See the Study Materials section for screenshots of subjects’ instruction pages.

1. **Beliefs:** Subjects are asked to guess the answers to questions with numerical solutions. Importantly, they are asked and incentivized to guess their median belief (i.e. such that find it equally likely for the answer to be above or below their guess). They are also asked and incentivized for their interquartile range.
2. **News:** Subjects receive a binary message from one of two news sources: True News and Fake News. The message from True News is always correct, and the message from Fake News is always incorrect. The probability of either source is  $1/2$  and iid across questions. This is the main (within-subject) treatment variation.

The message says either “The answer is **greater than** your previous guess of [previous guess].” or “The answer is **less than** your previous guess of [previous guess].” Note that the message space is *different* for each subject since subjects have different priors. These customized messages are designed so that they have the same *subjective* likelihood of occurring.

3. **Assessment:** After receiving the message, subjects assess the probability that the source was True News on a scale from 0/10 to 10/10 and are incentivized to state their true belief. This is the main outcome measure. The page is identical to the beliefs page but the guess boxes are replaced with assessment choices. The effect of variation in news on veracity assessments is the primary outcome variable for identifying motivated reasoning.

The general point of this setup is that subjects receive messages that compare the answer to their median, so they should not rationally update their assessment based on the message. Directionally different assessments are difficult to reconcile with Bayesian updating; they are also difficult to reconcile with general misweighting of priors (since the prior of source is fixed at  $1/2$ ) or likelihoods (each message is equally likely, so the message is uninformative about source veracity). However, these deviations can be explained by motivated reasoning.

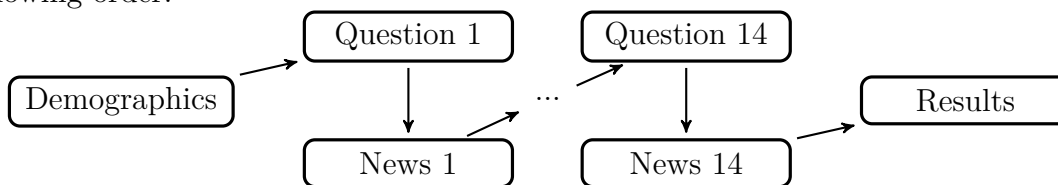
The most direct test is to hypothesize what people are motivated to believe, and compare their assessments on “Pro-Motive” news and “Anti-Motive” news. If Pro-Motive news is trusted more than Anti-Motive news, this indicates that motivated reasoning is likely with these hypothesized motives is at play.

## Subject Pool

1300 subjects from the United States were recruited from Amazon’s Mechanical Turk platform on June 25, 2018. The objective was to obtain approximately 1000 subjects who passed comprehension checks, and 987 ended up passing the checks.

## Experiment Design: Identifying Motivated Reasoning

There are Demographics, Question, News, and Results pages, and subjects see them in the following order:



Before seeing Demographics, subjects must consent to participate in the experiment.

The Demographics page includes questions about party ratings (which will be used to determine subjects’ relative party preference), party affiliation, ideology, gender, age, race and ethnicity, annual income, highest education level, state or territory of residence, religion, and opinion questions (one each about each politicized topic in the study and one about Donald Trump’s performance). It then asks for opinions on issues covered in later questions.

The Results page tells subjects what their overall performance was, what their score on each question and assessment was, and the correct answer to each question and assessment.

The order of Questions 1-12 is randomized between subjects, but Questions 13 and 14 are the same for each subject. These last two questions are “meta-questions” that rely on previous questions: Question 13 asks subjects about their performance on the first 12 questions relative to 100 other (pilot) subjects, and Question 14 asks about other Democratic subjects’ performance compared to other Republican subjects’ performance on Questions 1-12.

Each of the other main questions are equally likely to be selected in each round, but the comprehension check is restricted to be between Question 2-11, inclusive.

## Data Cleaning

Subjects are dropped from the analysis if any of the following conditions are met:

- The subject does not complete the experiment within 60 minutes, and is kicked out of the experiment.
- The subject does not correctly answer the attention check question (“What year is it?”). This requires answering the question and setting upper and lower bounds correctly (all equal to 2018).
- The subject does not correctly answer the attention check news veracity assessment. The subject will see the message: “The correct answer is equal to your previous guess of 2018.” A correct answer involves assessing that this has a 10/10 chance of being True News, and by giving a second guess of 2018.
- On any other question, the subject gives an answer that is not possible. For instance, on questions that ask for percentages that are between 0 and 100, subjects will be dropped if their guess, reguess, upper bound, or lower bound is greater than 100 or less than 0.

Subjects who give a higher rating to the Republican Party are classified as Pro-Rep; subjects who give a higher rating to the Democratic Party are classified as Pro-Dem; subjects who give the same rating to each are disregarded for the analysis regarding Pro-Party / Anti-Party news.

Occasionally, a subject will exactly guess the answer to the initial question. In this case, she skips the news assessment page. This was infrequent, as correct answers tend to be precise.

## Primary Outcomes

### Overtrusting Pro-Motive News

This is the most important outcome. Motives are hypothesized in Table 1.

- Subjects give larger assessments to Pro-Party news than Anti-Party news. The gap between Pro-Party and Anti-Party news increases in polarization (the absolute difference in opinion ratings between the Democratic and Republican parties). These specifications regress assessment on news type with subject-, topic-, and round-fixed effects. This is tested on every topic individually by interacting news type with topic dummies.

- Motivated reasoning goes in both directions: Subjects give larger assessments to Pro-Party news than Neutral news, and larger assessments for Neutral news than Anti-Party news.
- Subjects give larger assessments to Pro-Performance news than Anti-Performance news. These specifications regress assessment on news type with subject-, topic-, and round-fixed effects.

## Overtrusting Fake News

This is the second most important outcome.

- Subjects give larger assessments to Fake News than True News on the politicized topics. These specifications regress assessment on news source with subject-, topic-, and round-fixed effects. Additionally, this specification controls for Pro-Party news.

## Changing Guesses

Whether subjects change their guess after seeing the message is another relevant outcome variable. In particular, this outcome variable is an indicator for whether the subject *follows the message*: i.e. if she changes her guess upwards conditional on seeing a “Greater Than” message or changes downwards conditional on seeing a “Less Than” message. The effect of news type should affect veracity assessment and changing guesses similarly.

- Subjects are more likely to follow messages from Pro-Party news than Anti-Party news. This specification regresses the follow message dummy on news type with subject-, topic-, and round-fixed effects.

## Secondary Outcomes

### Polarization

Next, for the second-guessing group of subjects, we ask whether these messages lead to increased polarization.

Polarizing from the message uses the “follow message” measure. “Polarizing news” is a dummy that equals one if the news source says “Greater Than” when the subject’s guess is above the mean population guess or “Less Than” when the subject’s guess is below the mean population guess.

- Subjects are more likely to follow messages from polarizing news than anti-polarizing news. This specification regresses the follow message dummy on the polarizing news dummy with subject-, topic-, and round-fixed effects.

## Overprecision

Subjects are asked to state 50% confidence intervals (CI); that is, their 25th percentile and 75th percentile beliefs are elicited. Overprecision is a dummy that takes 0.5 if the correct answer is not within the CI and -0.5 if the correct answer is within the CI. That is, overprecision is equal to  $0.5 - P(\text{answer within 50\% CI})$ . Overprecision is positive (negative) when the CI contains the true answer less (greater) than 50% of the time.

- On politicized topics, average overprecision is positive and increasing in partisanship. Overprecision is more severe for politicized than neutral topics. The latter main specification regresses overprecision on partisanship with subject controls.

## Relative Overconfidence

This is a between-subjects analysis. Confidence is measured by subjects' answer to the question of how many other subjects a subject thinks she outperformed. Overconfidence is equal to Confidence minus the true answer.

- The hypotheses are that subjects are overconfident, that more partisan subjects are more overconfident than more moderate subjects, and that more partisan subjects actually perform worse using this measure (and using the total points measure below).
- These specifications regress confidence and relative performance on partisanship with subject controls.

## Absolute Performance

This is a within-subject analysis. The hypotheses are that subjects score worse on news assessments on questions on motivated topics compared to if they had simply answered "5/10 chance it's True News".

- On politicized topics, subjects score fewer points than if they had answered "5/10 chance it's True News".
- Subjects score fewer points on politicized topics than on neutral topics. The main specification for this regresses news points scored on a dummy for politicized topics, controls for subject-level fixed effects, and round number.

## Willingness to Pay

This is a between-subject analysis. The main hypothesis is that subjects positively value messages, and that their WTP is increasing in the noisiness of their updating process.

- Subjects' average WTP is greater than zero on both politicized and neutral topics.
- Subjects' WTP is increasing in the standard deviation of their news veracity assessments from Rounds 1-11.

## Heterogeneity

This is a between-subject analysis to test whether demographic heterogeneity affects the motivated-reasoning treatment effect:

- Heterogeneity in direction: The specification regresses assessment on Pro-Rep (versus Pro-Dem) news, observable demographics, and interaction terms. It runs a horse race for binary measures of party preference, age, race, gender, income, education, religious group affiliation, and whether ones state voted for Trump or Clinton in 2016.
- Heterogeneity in magnitude: The specification regresses assessment on Pro-Motive (versus Anti-Motive) news, observable demographics, and interaction terms for partisans. It runs a horse race for binary party preference interacted with binary partisanship, and binary measures of age, race, gender, income, education, religious group affiliation, and whether ones state voted for Trump or Clinton in 2016.

# Study Materials

## Flow of Experiment

Subjects see a series of pages in the following order:

- Introduction and Consent
- Demographics and Current Events Quiz
- Opinions
- Instructions for Question Pages
- Question 1
- Instructions for News Assessment Pages
- News Assessment 1
- Question 2, News Assessment 2, . . . , Question 14, News Assessment 14
- Feedback
- Results and Payment

Screenshots for each of the pages are in the next subsection. Exact question wordings are in the following subsection. Red boxes are not shown to subjects and are included for illustration purposes only. Results pages here are cut off after three questions, but all results are shown to subjects. Choices on the Demographics page and statements on the Opinions page are randomly ordered.

Subjects in the Willingness-To-Pay treatment see the News Valuation page between Question 12 and News Assessment 12. They see the black bar page if their elicited valuation is lower than the random number.

Subjects in the Second Guess treatment see the version of the News Assessment page with the message “After seeing this message and assessing its truthfulness, what is your guess of the answer to the original question?”

# Introduction

You are invited to participate in this online study on political attitudes. This is a research project being conducted by Michael Thaler, a PhD student in economics at Harvard University.

Your participation in this survey is entirely voluntary. You may refuse to take part in the research or exit the survey at any time without penalty.

If you choose to be in the study, you will complete a series of questions related to issues affecting the United States today. The study should take approximately 20 minutes to complete, but you may take up to 45 minutes. You will have a chance to earn a bonus of \$10.00 in addition to your participation earnings.

Your specific answers will not be shared with anyone, and for the purpose of privacy please do not include your name or other personally identifiable information in your responses. Please make sure to mark your Amazon Profile as private if you do not want it to be accessible via your Mechanical Turk Worker ID.

If you have any questions or concerns, please contact Michael Thaler at michaelthaler@g.harvard.edu.

You may print or save a copy of this information sheet for your own records. **Please do not press the back button, refresh, or leave the page at any time or else you might have a server error; if this happens, you will not be able to reenter the study or earn your payment.**

If you wish to participate in the study, please indicate below that you have read the instructions and enter your Mechanical Turk Worker ID for payment.

What is your MTurk Worker ID number? This is required for payment.

☐ I have read the above information and would like to participate in the study.

Next

## Demographic Information and Current Events Quiz

It is important for this study that you answer these questions honestly.

**Your earnings and bonus are not affected by your answers to these questions.**

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What is your age?

What is your gender?

- ☐ Male
- ☐ Female
- ☐ Other / Prefer not to answer

What is your race/ethnicity?

- ☐ Hispanic or Latino
- ☐ Asian
- ☐ White
- ☐ American Indian
- ☐ Black or African American
- ☐ Two or more of these
- ☐ Other / Prefer not to answer

What is the highest level of education you have completed?

- ☐ Did not graduate high school
- ☐ High school graduate or GED
- ☐ Began college, no degree
- ☐ Associate's degree
- ☐ Bachelor's degree
- ☐ Postgraduate or professional degree

What religious group do you consider yourself affiliated with?

- ☐ Mainline Protestant
- ☐ Historically black Protestant
- ☐ Evangelical Protestant
- ☐ Catholic
- ☐ Other Christian
- ☐ Jewish
- ☐ Muslim
- ☐ Other religion or faith
- ☐ Atheist
- ☐ Agnostic
- ☐ Unaffiliated

Which US state or territory do you currently live in?

What was your total household income before taxes during the past 12 months?

- ☐ Less than \$20,000
- ☐ \$20,000 to \$29,999
- ☐ \$30,000 to \$39,999
- ☐ \$40,000 to \$49,999
- ☐ \$50,000 to \$69,999
- ☐ \$70,000 to \$99,999
- ☐ \$100,000 to \$149,999
- ☐ \$150,000 or more

In politics today, do you consider yourself a Republican, a Democrat, or an Independent?

- ☐ Democrat
- ☐ Republican
- ☐ Independent

Where do you see yourself on the liberal/conservative spectrum?

- ☐ Extremely liberal
- ☐ Liberal
- ☐ Slightly liberal
- ☐ Moderate
- ☐ Slightly conservative
- ☐ Conservative
- ☐ Extremely conservative

Please rate how you feel about the Republican Party using a scale of 0 to 100. The higher the number, the more favorable you feel toward the Republican Party.



Please rate how you feel about the Democratic Party using a scale of 0 to 100. The higher the number, the more favorable you feel toward the Democratic Party.



Who is the current President of France?

- ☐ Theresa May
- ☐ Charles de Gaulle
- ☐ Emmanuel Macron
- ☐ Marine Le Pen
- ☐ Justin Trudeau

Who won the recent special election in Alabama for the U.S. Senate?

- ☐ Doug Jones
- ☐ Roy Moore
- ☐ Richard Shelby
- ☐ Luther Strange
- ☐ Thad Cochran

Who was Hillary Clinton's running mate in the 2016 presidential election?

- ☐ Martin O'Malley
- ☐ Jim Webb
- ☐ Joe Biden
- ☐ Bernie Sanders
- ☐ Tim Kaine

Who is the most recently-appointed Supreme Court Justice?

- ☐ Merrick Garland
- ☐ Anthony Kennedy
- ☐ John Roberts
- ☐ Stephen Breyer
- ☐ Neil Gorsuch

Next

# Opinions

For each of the following statements, please indicate whether you agree or disagree.

**Your earnings and bonus are not affected by your answers to these questions.**

<b>Donald Trump is doing a good job as president.</b>	<input type="radio"/> Strongly agree	<input type="radio"/> Somewhat agree	<input type="radio"/> Neither agree nor disagree	<input type="radio"/> Somewhat disagree	<input type="radio"/> Strongly disagree
<b>The United States media tends to be biased in favor of Democrats over Republicans.</b>	<input type="radio"/> Strongly agree	<input type="radio"/> Somewhat agree	<input type="radio"/> Neither agree nor disagree	<input type="radio"/> Somewhat disagree	<input type="radio"/> Strongly disagree
<b>One reason why there are more men than women working in science, technology, engineering, and math is that men are inherently more interested in these fields.</b>	<input type="radio"/> Strongly agree	<input type="radio"/> Somewhat agree	<input type="radio"/> Neither agree nor disagree	<input type="radio"/> Somewhat disagree	<input type="radio"/> Strongly disagree
<b>The Obama administration did a good job at dealing with violent crime.</b>	<input type="radio"/> Strongly agree	<input type="radio"/> Somewhat agree	<input type="radio"/> Neither agree nor disagree	<input type="radio"/> Somewhat disagree	<input type="radio"/> Strongly disagree
<b>The United States has a responsibility to accept refugees into the country.</b>	<input type="radio"/> Strongly agree	<input type="radio"/> Somewhat agree	<input type="radio"/> Neither agree nor disagree	<input type="radio"/> Somewhat disagree	<input type="radio"/> Strongly disagree
<b>Racial discrimination is a major reason why many black people can't get ahead these days.</b>	<input type="radio"/> Strongly agree	<input type="radio"/> Somewhat agree	<input type="radio"/> Neither agree nor disagree	<input type="radio"/> Somewhat disagree	<input type="radio"/> Strongly disagree
<b>Gun laws should be more strict than they are today.</b>	<input type="radio"/> Strongly agree	<input type="radio"/> Somewhat agree	<input type="radio"/> Neither agree nor disagree	<input type="radio"/> Somewhat disagree	<input type="radio"/> Strongly disagree
<b>There is solid evidence that the Earth is getting warmer and that this is due to human activity.</b>	<input type="radio"/> Strongly agree	<input type="radio"/> Somewhat agree	<input type="radio"/> Neither agree nor disagree	<input type="radio"/> Somewhat disagree	<input type="radio"/> Strongly disagree
<b>The recent tax reform bill will help lower-income Americans get ahead.</b>	<input type="radio"/> Strongly agree	<input type="radio"/> Somewhat agree	<input type="radio"/> Neither agree nor disagree	<input type="radio"/> Somewhat disagree	<input type="radio"/> Strongly disagree

Next

# Instructions for Question Pages

Throughout this study, you will see several types of pages, including 14 Question pages.

On each of the Question pages, you will be asked to guess the answer to a factual question; each question has a correct numerical answer. In addition to your guaranteed HIT payment, you will have a chance to win an additional bonus of \$10.00 based on your guesses to these questions and questions on other pages. At least one question is an "attention check" for which the correct answer will be obvious.

You will also be asked to provide an upper bound and lower bound for your guess. You should choose these bounds in a way such that you think the answer has a 50% chance of falling between your bounds. The more confident you are, the smaller the difference should be between your upper and lower bound.

The details of the point system used to determine your chance of winning the prize are a bit complicated, but explained below if you are interested. **What is important to know is that the way your earnings are determined ensures that your chances of winning the bonus are maximized by carefully and honestly answering these questions.**

At the end of the study, the points you receive on all choices you make will be averaged, and this will determine the chance (out of 1000) that you win the bonus. For example, if you earn 90 points on average, you will have a 90 out of 1000 chance of winning the bonus.

Your final score, whether you won the prize, and a list of correct answers and sources will be provided at the end of the study.

You will see a Question page on the next screen.

## **Point system for your guess:**

*You will receive between 0 and 100 points for each guess you give. The closer your guess is to the correct answer, the more likely it is that you'll win the prize.*

*If you guess the answer correctly, you will receive 100 points (the maximum) for that question.*

*If your guess is more than 100 away from the answer, you will receive 0 points for that question.*

*If your guess is less than 100 away from the answer, you will receive points equal to 100 minus the distance from your guess to the correct answer.*

*It is in your best interest to guess an answer that is in the "middle" of what you believe is likely. For example, if you think the answer is equally likely to be 10, 40, and 60, you should guess 40.*

## **Point system for your bounds:**

*If the answer is **above** your **upper** bound, you will receive points equal to 100 minus 3 times the distance from your guess to the correct answer.*

*If the answer is **below** your **upper** bound, you will receive points equal to 100 minus the distance from your guess to the correct answer.*

*If the answer is **above** your **lower** bound, you will receive points equal to 100 minus the distance from your guess to the correct answer.*

*If the answer is **below** your **lower** bound, you will receive points equal to 100 minus 3 times the distance from your guess to the correct answer.*

*You cannot earn negative points. All negative point values will be rounded up to zero.*

*It is in your best interest to choose a lower bound such that you think it's 3 times more likely to be above the bound than below it, and an upper bound such that it's 3 times more likely to be below the bound than above it. For example, if you think the answer is equally likely to be any number from 100 to 200, you should set a lower bound of 125 and an upper bound of 175.*

# Question

## Question 1 of 14: Crime Under Obama

Some people believe that the Obama administration was too soft on crime and that violent crime increased during his presidency, while others believe that President Obama's pushes towards criminal justice reform and reducing incarceration did not increase violent crime.

This question asks how murder and manslaughter rates changed during the Obama administration. In 2008 (before Obama became president), the murder and manslaughter rate was 54 per million Americans.

In 2016 (at the end of Obama's presidency), what was the per-million murder and manslaughter rate?

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My guess:

My lower bound:

My upper bound:

Please choose your bounds so that you think there's a 50% chance that the answer is between the bounds.

Next

Figure 1: Crime Under Obama question page.

# Instructions for News Assessment Pages

After most Question pages, you will see a News Assessment page.

There has been a growing debate about the accuracy of news sources, with both the left and the right accusing each other's primary media of spreading "Fake News." News sources like CNN and Fox News have reported extensively on topics such as crime, global warming, and gun laws; some give factual information, while others may distort the truth or lie outright. This part of the study is testing whether people can recognize Fake News and True News.

On each News Assessment page, you will see the previous Question page and be given a message related to your previous guess from either a True News source or Fake News source. In addition to your guaranteed HIT payment, you will have a chance to win an additional bonus of \$10.00 based on your answers to these questions and questions on other pages. The message will say either "The answer is *greater than* your previous guess" or "The answer is **less than** your previous guess."

**The True News source will *always* tell you the truth, while the Fake News source will *never* tell the truth.**

If the answer truly is greater than your previous guess, True News will tell you "The answer is *greater than* your previous guess" and Fake News will tell you "The answer is *less than* your previous guess."

If the answer truly is less than your previous guess, True News will tell you "The answer is *less than* your previous guess" and Fake News will tell you "The answer is *greater than* your previous guess."

Whether you get your message from True News or Fake News is random; different messages may come from different sources. Seeing Fake News on one page does not affect the chances of seeing Fake News on any other page.

**After each question, you will assess whether you think it is more likely that the source is True News or Fake News on a scale of 0/10 to 10/10, and your assessment will determine how many points you will earn for that page.**

The details of the point system to determine your chance of winning the prize are a bit complicated, but explained below if you are interested. **What is important to know is that the way your earnings are determined ensures that your chances of winning the bonus are maximized by carefully and honestly answering these questions.**

Your final score, whether you won the prize, and a list of correct answers and sources will be provided at the end of the study.

You will see a News Assessment page on the next screen.

**Point system:**

<b>Your estimate</b>	<b>Points earned if the source is True News</b>	<b>Points earned if the source is Fake News</b>
0/10 chance it's True News; 10/10 chance it's Fake News	0 points	100 points
1/10 chance it's True News; 9/10 chance it's Fake News	19 points	99 points
2/10 chance it's True News; 8/10 chance it's Fake News	36 points	96 points
3/10 chance it's True News; 7/10 chance it's Fake News	51 points	91 points
4/10 chance it's True News; 6/10 chance it's Fake News	64 points	84 points
5/10 chance it's True News; 5/10 chance it's Fake News	75 points	75 points
6/10 chance it's True News; 4/10 chance it's Fake News	84 points	64 points
7/10 chance it's True News; 3/10 chance it's Fake News	91 points	51 points
8/10 chance it's True News; 2/10 chance it's Fake News	96 points	36 points
9/10 chance it's True News; 1/10 chance it's Fake News	99 points	19 points
10/10 chance it's True News; 0/10 chance it's Fake News	100 points	0 points

For instance, if you estimate a 7/10 chance of True News, then for that round you will earn 91 points if the source is True News and 51 points if the source is Fake News.

At the end of the study, the points you receive on all choices you make will be averaged, and this will determine the chance (out of 1000) that you win the bonus. For example, if you earn 90 points on average, you will have a 90 out of 1000 chance of winning the bonus.

## News Assessment

### Original question 1 of 14: Crime Under Obama

Some people believe that the Obama administration was too soft on crime and that violent crime increased during his presidency, while others believe that President Obama's pushes towards criminal justice reform and reducing incarceration did not increase violent crime.

This question asks how murder and manslaughter rates changed during the Obama administration. In 2008 (before Obama became president), the murder and manslaughter rate was 54 per million Americans.

In 2016 (at the end of Obama's presidency), what was the per-million murder and manslaughter rate?

#### Message:

The answer is **less than** your previous guess of **57.0**.

Do you think this information is from True News or Fake News?

- ☐ 0/10 chance it's True News; 10/10 chance it's Fake News
- ☐ 1/10 chance it's True News; 9/10 chance it's Fake News
- ☐ 2/10 chance it's True News; 8/10 chance it's Fake News
- ☐ 3/10 chance it's True News; 7/10 chance it's Fake News
- ☐ 4/10 chance it's True News; 6/10 chance it's Fake News
- ☐ 5/10 chance it's True News; 5/10 chance it's Fake News
- ☐ 6/10 chance it's True News; 4/10 chance it's Fake News
- ☐ 7/10 chance it's True News; 3/10 chance it's Fake News
- ☐ 8/10 chance it's True News; 2/10 chance it's Fake News
- ☐ 9/10 chance it's True News; 1/10 chance it's Fake News
- ☐ 10/10 chance it's True News; 0/10 chance it's Fake News

Figure 2: Crime Under Obama news assessment page.

## News Assessment

### Original question 1 of 14: Crime Under Obama

Some people believe that the Obama administration was too soft on crime and that violent crime increased during his presidency, while others believe that President Obama's pushes towards criminal justice reform and reducing incarceration did not increase violent crime.

This question asks how murder and manslaughter rates changed during the Obama administration. In 2008 (before Obama became president), the murder and manslaughter rate was 54 per million Americans.

In 2016 (at the end of Obama's presidency), what was the per-million murder and manslaughter rate?

#### Message:

The answer is **less than** your previous guess of **57.0**.

Do you think this information is from True News or Fake News?

- ☐ 0/10 chance it's True News; 10/10 chance it's Fake News
- ☐ 1/10 chance it's True News; 9/10 chance it's Fake News
- ☐ 2/10 chance it's True News; 8/10 chance it's Fake News
- ☐ 3/10 chance it's True News; 7/10 chance it's Fake News
- ☐ 4/10 chance it's True News; 6/10 chance it's Fake News
- ☐ 5/10 chance it's True News; 5/10 chance it's Fake News
- ☐ 6/10 chance it's True News; 4/10 chance it's Fake News
- ☐ 7/10 chance it's True News; 3/10 chance it's Fake News
- ☐ 8/10 chance it's True News; 2/10 chance it's Fake News
- ☐ 9/10 chance it's True News; 1/10 chance it's Fake News
- ☐ 10/10 chance it's True News; 0/10 chance it's Fake News

After seeing this message and assessing its truthfulness, what is your guess of the answer to the original question?

Figure 3: Crime Under Obama news assessment page: Second Guess question.

## News Valuation

On the previous News Assessment pages you were given messages that said that the correct answer was either "greater than" or "less than" your guess, and you were then asked to guess how likely it was that this message came from a True News versus Fake News source.

This section is designed to assess how useful you think those messages are. On this page you will decide whether to see the message or whether to receive additional points and see a screen with a black bar as in the following example:

### Original question 12: Gender and Math Grades

In the United States, men are more likely to enter into mathematics and math-related fields. Some people attribute this to gender differences in interest in or ability in math, while others attribute it to other factors like gender discrimination.

This question asks whether high school boys and girls differ substantially in how well they do in math classes. A major testing service analyzed data on high school seniors and compared the average GPA for male and female students in various subjects.

Male students averaged a 3.04 GPA (out of 4.00) in math classes. What GPA did female students average in math classes?

(Please guess between 0.00 and 4.00.)

#### Message:

The answer is            your previous guess of **3.1**.

Do you think this information is from True News or Fake News?

- ☐ 0/10 chance it's True News; 10/10 chance it's Fake News
- ☐ 1/10 chance it's True News; 9/10 chance it's Fake News
- ☐ 2/10 chance it's True News; 8/10 chance it's Fake News
- ☐ 3/10 chance it's True News; 7/10 chance it's Fake News
- ☐ 4/10 chance it's True News; 6/10 chance it's Fake News
- ☐ 5/10 chance it's True News; 5/10 chance it's Fake News
- ☐ 6/10 chance it's True News; 4/10 chance it's Fake News
- ☐ 7/10 chance it's True News; 3/10 chance it's Fake News
- ☐ 8/10 chance it's True News; 2/10 chance it's Fake News
- ☐ 9/10 chance it's True News; 1/10 chance it's Fake News
- ☐ 10/10 chance it's True News; 0/10 chance it's Fake News

To determine whether you receive the message or the black bar, you will write down a "valuation" at the bottom of this page. The more that you think the message helps you, the higher your valuation should be.

(If you would prefer to see the message instead of the black bar, you should submit a valuation between 0 and 25 points, where a larger valuation indicates a stronger preference for the message.)

(If you would prefer to see the black bar instead of the message, you should submit a valuation between -25 and 0 points, where a more negative valuation indicates a stronger preference for the black bar.)

The details of the procedure to determine whether you receive the message or the black bar is a bit complicated, but explained below. **What is important to know is that the way your earnings are determined ensures that your chances of winning the bonus are maximized by honestly answering this question.**

Valuation of message (in points):

**Point and message procedure given your valuation:**

*A computer will randomly select a number between -25 and 25 with all numbers being equally likely.*

*If this number is greater than your valuation in points, this number will be added to the points you earn on the next News Assessment page, but you will receive the black bar instead of the message (as above).*

*If this number is less than your valuation in points, you will earn the standard amount of points on the next News Assessment page, and you will receive either the "greater than" or the "less than" message (as in previous pages).*

# News Assessment

## Original question 12 of 14: Gender and Math Grades

In the United States, men are more likely to enter into mathematics and math-related fields. Some people attribute this to gender differences in interest in or ability in math, while others attribute it to other factors like gender discrimination.

This question asks whether high school boys and girls differ substantially in how well they do in math classes. A major testing service analyzed data on high school seniors and compared the average GPA for male and female students in various subjects.

Male students averaged a 3.04 GPA (out of 4.00) in math classes. What GPA did female students average in math classes?

(Please guess between 0.00 and 4.00.)

### Message:

The answer is            your previous guess of **3.1**.

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Do you think this information is from True News or Fake News?

- ☐ 0/10 chance it's True News; 10/10 chance it's Fake News
- ☐ 1/10 chance it's True News; 9/10 chance it's Fake News
- ☐ 2/10 chance it's True News; 8/10 chance it's Fake News
- ☐ 3/10 chance it's True News; 7/10 chance it's Fake News
- ☐ 4/10 chance it's True News; 6/10 chance it's Fake News
- ☐ 5/10 chance it's True News; 5/10 chance it's Fake News
- ☐ 6/10 chance it's True News; 4/10 chance it's Fake News
- ☐ 7/10 chance it's True News; 3/10 chance it's Fake News
- ☐ 8/10 chance it's True News; 2/10 chance it's Fake News
- ☐ 9/10 chance it's True News; 1/10 chance it's Fake News
- ☐ 10/10 chance it's True News; 0/10 chance it's Fake News

Next

# Feedback

This is the last page before you see your results. Your feedback is not required, but it is very helpful for designing future studies.

**Your earnings and bonus are not affected by your answers to these questions.**

What did you think of the study? What did you like or dislike about it?

What was your thought process when you received a message and were deciding whether it was True News or Fake News?

Next

## Results: Click the Finish button at the bottom of this page to complete the HIT

Sorry, you did not win the bonus. Your additional bonus was \$0.00.

You earned 80.32 points on average across all questions in this study. For questions, solutions, points and whether information was from True News or Fake News, see the tables below.

Question	Correct answer	Your initial guess	Message said	Was the News Real or Fake	Your likelihood of this being True News	Points you earned for your likelihood
In a study, researchers sent fictitious resumes to respond to thousands of help-wanted ads in newspapers. The resumes sent had identical skills and education, but the researchers gave half of the (fake) applicants stereotypically White names such as Emily Walsh and Greg Baker, and gave the other half of the applicants stereotypically Black names such as Lakisha Washington and Jamal Jones. 9.65 percent of the applicants with White-sounding names received a call back. What percent of the applicants with Black-sounding names received a call back? (Please guess between 0 and 100.)	6.45	3.0	The answer is less than your previous guess.	Fake News	9/10	19.0
What is the year right now? This is not a trick question and the first sentence is irrelevant; this is a comprehension check to make sure you are paying attention. For this question, your lower and upper bounds should be equal to your guess if you know what year it currently is.	2018.0	2018.0	The answer is equal to your previous guess.	True News	10/10	100.0
How many degrees West is this geographic center? (Please guess between 0 and 180. The continental U.S. lies in the Western Hemisphere, which ranges from 0 degrees West to 180 degrees West.)	98.583	90.0	The answer is less than your previous guess.	Fake News	5/10	75.0

Question	Correct answer	Your guess	Your lower bound	Your upper bound	Points you earned for your guess and bounds	Source
In a study, researchers sent fictitious resumes to respond to thousands of help-wanted ads in newspapers. The resumes sent had identical skills and education, but the researchers gave half of the (fake) applicants stereotypically White names such as Emily Walsh and Greg Baker, and gave the other half of the applicants stereotypically Black names such as Lakisha Washington and Jamal Jones. 9.65 percent of the applicants with White-sounding names received a call back. What percent of the applicants with Black-sounding names received a call back? (Please guess between 0 and 100.)	6.45	3.0	3.0	3.0	94.25	<a href="http://bit.ly/labor-market-discrimination">http://bit.ly/labor-market-discrimination</a>
What is the year right now? This is not a trick question and the first sentence is irrelevant; this is a comprehension check to make sure you are paying attention. For this question, your lower and upper bounds should be equal to your guess if you know what year it currently is.	2018.0	2018.0	2018.0	2018.0	100.0	<a href="http://bit.ly/what-year-is-it">http://bit.ly/what-year-is-it</a>
How many degrees West is this geographic center? (Please guess between 0 and 180. The continental U.S. lies in the Western Hemisphere, which ranges from 0 degrees West to 180 degrees West.)	98.583	90.0	80.0	100.0	90.47	<a href="http://bit.ly/center-of-the-us">http://bit.ly/center-of-the-us</a>

<b>Topic</b>	<b>Pro-Democrat Motives</b>	<b>Pro-Republican Motives</b>
US crime	Got better under Obama	Got worse under Obama
Upward mobility	Low in US after tax cuts	High in US after tax cuts
Racial discrimination	Severe in labor market	Not severe in labor market
Gender	Girls better at math	Boys better at math
Refugees	Decreased violent crime	Increased violent crime
Climate change	Scientific consensus	No scientific consensus
Gun reform	Decreased homicides	Didn't decrease homicides
Media bias	Media not dominated by Dems	Media is dominated by Dems
Party performance	Higher for Dems over Reps	Higher for Reps over Dems
Own performance	Higher for self over others	Higher for self over others

Table 1: The list of topics and hypothesized motives in the experiment. On the computer, each topic is a hyperlink that links to the exact question wording.

## Exact Question Wordings

### Crime Under Obama

Some people believe that the Obama administration was too soft on crime and that violent crime increased during his presidency, while others believe that President Obama's pushes towards criminal justice reform and reducing incarceration did not increase violent crime.

This question asks how murder and manslaughter rates changed during the Obama administration. In 2008 (before Obama became president), the murder and manslaughter rate was 54 per million Americans.

In 2016 (at the end of Obama's presidency), what was the per-million murder and manslaughter rate?

*Correct answer: 53.*

*Source linked on results page: <http://bit.ly/us-crime-rate>*

### Upward Mobility

In 2017, Donald Trump signed into law the largest tax reform bill since Ronald Reagan's 1981 and 1986 bills. Some people believe that Reagan's reforms accelerated economic growth and allowed lower-income Americans to reap the benefits of lower taxes, while other people believe that this decreased the government's spending to help lower-income Americans get ahead.

This question asks whether children who grew up in low-income families during Reagan's tenure were able to benefit from his tax reforms.

Of Americans who were born in the lowest-income (bottom 20%) families from 1980-1985, what percent rose out of the lowest-income group as adults?

(Please guess between 0 and 100.)

*Correct answer: 64.9.*

*Source linked on results page: <http://bit.ly/us-upward-mobility> (page 47)*

### Racial Discrimination

In the United States, white Americans have higher salaries than black Americans on average. Some people attribute these differences in income to differences in education, training, and culture, while others attribute them more to racial discrimination.

In a study, researchers sent fictitious resumes to respond to thousands of help-wanted ads in newspapers. The resumes sent had identical skills and education, but the researchers gave half of the (fake) applicants stereotypically White names such as Emily Walsh and Greg Baker, and gave the other half of the applicants stereotypically Black names such as Lakisha Washington and Jamal Jones.

9.65 percent of the applicants with White-sounding names received a call back. What percent of the applicants with Black-sounding names received a call back?

(Please guess between 0 and 100.)

*Correct answer: 6.45.*

*Source linked on results page: <http://bit.ly/labor-market-discrimination>*

## Gender and Math GPA

In the United States, men are more likely to enter into mathematics and math-related fields. Some people attribute this to gender differences in interest in or ability in math, while others attribute it to other factors like gender discrimination.

This question asks whether high school boys and girls differ substantially in how well they do in math classes. A major testing service analyzed data on high school seniors and compared the average GPA for male and female students in various subjects.

Male students averaged a 3.04 GPA (out of 4.00) in math classes. What GPA did female students average in math classes?

(Please guess between 0.00 and 4.00.)

*Correct answer: 3.15.*

*Source linked on results page: <http://bit.ly/gender-hs-gpa>*

## Refugees and Violent Crime

Some people believe that the U.S. has a responsibility to accept refugees into the country, while others believe that an open-doors refugee policy will be taken advantage of by criminals and put Americans at risk.

In 2015, German leader Angela Merkel announced an open-doors policy that allowed all Syrian refugees who had entered Europe to take up residence in Germany. From 2015-17, nearly one million Syrians moved to Germany. This question asks about the effect of Germany's open-doors refugee policy on violent crime rates.

In 2014 (before the influx of refugees), the violent crime rate in Germany was 224.0 per hundred-thousand people.

In 2017 (after the entrance of refugees), what was the violent crime rate in Germany per hundred-thousand people?

*Correct answer: 228.2.*

*Sources linked on results page: Main site: <http://bit.ly/germany-crime-main-site>. 2014 and 2015 data: <http://bit.ly/germany-crime-2014-2015>. 2016 and 2017 data: <http://bit.ly/germany-crime-2016-2017>.*

## Climate change

Some people believe that there is a scientific consensus that human activity is causing global warming and that we should have stricter environmental regulations, while others believe that scientists are not in agreement about the existence or cause of global warming and think that stricter environmental regulations will sacrifice jobs without much environmental gain.

This question asks about whether most scientists think that global warming is caused by humans. A major nonpartisan polling company surveyed thousands of scientists about the existence and cause of global warming.

What percent of these scientists believed that “Climate change is mostly due to human activity”? (Please guess between 0 and 100.)

*Correct answer: 87.*

*Source linked on results page: <http://bit.ly/scientists-climate-change>*

## Gun Reform

The United States has a homicide rate that is much higher than other wealthy countries. Some people attribute this to the prevalence of guns and favor stricter gun laws, while others believe that stricter gun laws will limit Americans’ Second Amendment rights without reducing homicides very much.

After a mass shooting in 1996, Australia passed a massive gun control law called the National Firearms Agreement (NFA). The law illegalized, bought back, and destroyed almost one million firearms by 1997, mandated that all non-destroyed firearms be registered, and required a lengthy waiting period for firearm sales.

Democrats and Republicans have each pointed to the NFA as evidence for/against stricter gun laws. This question asks about the effect of the NFA on the homicide rate in Australia.

In the five years before the NFA (1991-1996), there were 319.8 homicides per year in Australia. In the five years after the NFA (1998-2003), how many homicides were there per year in Australia?

*Correct answer: 318.6.*

*Sources linked on results page: <http://bit.ly/australia-homicide-rate> (Suicides declined substantially, however. For details: <http://bit.ly/impact-australia-gun-laws>.)*

## Media Bias

Some people believe that the media is unfairly biased towards Democrats, while some believe it is balanced, and others believe it is biased towards Republicans.

This question asks whether journalists are more likely to be Democrats than Republicans.

A representative sample of journalists were asked about their party affiliation. Of those either affiliated with either the Democratic or Republican Party, what percent of journalists are

Republicans?

(Please guess between 0 and 100.)

*Correct answer: 19.8.*

*Source linked on results page: <http://bit.ly/journalist-political-affiliation>*

## Party Relative Performance

Subjects are randomly assigned to see either the Democrats' score (and asked to predict the Republicans' score) or to see the Republicans' score (and asked to predict the Democrats' score).

## Democrats' Relative Performance

This question asks whether you think Democrats or Republicans did better on this study about political and U.S. knowledge. I've compared the average points scored by Democrats and Republicans among 100 participants (not including yourself).

The Republicans scored 70.83 points on average.

How many points do you think the Democrats scored on average?

(Please guess between 0 and 100)

*Correct answer: 72.44.*

## Republicans' Relative Performance

This question asks whether you think Democrats or Republicans did better on this study about political and U.S. knowledge. I've compared the average points scored by Democrats and Republicans among 100 participants (not including yourself).

The Democrats scored 72.44 points on average.

How many points do you think the Republicans scored on average?

(Please guess between 0 and 100)

*Correct answer: 70.83.*

## Own Relative Performance

How well do you think you performed on this study about political and U.S. knowledge? I've compared the average points you scored for all questions (prior to this one) to that of 100 other participants.

How many of the 100 do you think you scored higher than?

(Please guess between 0 and 100.)

*Correct answer: Depends on participant's performance.*

## Random Number

A computer will randomly generate a number between 0 and 100. What number do you think the computer chose?

(As a reminder, it is in your best interest to guess an answer that is close to the computer's choice, even if you don't perfectly guess it.)

*Correct answer: Randomly generated for each participant.*

## Latitude of Center of the United States

The U.S. National Geodetic Survey approximated the geographic center of the continental United States. (This excludes Alaska and Hawaii, and U.S. territories.)

How many degrees North is this geographic center?

(Please guess between 0 and 90. The continental U.S. lies in the Northern Hemisphere, the Equator is 0 degrees North, and the North Pole is 90 degrees North.)

*Correct answer: 39.833.*

*Source linked on results page: <http://bit.ly/center-of-the-us>*

## Longitude of Center of the United States

The U.S. National Geodetic Survey approximated the geographic center of the continental United States. (This excludes Alaska and Hawaii, and U.S. territories.)

How many degrees West is this geographic center?

(Please guess between 0 and 180. The continental U.S. lies in the Western Hemisphere, which ranges from 0 degrees West to 180 degrees West.)

*Correct answer: 98.583.*

*Source linked on results page: <http://bit.ly/center-of-the-us>*

## Comprehension Check: Current Year

In 1776 our fathers brought forth, upon this continent, a new nation, conceived in Liberty, and dedicated to the proposition that all men are created equal.

What is the year right now?

This is not a trick question and the first sentence is irrelevant; this is a comprehension check to make sure you are paying attention. For this question, your lower and upper bounds should be equal to your guess if you know what year it currently is.

*Correct answer: 2018.*

*Source linked on results page: <http://bit.ly/what-year-is-it>*