Beliefs about Racial Discrimination
Pre-Analysis Plan I

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We collect novel data on people's beliefs about the extent of racial discrimination in the United States and examine to what extent these beliefs drive support for racial affirmative action policies. The experiment has two waves. In the first wave, we elicit incentivized beliefs about how likely black-sounding names are to receive a callback for an interview relative to white-sounding names. We then provide a random subset of our subjects with information about the results from an audit study that found evidence of racial discrimination in the labor market. In the second wave, which is performed approximately one week after the first wave, we measure self-reported attitudes toward affirmative action. We obfuscate the purpose of the second wave to reduce concerns about experimenter demand effects.

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1. Introduction

We collect novel data on people's beliefs about the extent of racial discrimination in the United States and examine to what extent these beliefs drive support for racial affirmative action policies. In this document, we outline our plan for analysis of the data, which will be collected from a representative sample of the US population in terms of several observables. In a separate experiment, we plan to collect data from a representative probability-based sample of the US population. Separate pre-analysis plans for the two experiments will be uploaded to the same AEA RCT Registry trial.

2. Experimental design

The experiment proceeds in two waves. In the first wave of the experiment, we elicit beliefs about the extent of racial discrimination in the US labor market from all subjects. After the belief elicitation, a random subset of subjects receive information about the true results from an audit study that tested for racial discrimination in the labor market by randomly varying whether names on fictitious resumes were white-sounding or black-sounding. The remaining subjects do not receive any information.

In the second wave of the experiment, collected approximately one week after the first wave, we measure our subjects' views on racial affirmative action policies. We obfuscate the purpose of the second wave by first asking questions unrelated to racial affirmative action. Since our subjects are not aware of the connection between the two waves, we can rule out that any findings will be driven by experimenter demand effects.

2.1. First wave

2.1.1. Prior beliefs about racial discrimination

In the first wave of the experiment, we elicit subjects' beliefs about the extent of racial discrimination in the US labor market. We do this in the context of a seminal audit study by Bertrand and Mullainathan (2004) that tested for racial discrimination in the US labor market. We tell our subjects that researchers had studied racial labor

market discrimination by varying the names on fictitious resumes that were sent out to help-wanted ads in Boston and Chicago newspapers. We tell our subjects that resumes with white-sounding names had to be sent out on average 10 times to get one callback for an interview, and we then ask them to estimate how many times resumes with black-sounding names on average had to be sent out to get one callback for an interview. We incentivize correct answers with a $2 bonus.

2.1.2. Treatment group

Subjects in the treatment group are then truthfully told that resumes with black-sounding names on average had to be sent out 15 times to get a callback for an interview. We explain to treated subjects that this implies that resumes with white-sounding names are 50 percent more likely to receive a callback than resumes with black-sounding names.

2.1.3. Control group

Subjects in the control group do not receive any information and go straight from the belief elicitation to the manipulation check.

2.1.4. Manipulation check

At the end of the first wave, we ask subjects in both the treatment and control group whether they think that racial labor market discrimination in the labor market is a serious problem.

2.2. Second wave

2.2.1. Obfuscation of the purpose of the study

About one week after the first wave, subjects get a generic invitation from the survey provider to participate in a 5-minute survey. This survey is the second wave of our experiment, but we do not tell the subjects that the two waves are connected. We use a different consent form from the first wave and, to obfuscate the purpose of

the second wave, we first ask a series of questions on topics unrelated to affirmative action, such as views on personal investments and religion.

2.2.2. Views on affirmative action and name-blind recruitment

We then measure our subjects' support for racial affirmative action with two self-reported measures: *(i)* whether they support public and private programs that give qualified black candidates *preference* over equally qualified white candidates in getting a job and *(ii)* whether they support public and private programs that give qualified black candidates *assistance* in getting a job. Furthermore, we ask our subjects whether they support name-blind recruitment for public and private jobs.

2.2.3. Mechanisms

After the questions on affirmative action and name-blind recruitment, we ask a series of questions to assess possible mechanisms through which the treatment may affect policy preferences. First, we ask subjects whether they think that affirmative action has helped blacks. Second, we ask our subjects to what extent they think differences in economic outcomes between whites and blacks are primarily due to *(i)* racial discrimination against blacks and *(ii)* differences in work ethics between whites and blacks. Subsequently, we also re-ask the question from the first wave on whether the subjects think racial labor market discrimination is a serious problem.

2.2.4. Posterior beliefs

Subsequently, we elicit posterior beliefs about the extent of racial labor market discrimination in the US using the same audit study as in the first wave. As in the first wave, we incentivize correct answers with a $2 bonus. Since the belief elicitation is identical to the one in the first wave, it may be natural to assume that subjects at this point in the survey realize that the two waves are connected.

2.2.5. Willingness to pay for the information

Finally, for the control group subjects, we elicit their marginal rate of substitution between receiving the results from the audit study and money. Specifically, we provide

them with a multiple price list in which they have to decide whether they would like to receive the research results from the audit study or varying amounts of money.

3. Setting, sample size and power

We recruit subjects using Research Now, which is one of the leading data collection agencies in the US. The first wave of this project was part of a follow-up study from another experiment that we also conducted with Research Now.[1] The baseline sample of the other experiment was representative of the general US population in terms of income, region, gender, and age.

Data collection for the first wave was finished *before* we submitted this pre-analysis plan. We analyzed the data from wave 1 prior to submitting this pre-analysis plan. We will submit this pre-analysis plan before data collection for wave 2 will start.

2075 subjects completed the first wave of the experiment, and we expect between 1400 and 1800 subjects to complete the second wave. With 1400 subjects in the second wave, we would have 0.8 power to detect an effect size of 0.15 of a standard deviation between the treatment and the control group at a 0.05 significance level.

4. Analysis

4.1. Treatment differences

In the first specification, we regress each outcome y_i on a treatment indicator, Treatment_i, that takes the value one if subject i received the informational treatment:[2]

$$y_i = \alpha_0 + \alpha_1 \text{Treatment}_i + \mathbf{A}^T \mathbf{X}_i + \varepsilon_i$$

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[1] In the first wave, subjects also answered demographic questions, questions about their views on the role of government, and questions about their views on immigration.

[2] We recode our outcomes such that they take a high value for positive attitudes towards affirmative action.

where ε_i is an individual-specific error term[3] and $\mathbf{X}_i$ is a vector of controls.[4]

4.2. Heterogeneous treatment effects: Prior beliefs

In the second specification, we estimate heterogeneous responses to the informational treatment based on our subjects' prior beliefs about racial labor market discrimination, Belief_i, which is a dummy variable taking value one if subject i strictly overestimated the extent of racial discrimination in society ($\text{Belief}_i > 15$). We include an interaction term between the treatment indicator and prior beliefs, $\text{Treatment}_i \times \text{Belief}_i$, and estimate the following equation:

$$y_i = \beta_0 + \beta_1 \text{Treatment}_i + \beta_2 \text{Belief}_i + \beta_3 \text{Treatment}_i \times \text{Belief}_i + \mathbf{B}^T \mathbf{X}_i + \varepsilon_i$$

As a robustness check, we will also estimate the same equation with a continuous belief measure about how many times a resume with a black-sounding name on average had to be sent out to get one callback for an interview instead of the binary belief measure.[5]

4.3. Heterogeneous treatment effects: Confidence in priors

In the third specification, we look at heterogeneity by the subjects' confidence in their prior beliefs about racial labor market discrimination. We estimate the following equation:

$$y_i = \gamma_0 + \gamma_1 \text{Treatment}_i + \gamma_2 \text{Conf}_i + \gamma_3 \text{Treatment}_i \times \text{Conf}_i + \mathbf{\Gamma}^T \mathbf{X}_i + \varepsilon_i$$

where confidence in the prior, Conf_i, is measured on a five-point scale from 1: "Very unsure" to 5: "Very sure".

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[3]For all the specifications, we use robust standard errors.

[4]The control variables are described in Section 5.3. In the regression tables, we also report the results of this regression without the inclusion of controls.

[5]For this variable, we will re-code observations with values above 50 to 50 to avoid extreme observations that are more likely to be expressions of erroneous entries or misunderstandings than true expressions of beliefs.

4.4. Heterogeneous treatment effects: Party affiliation

In the fourth specification, we estimate the following equation to look at heterogeneity by political party affiliation:

$$y_i = \zeta_0 + \zeta_1 \text{Treatment}_i + \zeta_2 \text{Republican}_i + \zeta_3 \text{Treatment}_i \times \text{Republican}_i + \mathbf{Z}^T \mathbf{X}_i + \varepsilon_i$$

where Republican_i takes value one if respondent i is Republican and zero otherwise.

4.5. Heterogeneous treatment effects: Gender

In the fifth specification, we estimate the following equation to look at heterogeneity by gender:

$$y_i = \eta_0 + \eta_1 \text{Treatment}_i + \eta_2 \text{male}_i + \eta_3 \text{Treatment}_i \times \text{male}_i + \mathbf{H}^T \mathbf{X}_i + \varepsilon_i$$

where male_i takes value one if respondent i is male and zero otherwise.

4.6. Posterior beliefs

We examine how people form their posterior beliefs in the second wave of the experiment. Specifically, we estimate the weights people give to their prior beliefs and the information they receive about the outcomes in the audit study—the "information shock"—through the following equation:

$$\text{posterior}_i = \theta_0 + \theta_1 \text{prior}_i + \theta_2 \text{shock}_i + \boldsymbol{\Theta}^T \mathbf{X}_i + \varepsilon_i$$

where

- posterior_i (prior_i) is subject i's estimate from the second (first) wave of how many times resumes with black-sounding names on average had to be sent out to get one callback for an interview.
- $\text{shock}_i = \text{prior}_i - 15$ if $T_i = 1$ and zero otherwise.

θ_1 provides us with an estimate of how much weight our subjects place on their prior belief and θ_2 provides us with an estimate of the weight subjects place on the

information shock they receive.

4.7. Willingness to pay for information

For the control group, we also explore correlates of people's marginal rate of substitution between money and information about the research results. We will regress the number of times subject i chooses to receive the information instead of the money, info_i, on a continuous measure of the size of our respondent's biased belief about racial discrimination, bias_i ($\text{prior}_i - 15$), as well as a set of controls, $\mathbf{X}_i$, described in Section 5.3[6]:

$$\text{info}_i = \iota_0 + \iota_1 \text{bias}_i + \mathbf{I}^T \mathbf{X}_i + \varepsilon_i$$

4.8. Multiple hypothesis adjustment

To deal with the issue of multiple hypotheses testing, we adopt two strategies: *(i)* use of indices and *(ii)* accounting for the False Discovery Rate.

4.8.1. Use of indices

We have one main family of outcomes. We will create an unweighted index for this main family, which is defined as follows:

- **Attitudes towards pro-black policies:** We compute an unweighted index of people's support for policies aimed at reducing racial discrimination based on the following two questions:

    - Do you support or oppose government and private programs that give qualified black candidates preference over equally qualified white candidates in getting a job?

    - Do you support or oppose government and private programs that give qualified black candidates assistance in getting a job?

We also have a series of additional outcomes that will not be part of any family:

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[6]We include all controls outlined in section Section 5.3 except for *Belief$_i$*.

- **Support for name-blind recruitment:** Do you support or oppose mandatory name-blind recruitment for hiring in public and private jobs?

- **Manipulation check:** In the United States today, do you think racial discrimination against blacks in the labor market is a serious problem?

- **Posterior beliefs:** How many times did resumes with black-sounding names to be sent out in order to get one callback for an interview?

- **Beliefs about affirmative action:** Overall, do you think affirmative action programs for the past fifty years have helped blacks, hurt them, or had no effect one way or the other?

- **Beliefs about racial inequality (discrimination):** To what extent do you agree with the following statement: "Differences in economic outcomes between whites and blacks are primarily the result of racial discrimination against blacks."

- **Beliefs about racial inequality (effort):** To what extent do you agree with the following statement: "Differences in economic outcomes between whites and blacks are primarily the result of whites working harder than blacks."

4.8.2. Accounting for the False Discovery Rate

The second method uses the "sharpened q-value approach" (Benjamini et al. 2006; Anderson 2008). We use the same family of outcomes as the one defined above. For our family of outcomes, we control for a false discovery rate of 5 percent, i.e., the expected proportion of rejections that are Type I errors (Anderson 2008).

5. Definition of outcome variables

5.1. Self-reported measures

For simplicity, we will consider all of the self-reported measures on attitudes toward affirmative actions as continuous.[7] For instance, when subjects need to state to what extent they agree with a particular statement, we will code "Strongly oppose" as 1, "Oppose" as 2, "Neither support nor oppose" as 3, "Support" as 4, and "Strongly

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[7]See Section B.4 for details about these measures

support" as 5. Furthermore, we standardize these variables by, for each variable, subtracting the control group mean and dividing by the control group standard deviation for each observation.

5.2. Variables with limited variation

We will drop from the analysis variables which have very limited variation, as they are not informative. Specifically, we will drop variables for which more than 95 percent of observations have the same value. If these variables are part of an index, we will recalculate the index without them.

5.3. Control variables

We use control variables that were collected as part of the baseline survey from the other experiment. They will be coded as follows:

- Gender will be coded as a dummy.

- Age will be coded continuously.

- Ethnicity will be coded as one dummy for each category (Hispanics are treated as an own category, e.g. the dummy for "Caucasian/White" will refer to non-Hispanic whites).

- State will be coded as three regional dummies (three of the following: Northeast, Midwest, South, and West).

- Household size will be coded continuously.

- Household income will be coded as the log of the midpoint of the interval specified by the respondent.

- Education will be coded as a dummy for whether the respondent has at least a 2-year college degree.

- Employment status will be coded as one dummy for whether the respondent is a full-time employee.

- Party affiliation will be coded as a dummy for being Republican.

As controls, we also include prior beliefs about racial labor market discrimination,

Belief$_i$ (equals to 1 if subject i thinks resumes with black-sounding names on average had to be sent out strictly above 15 times to get one callback for an interview)[8], and confidence in prior beliefs, Con$_i$ (coded on an integer scale from 1 to 5).

[8]As discussed in Section 4.2, we use the continuous belief measure in robustness checks.

References

Anderson, Michael L. 2008. "Multiple Inference and Gender Differences in the Effects of Early Intervention: A Reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects." *Journal of the American Statistical Association* 103 (484): 1481–1495.

Benjamini, Yoav, Abba M Krieger, and Daniel Yekutieli. 2006. "Adaptive linear step-up procedures that control the false discovery rate." *Biometrika* 93 (3): 491–507.

Bertrand, Marianne, and Sendhil Mullainathan. 2004. "Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination." *American Economic Review* 94 (4): 991–1013.

A. Instructions: Main experiment

A.1. Consent Form

This study has received ethics clearance by the Oxford University Institutional Review Board.

If subjects have questions about this study or their rights, or if they wish to lodge a complaint or concern, they may contact us at the following email: christopher.roth@economics.ox.ac.uk.

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Consent form

I have read the information provided on the previous page.

I understand that I may withdraw from the study at any time.

I have had the opportunity to ask questions about the study.

I understand how to raise a concern or make a complaint.

I understand that I can only participate in this experiment once.

I understand that close attention to the survey is required for my responses to count.

If you are 18 years of age or older, agree with the statements above, and freely consent to participate in the study, please click on the "I agree" button to begin the experiment.

I agree

I disagree

A.2. Elicitation of beliefs about racial discrimination

Researchers from Harvard University and the University of Chicago conducted an experiment to study racial discrimination in the labor market. They did so by sending out fictitious resumes to help-wanted ads in Boston and Chicago newspapers.

The resumes were exactly the same except for one thing: the name of the job applicant. Half of the resumes had typically white-sounding names like "Carrie" and "Todd".

The other half of the resumes had typically black-sounding names like "Tanisha" and "Kareem".

The idea was to make sure that the applicants were seen as having identical qualifications, but that the employers would use the applicants' names to infer whether they were white or black.

Resumes with **white-sounding** names had to be sent out on average **10 times** to get one callback for an interview.

What do you think?

How many times do you think resumes with **black-sounding** names on average had to be sent out to get one callback for an interview?

I think resumes with black-sounding names on average had to be sent out ☐ times to get one callback for an interview.

If your answer is the same as what the researchers found, you will be rewarded a **bonus of $2** in panel currency.

A.3. Confidence in priors

How sure are you about your answer to the previous question?

Very sure

Sure

Somewhat sure

Unsure

Very unsure

A.4. Treatment screen

The researchers found that resumes with black-sounding names on average had to be sent out **15 times** to get one callback for an interview.

Since resumes with white-sounding names on average only had to be sent out 10 times to get one callback for an interview, this means that employers were **50 percent**

more likely to give callbacks to applicants with white-sounding names than applicants with black-sounding names.

A.5. Manipulation check

In the United States today, do you think that racial discrimination against blacks in the labor market is a serious problem?

A very serious problem

A serious problem

A problem

A small problem

Not a problem at all

B. Instructions: Follow-up

B.1. Introduction

This survey is conducted by a researcher from NHH Norwegian School of Economics.

In this survey, you will be asked questions on a broad range of different topics. Please pay close attention to all questions.

By continuing this survey, you acknowledge your consent to participate and that you are at least 18 years of age.

B.2. Obfuscation: Views on investments

Which of the following do you think is the best long-term investment: bonds, real estate, saving accounts, stock or mutual funds, or gold?

Bonds

Real estate

Saving accounts

Stock or mutual funds

Gold

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Do you, personally, or jointly with a spouse, have any money invested in the stock market right now – either in an individual stock, a stock mutual fund, or in a self-directed 401-K or IRA?

Yes

No

Do not know

B.3. Obfuscation: Views on religion

How important would you say religion is in your own life – very important, fairly important, or not very important?

- Very important

- Fairly important

- Not very important

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At the present time, do you think religion as a whole is increasing its influence on American life or losing its influence?

- Increasing

- Decreasing

- No opinion

B.4. Self-reported outcomes

Do you support or oppose government and private programs that give qualified black candidates preference over equally qualified white candidates in getting a job?

Strongly support

Support

Neither support nor oppose

Oppose

Strongly oppose

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Do you support or oppose government and private programs that give qualified black candidates assistance in getting a job?

Strongly support

Support

Neither support nor oppose

Oppose

Strongly oppose

{page break}

Name-blind recruitment has been suggested as a way to reduce racial discrimination in the labor market by hiding the names of the job applicants from their resumes. Do you support or oppose mandatory name-blind recruitment for hiring in public and private jobs?

Strongly support

Support

Neither support nor oppose

Oppose

Strongly oppose

B.5. Mechanisms

Overall, do you think affirmative action programs for the past fifty years have helped blacks, hurt them, or had no effect one way or the other?

Strongly helped

Helped

Somewhat helped

Neither helped nor hurt

Somewhat hurt

Hurt

Strongly hurt

To what extent do you agree with the following statement: "Differences in economic outcomes between whites and blacks are primarily the result of racial discrimination against blacks."

Strongly agree

Agree

Somewhat agree

Neither agree nor disagree

Somewhat disagree

Disagree

Strongly disagree

To what extent do you agree with the following statement: "Differences in economic outcomes between whites and blacks are primarily the result of whites working harder than blacks."

Strongly agree

Agree

Somewhat agree

Neither agree nor disagree

Somewhat disagree

Disagree

Strongly disagree

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In the United States today, do you think that racial discrimination against blacks in

the labor market is a serious problem?

A very serious problem

A serious problem

A problem

A small problem

Not a problem at all

C. Elicitation of posterior about labor market discrimination

Researchers from Harvard University and the University of Chicago conducted an experiment to study racial discrimination in the labor market. They did so by sending out fictitious resumes to help-wanted ads in Boston and Chicago newspapers.

The resumes were exactly the same except for one thing: the name of the job applicant. Half of the resumes had typically white-sounding names like "Carrie" and "Todd". The other half of the resumes had typically black-sounding names like "Tanisha" and "Kareem".

The idea was to make sure that the applicants were seen as having identical qualifications, but that the employers would use the applicants' names to infer whether they were white or black.

Resumes with **white-sounding** names had to be sent out on average **10 times** to get one callback for an interview.

What do you think?

How many times do you think resumes with **black-sounding** names on average had to be sent out to get one callback for an interview?

I think resumes with black-sounding names on average had to be sent out ☐ times to get one callback for an interview.

If your answer is the same as what the researchers found, you will be rewarded a **bonus of \$2** in panel currency.

C.1. Confidence in priors

How sure are you about your answer to the previous question?

> Very sure
>
> Sure
>
> Somewhat sure
>
> Unsure
>
> Very unsure

C.2. Willingness to pay for the information (control group only)

We just explained to you the details of a study which tested for racial discrimination in the labor market.

For each of the seven choices below, you decide whether you would like to receive more information about the results from the study or whether you would like to receive money.

If you decide to receive the information about the results of the study, we will provide you with a short summary of the results, including information on the number of times resumes with black-sounding names had to be sent out in order to get one callback. If you decide to receive the information about the results of the study, we will also provide you with a link to the research study which further describes the methodology, implementation of the experiment, and discusses the research results.

We will randomly implement your decision for *one* of these choices after the study has ended, so please consider each choice carefully. Each decision has the same chance of being implemented.

Information	○		○	$0.10 for me
Information	○		○	$0.20 for me
Information	○		○	$0.30 for me
Information	○		○	$0.40 for me
Information	○		○	$0.50 for me
Information	○		○	$0.75 for me
Information	○		○	$1 for me

C.3. Information provision (depending on people's choices)

The researchers found that resumes with black-sounding names on average had to be sent out 15 times to get one callback for an interview.

Since resumes with white-sounding names on average only had to be sent out 10 times to get one callback for an interview, this means that employers were 50 percent more likely to give callbacks to applicants with white-sounding names compared to applicants with black-sounding names.

`http://www2.econ.iastate.edu/classes/econ321/orazem/bertrand_emily.pdf`

D. Demographics from baseline survey

1. What is your age? [18–24; 25–34; 35–44; 45–54; 55–64; 65 or older]

2. What is your gender? [Male; Female]

3. What was your family's gross household income in 2016 in US dollars? [Less than $15,000; $15,000 to $24,999; $25,000 to $49,999; $50,000 to $74,999; $75,000 to $99,999; $100,000 to $149,999; $150,000 to $200,000; More than $200,000; Prefer not to answer]

4. Which of the following best describes your race or ethnicity? [African American/Black; Asian/Asian American; Caucasian/White; Native American, Inuit or Aleut; Native Hawaiian/Pacific Islander; Other; Prefer not to answer]

5. Are you of Hispanic, Latino, or Spanish origin? [Yes, No]

6. In which state do you currently reside?

7. In politics, as of today, do you consider yourself a Republican, a Democrat, or an Independent? [Republican, Democrat, Independent]

8. Including yourself, how many people are currently living in your household?

9. Which category best describes your highest level of education? [Eighth grade or less, Some high school, High school degree/GED, Some college, 2-year college degree, 4-year college degree, Master's degree, Doctoral degree, Professional degree (JD, MD, MBA)]

10. What is your current employment status? [Full-time employee, Part-time employee, Self-employed or small business owner, Unemployed and looking for work, Student, Not in labor force (for example: retired or full-time parent)]

11. What is the zip code of your current residence?

12. Were both of your parents born in the US? [Yes, No]