Research Design May 2021

Background:

Many Americans remain hesitant to be vaccinated against COVID19. A recent survey by the Kaiser Family Health Foundation found that less than half of unvaccinated people in the U.S. say they want to be vaccinated as soon as possible (Figure 1). There are many underlying reasons for vaccine hesitation that likely differ across demographic groups (MacDonald 2015). While conservative leaning people are more likely to be exposed to media reports that promote conspiracy theories, it is widely believed that distrust against the medical system based on past racial injustices is an important factor in the Black population. Information campaigns have been shown to be effective in decreasing vaccination hesitancy in other settings (Charron et al. 2020).

In this project, we will study whether information targeted at Black people and delivered by Black physicians can increase vaccinations against COVID19. To do so, we will experimentally test the effectiveness of informational videos created by the Kaiser Family Health Foundation.

Research Questions:

- R1: What is the effect of "standard" information videos on vaccination?
- R2: Does the effect of "standard" information differ by race?
- R3: What is the effect of "tailored" information (information that directly addresses the concerns of a specific group)?
- R4: What can explain differences in effects across videos and race (e.g. credibility, relatability, baseline knowledge and attitudes..)?

Research Design:

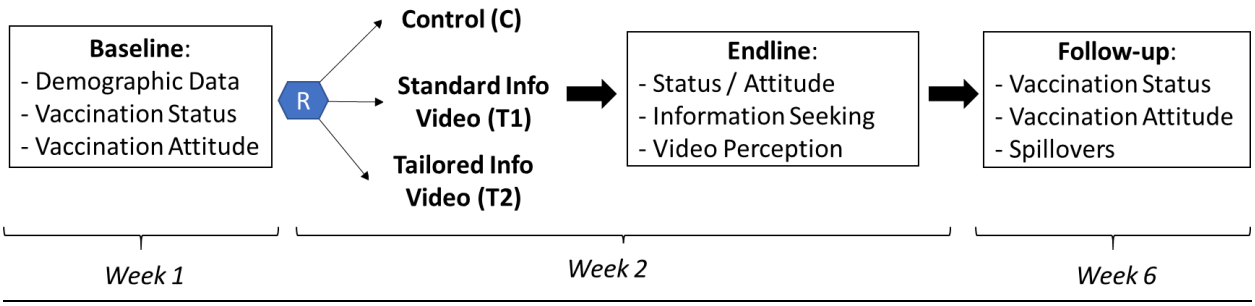
Recruitment: We will recruit people online using MTurk. The research design will have three stages of data collection (as described in more detail below). Participants will be compensated for each survey in which they participate, at or above the average MTurk rate. We will oversample Black respondents to get a sample that is equally split between White and Black respondents.

Baseline: We will conduct a short (5 minute) baseline survey in which we collect data on people's basic demographic characteristics (e.g. education, age, race), their vaccination status, and their attitude towards the vaccine.

Treatment: Of those who completed the baseline, we will select people who have not yet been vaccinated (or scheduled an appointment). Selected people will receive an invitation via email to participate in a follow-up survey after 1 week. Those that decide to participate will be randomized into one of three groups: a control and two treatment groups. The treatment groups will receive information treatments (as described in more detail below).

> **Control**: No video.
>
> **T1**: watch "standard" information videos conveying information about COVID 19 vaccine information including information on side effects and emergency use authorization.

T2: watch "tailored" videos referring to aspects relevant to Black populations, e.g.: whether Black people were involved in the development and testing of the vaccine.



Follow-up survey: Four weeks after the treatment, we will invite participants to conduct a short follow-up survey in which we ask about people's vaccination status and concerns. We also invite people to share the vaccination lot number (entered on their vaccination card) to verify their status. This number can be used to look up vaccine expiration dates, not to identify specific individuals. Last, in order to test for spill-over effects, we will also ask whether they have talked to others about getting vaccinated.

Primary Outcomes:

1. *Attitude towards vaccinations*
    a. Probability of getting vaccinated. "What is the probability that you will be vaccinated against COVID-19 by Labor Day (Sep 6, 2021)? "
    b. Categorical variables: We ask participants "When a FDA approved vaccine for COVID-19 is available to you for free, what will you do? ". Options are: "Wait until it has been available for a while to see how it is working for other people", "Wait until it has been available for a while to see how it is working for other people", "Only get the vaccine if I am required to do so for work, school, or other activities", "Definitely not get the vaccine"
        i. Binary outcome: 1="Definitely not get the vaccine"
        ii. Binary outcome: 1="Get vaccinated as soon as I can"
        iii. Ordinal outcomes (order determined by probabilities of getting vaccine) - estimate with ordered probit.

2. *General Concerns:*
   We ask participants: "How concerned are you about the following: 1) You might experience serious side effects from the vaccine, 2) It will be difficult to access the vaccine from a place that you trust 3) You might have to miss work due to side effects of the vaccine 4) Because of the fast approval process we don't know long term effects".
    a. For the analysis, we will convert responses to 0="Not concerned", 1="Somewhat concerned." , 2="Very concerned"

3. *Infection Concerns:*
   We ask participants: "How concerned are you about the following: 1) Getting COVID-19 myself, 2) Spreading COVID-19 to my family 3) Spreading COVID-19 to my community.

   a. For the analysis, we will convert responses to 0=”Not concerned”, 1=”Somewhat concerned.” , 2=”Very concerned”

4. *Information seeking*: In the treatment survey (after receiving the information) we provide all participants with a link to a website where they can learn more about the logistics of getting vaccinated.
   a. Binary outcome: 1= participants click on the link.

5. *Spillovers*:
   a. Binary outcome: 1= talk to others about vaccination

6. *Behavior*:
   a. Vaccination:
      i. Binary: 1= received the vaccine
      ii. Binary: 1= received the vaccine OR having scheduled vaccination appointment

<u>Secondary Outcomes</u>:

- Perception of videos: accuracy, novelty, credibility. We can estimate differences between race in T1 and difference between T1 and T2 among Black respondents.
  - Convert categorical to numeric variables:
    - Credibility: 0=Not credible, 1=somewhat, 2=very
    - Accuracy: 0=Not accurate, 1=somewhat, 2=very
    - Novelty: 0=Not novel, 1=somewhat, 2=very

- Behavior: As an additional outcome, we ask participants to provide us with the vaccination number.
  - Binary: 1=Provide us with vaccine number

<u>Analysis</u>:

We will use two types of specifications: 1) average treatment effects 2) heterogeneous treatment effects across subgroups.

1. **Average treatment effects**:
   a. Our preferred specification pools the sample and estimates:

$$y_i = \alpha_0 + \beta_1 Black + \beta_2 T_1 + \beta_3 T_1 x\ Black + \beta_4 T_2 + \gamma X_i + \epsilon_i$$

   - Coefficient beta 3 captures whether the effect of information (T1) differs by respondents’ race.
   - Coefficient beta 4 captures the treatment effect of tailored information (T2) - since the treatment was only administered to Black respondents, we don’t need the interaction term.
   - We will estimate specifications with and without covariate vector Xi.

b. To increase transparency, we will also estimate the following specification for the subset of black respondents:

$$y_i = \alpha_0 + \beta_1 T_1 + \beta_2 T_2 + \gamma X_i + \epsilon_i$$

and the following specification among the control group and only those respondents in T1:

$$y_i = \alpha_0 + \beta_1 Black + \beta_2 T_1 + \beta_3 T_1 x\ Black + \gamma X_i + \epsilon_i$$

c. As a secondary specification, we will also test the effect of receiving any information (pool T1 and T2) for black respondents

$$y_i = \alpha_0 + \beta_1 T_{any} + \gamma X_i + \epsilon_i$$

2. **Heterogeneous treatment effects:** We will conduct exploratory subgroup analysis along the following baseline characteristics:
    - Moral foundations
    - Concerns about spreading COVID to community
    - Political leaning
    - COVID mortality risk perception.
    - Health indicators

References

Charron, J., Gautier, A. and Jestin, C., 2020. Influence of information sources on vaccine hesitancy and practices. *Medecine et maladies infectieuses*, 50(8), pp.727-733.

MacDonald, N.E., 2015. Vaccine hesitancy: Definition, scope and determinants. *Vaccine*, 33(34), pp.4161-4164.