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# Moving the needle on racial disparity: COVID-19 vaccine trust and hesitancy

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## ABSTRACT

Health equity has grown in prominence during the pandemic. Racial disparities in COVID-19 infections and vaccine hesitancy (differences up to 26%) have generated concerns, research, and interventions with less-than-satisfactory results. Two longitudinal national surveys in the U.S. revealed previously overlooked patterns in the changes of COVID-19 vaccination intention across race/ethnicity. While White vaccine acceptance bounced back to the March 2020 level (65%) a year later, minority (except Asians) responses continued to lag and fluctuated with greater volatility. Though Hispanics' refusal aligned more with Blacks, the ratio of Hispanics willing to vaccinate was similar to Whites, even intermittently went above. Further, the magnitude and direction of changes varied by race at specific times (e.g., launch of Operation Warp Speed, reports of high vaccine efficacy in clinical trials or FDA approval), indicating subgroups react differently to events and thus require timely identification of driving factors for dynamic communications to encourage uptake. We also briefly reviewed the historical background of distrust in medicine and health authorities, including the Tuskegee Syphilis Study that led to the Belmont Report regulating human subject research and severe adverse reactions from the 1976 mass vaccination against the H1N1 swine flu. These examples, perpetuating inequity in the present healthcare system, and logistical barriers illustrate the contextual complexity and importance of instilling confidence in vaccines among the minority population.

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## 1. Introduction

Racial inequity in medical research and treatment have long existed. The differences in COVID-19 infection, mortality, and vaccination rates underscore this chasm [1]. The lagging vaccine confidence among most minorities, particularly Blacks, has generated necessary and overdue discussions. Studies on vaccine acceptance and hesitancy showed a startling disparity, up to 26%, between communities of color and Whites [2,3]. Health departments and community organizations have implemented various strategies, including communication campaigns and increased access, with gradually improving yet inconsistent results. As of June 14, 2021, and according to KFF analysis, in the U.S. 32% of Blacks and 36% of Hispanics, compared to 45% of Whites and 58% of Asians, have received at least one dose of COVID-19 vaccine [4].

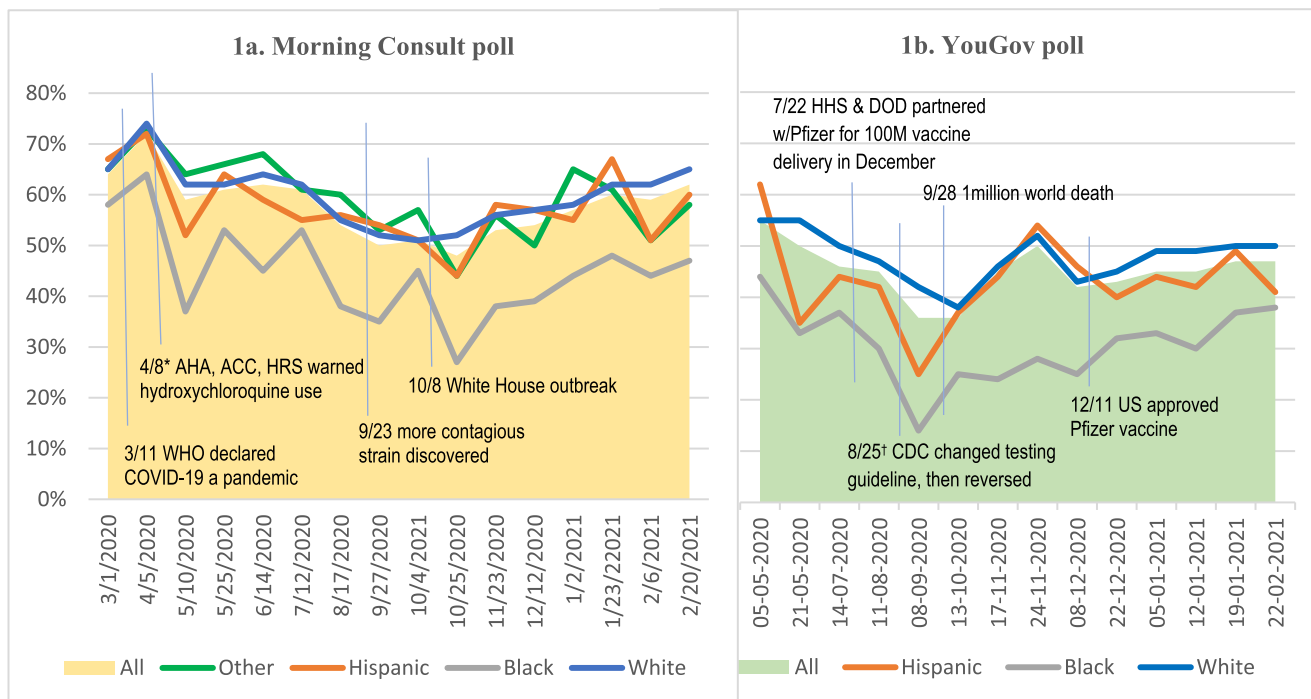
## 2. Trends and disparities in COVID-19 vaccination intention

Over time since the pandemic gained steam, Whites have remained relatively consistent in their views on this question: "If/when a COVID vaccine is available, would you get it?" Among the few longitudinal population-representative surveys, Morning Consult polls from March 1, 2020 through February 20, 2021 found that White support for the vaccines began at 65% before the public realized the enormity of the outbreak, peaked at 74% in April 2020 after the near-nationwide lockdown, dipped into the low-50s in September and October, and then gradually reclaimed to where it started (Fig. 1a) [5]. Conversely, minority responses were more erratic. Blacks started at 58%, dropped more than 20% in two months with persistent fluctuations, skidded to its lowest at 27% by late October, and rebounded to 47% the following February. Hispanics began similarly to Whites at 67%, slipped to its lowest point in October (the same time as Blacks) at 41%, and finished at 60%.

Another national survey by YouGov started in May 2020 and traced a similar pattern, with overall vaccination intention tanking in late summer through the November election (Fig. 1b) [6].

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**Fig. 1.** Rates of participants answered “Yes” to vaccine intention question by race. *Data sources:* Morning Consult and YouGov, compiled by the research team. Both are cross-sectional, longitudinal surveys with stratified random samples representative of the U.S. population by demographics and regions. Morning Consult polled about 2200 participants each time and YouGov polled 1500 participants. With more vaccine rollouts, the question wordings and answer options of the survey item were adjusted by the respective pollsters in March 2021, thus the response data thereafter were not included in the graphs for direct comparison. \* Despite few earlier positive outcomes and President Trump’s promotion of the use of hydroxychloroquine as a treatment for Covid-19, AHA, ACC, and HRS jointly issued cautionary guidelines for the drug, especially warning the application for Covid-19 patients with heart conditions.[17]. † CDC changed its guidelines, stating testing may not be needed for exposed but asymptomatic individuals, generating confusion. The guideline was later reversed on September 17, citing it did not go through CDC’s regular scientific review [18]. *Abbreviations:* ACC: American College of Cardiology; AHA: American Heart Association; CDC: Centers for Disease Control and Prevention; DOD: Department of Defense; HHS: Department of Health and Human Services; HRS: Heart Rhythm Society; WHO: World Health Organization.

Though Hispanics began at 62%--the highest among subgroups--and Blacks at 44%, both plummeted to around 30% within three weeks and further down to their lowest by early September at 25% and 14%, respectively. Hispanic acceptance then grew steadily, exceeding Whites in late November at 54% when Blacks lingered in the 20s; later, both converged around 40% as Whites settling around 50% since the holidays.

The hesitant and resistant responses were no simple flips of the “yes” to vaccinations. Minority opinions again were volatile in both polls. In Morning Consult, Blacks’ “no” started at 16% in March 2020 and shot up to 43% in late September; Whites hovered around 20% for nine months since May (Fig. 2a). Compared to those expressing refusal, the hesitant respondents deserve special attention as they present greater opportunity for conversion to acceptance. In YouGov, “not sure” Blacks and Hispanics started around 25% and were in relative lockstep until November, when Blacks climbed to 46% while Hispanics dropped to 20%. The two groups came close again after the 2021 New Year and in February met around 35%, when Whites rested at 22% (Fig. 2d).

Twenty newsworthy Covid-related events were mapped on the graphs to provide context to the timeline and trends in vaccine intent. A closer examination revealed patterns that were overlooked in previous studies: (1) greater volatility in vaccine receptivity among minorities compared to Whites; (2) while the ratio of Hispanics (and other non-Black minorities, when data were available) willing to vaccinate closely followed that of Whites and even went above at times, the ratio and vaccination of Hispanics rejecting vaccines aligned more with Blacks; and (3) the timing and degree of attitude change differed by race, sometimes in opposite directions. For example, in early summer 2020 when the ratios of undecided Whites remained stable in both polls, the other two

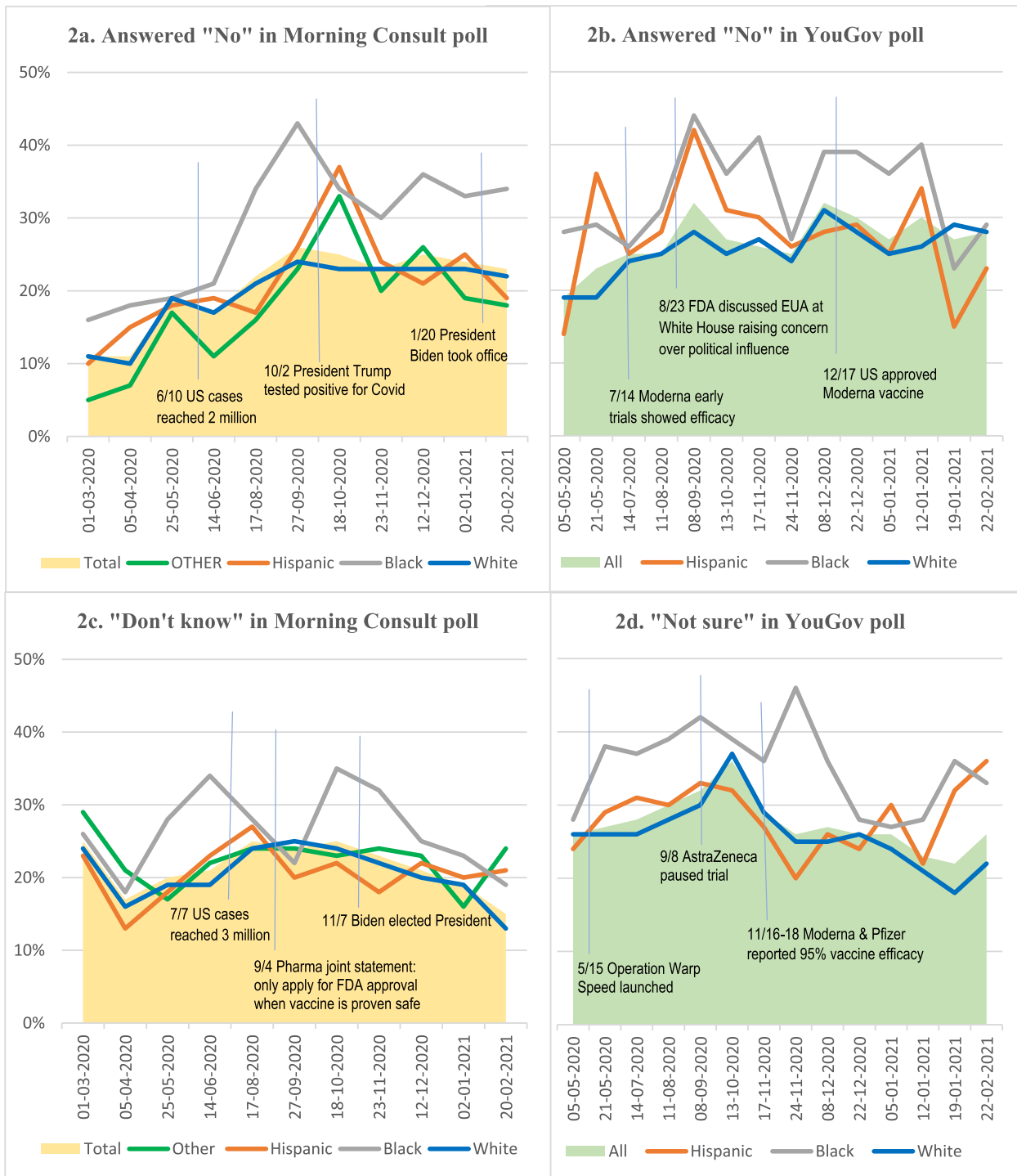
groups spiked. Before Thanksgiving 2020, Black hesitancy in YouGov jumped 10% to its highest at 46%; Hispanic hesitancy dropped to its lowest at 20%.

These findings highlight stark racial differences in driving factors of vaccine decisions and how opinions have fluctuated. It would be expected that as positive vaccine-related news has been announced, such as high efficacy in clinical trials or FDA approvals, “yes” responses would correspondingly increase across subgroups. However, the variations in size and direction of changes between categories indicate that it is critical to investigate additional factors not covered in existing literature, such as how respective groups receive and interpret information and historical context to better detect triggers and timing for customized, effective advocacy to continue raising vaccination rates.

### 3. Impacts of historical medical experiments

#### 3.1. Tuskegee study and Nazi echoes

Numerous experiments characterize the history of medicine; some catalyzed significant changes to the practice of research. Nazi doctors performed hideous experiments at Auschwitz and tested antibodies and vaccine ingredients against TB, typhus, malaria, and others at Buchenwald and Dachau [7]. The conscience of the civilized world was so stricken that in the midst of various war crimes trials, the Nuremberg Code was drafted, expressly mandating voluntary and explicit informed consent from those involved in human subject research [8]. This did not sufficiently persuade some American health agencies and researchers from discontinuing the Orwellian-titled “Tuskegee Study of Untreated Syphilis in



**Fig. 2.** Rates of participants expressed vaccine resistance or hesitancy by race. *Data sources:* Morning Consult and YouGov, compiled by the research team. *Abbreviations:* EUA: Emergency Use Authorization; FDA: Food and Drug Administration.

the Negro Male,” which in 1932 recruited hundreds of poor and uneducated Black male sharecroppers in Alabama. The participants were never told of the study purpose and were lured with promises of free meals, physicals, treatment (placebos in truth), and even burial insurance. Some thought they were being treated for rheumatism or “bad blood.” [9] At the outset of the study, there was no cure for syphilis, but by the mid-1940s penicillin was a widely available and effective treatment and was withheld from the test subjects [10].

In 1969, the Centers for Disease Control and Prevention (CDC) recommended perpetuation of the program [11]. It might have continued without Public Health Services investigator Peter Buxton’s revelations to Associated Press reporter Jean Heller, whose front-page *New York Times* story ended the study [9]. In 1974, Congress passed the National Research Act, creating the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, which then wrote the Belmont Report in 1976 to prevent future abuses and regulate human subject research [12].

### 3.2. The mentally ill, foster children, and the swine flu

Clinical mistreatments and public health mishaps were not limited to racial/ethnic minorities. From 1946 to 1948, despite the Nuremberg protocols, soldiers, prisoners, prostitutes, and the mentally ill in Guatemala were injected with syphilis in a U.S.-led program, without informed consent; eighty-three subjects died [13]. During the late 1980s and 1990s, more than 48 government-funded studies tested foster children with antiretroviral drugs intended to treat HIV/AIDS and secondary infections, largely without informed consent by the guardians entrusted with protecting them [14].

In 1976, public health officials preemptively convinced President Ford to vaccinate all Americans against the H1N1 Swine Flu in response to an outbreak at Fort Dix. Eventually 45 million received shots, about 25% of the population at the time. It was abruptly cancelled in December after people in over a dozen states were diagnosed with potentially lethal Guillain-Barré Syndrome and 94 suffered paralysis [15].

### 4. Implications and conclusions

Not all people with reservations or objection toward clinical interventions hold dubious opinions dangerous to public health. While the memories of the Tuskegee and other studies fade, it is an uncomfortable truth that some Americans have real reasons to distrust government agencies, pharmaceutical companies, politicians, doctors, and researchers. Their behavior in the past, compounded by continued inequity in the present healthcare system, engendered lasting suspicion and even the mass deaths of a pandemic could scarcely shake the deep-rooted fear and mistrust of many minorities and underserved communities. The historical and recent examples offer both evidence and lessons of how challenging, yet vital, it is to build trust in the safety of vaccines and public health officials.

At the same time, we must recognize that the causes for under-vaccination also entail logistical and information barriers, such as transportation, internet access to find vaccination sites or schedule appointments, inability to take time off from work, misinformation, and low health literacy; socioeconomically disadvantaged groups are more susceptible to these factors. To counter the endemic persistence of social and health inequality, CDC has prioritized “vaccine equity” with preferential access and administration for communities that have been most impacted by COVID-19 [16]. On the other hand, the fact that information on race/ethnicity is only reported for 57.3% of the people vaccinated nationwide (compared to 91–92% on age and sex) [1] further speaks to the discrepancy between the interest and implementation of potential solutions to the issue.

To successfully instill confidence and encourage uptake, culturally sensitive communication and increased and more convenient access to vaccines as well as medical care and related supports are essential. In addition, further research and long-term surveillance on vaccine receptivity should identify predictors driving hesitancy to optimize campaign strategies tailored not just to the respective groups, but at specific times or in response to particular events. Vaccination studies need to go beyond investigating barriers or who people trust or distrust and also pinpoint when and how attitudes and uptake behavior change within the populations of interest. By more accurately addressing health disparity issues, incorporating contextual and historical factors with understanding and respect, public health organizations can develop effective plans to move the needle by re-establishing trust in our health institutions to reach sufficient vaccination coverage to control this and future pandemics.

### Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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### Contribution

All authors attest they meet the ICMJE criteria for authorship. All authors contributed equally to this article and approved the final version submitted.

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