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## Do some prefer to pay? Identifying bias against free COVID-19 tests

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## ABSTRACT

**Objectives:** In the United States, a federal emergency program has made SARS-CoV-2 self-test kits available at no cost. It is unclear how widely free tests are preferred. We conducted a survey to estimate the proportion of respondents who do not prefer a free test. We hypothesized that free tests would not be preferred universally, and that a preference for paying would be more common among those with conservative politics than with liberal politics, regardless of income.

**Design:** Observational study design.

**Methods:** A national sample of US adults completed an online survey. To reduce potential enrollment bias, the survey's focus was not specified beforehand. To prioritize a high-risk group, participation was limited to those who were unvaccinated or were incompletely vaccinated in the primary series against COVID-19. Participants reported their testing preferences and socio-demographic characteristics, including political affiliation. The main outcome assessed if a participant preferred to pay for a self-test or receive a free one (subsidized by the US government).

**Results:** Among 1215 participants, (73%, n = 886) preferred free self-testing, while 27% (n = 329) preferred to pay for the same testing. After adjusting for income, the odds of preferring to pay for self-testing were 66% higher in "strong" Republicans compared to "strong" Democrats (odds ratio = 1.66, 95% confidence interval = 1.07–2.62).

**Conclusions:** More than a quarter of individuals preferred paying for these tests. This preference was more likely among those with right-wing politics. Policy implications are discussed, along with future research directions.

## 1. Introduction

Until May 2023, federal programs in the United States guaranteed free, at-home self-test kits for SARS-CoV-2 available at no charge. Over 750 million free kits were shipped directly to American households [1]. Currently, they are no longer guaranteed to be free. While planning for the policy change, public health experts have debated if self-tests should remain accessible at no cost in certain community locations and, if so, which communities should be prioritized for stockpiling [1]. During these debates, experts have noted that little is known about the extent to which some may be reluctant to use a free test and prefer to pay [2].

We assessed preferences for using free versus purchased self-testing kits, hypothesizing that free testing would not be universally preferred. As economists have documented, some consumers reject free

or low-cost products, perceiving them to be of lesser quality [3]. We also hypothesized that, compared to individuals with left-leaning (or liberal) Democratic politics, individuals with right-leaning (or conservative) Republican politics would be less likely to prefer the free, federally subsidized kits. In the United States, those with right-leaning politics have been reluctant to trust government-subsidized COVID-19 vaccines [4] and it is plausible that politics may also be correlated with government-subsidized testing. Prior research has documented variation in self-testing rates by age, race, and income [5] but it has not assessed politics or preferences for purchased versus free testing.

If the free tests are not universally preferred and if political partisanship is correlated with this preference, there are policy implications worth considering. For example, those debating the ideal location of stockpiles could consider political maps of the country, which details the

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**Table 1**  
Preferences for purchasing COVID-19 self-test kits over using free self-test kits.

		Prefer to purchase a self-test kit (N = 329)	Prefer a free self-testing kit (N = 886)	Unadjusted Odds Ratio (95% Confidence Interval)	Adjusted Odds Ratio (95% Confidence Interval) <sup>3</sup>
<b>Age (Years)<sup>a</sup></b>	<b>18–29</b>	129 (39%)	396 (45%)	Reference	Reference
	<b>30–64</b>	179 (54%)	443 (50%)	1.24 (0.95, 1.62)	1.18 (0.90, 1.54)
	<b>≥ 65</b>	0 (0%)	8 (1%)	NA	NA
<b>Gender</b>	<b>Female</b>	174 (53%)	485 (55%)	Reference	Reference
	<b>Male</b>	155 (47%)	401 (45%)	1.08 (0.84, 1.39)	1.03 (0.80, 1.33)
<b>Ethnicity</b>	<b>Spanish, Hispanic, or Latino</b>	38 (12%)	101 (11%)	1.01 (0.68, 1.50)	1.06 (0.71, 1.57)
<b>Race</b>	<b>American Indian, Alaska Native, Native Hawaiian, Pacific Islander</b>	5 (2%)	16 (2%)	1.05 (0.32, 2.94)	1.18 (0.36, 3.35)
	<b>Asian</b>	0 (0%)	26 (3%)	NA	NA
	<b>Black or African American</b>	30 (9%)	101 (11%)	Reference	Reference
	<b>Other/multiple responses</b>	23 (7%)	71 (8%)	1.09 (0.58, 2.03)	1.08 (0.57, 2.01)
	<b>White</b>	271 (82%)	672 (76%)	1.36 (0.89, 2.12)	1.29 (0.85, 2.03)
	<b>Beyond high school</b>	257 (78%)	672 (76%)	Reference	Reference
	<b>High school graduation or less</b>	72 (22%)	214 (24%)	0.88 (0.65, 1.19)	1.00 (0.73, 1.36)
<b>Income<sup>2</sup></b>	<b>&lt;\$10,000</b>	24 (7%)	106 (12%)	Reference	Reference
	<b>\$10,000 - \$49,999</b>	117 (36%)	374 (42%)	1.38 (0.86, 2.30)	1.40 (0.87, 2.33)
	<b>\$50,000 - \$99,999</b>	113 (34%)	278 (31%)	<b>1.80 (1.11, 3.00)</b>	<b>1.79 (1.10, 3.00)</b>
	<b>≥ \$100,000</b>	75 (23%)	128 (14%)	<b>2.59 (1.55, 4.45)</b>	<b>2.58 (1.53, 4.47)</b>
<b>Politics</b>	<b>Strong Democrat</b>	34 (10%)	134 (15%)	Reference	Reference
	<b>Lean Democrat</b>	71 (22%)	185 (21%)	1.51 (0.96, 2.43)	1.52 (0.96, 2.45)
	<b>Independent</b>	52 (16%)	145 (16%)	1.41 (0.87, 2.33)	1.42 (0.87, 2.34)
	<b>Lean Republican</b>	70 (21%)	196 (22%)	1.41 (0.89, 2.26)	1.28 (0.80, 2.06)
	<b>Strong Republican</b>	102 (31%)	226 (26%)	<b>1.78 (1.15, 2.80)</b>	<b>1.66 (1.07, 2.62)</b>

<sup>2</sup> Chi-square p-value <0.001.

<sup>3</sup> Odds ratio of purchasing tests over receiving free tests after adjusting for income group. Categories where P < 0.05 are emboldened.

<sup>a</sup> Age data was missing from 60 (5%) individuals.

political composition of counties and even neighborhoods [5]. Currently, even at the neighborhood level, Democrats and Republicans are often geographically segregated in the United States [6]. The lack of heterogeneity could inform decisions about which communities should host the stockpiles to facilitate distribution in proportion to demand.

**2. Methods**

We conducted a national, anonymous, online survey through the research company, Prolific. We enrolled U.S. adult residents (in December 2022) who were unvaccinated or were incompletely vaccinated in the primary series against COVID-19. This population has been of interest to behavioral researchers who seek to understand their vaccine hesitancy [7], which makes these individuals at higher risk for severe COVID-19. In addition, this group is important to public health because they are also less likely to adopt other pandemic behaviors, such as wearing masks and socially distancing, which can help decrease the risk of infection and transmission [8].

The questionnaire measured political and other socio-demographic variables. We used the standardized political measurement approach and categorical terminology (e.g., “Republican,” “Independent” and “Democrat”) that has been used by several national surveys, including those conducted by the American National Election Studies (ANES), Pew and Gallup. The questionnaire also asked respondents to select which type of COVID-19 testing they would prefer if they decided to test. They indicated their preference by selecting from a randomly ordered list of options that included testing at 1) a doctor’s office, 2) a pharmacy, 3) your workplace by your employer, 4) home using a self-testing kit that the government has made free (no-cost), or 5) home using a self-testing kit that you purchase from pharmacies or online (for about \$20).

We restricted our analysis to individuals who indicated a preference for self-testing, either using a free kit or purchasing a kit. The questionnaire included other testing options to 1) increase external validity, reflecting the variety of testing options available beyond self-testing and 2) disguise our analytic objective. Our primary outcome was preferring to pay for a self-test. We used logistic regression to identify characteristics of individuals who preferred to pay.

**3. Results**

Among 4299 survey participants, 1215 (28%) indicated a preference for self-testing and a majority of them (73%, n = 886) preferred free self-testing, but 27% (n = 329) preferred paying for self-testing (Table 1). In univariable regression, individuals with higher income (≥\$50,000) had higher odds of preferring to pay for a self-test compared to those with incomes <\$10,000 (Table 1). We included income in multivariable logistic regression models with each variable in each model. After adjusting for income, the odds of preferring to pay for self-testing were 66% higher in “strong” Republicans compared to “strong” Democrats (odds ratio = 1.66, 95% confidence interval = 1.07–2.62). (Table 1).

**4. Discussion**

Although most individuals preferred free COVID-19 self-testing kits, more than a quarter of individuals preferred paying for these tests. Far-right politics were statistically significantly associated with this preference to pay. This preference for the same product at a higher price is evidence of a cognitive bias that appears to influence a substantial proportion of adults, as hypothesized. In part, consumers may perceive free products as lower quality, as suggested by economic research [3].

We are not aware of other studies investigating payment preferences for COVID-19 testing or other pandemic tools. Future research could test if the results are generalizable to other populations and identify if other pandemic products, such as vaccines and facial masks, differ in perceived value when provided for free or not. It is also possible that the federal financing of COVID-19 test kits may cause some to distrust the free testing, just as some have distrusted the COVID-19 vaccine because of the government’s role [4]. Because partisanship was correlated with the study outcome, it is conceivable that Republicans may be fearful of the government’s role developing the tests and/or accessing the results.

Although our study measured preference, and not testing behavior, the methods used have predicted actual behavior [9,10]. Still, future research is needed to test the extent to which partisanship does indeed predict COVID-19 testing behavior. In the meantime, as U.S. policy experts debate which communities should be prioritized for future stockpiling and distribution of the free self-testing kits, they could consider

that demand is likely to vary in potentially predictable ways, such as partisanship. Because data now tracks the political composition of geographic areas, down to specific neighborhood [6], it would be feasible to stockpile and disseminate tests in the specific communities where demand for the tests is likely to be strongest.

#### Informed consent statement

Because the IRB judged that this study posed minimal risk, they waived formal consent.

#### Competing interests/conflicts of interest

The authors declare no conflict of interest.

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#### Institutional Review Board statement

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board (IRB) #8 the of University of Pennsylvania (Protocol Number 8347728).

#### 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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