Additional Lives Saved During COVID-19?
How Vaccination Affects Willingness to go to the Doctor

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Abstract: At the beginning of the current pandemic, many individuals who had not yet been vaccinated against COVID-19 skipped or postponed doctor visits for fear of exposure to the disease. This disruption in health care may have had a significant negative impact on their health. To test the hypothesis that vaccination reduced this hesitancy, we employ Census Household Pulse Survey data for January 2021-July 2021, control for selection, time trends, and demographics, and find that medical care avoidance increased with non-vaccinated status. We take this as evidence of additional adverse medical outcomes of the pandemic in addition to the virus itself.

Keywords: Vaccination; COVID-19; Delayed Medical Care; Household Pulse Survey

JEL Codes: I10; I39

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I. Introduction:

With the widespread availability of the COVID-19 vaccine, individuals who had previously been unable to imagine going outside due to fears of contracting the disease were given the opportunity to do so. However, the medical visits that had been skipped during that period may be associated with an increased risk of serious health results, including heart attack, stroke, or undiagnosed cancer. Even after being vaccinated, some individuals continued to avoid all outdoor outings and crowds, something that has been described as "cave syndrome" (Flaskerud 2021). It is in this context that the present analysis makes its unique and timely contribution.

Specifically, we employ recent January 2021-July 2021 Census Household Pulse Survey data to test for the relationship between "not being vaccinated" and "avoiding or delaying medical care".[3, 4] We control for selection into both avoidance of vaccines and medical care by considering individuals who said they "plan to get a vaccine when they are eligible," compared with those who have already been vaccinated, as well as employing a series of controls and stratifications.[5] We find that vaccinated individuals were indeed less likely to avoid medical care, which may have helped ameliorate some of the non-COVID health costs of the pandemic.

II. Background and Motivation:

Early in the COVID-19 pandemic, access to health care was suddenly limited in many locations, with some hospitals postponing elective procedures and doctors being unable or unwilling to see patients. Some doctors' visits that would have taken place in person were canceled entirely or

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[3] While it is also possible that individuals choose to receive their vaccine for COVID-19 during a visit to their doctor for some other medical issue, or at the hospital while receiving treatment—so that the direction of causality between vaccination and medical care receipt is reversed—this will be a relative minority of cases. At the present time, vaccines are largely being provided by pharmacies and state departments of health rather than through other sources: https://www.nbcnews.com/politics/white-house/federal-government-ship-covid-vaccines-retail-pharmacies-next-week-n1256500 . As an example, in Michigan only 0.64% of vaccinations were administered at a doctor's office https://www.michigan.gov/coronavirus/0,9753,7-406-98178_103214_103272-547150--,00.html

[4] In addition to simply "attending a doctor's visit," there are multiple other possible long-term effects of vaccination to consider, such as increases in productivity (Atwood 2021). We reserve this for a possible avenue of future research looking at medical care outcomes due to COVID-19 vaccinations after more time has elapsed.

[5] We do not consider the preferred order of who "should" have been vaccinated as do other authors (Luyten et al., 2020), rather, we simply assume that there was an ordering based mainly on age and, to a lesser degree, other factors.

done instead in a "telehealth" capacity (Garver 2021; Leyenaar et al. 2021; Kranz et al. 2021). This, coupled with the unwillingness of each patient to go to his or her doctor's office due to fears of contracting COVID-19 (Shields et al., 2021; Chatterji and Li 2020; Gonzalez et al. 2021), led to a situation of reduced medical care.

To make matters worse, the majority of people skipping care were those with serious health conditions, which may have worsened during this time[6]. As a result, many found it increasingly difficult to do their work, or live normal lives, after skipped doctor visits (Gonzalez et al. 2021; Gonzalez et al. 2020). While there were some exceptions, such as for acute head and neck cancer surgery (Thompson et al 2021), declines in health care provision appeared across the board. Some authors believe that about a third of individuals have been delaying or foregoing care since late in 2020, with 40% of people who were quite ill doing so (Gonzalez et al. 2021). These rates are also particularly pronounced for those who are poor, uninsured, out of work, or are a member of a racial or ethnic minority (Gonzalez et al. 2020)[7].

With respect to age, while it is true that midlife individuals (ages 50-64) were already likely to delay or skip medical care, the situation with COVID-19 appears to have exacerbated the issue (Johnson et al. 2021). It is also the case that state of residence had a large impact on this variation, with people in California significantly more likely to delay care than those in other states (Kranz et al. 2021).

In particular, overall rates of elective surgery declined by 87% in March-April of 2020, while Emergency Room (ER) visits declined by 42%, heart attack visits by 23%, and stroke visits by 20% (Kaye and Manchikanti 2020). To make matters worse, along with reduced doctor visits, it appears that some primary care physicians have now begun to shut their doors, citing a reduction in demand for their services as a reason for closing up shop (Gonzalez et al. 2021).

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[6] Since individuals in worse health are *more* likely to skip/delay health care visits, we are particularly unconcerned about selection into vaccination based on health status. Specifically, if individuals who were less healthy were both more likely to skip appointments and to have priority in being eligible for the vaccine, then our results would actually be biased to showing a positive—rather than negative, which is what we observe—relationship between vaccination and the tendency to skip/delay appointments. If anything then, our results can be seen as an underestimate of the impact of vaccination in helping people go to the doctor.

[7] As an interesting aside, and in contrast to some of the other income results, individuals with Medicaid appear to be less likely to delay visits than individuals who had private medical care during the pandemic (Dominguez et al. 2021). We are currently working on an additional analysis examining how the different types of medical care mediated individual choice of medical care conditional on vaccination status.

Now that a vaccine against COVID-19 has been made widely available in the United States, we consider how the medical care landscape has been altered. In particular, we analyze how obtaining vaccinated status changed the likelihood of avoiding or delaying medical care, and discuss the implications.

III. Structure:

a. Data:

We employ weeks 22-33 (corresponding to January 2021 through July 2021) of the United States Census Household Pulse Survey for the current analysis. The Household Pulse survey, first started in April 2020, is sponsored by over a dozen federal agencies, and is designed to collect information regarding a respondent's continuing experience of the COVID-19 pandemic and its aftermath.

The data in this survey were collected in phases, with different individuals randomly sampled each week in a national sampling frame, and some questions added or altered between phases of the study. The Pulse Survey is a continuing project, and additional phases have been scheduled. As of the writing of this work, data are to be collected for Phase 3.3 in November of 2021. For the purpose of this analysis, we are interested specifically in Phases 3 and 3.1 due to question availability overlap for those times.

The Household Pulse Survey has a unique focus on vaccination against COVID-19, with individuals asked both if they have received the vaccine, as well as their reasons for abstaining, and if they plan to receive it when they become eligible. As explained in the methodology section that follows, this will be a crucial feature for dealing with potential concerns of selection bias. The survey also focuses on medical care questions, with individuals specifically asked:

(1) "At any time in the last 4 weeks, did you DELAY getting medical care because of the coronavirus pandemic?"

(2) "At any time in the last 4 weeks, did you need medical care for something other than coronavirus, but DID NOT GET IT because of the coronavirus pandemic?"

We employ these two questions as a measure of the degree to which health care was underutilized due to the pandemic. In addition to these questions on medical avoidance/delay and COVID-19 vaccination, we have access to a series of demographic characteristics that function as important controls. We further utilize a number of these demographic variables to stratify the data in the analysis.[8]

b. Methodology:

The purpose of our analysis is to determine if a lack of vaccination against COVID-19 potentially caused harm to individuals in the form of an increased likelihood of delaying or skipping medical care. To answer this question, we employ both a linear(ized) Ordinary Least Squares regression as well as a marginal Probit regression, in which the outcome is one of these two medical events, and one of the right-hand-side variables is whether the person had already received the COVID-19 vaccine. We further control for various demographic characteristics believed to influence the tendency to vaccinate, health care choices, and several other key characteristics.

Specifically, for individual *i*, we have:

$$Med\_Care_i = f(Vaccinate_i, Demographics_i, Region_i, Time_i, HlthInsurance_i, Cases_i)$$

Med_Care consisted of one of the two separate outcomes, either 'Skipping' or 'Delaying' a medical visit being alternatively used to demonstrate the outcome, and the Boolean set to one in the event that this occurred. The main right-hand-side variable of interest, *Vaccinate*, was set to one when individuals had already been vaccinated and zero otherwise. Also on the health side, we were concerned that having no access to medical care might influence the choice to receive care, so we included a Boolean for whether they had health insurance of any kind (*HlthInsurance*).

[8] While politically sensitive questions may lead to concerns about misreporting, the literature on the topic showing the consistency of responses with the Household Pulse Survey and the Consumer Finance Survey (CFS), indicate that the Household Pulse does as well as can be reasonably expected for a survey in the area (Garner et al., 2020).

In terms of the other right-hand-side variables, we chose to include the week in which the survey was given (*Time*), since as time passed, more people had obtained vaccinated status, and hospitals were more open for elective procedures. As a result, by including the week we helped avoid spurious secular relationships between vaccination and medical care that were actually due to improved conditions overall. Other variables included in *Demographics* were household income, maximum education achieved, gender, stated race, number of children in the household, marital status, age, and its square.[9]

Additionally, *Cases* represents the final control where we considered the effect of the number of COVID-19 cases in the state on the likelihood that individuals would delay or skip care. We further controlled for the state of residence with a series of Booleans and also clustered standard errors at the state level to allow for the most conservative possible interpretation.[10]

To be precise, we included both the state control, and the state-COVID-19-case count as controls due to the possibility that there were supply-side issues at play to bias results.[11] Specifically, individuals may have both skipped care and been unable to vaccinate due to state-patterns in disease transmission and hospital admission policies. Hospitals may have been too overwhelmed with cases to offer vaccines or to increase availability of the vaccine, and they may simultaneously have cut appointments and procedures that were non-COVID-19-related. While this was our justification for including the supply-side control, as a preview of results, we did not find that this (potential) omitted variable significantly impacted the magnitude or significance of the coefficient on vaccination for COVID-19 in affecting skipping or delaying doctor's visits.

Finally, our main concern in this analysis was that individuals would both delay or skip vaccination for the same reason that they would delay or skip their medical care visits. This could occur for a variety of reasons, including the possibility of specific types of risk-averse/risk-

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[9] Specifically, Income was coded by category: <$25K, $25-$35K, $35-$50K, $50-$75K, $75-$100K, $100-$150K, $150-$200K, over 200K; Marital status was recoded as either 1 = single, 2 = married, or 3 = widowed/separated/divorced; Race was coded in a hierarchy of Hispanic, followed by the other racial categories of White alone, Black alone, Asian Alone, Other; Education was coded as either Less than High School, some High School, High School Degree, some College, AA degree, BS degree, Post-BS degree.

[10] Coefficients on 'being vaccinated' were nearly identical without the clustering and are available upon request

[11] For completeness, we also ran our regressions without either state-Booleans or state-numbers on COVID-19 cases and instead only controlled for region (Midwest, South, Northeast and West). Coefficients on the effect of being vaccinated on delaying or skipping medical care in those instantiation were nearly identical and are available upon request.

seeking attitudes (Neymotin, 2021) to name a few. To account for this, we separately considered only individuals who had either already been vaccinated against COVID-19, or else they said "*Once a vaccine to prevent COVID-19 is available to you, would you definitely get a vaccine*" where the other possible responses were to probably get a vaccine, probably not get a vaccine, or definitely not get a vaccine.

We used this structure since it made eligibility, which was based primarily on age, the determining factor for whether individuals had been able to become vaccinated, and not any other predisposing factors that could affect medical care. Since we had already controlled for age, we considered this to be a reasonable solution.[12, 13]

Our regressions were additionally stratified for age, gender, and race to determine whether relationships varied at that level. Finally, we considered the possibility that the relationship between delaying/skipping medical care and vaccination may have changed over the course of January-July 2021, so we further split the data in half to determine whether effects varied between the two time frames.

IV. Results:

a. Trends

Figure 1 displays the changes in medical choices over time. It is clear that as vaccination rates increased, the tendency to delay or skip medical care decreased. This is the first indication that time is an important factor to consider, and control for, in an analysis of the relationships studied here.

********INSERT FIGURE 1 ABOUT HERE***********

Figure 2 takes this relationship further by examining the choices by gender over time. It is apparent that there was not a great deal of switching back and forth over time, and the gender

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[12] Furthermore, we found the same results in our age-stratified regressions.

[13] Individuals in high-risk health categories are actually more likely to *skip* doctor's visits, all else held constant (Gonzalez et al. 2020), so we do not believe that individuals who received vaccines because of recognized pre-existing conditions were already more likely to go to their medical care appointments. For this reason, we do not feel that the inclusion of high-risk individuals will bias the results.

aspect being overwhelmed by the time patterns. Figures 3a-3c and 4a-4c then consider how these same choices varied based upon either age or race, respectively.

********INSERT FIGURE 2 ABOUT HERE***********

In Figures 3a-3c, A1 corresponds to age under 30, A2 includes those aged 30 to 50, A3 includes those aged 50 to 70, and A4 includes those aged 70+. As can be seen from Figure 3c, and consistent with our prior knowledge of how events unfolded, the oldest were the first to vaccinate, followed by each age grouping from oldest to youngest. The only surprising aspect of this figure is just how quickly the oldest group nearly reached its final value and began to plateau.

********INSERT FIGURES 3A-3C ABOUT HERE***********

Figures 3a-3b show a similar time trend of declining incidences of delaying or skipping medical care for each of the age groups, with the lines staying generally parallel throughout the process. This is consistent with the idea that time impacted each of the groups in a similar fashion throughout this period.

********INSERT FIGURES 4A-4C ABOUT HERE***********

Turning next to race, perhaps the most telling aspect of Figure 4c are the widening gaps in vaccination rates based on race from the beginning to the end of the data period. All groups experienced the same linear trends and jumps, but the inequality in total number of Asian versus White versus Hispanic, Black, and Other-race vaccinations seems to have increased over time. In Figures 4a-4b, we still see the same trends over time. However, the data is slightly noisier than it was for the age-related data, for example. Taken together, these figures help provide additional justification for our race-stratified regressions.

b. Summary Statistics

To properly understand the data, we must assess how selection may or may not have played a role in our analysis. To address this, we first consider the mean values in our various samples. Table 1 displays mean values for the sample as a whole, as well as for the subsamples of individuals who either had the vaccine, or for those who plan to get the vaccine once it becomes available.

********INSERT TABLE 1 ABOUT HERE***********

The samples are relatively similar, with some slight differences in age. Specifically, “plan vaccine” is understandably younger, due to the eligibility guidelines, as well as the fact that these individuals also have somewhat lower education. They are also more likely to be single and not separated/divorced/widowed. All of these facts are consistent with the pattern of how the vaccine was rolled out over time - predominantly based on age, risk factors, and industry. It is also an additional justification for using age-separated regressions as an additional robustness check for our later analysis.

Tables 2 and 3 take a closer look at our main variables, vaccination, and likelihood to delay/skip medical care, and stratify these choices based upon gender (both tables), age (Table 2), and race (Table 3).

********INSERT TABLES 2-3 ABOUT HERE***********

As can be seen from Table 2, irrespective of gender, vaccination rates are highest for the oldest age group and progressively decrease with age. This is exactly the opposite pattern for what happens with delaying or skipping medical care. There is one exception, as individuals in the under-30 group are actually less likely to skip or delay care than any of their peers besides the age 70+ group. We find this result interesting, and it may be due to children still relying on their parents’ health insurance, as well as childbearing for women. Nevertheless, it is a fact that should be noted for a more complete understanding of the health care system.

In terms of gender differences, women appeared to be more hesitant to receive care in general and were "mostly" more likely to vaccinate (outside of the 70+ group). This is in keeping with the literature showing that women tend to be more risk averse. In particular, in our scenario, a possible indication of increased risk-aversion may be missing scheduled doctor's visits—if they believe they will be infected at the doctor's office—and, on the opposite end, receiving the vaccine may be seen as a way to reduce risk.

Table 3 next examines differences by race, and finds a general pattern of highest vaccinations for Asian, followed by White, Black, Hispanic, and Other-race individuals. This was true for both genders, although Hispanic and Black flip the ordering for women. It is also true that delaying care was highest for Other race, followed by Hispanic, White, Black, and Asian for both men and women. The pattern for skipping care was somewhat similar, in that Other-race had the highest likelihood of skipping, and Asian had the lowest (for both gender). However, there were some variations in the ordering between White, Black and Hispanic in the middle. It is also true that, for all races, women were more likely to skip or delay care compared with men. Interestingly, vaccination rates were somewhat different by gender for each race, but those differences were not as pronounced.

We take these results as further indication that women were more likely to avoid medical care during this time period, but vaccination rates may not have been as different by gender after accounting for race. It is also clear that there were some patterns of wariness depending on race of health care or tendency to vaccinate. However, besides Asian being consistently higher and Other-race being consistently lowest, these patterns did not seen to be fully consistent.

c. Regression Results:

We next turn to the main section of our analysis, an examination of how vaccination status affects the tendency to skip or delay medical care. Table 4 examines the outcome of delaying care, while Table 5 looks at skipping care entirely. Each table displays both results from the OLS and the marginal Probit regressions, along with the number of individuals in the regression, and each column corresponds to a different stratification. After examining (1) the full sample, we alternatively limited it to (2) only males, (3) only females, (4) Hispanic, (5) White, (6) Black, (7) Asian, (8) Other race, (9) the first six weeks of the sample in weeks 22-27, (10) the last five weeks of the sample in weeks 28-32, (11) those aged under 30 only, (12) those aged 30-50, (13) those aged 50-70, and finally (14) those aged over 70. The bottom half of the table has the further restriction that it only includes the subset of individuals who either already had the vaccine or else plan to do so once they become eligible. The top half of the table does not include this additional restriction based upon vaccine intentions.

********INSERT TABLES 4-5 ABOUT HERE***********

As we can see from these tables, in almost all cases there is a negative relationship between having been vaccinated and either delaying or skipping medical care. This is true both for the marginal Probit and the OLS regressions, and it holds for both the subset based on vaccine-intention and those for which this restriction is not in place. We find that that imposing the intention-to-vaccinate restriction appears to, in most cases, increase the magnitude and often the statistical significance of the coefficients. This is particularly true for the case of delaying care rather than skipping it entirely. However, in the regressions for the later weeks (10), this was not possible given the subset of the data in the bottom half of the tables. This is to be expected, since vaccination rates were high in the later weeks, and the reason people were not vaccinated at that time was probably not due to a lack of eligibility.[14] Finally, while we see some differences by race in the magnitude of effects, given the bottom half of the subset data, we can say that there was a clear impact of vaccination on the tendency to delay or skip medical care for each of the individual racial, gender, and age groups. The only possible exception is that effects for other race and Hispanic look slightly weaker in some cases, and the age-under-30 group appears less affected in the regressions that do not control for intention to vaccinate.

As an additional point, while we have suppressed the results from other control factors in the interest of space, we briefly consider them here. Specifically, we found that, for nearly all of the regressions, individuals without health insurance, those of lower income, those in the locations with higher COVID-19 case counts, women, individuals who identified as Hispanic or

[14] This strange effect in the later weeks explains why it may incorrectly appear that there is a slightly positive (magnitude<0.01) effect of vaccinations on delaying care in the later weeks in the regressions without controlling for intention to vaccinate.

Other race, and those with more children were more likely to delay medical care. Similarly, those who are now, or were married before are more likely to delay medical care. This accords with our prior expectations and the previous literature, as stated earlier. Interestingly, those with higher levels of education were more, rather than less, likely to delay care—although the relationship was not consistent, and delaying care increased with age - but at a decreasing rate. We take this last point regarding age as an artifact of the summary statistics regarding age and delaying care for our youngest group of individuals.

V. Conclusions:

We examined the relationship between COVID-19 vaccination status and the tendency to avoid or delay medical care. We controlled for selection into vaccine status and medical care visits by restricting our analysis to only individuals who were already either vaccinated or else planned to vaccinate when they became eligible. We further controlled for various demographic variables, supply factors, and a time factor to allow for the trend of increasing vaccination rates over time. We found that individuals who were vaccinated were less likely to avoid or delay medical care. This is true for all age group breakdowns, races, both stated genders, and for the sub-period of the first half of the reference period as well as the full time frame.

Overall, we consider our results to provide strong evidence that the health impact of the pandemic extends far beyond the direct effects of the virus. Here, we have identified the importance of timely distribution of vaccines to minimize the baleful effects of missed health care due to concerns for becoming infected. Our analysis shows clear reductions in hesitancy to obtain medical care upon vaccination. This result must be considered when calculating the true costs of COVID-19 to society, and help inform future crisis response planning.

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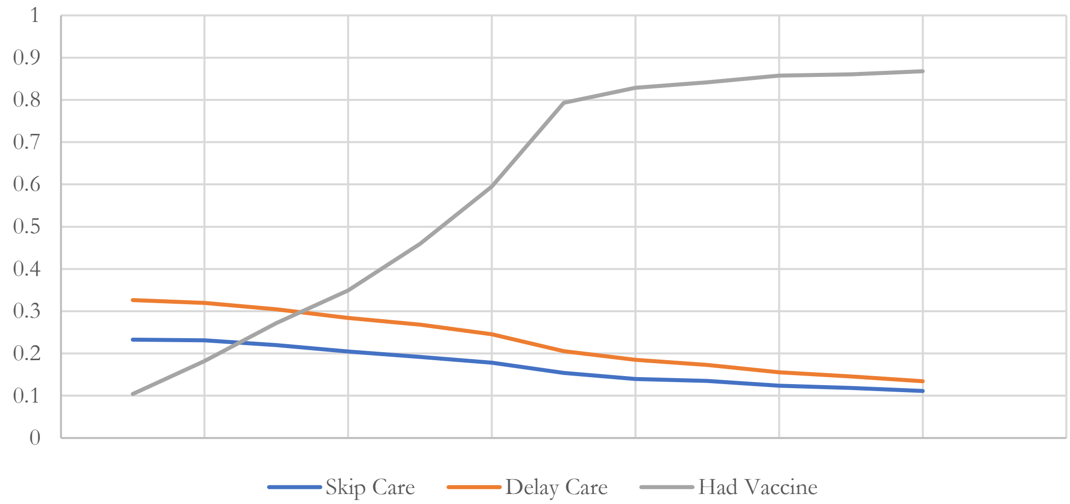
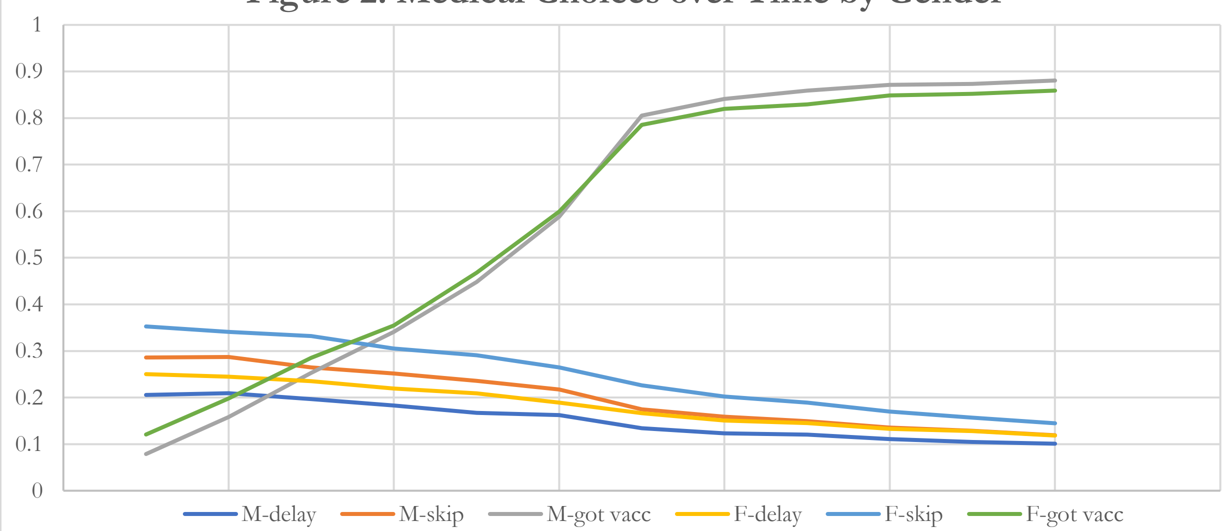
Figure 1: Medical Choices Over Time



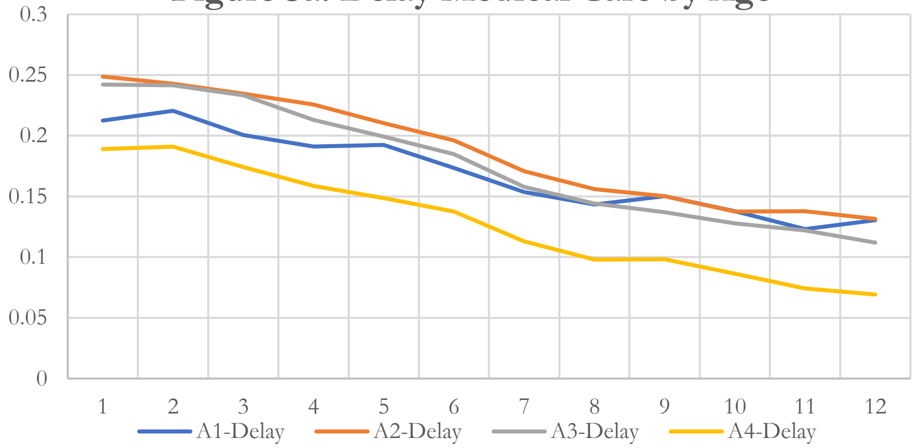
Source: Author calculations using the 2020-2021 Census Household Pulse Survey

Figure 2: Medical Choices over Time by Gender



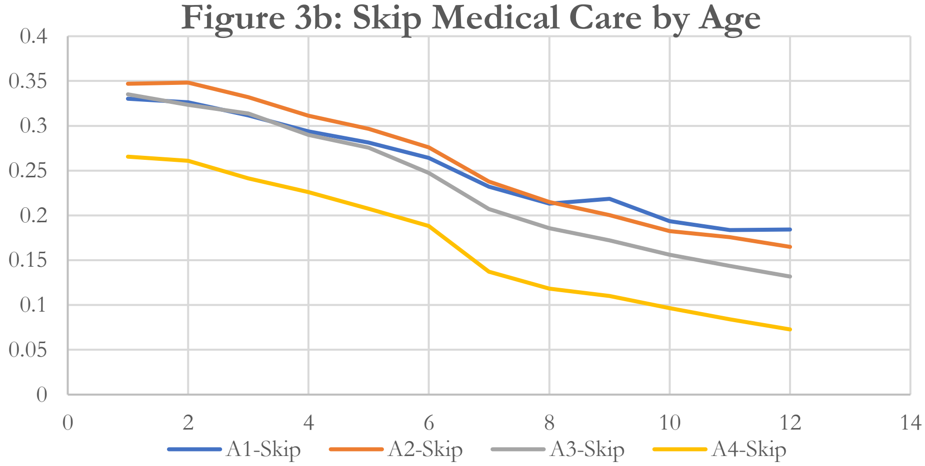
Source: Author calculations using the 2020-2021 Census Household Pulse Survey

Figure 3a: Delay Medical Care by Age

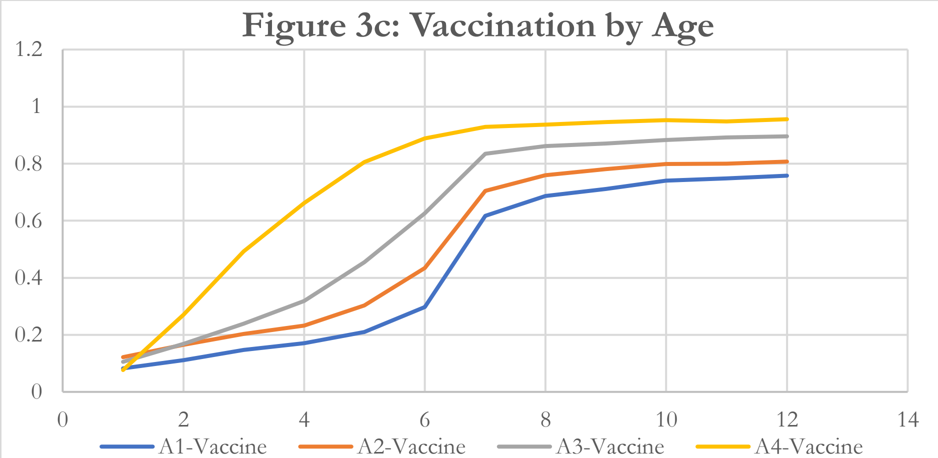


<u>Source</u>: Author calculations using the 2020-2021 Census Household Pulse Survey

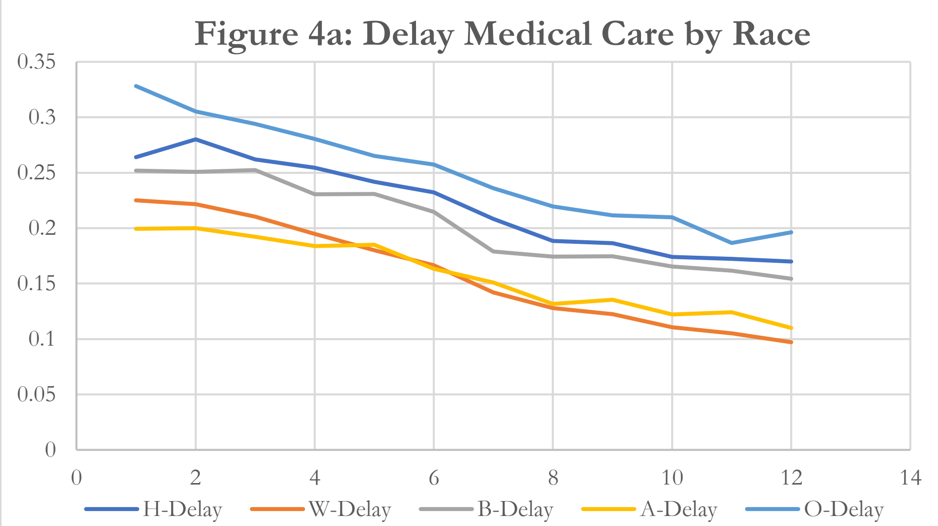
Figure 3b: Skip Medical Care by Age



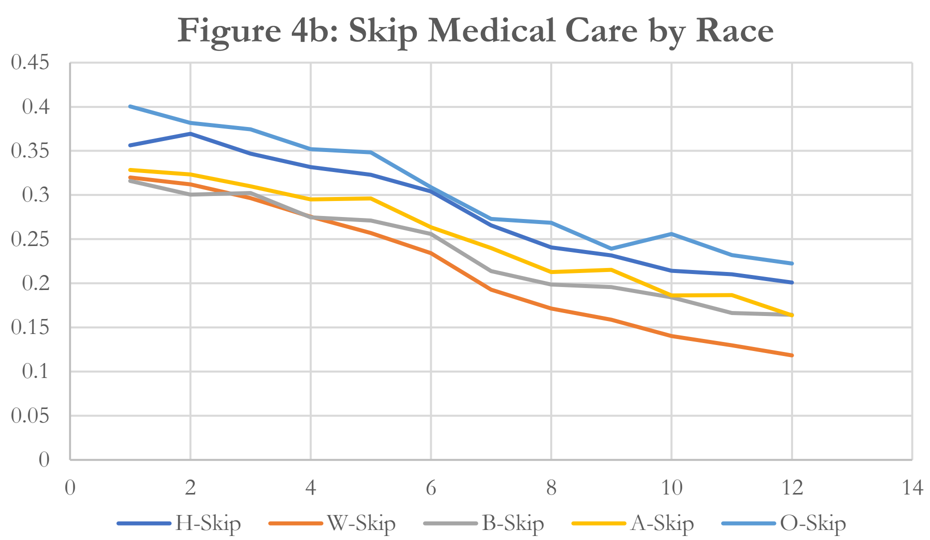
<u>Source</u>: Author calculations using the 2020-2021 Census Household Pulse Survey



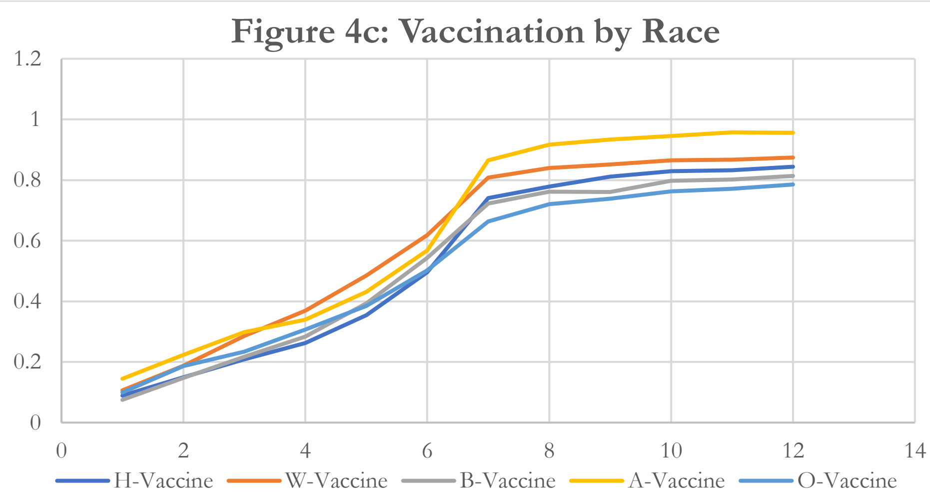
<u>Source</u>: Author calculations using the 2020-2021 Census Household Pulse Survey



<u>Source</u>: Author calculations using the 2020-2021 Census Household Pulse Survey



<u>Source</u>: **Author calculations using the 2020-2021 Census Household Pulse Survey**



<u>Source</u>: **Author calculations using the 2020-2021 Census Household Pulse Survey**

Table 1: Sample Traits by Vaccination

	Full Sample	*Plan Vaccine*	*Had Vaccine*
Hispanic	9.09%	9.79%	8.77%
White	75.23%	76.16%	75.71%
Black	7.43%	5.47%	6.92%
Asian	4.66%	5.69%	5.49%
Other Race	3.59%	2.89%	3.11%
Female	59.45%	55.87%	59.48%
Age	52.30	53.55	55.69
Number Kids	0.64	0.54	0.52
Income: <$25K	10.42%	9.18%	8.35%
Income: $25K-$35K	8.68%	7.90%	7.77%
Income: $35K-$50K	10.88%	10.21%	10.08%
Income: $50K-$75K	17.56%	16.95%	17.18%
Income: $75K-$100K	14.67%	14.17%	14.86%
Income: $100K-$150K	18.37%	19.03%	19.54%
Income: $150K-$200K	8.92%	9.89%	9.94%
Income: >$200K	10.52%	12.68%	12.27%
Educ: <H.S.	0.63%	0.67%	0.45%
Educ: Some H.S.	1.44%	1.37%	0.98%
Educ: H.S. Degree	11.64%	10.06%	9.63%
Educ. Some College	21.50%	20.34%	19.40%
Educ: AA Degree	10.52%	9.03%	10.06%
Educ: B.S. Degree	28.98%	31.97%	30.01%
Educ: Post-B.S. Degree	25.29%	26.56%	29.46%
Married now	58.33%	59.48%	60.75%
Previous Married	22.31%	20.94%	22.71%
Always single	19.36%	19.58%	16.54%
Northeast Region	15.55%	18.06%	16.01%
South Region	31.56%	29.36%	31.60%
Midwest Region	20.32%	20.06%	19.87%
West Region	32.57%	32.52%	32.52%

Source: Author calculations using the 2020-2021 Census Household Pulse Survey

Table 2: Vaccination and Medical Care by Age

	Both Male and Female & no response			
	Age <30	*Age 30-50*	*Age 50-70*	*Age 70+*
Skip Care	24.43%	28.03%	26.65%	20.65%
Delay Care	34.79%	37.78%	34.98%	27.78%
Had Vaccine	51.23%	58.05%	66.39%	78.03%

	Male Only			
	Age <30	*Age 30-50*	*Age 50-70*	*Age 70+*
Skip Care	19.41%	24.45%	24.37%	19.98%
Delay Care	28.40%	33.50%	31.68%	25.72%
Had Vaccine	39.60%	50.31%	57.92%	73.60%

	Female Only			
	Age <30	*Age 30-50*	*Age 50-70*	*Age 70+*
Skip Care	27.71%	30.15%	28.22%	21.28%
Delay Care	38.96%	40.31%	37.25%	29.73%
Had Vaccine	44.25%	50.46%	59.83%	72.42%

Source: Author calculations using the 2020-2021 Census Household Pulse Survey

Table 3: Vaccination and Medical Care Usage by Race

Both Male and Female & no response

	Total	*Hispanic*	*White*	*Black*	*Asian*	*Other*
Skip Care	26.02%	29.43%	25.20%	29.67%	21.77%	34.08%
Delay Care	34.82%	37.32%	34.42%	34.51%	32.01%	41.62%
Had Vaccine	64.66%	59.65%	65.66%	59.97%	71.06%	57.68%

Male Only

	Total	*Hispanic*	*White*	*Black*	*Asian*	*Other*
Skip Care	23.21%	26.50%	22.62%	25.15%	20.53%	30.24%
Delay Care	30.91%	33.37%	30.62%	29.38%	29.32%	36.62%
Had Vaccine	57.72%	51.96%	58.51%	55.52%	63.27%	49.56%

Female Only

	Total	*Hispanic*	*White*	*Black*	*Asian*	*Other*
Skip Care	27.95%	31.30%	27.00%	31.67%	23.03%	36.49%
Delay Care	37.50%	39.86%	37.09%	36.78%	34.73%	44.78%
Had Vaccine	57.53%	51.95%	58.94%	51.13%	63.95%	50.94%

Source: Author calculations using the 2020-2021 Census Household Pulse Survey

Table 4: Effect on "Delaying Medical Care" of Having Gotten the Vaccine

Vaccination Status Subset: NO	Full Sample	Male	Female	Hispanic	White	Black	Asian	Other Race	Week 22-27	Week 28-32	Age<30	Age 30-50	Age 50-70	Age 70+
OLS	-0.018	-0.009	-0.024	-0.008	-0.018	-0.024	-0.029	0.002	-0.032	0.006	0.001	-0.018	-0.015	-0.021
	[-7.63]**	**[-3.56]****	**[-8.23]****	[-1.62]	**[-7.76]****	**[-5.31]****	**[-4.76]****	[0.21]	**[-11.34]****	**[2.88]****	[0.17]	**[-5.58]****	**[-5.95]****	**[-6.33]****
N	655384	266201	389883	56300	503102	43013	30620	22349	347199	308185	36474	216489	279274	123147
Marg. P	-0.016	-0.006	-0.022	-0.008	-0.016	-0.024	-0.027	0.001	-0.033	0.007	0.002	-0.018	-0.013	-0.017
	[-6.56]**	**[-2.46]***	**[-7.44]****	[-1.5]	**[-6.5]****	**[-5.24]****	**[-4.38]****	[0.14]	**[-10.23]****	**[3.66]****	[0.43]	**[-5.29]****	**[-5.36]****	**[-5.75]****
N	655384	266201	389883	56300	503102	43013	30620	22349	347199	308185	36474	216489	279274	123147
Vaccination Status Subset: YES														
OLS	-0.053	-0.039	-0.064	-0.038	-0.057	-0.035	-0.049	-0.030	-0.056	-	-0.065	-0.076	-0.046	-0.031
	[-21.14]**	**[-10.65]****	**[-24.99]****	**[-6.16]****	**[-24.09]****	**[-5.7]****	**[-6.89]****	[-1.59]	**[-24.7]****		**[-7.38]****	**[-20.75]****	**[-12.79]****	**[-7.52]****
N	522885	217874	305534	42027	408634	29755	26880	15589	260156	262729	24514	156123	228854	113394
Marg. P	-0.044	-0.030	-0.055	-0.035	-0.046	-0.031	-0.045	-0.029	-0.057	-	-0.062	-0.071	-0.040	-0.023
	[-15.97]**	**[-8.04]****	**[-20.27]****	**[-5.99]****	**[-17.62]****	**[-5.42]****	**[-6.32]****	[-1.61]	**[-20.16]****		**[-7.31]****	**[-18.46]****	**[-11.11]****	**[-6.58]****
N	522885	217874	305534	42027	408634	29755	26880	15589	260156	262729	24514	156123	228854	113394

Note: Each column shows a different subsetting of the regressions (by gender, age group, race, and whether it was the first or latter part of the data), which were run both using a linear(ized) Ordinary Least Squares regression as well as using a Marginal Probit Model. The bottom panel only focuses on individuals who have been vaccinated or plan to do so when eligible, and the top panel does not make this additional restriction. Hence, the table includes results from 56 separate regressions. All of these regressions additionally control for a series of demographic characteristics including education, age and age^2, gender, race, income, number of children in the household, marital status, state, # COVID-19 cases in the state, the presence/absence of health insurance, and Booleans for the week in question. * indicates significance at the 5% level, and ** indicates significance at the 1% level.

Table 5: Effect on "Skipping Medical Care" of Having Gotten the Vaccine

Vaccination Status Subset: NO	Full Sample	Male	Female	Hispanic	White	Black	Asian	Other Race	Week 22-27	Week 28-32	Age<30	Age 30-50	Age 50-70	Age 70+
OLS	-0.022	-0.015	-0.028	-0.020	-0.021	-0.026	-0.028	-0.015	-0.026	-0.016	-	-0.023	-0.020	-0.017
	[-13.89]**	**[-6.24]****	**[-15.84]****	**[-5.05]****	**[-12.78]****	**[-6.14]****	**[-4.98]****	**[-2.1]***	**[-13.25]****	**[-7.77]****		**[-9.84]****	**[-9.46]****	**[-4.1]****
N	655843	266386	390152	56328	503450	43084	30623	22358	347383	308460	36464	216479	279419	123481
Marg. P	-0.020	-0.013	-0.026	-0.020	-0.019	-0.026	-0.027	-0.015	-0.027	-0.012	0.000	-0.023	-0.019	-0.014
	[-11.67]**	**[-5.38]****	**[-13.92]****	**[-4.85]****	**[-10.74]****	**[-5.96]****	**[-4.56]****	**[-2.16]***	**[-10.97]****	**[-6.95]****	[-0.01]	**[-10.22]****	**[-8.51]****	**[-3.67]****
N	655843	266386	390152	56328	503450	43084	30623	22358	347383	308460	36464	216479	279419	123481
Vaccination Status Subset: YES														
OLS	-0.032	-0.023	-0.041	-0.017	-0.034	-0.038	-0.032	-0.022	-0.034	-	-0.027	-0.042	-0.032	-0.020
	[-13.35]**	**[-7.21]****	**[-17.52]****	**[-3.3]****	**[-16.71]****	**[-5.44]****	**[-3.09]****	[-1.8]	**[-16.18]****		**[-2.97]****	**[-14.92]****	**[-10.46]****	**[-3.85]****
N	523251	218012	305755	42033	408919	29821	26880	15598	260306	262945	24505	156103	228956	113687
Marg. P	-0.027	-0.018	-0.034	-0.015	-0.027	-0.035	-0.029	-0.021	-0.034	-	-0.025	-0.038	-0.027	-0.014
	[-10.12]**	**[-5.62]****	**[-13.24]****	**[-3.11]****	**[-11.66]****	**[-5.15]****	**[-2.87]****	[-1.79]	**[-12.93]****		**[-2.77]****	**[-13.49]****	**[-8.5]****	**[-3.29]****
N	523251	218012	305755	42033	408919	29821	26880	15598	260306	262945	24505	156103	228956	113687

Note: Each column shows a different subsetting of the regressions (by gender, age group, race, and whether it was the first or latter part of the data), which were run both using a linear(ized) Ordinary Least Squares regression as well as using a Marginal Probit Model. The bottom panel only focuses on individuals who have been vaccinated or plan to do so when eligible, and the top panel does not make this additional restriction. Hence, the table includes results from 56 separate regressions. All of these regressions additionally control for a series of demographic characteristics including education, age and age^2, gender, race, income, number of children in the household, marital status, state, # COVID-19 cases in the state, the presence/absence of health insurance, and Booleans for the week in question. * indicates significance at the 5% level, and ** indicates significance at the 1% level.