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Characterization of COVID-19 mitigation measures among workers from May 2020 to June 2021

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Abstract

Objectives: To determine the relationship between early adherence to COVID-19 mitigation measures (before vaccine availability) and later vaccination status (after vaccines were widely available) in the Southwest Indiana workforce population.
Design: Retrospective analysis of an existing longitudinal cohort from two surveys: a COVID-19 prevalence survey in May 2020 and a follow up survey in June 2021.
Setting: This study focused on secondary analysis of existing data from two surveys of the same Southwest Indiana workforce population, spanning manufacturing, finance, healthcare, and service industries.
Participants: The analysis included participants who completed the 2020 survey (845), 2021 survey (492), or both (343).
Main Outcome Measures: Relationship of adherence to early mitigation measures on vaccine adoption. We also examined differences in demographic characteristics including age, rurality (rural, rural/mixed, or urban county, based on zip code of residence), education level, gender, and workplace environment.
Results: Significant differences in age (p=0.02) and education (p=0.01), but not rurality, were observed between the vaccinated and unvaccinated groups. Compared to the unvaccinated group, the average age of the vaccinated group was older (46.1 vs 45.7 years) and education level was higher (62% vs 46% with 4+ years of college). Vaccinated and unvaccinated groups reported significantly different degrees of compliance to recommended mitigation practices in early 2020, with vaccinated individuals having reported greater compliance to maintaining six feet of distance from others (p=0.04) in May 2020.
Conclusions: Consistent with previous studies, we found that demographic characteristics such as age and education may influence vaccination status. Furthermore, our data suggest an association between willingness to practice mitigation measures at the beginning of the pandemic and willingness to receive the COVID-19 vaccine.

Introduction

In December of 2020, the first COVID-19 vaccine was approved for emergency use authorization in the United States, resulting in vaccination of 62% of the United States population by December 2021.[1,2] Prior to the development of a vaccine, people were encouraged to abide by social distancing guidelines put in place by local, state, and federal governments, which included remaining six feet from others and avoiding large social gatherings to prevent the spread of the novel virus. [3] During the early months of the pandemic, several studies were conducted to assess the relationship between demographic data, social distancing compliance, and vaccine intention. A national survey administered in May of 2020 indicated that only about half of respondents would be willing to get a theoretical vaccine against COVID-19, and those who were Black, Hispanic, female, or younger were less likely to receive it.[4] In addition, those who were unwilling to receive the vaccine reported less adherence to preventative measures such as wearing a mask and social distancing.[4,5] Further surveys revealed that intent to vaccinate was lowest amongst individuals who had children at home, those with lower educational status, people without preexisting medical conditions, and those living in rural areas.[6,7,8]

In this study, we sought to assess the relationship between demographics, COVID-19 mitigation measures, and voluntary vaccination status through retrospective analysis of an existing longitudinal

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cohort. This convenience sample of adult workers in southwestern Indiana considered employees from large employers in the region, representing industries ranging from healthcare, manufacturing, and service sectors. All had taken part in a local COVID-19 prevalence study in May 2020, which included administration of a survey containing questions of adherence to various COVID-19 mitigation measures. A follow-up survey aimed to understand mental health in this population as of June 2021 also included the question of whether participants had received the COVID-19 vaccine.

In this study, we hypothesized that participants who reported greater compliance to COVID-19 mitigation measures early in the pandemic would be more likely to receive the COVID-19 vaccine within the first six months of widespread availability. In addition, demographic information was compared between the groups of vaccinated and unvaccinated people, and the influence of workplace on vaccination was analyzed. Finally, based on interest in vaccine hesitancy among different demographic populations, social distancing metrics were compared amongst groups based on where they lived in respect to county type, age, gender, and education level.

Methods

For this study, we conducted a retrospective analysis of an existing longitudinal cohort. Participants were employees from large employers in Southwest Indiana who had completed a prior COVID-19 prevalence study in May 2020 and/or a follow-up COVID-19 survey in June 2021 assessing vaccination status and mental health. For this study, we analyzed three separate groups: “All 2020 Respondents” includes all participants who completed the initial survey in 2020, while “All 2021 Respondents” includes all participants who completed the follow-up survey in 2021, regardless of available data for 2020. “Longitudinal Respondents” includes participants who completed both the prevalence and follow-up studies.

Recruitment

Employees from six Southwest Indiana companies were invited to participate in a 2020 prevalence study, in which participants were invited to receive PCR and antibody testing for COVID-19, prior to widespread availability of these tests. Companies encompassed multiple workforce settings, including health care, manufacturing, finance, and service sectors. Those who were invited to participate in the 2020 study were invited again in 2021 to complete a follow-up survey assessing vaccination status.

For the 2020 prevalence study, active employees of six large regional employers were invited to participate via email, flyer, or phone. Sampling was based on lists provided by the employers, stratified by job classification, age, and/or location. Each participant was assigned a Study Participant Identification Number to de-identify the data. Of 2081 invited employees, 845 (41%) chose to participate. All participants were required to sign an approved informed consent form and had to meet various criteria (18 years of age or older, willingness to complete a questionnaire, blood specimen, nasal swab, and fluent and able to read English). Eligible participants completed a questionnaire, including demographic data, provided a blood specimen for COVID-19 antibody testing, and underwent a nasal swab for COVID-19 PCR testing. No incentives for participation were offered, other than individual access to results regarding past or current COVID-19 infection. This initial study was led by Deaconess Health Systems (Evansville, Indiana) and approved by the Advarra Institutional Review Board.

The follow up study was initiated in May of 2021. For four companies that actively participated in the follow-up study, invitations to complete an online survey were emailed to the same list of sampled individuals. Of 1708 invited employees from these companies, 492 (29%) chose to participate, compared to 621 (39%) from these four companies in the 2020 study. For the remaining two companies, participants of the 2020 study who (1) shared a phone number for contact and (2) agreed to be contacted for future studies were invited by phone to participate in the follow-up study, resulting in an additional 18 participants.

Prior to beginning the survey, participants were instructed to read a study information sheet explaining the purpose of the study, the voluntary nature of the study, and the confidentiality of responses. Participants who provided an email

address or mobile phone number were provided the opportunity to be entered into a prize drawing for a $100 gift card. Responses were stored securely within REDCap. This study was determined to be exempt from full Institutional Review Board approval by the Indiana University Human Research Protection Program.

Survey Questions

In May 2020, participants completed an in-person questionnaire to provide demographic data as well as information related to overall health (birth date, education level, number of children in household, race, ethnicity, legal sex, zip code, known COVID-19 infections and exposures, COVID-19 symptoms over the previous two weeks, self-rating of general health, and comorbidities). Additionally, participants were asked to assess their compliance with the following COVID-19 mitigation measures on a scale of 1-10, with 1 being *none of the time* and 10 being *all of the time*. Metrics considered were: *I avoided leaving the home*, *I did not attend social gatherings of any size*, *I kept a distance of at least six feet from others when outside my home*, *I washed my hands more frequently than the month before*. Notably, masking was not yet recommended by the Centers for Disease Control and Prevention at the time of study and survey design.

In June 2021, participants completed a short online survey. On page one, participants were again asked to provide demographic data and information related to overall health, as well as COVID-19 infections and vaccination status (birth date, education level, number of children in household, race, ethnicity, legal sex, known COVID-19 infections and exposures, COVID-19 vaccination status, self-rating of general health). Page two of the survey asked participants to indicate their employment type, the extent to which they worked remotely, and agreement with specific statements related to company policies over the past year on a Likert scale. Page three included standardized questions related to depression[9] and anxiety,[10] as well as one question on increase in alcohol use.

Statistical Analysis

Data analysis was conducted using SPSS statistics software. Chi-square analysis was used to assess differences between groups based on binary category data. Kruskal-Wallis and Mann Whitney U were used to assess differences between groups based on ordinal data, with Kruskal-Wallis used to compare three or more groups and Mann Whitney U used to compare two groups. The threshold for significance was set at $p<0.05$.

For analyses that used participants' current zip code to assess vaccine status and social distancing metrics, participants were placed into county types based on the Purdue Rural/Urban Classification System. Rural was defined as a county with a population of <40,000, Rural/Mixed 40,000-100,000, and Urban >100,000. In some analyses, age was divided into three groups representing commonly described generational cohorts: Millennials/Generation Z (age 18-43 at time of 2020 study), Generation X (age 44-54 at time of 2020 study) and Baby Boomers (age 55+ at time of 2020 study).

Results

Basic demographic differences between vaccinated and unvaccinated employees

Previous studies have suggested that demographic differences exist between vaccinated and unvaccinated individuals. The overall sample demographics for each cohort are provided in Table 1 and include average age (years), legal sex (male or female), race (self-identified as White, Black or African American, Asian including Asian Indian, Bi-Racial, or some other race not listed above), as well as education level (Grade 12 or GED equivalent, one to three years of college, or four or more years of college). To determine whether such differences exist in the current cohort, we compared age, education level, sex, county type, and presence of children in the home between vaccinated and unvaccinated groups. County information was not collected in the 2021 survey. When considering only participants who completed both surveys (Longitudinal Respondents, n=343), analysis revealed that a significant difference existed between the groups in terms of age ($p=0.02$) and education level ($p=0.01$), with older and more educated participants being more likely to be vaccinated (Table 2). These differences persisted when considering all who participated in the 2021 survey (n=492) ($p=0.007$ and $p=0.04$, respectively) (Supplemental Table 1).

Table 1. Overall Sample Demographics

Demographics	All 2020 Respondents	All 2021 Respondents	Longitudinal Respondents
Sample	845	492	343
Legal Sex Female	49.7%	56%	55%
Age Range Average	21-72 46 +/- 11.1	20-72 46 +/- 11.5	23-69 46 +/- 10.5
Race White Black Bi-Racial or Other Asian	94.7% 2.1% 1.9% 1.3%	95.3% 2.2% 1% 0.5%	96.5% 1.5% 1.7% <0.3%
Education Level 4+ Years of College 1-3 Years of College Grade 12 or GED	58% 30% 12%	57% 32% 10%	59% 31% 10%

Table 2. Demographic Differences and Vaccination Status (Longitudinal Respondents)

	Vaccinated (N=272)	Unvaccinated (N=71)	p-value
Age (average)	46.1 +/- 10.6	45.7 +/- 10.4	0.02
Education 3 = 4+ years of college 2 = 1-3 years of college 1 = Grade 12 or GED	 62% 30% 8%	 46% 37% 17%	0.01
Legal Sex (% Female)	56%	51%	0.40
Children at Home	49%	45%	0.76
County 3 = Urban 2 = Rural/Mixed 1 = Rural	 57% 27% 16%	 49% 31% 20%	0.08

Workplace environment and remote work

Similar to differences in demographics, studies suggest differences in vaccination could exist based on industry type and ability to work from home, with those in industries such as health care or education and those working from home showing decreased vaccine hesitancy.[11] Since data in this study was gathered from unique workplaces and industries, we also compared vaccination status in these terms. Analysis revealed no significant difference amongst workplace environments with respect to vaccination status (p=0.52), with a vaccination range of 75-83% among the organizations with greater than 15 responses (n=142 financial, n=130 manufacturing, n=113 healthcare, n=81 service). Vaccination status was also compared between remote and in-person work environments revealing that employees required to work in-person were not more likely to get vaccinated (Table 3). Qualitatively, remote workers reported higher vaccination rates (77-88%) than fully in-person workers (75%), with completely remote workers reporting the highest vaccination rates of any categorization (88%). However, the difference in vaccination rate was not statistically significant among the five remote work categories (p=0.06) nor between those who did not work remotely and those with any level of remote work (p=0.07).

Table 3. Remote Work and Vaccination Status (All 2021 Respondents)

	Vaccinated (N=382)	Unvaccinated (N=100)	p-value
Did not work remotely	34%	44%	0.06
Remote less than half of the time	36%	31%	
Remote about half of the time	9%	6%	
Remote most of the time	11%	9%	
Completely remote	9%	10%	

Health and COVID-19 quarantine differences

Additionally, participants were asked to self-rate their health status as poor, fair, good, very good, or excellent. When comparing differences in vaccination status based on self-rating of health, participants who were vaccinated were not more likely to report worse health (p=0.56). Those who had previously been asked to quarantine were not more likely to obtain vaccination either, with 78% being vaccinated, compared to 80% among those who did not have to quarantine (p=0.50) (Supplemental Table 2).

COVID-19 mitigation measures reported in 2020 and vaccination status in 2021

The main purpose of this study was to assess whether compliance with COVID-19 mitigation measures early in the pandemic was correlated to whether or not participants received a vaccination for COVID-19. Vaccination status as of June 2021 was compared to self-reported adherence to COVID-19 mitigation measures in May 2020, with the hypothesis that employees who self-reported greater adherence would be more likely to obtain vaccination. First, we compared groups using Mann Whitney U to determine whether the average Likert score (1-10) was significantly different (Table 4). Analysis revealed that those who received the vaccine reported greater adherence to the mitigation measure of staying six feet from others in 2020 (p=0.04), but differences were not significant for any other mitigation measure.

Table 4. COVID-19 Mitigation Measures and Vaccination Status (Longitudinal Respondents)

	Vaccinated (Mean)	Unvaccinated (Mean)	p-value
Avoided Large Gatherings	8.42	8.97	0.41
Avoided Leaving Home	6.39	6.27	0.74
Kept Distance of Six Feet	8.09	7.41	0.04
Washed Hands Frequently	9.13	9.02	0.15

We also compared the distribution of responses for each COVID-19 mitigation measure (Supplemental Figure 1). Analysis of these distributions with Chi-square analysis revealed distribution differences in the categories of *Avoided Leaving Home* (p=0.04) and *Kept Six Feet of Distance* (p=0.04).

In regard to *Avoided Large Gatherings* and *Washed Hands More Frequently*, the distribution of responses appeared similar in both the vaccinated and unvaccinated groups, with the majority of participants expressing compliance all the time (scores of 9 and 10). For the case of *Avoided Leaving the Home*, the distribution of responses was more widespread. The unvaccinated group had a multimodal distribution with peaks at 1 (none of the time), 5 (middle option), and 8 (most of the time). The vaccinated group had a bimodal distribution with peaks at 5 and 8. For *Keeping Six Feet of Distance*, the distribution of unvaccinated responses was heavier at a score of 8 and below, whereas responses for those who were vaccinated favored scores of 8 and above suggesting higher compliance. For both cases, the distributions appear to suggest that those who did not report high compliance with the mitigation measure of *Avoided Leaving the Home* and *Kept Distance of Six Feet* were less likely to be vaccinated.

COVID-19 Mitigation Measures and Demographic Differences

Additional analyses were conducted to assess whether demographic differences had any effect on adherence to COVID-19 mitigation measures in 2020, to determine whether associations were similar or different from associations related to vaccination status in 2021. When considering all 2020 respondents (n=845), significant differences in average response were observed with respect to education level, age, and gender (Table 5). These trends persisted in analysis of the smaller longitudinal cohort (n=343), though only differences related to education level reached statistical significance (Supplemental Table 3). Similar to demographic trends observed in vaccination status, female respondents and those with higher education were more likely to report high compliance to mitigation measures, particularly *Avoided Leaving the Home*. However, contrary to the association observed in vaccination status, we found that younger age groups were more likely to report high compliance to mitigation measures, with significant differences in *Avoided Leaving the Home*.

While Kruskal-Wallis did not reveal significant differences in average response score (Table 5) based on county type, distributions were significantly different in reported tendencies to avoid large social gatherings (p=0.01) and remain at home (p=0.01), with a trend toward higher adherence among more rural groups (Supplemental Figure 2). For *Kept Distance of Six Feet* and *Washed Hands Frequently*, the distribution of responses appears to be similar with participants favoring stricter adherence to the metric with scores of 8-10. In regard to the *Avoided Leaving Home* distribution, urban and rural/mixed responses appeared to peak at a score of 8 whereas responses from rural participants seem to be more evenly distributed from scores 5-10. For *Avoided Large Social Gatherings*, respondents in all groups appeared to have greater compliance with this metric (scores of 9 and 10); however, rural/mixed and urban participants did have a spike in responses expressing no compliance at all (score of 1).

Table 5. COVID-19 Mitigation Measures by Demographic Group (All 2020 Respondents)

	Urban (Mean)	Rural/Mixed (Mean)	Rural (Mean)	p-value
Avoided Large Gatherings	7.54	7.57	7.87	0.70
Avoided Leaving Home	6.44	6.11	6.10	0.30
Kept Distance of Six Feet	8.09	8.08	7.75	0.19
Washed Hands Frequently	9.09	8.80	8.87	0.42
	4+ Years of College (Mean)	**1-3 Years of College (Mean)**	**Grade 12 or GED (Mean)**	**p-value**
Avoided Large Gatherings	7.81	7.41	7.06	0.61
Avoided Leaving Home	6.59	6.00	5.59	0.001
Kept Distance of 6-Feet	8.20	7.82	7.82	0.31
Washed Hands Frequently	8.94	9.02	9.00	0.49
	Age 18-43 (Mean)	**Age 44-54 (Mean)**	**Age 55+ (Mean)**	**p-value**
Avoided Large Gatherings	7.82	7.43	7.43	0.69
Avoided Leaving Home	6.59	6.25	5.84	0.04
Kept Distance of 6-Feet	8.14	7.87	8.07	0.15
Washed Hands Frequently	8.98	8.96	8.97	0.46
	Male (Mean)	**Female (Mean)**		**p-value**
Avoided Large Gatherings	7.45	7.74		0.18
Avoided Leaving Home	6.02	6.56		0.001
Kept Distance of 6-Feet	7.90	8.17		0.05
Washed Hands Frequently	8.82	9.13		0.02

Discussion

In this study, we analyzed data from two surveys of employees of six large Southern Indiana companies, one in May 2020, and a follow up survey in June 2021. These surveys gathered data about demographics of participants, adherence to COVID-19 mitigation measures, and vaccination status, as well as asking questions related to mental health and workplace policies. Our analysis aimed to evaluate a potential relationship between adherence to mitigation measures early in the pandemic (prior to availability of vaccines) and vaccination status at a time shortly after vaccines became widely available in the United States. We considered four early mitigation measures, reflecting early CDC guidance to avoid large social gatherings, avoid leaving home, keep six feet distance from others, and increase frequency of handwashing. When examining reported adherence to these mitigation measures, we found that only increased adherence to keeping a distance of six feet from others was associated with increased vaccination.

We also considered demographic differences among survey respondents, which have been linked to both vaccination rates and early mitigation behaviors. In the current dataset, both age and education level were significantly different between vaccinated and unvaccinated groups. These findings are consistent with previous studies suggesting positive relationships between level of education or age and increased vaccination.[5,6,8] In analysis of adherence to early mitigation measures, we similarly found a positive, significant relationship between education level and the mitigation measure *Avoided Leaving Home*. Together, this data suggests that education level may serve as confounding factor in the relationship between this mitigation behavior between 2020 and 2021. Interestingly, however, there was a negative association between age and early mitigation, with younger respondents reporting significantly greater adherence than older generations in the same metric. Thus, age and early mitigation adherence represent competing factors that decrease and increase the likelihood of vaccination, respectively.

We did not find any significant differences in vaccination status based on gender, having children at home, or living in a rural area, although the same studies suggested that those factors may influence vaccination as well. Our observations based on county type were consistent with data from the Indiana Department of Health on vaccination status, which did not show a clear trend based on county type and rurality in southern Indiana over this time period.[11] Similarly, an Indiana study of the intent of parents to vaccinate their children did not reveal a significant difference based on rurality.[12] Comparison of pre-vaccine mitigation strategies revealed no significant differences in average response rate based on county type (Table 5). However, pronounced differences were observed with respect to gender: Females reported significantly greater adherence than males in the categories of *Avoided Leaving Home*, *Kept Distance of Six Feet*, and *Washed Hands Frequently*.

It is also worth noting that we did not observe statistically significant differences between vaccinated

and unvaccinated groups related to workplace, degree of remote work, or overall health status. This first finding differs from a previous study that suggested employers in production were more hesitant than those in healthcare to obtain a vaccine, as well as increased hesitancy amongst those working outside of the home.[13, 14, 15] However, we note that our sample only included one organization across each sector (e.g., one hospital), and focused on differences within a single community. While we did not observe differences related to self-reported overall health status, previous studies suggest that individuals with a higher perceived risk of contracting COVID-19 were more likely to receive a vaccination once available.[16,17] While findings of our small study cannot be generalized to the broader population of the United States, they do suggest that previous generalized findings may not hold true within each community.

Importantly, the current study assessed adherence to top recommended COVID-19 mitigation measures (social distancing) at a time prior to vaccine availability (May 2020), as well as top recommended COVID-19 mitigation measures (vaccination) after vaccines had become widely available (June 2021). Of those who participated in both surveys, adherence to mitigation measures early in the pandemic were similar on average between vaccinated and unvaccinated groups for three of the four measures considered, with a significant difference only with maintaining six-feet distance. Additionally, we observed a significant difference in the distribution of responses for maintaining six-feet distance and avoiding leaving home, in both cases suggestive that participants who reported higher compliance were more likely to receive the vaccine. Similar differences in distribution were observed, but not significant, for the recommended avoidance of social gatherings and increased handwashing.

Together, results are similar to past reports linking positive vaccine intentions to social distancing.[4,5,18] In regard to social distancing alone, review of literature indicated that older individuals,[19,20] females and the more educated,[21] healthcare workers,[22] and those with children reported greater adherence.[23] For the cohort considered in this study, we find similar trends with respect to vaccination status. In terms of social distancing, we found similar trends in the context of sex and education level, but – contradictory to previous studies – greater adherence among younger generations. Other factors that have been reported to impact adherence to mitigation measures include political affiliation, news source exposure, and access to vaccine information.[24-26]

Previous reports have suggested mixed results when assessing social distancing and intent to vaccinate based on community size. In general, Omid et al. found that urban dwellers were less likely to socially distance;[23] however, similar studies suggested the opposite.[22] Results from Garnier et al and Khubchandani et al. propose reduced social distancing[27] and intent to vaccinate[6] in rural communities, respectively. Conversely, Turk et al. and Beck et al. describe increased importance of mitigation measures in areas with smaller populations.[28,29] Based on these reports, we also looked at differences in adherence to mitigation measures in terms of home zip code designations of rural, rural/mixed, and urban. We did not observe any statistically significant differences on average between these groups. However, we did observe differences in the distribution of responses for avoiding large gatherings and avoiding leaving home, with Rural participants' responses favoring higher compliance despite no differences in the mean scores. Similarly, differences in the proportion of vaccinated individuals based on the categorization of Rural, Rural/Mixed, and Urban were small. Together, this data suggests that - within the workforce population of a given region - differences between urban and rural individuals may be smaller than suggested by nationwide studies.

Lastly, several important limitations to this study must be considered.

- First, the data for this study was obtained through a voluntary survey, with a response rate of 41% in 2020 and 29% in 2021. Due to the voluntary nature, this study may not be representative of the full workforce population studied. At the completion of the second survey, approximately 40% of the Indiana population had received at least one dose of a COVID-19 vaccine, and 35.5% of the state's population was fully vaccinated.[30] By contrast, upwards of 75% of the cohort

analyzed was vaccinated. It is possible that those who were willing to participate in the voluntary study were more likely to seek out the vaccine compared to those who did not participate.

- Furthermore, both adherence to social distancing metrics in 2020 and vaccination status in 2021 were self-reported, which poses the challenge of honesty and introspective ability. Notably, compliance with social distancing metrics was evaluated at the height of implementation in which participants could have been more adherent. Masking was not assessed with this study as this mitigation measure was not recommended by the CDC at the time of survey administration.
- Vaccination status was assessed relatively early in the rollout, such that some participants may not have had the opportunity to receive the vaccine and no employers in our study had implemented vaccine mandates at the time of the 2021 follow-up survey. The surveys considered in this study did not address vaccine intent, so while participants may not have been vaccinated at the time of this survey, they may have had the intention to receive it or been required to receive it at a later date. Future work should explore trends in vaccination at later dates.
- We also note that the distributions of races in this study (and in southern Indiana) are not representative of the national population. Relative to the southwest Indiana region, our sample contained a higher proportion of white respondents and those with higher education levels.[31] Since the population of participants was predominantly white and non-Hispanic, our results are not adequately powered to detect differences in vaccination based on race or ethnicity that have been demonstrated in previous studies.[4-6]
- Finally, this study focused on descriptive analysis of differences amongst vaccinated and unvaccinated cohorts, which is not able to account for all confounding effects of both measured and unmeasured factors. Ideally, stratified or multivariate analyses of larger data sets could be used to fully understand the separate effects of age, race, education level, and county type.

Conclusions

In this study of the Southwest Indiana workforce population, we hypothesized that participants who reported greater compliance to social distancing measures early in the pandemic would be more likely to receive the COVID-19 vaccine once available to the public. Results of this study suggest that adherence to social distancing metrics, specifically keeping six feet apart, early in the pandemic may be predictive of early vaccine adoption. While vaccinated participants tended to be older, with higher education levels, we did not observe large differences between demographic groups highlighted in previous studies, such as urban versus rural. This data provides additional insight into the mitigation practices of individuals within a given region.

Implications for Policy and Practice

- In the setting of a pandemic, early adherence to mitigation measures, such as maintaining six feet of distance, may predict vaccine adoption.
- Age and education have been repeatedly documented in the literature, as well as in this study, as a factor in vaccine adoption. Public health initiatives aimed at those with lower education levels and who are younger may address this gap.

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