

Comparison of Health Behaviors and Characteristics Between COVID-19 Vaccinated and Unvaccinated Individuals



Meghan Neumann,¹ Dingjing Shi,² Krista M. Kezbers,¹ Jillian Robison,¹ Megan E. Piper,³ & Michael S. Businelle^{1,4}

¹TSET Health Promotion Research Center, Stephenson Cancer Center, The University of Oklahoma Health Sciences Center (OUHSC); ²Department of Psychology, University of Oklahoma, Norman, OK; ³Center for Tobacco Research and Intervention, Department of Medicine, University of Wisconsin, Madison, Wisconsin; ⁴Department of Family and Preventive Medicine, OUHSC, Oklahoma City, OK

Background

- At least 79% of the US population has received one dose of the coronavirus (COVID-19) vaccine.¹
- It is imperative that individuals continue to vaccinate against COVID-19 in order to reach and maintain herd immunity for the wellbeing of their communities.²
- Previous research has examined many variables that may influence COVID-19 vaccine uptake, such as demographics and social and contextual factors.³

Objective

- This research aimed to identify associations between health risk factors, demographic characteristics, and COVID-19 vaccination status.

Study Design

Procedures

- Participants were 485 adults that enrolled in a nationwide study to examine the effects of five different factors on compliance with daily smartphone-based ecological momentary assessments (EMAs).
- Participants downloaded the *Insight mHealth Platform* smartphone application onto their personal Android phone and completed the baseline assessment, daily EMAs, and follow-up survey.
- The 20-30-minute baseline survey included questions about demographics, various health risk behaviors, and COVID-19 related questions.

Measures

- Self Rated Health Questionnaire:**
 - Srh34:** smoking status
 - Srh22:** substance use
 - Srh1(5):** fruit and vegetable intake
 - Srh1(6):** weight
 - Srh36:** moderate physical activity
 - Srh37:** vigorous physical activity
- AUDIT-C:** Three alcohol related items were combined to measure severity of drinking problems.⁴
 - Variable recoded as problematic if the sum score was greater than or equal to 4 for men and greater than or equal to 3 for women.
- Behavioral Risk Factor Surveillance System Inadequate Sleep Questionnaire:** Sleep score was measured by combining five items to assess quality of sleep and sleep factors.⁵
- Pandemic Stress Index:**
 - Psi1:** "Over the past week, how much has the COVID-19 (coronavirus) pandemic impacted your day-to-day life?"
 - Psi2:** "Have you or anyone you personally know tested positive for COVID-19 (coronavirus)?"
 - Psi3:** "How many people that you personally know have tested positive for COVID-19?"
 - Psi4:** "Have you received the COVID-19 vaccine?"

Study Design (cont.)

Analyses

- Logistic regression analyses were conducted to determine if specific health risk factors were related to COVID-19 vaccination status and vaccine hesitancy among those that had not been vaccinated.
- All models were adjusted for age, sex, race/ethnicity, and education.

Results

Table 1. Descriptive statistics for variables at baseline.

Variable	Total
Sex, n (%)	
Male	115 (23.7)
Female	370 (76.3)
Age (years), M (SD)	48.2 (12.4)
Race/Ethnicity, n (%)	
White	342 (70.5)
Non-White	143 (29.5)
Education (years), M (SD)	14.5 (2.2)
How much has COVID impacted your day-to-day life? (Likert-type scale 1-5; M, SD)	2.2 (1.1)
How many people that you personally know have tested positive for COVID-19? M (SD)	7.6 (5.7)

- There were **significant positive relationships** between age and years of education on vaccination status indicating older individuals and those who had more years of education were more likely to be vaccinated ($p < .05$).
- White participants were more likely to know someone who had tested positive for COVID-19 than non-White participants ($p < .05$).
- White participants knew more people who tested positive for COVID-19 than non-White participants ($p < .05$).
- Participants that **self-reported "weighing too much"** (63% vs. 53%, $p < .05$), **non-smokers** (34.5% vs. 17.6%, $p < .05$), and those that **self-reported lower levels of physical activity** ($p < 0.05$) were more likely to be vaccinated than their comparators.
- None of the other assessed health behaviors were related to COVID vaccination status (i.e., substance use, fruit and vegetable intake, AUDIT-C score, sleep related variables).

Table 2. Summary of COVID-19 vaccination hesitancy among non-vaccinated participants.

Summary of COVID-19 Vaccination Hesitancy*		
	Hesitant	Not Hesitant
Non-vaccinated	100	10

*vaccinated participants were not asked this question

- There were no significant relationships between demographic variables and vaccine hesitancy.

Funding: This study was supported by the Oklahoma Tobacco Settlement Endowment Trust (grant number R22-02) and used the mobile health shared resource of the Stephenson Cancer Center via an NCI Cancer Center Support Grant (grant number P30CA225520).

Results (cont.)

Figure 1. Differences in vaccine status as predicted by smoking status.

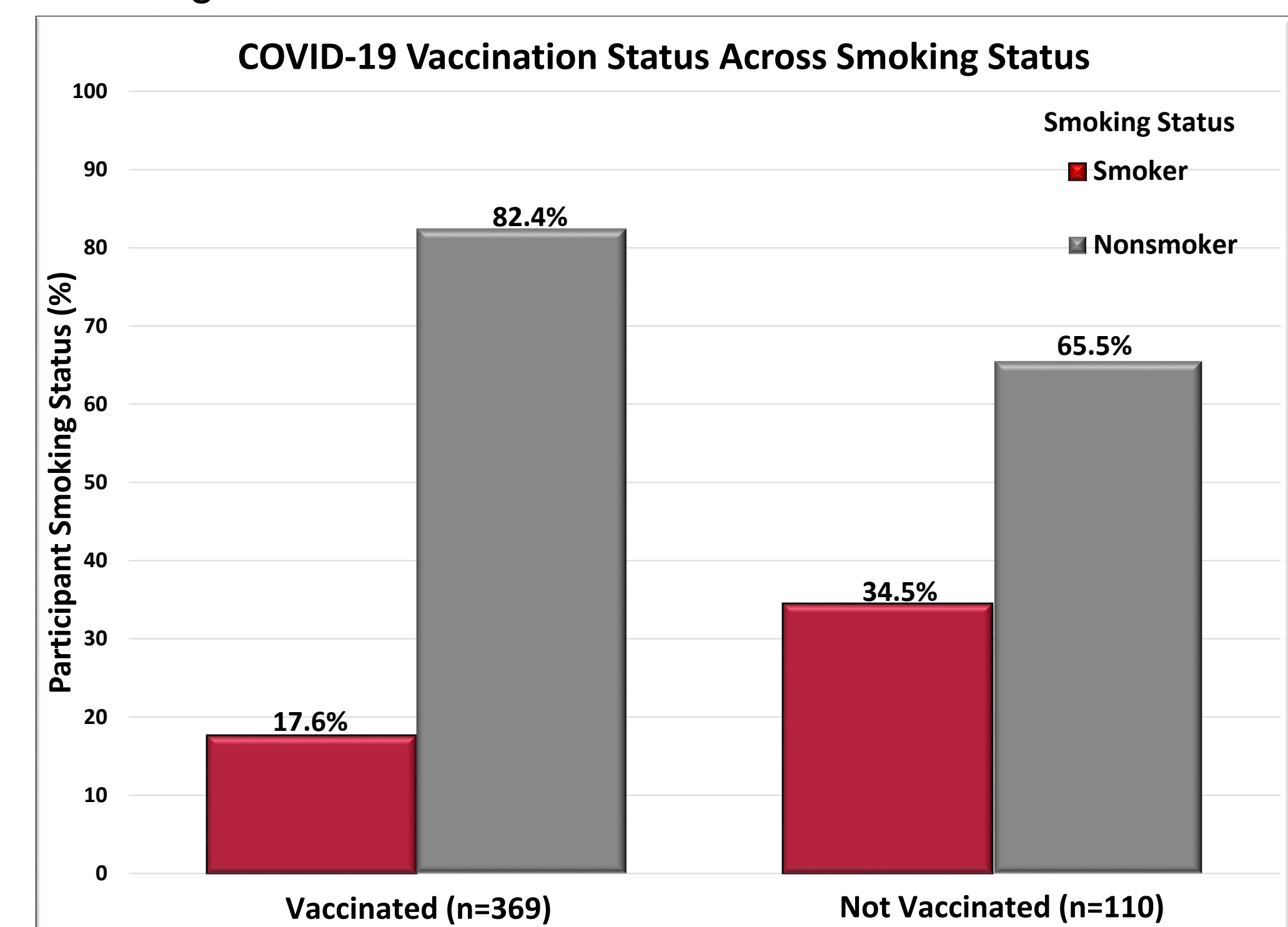


Figure 2. Differences in vaccine status as predicted by participants self-reporting "I weigh too much."

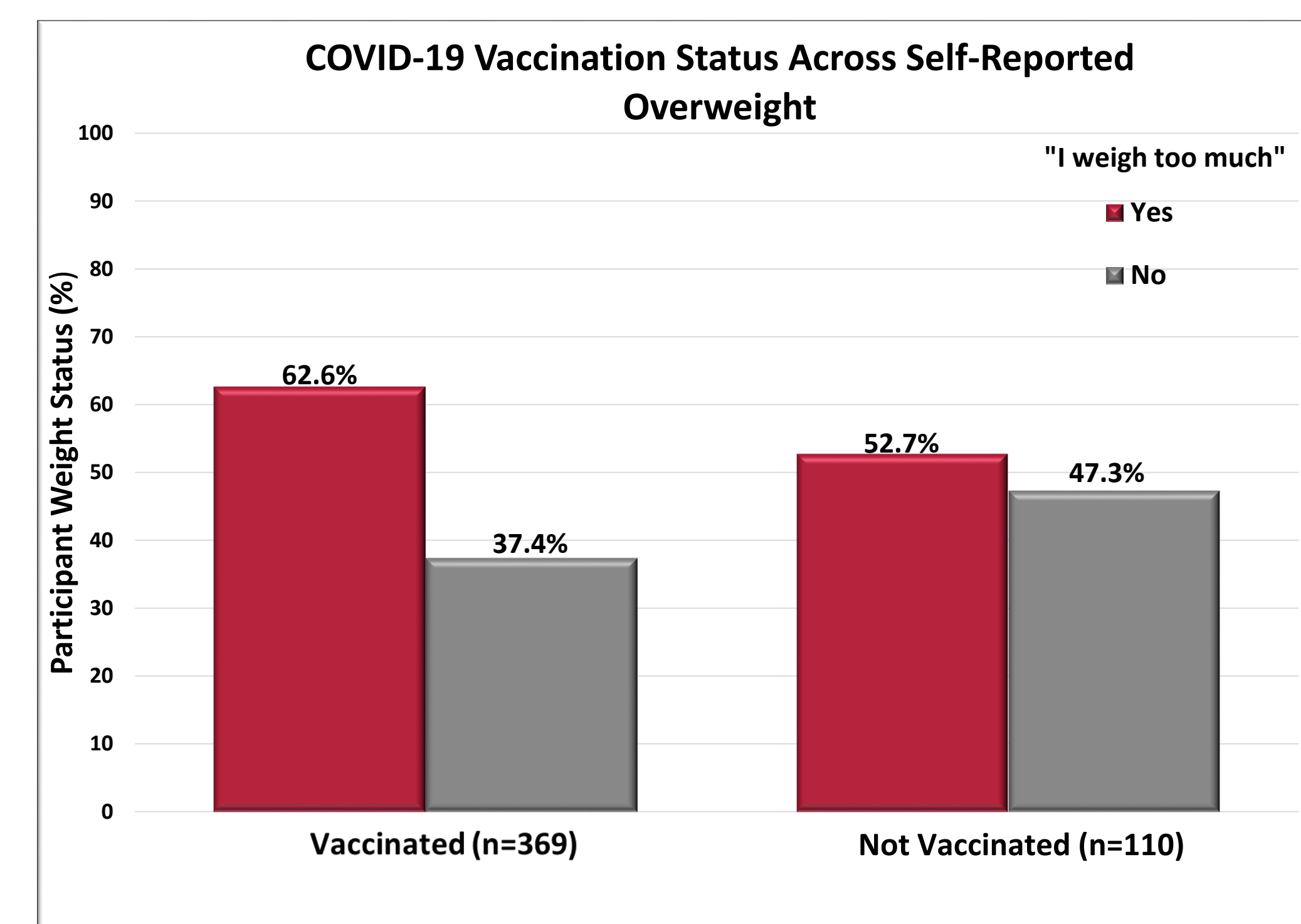
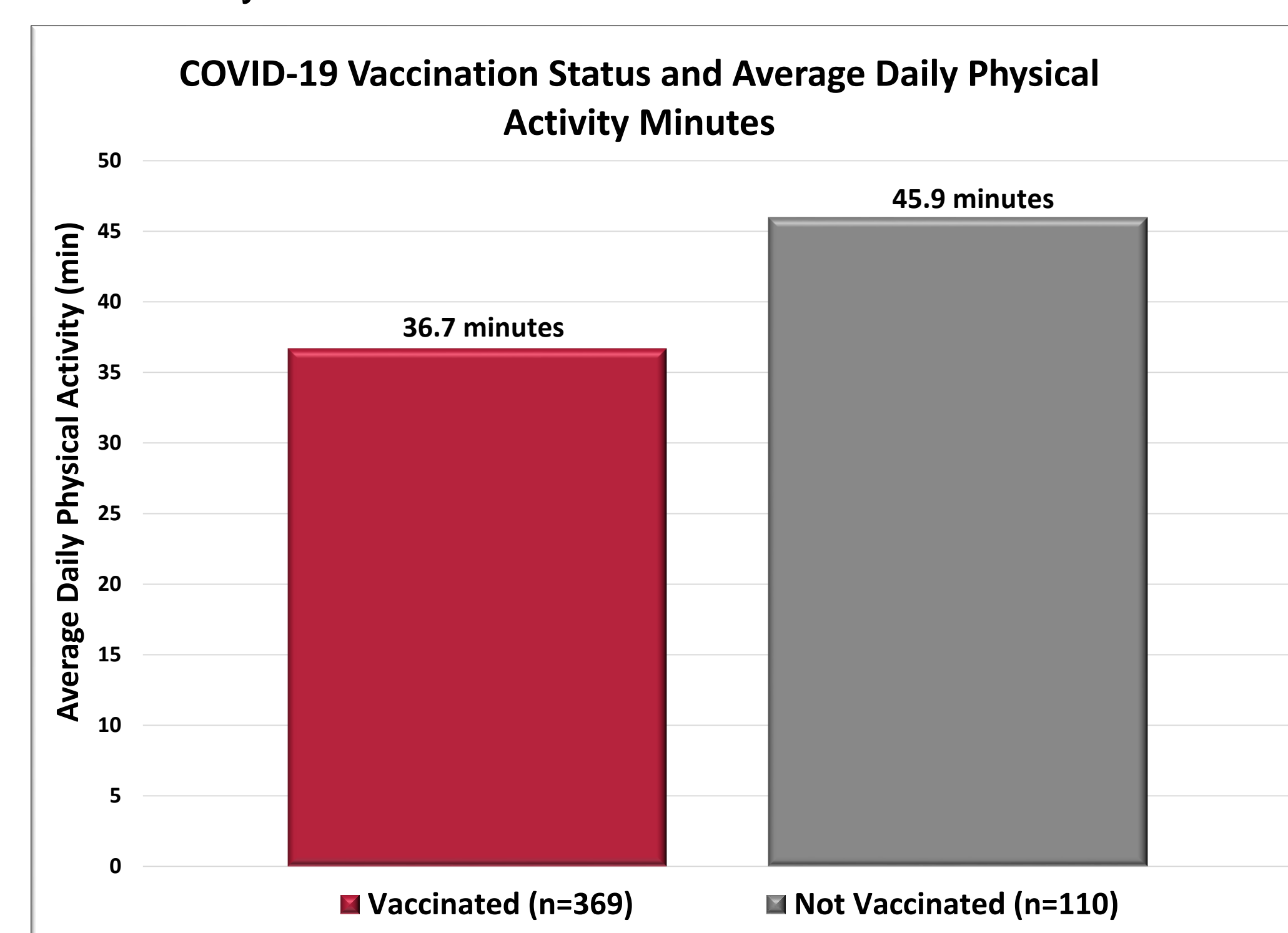


Figure 3. Differences in self-reported physical activity minutes by vaccination status.



Conclusions

- Some groups that were at high risk for serious adverse effects of COVID-19 infection were more likely to be vaccinated, such as older, overweight, or physically inactive adults.
- Smokers, a group at high risk for negative COVID-19 related outcomes, were less likely to be vaccinated.
- A limitation in this study included self-reported health measures for weight and physical activity minutes.
- Future research should further examine reasons for COVID-19 vaccine non-compliance in unvaccinated individuals in order to target vaccine interventions and sustain a healthy population.

References

1. US coronavirus vaccine tracker. USAFacts. <https://usafacts.org/visualizations/covid-vaccine-tracker-states>. Published February 20, 2023. Accessed February 21, 2023.
2. Randolph HE, Barreiro LB. Herd immunity: Understanding covid-19. *Immunity*. 2020;52(5):737-741. doi:10.1016/j.immuni.2020.04.012
3. AlShurman BA, Khan AF, Mac C, Majeed M, Butt ZA. What demographic, social, and contextual factors influence the intention to use covid-19 vaccines: A scoping review. *International Journal of Environmental Research and Public Health*. 2021;18(17):9342. doi:10.3390/ijerph18179342
4. Va.gov: Veterans Affairs. Alcohol Use Disorders Identification Test (AUDIT-C). <https://www.hepatitis.va.gov/alcohol/treatment/audit-c.asp>. Published October 29, 2018. Accessed March 1, 2023.
5. Surveillance - sleep and sleep disorders. Centers for Disease Control and Prevention. <https://www.cdc.gov/sleep/surveillance.html>. Published December 14, 2022. Accessed March 1, 2023.