UNDERSTANDING DEMOGRAPHIC DISPARITIES IN COVID-19 VACCINATION COMPLIANCE

Group 2

Executive Summary of the Project and Project Goals

- Understanding the factors that influence individuals' decisions to receive COVID-19 vaccinations is crucial for public health initiatives and vaccination campaigns.
- In this analysis, we delve into various demographic and socio-political factors to uncover insights into vaccination uptake among respondents in a survey dataset.
- Our investigation focuses on identifying key influencers that may sway individuals' decisions regarding COVID-19 vaccination.
- We aim to provide valuable insights that can inform targeted vaccination strategies, public health messaging, and policy interventions to promote COVID-19 vaccine uptake and mitigate disparities in vaccination rates.

National Library of Medicine
National Center for Biotechnology Information

"Demographic Differences in Compliance with COVID-19 Vaccination Timing and Completion Guidelines in the United States"

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9967743/

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RAW DATA FRAME

	D1_A	D1_G	Q1	VAXANY	VAXCOUNT	VAXBRAND	VAXJJ	newv3_1	newv3_2	newv3_3	...	D7_1	D8	D9	D9b	D13	D14	D15	wt
0	42	2	1	2	.	.	.	.	.	.	...	4	3	1	.	1	2	4	0.50954
1	30	1	1	1	3	1	1	1	.	.	...	1	2	1	.	2	2	3	0.90294
2	32	1	1	1	2	4	2	1	.	1	...	3	2	1	.	2	2	7	0.50072
3	30	2	1	1	2	1	2	.	.	.	...	1	1	1	.	1	1	7	0.60841
4	33	2	1	1	2	1	2	1	1	1	...	1	2	1	.	1	2	6	0.54509
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
695	21	2	1	2	.	.	.	.	.	.	...	.	1	4	.	2	2	4	0.25909
696	21	1	1	1	1	2	.	1	1	1	...	.	1	1	.	2	2	7	0.29503
697	31	1	1	2	.	.	.	.	.	.	...	4	3	2	.	2	2	5	0.80229
698	66	2	1	1	3	1	2	1	1	1	...	3	2	7	.	2	2	5	2.98312
699	75	1	1	1	4	2	2	.	.	1	...	5	1	7	.	2	2	5	2.06601

700 rows × 156 columns

Column names and answers encoded by numbers

Translated Data Frame

	AGE	GENDER	VACCINE STATUS	TRUST	POS-CASES	TRUST GOV	HEALTHY	STATE	RURAL	INCOME	HISPANIC	RACE	RELIGION	RELIGIOUS	HEALTH COVERAGE
0	42	Female	No	Strongly agree	Twice	NA	Poor	Missouri	Yes	$12,000-$23,999 a year	No	N/A	Something else	N/A	A plan purchased through an employer or union
1	30	Male	Yes	Strongly agree	Once	NA	Good	New York	No	$120,000-$155,999 a year	No	N/A	Agnostic	N/A	A plan purchased through an employer or union
2	32	Male	Yes	Agree	Once	Now trust them more	Very good	New York	No	$120,000-$155,999 a year	No	N/A	Muslim	N/A	A plan purchased through an employer or union
3	30	Female	Yes	Strongly agree	Twice	NA	Fair	Indiana	No	$120,000-$155,999 a year	No	N/A	Protestant	Yes	A plan purchased through an employer or union

- Column title categorized by the type of question.
- Answers displayed as the original survey.

Distribution by State

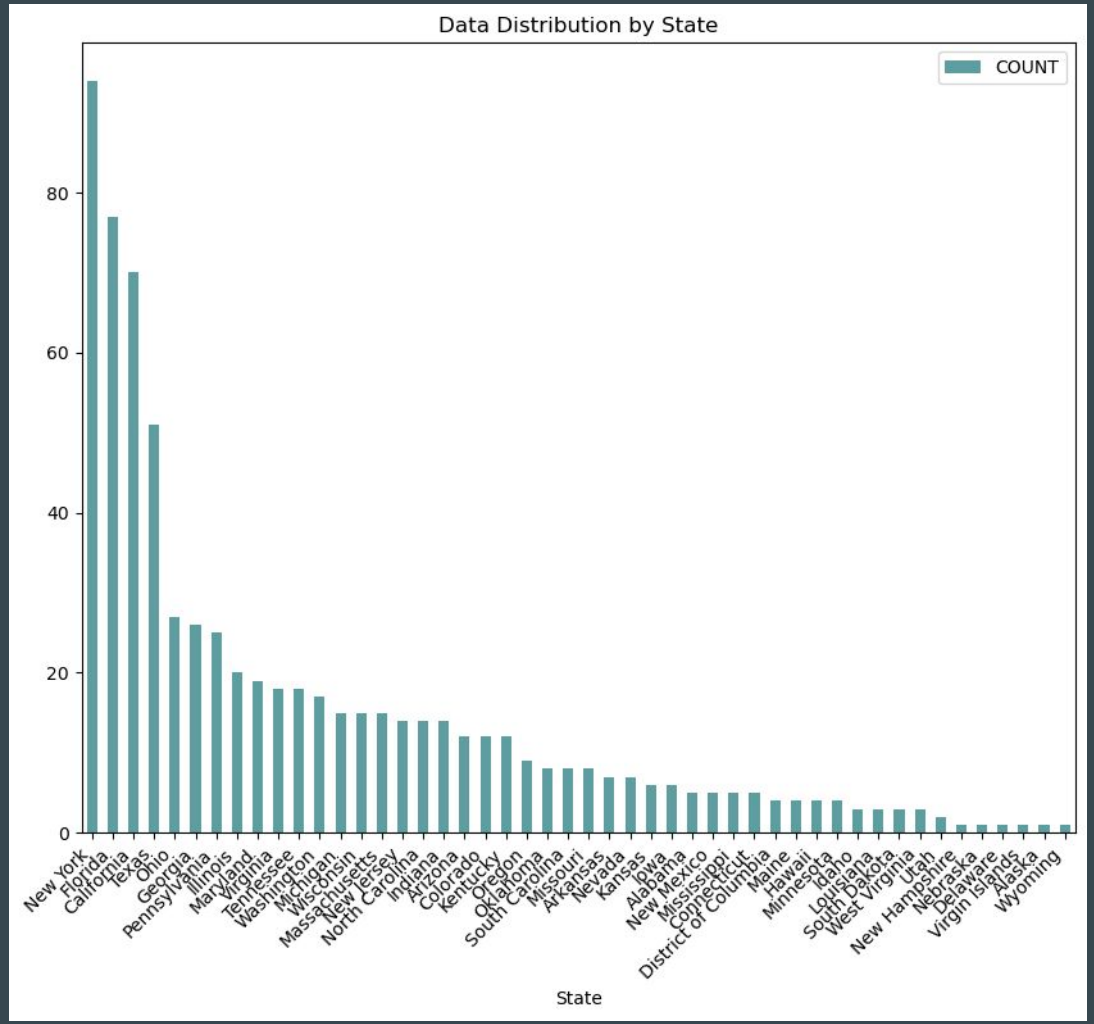
1. Top 3 States:
   New York, Florida, and California.

2. Regional Variation:
   Southern and Eastern States: States like Texas, Ohio, Georgia, and Pennsylvania also have notable representation, suggesting a diverse geographical spread of respondents across the United States.

   Midwestern and Western States: States like Washington, Michigan, Wisconsin, and Massachusetts also have a moderate number of respondents.

3. Lowest Representation:
   Less Populated States: States like Wyoming, and Alaska, have the lowest representation, with only one respondent each.

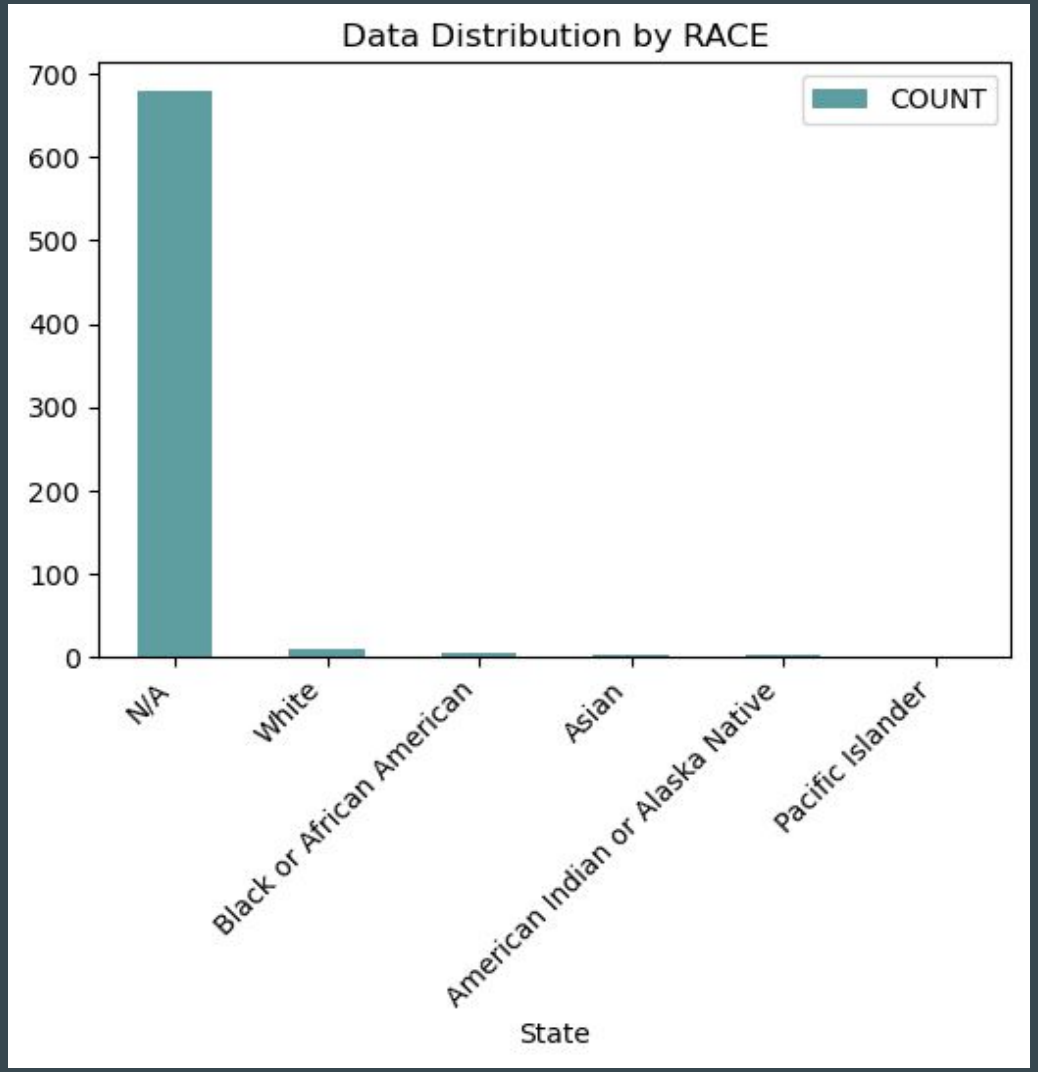
Overall, this distribution allows for a diverse representation of respondents from various states, enabling a more comprehensive analysis of vaccination trends and attitudes across different regions of the United States.



Distribution by Race

1. Dominant Category:
   N/A (Not Available): This category has the highest count of respondents, totaling 680. This indicates that many respondents did not provide or disclose their racial identity,

2. Implications:
   The lack of representation of racial minorities in the dataset underscores the importance of ensuring accurate responses in surveys to capture the perspectives and experiences of all demographic groups.

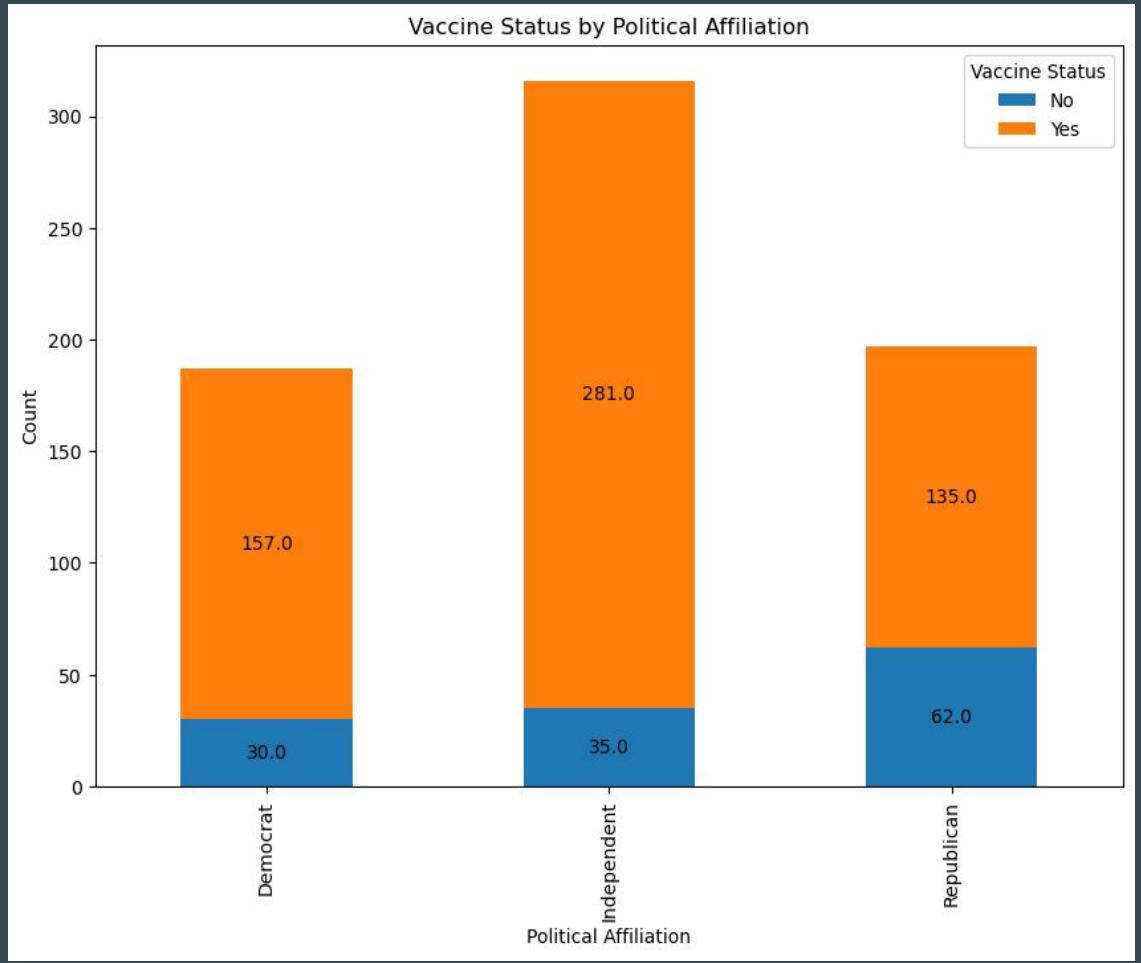


Political Affiliation

1. Vaccination rates vary among different political affiliations.
2. Independents have the highest number of "Yes" responses, followed by Democrats and Republicans.
3. The majority of respondents were vaccinated, regardless of their political beliefs.

Percentages of Yes responses by political affiliation:

Democrat	83.95 %
Independent	88.92 %
Republican	68.52 %

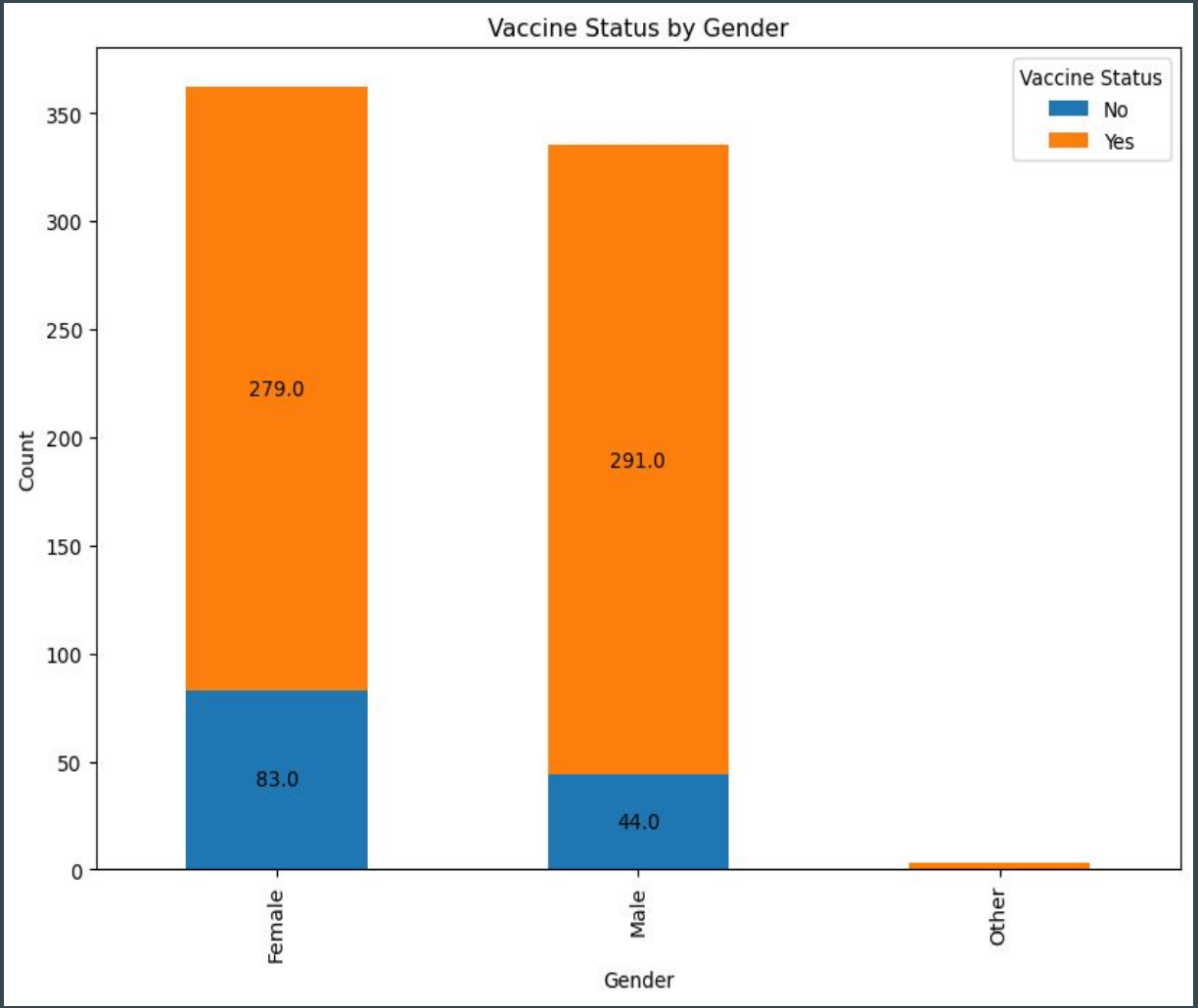


Gender

- Female: Among females, 279 have received the vaccine (Yes) out of 362.

- Male: For males, 291 have received the vaccine (Yes) out of 335.

Overall, a higher number of females and males have been vaccinated compared to those who have not.

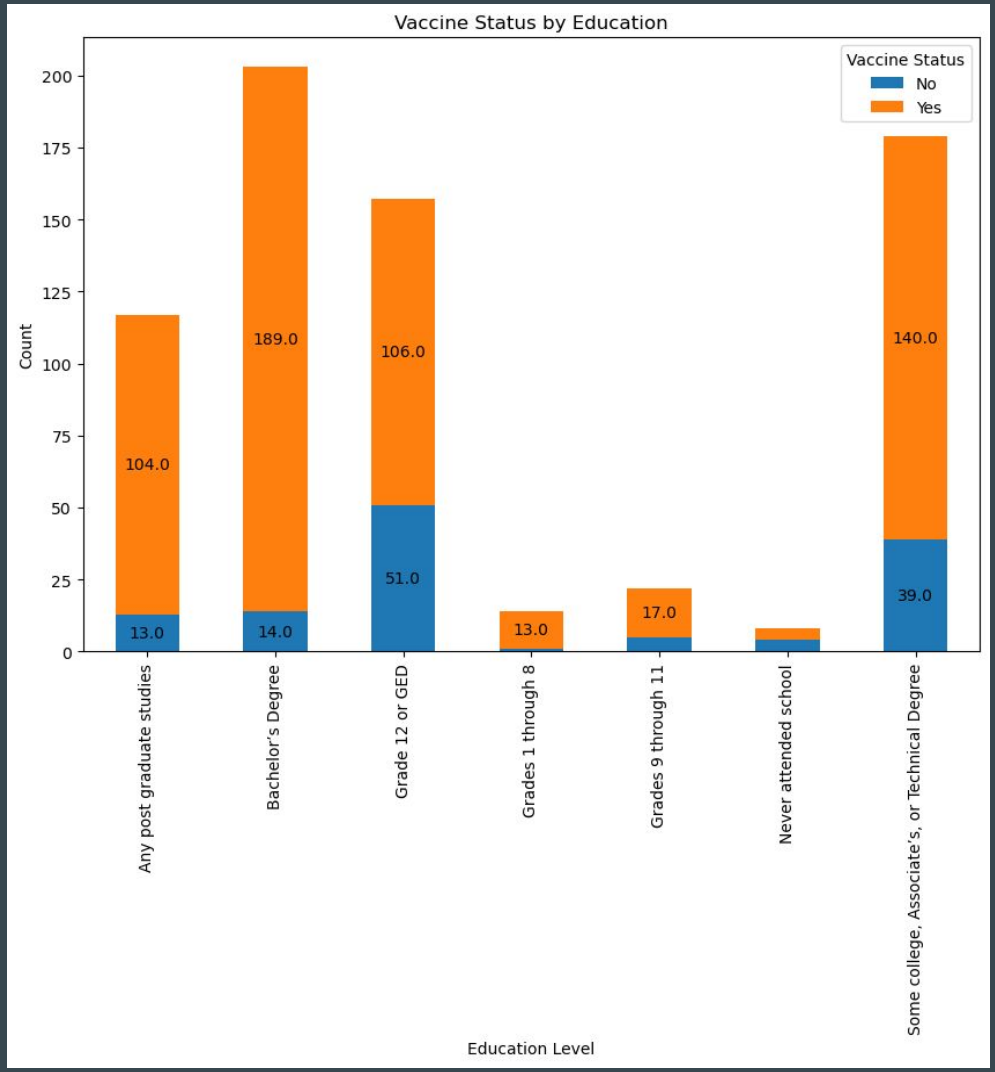


Education

Insights:

- Individuals with higher education levels, such as Bachelor's degrees and post-graduate studies, show a higher proportion of vaccinated individuals.
- Conversely, those with lower levels of education, such as those who never attended school or completed grades 9 through 12 or GED, exhibit lower vaccination rates.

This indicates a potential correlation between education level and vaccination status, suggesting that education may play a role in influencing vaccination decisions. Further analysis and targeted outreach efforts may be needed to address vaccination disparities among different educational groups.



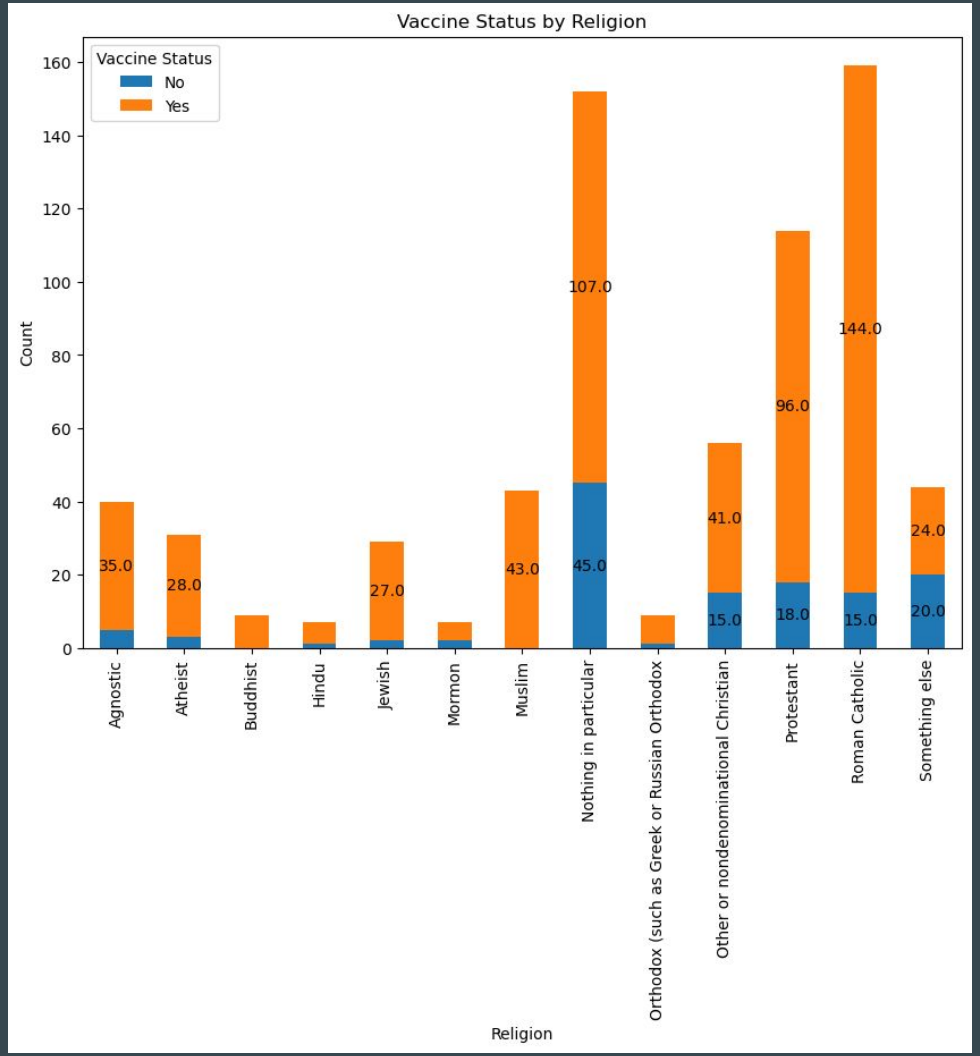
Religion

Highest Vaccination Rate: Muslim and Buddhist communities reported a 100% vaccination rate, indicating that all individuals belonging to these religious groups who participated in the survey have been vaccinated against COVID-19.

Lowest Vaccination Rate: The community with the lowest vaccination rate is "Something else" at 54.55%. This suggests that there is a relatively lower proportion of individuals vaccinated within this group compared to others surveyed.

Percentages of Yes responses by religion:

Agnostic	87.500000
Atheist	90.322581
Buddhist	100.000000
Hindu	85.714286
Jewish	93.103448
Mormon	71.428571
Muslim	100.000000
Nothing in particular	70.394737
Orthodox (such as Greek or Russian Orthodox)	88.888889
Other or non denominational Christian	73.214286
Protestant	84.210526
Roman Catholic	90.566038
Something else	54.545455



Future Research

Future research and survey efforts should prioritize inclusive sampling strategies to gather insights from a more representative cross-section of the population, especially from historically marginalized communities.

1. Based on this analysis, political ideology may not be a significant determinant of vaccination behavior, highlighting the importance of evidence-based public health messaging that transcends political divides.

2. We observed a slight disparity in vaccination rates between genders, while the reasons for this discrepancy may be varied and require further investigation, it underscores the importance of targeted outreach efforts to ensure equitable access to vaccines across all gender identities.

3. Our analysis revealed a positive correlation between education level and vaccination status. This finding underscores the role of socio-economic factors in vaccination decisions and highlights the need for targeted interventions to address barriers to vaccine access among marginalized communities.

4. Religion and vaccination status revealed varying vaccination rates among different religious groups, suggesting the influence of religious beliefs and community dynamics on vaccination behavior.

Conclusion

Through an exploration of demographic and socio-political variables, we have uncovered important patterns and correlations that shed light on vaccination behavior among survey respondents.

Overall, our analysis provides valuable insights that can inform targeted public health interventions, vaccination campaigns, and policy initiatives aimed at promoting equitable access to COVID-19 vaccines and increasing vaccination rates across diverse populations. By addressing the underlying determinants of vaccination behavior, we can work towards achieving widespread vaccine coverage and mitigating the impact of the COVID-19 pandemic on public health and society as a whole.