

# COVID-19 Vaccine Distribution & Impact on Death Rates

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# COVID-19 Deaths

- Using our data analysis, we are hoping to determine the following:
  - Do COVID-19 deaths slow at a different rate for minorities?
  - Do COVID-19 deaths slow at a different rate depending on age?
  - How have different genders been impacted by COVID-19?
  - Which states should be prioritized to receive vaccines?
  - How did politics impact COVID-19 data?
  - Based on vaccination and infection rates, can you accurately predict if a state voted for Trump or for Biden?

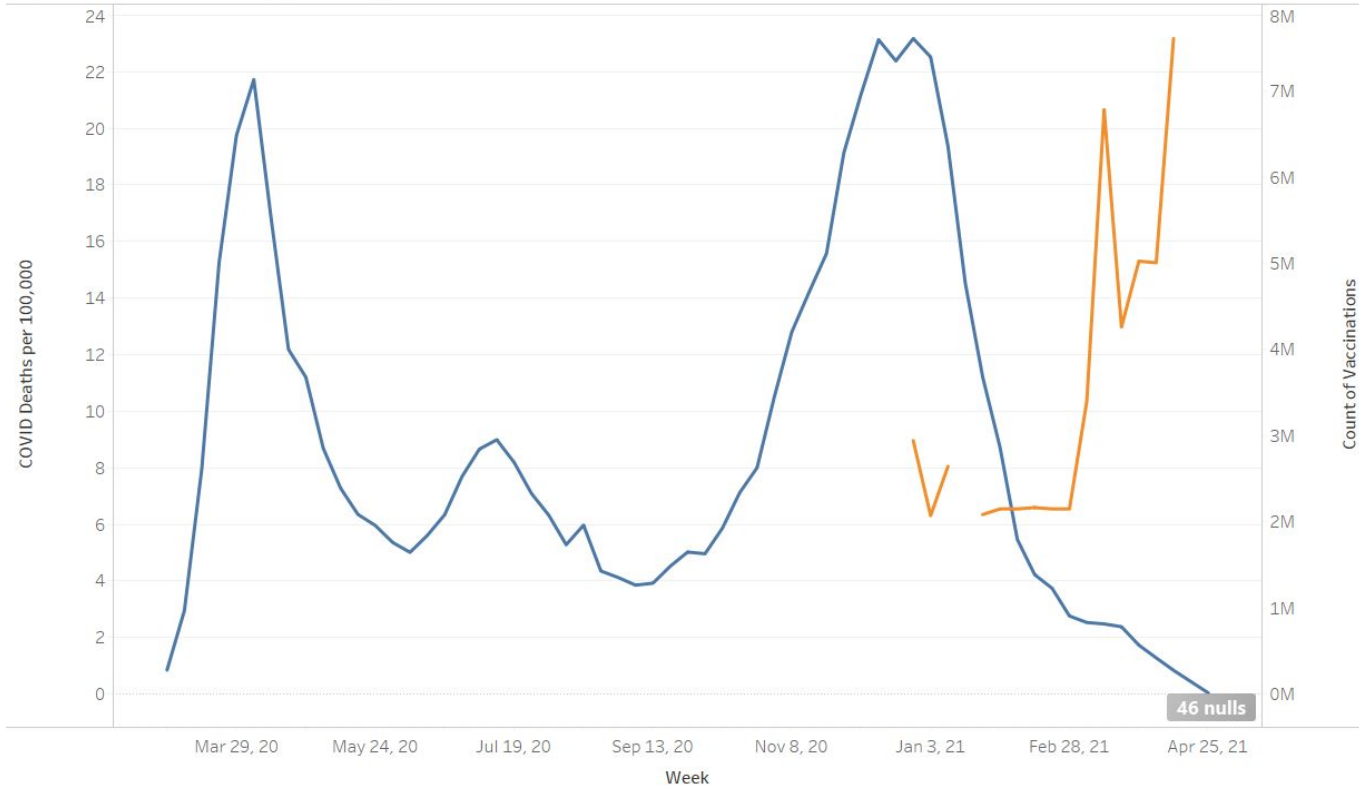
# Data Sourcing

We've sourced most of our data from the Center for Disease Control (CDC) and the US Government. Linked below are a few of the datasets referenced.

- Datasets
  - [Weekly Deaths by Race and Age](#)
  - [Weekly Deaths by Gender and Age](#)
  - [Pfizer Vaccine Allocations](#)
  - [Moderna Vaccine Allocations](#)
  - [J&J Vaccine Allocations](#)
- Additional Sources
  - [Demographics Over Time](#)
  - [Mask Wearing by State](#)
  - [Bloomberg Vaccine Tracker](#)
  - [Morning Consult Dashboard](#)

# How did the introduction of the vaccine impact deaths from COVID-19?

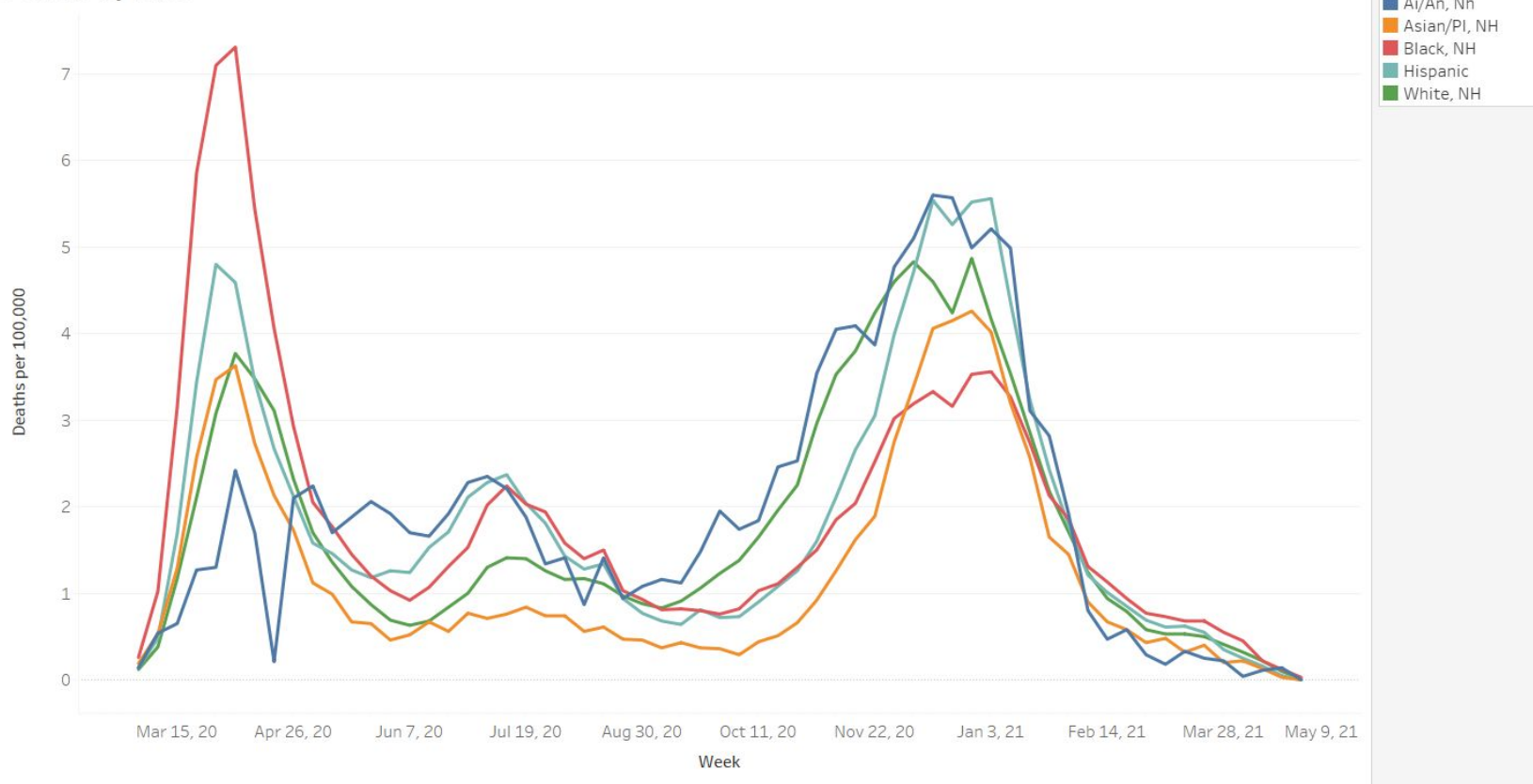
Death Rates and Vaccine Distribution



Following the introduction of the vaccine, deaths from COVID-19 decline.

# Do COVID-19 deaths slow at a different rate for minorities?

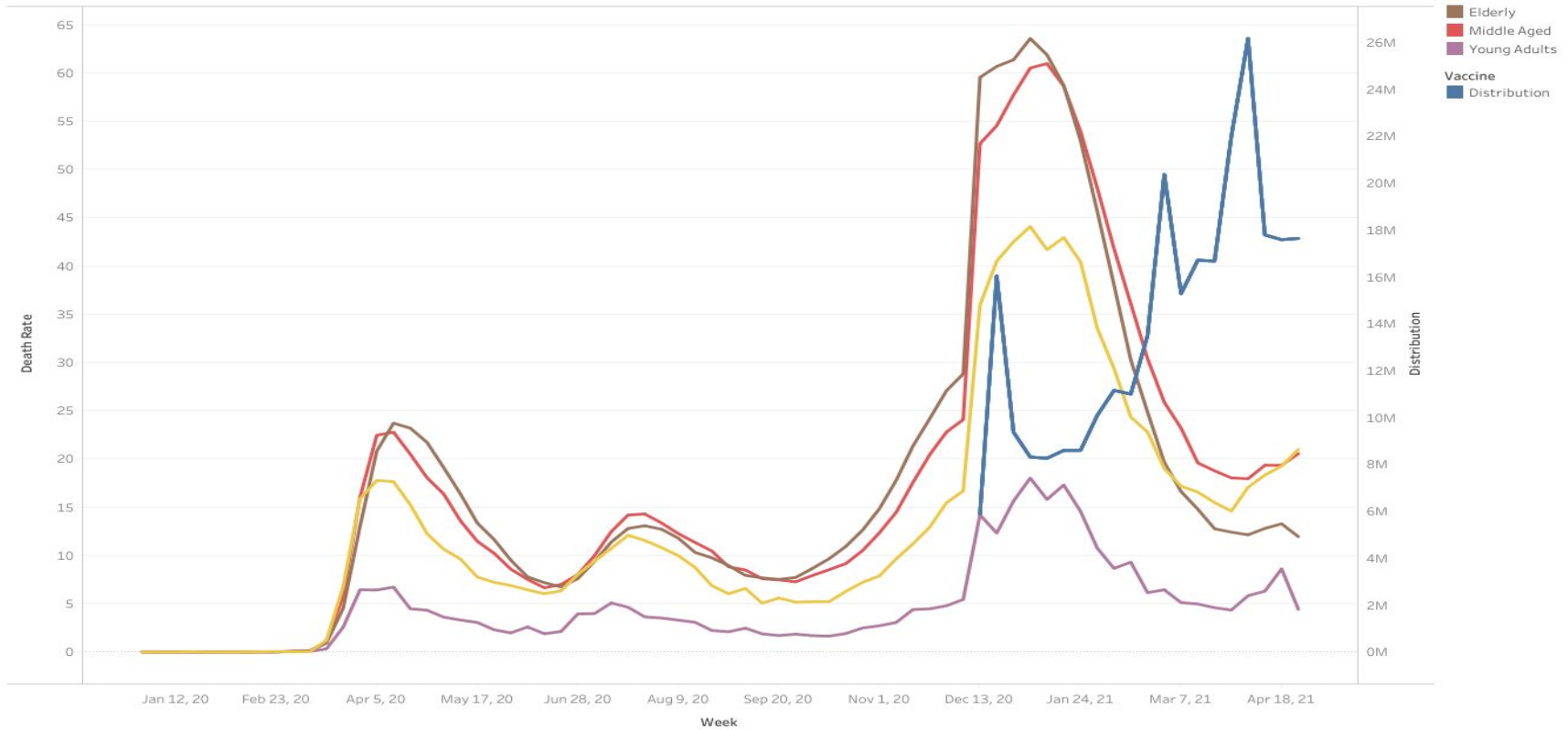
Deaths By Race



Deaths for all races decline when the vaccine is introduced.

# Do COVID-19 deaths slow at a different rate by age?

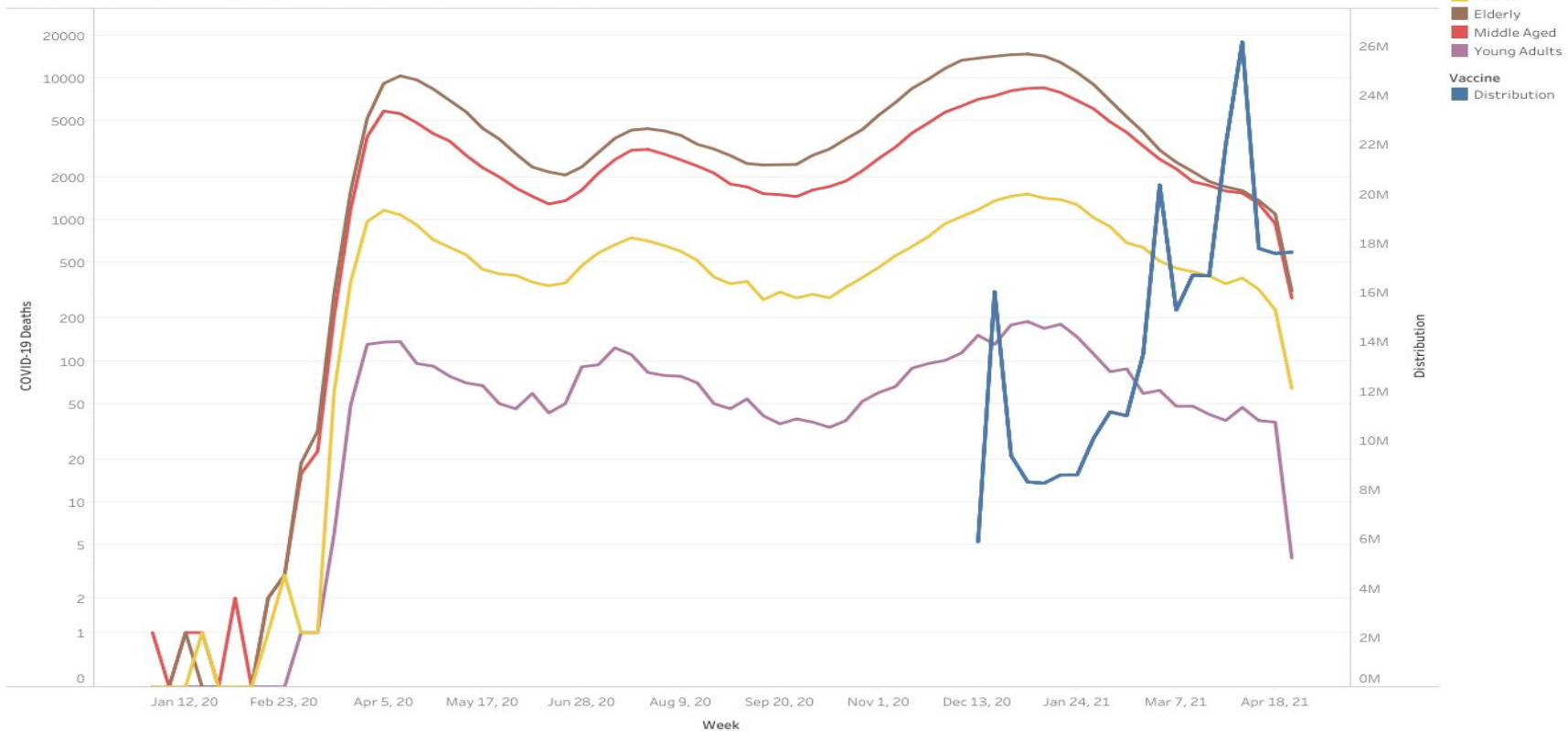
COVID-19 Death Rate By Age Group



Deaths for all ages decline when the vaccine is introduced.

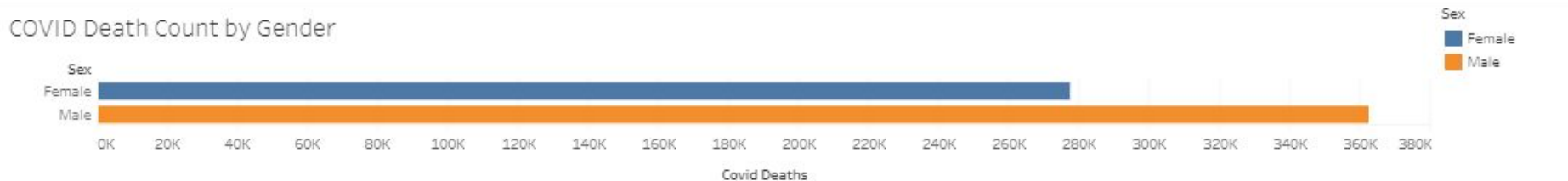
# Do COVID-19 deaths slow at a different rate by age?

Total Death Count By Age Group to Vaccine Distribution



Deaths for all ages decline when the vaccine is introduced.

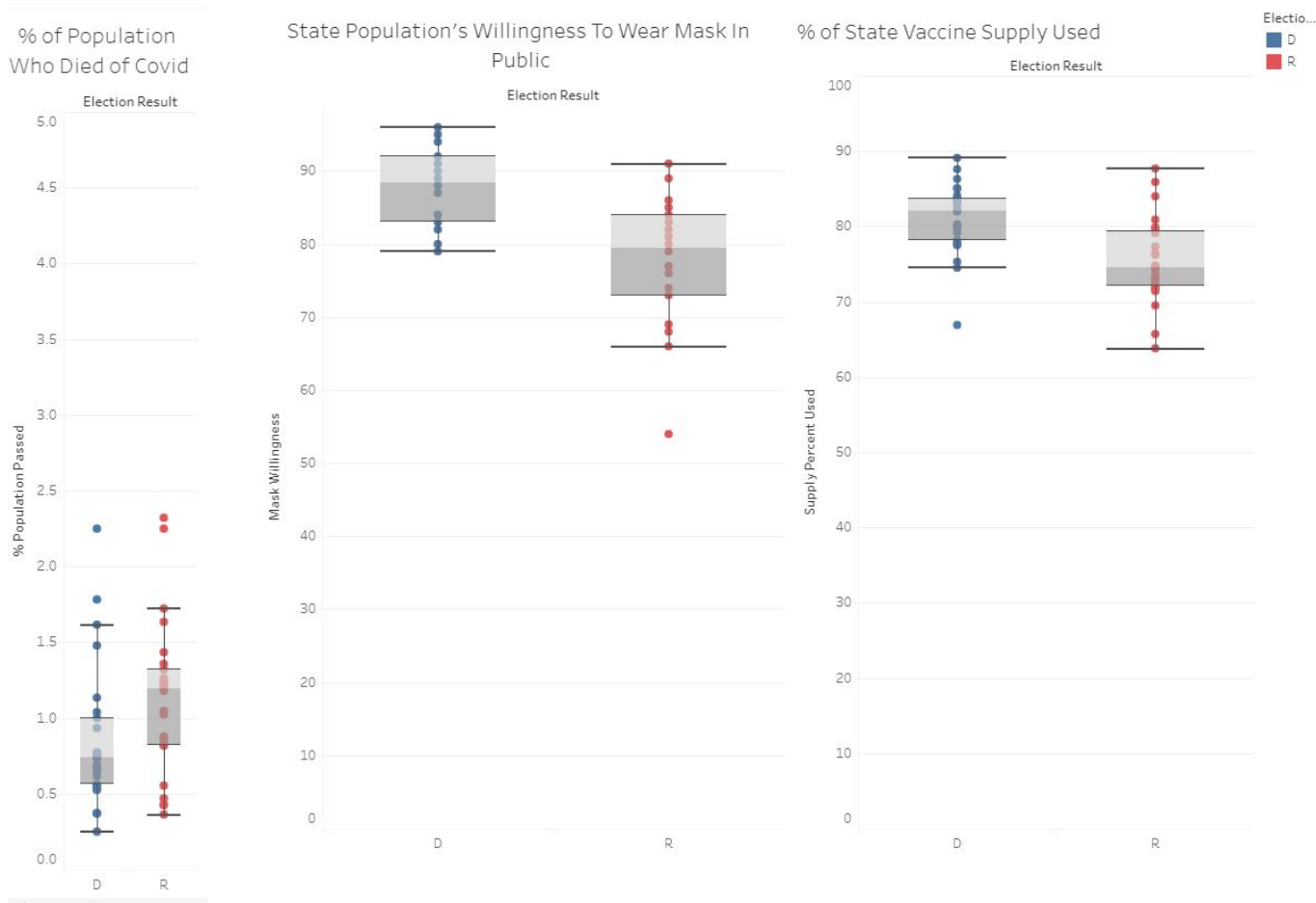
# How have COVID-19 deaths differed by gender?



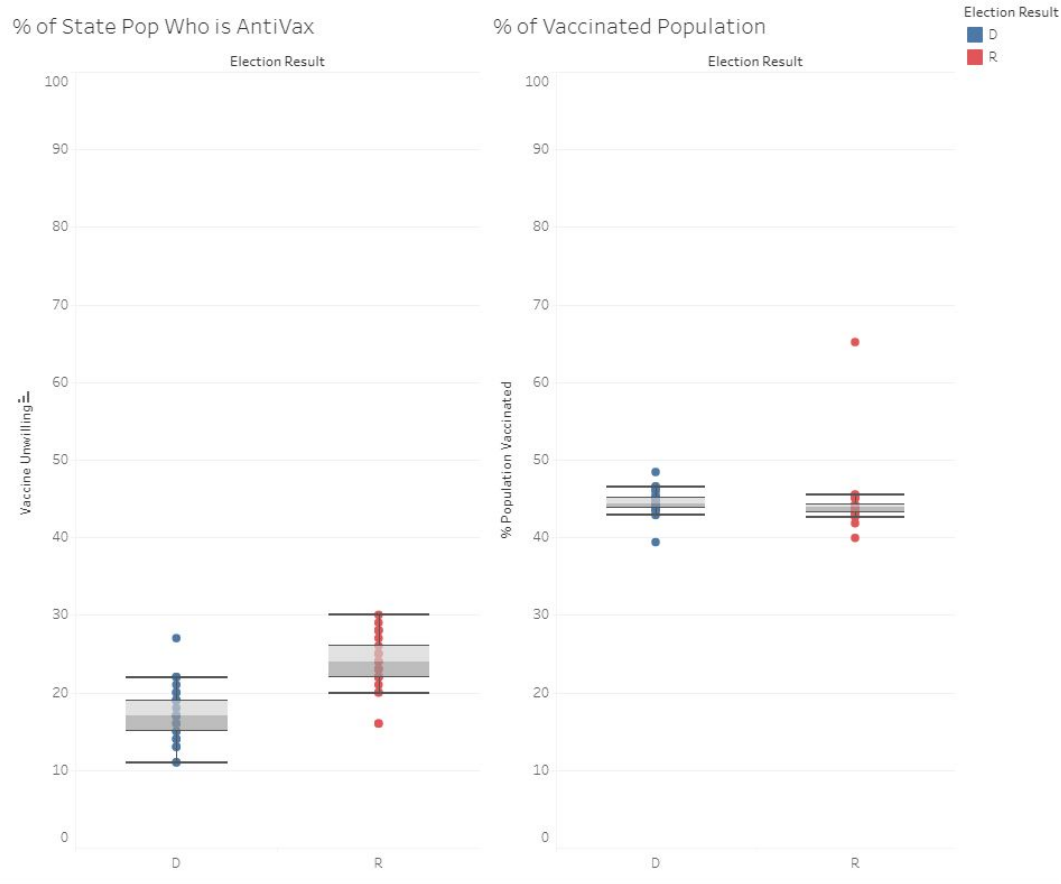
More males than females have died from COVID-19.



# How do Democrats and Republicans Compare?



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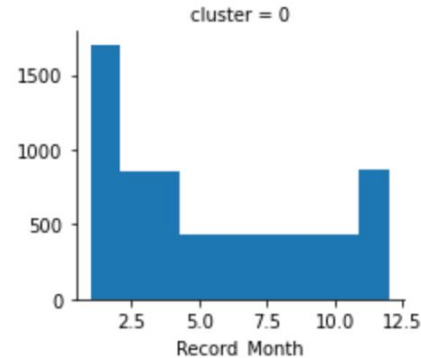


# Which state(s) should be prioritized for vaccines?

- Unsupervised machine learning
- Use K-mean clustering model
- Use PCA to reduce 78 variables to 2 variables

## Cluster 0:

- These are the people with highest death rate.
- People were most affected in winter months (December to March).
- Both males and females are equally impacted by COVID-19 in this group.
- People aged 70-84 belong to this group.
- People from New York and California fall in this category.
- This is the group that requires vaccinations before other people.



# Can you use COVID-19 response data to determine how a state voted in their election?

	Logistic Regression	Decision Tree	Random Forest Decision Tree
Accuracy	92.3%	84.6%	85.7%
Precision	92%	88%	88%
Recall	91%	85%	85%

# Key Learnings

1. The introduction of the vaccine has had a positive impact on COVID-19 deaths (aka deaths are declining)
  - a. The race that was most impacted by the first wave of COVID-19 was least impacted by the second, and vice versa
2. Republican states are performing much worse in all major COVID-19 related stats. These include:
  - a. willingness to wear a mask in public,
  - b. % of population who passed from covid
  - c. vaccine supply usage
3. Though Republican states have higher % of those who are anti-vax, they have a similar vaccination rate to Democratic states
4. New York and California should be prioritized for receiving the COVID-19 vaccine