**Process Book**

**Abstract**

(introduction to the dataset and our main research question)

Image(vaccine)

1. **# Who are the people reporting adverse reactions?**

**## AGE AND GENDER**

**### Do elders suffer more from side effects? Not exactly**

Conclusion: Women and Younger people tend to report more cases. Is it possible that there are fewer elders got vaccinated thus fewer reports?

**We decided to dive deeper into who got vaccinated by looking at different age group.**

**### Vaccinated Rate by Different Age Group**

Figure:(by age group) Percentage of People that Have Received at Least One Dose of Cov Vaccine , by Mar 31, 2021

Type: plotly interactive line chart

source : <https://covid.cdc.gov/covid-data-tracker/#datatracker-home>

**### Report rate by different age group (animated bar? to show the changes by time)**

**## Pre-illness**

### most common illness (wordcloud) (allergy is actually a big category, what are the common allergies mentioned?)

### common allergies (there are all kinds of allergies containing other allergy, eg: food allergy, nut allergy or words in reverse order, eg: penicillin allergy, allergy penicillin. Don’t really know how to handle it .give up ⚠️)

**2.# Where are they from?**

##allocation rate by state

This part uses bar chart and map to show the allocation of vaccines of different brands in different states before 2021-03-31.

Source:

<https://data.cdc.gov/Vaccinations/COVID-19-Vaccine-Distribution-Allocations-by-Juris/saz5-9hgg>

https://data.cdc.gov/Vaccinations/COVID-19-Vaccine-Distribution-Allocations-by-Juris/b7pe-5nws

Conclusion:

The number of vaccine allocations in each state does not have a brand tendency. In every state, the number of vaccine allocations for the two brands is basically the same.

## report rate by state

This part uses bar chart and map to show the side effect case report rate (from 2020-12-14 to 2021-03-31) in 50 states and the District of Columbia and the relationship between report rate and 2020 election result.

The report rate was calculated by dividing the number of cases in the VARES data set by the number of people vaccinated in the daily administered data set.

Source:

us-daily-covid-vaccine-doses-administered.csv

VARES data set: https://www.kaggle.com/ayushggarg/covid19-vaccine-adverse-reactions

The results of the state elections come from the data provided in the Week 5 lecture.

Conclusion:

The report rate in the northeast and northwest regions is higher than other regions. The reporting rate of vaccine side effects in each state does not seem to be significantly related to the party’s victory in the 2020 election. But New York has the highest reporting rate, more than double that of Montana, the second highest.

**3.#When did side effects kick in ?**

(bar chart, taking average value for different age group and sex)

(tried line chart, but it took extreme values into consideration, the displaying is not very nice. I guess average makes more sense, instead of showing value for every age)

**4.#What are the side effects symptoms?**

## top 10 common symptoms (bar chart)

##emotional words in symptoms description(how do people feel) (facet)

**5.# report rate by manufacturer**

This part uses bar chart and map to show the number of reported side effect cases of different brands of vaccines (from 2020-12-14 to 2021-03-31) in 50 states and the District of Columbia

Source:

VARES data set: https://www.kaggle.com/ayushggarg/covid19-vaccine-adverse-reactions

Conclusion:

According to previous visulizations, there is no significant difference in the number of vaccine allocations between Moderna and Pfizer in each state. However, Pfizer’s vaccine has more reported cases of side effects.