Study on the Adverse Effect of Covid-19 Vaccine

Capstone Project 3
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Problem Statement

The U.S. Department of Health and Human Services (HSS) is interested to know the demographic of the candidates who have adverse effects and common symptoms after the Covid-19 vaccination.

US: COVID-19 Vaccine Rollout Recommendations

From 3 Dec 20: Healthcare personnel and residents of long-term care facilities

From 22 Dec 20: Frontline essential workers, people aged 65 years and older, people aged 16-64 years with underlying medical conditions and other essential workers

Data Cleaning & Preparation

- Remove unwanted columns.
- **State:** Insert 'Unknown' into empty cells.
- **Age:** Age Yrs with values remain while null value to be replace with (Cage:Calculated age) Yrs.

1²₃ VAERS_ID	Aᴮ꜀ STATE	1.2 AGE_YRS	1²₃ CAGE_YR
918204	OH	27	27
918205		44	44
918206	MA	30	30
918207	FL	null	54
918208	IN	62	62
918209	VA	52	52
918210	VA	31	31

Data Cleaning & Preparation

- **Recovered**: Insert empty cells and replace 'U' with 'Unknown'. Replace 'Y' with 'Yes', create conditional with Died column for those who have died become 'Death' while the others 'N' will be 'No'.

A^B_C Hospitalisation	1²₃ Days in Hospital	A^B_C Recovered
Y	1	N
	null	Y
Y	null	
Y	2	N
	null	N
	null	N
Y	3	U

Data Cleaning & Preparation

- **Hospital Days**: Create a Conditional Column for the empty row
- If hospitalisation is 'No', then '0'.
- If hospitalisation is 'Yes' and Recovered is 'Unknown', 'Yes' and 'Death, then Hospital Days is 'Unknown'.
- If hospitalisation is 'Yes' and Recovered is 'No', then Hospital Days is 'In Progress'.

Recovered	Hospitalisation	Days in Hospital	Hospital Days
Unknown	Yes	null	Unknown
No	No	null	0
Yes	Yes	null	Unknown
Unknown	Yes	1	1
Unknown	Yes	null	Unknown
Unknown	Yes	6	6
No	Yes	null	In Progress
Death	Yes	null	Unknown

Data Cleaning & Preparation

Symptoms: Conditional column to find the common symptoms by removing the common testing measures found in the 5 symptom's columns.
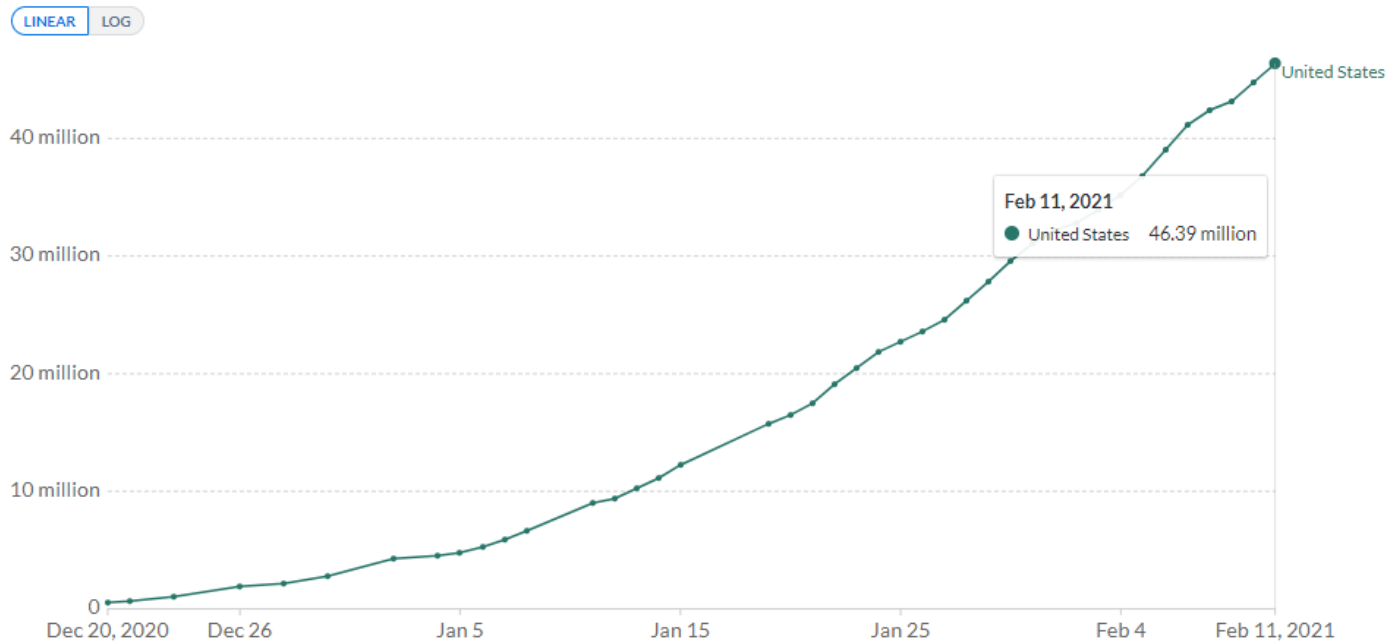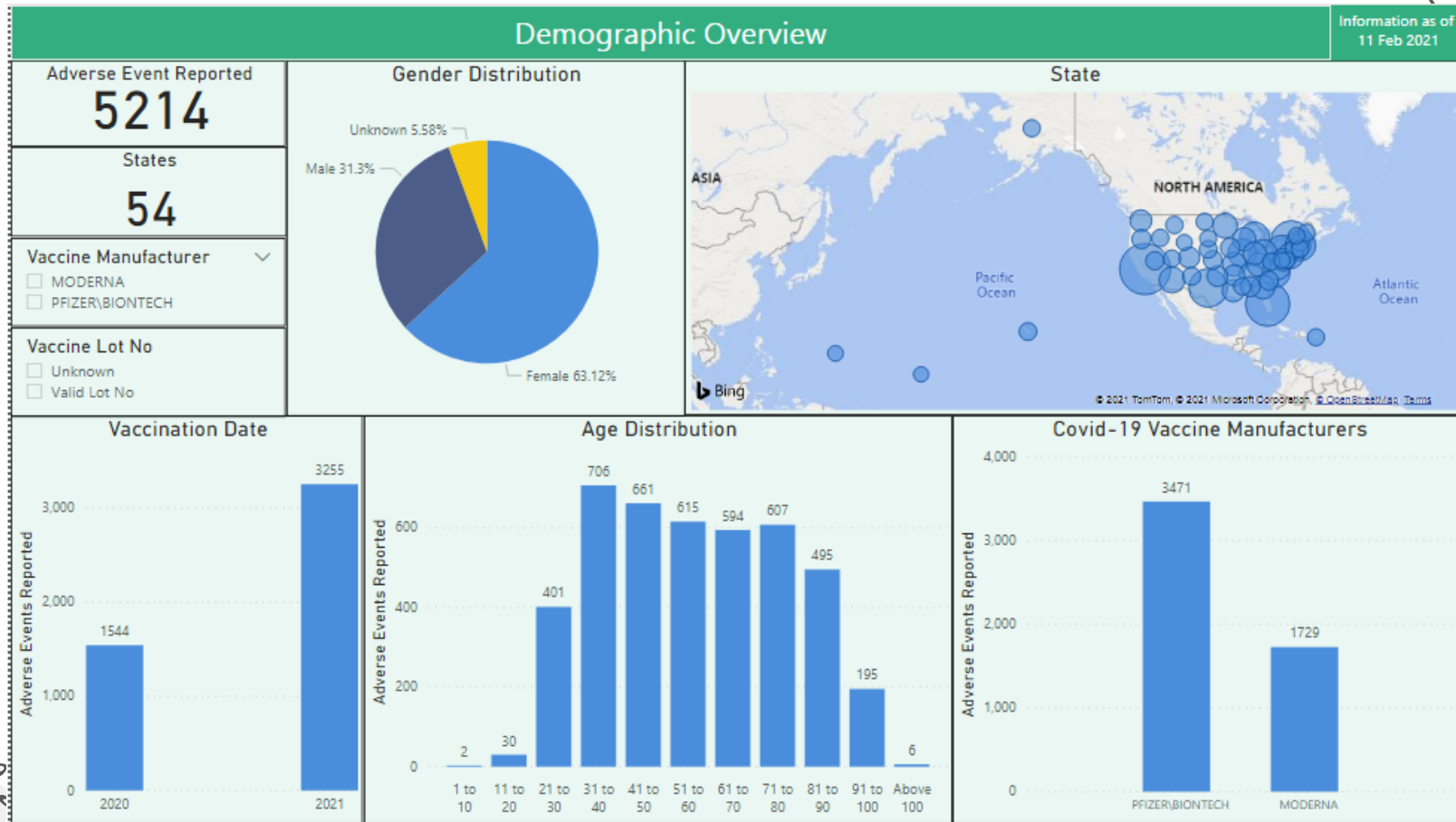
US: 46.39 Million Vaccinated as of 11 Feb 2021

Cumulative COVID-19 vaccination doses administered

Our World in Data

LINEAR LOG

United States

40 million

30 million

Feb 11, 2021
● United States   46.39 million

20 million

10 million

0

Dec 20, 2020   Dec 26   Jan 5   Jan 15   Jan 25   Feb 4   Feb 11, 2021

https://ourworldindata.org/covid-vaccinations

Dashboard

Conclusion

- Overall: **5214 (0.011239%)** reported adverse events of **46.39 Million** total vaccinated single dose
- Gender: More on female
- Age: More on middle age (31 to 50 years old) due to vaccine schedule while death rate higher on older age (81 to 90 years old) due to health complications

Conclusion

- Vaccine Manufacturer: Moderna vaccine have higher % in life threatening & death cases among the adverse events
- Length of stay in hospitals: around 1 or 2 days

Conclusion

Top 10 common symptoms

- Fatigue
- Chills
- Fever
- Arthralgia- inflammation, joints pain
- Abdominal pain
- Dizziness
- Dyspnoea- difficult breathing
- Anaphylactic reaction- life threatening allergic reaction
- Nausea

Thanks!

References:
https://www.kaggle.com/ayushggarg/covid19-vaccine-adverse-reactions?select=2021VAERSDATA.csv