ADVERSE REACTION OF
VACCINATION: SIDE EFFECTS
CLUSTERING AND RISK AND
VACCINE EFFICIENCY
PREDICTION

CAPSTONE





TEAM

SHARAT SRINIVAS

Introduction
Background
Goals

NEXT WEEK TASKS:

CHETAN DESAI

Initial Dataset
Data Definitions
Methods

SAIDEEP REDDY

RESEARCH RESOURCES





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Introduction & Background



RESULTS ANALYSIS



02

METHODOLOGY

Exploratory Data Analysis & Pre-Processing



CONCLUSIONS

INTRODUCTION

543 million doses of COVID-19 vaccines were administered in the United States from December 14, 2020, through February 3, 2022

During this time, VAERS received 12,122 preliminary reports of death (0.0022%) among people who received a COVID-19 vaccine

It is important to analysis the data during this pandemic and be aware of the information regarding the vaccination.



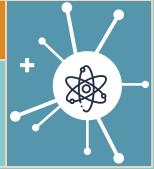






Drug Safety

Drug safety refers to the frequency of adverse drug effects that are treatment emergent. After regulatory approval of a drug, the ongoing process of post-market surveillance ensures continued safety of the product



Adverse Event

Harmful or **negative** outcome that occurs when a patient has been provided with medical care or treatment















Product Administration







Reporting







6.

Action Taken



BACKGROUND







VAERS

Vaccine Adverse Event Reaction System (VAERS)



MONITORING

Monitor reports



FDA AND CDC

Reports of vaccine-related adverse events



VACCINATION

Greater rate of incidents than expected



FORMED

November 1, 1990 to the present



SERIOUS INCIDENTS

85% to 90% modest events < 15% serious incidents



GOALS







ADVERSE REACTION

Can we Predict the Reactions after Immunization ? Is it Life threatening ?

MANUFACTURERS

Which manufacture Vaccine will suits you?

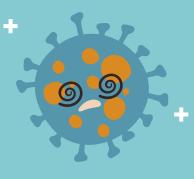
ADVERSE EVENT

Where more events occurred?

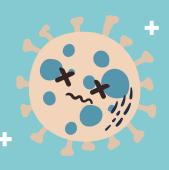




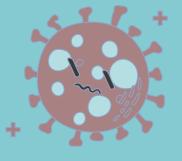
INITIAL DATASET



Data sets



Data Description



Data File containing Patient details

VAERSDATA

Data provide the vaccine information

VAERSVAX

Data provide the adverse event coded terms utilizing the MedDRA dictionary

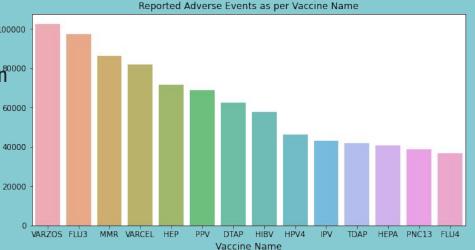
VAERSSYMTOMS



VACCINE?

COVID 19: Vaccine that

Acute respiratory illness in 60000
humans caused by a coronavirus, capable of producing severe symptoms



HEPATITIS B : Vaccine that prevents inflammation of liver

FLU (Influenza): Vaccine Protects against FLU and from its potential serious complications

VARICELLA-ZOSTER VACCINE (VARZOS):

Vaccine that reduces the incidence of herpes zoster (shingles), a disease caused by reactivation of the varicella zoster virus (VZV), which is also responsible for chickenpox.





DATA DEFINITION





COVID 19



1088560

VARZOS



101037

FLU (Influenza)



169699





113692





DATA CLEANING









Filtering Vaccines Data by name

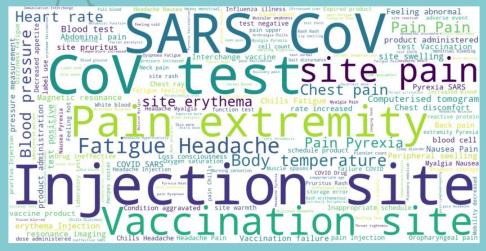
Removal of Duplicates
& Imputing Boolean or Removal
of columns

Cleaning of Text Columns with Regex



WORLD CLOUD OF SYMPTOMS BY VACCINE

01: COVID



02: FLU INFLUENZA



03: HEPATITIES



04: FLU INFLUENZA





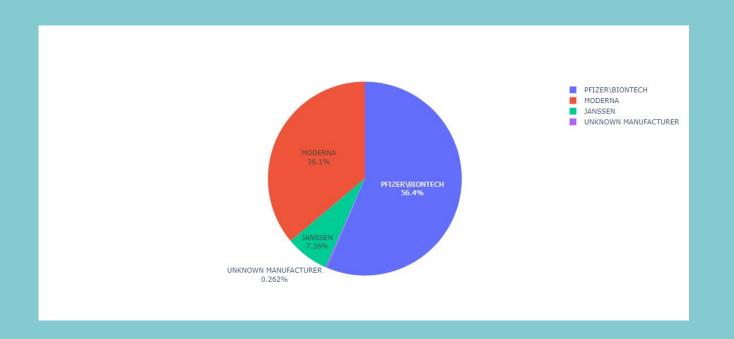
OBSERVATION

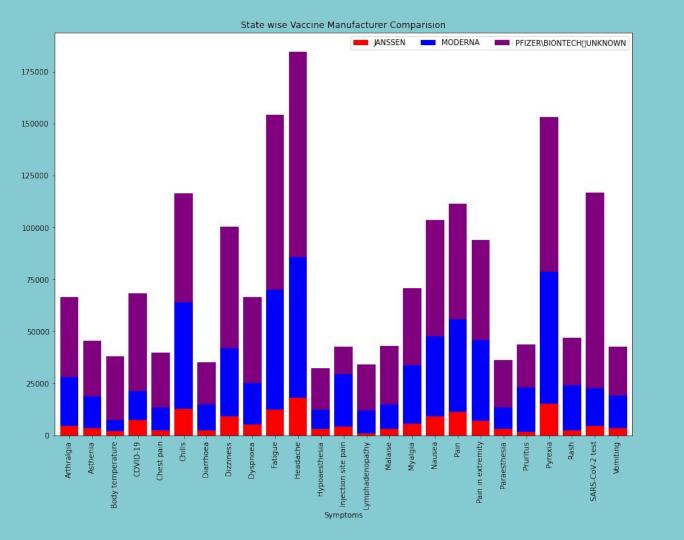
Data have more parsity and More EDA and exploration is required.

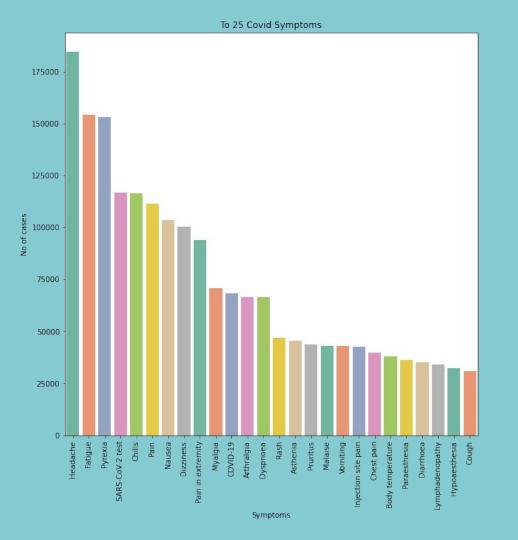
We are in the process of applying NLP for the Text columns

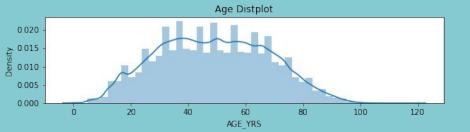


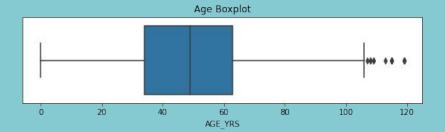
APPENDIX











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- [3].https://www.cdc.gov
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THANKS



