Covid-19 Vaccine
Adverse Event Dashboard

Zoe Liao
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Vaccine Adverse Event Reporting System
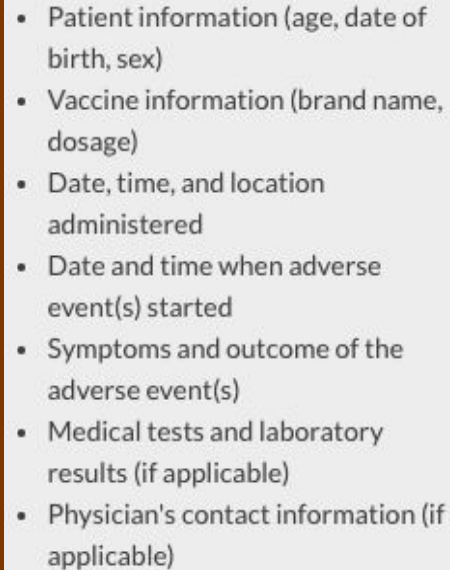
Self-Reported Data

Passive surveillance system monitored by CDC and FDA

3 Tables per Year

Event data, Vaccine data, Symptom data (joined by VAERS_ID)

- Patient information (age, date of birth, sex)
- Vaccine information (brand name, dosage)
- Date, time, and location administered
- Date and time when adverse event(s) started
- Symptoms and outcome of the adverse event(s)
- Medical tests and laboratory results (if applicable)
- Physician's contact information (if applicable)

Tried using CDC Wonder...

GOAL

- Pipeline for interactive dashboard
- Visualize adverse events reported for Covid-19 vaccines
- Conveniently updated

PIPELINE

VAERS
- CSV files
- 2020, 2021, 2022

SQLite

3 tables: patient data, vaccine, symptoms

pandas **PySpark**
- Query Covid-19 vaccine data
- Clean, aggregate for visualization

plotly | Dash Enterprise

HEROKU

Dashboard

- Unit tests for processing
- Update dashboard after downloading new data

https://covid-vax-vaers.herokuapp.com/
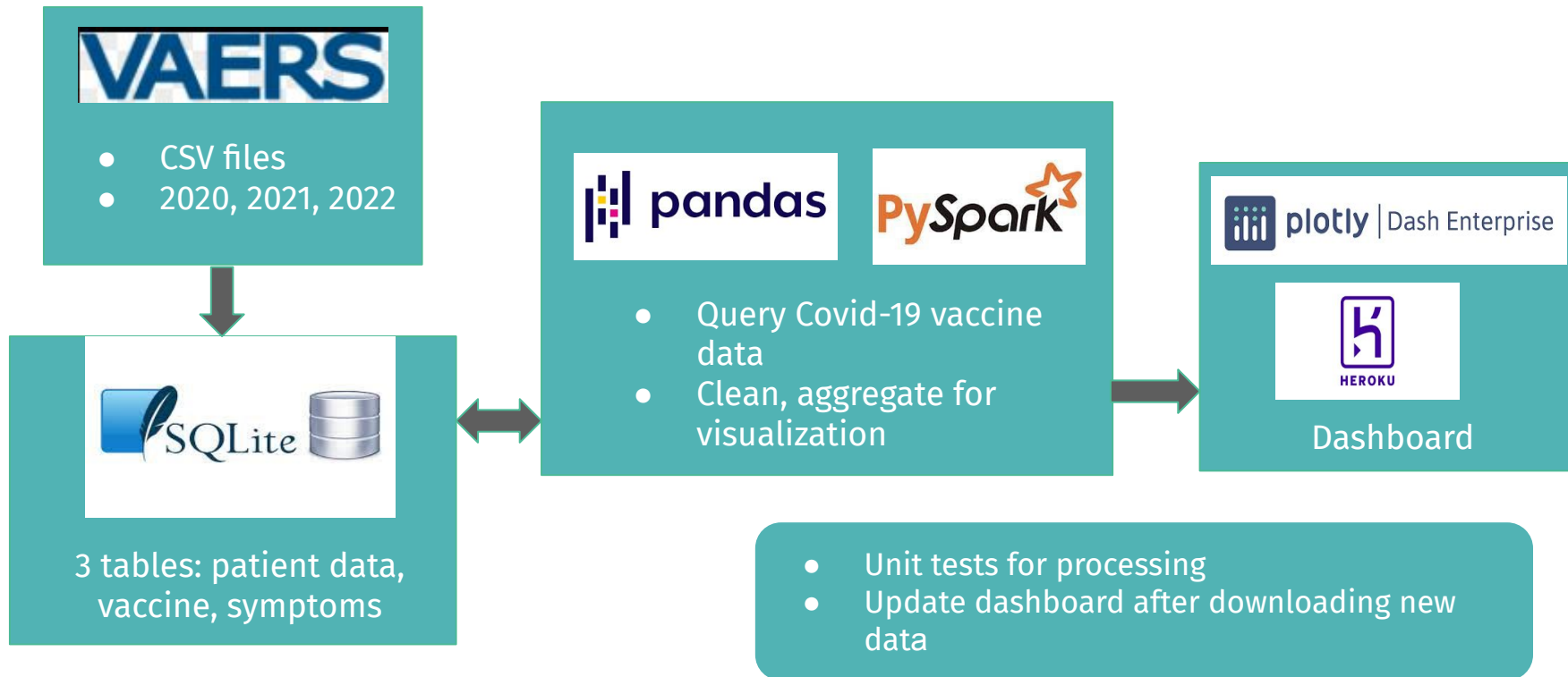
INSIGHTS

- Most adverse events reported for Dose 1: Moderna
- Most adverse events reported for Dose 2: Pfizer
- Most frequently administered location: "Private" (vs Pharmacy, Nursing Home, Work, etc.)
- Similar top frequency symptoms for 1st dose:
  - Pfizer: 1) headache, 2) pyrexia (fever), 3) pain
  - Moderna: 1) headache, 2) pain, 3) pyrexia
  - Janssen: 1) headache, 2) pyrexia, 3) pain

Caveats: don't know in proportion to how many people received, severity of symptoms, unverified data, symptoms from free text extracted by VAERS

FUTURE WORK

EXPLORE MORE DATA
01

Medications, medical conditions using NLP

OTHER ANALYSES
02

Trending line graph, choropleth map, comparison to other vaccination data

Thank you!