

Use of an Analytics Database for Reporting COVID-19 Vaccination Data in NYC

May 3, 2023

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Outline

- ❑ Background
- ❑ Key Considerations
- ❑ Database Architecture
- ❑ Analytics ETL Process
- ❑ Process Enhancements
- ❑ Results
- ❑ Lessons Learned

Background

- Support Health Department COVID-19 emergency response in NYC
- Maintain immunization data for ad-hoc queries from internal and external stakeholders
- Provide vaccine data for NYC's public portal on COVID-19



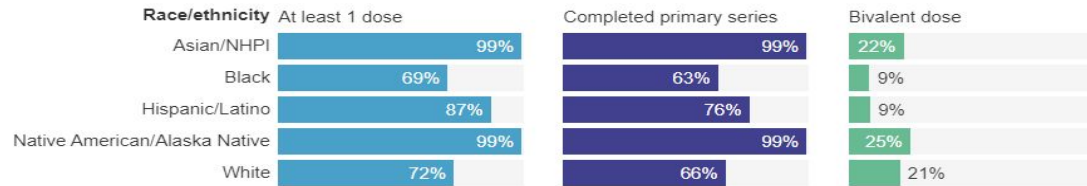
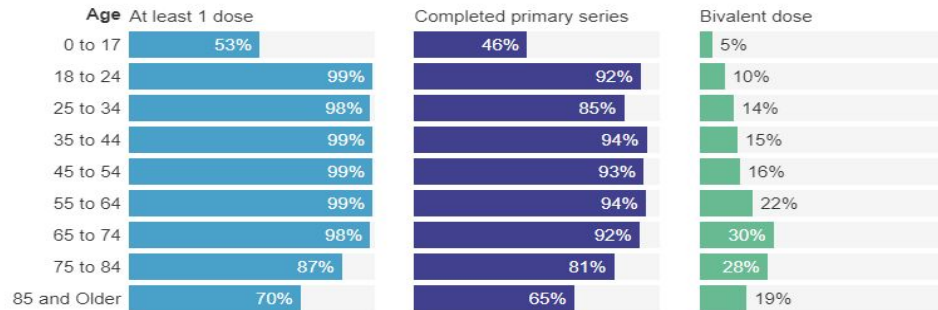
Visualizations - NYC Public Portal

Vaccinations by Demographic Group

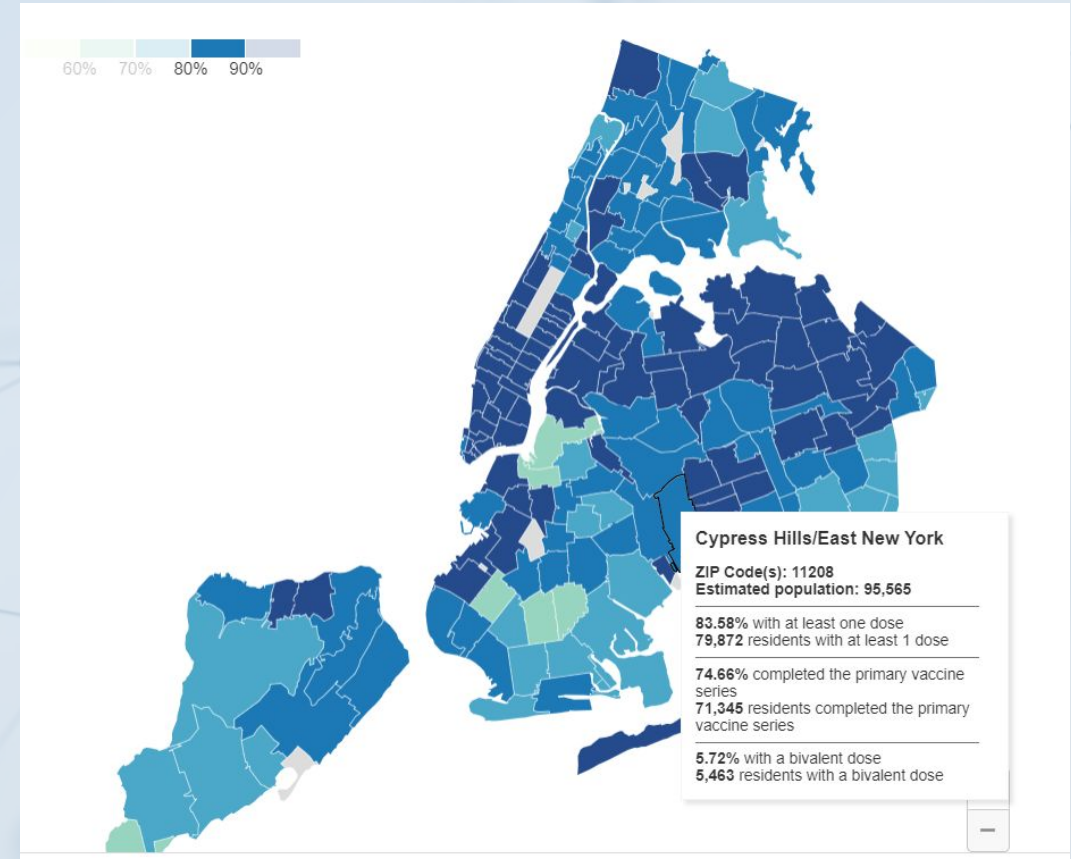
This table shows data on the percent of NYC residents vaccinated by age, race/ethnicity and sex.

All Ages Children Adults

Total NYC residents vaccinated



Sex At least 1 dose Completed primary series Bivalent dose

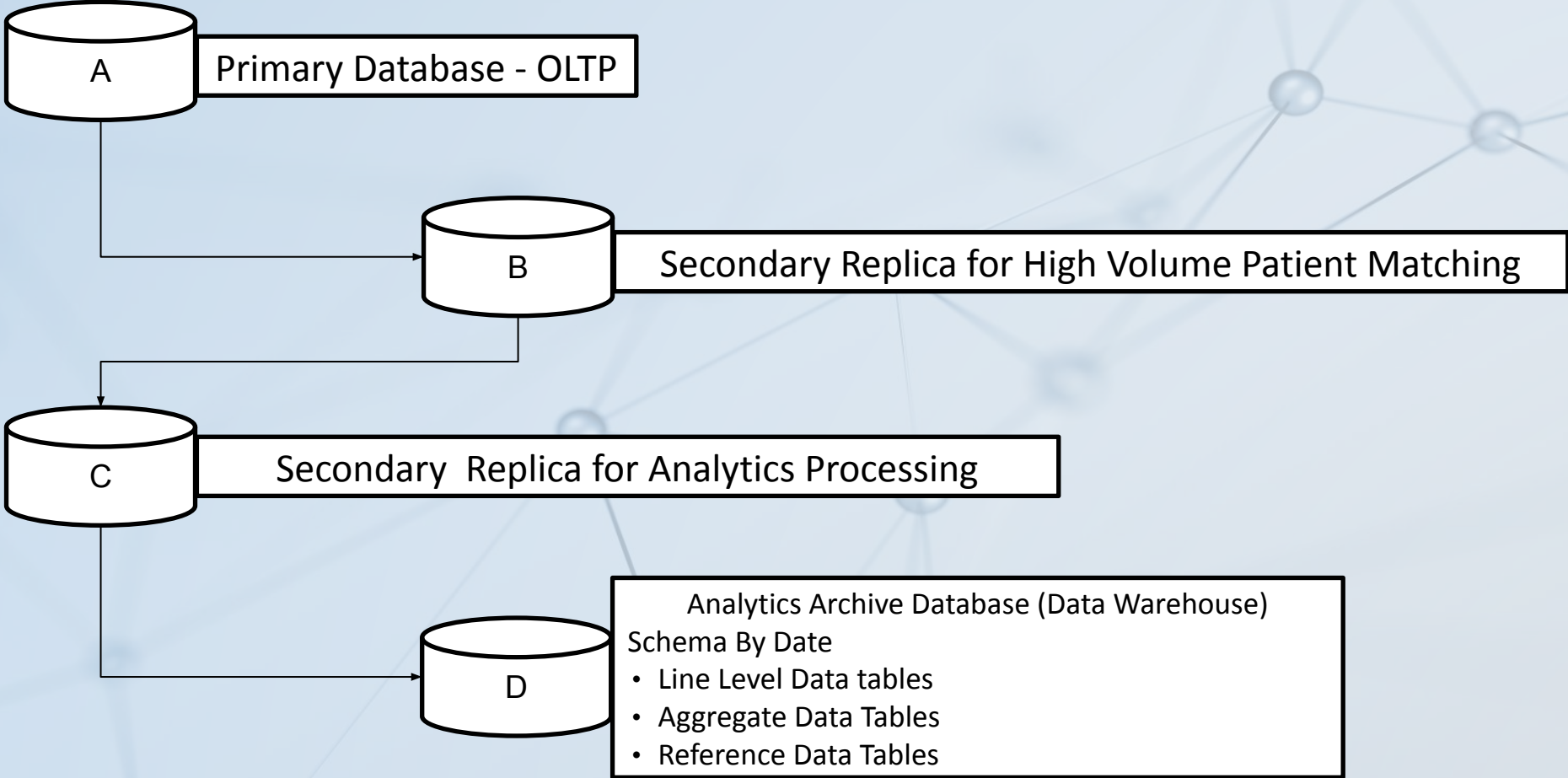


<https://www.nyc.gov/site/doh/covid/covid-19-data-vaccines.page>

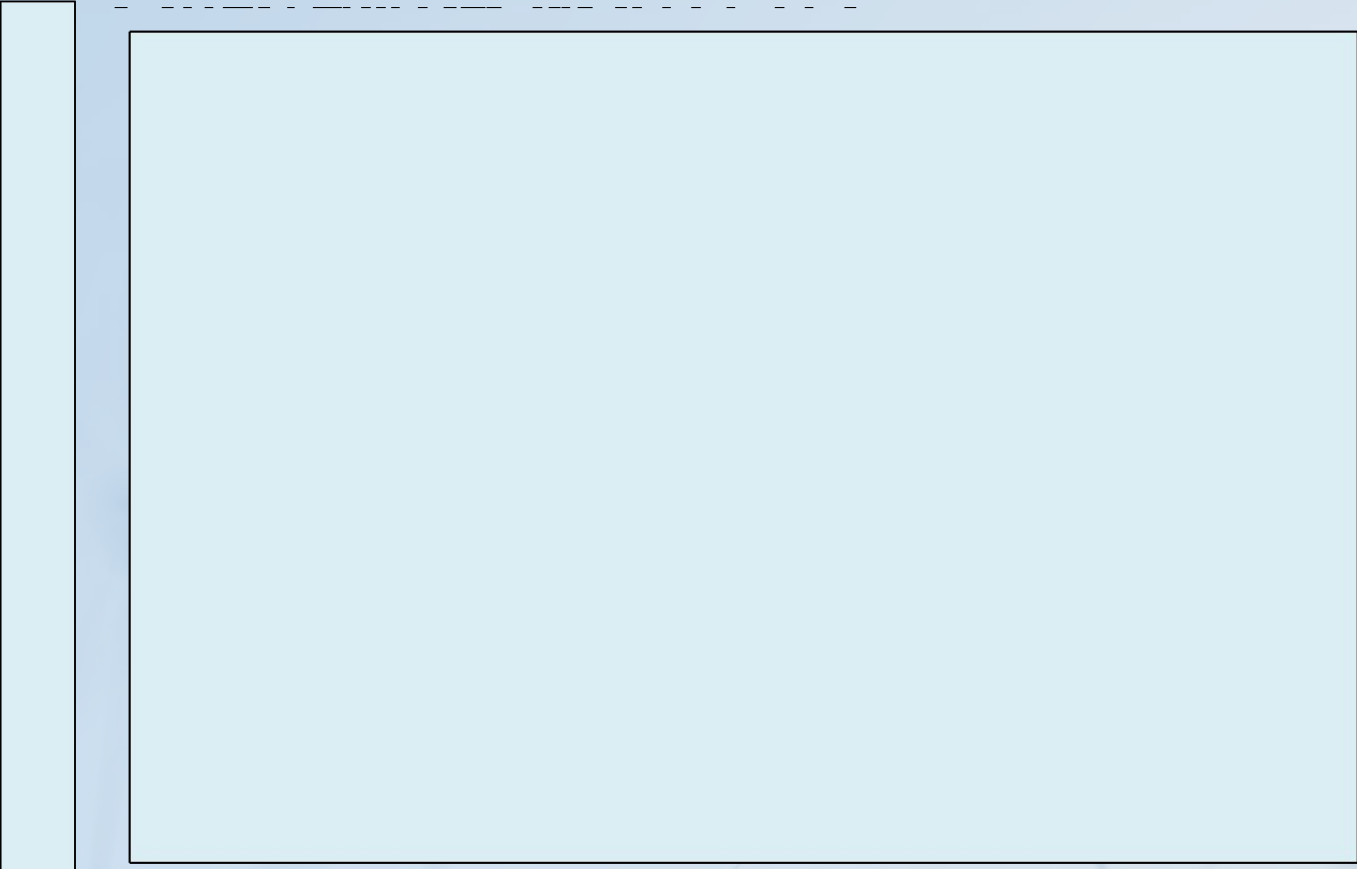
Key Considerations

- Improve timeliness of dataset required for reporting
- Ensure accuracy
- Integrate complex business logics
- Interface with external systems for import of data

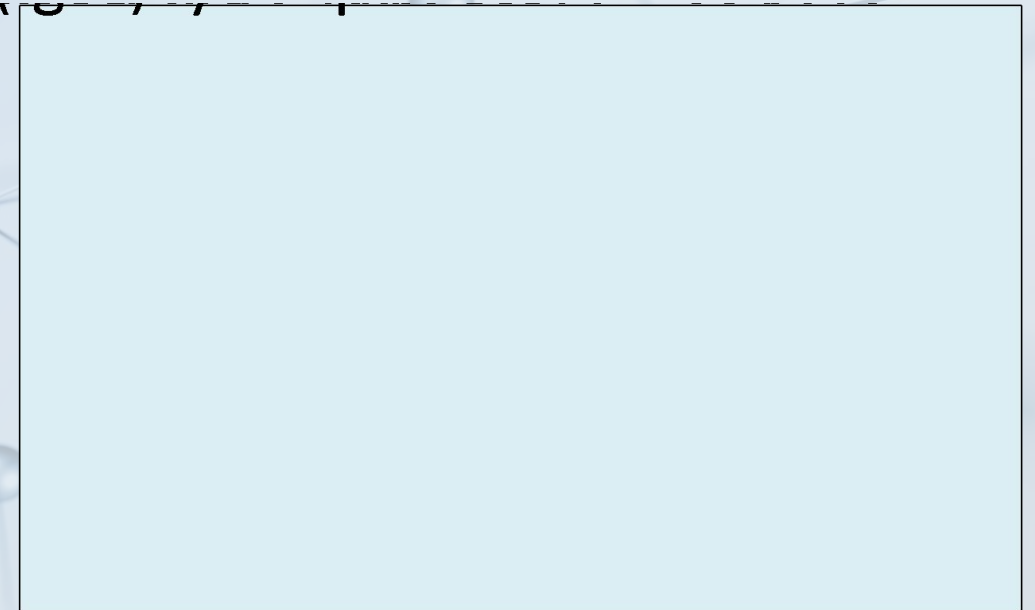
Overview – Database Architecture



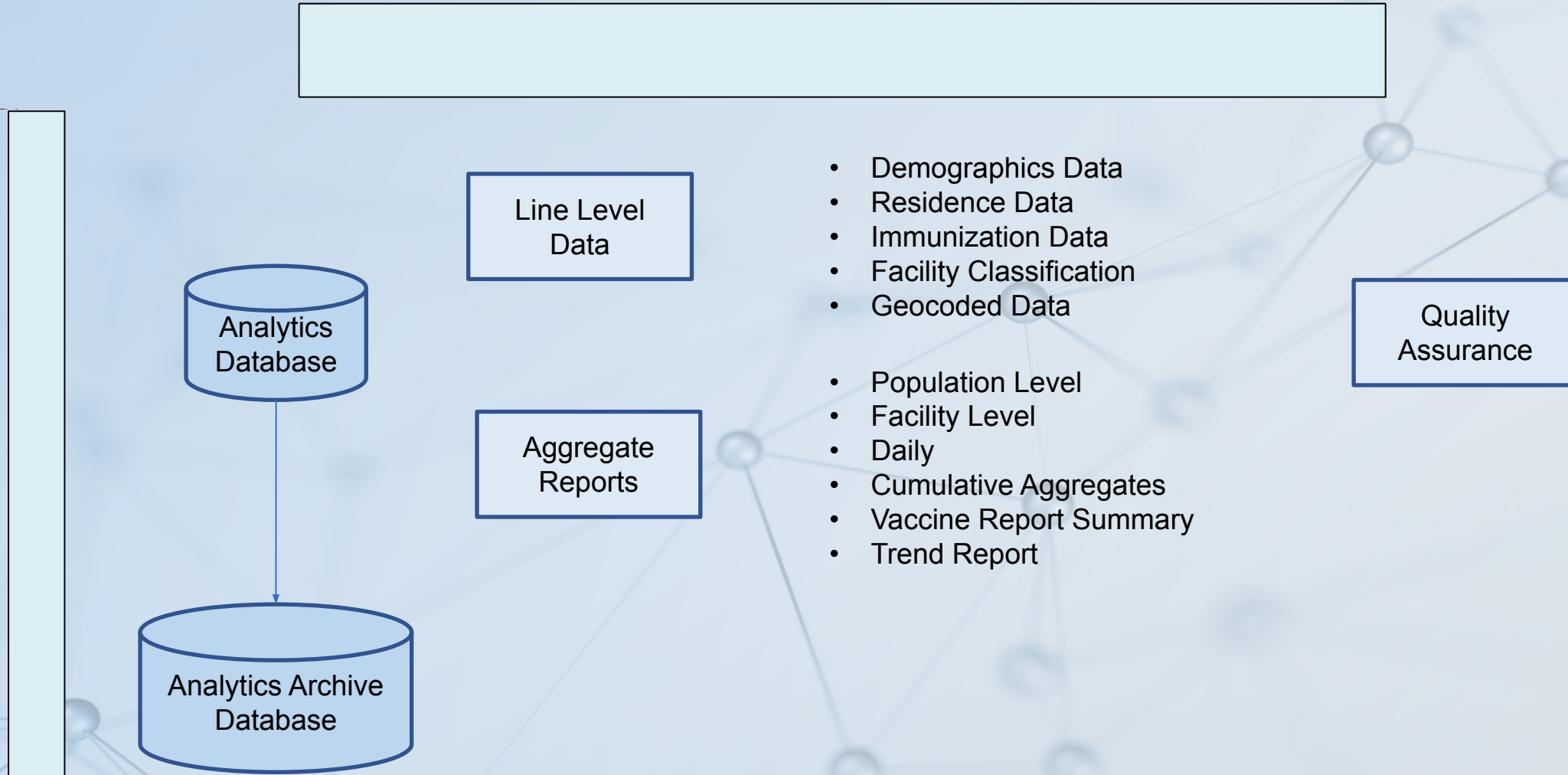
Analytics ETL Process: Phase 1 - Extract



Analytics ETL Process: Phase 2 - Transform



Analytics ETL Process: Phase 3 - Load



Process Enhancements

- Identified requirements for each report and optimized their scheduled runs
- Parallel processing of reports
- Table-based values replaced hardcoded logic to accommodate rapidly changing business rules
- Report generation failures triggers email notifications
- Quality Assurance

Results

- Line level and Aggregate data available for reuse
- Extensible process - Vaccination campaigns like mpox

- Daily reports



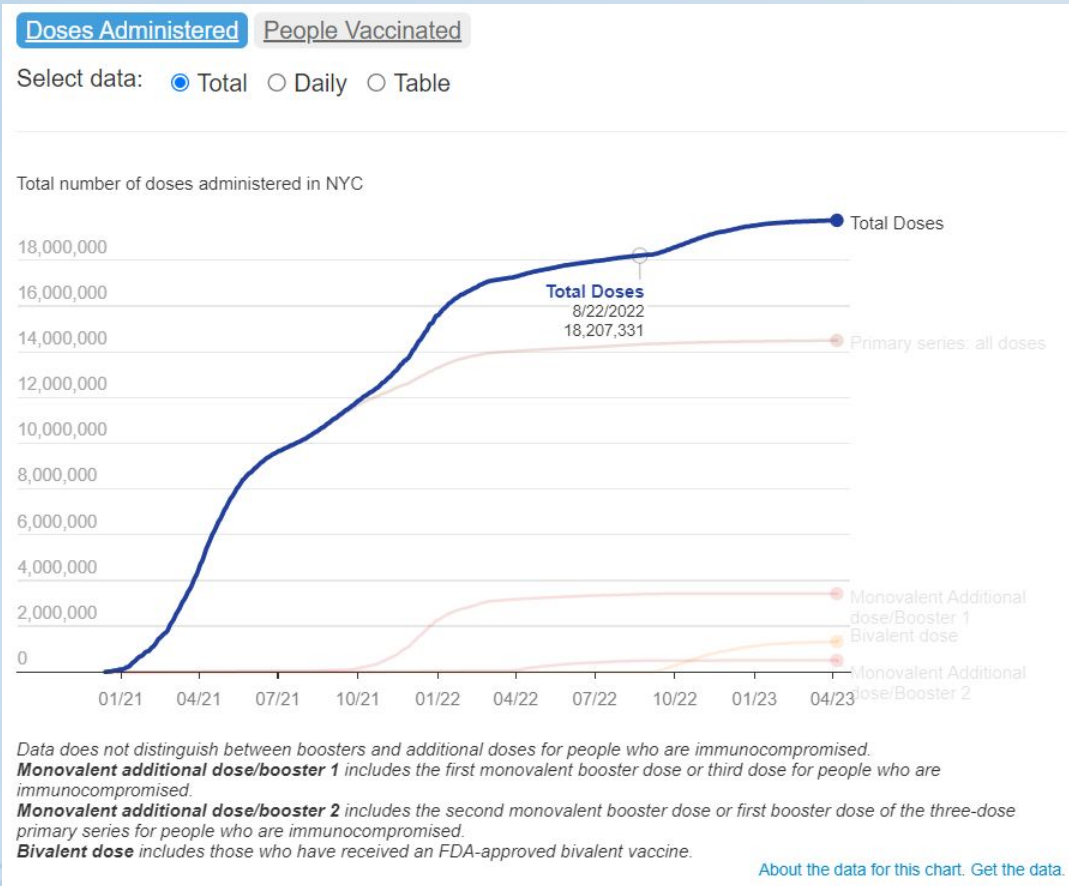
Old COVID-19 Vaccine Reporting Process
15 hours +

New Analytics Database Process
5+ hours

- NYC's public portal on COVID-19

Sample Visualizations

<https://www.nyc.gov/site/doh/covid/covid-19-data-vaccines.page>



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Sample Ad Hoc Report Requests

- Line-level data
- COVID-19 cases data/studies
 - Weekly COVID-19 cases matching
 - CDC vaccine breakthrough vaccine denominator data
- Cross-bureau collaboration
 - Monthly aggregate by age group by certain zip codes for Neighborhood Health Action Centers
- External/OpenData data request
 - Aggregate by other geographic unit, community district neighborhood

Lessons Learned

- Confirm and provide alternative solution on all external dependencies
- Cross check of reports or between jobs for data accuracy
- Design with capability of expansion/future change

Have Further Questions ??

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