

# Impact of Inter-IIS Data Exchange on COVID-19 Series Completeness in New York City

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**Alexandra Ternier, DrPH**

Bureau of Immunization

New York City Department of Health and Mental Hygiene

# Outline

- Overview of NYC jurisdiction and the Citywide Immunization Registry, its IIS
- Status of data exchange activity prior to the COVID-19 vaccination campaign
- Impact of doses received on record completeness and population coverage
- Challenges
- Next Steps

# The NYC Jurisdiction

- NYC - most populous city in US
  - Approximately 8.8M residents across 5 counties or borough
  - Shares boundaries with upstate NY counties and New Jersey
  - 2020 birth cohort was 100K, down from 110K in 2019
  - Almost half of NYS residents live in NYC
- NYC's diverse population
  - 41% White; 24% Black; 14% Asian
  - 29% Hispanic
  - 37% foreign-born



# The New York City IIS: Citywide Immunization Registry (CIR)

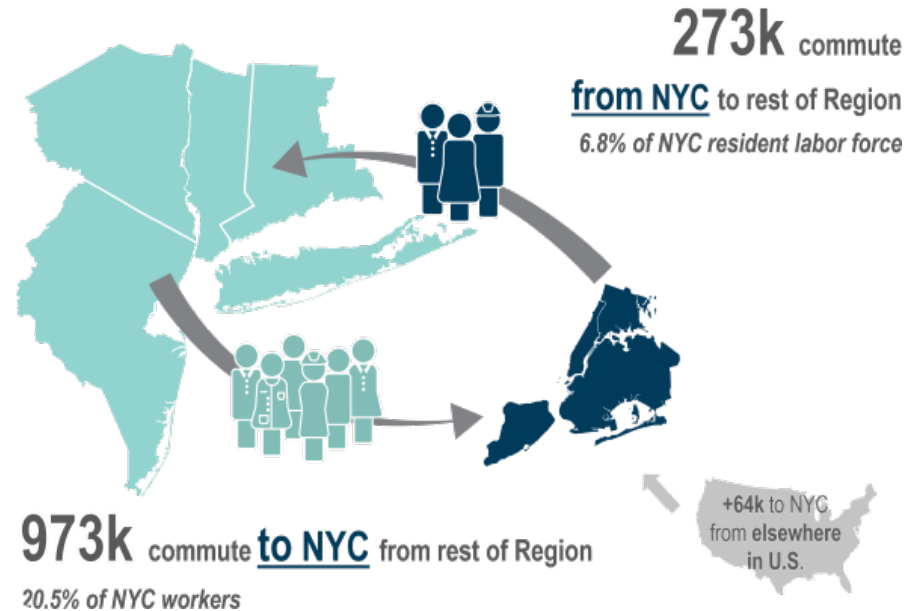
- Implemented in 1997 - population-based IIS for the NYC jurisdiction (New York State has a separate IIS)
  - Birth certificate data loaded twice weekly
- Contains >13.8M patient records and >147M immunization events
- NYC providers mandated to report immunizations for patients 0-18 years
  - Reporting for adults  $\geq 19$  years requires consent for non-COVID-19 vaccines
- Supports data reporting via an HL7 Web Service (88%), Online Registry user interface (7%) and batch files (4%)
- Currently exchanges vaccination data with neighboring IISs: New York State IIS (NYSIIS) and New Jersey IIS (NJIIS)

# Mobility Between NYC and Neighboring Jurisdictions

- Over 1.3M commuters daily
  - Nearly 20% of NYC workers live outside of the 5 boroughs\*
    - 973K are residents of neighboring counties
    - 64K from elsewhere in the US
  - About 7% of NYC residents work in neighboring counties

## In addition:

- NYC city hosts over 60M visitors each year (66M in 2019)\*\*



- Many NY Metro residents seek healthcare outside of their home jurisdiction, including vaccinations

\*<https://www1.nyc.gov/assets/planning>

\*\*<https://www.osc.state.ny.us/reports/osdc/tourism-industry-new-york-city>

# Data Exchange with Regional IIS Partners Before the COVID-19 Vaccination Campaign

- Linkage with NYSIIS
  - Began in December 2012
    - CIR sent over 5.3M immunizations to NYSIIS for NYS residents between December 2012 and December 2020 - most for kids under age 19 living in border counties
    - CIR received 5.8M immunizations from NYSIIS for NYC residents in the same period
      - For 346K NYC residents
- Linkage with the NJ IIS did not start until after the COVID-19 vaccination campaign began – July 2021

# Rationale for the Exchange

- To improve vaccination record completeness in CIR
- To allow timely assessment of individual status
  - Record dissemination (lifetime vaccination record, health pass, etc.)
  - Reminder/Recall activities
- To allow accurate and timely assessment of population-level coverage rates
  - Planning and resource allocation
  - Policy making

# The Data Exchange Process

- Data transmitted via CIR's HL7 Web Service (VXUs)
  - NYSIIS → daily
  - NJIIS → weekly
- Data loads include historical doses - all vaccine groups
- Records are queued for transmission if new to the local IIS or updated since last file upload
  - Selection based on residential address
- Requires continuous monitoring due to possible systems, communications and data integrity issues

# COVID-19 Immunizations Received from Regional IIS Partners Between December 2020 and March 2022

- Since the start of the COVID-19 campaign:
  - CIR received over 683K COVID-19 immunizations from partner IISs
    - 580K\* from NYSIIS
    - 103K from NJIIS
  - Approximately 410K records were updated
    - Representing 5.3% of the NYC COVID-19 eligible cohort (ages 5+)

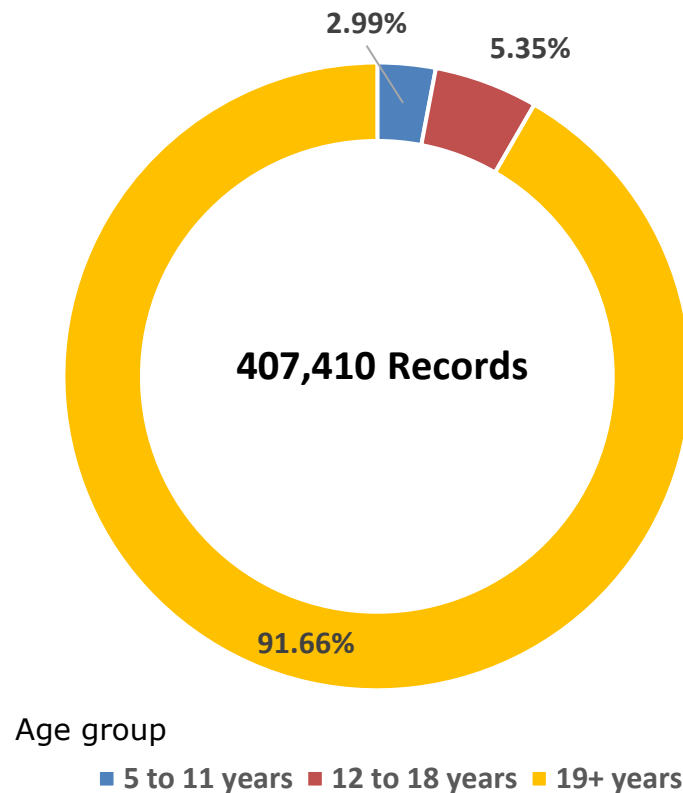
\*This number does not include doses administered at vaccination sites run by NYS in NYC.

What was the Impact of the COVID-19  
Vaccination Data received from Partner IISs  
on the CIR?

# Patient Records Updated by NYSIIS and NJIIS by Age Group – December 2020 through March 2022

- Over 407K records updated (by March 2022):
  - 91.6% (373,441) among individuals 19 years and older
  - 5.3% (21,784) among 12-18 year-olds
  - 2.9% (12,185) among 5-11 year-olds

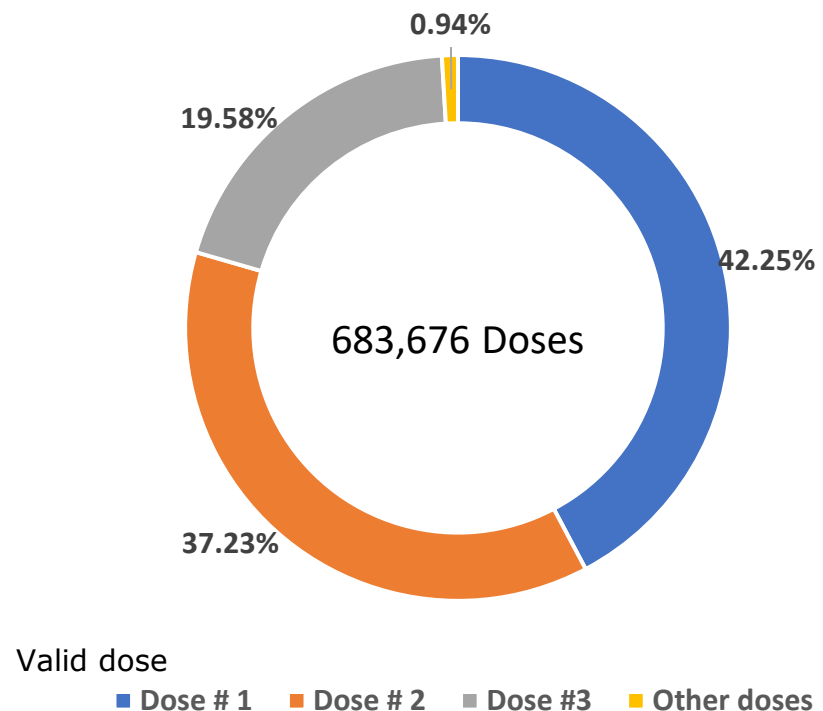
Total Patient Records Updated by NYSIIS and NJIIS by Age Group



# COVID-19 Vaccine Doses Received from NYSIIS and NJIIS by Dose Number – December 2020 through March 2022

- Nearly 684K vaccine doses added:
  - Dose One  
42.2% (288,862)
  - Dose Two  
37.2% (254,531)
  - Additional Doses  
19.5% (133,832)
  - Other Doses (include invalid doses)  
0.9% (6,451)

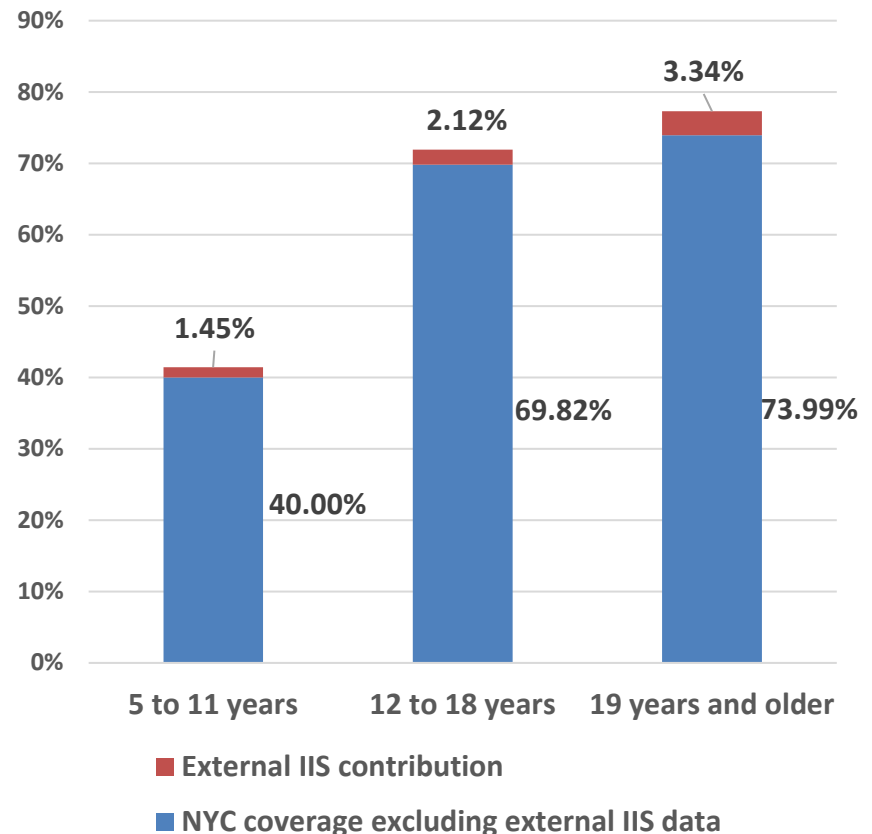
Distribution of Vaccine Doses Received by Dose Number



# Impact of NYSIIS & NJIIS data on Primary Series Completeness in the CIR

- About 69% of the total 407K records updated became complete with the external addition
- Overall coverage increased by 3.1%
  - 19 years and older
    - 3.3% ; 73.99% to 77.33%
  - 12-18 years
    - 2.1%; 69.82% to 71.93%
  - 5-11 years
    - 1.4%; 40.0% to 41.45%

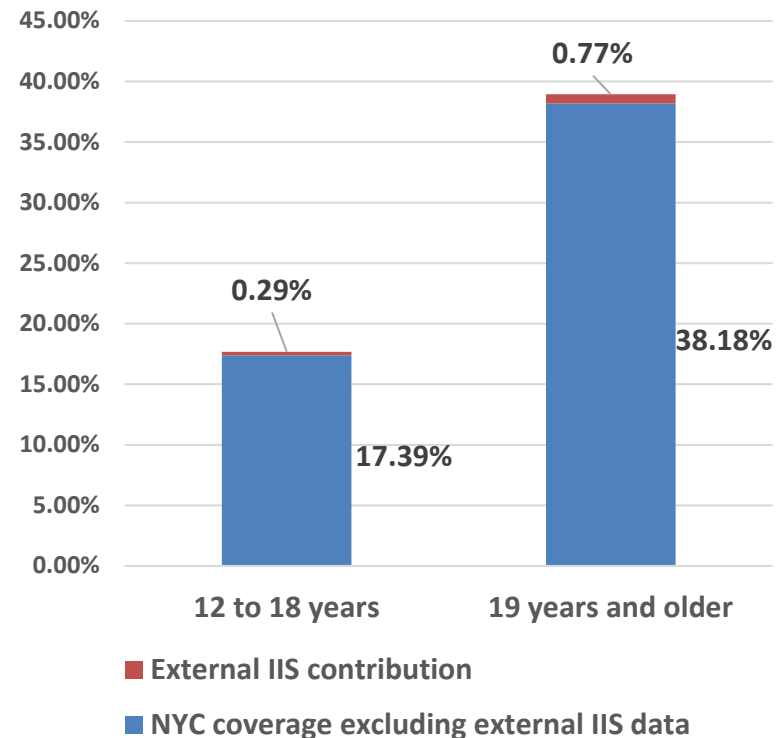
Primary Series Coverage Gains with External IIS Contribution



# Impact of NYSIIS & NJIIS data on Booster Series Completeness in the CIR

- Booster coverage increased by an average of .68%
  - 19 years and older
    - 0.7%; 38.18% to 38.95%
  - 12-18 years
    - 0.2%; 17.39% to 17.68%

**Booster Coverage Gains with External IIS Contribution**



# Challenges

- The Data Sharing Agreement process
- System issues
- Selection of out-of-state records in the home IIS (e.g., choosing current over historical addresses)
- Data looping: transmission of the same records back and forth
- Maintaining data synchronization between IIS systems (after record update or merge)
- Patients with intermittent residency (in and out of a jurisdiction)

# Next Steps

- Examine the impact of all doses on CIR
- Continue to pursue data sharing partnerships
- Work with CDC Immunization Gateway to engage other jurisdictions and to contribute to the refinement of IIS to IIS data sharing standards

# Conclusion

- Inter-IIS data exchange contributed to over a 3 percentage points increase in COVID-19 coverage overall
- Majority of patients updated with COVID-19 doses through the exchange became complete in the CIR
- Inter-jurisdictional data exchange
  - Increases vaccine record completeness in an IIS
  - Should be prioritized nationally
- Next steps to prioritize data sharing partnerships via the IZ Gateway and independently, and to continue to advocate for more standards around IIS-IIS data sharing

# Our Team

**Andrius Kirkyla**

**Vikki Papadouka**

**Sam Nicolary**

# Contact

## **NYC DOHMH Citywide Immunization Registry**

[www.nyc.gov/health/cir](http://www.nyc.gov/health/cir)  
[cir@health.nyc.gov](mailto:cir@health.nyc.gov)

[aternier@health.nyc.gov](mailto:aternier@health.nyc.gov)