

Admitted - Integrating Inpatient Data

4:15PM EST | November 16th, 2021 | 2021 SyS Symposium

Moderator: Daniel Bedford – State of Wisconsin, Department of Health Services

Presenters:

Andy Walsh, PhD – Health Monitoring

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Neha Shanker, PhD, MPH – NC Division of Public Health, NC DHHS



Council of State and Territorial Epidemiologists



Andy Walsh, PhD
Health Monitoring





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DHHS



Identifying Potential Post-vaccination COVID Infections in NC Using HIE Data

NC Division of Public Health, NC

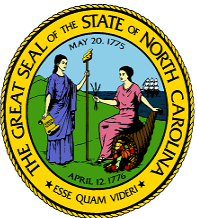
Neha Shanker, PhD, MPH

Lana Deyneka, MD, MPH

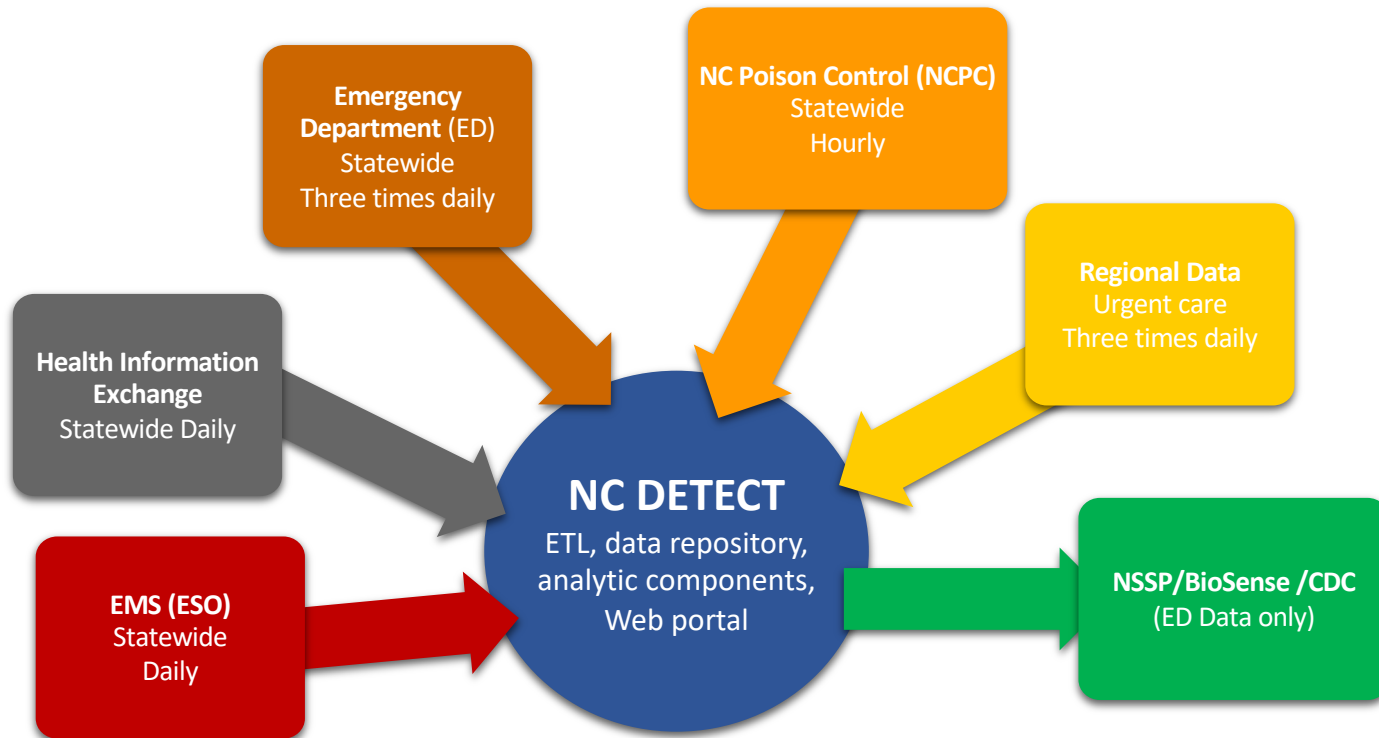
University of North Carolina at Chapel Hill,

Amy Ising, MSIS

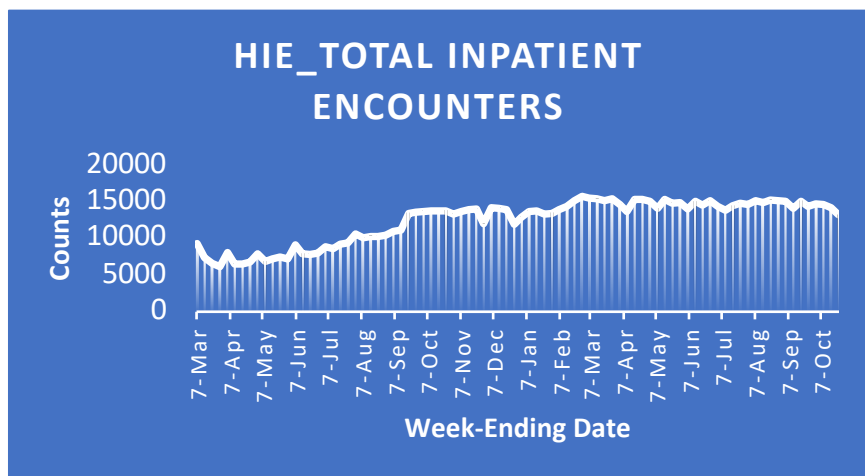
Dennis Falls, CISSP



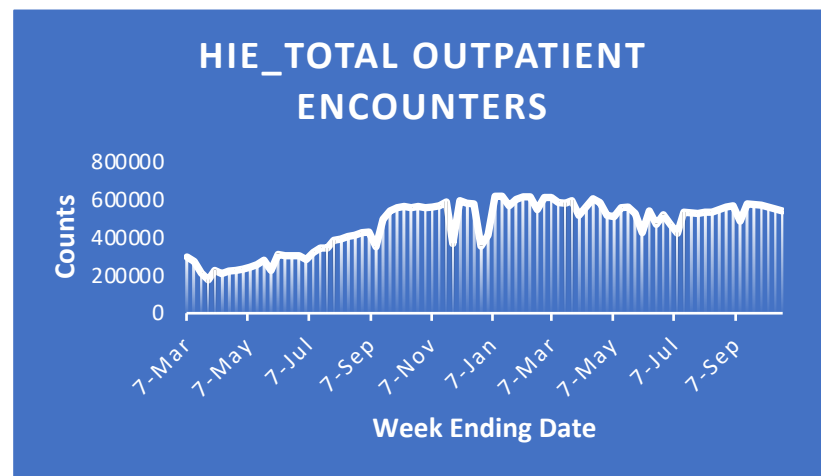
THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL



- NC HealthConnex receives data from participating healthcare facilities (inpatient & outpatient) via HL7 (ADT and CCD message types)
- As of December 2020, NC HealthConnex sends daily flat files to NC DETECT for encounters, diagnoses, medications, immunizations, problems, insurance, procedures for select practice types.
- Data elements include encounter date, encounter type (inpatient vs. outpatient), healthcare facility, patient age, sex, race, ethnicity, ZIP of residence, patient problems, medication history, immunization history, and encounter diagnoses.



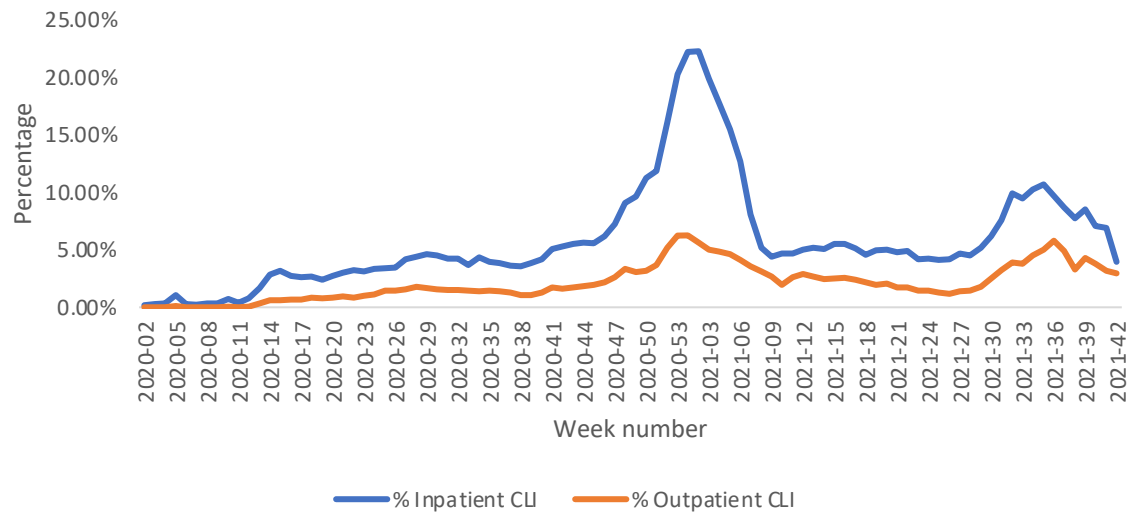
Over 4,000 inpatient encounters daily



Over 175,000 outpatient encounters daily

HIE Data Volume in NC DETECT

HIE Weekly Trends



CLI Syndrome Definition:

ICD-10-CM Codes: B97.2% OR B34.2 OR
J12.81 OR J12.82 OR U07.1 OR U07.2
OR
Diagnosis code description: %COVID%
AND
Diagnosis Code: %COVID%

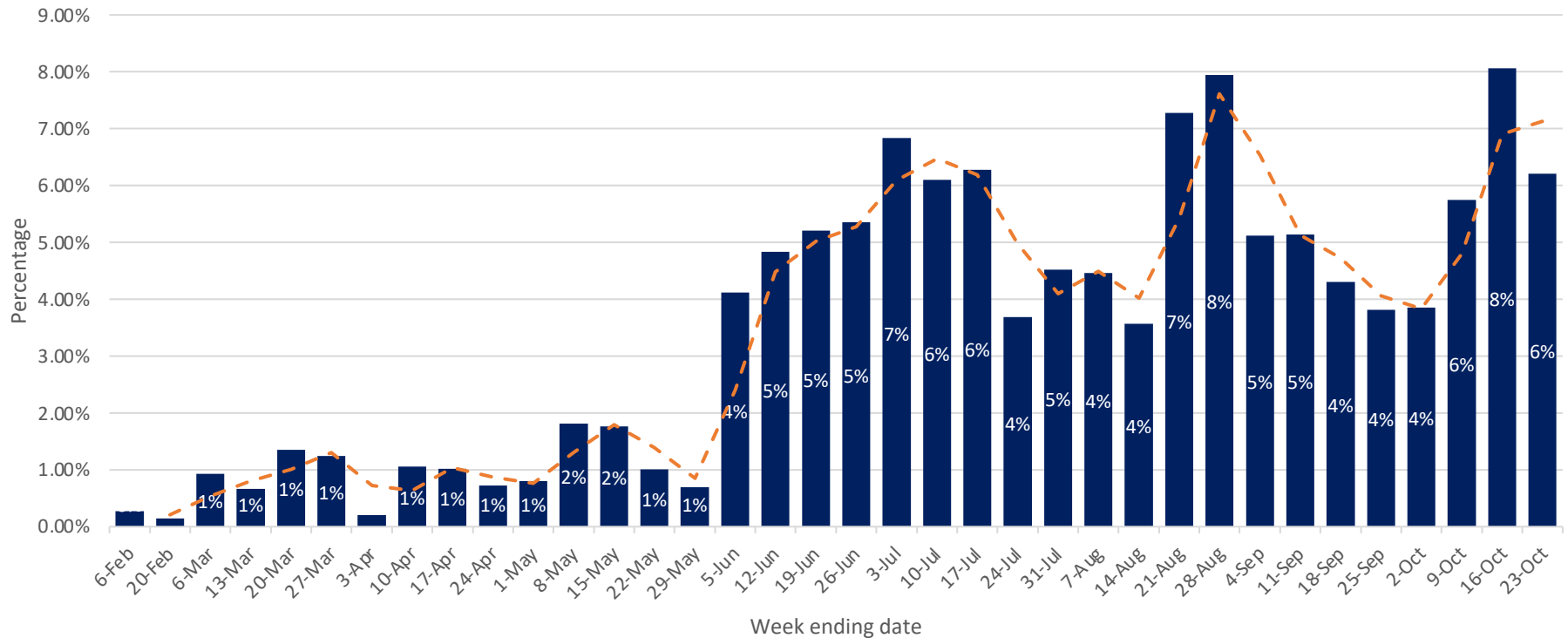
Identify encounters with COVID-related diagnosis (no keywords)
(B97.2*, B34.2, J12.81, J12.82, U07.1)

Among these encounters, identify those with at least one J&J vaccine or at least two Moderna / Pfizer vaccines where the COVID diagnosis is ≥ 14 days after max COVID vaccination date

Bin into COVID Post-Vax syndrome

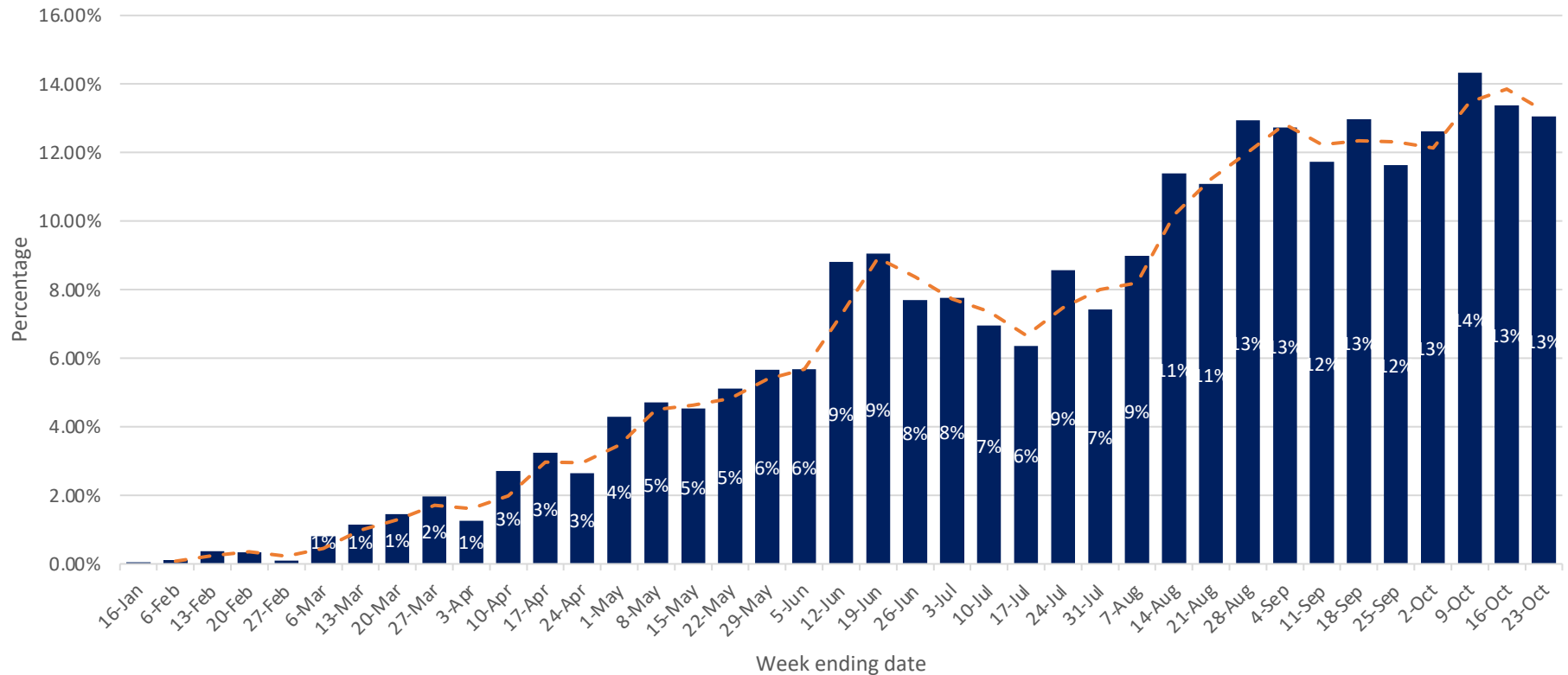
Covid Post-Vax trends

Covid Post-Vax_Inpatient Encounters_CLI Percent

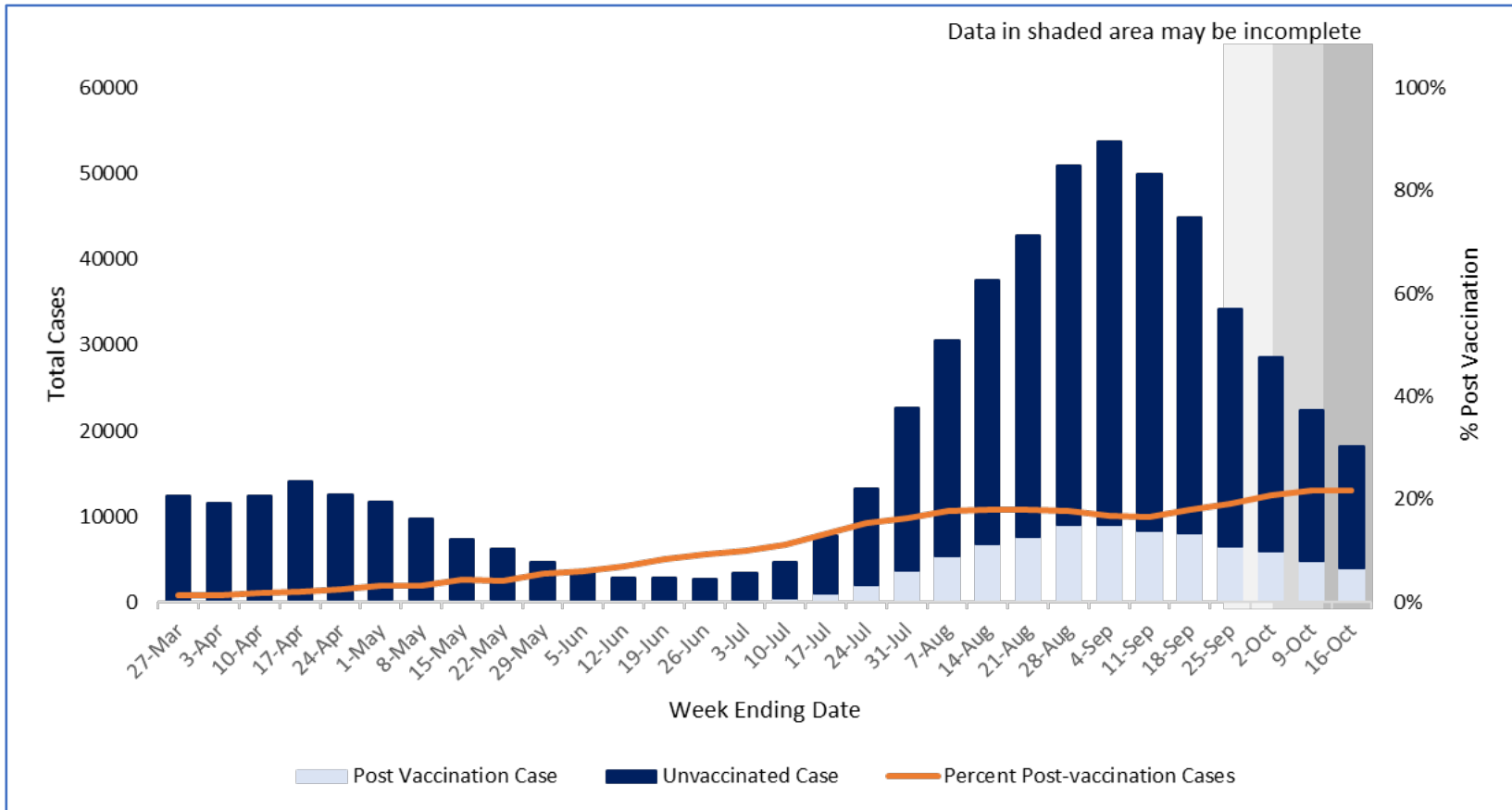


Covid Post-Vax trends

Covid Post-Vax_Outpatient Encounters_CLI Percent



Comparison with other data sources

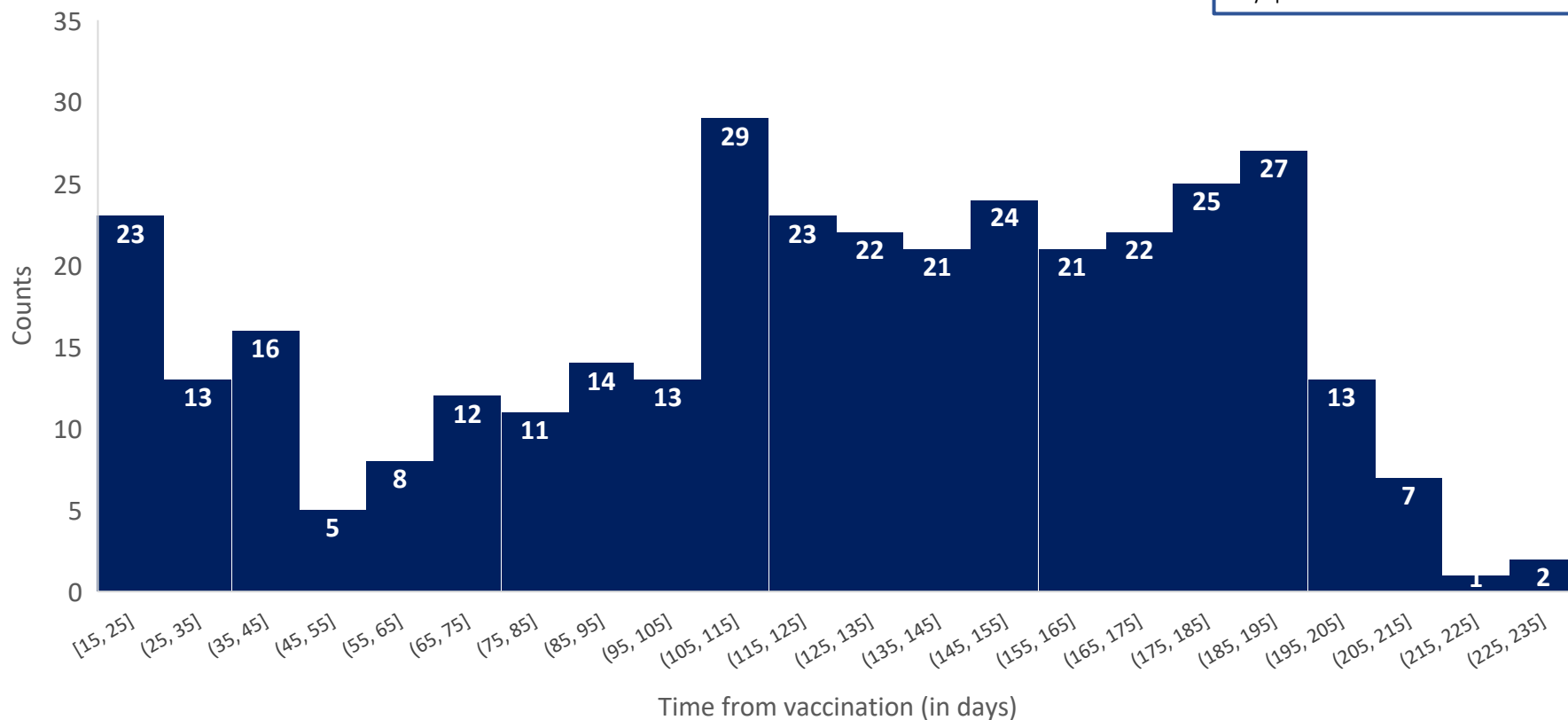


Source: NCEDSS

Time-based Analysis

Breakthrough Infection_Change in frequency with time_Inpatient

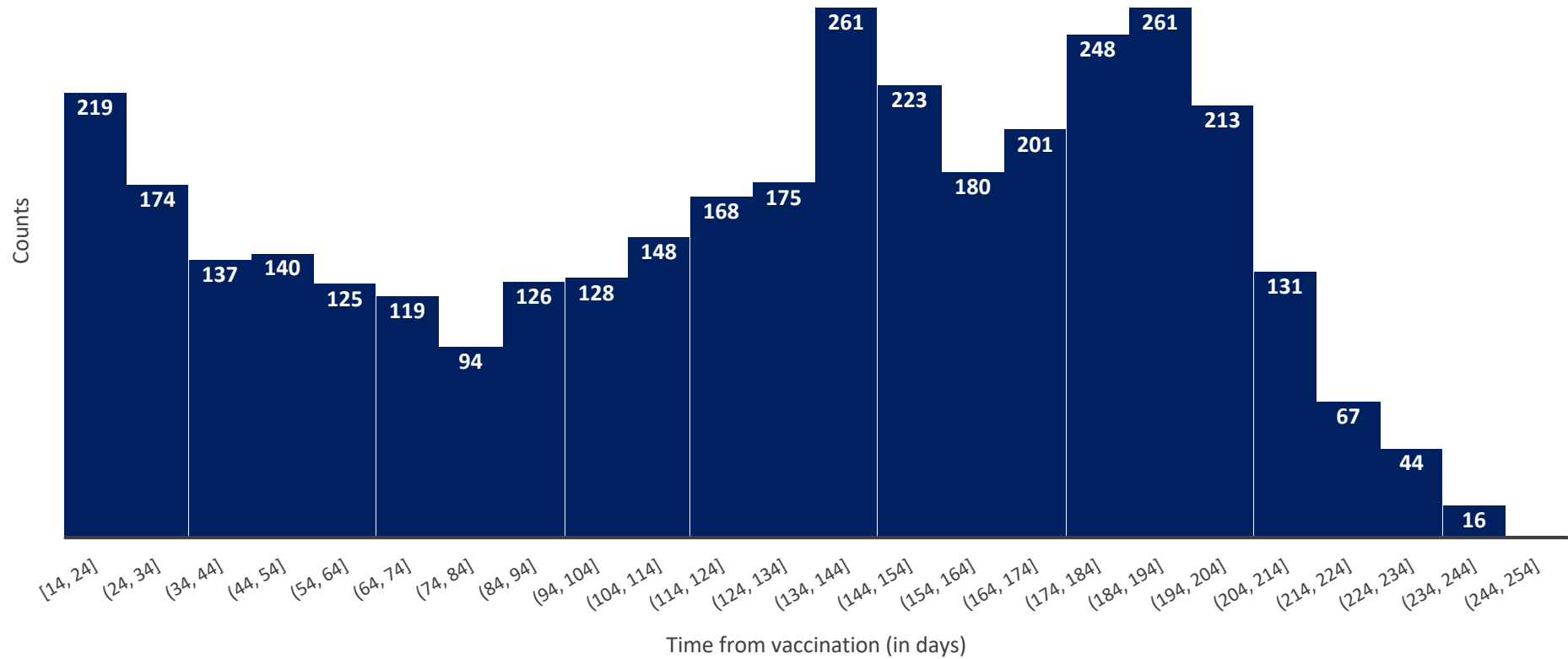
Average Number of Days: **122.8**
Maximum counts seen between **105-115** days post vaccination



Time-based Analysis

Breakthrough Infection_Change in frequency with time_Outpatient

Average Number of Days: **125.5**
Maximum counts seen between **134-144; 184-194** days post vaccination



Limitations

- Secondary EHR data from an HIE.
- Potential data quality issues related to date of immunization, date of COVID diagnosis, etc.
- Partial self-reporting of immunization – difficult to quantify.
- Not all facilities send ICD-10-CM codes to indicate a COVID diagnosis.
- Conclusions based on diagnosis only, without lab data confirmation.

Observations and Conclusion

HIE data:

- Shows post-vaccination COVID infection trends comparable to the trends identified in other surveillance systems.
- Shows promise in monitoring post-vaccination COVID infections.

Next steps:

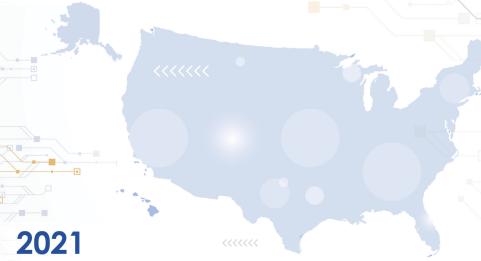
- Time-based analysis
- Comparison between different populations and age-groups.
- Analysis by vaccine type and comorbidities.
- Inclusion of booster doses in analysis of breakthrough infections.

Thank you

National Syndromic Surveillance Program

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2021

Syndromic Surveillance Symposium

Week of November 15, 2021



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