IIS measures of childhood vaccination coverage: the role of standardization

AIRA Annual Meeting, Pittsburgh, PA

April 28, 2026

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Funding acknowledgement

This study has been partially supported by the **University of Montana Center for Population Health Research**, which is funded by a Center for Biomedical Research Excellence award (grant P20GM130418) from the National Institute of General Medical Sciences of the NIH.

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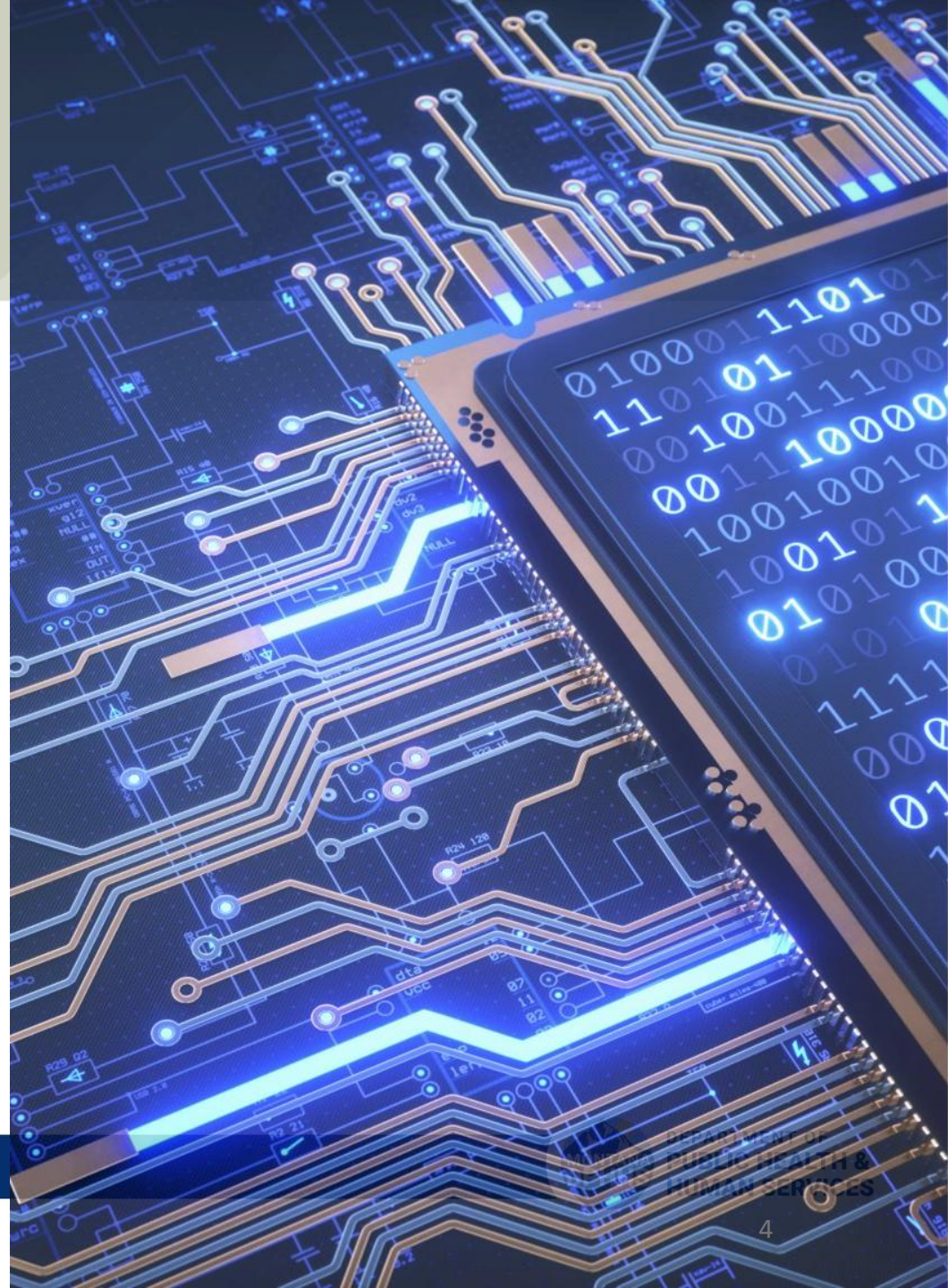
Background

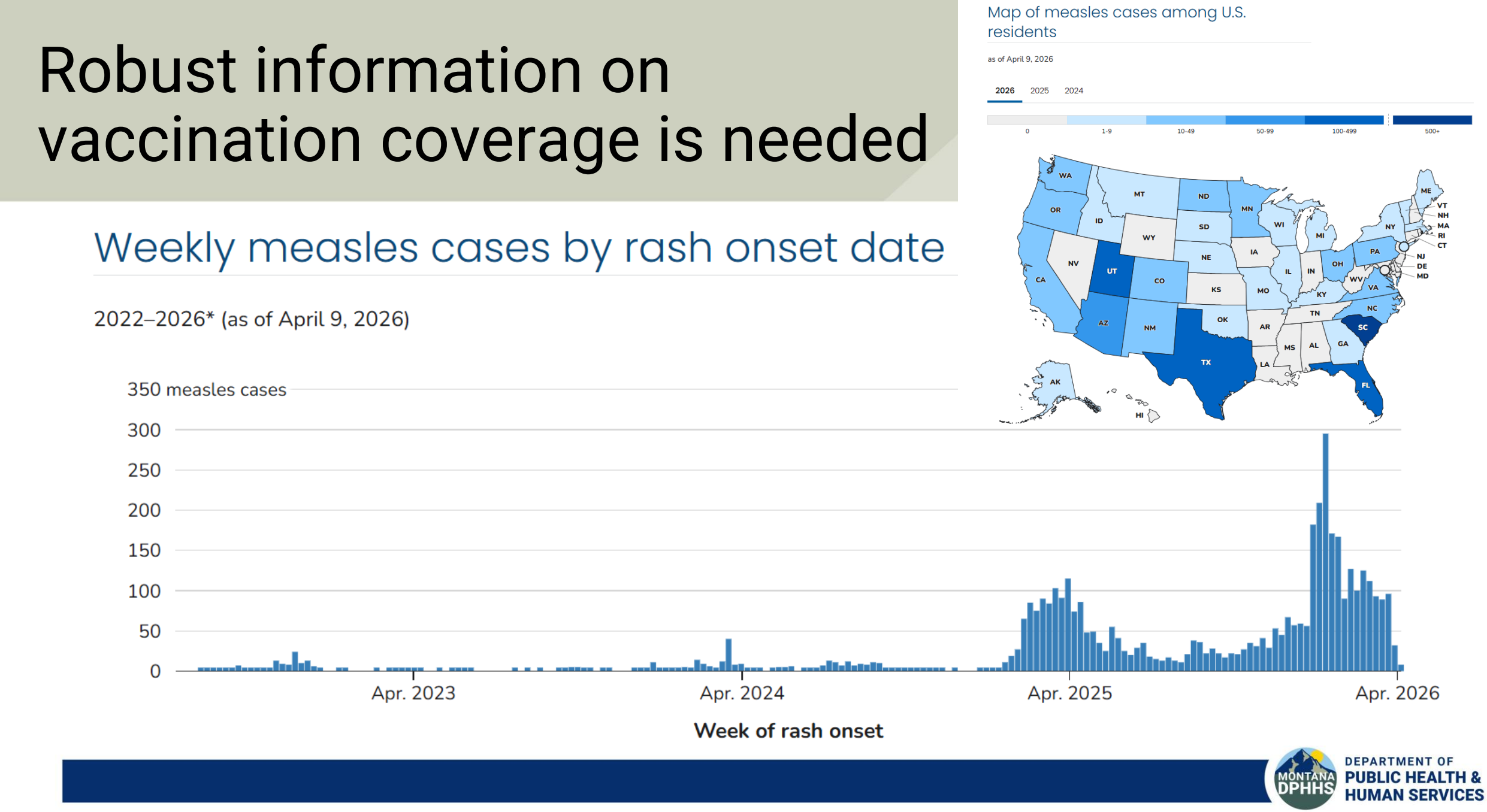
Measuring childhood vaccination coverage: Immunization Information Systems

- Confidential, electronic population-based data systems.
- Records all doses administered by participating healthcare providers.
- Nationwide coverage (all 50 states, territories, and large cities).



Centers for Disease Control and Prevention. Immunization Information Systems Annual Report. https://www.cdc.gov/iis/annual-report-iisar/index.html. Accessed April 26, 2025, 2025; Murthy N, Rodgers L, Pabst L, Fiebelkorn AP, Ng T. Progress in Childhood Vaccination Data in Immunization Information Systems - United States, 2013-2016. *MMWR Morb Mortal Wkly Rep.* 2017;66(43):1178-1181.

Robust information on vaccination coverage is needed



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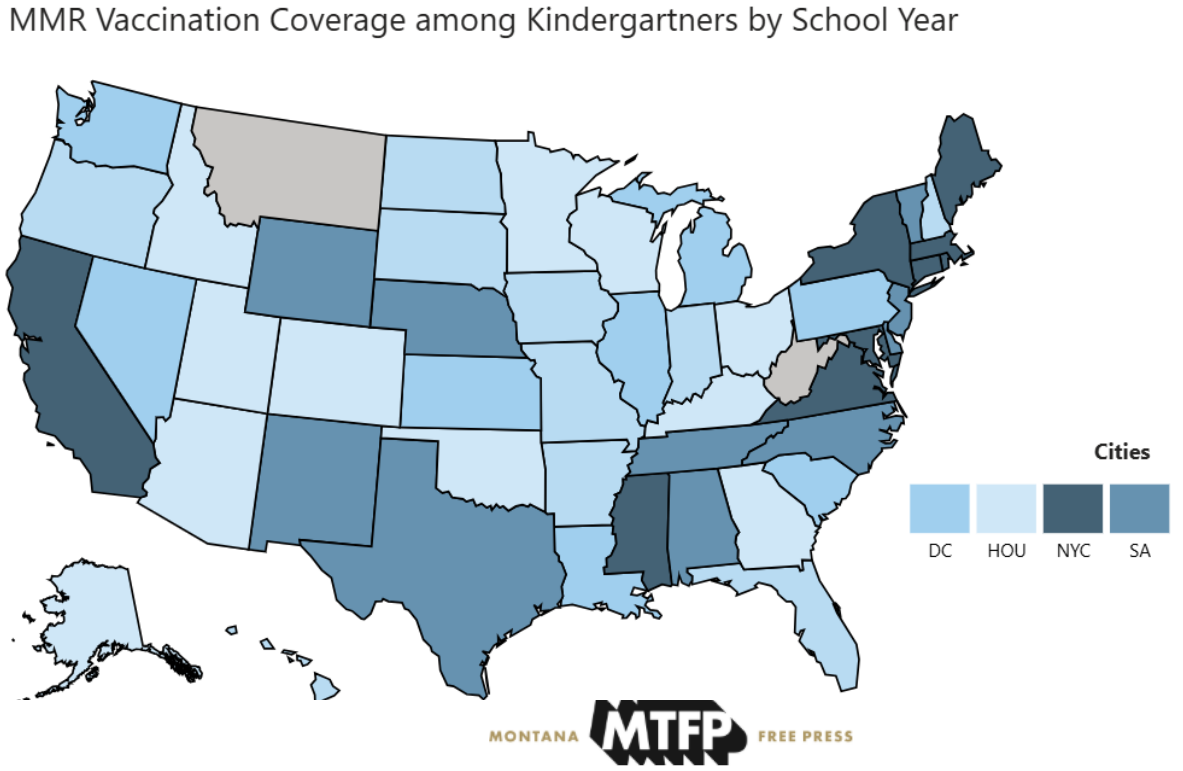
Images: Centers for Disease Control and Prevention, Measles Cases and Outbreaks, Accessed at: https://www.cdc.gov/measles/data-research/index.html, Accessed on April 16, 2026.

Data gaps in vaccination coverage information in Montana

- MT currently does not use the IIS to routinely report vaccination coverage.
- Since the 2019/2020 school year, schools are no longer required to report vaccination information to public health.
- MT is looking to re-establish routine reporting of vaccination coverage using the IIS.



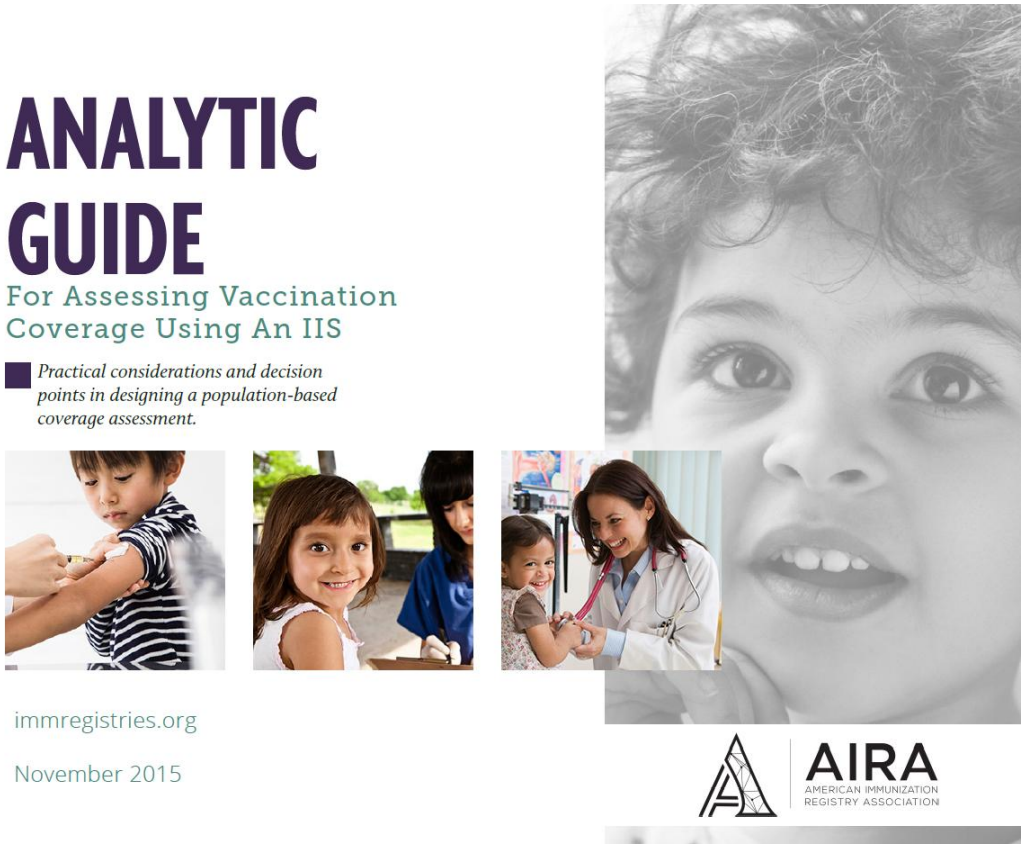
by Alex Sakariassen
12.06.2024

PUBLIC HEALTH

Why Montana data is missing from national childhood immunization reports

A 2021 law halted the state's collection of kindergarten vaccination data from public schools.

Vaccination coverage surveillance using IIS data



- Comprehensive analytic guidance for calculating vaccination coverage using IIS data was published in 2015.
- However, there are no standardized surveillance measures for vaccination coverage.

Standardized surveillance measures

What are they?

- ✓Define the event to be counted
- ✓Data source
- ✓Time interval for measurement
- ✓Sub-populations to be reported

Process

Developed through a consensus process by the Council of State and Territorial Epidemiologists (CSTE) and adopted by CDC.

Hopkins RS, Landen M, Toe M. Development of Indicators for Public Health Surveillance of Substance Use and Mental Health. *Public Health Rep.* 2018;133(5):523-531.

Study Objective

- To **systematically review** public reports to document and characterize the existing **methodologies** used to **calculate vaccination coverage** among children and adolescents (< 18 years) **using IIS data**.

Methods

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Systematic Review of Public Reports

- Public reports of vaccination coverage derived from Immunization Information System (IIS) data among children and adolescents (< 18 years)
- Published by 64 jurisdictions that receive Immunization Program funding
  - 50 states, Washington D.C., 8 territories, and 5 major cities
- Identification of public reports
  - Web addresses in 2023 IIS Annual Report
  - Google search using the terms “[jurisdiction name]” and “vaccination coverage” or “vaccination rate”

Data Collection

- Three authors independently identified and abstracted public reports. Discrepancies were resolved via consensus.
- Standardized data collection tool in REDCap.
  - Age group(s) reported
  - Which vaccines and the number of doses
  - Details of coverage calculation (%)
    - numerator (vaccinated children)
    - denominator (total population)
  - Demographic or geographic sub-populations
  - Frequency at which data are published.
- Data collected February-March 2026

Results

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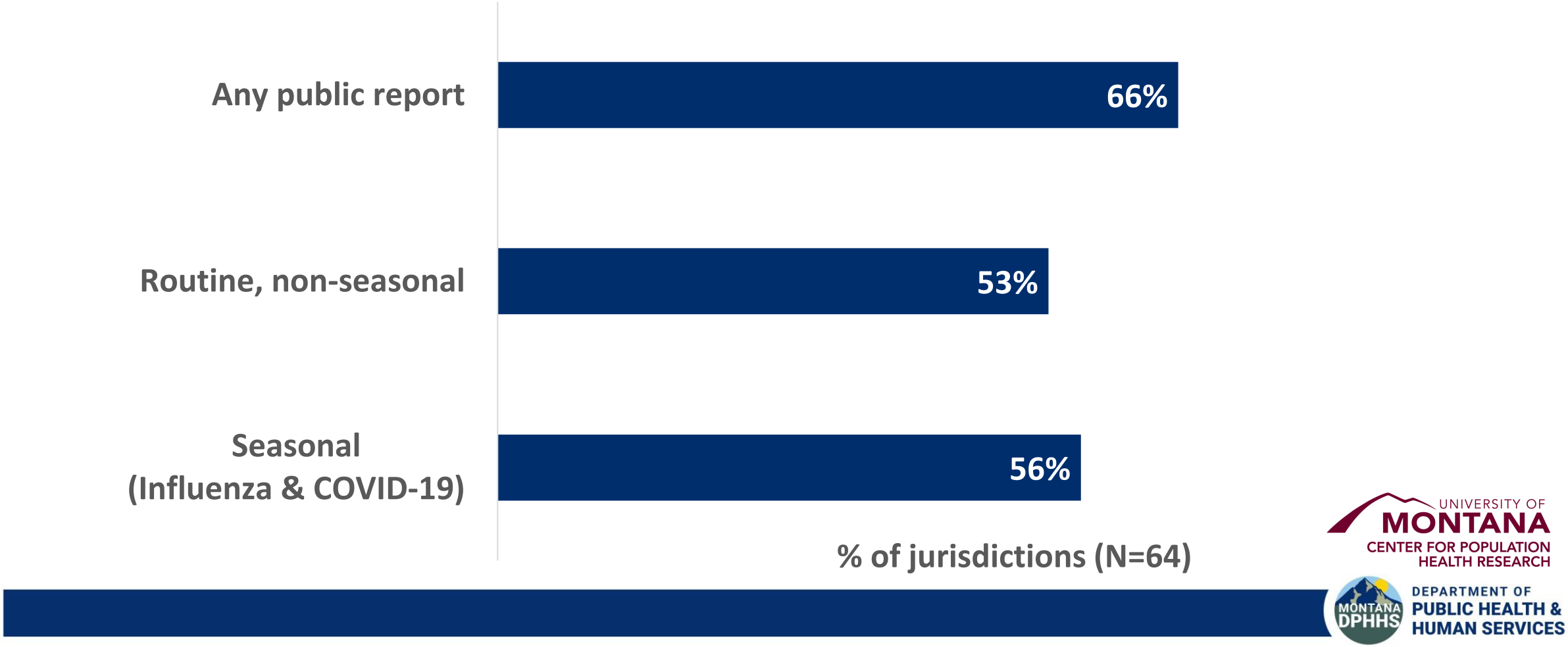
Two in three jurisdictions reported vaccination coverage using IIS data

% of jurisdictions (N=64)



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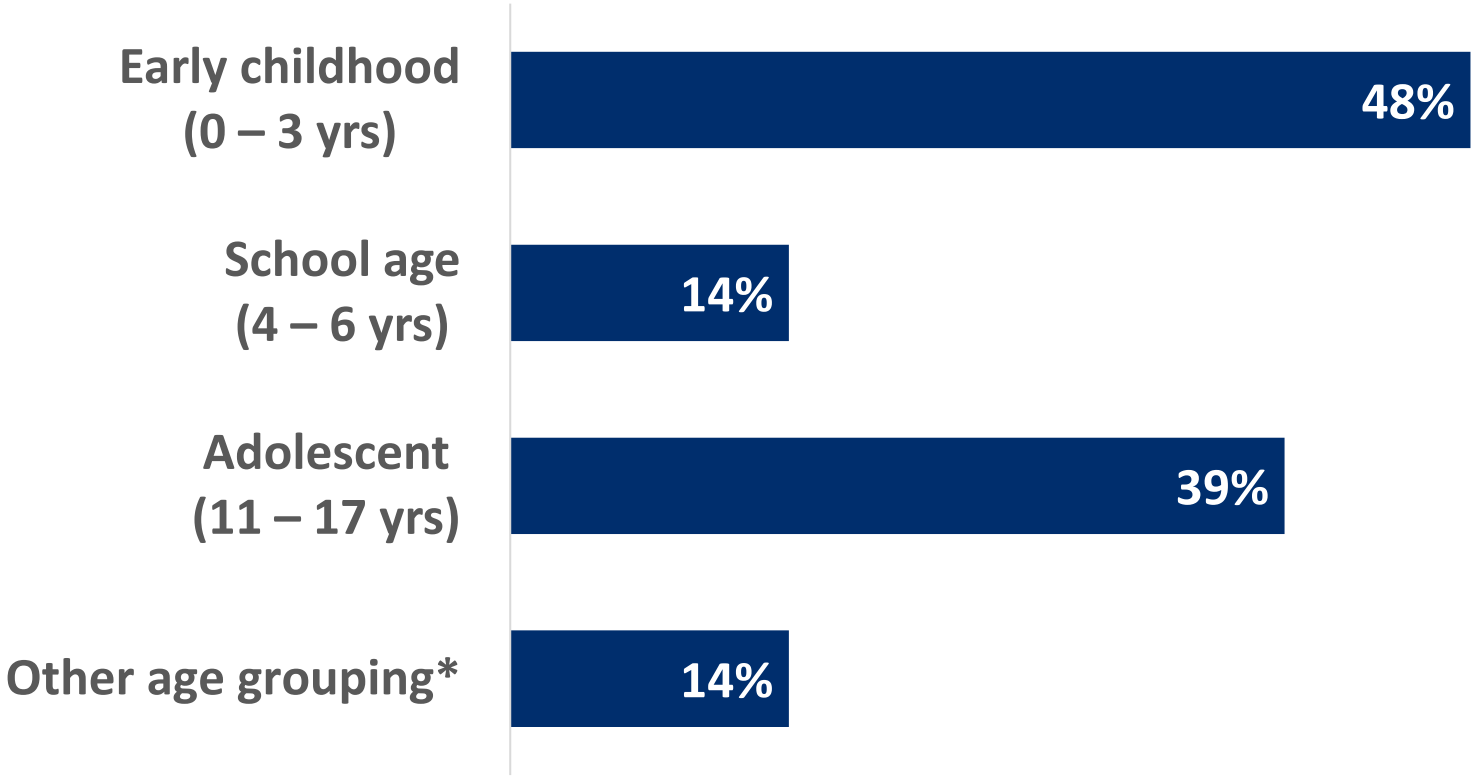
Publicly available IIS-based coverage estimates by age category varied by jurisdiction

% of jurisdictions (N=64)



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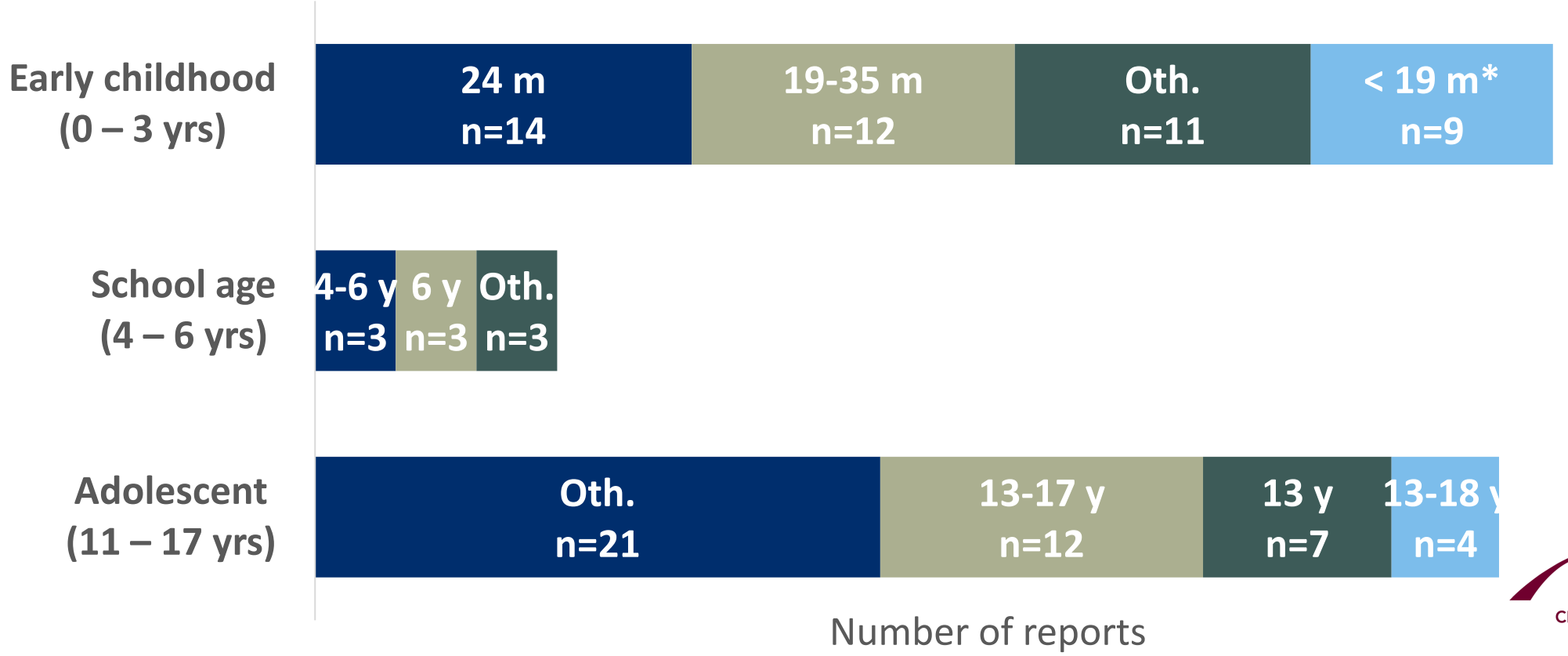
*Any other pediatric age grouping (e.g., 6-12 years)

Variation in age groupings across jurisdictions

Number of reports. Jurisdictions may report > 1 age group in each age category.



*RSV only

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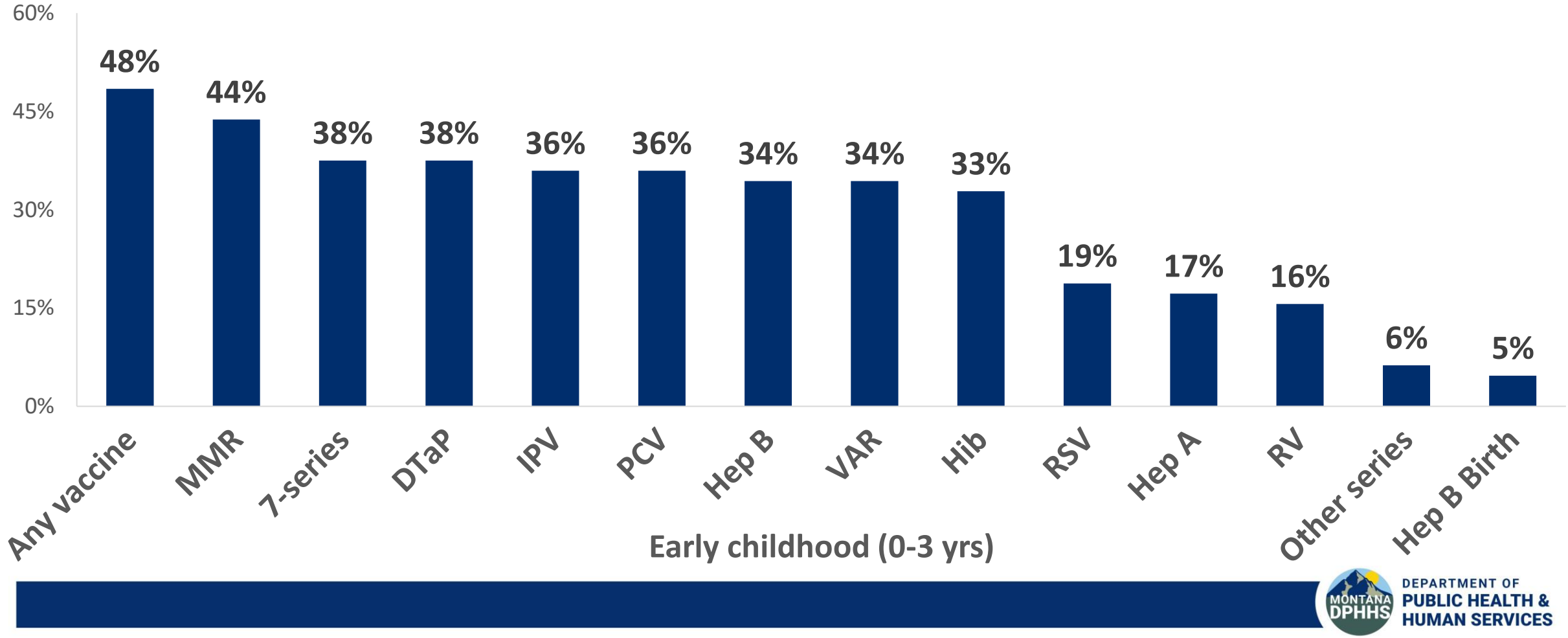
Early childhood coverage reporting for routine, non-seasonal vaccines by vaccine type

% of jurisdictions (N=64)



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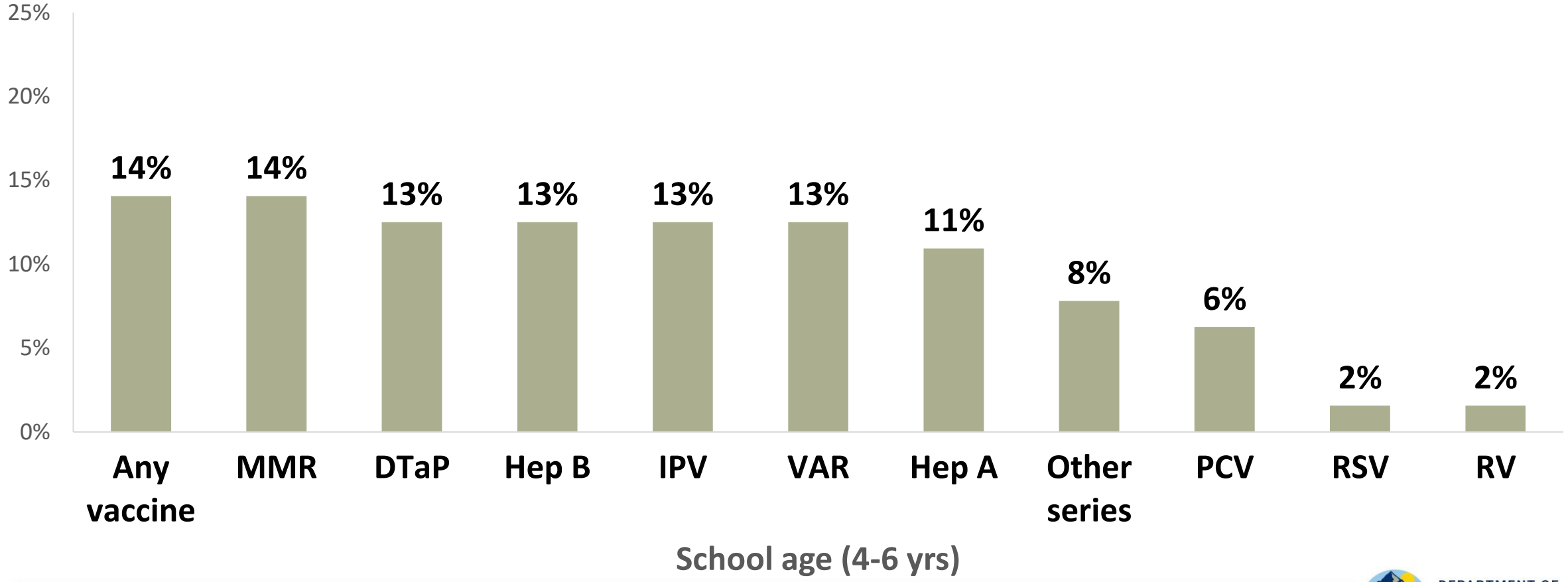
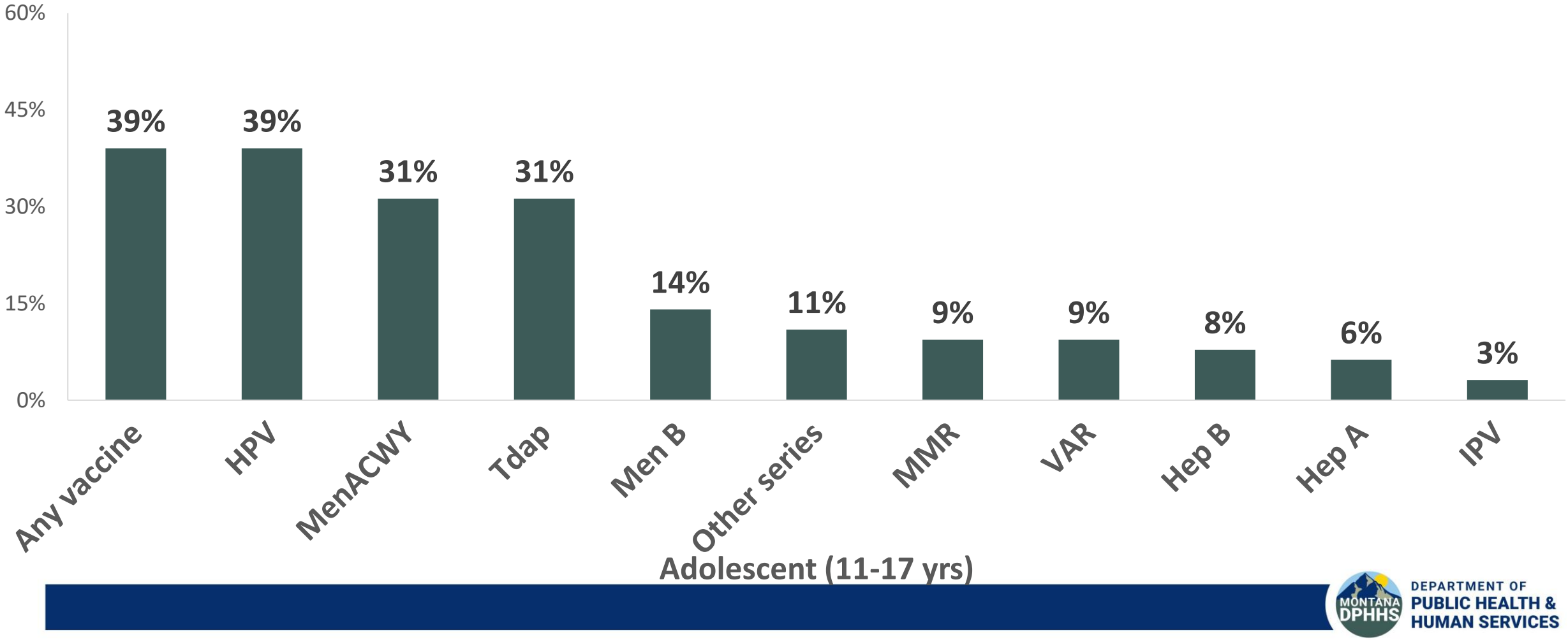
School-aged children coverage reporting for routine, non-seasonal vaccines by vaccine type

% of jurisdictions (N=64)



Adolescent coverage reporting for routine, non-seasonal vaccines by vaccine type

% of jurisdictions (N=64)



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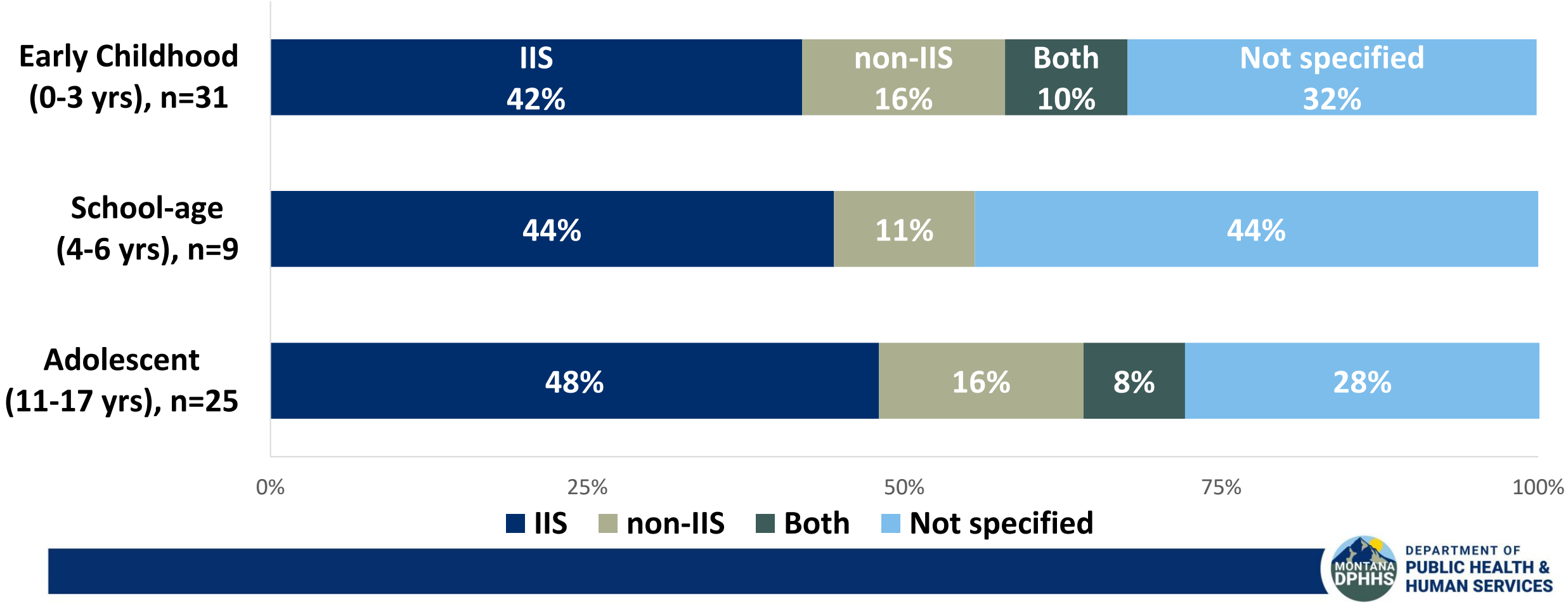
Denominator source varied for routine, non-seasonal vaccine coverage estimates

% of jurisdictions reporting coverage estimates by age category



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Conclusions

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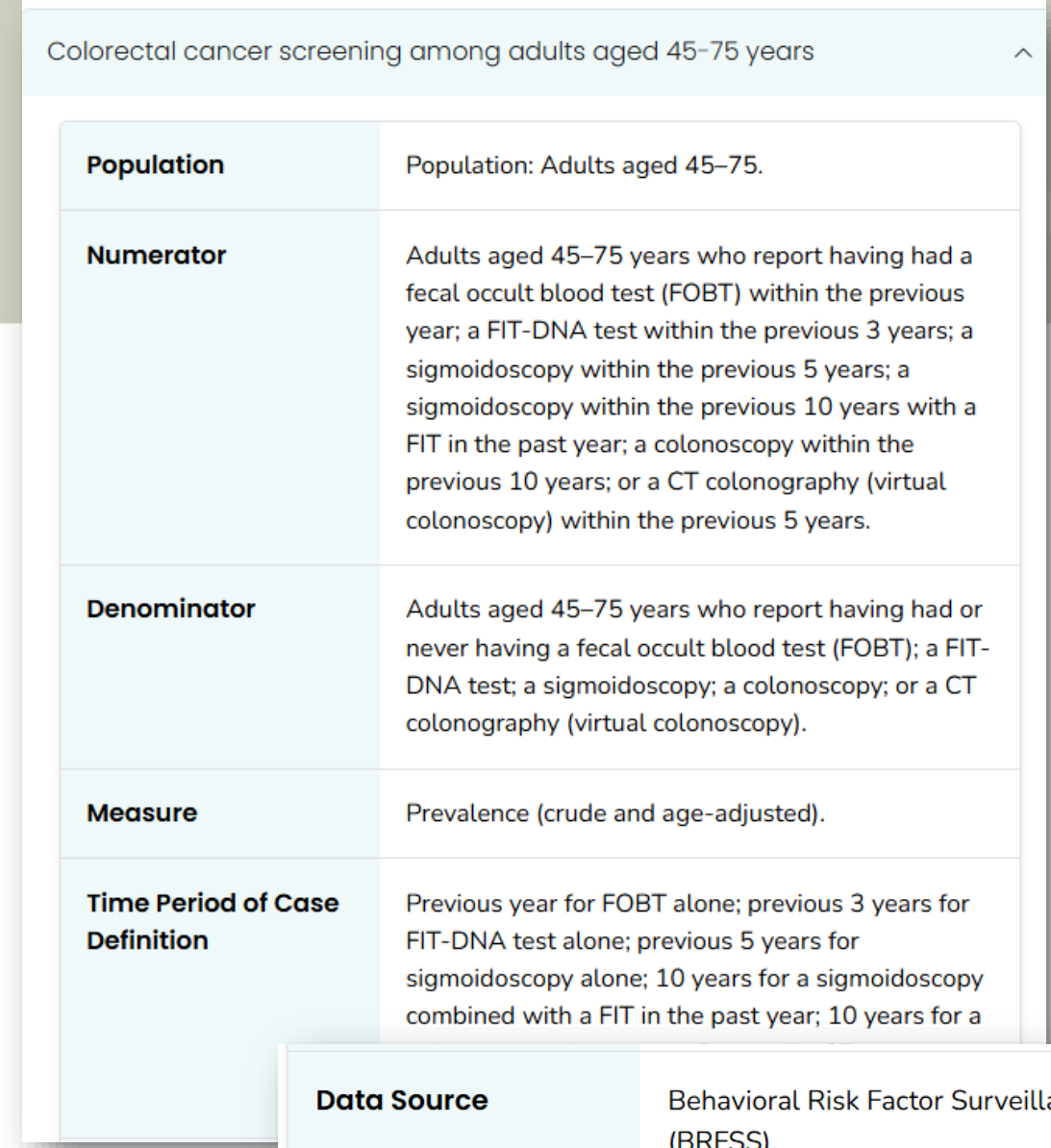
Broad IIS Use, Divergent Methods

- 66% of jurisdictions publicly reported pediatric vaccination coverage using IIS data.
  - 53% of jurisdictions reported routine, non-seasonal vaccination coverage.
  - Only 14% reported coverage among school-aged children, when 2 MMR is recommended.
- Variety in ages and vaccines reported, and methods used to calculate coverage.

Standard surveillance definitions

- Essential for reporting uniform and comparable information, ensuring timely action by public health officials
- Defines: **what** should be measured, among **whom**, and **how** often.
- Example health issues with surveillance definitions:
  - Chronic disease
  - Preventive services
  - Occupational Health



Colorectal cancer screening among adults aged 45-75 years

Population	Population: Adults aged 45–75.
Numerator	Adults aged 45–75 years who report having had a fecal occult blood test (FOBT) within the previous year; a FIT-DNA test within the previous 3 years; a sigmoidoscopy within the previous 5 years; a sigmoidoscopy within the previous 10 years with a FIT in the past year; a colonoscopy within the previous 10 years; or a CT colonography (virtual colonoscopy) within the previous 5 years.
Denominator	Adults aged 45–75 years who report having had or never having a fecal occult blood test (FOBT); a FIT-DNA test; a sigmoidoscopy; a colonoscopy; or a CT colonography (virtual colonoscopy).
Measure	Prevalence (crude and age-adjusted).
Time Period of Case Definition	Previous year for FOBT alone; previous 3 years for FIT-DNA test alone; previous 5 years for sigmoidoscopy alone; 10 years for a sigmoidoscopy combined with a FIT in the past year; 10 years for a
Data Source	Behavioral Risk Factor Surveillance System (BRFSS).
Related Objectives or Recommendations	Healthy People 2030 objective: C-07. Increase the proportion of adults who get screened for colorect cancer.

https://www.cdc.gov/cdi/indicator-definitions/

Next steps

- Follow up with select jurisdictions to learn more about their methods for coverage calculation.
- Present to the Council of State and Territorial Epidemiologists Annual Meeting, June 2026.
- Re-establish vaccination coverage reporting in Montana using IIS data.
- Investigate the feasibility of developing and implementing a standardized set of IIS-based childhood vaccination coverage measures.

Questions or comments

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