AIRA
AMERICAN IMMUNIZATION REGISTRY ASSOCIATION

Metrics for Calculating MMR Coverage Rates

Takeaways from the IIS Data Analyst Collaborative (IDAC)

October 2026

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October 15, 2026

The IIS Data Analyst Collaborative (IDAC)

The IIS Data Analyst Collaborative (IDAC) is a discussion-based collaborative for people who work with immunization data to connect on important and timely topics. IDAC happens quarterly on the third Thursday at 1 p.m. ET. There are different discussion topics in every meeting. The goals for these collaboratives are to offer an opportunity to share and develop skills and insights, to help people who work with immunization data to connect and spark collaborations, and to create a supportive, engaged community of IIS data analysts.

The October 2026 IDAC meeting discussion focused on the metrics involved in calculating MMR coverage rates.

Questions Discussed During This IDAC Session

1. What are criteria for pulling the data?
    a. Age ranges
    b. Dose numbers
    c. Differentiate between MMR and MMRV
    d. Exemptions, vaccine refusals, and invalid doses
        i. In which populations do you see vaccine refusals?
    e. Documented immunity to any vaccine component
    f. What are considerations for pulling data when calculating MMR coverage in an outbreak setting versus routine coverage?
2. Denominator methodology
    a. IIS or US Census denominators?
    b. If IIS, are there any pediatric denominator adjustments (e.g., for 4-6yo, adolescent)?
    c. How do jurisdictions calculate ZIP code population estimates from US Census (ACS or decennial) for denominators?
    d. Any methods to account for missing populations in IIS denominator, such as children on bordering counties or in Amish communities?
    e. Is anyone matching birth registries to calculate these rates?
3. Slicing and dicing the data
    a. How granular (e.g., county, city, ZIP, other) are you breaking down your coverage rates?
    b. How to best define and organize patients in certain groups: UTD, series complete, missing shot, left coverage area, invalid shots?
    c. How often should coverage rates be updated?
    d. Are you monitoring changes in any trends over time?
    e. Do you display coverage rates publicly?
4. Are you getting coverage that is comparable to kindergarten survey data?

    a. How do you interpret and message when data from schools gives a higher coverage rate than rates calculated from IIS?
5. Have your IIS data been used to inform and drive program activities?
    a. What are some examples, outcomes, and lessons learned?

Key Discussion Points

Defining inclusion criteria and age groups

Participants discussed the importance of clearly defining which patients and doses are included in MMR coverage calculations.

Key points:

- Age ranges vary across jurisdictions. Washington uses age groups of 19–35 months and 4–6 years for public reporting. Other jurisdictions focus on children around 2 years old or use kindergarten enrollment data.
- Historical measures can be difficult to change. Some jurisdictions continue using established age ranges even when the original rationale is unclear or the measures are no longer ideal.
- MMR and MMRV should be considered appropriately. Louisiana includes both vaccines when calculating measles-related coverage because both provide measles protection.
- Kindergarten coverage requires careful interpretation. A 4-year-old may not yet be due for a second MMR dose, making age-based coverage estimates difficult to compare with school-entry compliance measures.
- Residency matters. Kansas emphasized that patients must be Kansas residents, particularly because the Kansas City metropolitan area crosses state boundaries.
- Adult MMR coverage is difficult to calculate reliably. Several jurisdictions explained that their IIS records do not provide sufficiently complete historical vaccination information for adult population-level estimates.

Important distinction: Coverage measures should reflect their intended purpose. Measuring whether children received vaccines by a recommended age is different from measuring compliance with school-entry requirements or assessing susceptibility within a classroom.

Tracking early or "zero-dose" MMR vaccination

Iowa described expanding its monitoring of early MMR doses in infants aged 6–12 months, in response to measles activity and a new vaccination initiative.

Discussion highlights:

- Iowa is examining whether infants who receive an early dose subsequently receive their routine first MMR dose on time.
- Approximately 90% of children receiving a dose at 6 months of age reportedly go on to receive dose one, according to the discussion.

- Participants identified follow-up tracking as an important step in determining whether early vaccination translates into continued adherence to the recommended schedule.

Potential follow-up: Establish a process to monitor children who receive an early MMR dose and determine whether they later receive their routine doses.

Choosing and improving population denominators

The denominator was one of the most significant challenges discussed. An inflated or incomplete population denominator can substantially distort coverage estimates.

Approaches and challenges included:

- Using the IIS as the denominator: Wisconsin and Louisiana described using their immunization registries, although both acknowledged potential inflation.
- Comparing IIS counts with census estimates: Census figures provide a useful reference but may not align with the registry's actual population or capture the same individuals.
- Applying inactivity filters: Louisiana excludes patients who have not received a vaccine in the previous five years from both the numerator and denominator for children's estimates. For adults, it extends the period to 10 years.
- Integrating vital records: Birth and death records can help identify people who should be included in or removed from the registry population.
- Accounting for populations missing from the IIS: Birth certificate data may help capture children in communities with low vaccination rates or limited participation in the registry.

Participants cautioned that inactivity filters are imperfect. A person with no recent vaccinations may still be a real resident, while a person who has moved out of state may remain in the registry.

Key takeaway: Denominator methods should be transparent, documented, and evaluated for their effects on reported coverage rates.

Improving IIS data quality and removing invalid records

Participants shared practical strategies for identifying records that can distort coverage calculations.

Data quality issue	**Approaches discussed**
Duplicate or fragmented records	Review records with limited vaccination history, including isolated hepatitis B birth doses or single influenza/COVID-19 doses, before deciding whether to exclude them.
Test patients in production	Identify records with names such as "Minnie Mouse," "Donald Duck," or "test test," particularly when no legitimate vaccination data exist.

Deceased individuals	Incorporate death certificate data, record dates of death where possible, and develop procedures for updating deceased status.
Placeholder names	Run recurring scripts to find names such as “Baby Girl,” “BB1,” “Baby Boy,” or “Anonymous.”
Implausible vaccination patterns	Flag unusual combinations or dates of vaccination that could indicate test records or data errors.

Examples shared:

- Kentucky runs annual scripts to identify placeholder baby names and reviews the results before removing records. The state is also considering jurisdiction-level inactivity rules.
- Louisiana periodically reviews patients with no vaccination data and removes known test records and placeholder names.
- Iowa combines vital-record matching, manual deduplication, and other data-cleanup efforts. It also has automated rules for certain very old, inactive records.

Participants also discussed the option of applying exclusions analytically during coverage calculations rather than permanently changing or inactivating records in the IIS. This approach may allow analysts to test different assumptions while preserving the underlying records for clinical and operational use.

Integrating death records and vital statistics

Participants described different levels of integration between IIS platforms and vital records systems.

Iowa reported receiving files from vital statistics that can be uploaded and matched using identifiers such as name, date of birth, and Social Security number. The process also includes manual review and deduplication.

Discussion highlighted several considerations:

- Death data integration varies by jurisdiction, and the integration of electronic death records may lag behind birth data integration.
- Accurate dates of death are more useful than a generic deceased flag.
- Death records can help reduce denominator inflation, but they do not resolve other issues such as out-of-state migration, duplicate records, or incomplete vaccination histories.
- Retaining records with limited vaccination information may still be valuable when those records contain valid birth or demographic information.

Geographic reporting and dashboards

Participants discussed the growing demand for detailed MMR coverage estimates by county, ZIP code, school district, census tract, and local public health jurisdiction.

Examples included:

- Texas: Responds to requests for county- and ZIP code-level data, including zero-dose counts and dose-one and dose-two estimates in outbreak areas.
- Wisconsin: Uses Tableau dashboards for internal monitoring and shares more granular information with local health departments through restricted-access channels.
- Louisiana: Publishes county-level information and uses more detailed geographic analyses for internal or local health department purposes. It also described suppressing census tracts with fewer than 800 people in a prior public reporting effort.
- Kansas: Publishes school-based MMR information by school district and county.
- Washington: Has encountered extremely low apparent coverage in border areas because vaccinations received across state or national borders might not be captured in the IIS.

Participants emphasized that more granular reporting is not automatically more accurate. Small populations, cross-border vaccination, incomplete records, and privacy considerations can all affect interpretation.

Public reporting versus internal reporting

A recurring theme was the need to distinguish public-facing measures from internal surveillance and operational tools.

Participants described:

- Publishing established, relatively broad coverage measures for public audiences
- Providing more detailed data to local health departments and internal leadership
- Restricting access to sensitive, granular data through tools such as Tableau and Snowflake
- Suppressing small populations when necessary to protect privacy or avoid misleading interpretations
- Using dashboards to monitor vaccine administration and respond to outbreaks without necessarily publishing every analysis

Key takeaway: Reporting decisions should consider the audience, intended use, data quality, privacy, and risk of misinterpretation.

Comparing IIS coverage estimates with school compliance data

Participants strongly cautioned against treating IIS-derived coverage rates and school-reported vaccination compliance rates as interchangeable.

Key concerns:

- The two measures use different populations, data sources, and inclusion criteria.

- School-based estimates may be higher than IIS estimates.
- Public reporting and media coverage have sometimes mislabeled IIS-based estimates as school-based data, creating confusion about jurisdictional performance.
- These misunderstandings have made some jurisdictions hesitant to publish IIS-based coverage estimates.

Participants recommended clearly labeling each measure, explaining its methodology, and avoiding direct comparisons unless the measures are genuinely comparable.

Major Conclusions and Lessons Learned

The discussion produced several overarching lessons.

1. **Standardize definitions where feasible.** Document age ranges, dose requirements, residency rules, vaccine types, and inclusion criteria so users understand what each estimate represents.

2. **Treat denominator quality as a priority.** Evaluate registry inflation, migration, duplicate records, deceased individuals, and missing populations before interpreting coverage estimates.

3. **Use analytical exclusions rather than record deletion or inactivation.** Consider applying configurable analytical filters when testing denominator adjustments rather than automatically deleting or permanently inactivating records.

4. **Monitor the full vaccination pathway.** When early or zero-dose MMR vaccination is used, track whether children subsequently receive their routine doses.

5. **Use the right measure for the question.** IIS coverage, school compliance, vaccination administration counts, and outbreak-specific estimates answer different questions and should be used and reported accordingly.

6. **Make reporting fit the audience.** Consider internal and external, public-facing dashboards to provide the right level of information to the right audience. Internal dashboards can provide more detailed information to staff who are familiar with the data and methods, provided access, privacy, and appropriate interpretation are addressed.

7. **Be transparent about limitations.** Small-area estimates and adult MMR coverage can be particularly challenging because of incomplete histories, cross-border vaccinations, and population denominator issues.

Follow-up Items and Opportunities

The following are potential follow-up activities identified from the discussion. They are not all formal assignments.

Follow-up item	**Suggested focus**
Evaluate denominator adjustment methods	Compare approaches such as 5-year or 10-year inactivity filters, vital records integration, and analytical exclusions.
Review zero-dose follow-up	Determine whether infants receiving early MMR doses later receive routine doses on schedule.
Improve record-cleansing procedures	Explore recurring scripts for placeholder names, test patients, duplicates, and deceased individuals.
Document coverage methodologies	Clarify age ranges, vaccine types, residency criteria, and denominator definitions.
Improve reporting guidance	Develop clear explanations distinguishing IIS estimates from school compliance measures.
Assess geographic reporting limitations	Review cross-border vaccination, small-population suppression, and access controls for local dashboards.

Closing Summary

The meeting highlighted that calculating MMR coverage is not simply a matter of counting vaccinated individuals. Reliable estimates depend on carefully defined populations, valid vaccination records, appropriate denominators, and clear communication about what each metric measures.

Participants shared useful operational strategies from their jurisdictions, particularly regarding registry cleanup, vital records integration, zero-dose follow-up, and secure dashboards. The strongest common message was that MMR coverage estimates must be interpreted in the context of their methodology and intended use, especially during measles outbreaks when the public and leadership demand timely, granular data reports.