



AIRA
AMERICAN IMMUNIZATION
REGISTRY ASSOCIATION

IIS Data Circle of Life

IIS Data Quality Practices: To Monitor and Evaluate Data at Rest
&
Identifying Immunization Pockets of Need: Small Area Analysis
of IIS Data to Detect Undervaccinated Populations

August 29, 2018

Welcome!

- Basics
 - Recording the call
 - Muting the phone lines
 - Unmuting the phone lines for questions and discussion
 - *6 to unmute your line at any point
 - Watching the chat window





Data
Quality

Data
Use



IIS Data Circle of Life: Use the Data

IIS Data Quality Practices:
To Monitor and Evaluate Data at Rest

Agenda

Data at Rest Project

- Origin & scope
- Who was involved

What is Included

- Data quality dimensions
- Data quality challenges & strategies
- Implementation considerations

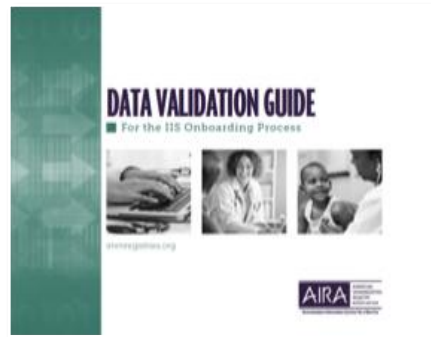
Next Steps

- When & where it will be available



How It Came to Be

Phase One:
Data Validation Guide
for the Onboarding
Process
Sept 2016



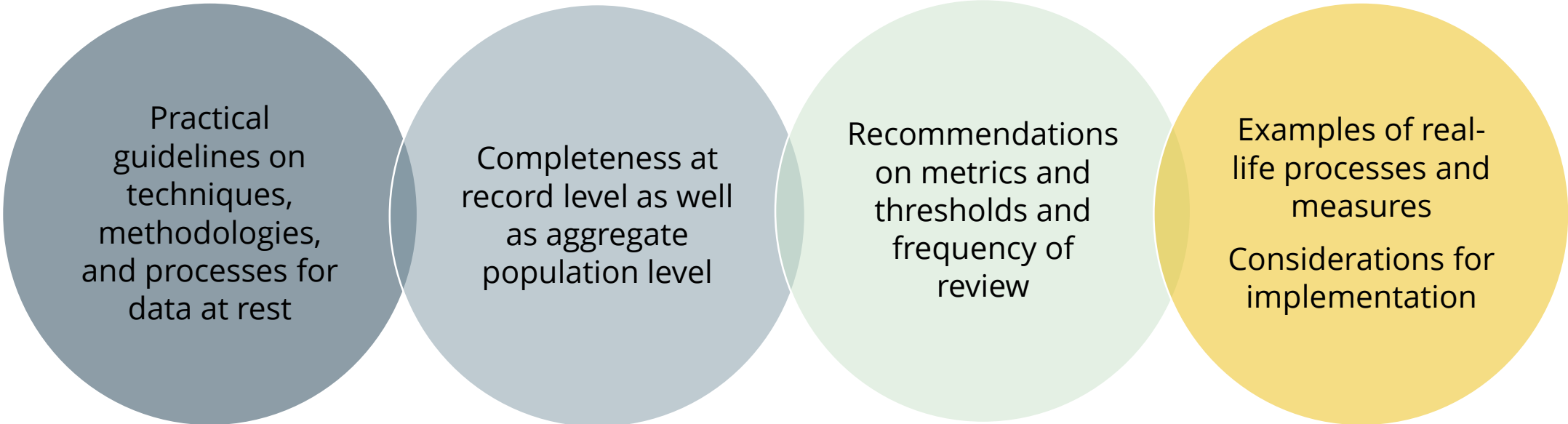
Phase Two:
IIS Data Quality
Practices: Monitoring
and Evaluating Data
Submissions
Sept 2017



Phase Three:
IIS Data Quality
Practices: Monitoring
and Evaluating
Data at Rest
Sept 2018



Data at Rest Scope



Practical
guidelines on
techniques,
methodologies,
and processes for
data at rest

Completeness at
record level as well
as aggregate
population level

Recommendations
on metrics and
thresholds and
frequency of
review

Examples of real-
life processes and
measures
Considerations for
implementation



Who Was Involved in
Developing the Guide?



Member	Organization
Scott Minkin	Massachusetts IIS
Mary Woinarowicz	North Dakota IIS
Heather Crawford	Oregon IIS
Assiatou Bah	Tennessee IIS
Michelle Campbell	Washington IIS
Brad Couse	Envision Technology Partners
LaTreace Harris	CDC
Mike Indovina	NIST
Rob Snelick	NIST
Natalie Viator	PHII
Carolina Danovaro	WHO
Nathan Bunker	AIRA
Alison Chi	AIRA
Sherry Riddick	AIRA Consultant
Nichole Lambrecht	AIRA

DQ Workgroup Members



Summary of Guide

- Main Sections of Document
 - Data Quality Dimensions and Indicators
 - Systemic Data Quality Challenges and Strategies
 - Patient address accuracy (cleansing and correction)
 - Patient status completeness and accuracy
 - Patient and vaccination record uniqueness
 - Select situations related to birth data record management
 - Implementation Considerations
 - General recommendations and DQ Analysis Plan
 - Appendices
 - Example reports and uses of address correction and cleansing services



Data Quality Dimensions



Completeness: The degree to which full information about a data set, record, or individual data element is captured in the IIS.



Consistency: The absence of difference when comparing two or more representations of a thing against a definition.



Accuracy: The degree to which data correctly describes the “real-world” object or event being described.



Timeliness: The amount of time between the occurrence of the real-world event and its documentation in the IIS.



Validity: The degree to which the data conforms to the syntax (format, type, range) of its definitions.




Uniqueness: No event, person, or data element is recorded more than once.



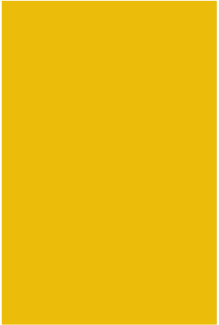
Systematic DQ Challenges and Strategies




Keeping addresses
standardized and up to date



Inactivating records of
patients who are deceased
or have moved out of
jurisdiction



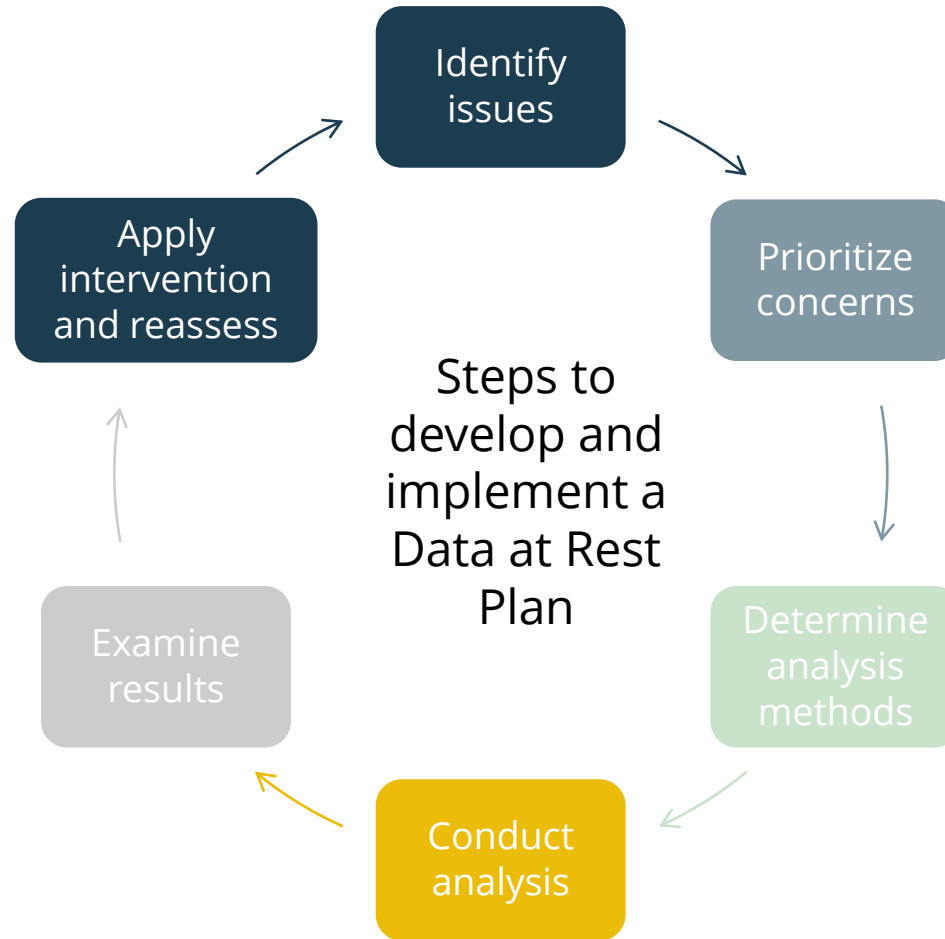
Maintaining separate records
for multiple births (e.g.,
twins)



Preventing duplicate records
when birth data is submitted
by both birthing facilities and
Vital Statistics



Implementation Considerations



Comments from Community

- What are 2-3 of your key takeaways or insights after reading the guide?

"I really like having the targets set for the different DQ measures. It's also helpful to have the additional notes that explain potential uses, programmatic implications and limitations of the different measures."

"Regardless of how much a program or IIS has previously committed to DQ improvements, the guide provides plenty more ideas and opportunities. The variety of members and experiences brought to the workgroup and guide by the different members really helped to highlight this for me."



When and Where is it Available



- Will be posted to AIRA Repository:
<http://repository.immregistries.org>



Questions

- Contacts:

- Alison Chi | achi@immregistries.org
- Nichole Lambrecht | nlambrecht@immregistries.org





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IIS Data Circle of Life: Use the Data

Identifying Immunization Pockets Of Need:
Small Area Analysis of IIS Data To Detect Undervaccinated
Populations

Overview

1

A few quick definitions

2

Introduction to the *Identifying Immunization Pockets Of Need* guide

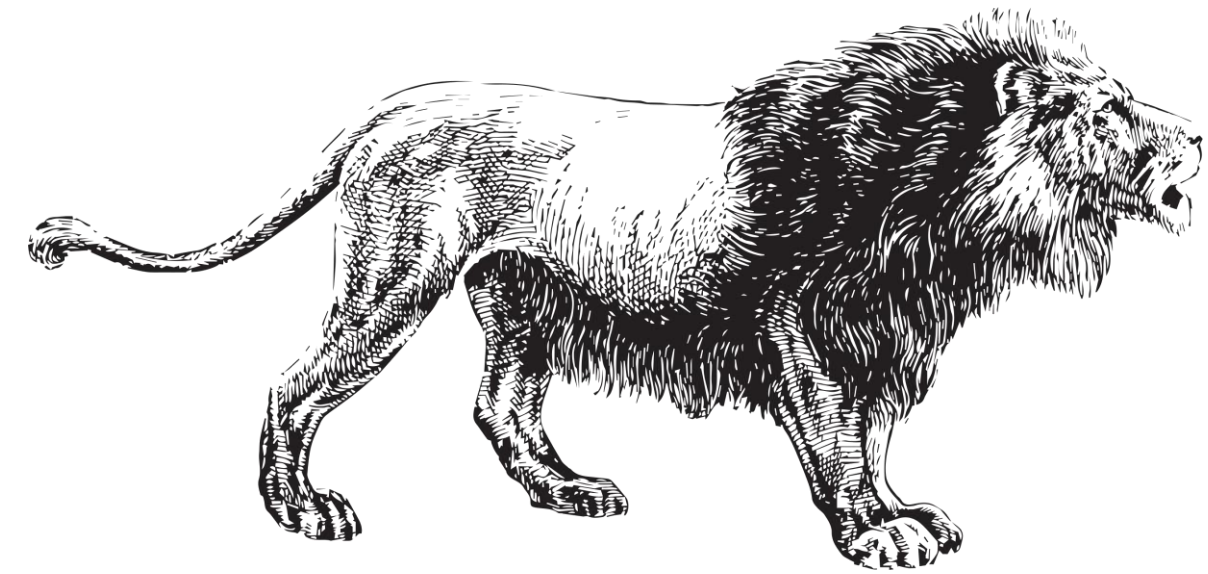
3

Brief description of the process to identify pockets of need

4

Options for responding to a pocket of need





Quick Definitions



Pocket of Need

- A population of unimmunized or underimmunized individuals that presents an increased disease risk



Geographic

Example: Census tract

Demographic

Example:
Uninsured children



Gathering Place

Example: Schools



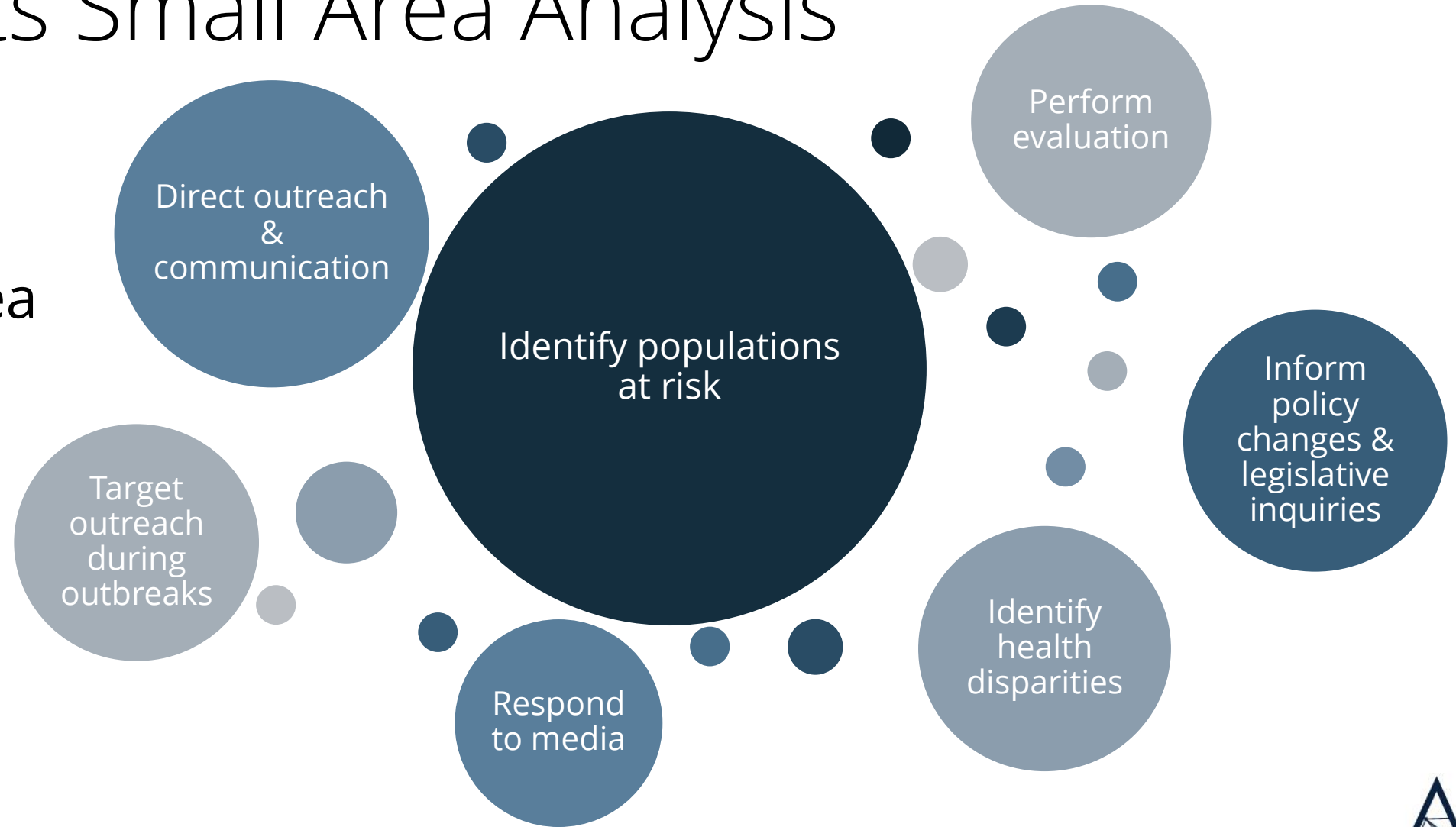
Small Area Analysis

- Small area analysis is the study of a specific small area or population to identify measurable differences from the larger statistical pattern



Benefits Small Area Analysis

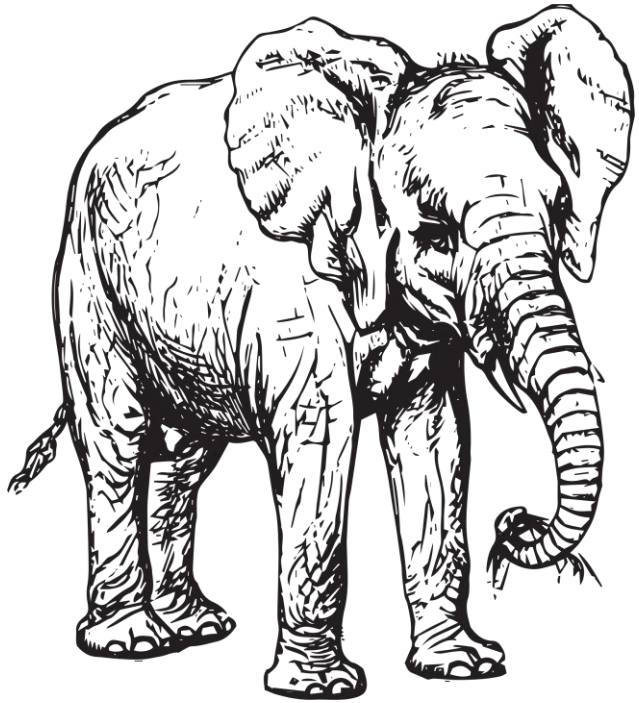
- Small area analysis lets you:



Relationship

- Small area analysis can be a powerful tool to identify pockets of need.



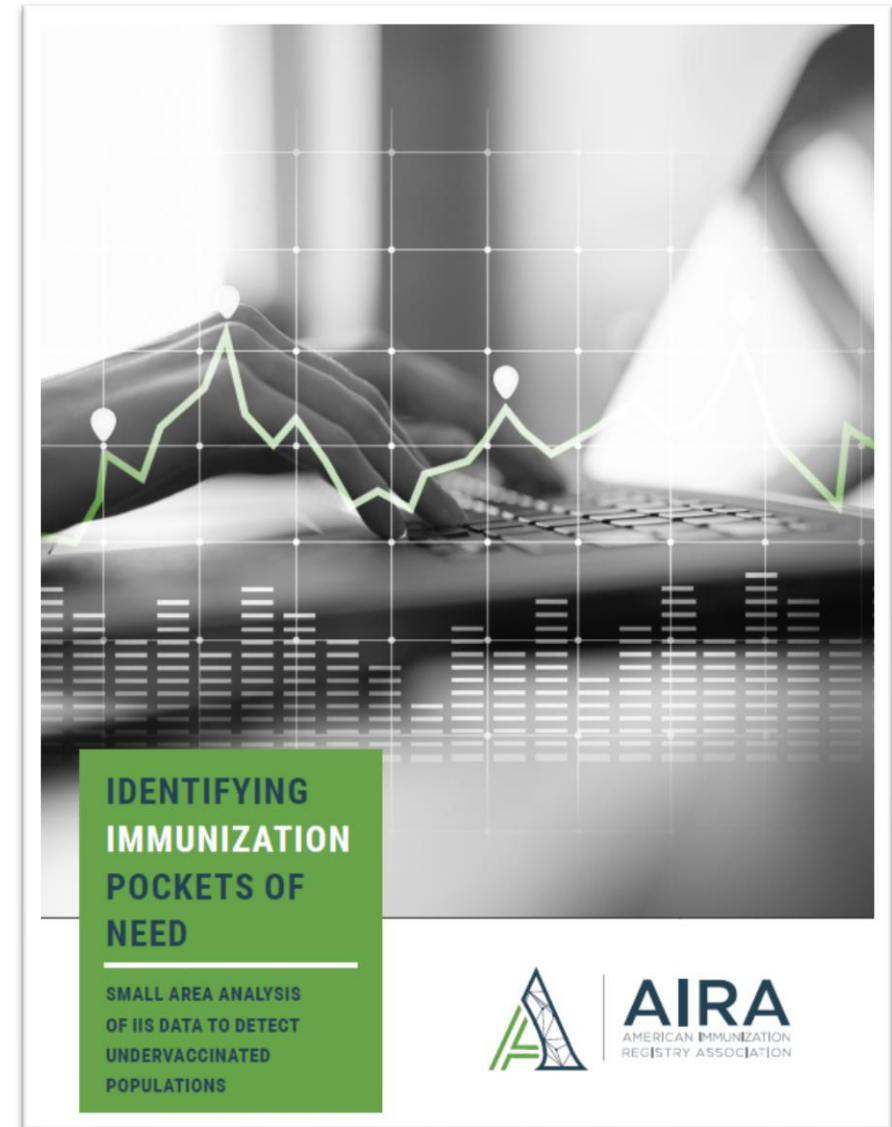


Introduction to the *Identifying Immunization Pockets Of Need* Guide



Background

- Coming soon!
- Will be available in the AIRA Resource Repository
 - <http://repository.immregistries.org/>





Purpose

- Help IIS and immunization programs identify pockets of need
- Offer practical tips on assessing data quality issues
- Provide strategies about responding to pockets of need



Who Should Read This Guide?

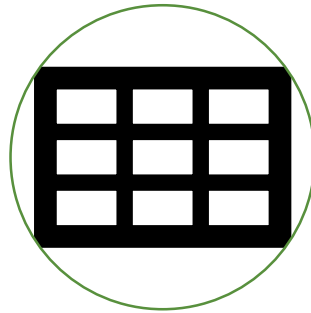
- IIS and immunization program staff
- Epidemiologists
- Public health staff who work with:
 - Specific geographic areas or populations
 - Vaccine hesitancy issues
 - School and childcare immunization laws
 - Surveillance or response to outbreaks of vaccine-preventable diseases



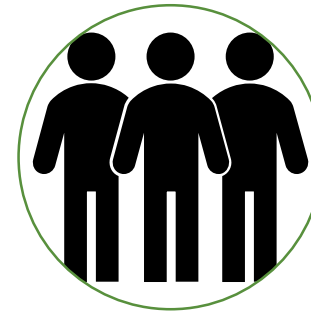
Sections of the Guide



Pockets Of Need &
Small Area Analysis:
Definitions & Purpose

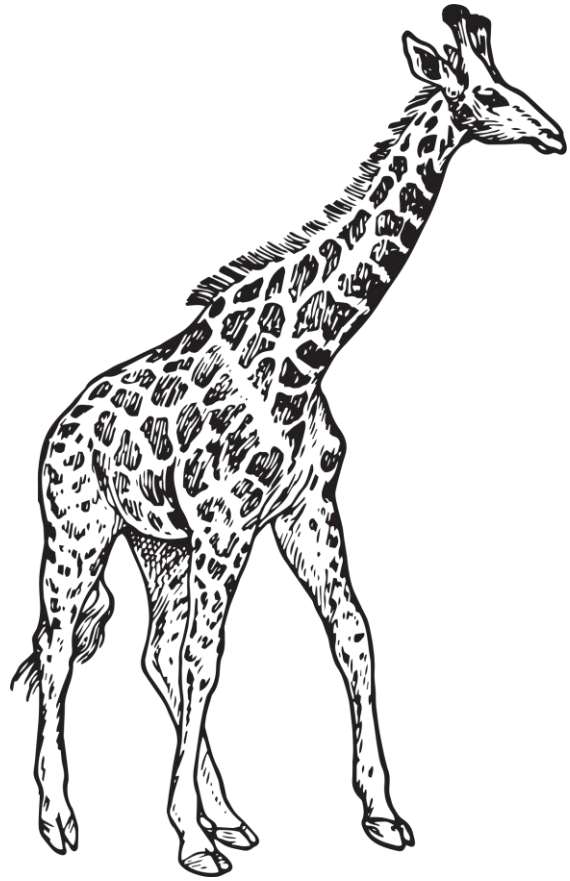


How to Perform a Small
Area Analysis to Identify
Pockets of Need



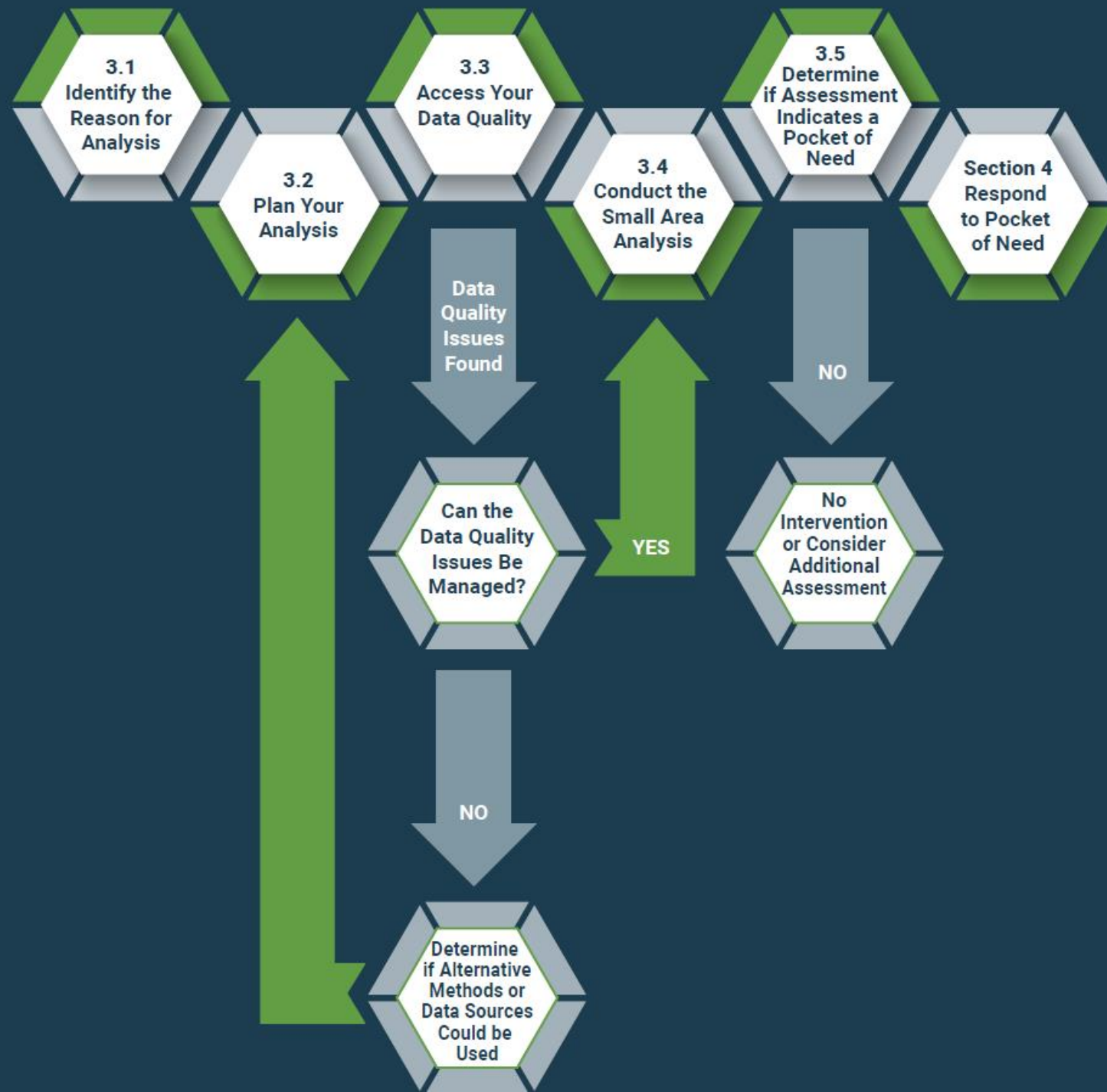
Responding to a Pocket
of Need





Description of the Process to Identify Pockets of Need





Identify the Reason for Your Analysis

- A broad search of IIS data for signs of pockets of need
- A general hypothesis or assumption about low vaccine coverage
- External signs point to a pocket of need that you can identify in your IIS



Plan Your Analysis: Part 1

Are you looking for pockets of need that are geographic, demographic, or based on a gathering point?

How are you defining the “small area”?

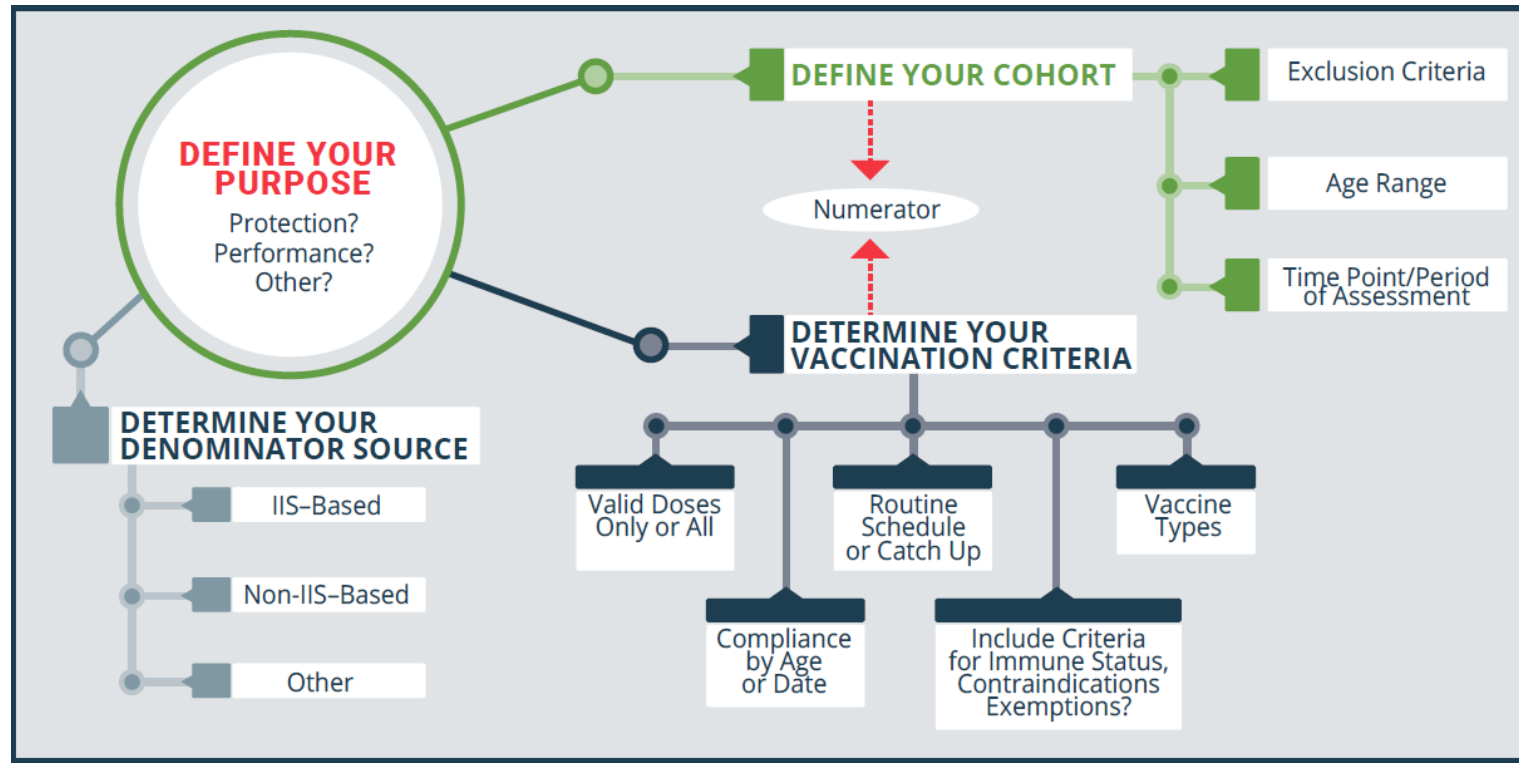
Do you have the type of data you need in your IIS?

Are you able to supplement your IIS data with data from external sources to perform the analysis?



Plan Your Analysis: Part 2

- Set the criteria for your analysis



Assess Your Data Quality

Can you easily fix the data quality issue?

Does your data underestimate or overestimate the population or vaccination coverage?

Can you determine the likely direction and magnitude of the bias?

Are data quality issues evenly distributed across subpopulations?

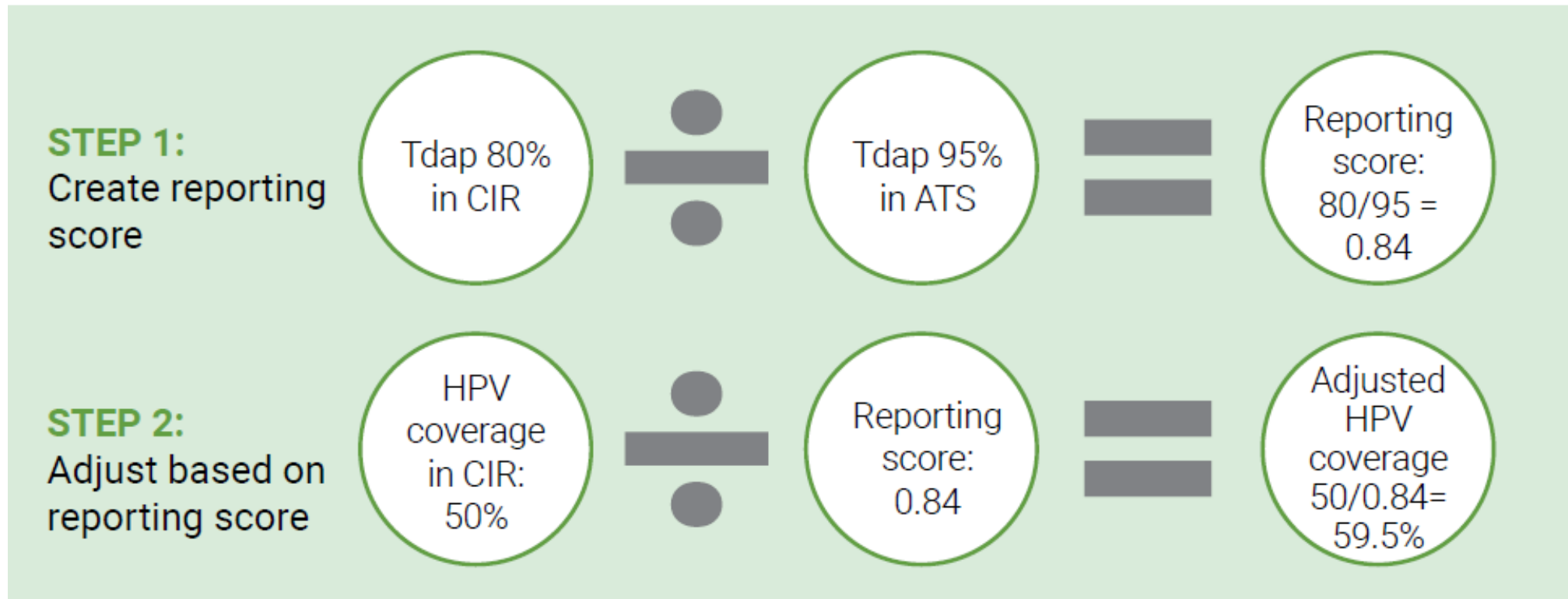
Can you adjust for the issue during analysis?

Does the data quality in your IIS allow you to identify a pocket of need?



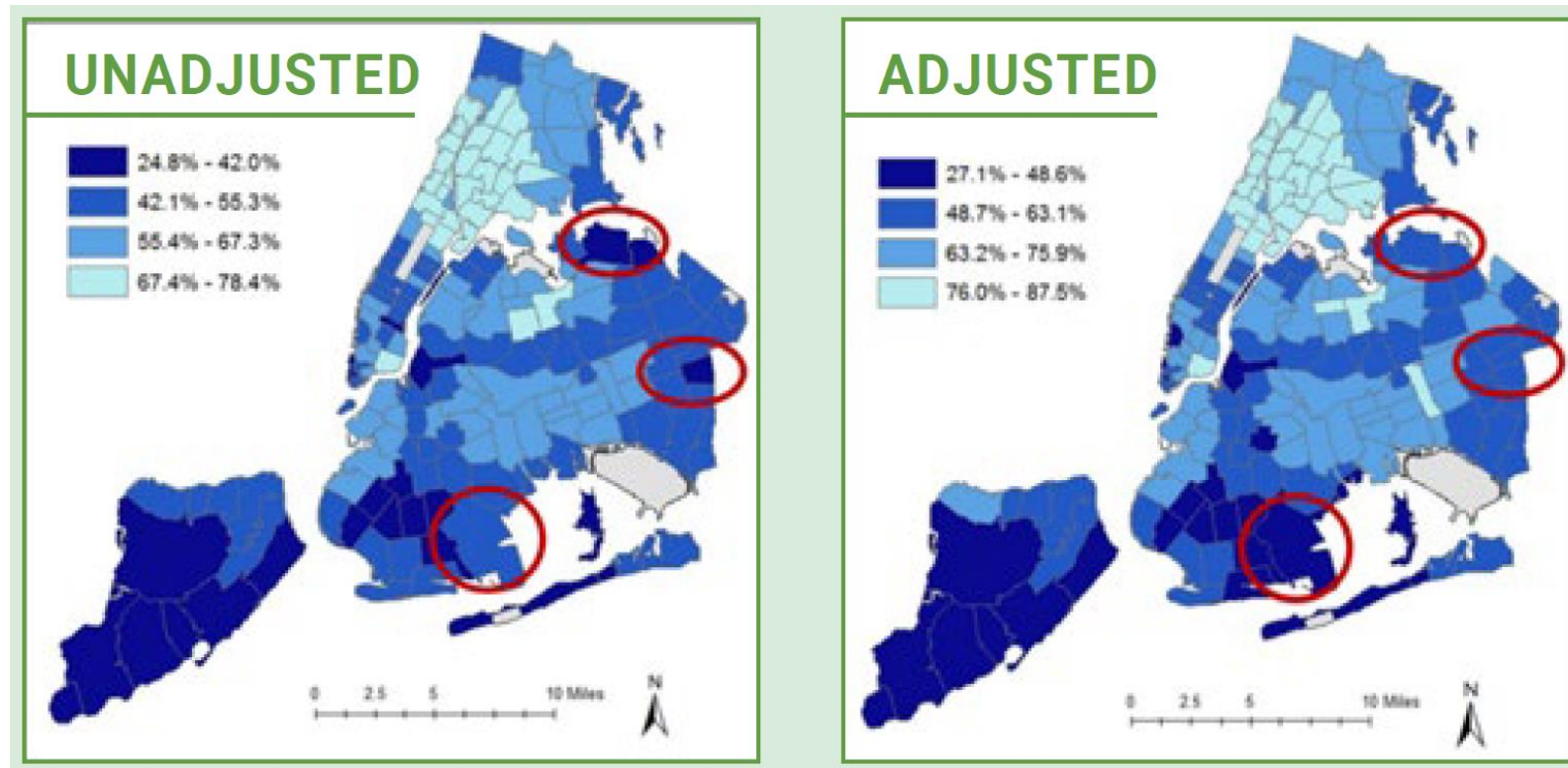
Adjust For Bias If Needed

- Example from New York City:

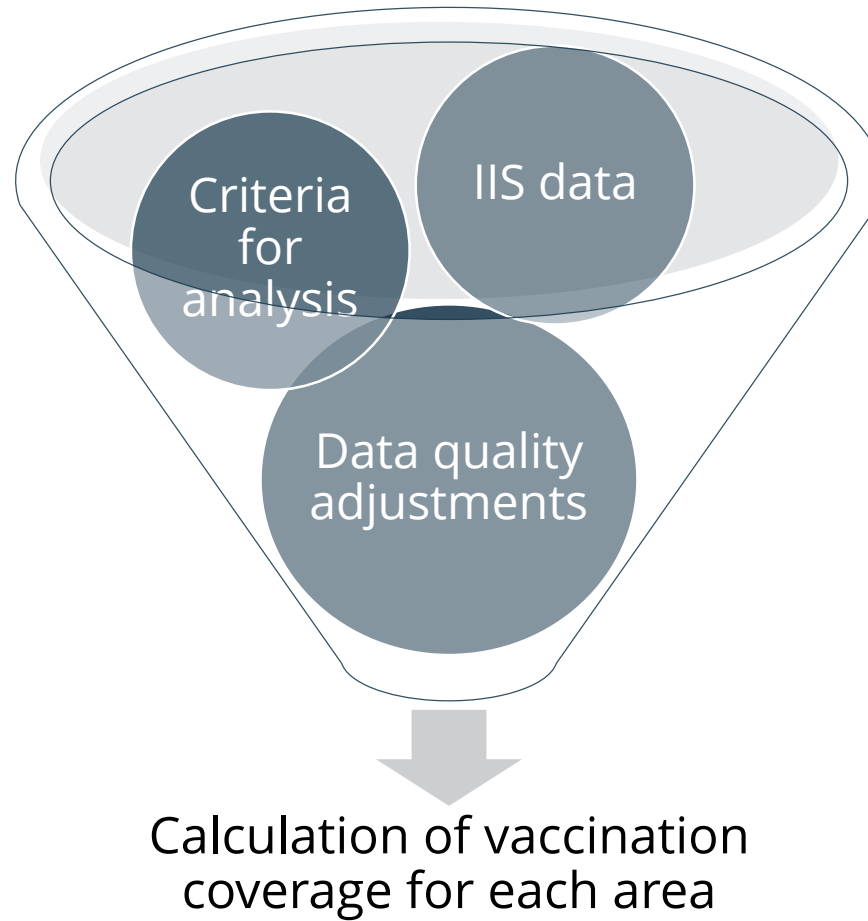


Adjust For Bias If Needed

- Example from New York City:



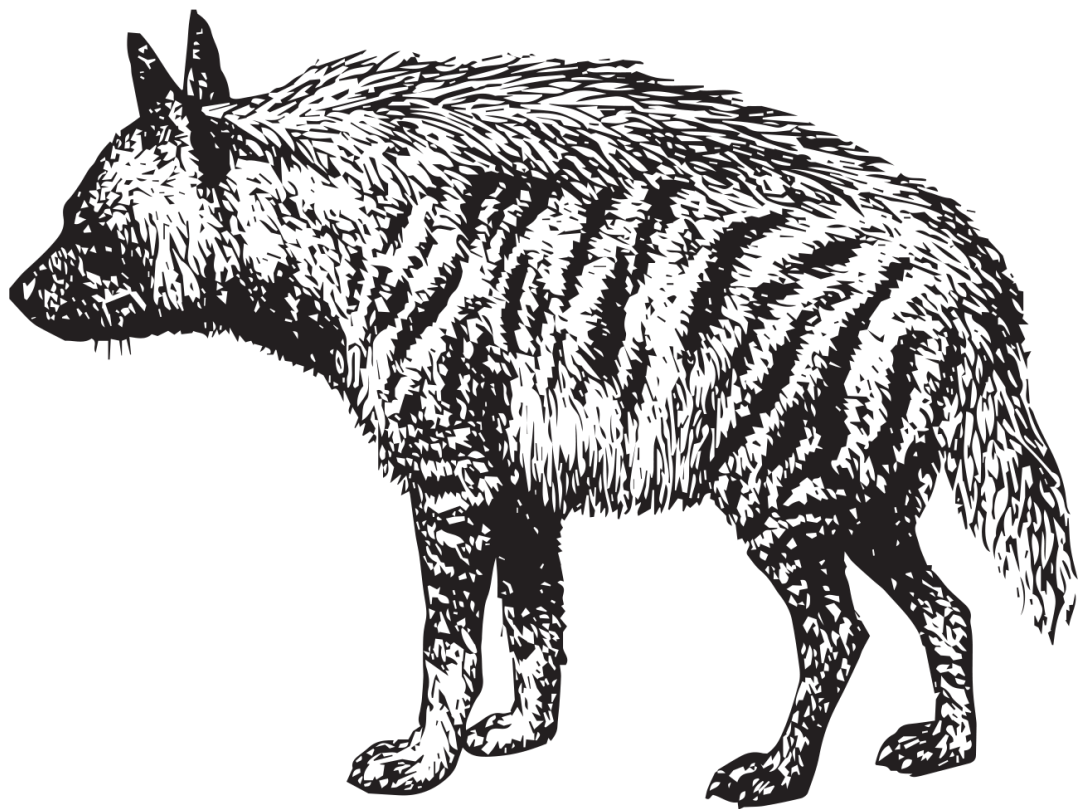
Conduct the Small Area Analysis



Determine if Your Assessment Indicates a Pocket of Need

- No specific rule
- Consider purpose of analysis
- Yes → Go to the next section of the guide
- No
 - Additional analysis
 - Repeat analysis annually or semiannually
 - Is the IIS the best way to find that specific pocket of need

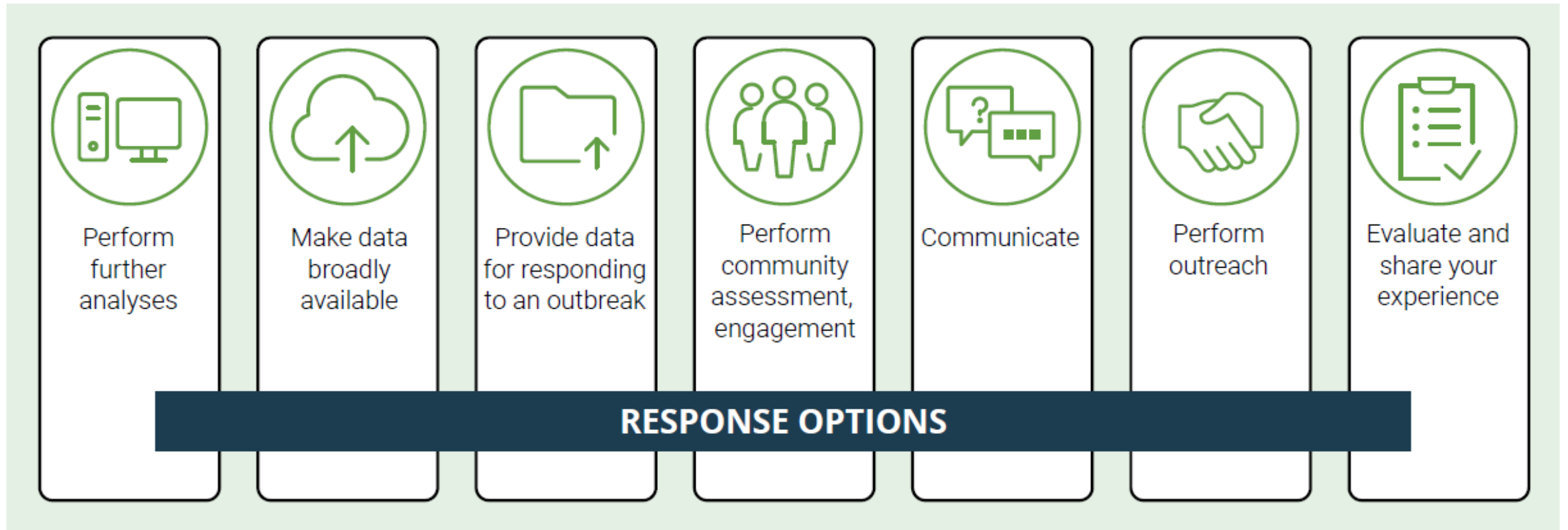




Options for Responding to a Pocket of Need



Response to a Pocket of Need



For Each Response

- Description
- Practical example(s)
- Resources

PRACTICAL EXAMPLE OF PROVIDING DATA FOR RESPONDING TO AN OUTBREAK RESOURCES FOR PROVIDING DATA FOR RESPONDING TO AN OUTBREAK

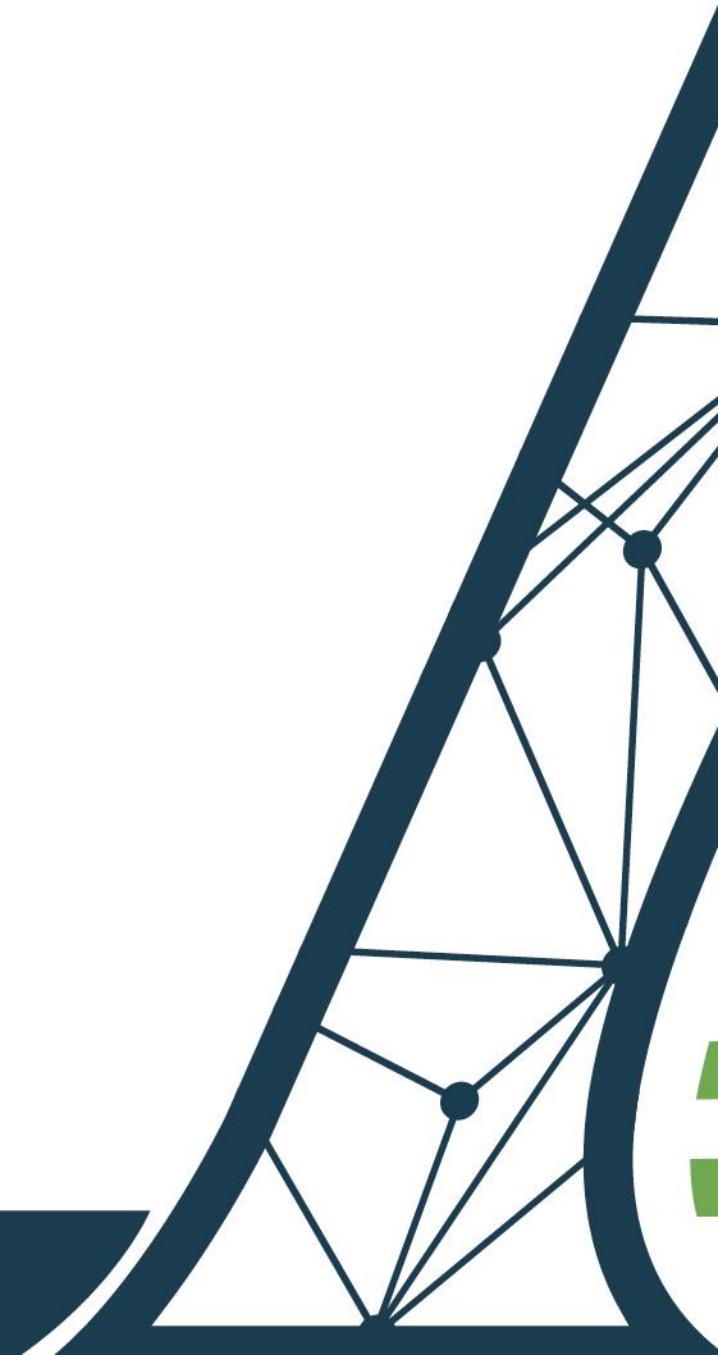
- Minnesota's Use of the IIS in Measles Outbreak Response – an AIRA *SnapShots* article (<http://repository.immregistries.org/resource/snapshots-june-2017/>)
- The Guide to Community Preventive Services' *Immunization Information Systems to Increase Vaccination Rates: A Community Guide Systematic Review*, page 7 (<https://www.thecommunityguide.org/sites/default/files/publications/vpd-jphpm-evrev-IIS.pdf>)

from stakeholders involved in the outbreak. By providing timely, accurate vaccination data to responders, MCIR was able to inform and support the outbreak response.





Highlights of the Guide



Tips



TIP: Privacy is an important concern when working with small populations. It is important to ensure that no individual can be identified based on publicly released data. Many organizations have policies regarding releasing data about small populations. The North Dakota Department of Health's *Policy on Small Numbers Release* specifies that it would not permit release of certain stratified data (e.g., number of African Americans with x condition) since the population of the subgroup may be small enough to become identifiable. You are encouraged to review your organization's policy before making data broadly available. An additional example of a small numbers policy is from the Rhode Island Department of Health and is available at <http://health.ri.gov/publications/policies/SmallNumbersReporting.pdf>.

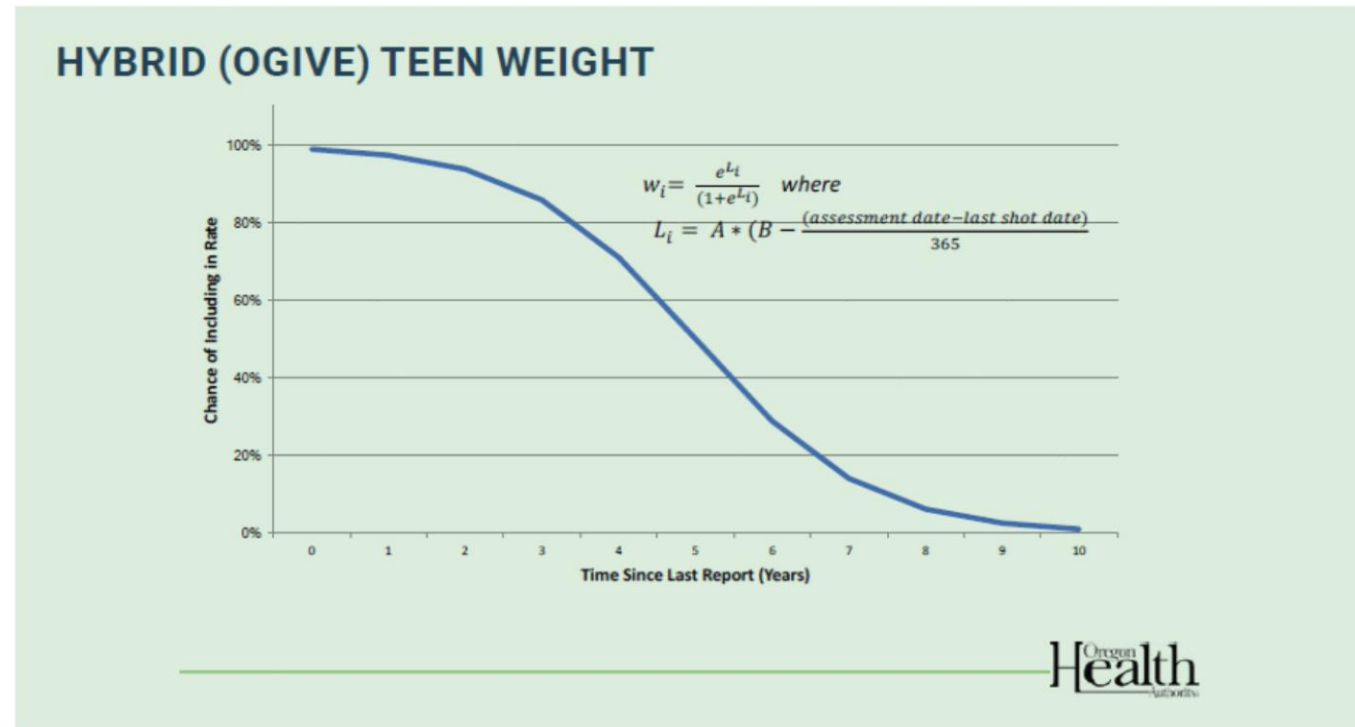


TIP: A beneficial method of supplementing IIS data is the use of geographic information systems (GIS). Geocoding services can translate IIS address data into geographical information like ZIP code tabulation areas or Census tract information. GIS data can also be helpful if you want to create a map showing the overlay of IIS data and various types of GIS data (e.g., hospitals, doctor offices, socioeconomic data from the Census). AIRA member IIS programs can sign up for SmartyStreets and geocode addresses at no cost (<http://www.immregistries.org/address-cleansing>).



Examples

Figure 5 | Hybrid (Ogive) teen weight formula and graph



¹¹Robison, S.G. (2015) "Addressing immunization registry population inflation in adolescent immunization rates." Public Health Rep. 2015 Mar-Apr; 130(2):161-6.



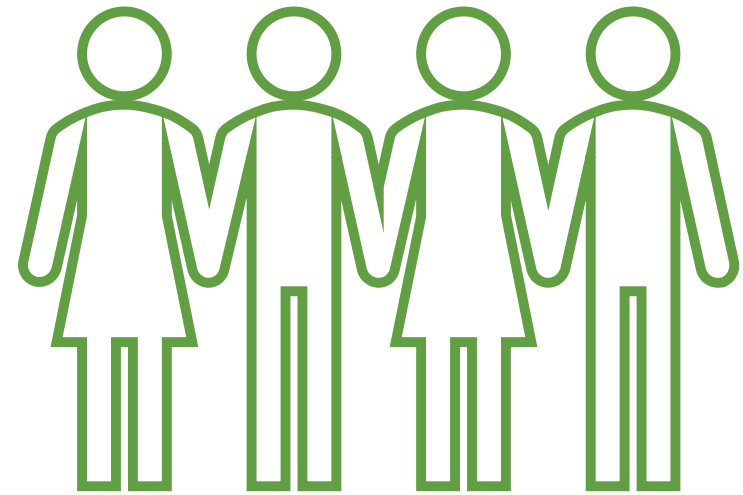
Resources

ARTICLES	CONCLUSIONS
Lieu, T.A., Ray, G.T., Klein, N.P., Chung, C., Kulldorff, M. (2015). Geographic Clusters in Underimmunization and Vaccine Refusal . Pediatrics, 135(2), 280-289.	"Underimmunization and vaccine refusal cluster geographically. Spatial scan statistics may be a useful tool to identify locations with challenges to achieving high immunization rates, which deserve focused intervention."
Omer, S.B., Enger, K.S., Moulton, L.H., Halsey, N.A., Stokley, S., Salmon, D.A. (2008). Geographic Clustering of Nonmedical Exemptions to School Immunization Requirements and Associations with Geographic Clustering of Pertussis . American Journal of Epidemiology, 168(12), 1389-1396.	"Geographic pockets of vaccine exemptors pose a risk to the whole community. In addition to monitoring state-level exemption rates, health authorities should be mindful of within-state heterogeneity."
Trogdon, J.G., Ahn, T. (2015). Geospatial patterns in influenza vaccination: Evidence from uninsured and publicly insured children in North Carolina . American Journal of Infection Control, 43(3), 234-240.	"To the extent that the geospatial clustering of vaccination rates is the result of social influences, targeting interventions to increase influenza vaccination among school-aged children in one area could also lead to increases in neighboring areas."



Acknowledgements

- AIRA Small Area Analysis Workgroup
 - Anna Rapp, MPH
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 - Kathy Van Abel
 - Loren Rodgers, PhD
 - Maureen Leeds, MPH
 - Michelle Korrell
 - Steve Robison, MPH





Thank you for your time!

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