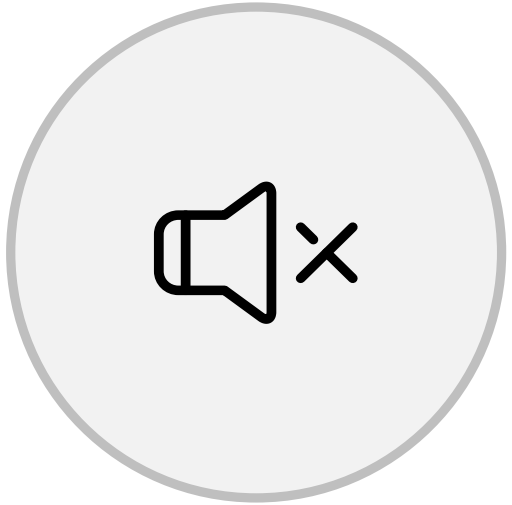
AIRA
AMERICAN IMMUNIZATION REGISTRY ASSOCIATION

I ♥ My Data: Tips for Learning to Love Your Data Even More

Education Webinar
Tuesday, March 10, 2020

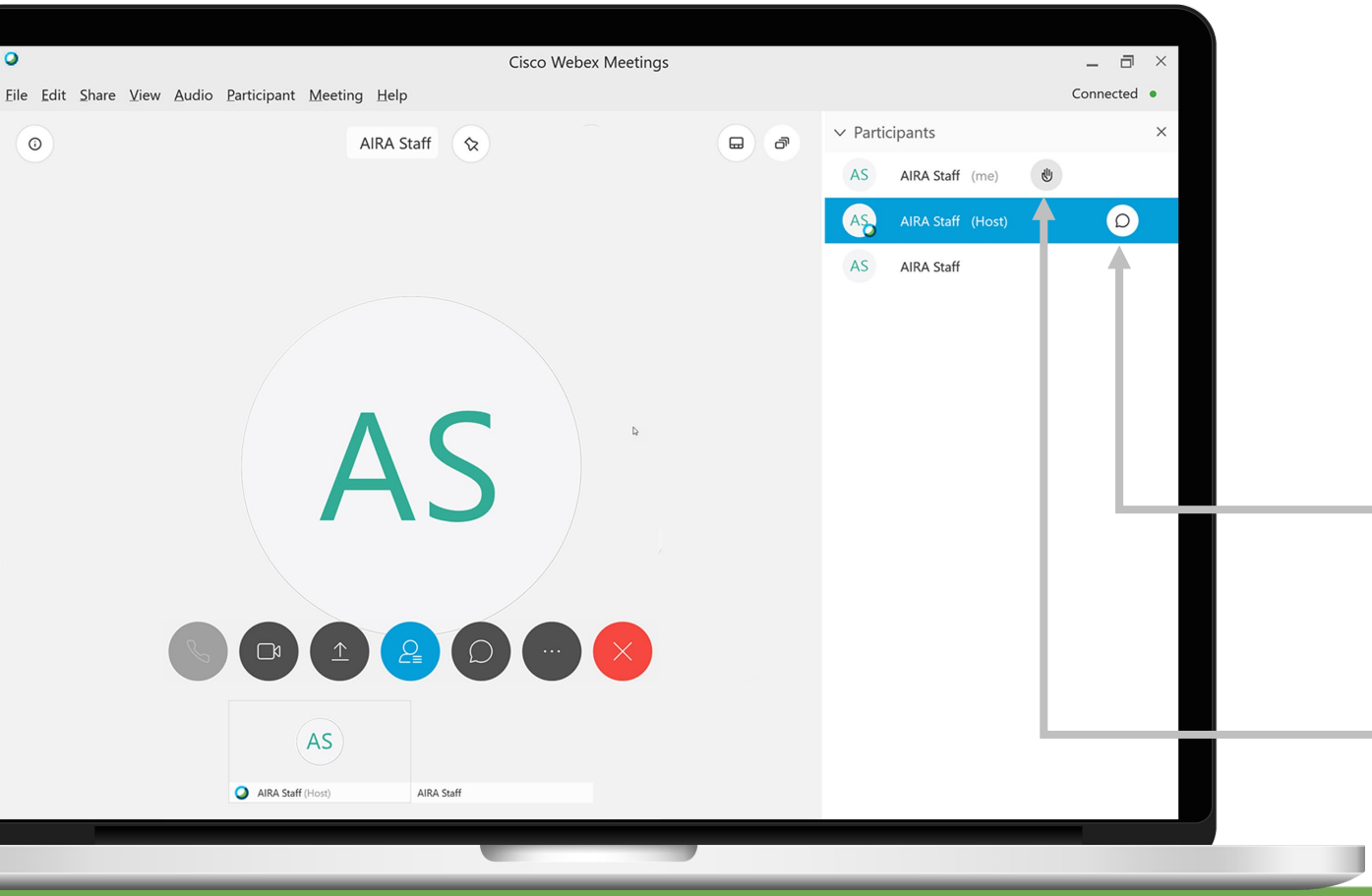
Before We Get Started



All phone lines
are muted

This meeting is being recorded
and will be posted on the
AIRA repository

Question & Answer



How do I ask a question?

- There will be time allotted for Q&A following the presentation, to unmute your line press *6
- Via WebEx:

Select the chat icon next to the host and type question into the chat box.

Select the hand icon next to your name and you will be called on.

Today's Speakers

- Beth Cox (CDC)
- Miriam Muscoplat (MN)
- Heather Roth (CO)
- Steve Nickell (CA)
- Nathalie Hartert (TN)
- Nathan Bunker (AIRA)

Beth Cox

Centers for Disease Control and Prevention

National Center for Immunization & Respiratory Diseases

IIS Data Quality: Blueprint for the Future

AIRA ESC Webinar

Beth Cox, IIS SME
IISSB/ISD/NCIRD/CDC

3/10/2020

Guiding Principles for IIS Data Quality Blueprint

Align with CDC Priorities

With high functioning systems and high data quality, IIS can **assess coverage**, **identify vulnerable populations,** and **support** responses to **emerging needs.**

Focus on improved data quality

Promote the virtuous data use/data quality cycle and seven characteristics of high quality data

Build on progress already made

Leverage progress awardees made over the last 20 years using the ***IIS Functional Standards*** to build infrastructure to support quality data

A Virtuous Cycle

Making IIS data available helps create a virtuous cycle to improve IIS data completeness, timeliness, validity, accuracy, uniqueness, and consistency. *You don't have to wait for perfect data to use it!*

A Virtuous Cycle

DQ Characteristic

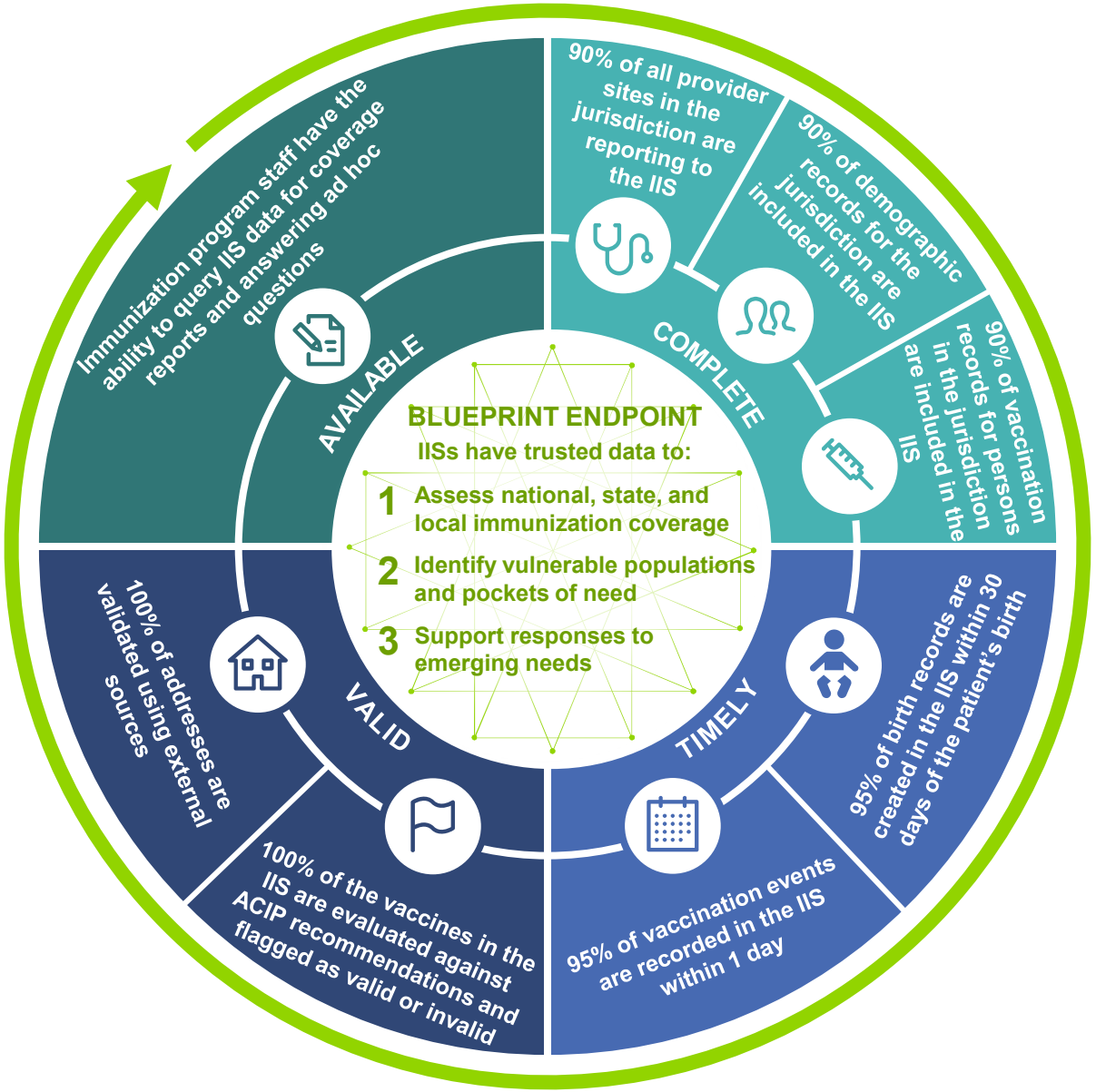
- Available

DQ Characteristic

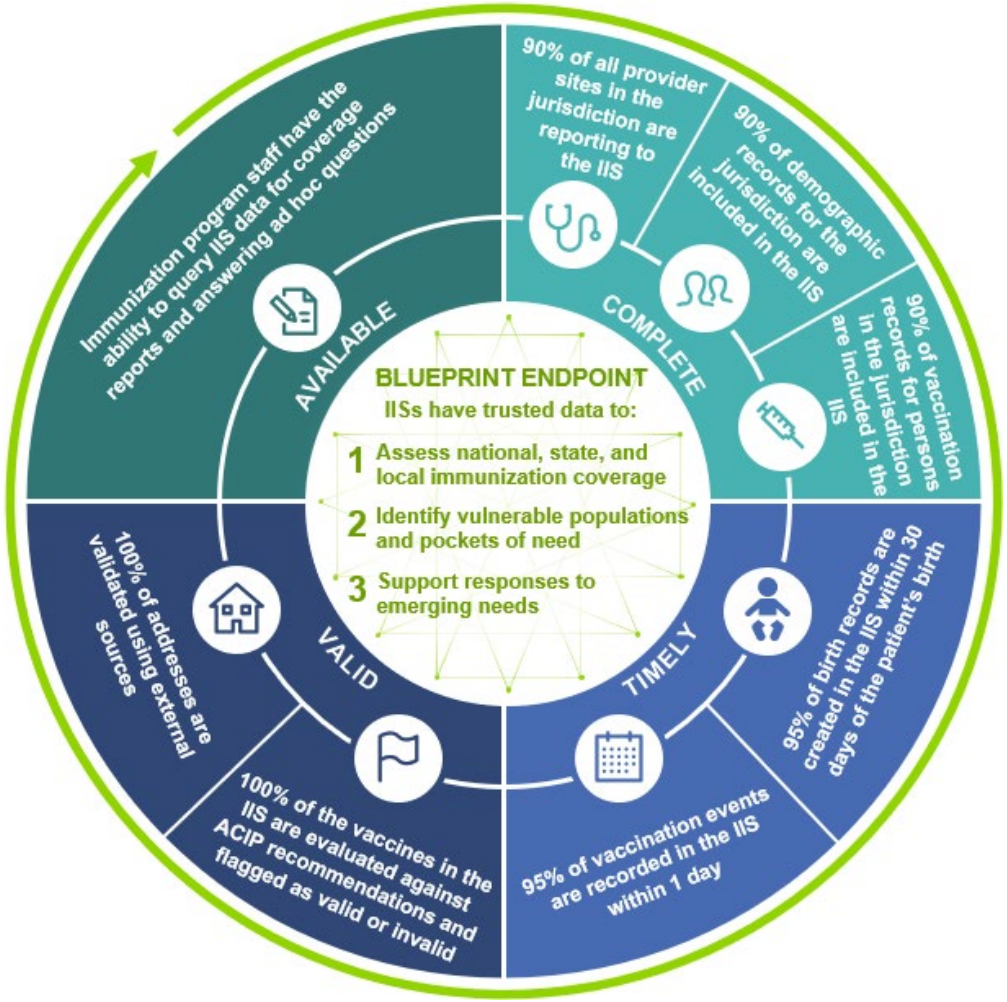
- Complete
- Timely
- Valid
- Accurate
- Consistent
- Unique

Making IIS data available helps create a virtuous cycle to improve IIS data completeness, timeliness, validity, accuracy, uniqueness, and consistency. *You don't have to wait for perfect data to use it!*

IIS Data Quality Blueprint



The Blueprint endpoint defines IISSB's vision for improving IIS data quality



Endpoint

- IISs will be ***the* trusted source** for reliable immunization data
- As the trusted source, IISs will produce data to support:
  - ***Immunization coverage assessments***
  - ***Identification of pockets of need***
  - ***Responses to emerging needs***

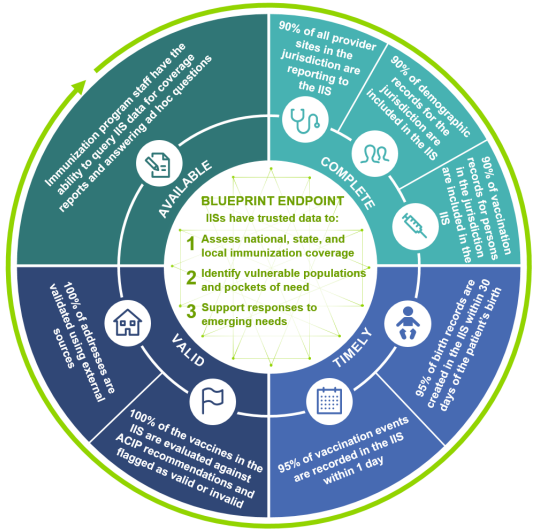
The blueprint represents a transformation in our approach to IIS performance improvement

Performance Improvement in the Past	A *New* Approach to Improvement
Reporting focused on system operations and efficiency	Reporting focused on the quality of IIS data
Activities guided by Functional Standards (FS) and previous CoAg guidance	Activities guided by the Blueprint and the new CoAg, informed by FS as needed
IIS Dashboard as the key tool for tracking and illustrating performance	Data Quality Report informs the IIS Dashboard, tracking and illustrating performance

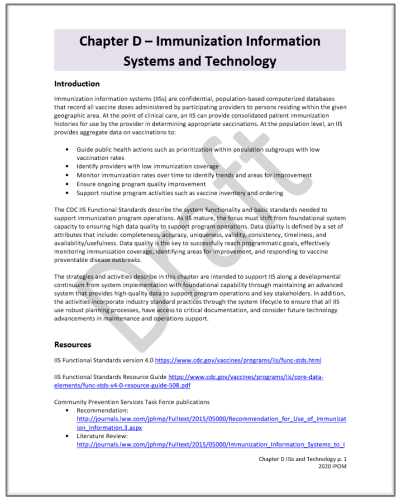
Leveraging the Blueprint and IPOM Chapter D

1. CDC sets the direction and creates supporting materials
2. CDC and Awardees collaborate on developing CoAg work plans
3. Awardees implement the plans to achieve immunization program goals

Using the Blueprint and Supporting Materials to Provide Awardees with Tailored Recommendations



IPOM and Components



Chapter D – Immunization Information Systems and Technology

Introduction

Immunization information systems (IISs) are confidential, population-based computerized databases that record all vaccine doses administered by participating providers to persons residing within the given geographic area. At the point of clinical care, an IIS can provide consolidated patient immunization histories for use by the provider in determining appropriate vaccinations. At the population level, an IIS provides aggregate data on vaccinations to:

- Guide public health actions such as prioritization within population subgroups with low vaccination rates
- Identify providers with low immunization coverage
- Monitor immunization rates over time to identify trends and areas for improvement
- Ensure ongoing program quality improvement
- Support routine program activities such as vaccine inventory and ordering

The CDC IIS Functional Standards describe the system functionality and basic standards needed to support immunization program operations. As IIS mature, the focus must shift from foundational system capacity to ensuring high data quality to support program operations. Data quality is defined by a set of attributes that include: completeness, accuracy, uniqueness, validity, consistency, timeliness, and availability/usefulness. Data quality is the key to successfully reach programmatic goals, effectively monitoring immunization coverage, identifying areas for improvement, and responding to vaccine preventable disease outbreaks.

The strategies and activities described in this chapter are intended to support IIS along a developmental continuum from system implementation with foundational capability through maintaining an advanced system that provides high-quality data to support program operations and key stakeholders. In addition, the activities incorporate industry standard practices through the system lifecycle to ensure that all IIS use robust planning processes, have access to critical documentation, and consider future technology advancements in maintenance and operations support.

Resources

IIS Functional Standards version 4.0 https://www.cdc.gov/vaccines/programs/iis/func-stds.html

IIS Functional Standards Resource Guide https://www.cdc.gov/vaccines/programs/iis/core-data-element/func-stds-v4-0-resource-guide-508.pdf

Community Prevention Services Task Force publications

- Recommendation: http://journals.lww.com/jphmp/Fulltext/2015/05000/Recommendation_for_Use_of_Immunization_Information_3.aspx
- Literature Review: http://journals.lww.com/jphmp/Fulltext/2015/05000/Immunization_Information_Systems_to_I

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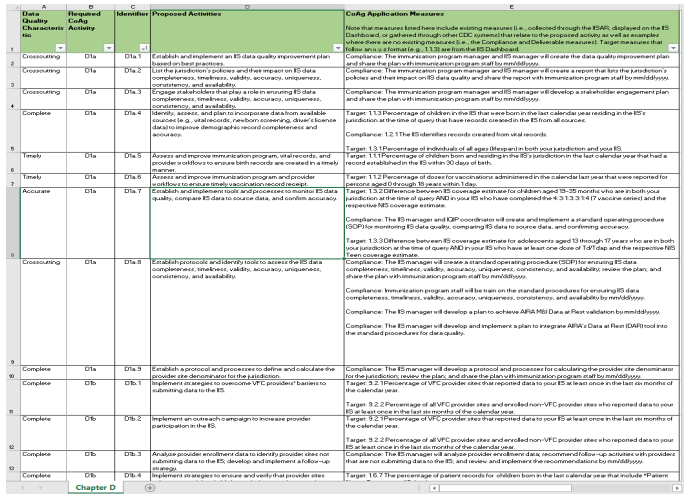
2020 IPOM

Activities & Measures



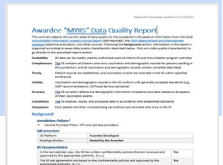
Data Quality Characteristic	Required CoAg Activity	Identifier	Proposed Activities	CoAg Application Measures
				None that measures listed here include existing measures (i.e., collected through the IISAR, displayed on the IIS Dashboard, or gathered through other CDC systems) that relate to the proposed activity as well as examples where there are no existing measures (i.e., the Compliance and Deliverable measures). Target measures that follow are in a format (e.g., 1.1.3) are from the IIS Dashboard.
Crosscutting	D1a	D1a.1	Establish and implement an IIS data quality improvement plan based on best practices.	Compliance: The immunization program manager and IIS manager will create the data quality improvement plan and share the plan with immunization program staff by mm/dd/yyyy.
Crosscutting	D1a	D1a.2	List the jurisdiction's policies and their impact on IIS data completeness, timeliness, validity, accuracy, uniqueness, consistency, and availability.	Compliance: The immunization program manager and IIS manager will create a report that lists the jurisdiction's policies and their impact on IIS data quality and share the report with immunization program staff by mm/dd/yyyy.
Crosscutting	D1a	D1a.3	Engage stakeholders that play a role in ensuring IIS data completeness, timeliness, validity, accuracy, uniqueness, consistency, and availability.	Compliance: The immunization program manager and IIS manager will develop a stakeholder engagement plan and share the plan with immunization program staff by mm/dd/yyyy.
Complete	D1a	D1a.4	Identify, assess, and plan to incorporate data from available sources (e.g., vital records, newborn screening, driver's license data) to improve demographic record completeness and accuracy.	Target: 1.1.3 Percentage of children in the IIS that were born in the last calendar year residing in the IIS's jurisdiction at the time of query that have records created in the IIS from all sources. Compliance: 1.2.1 The IIS identifies records created from vital records. Target: 1.3.1 Percentage of individuals of all ages (lifespan) in both your jurisdiction and your IIS.
Timely	D1a	D1a.5	Assess and improve immunization program, vital records, and provider workflows to ensure both records are created in a timely manner.	Target: 1.1.1 Percentage of children born and residing in the IIS's jurisdiction in the last calendar year that had a record established in the IIS within 30 days of birth.
Timely	D1a	D1a.6	Assess and improve immunization program and provider workflows to ensure timely vaccination record receipt.	Target: 1.1.2 Percentage of doses for vaccinations administered in the calendar last year that were reported for persons aged 0 through 18 years within 1 day.
Accurate	D1a	D1a.7	Establish and implement tools and processes to monitor IIS data quality, compare IIS data to source data, and confirm accuracy.	Target: 1.3.2 Difference between IIS coverage estimate for children aged 19–35 months who are in both your jurisdiction at the time of query AND in your IIS who have completed the 4-3.1-3.3-1-4 (7 vaccine series) and the respective NIS coverage estimate. Compliance: The IIS manager and IQIP coordinator will create and implement a standard operating procedure (SOP) for monitoring IIS data quality, comparing IIS data to source data, and confirming accuracy. Target: 1.3.3 Difference between IIS coverage estimate for adolescents aged 13 through 17 years who are in both your jurisdiction at the time of query AND in your IIS who have at least one dose of Tdf-Dap and the respective NIS Teen coverage estimate.
Crosscutting	D1a	D1a.8	Establish protocols and identify tools to assess the IIS data completeness, timeliness, validity, accuracy, uniqueness, consistency, and availability.	Compliance: The IIS manager will create a standard operating procedure (SOP) for ensuring IIS data completeness, timeliness, validity, accuracy, uniqueness, consistency, and availability; review the plan; and share the plan with immunization program staff by mm/dd/yyyy. Compliance: Immunization program staff will be train on the standard procedures for ensuring IIS data completeness, timeliness, validity, accuracy, uniqueness, consistency, and availability by mm/dd/yyyy. Compliance: The IIS manager will develop a plan to achieve AIRA MIQI Data at Fleet validation by mm/dd/yyyy. Compliance: The IIS manager will develop and implement a plan to integrate AIRA's Data at Fleet (DAF) tool into the standard procedures for data quality.
Complete	D1a	D1a.9	Establish a protocol and processes to define and calculate the provider site denominator for the jurisdiction.	Compliance: The IIS manager will develop a protocol and processes for calculating the provider site denominator for the jurisdiction; review the plan; and share the plan with immunization program staff by mm/dd/yyyy.
Complete	D1b	D1b.1	Implement strategies to overcome VFC providers' barriers to submitting data to the IIS.	Target: 3.2.1Percentage of VFC provider sites that reported data to your IIS at least once in the last six months of the calendar year. Target: 3.2.2 Percentage of all VFC provider sites and enrolled non-VFC provider sites who reported data to your IIS at least once in the last six months of the calendar year.
Complete	D1b	D1b.2	Implement an outreach campaign to increase provider participation in the IIS.	Target: 3.2.1Percentage of VFC provider sites that reported data to your IIS at least once in the last six months of the calendar year. Target: 3.2.2 Percentage of all VFC provider sites and enrolled non-VFC provider sites who reported data to your IIS at least once in the last six months of the calendar year.
Complete	D1b	D1b.3	Analyze provider enrollment data to identify provider sites not submitting data to the IIS; develop and implement a follow-up strategy.	Compliance: The IIS manager will analyze provider enrollment data; recommend follow-up activities with providers that are not submitting data to the IIS; and review and implement the recommendations by mm/dd/yyyy.
Complete	D1b	D1b.4	Implement strategies to ensure and verify that provider sites	Target: 1.6.7 The percentage of patient records for children born in the last calendar year that include *Patient

Chapter D

2019

October

IISSB creates a **data quality report** for every awardee and identifies **strengths and opportunities**


Awardee "MYIIS" Data Quality Report

November

IISSB, **recommend activities for each awardee,** with input from partner organizations

2020

January

IISSB and awardees discuss recommendations before, during, and after the IAM

April

Awardees submit their CoAg and component applications

eGrATIS

Miriam Muscoplat

Minnesota

Heather Roth

Colorado

Diving into IIS Data

Getting Comfortable with Imperfection

Heather Roth, MA
Deputy Immunization Branch Chief / IIS Program Manager

COLORADO
Department of Public Health & Environment

OVERVIEW

Phase I: Individualized county rate reports

Phase 2: Shared county rates map online

Phase 3: Interactive online dashboard

Colorado's IIS

Lifelong

Voluntary

Opt-out

What can the IIS tell us about vaccination coverage in Colorado?

PHASE 1

Generated individualized county-level coverage assessments using IIS for all local public health agencies, twice per year.

Results provided in report card format.
No sharing or posting.

PHASE 2

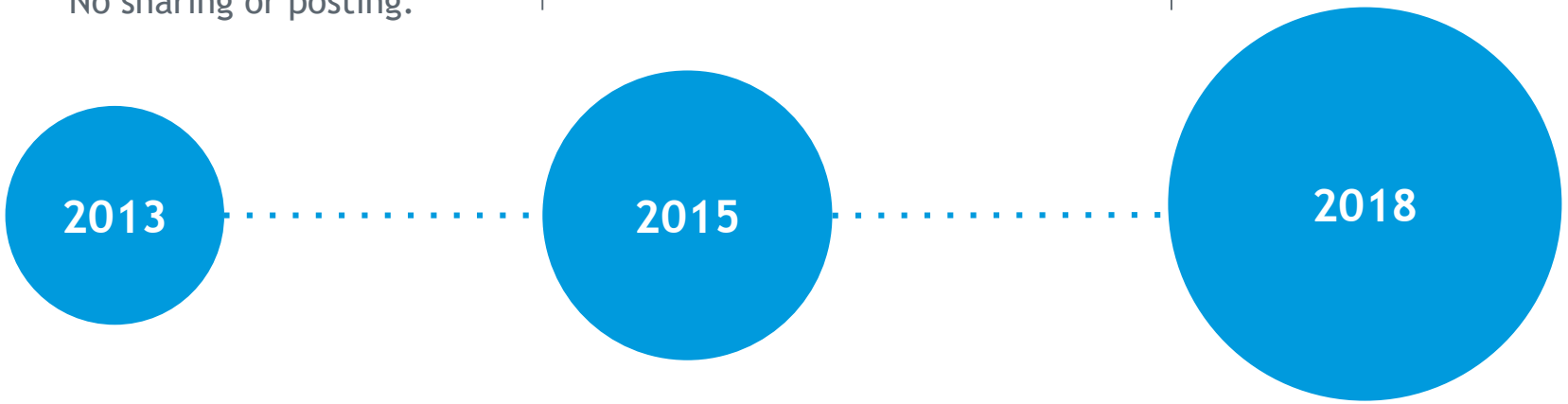
Created and shared county-level data on website.

Static PDFs.
Only included rate ranges, not exact rates.

PHASE 3

Transitioned to interactive Tableau data visualization on website.

User-driven.
Exact rates displayed.



PHASE 1: INDIVIDUAL COUNTY RATES (2013)

Mirrored logic in canned IIS rates report.

Rates not shared across agencies.

Nothing shared publicly.

Accompanied with a one-pager with tips on interpreting and comparing rates.

INDIVIDUAL REPORT SAMPLE

COLORADO
Department of Public Health & Environment
Dedicated to protecting and improving the health and environment of the people of Colorado

Colorado Immunization Information System (CIIS)
Summary Report of 2014 County-level Immunization Rates for: [ ] County

Background

The Colorado Immunization Information System (CIIS) can be a valuable tool to estimate immunization uptake and track coverage levels over time. As it is not mandatory for healthcare providers to submit data to CIIS, immunization coverage levels are calculated based on the information present in CIIS. If there are a significant number of patients and/or immunizations missing in CIIS, immunization rates calculated may not accurately reflect the rates in your county. For this report, CIIS estimated the percentage of patients 19 – 35 months and 13 – 17 years that have fully met the defined vaccine series from January 1, 2014 through June 30, 2014. National Immunization Survey coverage estimates and Healthy People 2020 goals are provided below for comparison. *Information contained in this report was generated: December 18, 2014*

Coverage Estimates and National Goals

National Immunization Survey (NIS): NIS-Child 19-35 months and NIS-Teen 13-17 years

The NIS is an annual telephone survey sponsored by the Centers for Disease Control and Prevention and is the most commonly referenced source for statewide immunization rates. Typically, immunization coverage rates generated from CIIS will be lower than those reported in the NIS due to the completeness of registry data and differing methodology (NIS counts valid and invalid doses while CIIS counts only valid doses).

2013 NIS - Child (19 – 35 months) Coverage Estimates for the 4:3:1:3:3:1:4 Series in Colorado:	**69.2%**
4+ Diphtheria, Tetanus, acellular Pertussis (DTaP):	81.2%
3+ Polio:	90.3%
1+ Measles, Mumps, Rubella (MMR):	86.0%
3 or 4+ *Haemophilus influenzae* b (Hib):	82.8%
3+ Hepatitis B:	84.1%
1+ Varicella:	84.8%
4+ Pneumococcal conjugate vaccine (PCV13):	84.0%
2013 NIS – Teen (13 – 17 years) Coverage Estimates in Colorado:	
1+ Tetanus, diphtheria, acellular pertussis (Tdap):	87.1%
3+ Human papillomavirus (HPV) for females:	39.1%
3+ Human papillomavirus (HPV) for males:	9.9%
1+ Meningococcal conjugate vaccine (MCV4):	73.6%

Healthy People 2020 Goals

Healthy People 2020 provides science-based, 10-year national objectives for improving the health of all Americans. Healthy People 2020, led by the U.S. Department of Health and Human Services, is the result of a multi-year process that reflects input from a diverse group of individuals and organizations including public health and prevention experts, a wide range of federal, state and local government officials, a consortium of more than 2,000 organizations, and the public.

Increase the percentage of children aged 19 to 35 months who receive the recommended doses of DTaP, polio, MMR, Hib, hepatitis B, varicella, and PCV.

Series Target: 80%[1]

[1] Leading Health Indicator – Subset of Healthy People 2020 objectives selected to indicate high priority health issues.

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Individual Antigen Targets: 90%

Increase routine vaccination coverage levels for adolescents.

Individual Antigen Targets: 80%

County-level Coverage Estimates

Children 19 – 35 months of age

Included: All patients 19-35 months old, as of June 30, 2014, who lived in your county, received more than one non-influenza vaccination, and were considered active in CIIS.

4:3:1:3:3:1:4 Series Rate: 67.74%

Individual Antigen Rates

4+ Diphtheria, Tetanus, acellular Pertussis (DTaP):	76.76%
3+ Polio:	88.41%
1+ Measles, Mumps, Rubella (MMR):	88.03%
3 or 4+ *Haemophilus influenzae* b (Hib):	89.53%
3+ Hepatitis B:	87.2%
1+ Varicella:	87.4%
4+ Pneumococcal conjugate vaccine (PCV13):	75.24%

Adolescents 13-17 Years of age

Included: All patients 13-17 years old, as of June 30, 2014, who lived in your county, received more than one non-influenza vaccination, and were considered active in CIIS.

Individual Antigen Rates

1+ Tetanus, diphtheria, acellular pertussis (Tdap):	69.88%
3+ Human papillomavirus (HPV) in females:	31.36%
3+ Human papillomavirus (HPV) for males:	14.13%
1+ Meningococcal conjugate vaccine (MCV4):	66.21%

ACCOMPANYING ONE-PAGER

COLORADO
Department of Public Health & Environment

CIIS County Level Immunization Rates

Interpreting and Comparing Rates

This report calculates county immunization coverage levels based on the information reported to the Colorado Immunization Information System (CIIS). If there are a significant number of patients or immunizations missing, it will unduly impact the results and the immunization rates calculated may not accurately reflect the rates in your county. Per CDC guidelines, to use registry data to accurately estimate county-level immunization rates, a minimum of 85% of providers in the county must submit data, and 85% of patients living in the county must have records in the registry. Most counties do not have all providers reporting to CIIS, so it is likely that the immunization rates generated out of CIIS underestimate the actual county rates.

This second set of county-level immunization rates shows some notable differences when compared to the previously distributed county rates for June 30, 2013 through December 31, 2013. You may see variation in your county's rates. The widest variation is seen in smaller counties where fewer children were included in the rate calculations. Among the adolescent immunizations, the largest variation was seen in the HPV rates. Because the HPV rates are reported by females or males separately, each rate includes a reduced number of adolescents in the analysis, which can make the rate fluctuate or be unstable.

If the data for your county reports shows an increase or decrease in rates compared to the previous report, the difference may be due to multiple factors:

- These rates are estimates for your county and are highly dependent on the completeness and accuracy of the data in the registry.
  - The number of providers reporting to the registry may have increased or decreased over this specified time period.
  - Providers with Electronic Health Records (EHRs) that are on the waiting list to connect electronically with CIIS may have temporarily suspended entering their immunization information manually into the registry.

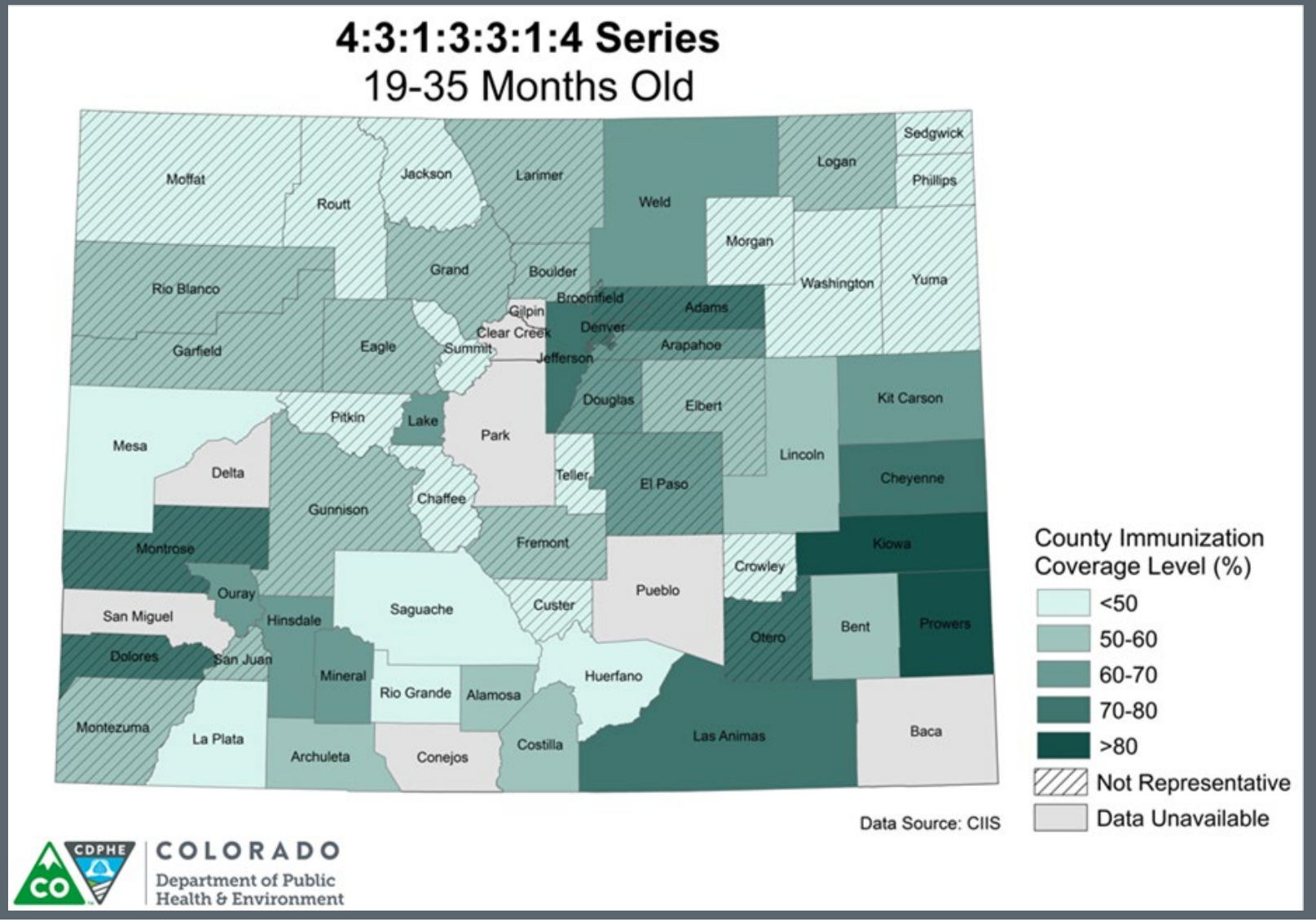
- There was a reduction in the number of children included in the analysis due to a change in the way the data query was run.
  - This resulted in a 20% decrease in the number of children 19-35 months old included in the report and an 8% decrease in the number of adolescents 13-17 years included in the analysis.
  - Decreasing the number of children may cause the rates to be less stable and fluctuate more, especially in smaller counties.
  - Even with the decrease, the new methodology and six-month time frame will be used moving forward because it allows us to run the reports more efficiently and to share more timely reports with local public health agencies.

- Counties with smaller populations may see more fluctuation in their rates because of how smaller numbers can impact rate calculations.
  - Compare the impact of having 10 less children up-to-date in a county with 100 children versus a county with 500 children. The smaller county would have a -10% difference in up-to-date rates, while in the larger county it would only be a -2% difference.
  - This is an issue when analyzing geographic areas with small populations and can cause rates to vary or fluctuate widely.

The Immunization Branch is exploring ways to assess the accuracy of county rates by measuring the completeness of the data in CIIS. Data from Colorado's Center for Improving Value in Health Care (CIVHC) All Payer Claims Database (APCD) will be used to determine the providers submitting data to CIIS, and help us identify those who are not. We hope that APCD claims data can also be used to assess the percentage of immunizations that are being entered into CIIS by county. This analysis won't be completed until later in 2015.

Expect the next county rate report for June through December 2014 to be sent out in March or April 2015.

COUNTY RATES MAP SAMPLE (2014)



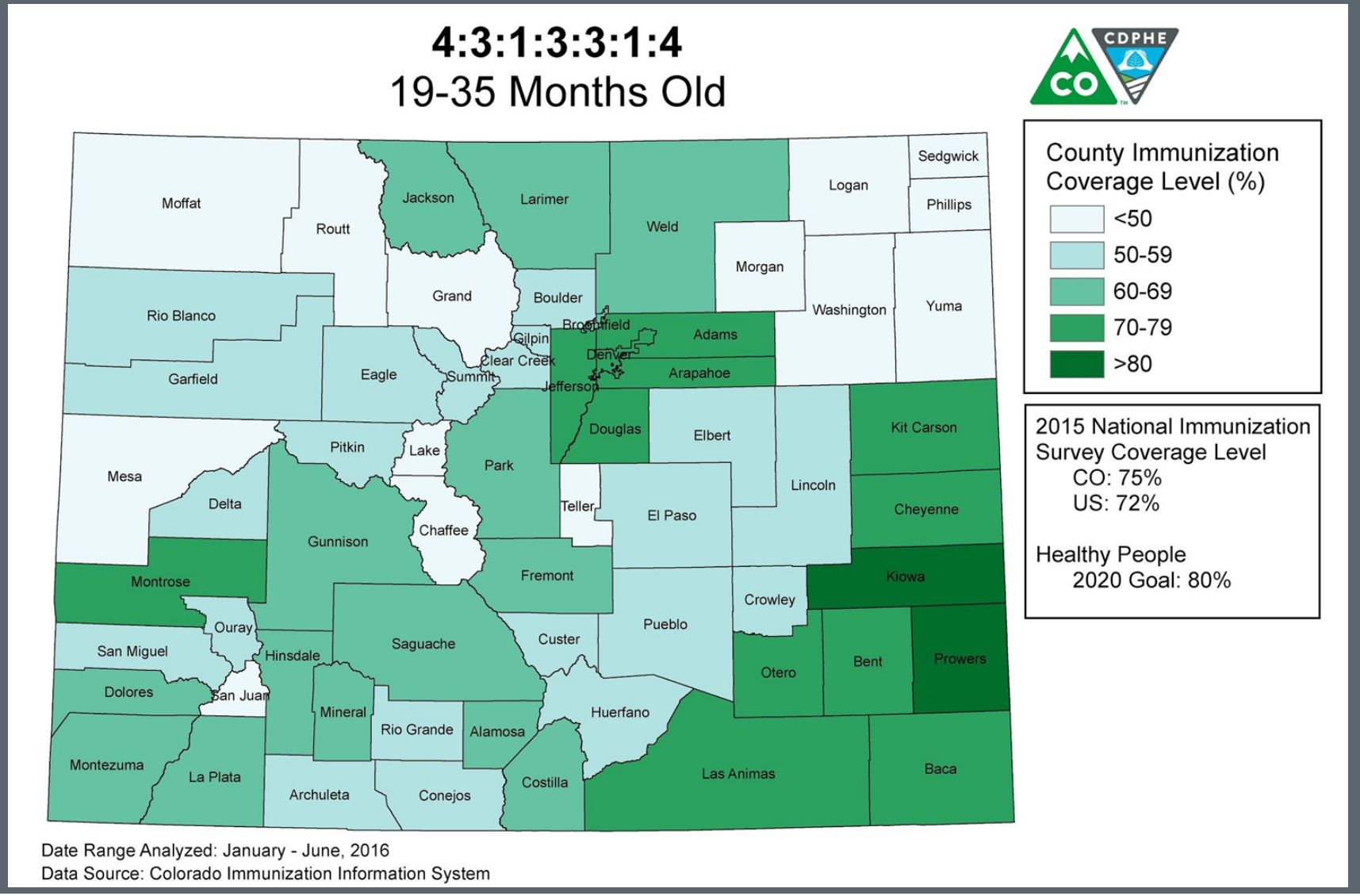
PHASE 2: SHARED COUNTY RATES (2015)

Posted static PDFs of county rates on website.

Only rate ranges were shared. “Representative” designations were removed.

Updated logic to include patient records without a county designation.

COUNTY RATES MAP SAMPLE (2016)



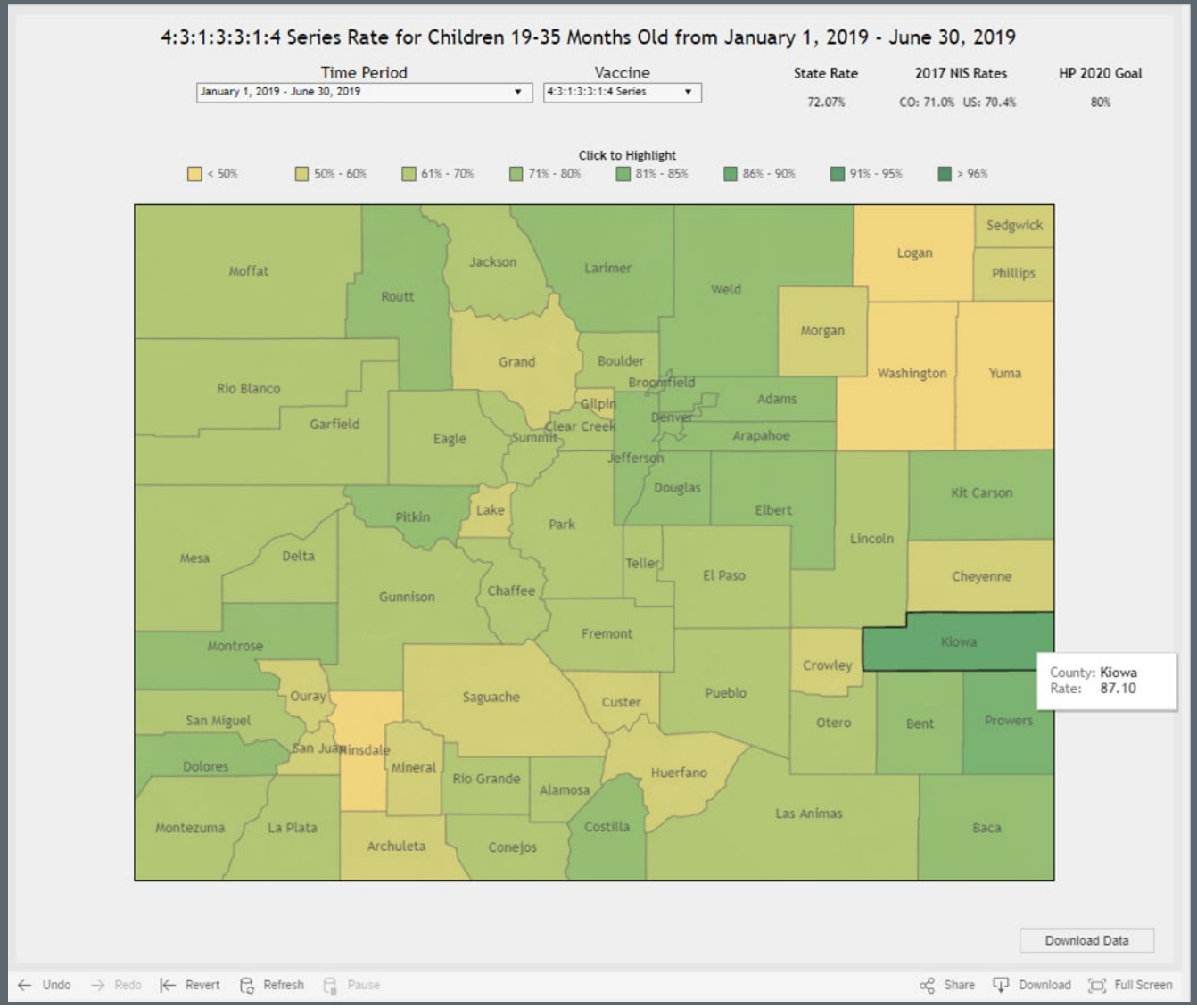
PHASE 3: INTERACTIVE ONLINE DASHBOARD (2018)

Converted static PDFs to interactive data visualization using Tableau.

Allows user-driven display of data.

Added actual rates for counties in 2019.

INTERACTIVE ONLINE DASHBOARD



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Department of Public Health & Environment

“BIG DATA SETS ARE NEVER COMPLETE.”

— Kate Crawford, Co-founder AI Now Institute, NYU

It’s okay to take baby steps.

Start somewhere and seek input. Revise. Repeat.

Keep an eye on data quality.

Be clear about what the data can and cannot say.

Share any caveats that are key to interpretation.


TAKE THE LEAP

THANKS!

Questions?

Heather Roth
heather.roth@state.co.us

Steve Nickell

California

Possible Use of Incentives to Drive DQ Improvement

CAIR2

- Major IIS in CA hosted by CA Department of Public Health
- WIR Software
- Data sharing with remaining 2 ‘independent’ IISs to begin in 2020

CAIR2 Data Submission Statistics (Jan 2020)

- 4,772 DX accounts (85%)

  848 UI only accounts (15%)
- 2.75M VXUs /8.75M QBPs

Ongoing DX DQ Improvement Efforts

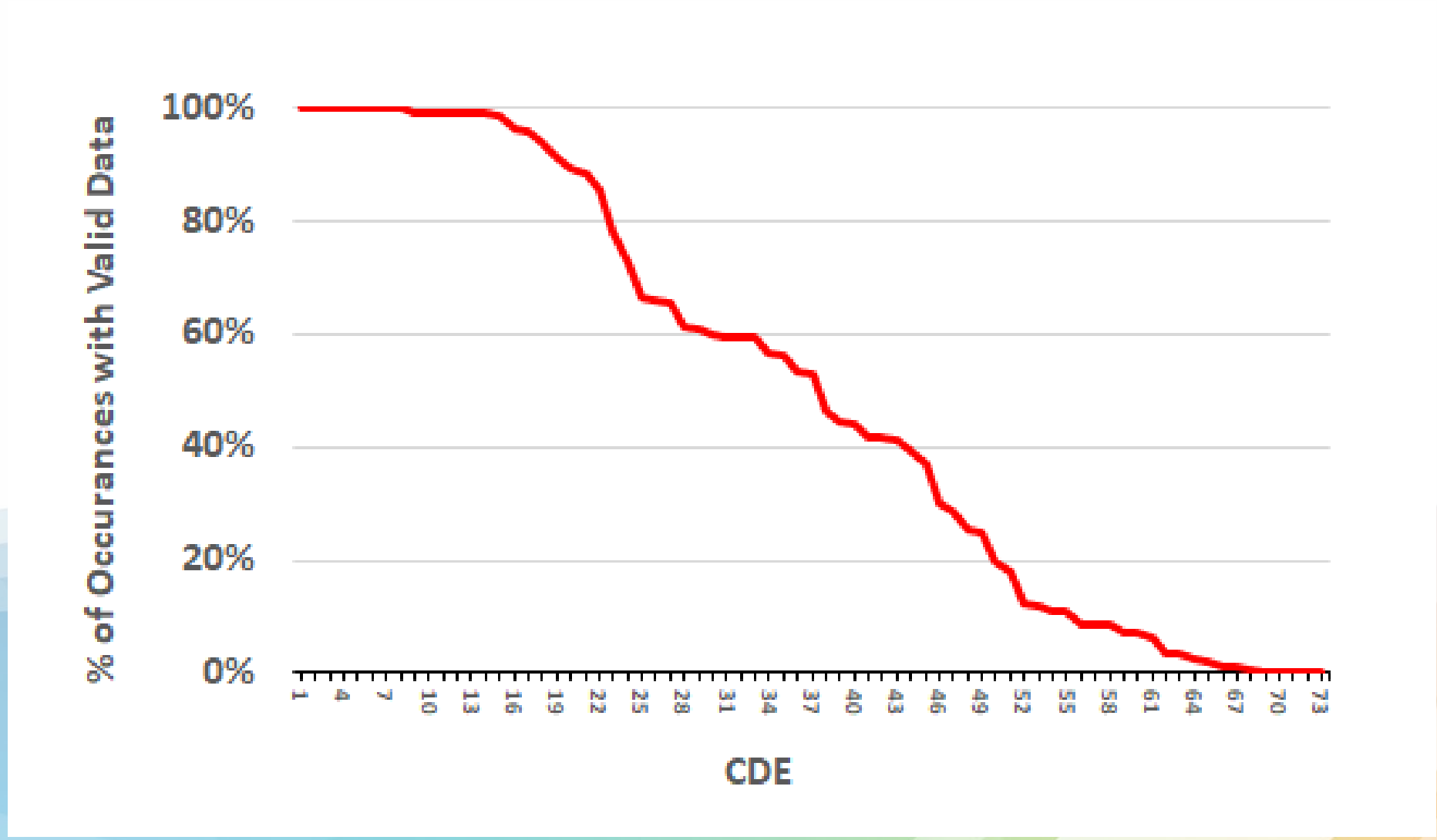
- Monthly analysis of incoming VXUs (*HL7Spy*)
  - Inactive CVXs
  - Age-inappropriate CVXs (Hep A, Hep B, PPSV23, Shingrix)
  - Vaccine eligibility (VFC only)
  - Excessive ‘protected’ records (>5%)

CC2 YR1 – Data Quality Improvement

- Assess data completeness of CDC Core Data Elements in incoming VXUs on monthly basis
- Pick 1-3 to target for improvement
- **Which ones should we choose for YR2?**

		Jan-20		
Field Position	Field Name	# of Occurences	% of Occurences	# of Segment Occurences
OBX-14	Date of history of vaccine preventable disease (If OBX-3 = 59784-9)	0	0.00%	3,811,576
PID-22.1	Ethnicity	1,636,266	59.50%	2,750,094
OBX-5	History of disease/titer (If OBX-3 = 59784-9)	849	0.02%	3,811,576
PID-6.2	Mother's name: first	101,531	3.69%	2,750,094
PID-6.3	Mother's name: middle	6,760	0.25%	2,750,094
PID-6.1	Mother's name: last	302,279	10.99%	2,750,094
PID-6.1	Mother's name: maiden last	166,397	6.05%	2,750,094
PID-11.9	Patient address: county of residence	1,014,005	36.87%	2,750,094
PID-11.3	Patient address: city	2,722,158	98.98%	2,750,094
PID-11.6	Patient address: country	1,639,711	59.62%	2,750,094
PID-11.4	Patient address: state	2,722,193	98.99%	2,750,094
PID-11.1	Patient address: street	2,721,773	98.97%	2,750,094
PID-11.5	Patient address: zip code	2,722,275	98.99%	2,750,094
PID-9.2	Patient alias name: first	235,983	9.19%	2,750,094
PID-9.3	Patient alias name: middle	69,961	2.46%	2,750,094
PID-9.1	Patient alias name: last	237,281	9.25%	2,750,094
PID-25	Patient birth order	197,591	7.18%	2,750,094
PID-23.4	Patient birth state	232,005	8.44%	2,750,094
PID-7	Patient date of birth	2,750,084	100.00%	2,750,094
PID-13[X].2	Patient email address (PID-13.2 = NET)	781,264	28.41%	2,750,094
PID-13[X].4	Patient e-mail address (PID-13.4 = email address)	696,525	25.33%	2,750,094
PID-13[X].4	Patient e-mail address (PID-13.4 = valid email address)	678,621	24.68%	2,750,094
PID-8	Patient gender	2,749,956	99.99%	2,750,094
PID-3.1	Patient ID	2,749,664	99.98%	2,750,094
PID-3.5	Patient ID: type	2,749,472	99.98%	2,750,094
PID-4.1	IIS Patient ID	491,728	17.88%	2,750,094
PID-24	Patient multiple birth indicator	1,273,303	46.30%	2,750,094
PID-5.2	Patient name: first	2,750,090	100.00%	2,750,094
PID-5.3	Patient name: middle	1,075,934	39.12%	2,750,094
PID-5.1	Patient name: last	2,750,091	100.00%	2,750,094
PID-15.1	Patient primary language	1,683,468	61.21%	2,750,094
PD1-16	Patient status indicator-provider level	1,627,682	59.19%	2,750,094

Range of % CDE Data Completeness in Incoming CAIR2 VXUs (Jan 2020)



CC2 YR2 – 4 CDEs Chosen for Improvement

CDE	HL7 field	% of Occurances
Ordering Authority Last Name	ORC-12.2	**54%**
Ordering Authority NPI	ORC-12.1	**30%**
Cell phone number (valid) *	PID-13.3,7	**12%**
Email address (valid)	PID-13.4	**25%**

* IIS-NIS initiative

Why OA Last Name and OA NPI?

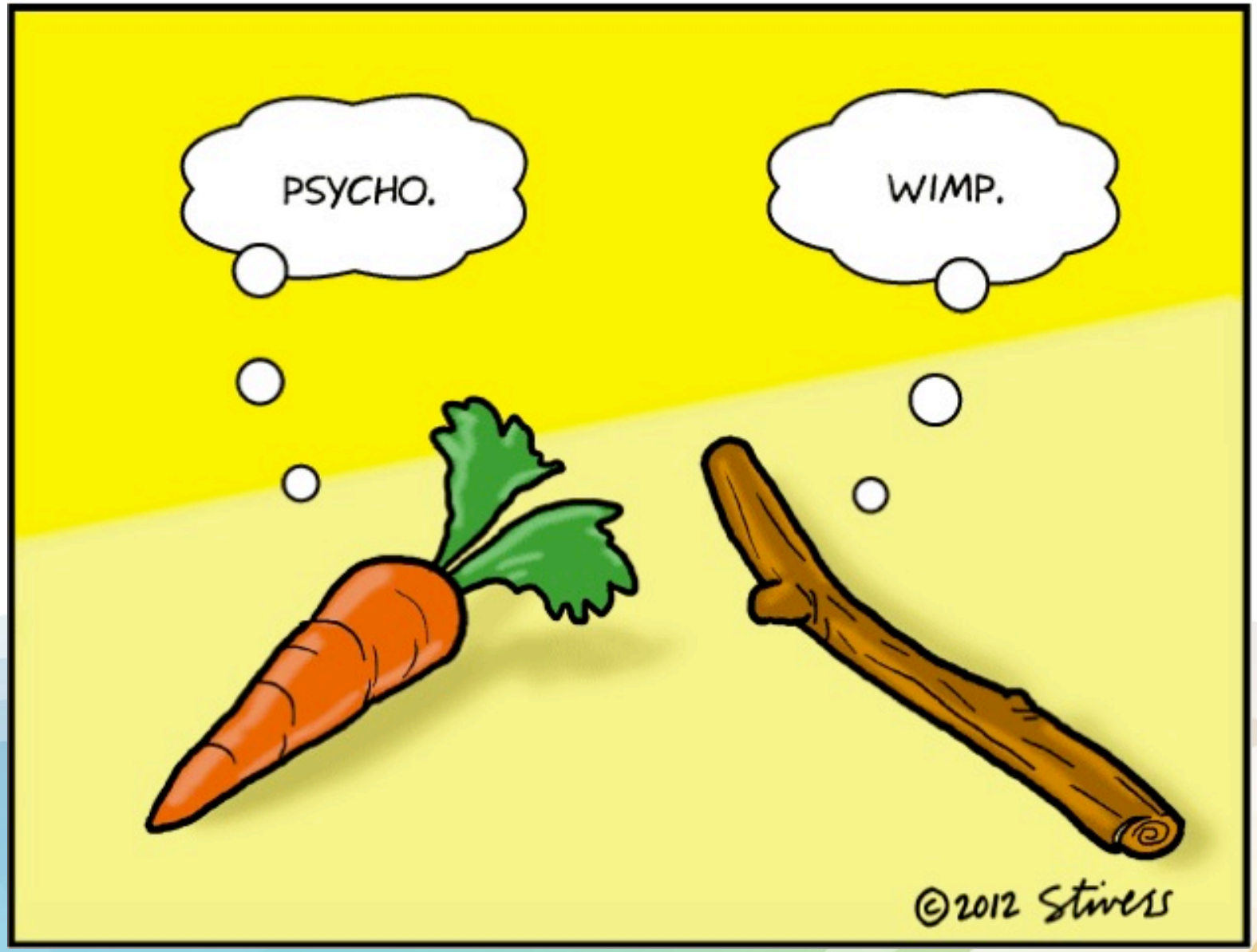
- New CA 'Value Based Payment Program' will pay Medicaid managed care-contracted providers $25 for each vaccine series completed by 2 yrs of age (up to $175 per child)
- CAIR2 data, specifically OA Name and OA NPI, to be used for secondary validation and this data is now being exported in HEDIS reports
- Targeted messaging to providers not sending OA or OA NPI will mention the VBP and available incentives for sending

Why Cell Phone and Email address?

- CA has decided to implement consumer access using the Docket mobile app platform and to incorporate two factor authentication utilizing either cell phone # or email address
- Messaging to providers and patients will emphasize the importance of cell phone /email being associated with the CAIR2 record for retrieval to work.

Conclusion

- The proportion of the 68 Core Data Element fields that are not populated in incoming CAIR2 VXU messages is high
- Obviously, not all CDEs have equal importance and choosing which ones to target for DQ improvement can be difficult.
- For YR2 of our CC2 Data Quality Improvement grant, we are choosing 4 poorly populated CDEs for improvement because they offer more immediate value as data elements supporting the current Value Based Payment incentive program and the coming Consumer Access rollout.
- It is hoped that the value provided to providers and consumers by these programs will drive providers to greater submission rates for these CDEs.


PSYCHO.
WIMP.
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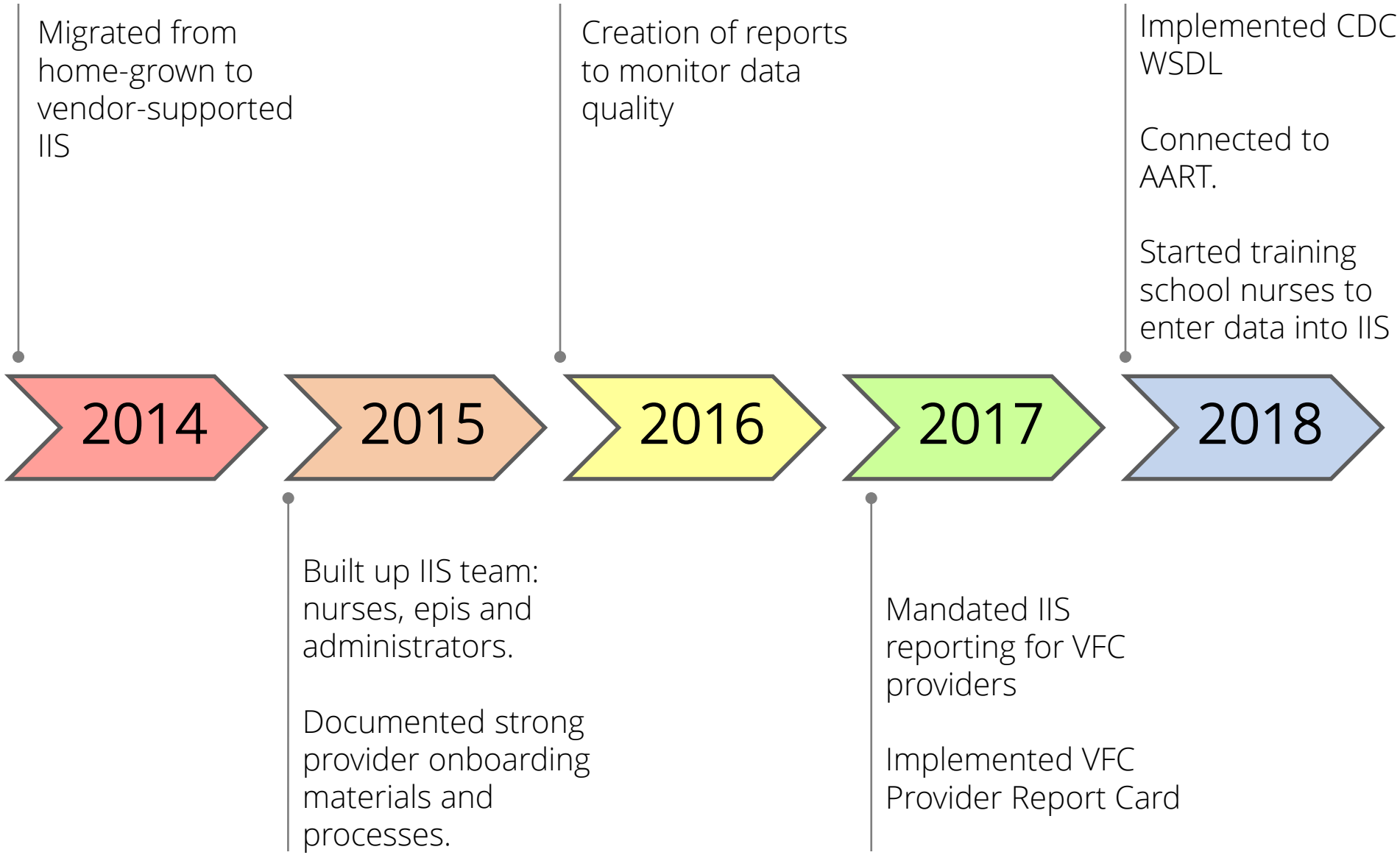
Nathalie Hartert

Tennessee

Tennessee's Path to Data Quality

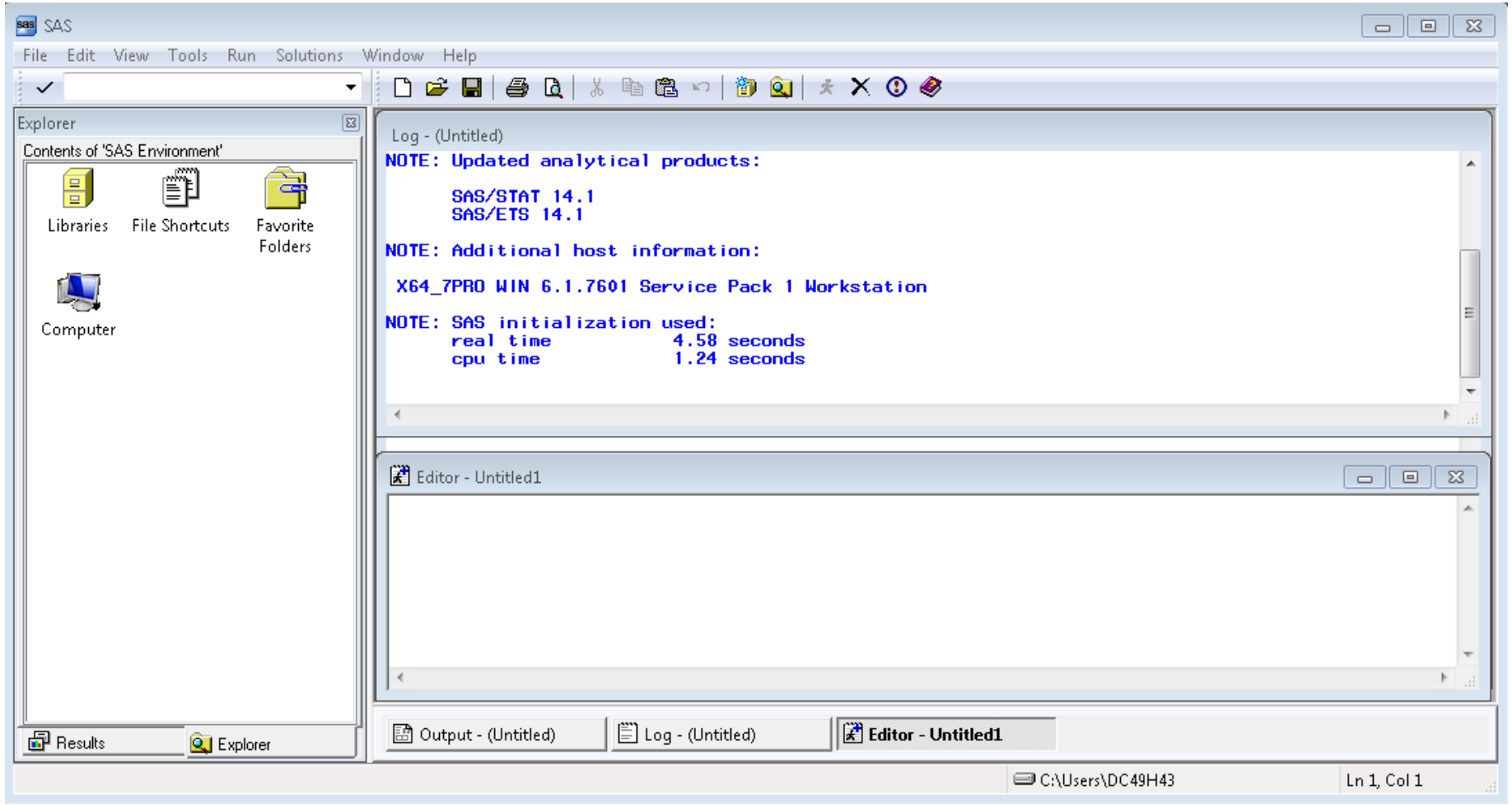
AIRA ESC

Nathalie Hartert, MA | March 10, 2020


Migrated from home-grown to vendor-supported IIS
Creation of reports to monitor data quality
Implemented CDC WSDL
Connected to AART.
Started training school nurses to enter data into IIS
2014
2015
2016
2017
2018
Built up IIS team: nurses, epis and administrators.
Documented strong provider onboarding materials and processes.
Mandated IIS reporting for VFC providers
Implemented VFC Provider Report Card

How does Tennessee improve data quality?

Much of our data quality work analyzes our IIS data in SAS (Statistical Analysis Software)



Onboarding

VXU MESSAGE REVIEW FOR [redacted]

NUMBER OF MESSAGES REVIEWED FOR ERRORS: 4
REVIEWED ON: 20190307

Data quality issues are divided into four categories based on severity. The ability of the organization to move into Production is based on fixing fatal ERRORs and WARNs. Messages with fatal ERRORs will be rejected by the IIS, while messages that WARN will be accepted by the IIS with an acknowledgement containing a WARNING.

HL7 MESSAGE FIELD	PRIORITY LEVEL	MESSAGE PERCENT	PROVIDER ACTION	EHR VENDOR ACTION
Patient Address (PID-11)	**ERROR**	**100**	Patient Address is missing. Ensure this field is populated correctly in the patient demographic information in the EHR system.	PID-11 (Patient Address) is missing. This is a required field.
Date/Time of Birth (PID-7) and Next of Kin Name (NK1-2)	**WARN**	**100**	If a patient is eligible for Vaccines for Children (<19 years old), please provide guardian information in the patient demographic information in the EHR system.	Patients that are VFC eligible (less than 19 years old per PID-7) are missing the required guardian field (NK1-2). Refer to Table 0063 in the 2.5.1 CDC HL7 Implementation Guide for a listing of acceptable values.
Processing ID (MSH-11)	**HIGH PRIORITY**	**100**		MSH-11 (Processing ID) is invalid for Production. Some messages have a T for Testing; this is acceptable for testing purposes, but must be populated with a P for Production messages.
Observation Value (OBX-5)	**HIGH PRIORITY**	**100**		OBX-5 (Observation Value) value and/or coding system is missing or invalid.
Action Code (RXA-21)	**HIGH PRIORITY**	**25**		RXA-21 (Action Code) is listed as Delete in some messages. This is a valid code and will delete the existing vaccination in TennIIS.

Incoming Data in Production

Our Weekly Frequency of Errors identifies providers that are sending in a high volume of erroring HL7 messages.

Organization Name	IRMS Number	PHC-Hub Profile ID	HL7 VERSION	EHR Vendor	Number of Errors This Week	All Messages This Week	Percent Error
FAKE TEST ORG NAME	1	123	2.5.1	VENDOR 1	2	2	100
SAMMY'S TEST ORG	2	456	2.5.1	VENDOR 2	53	220	24.09
TENNESSEE TEST ORG	3	789	2.5.1	VENDOR 3	7	43	16.28
PEDIATRIC TEST ORG	4	1011	2.5.1	VENDOR 4	2	15	13.33
HEALTH DEPARTMENT TEST ORG	5	1213	2.5.1	VENDOR 5	14	119	11.76
WE LOVE TEST ORGS	6	1415	2.5.1	VENDOR 6	1	9	11.11
TEST ORG 4EVER	7	1617	2.5.1	VENDOR 7	4	39	10.26
WOW WHAT A TEST ORG	8	1819	2.5.1	VENDOR 8	12	123	9.76
THANKSGIVING TEST ORG	9	2021	2.5.1	VENDOR 9	6	66	9.09

Our Vaccine Type by Age Group report identifies providers that are sending vaccines outside of the appropriate age range.

Vaccine Type By Age Group for Electronic Data Exchange

VACCINATION			AGE AT ADMINISTRATION													
CVX CODE	VACCINE DESCRIPTION	ADMINISTRATION TEXT	LESS THAN 1 MONTH OLD	LESS THAN 1 YEAR OLD	1 YEAR OLD	2 YEARS OLD	3 - 5 YEARS OLD	6 YEARS OLD	7 - 10 YEARS OLD	11 - 12 YEARS OLD	13 - 17 YEARS OLD	18 YEARS OLD	19 YEARS OLD	20 - 49 YEARS OLD	50 - 54 YEARS OLD	55 YEARS AND OLD
51	HIB-HEP B	ADMINISTERED	0	0	0	0	0	0	0	0	0	0	0	0	0	0
51		HISTORICAL	4	253	83	0	2	0	0	0	0	2	0	3	0	3
52	HEP A, ADULT	ADMINISTERED	0	0	24	5	9	0	5	8	77	62	141	5628	1083	3761
52		HISTORICAL	8	7	91	21	35	0	22	24	25	16	14	1318	182	554
62	HPV, QUADRIVALENT	ADMINISTERED	0	0	0	0	0	0	15	103	110	11	2	22	0	0
62		HISTORICAL	0	4	2	0	3	0	28	465	530	49	16	65	0	0
71	RSV-IGIV	ADMINISTERED	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71		HISTORICAL	0	3	0	0	0	0	0	0	0	0	0	0	0	0
74	ROTAVIRUS, TETRAVALENT	ADMINISTERED	0	0	0	0	0	0	0	0	0	0	0	0	0	0
74		HISTORICAL	0	8	0	0	0	0	0	0	0	0	0	0	0	0
75	VACCINIA (SMALLPOX)	ADMINISTERED	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75		HISTORICAL	0	6	4	2	11	0	1	0	1	0	2	6	0	1
83	HEP A, PED/ADOL, 2 DOSE	ADMINISTERED	0	23	7482	2134	1580	0	378	237	719	157	4	52	6	21
83		HISTORICAL	21	61	4065	1391	1289	0	459	308	254	36	6	141	14	24
84	HEP A, PED/ADOL, 3 DOSE	ADMINISTERED	0	0	3	6	2	0	0	1	1	0	0	0	0	0
84		HISTORICAL	5	1	23	6	9	0	4	3	1	0	0	0	0	0
85	HEP A, UNSPECIFIED FORMULATION	ADMINISTERED	0	0	0	0	0	0	0	0	0	0	0	1	0	0
85		HISTORICAL	1	8	573	245	296	0	222	156	181	31	7	70	8	26

Our Vaccine Type by Age Group report identifies providers that are sending vaccines outside of the appropriate age range.

Errors With Vaccination Date in the Last 7 Days

	VACCINATION					PATIENT	ORGANIZATION
ERROR	CVX CODE	VACCINATION DESCRIPTION	VACCINATION DATE	ADMINISTRATION TEXT	LOT NUMBER	REGISTRY ID	ORGANIZATION NAME
20 - 49 YEARS OLD	1	DTP	17APR2019	HISTORICAL		123	Test Org 1
20 - 49 YEARS OLD	1	DTP	16APR2019	HISTORICAL		456	Test Org 1
ADMIN IN LAST 7 DAYS	1	DTP	30APR2019	HISTORICAL		789	Fake Org 2
ADMIN IN LAST 7 DAYS	5	measles	29APR2019	HISTORICAL		1011	Fake Org 2
20 - 49 YEARS OLD	8	Hep B, adolescent or pediatric	29APR2019	ADMINISTERED		1213	Sammy's Data Quality Org 3
20 - 49 YEARS OLD	8	Hep B, adolescent or pediatric	26APR2019	ADMINISTERED		1415	Sammy's Data Quality Org 3
20 - 49 YEARS OLD	8	Hep B, adolescent or pediatric	22APR2019	ADMINISTERED		1617	Sammy's Data Quality Org 3
20 - 49 YEARS OLD	8	Hep B, adolescent or pediatric	30APR2019	ADMINISTERED	29ZB7	1819	Sammy's Data Quality Org 3
20 - 49 YEARS OLD	8	Hep B, adolescent or pediatric	19APR2019	ADMINISTERED	ZD5CA	2021	Sammy's Data Quality Org 3
20 - 49 YEARS OLD	8	Hep B, adolescent or pediatric	24APR2019	ADMINISTERED	9X4E7	2223	Sammy's Data Quality Org 3
20 - 49 YEARS OLD	8	Hep B Ped/Adol - Preserv Free	19APR2019	HISTORICAL		2425	Sammy's Data Quality Org 3
20 - 49 YEARS OLD	8	Hep B, adolescent or pediatric	11APR2019	ADMINISTERED	Z2497	2627	Sammy's Data Quality Org 3
20 - 49 YEARS OLD	8	Hep B, adolescent or pediatric	16APR2019	ADMINISTERED	T9AK3	2829	Sammy's Data Quality Org 3
20 - 49 YEARS OLD	8	Hep B, adolescent or pediatric	17APR2019	ADMINISTERED		3031	Sammy's Data Quality Org 3
20 - 49 YEARS OLD	8	Hep B, adolescent or pediatric	24APR2019	ADMINISTERED		323	Sammy's Data Quality Org 3

Our VFC Report Card evaluates vaccination records for compliance with VFC program, data quality, and coverage rates.

Vaccines for Children TennIIS Report Card - PILOT EDITION

THE AVALANCHE CLINIC, PIN 972146

2017 Quarter 3: July 1 – September 31

TN Department of Health

VFC Provider Site Information

Primary Contact: Paris Jeffree, paris.jeffree@theavalancheclinic.net
Secondary Contact: Eliza Wolfgramm, eliza.wolfgramm@theavalancheclinic.net
Facility Contact: Tony Di Blasi, toni.diblasi@theavalancheclinic.net
Lead Medical Contact: Robbie Chater, robbie.chater@theavalancheclinic.net
VFC Provider Agreement Renewal Deadline: 11/05/2018
IIS Reporting Method: Electronic Message Transfer Site Type: Private - Group HMO

Quantity & Quality of Vaccine Records

928 vaccine doses administered at this site were reported to TennIIS during this 3-month period.

How they were entered:

- 928 (100%) were sent by your Electronic Health Record System (EHR)
- 0 (0%) were entered by a user at your facility through the TennIIS website

Completeness of vaccine information (Eligibility target = 100%)

- 928 (100%) included VFC eligibility status
- 928 (100%) included lot number
- 928 (100%) included manufacturer

*Please note this report card only evaluates vaccinations **entered** or **added as administered doses** by your facility.*

Patient Profile & Vaccine Coverage Rates

VFC enrollment patient profile (self-reported):

- 2423 total patients under 19 years of age
- 871 of total are VFC eligible

Looks wrong? Contact us to update your patient profile.

Patients under 19 years linked to this site ("owned") in TennIIS*.

- 1987

Key vaccination coverage rates for your patients in TennIIS:

- 1 or more **influenza** vaccine since July 1, 2017: 216/1987 (11%) of patients 6 months and up (target: 70%)
- **HPV** vaccine aged 12 through 18 years:
  - At least one dose: 132/621 (21%)
  - Complete: 50/621 (8%) (target: 80%)
- **4th DTaP:** 152/158 (96%) of 18-24 month-olds (target: 90%)

**TennIIS automatically assigns a person to your site after you report administering a vaccine to the person. This is called "ownership."*

VFC Program TennIIS Reporting Compliance

The VFC Program requires that each vaccine administered to patients under 19 years, regardless of VFC status, be reported to TennIIS within two weeks of administration.

During this 3-month period:

- 687 VOMS inventory reconciliation indicated dose(s) of VFC vaccines were administered. *This number should be lower than the doses reported on patient TennIIS records.*
- Patient TennIIS records: 928 VFC vaccines reported *VFC eligibility is based on the reported vaccine information*
- 710 (77%) of all vaccines reported were submitted within two weeks of administration

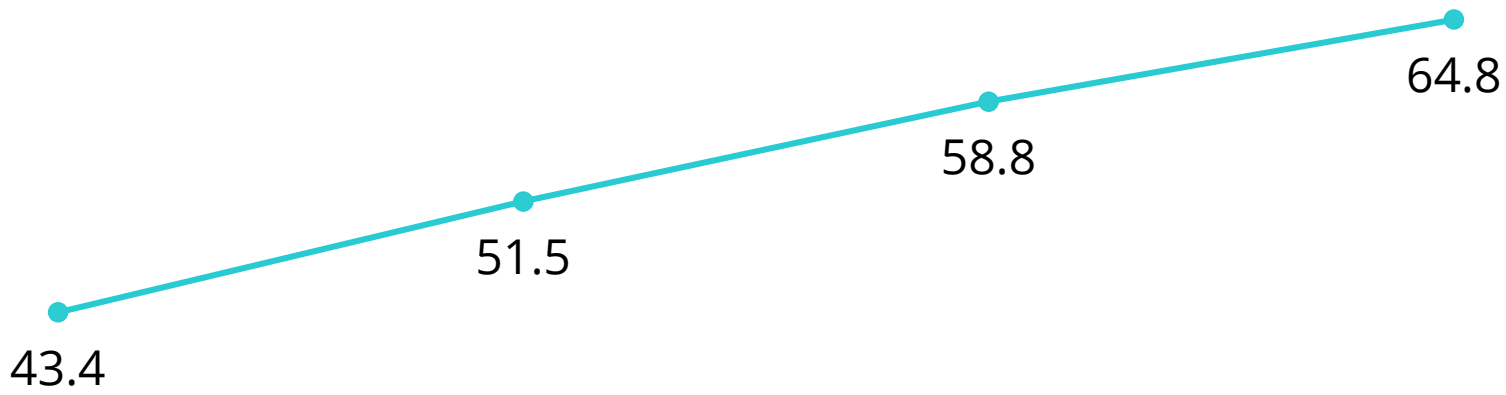
Contact Us & Helpful Information

- Contact your EHR Vendor regarding your electronic submissions. If they cannot resolve the issue please contact TennIIS.MU@tn.gov and put "VFC Report Card" in the subject.
- TennIIS.VFC@tn.gov regarding provider agreement contacts and enrollment numbers.
- TennIIS.Training@tn.gov to learn how to run reports in TennIIS to track your progress.
- Tennessee Immunization Program phone (800) 342-1813

Sites experiencing difficulties with reporting may be contacted by VFC Program staff to offer assistance.

How is Tennessee's data completeness over time?

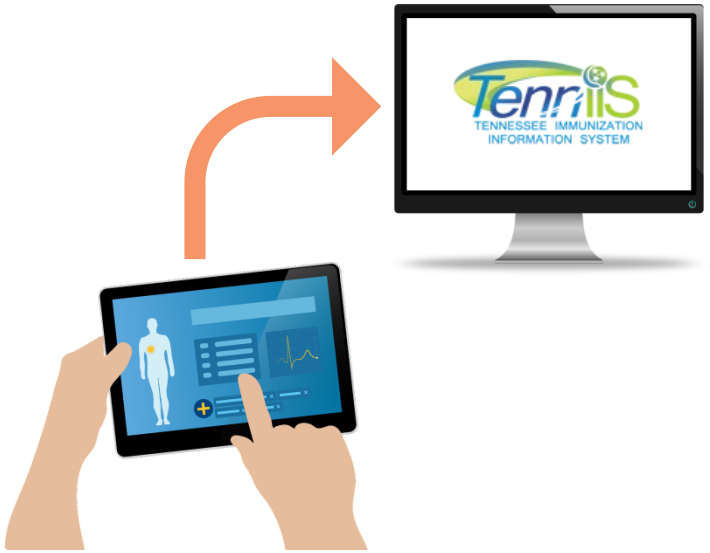
The public school kindergarteners that had all their required immunizations in TennIIS rose by 21 percentage points in three years!



2015 2016 2017 2018

Where is Tennessee going next with data quality?

Dose level accountability



Trading partner Infographic

SmartyStreets

Questions?

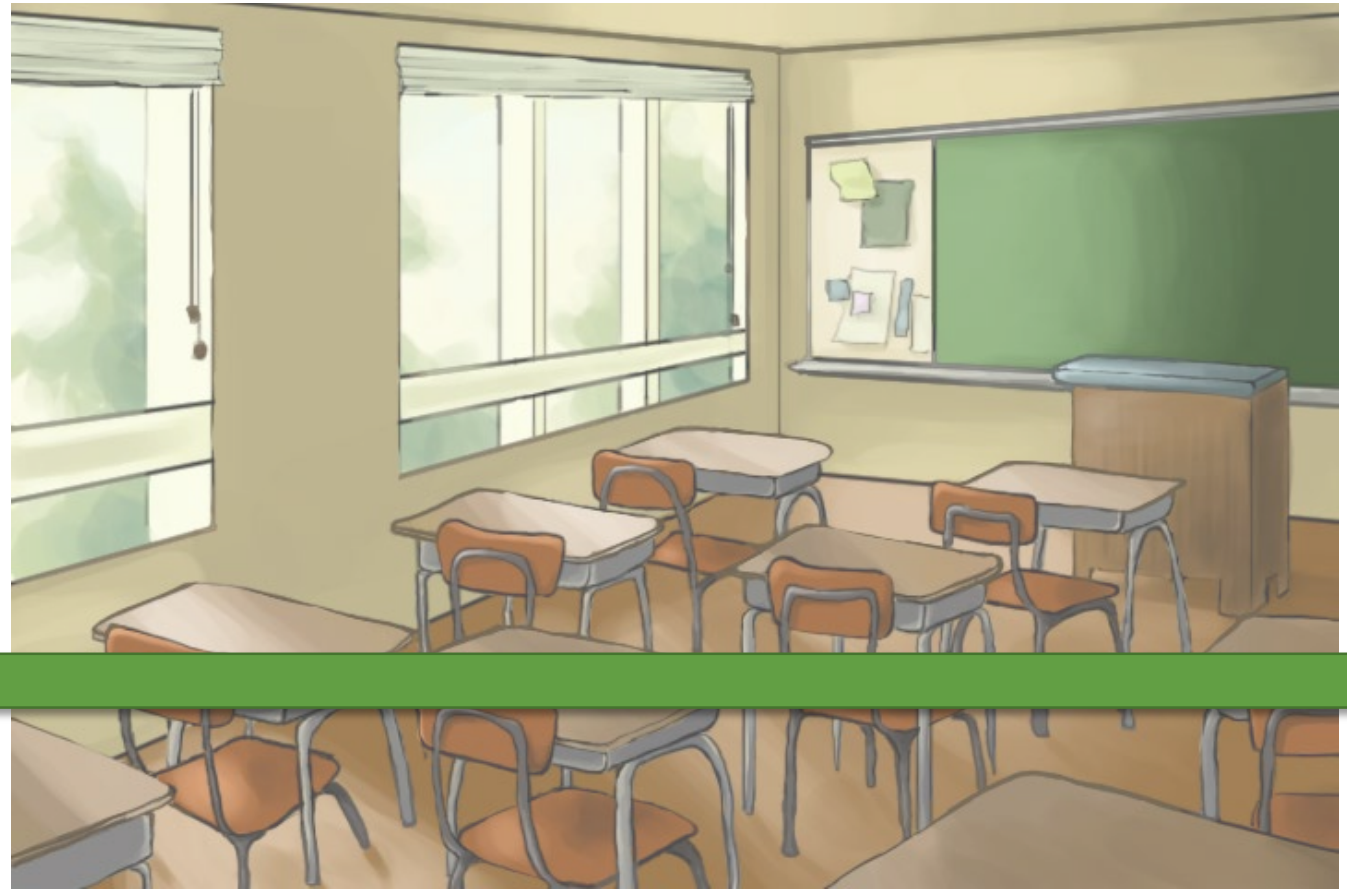
Nathalie.Hartert@tn.gov

Jacqueline.Logan@tn.gov

Nathan Bunker

AIRA

Zeno’s Paradox



AIRA Resources & Projects

- Data Quality
  - Incoming Data (2008):
    - https://repository.immregistries.org/resource/data-quality-assurance-in-immunization-information-systems-incoming-data-1/
  - Selected Aspects (2013):
    - https://repository.immregistries.org/resource/data-quality-assurance-in-immunization-information-systems-selected-aspects/
  - Monitoring and Evaluating Data Submissions (2017)
    - https://repository.immregistries.org/resource/iis-data-quality-practices-monitoring-and-evaluating-data-submissions/
  - Importing Legacy Data to Improve IIS Saturation
    - https://repository.immregistries.org/resource/importing-legacy-data-to-improve-iis-saturation/

AIRA Resources & Projects

- Other Data Quality
  - Monitoring and Evaluating Data Submissions
    - https://repository.immregistries.org/resource/iis-data-quality-practices-monitoring-and-evaluating-data-submissions/
  - To Monitor and Evaluate Data at Rest (2018)
    - https://repository.immregistries.org/resource/iis-data-quality-practices-to-monitor-and-evaluate-data-at-rest/
  - IIS Onboarding Process (2017)
    - https://repository.immregistries.org/resource/data-validation-guide-for-the-iis-onboarding-process/
- Pockets of Need
  - Small Area Analysis of IIS Data to Detect Undervaccinated Populations (2018)
    - https://repository.immregistries.org/resource/identifying-immunization-pockets-of-need-small-area-analysis-of-iis-data-to-detect-undervaccinated-p/

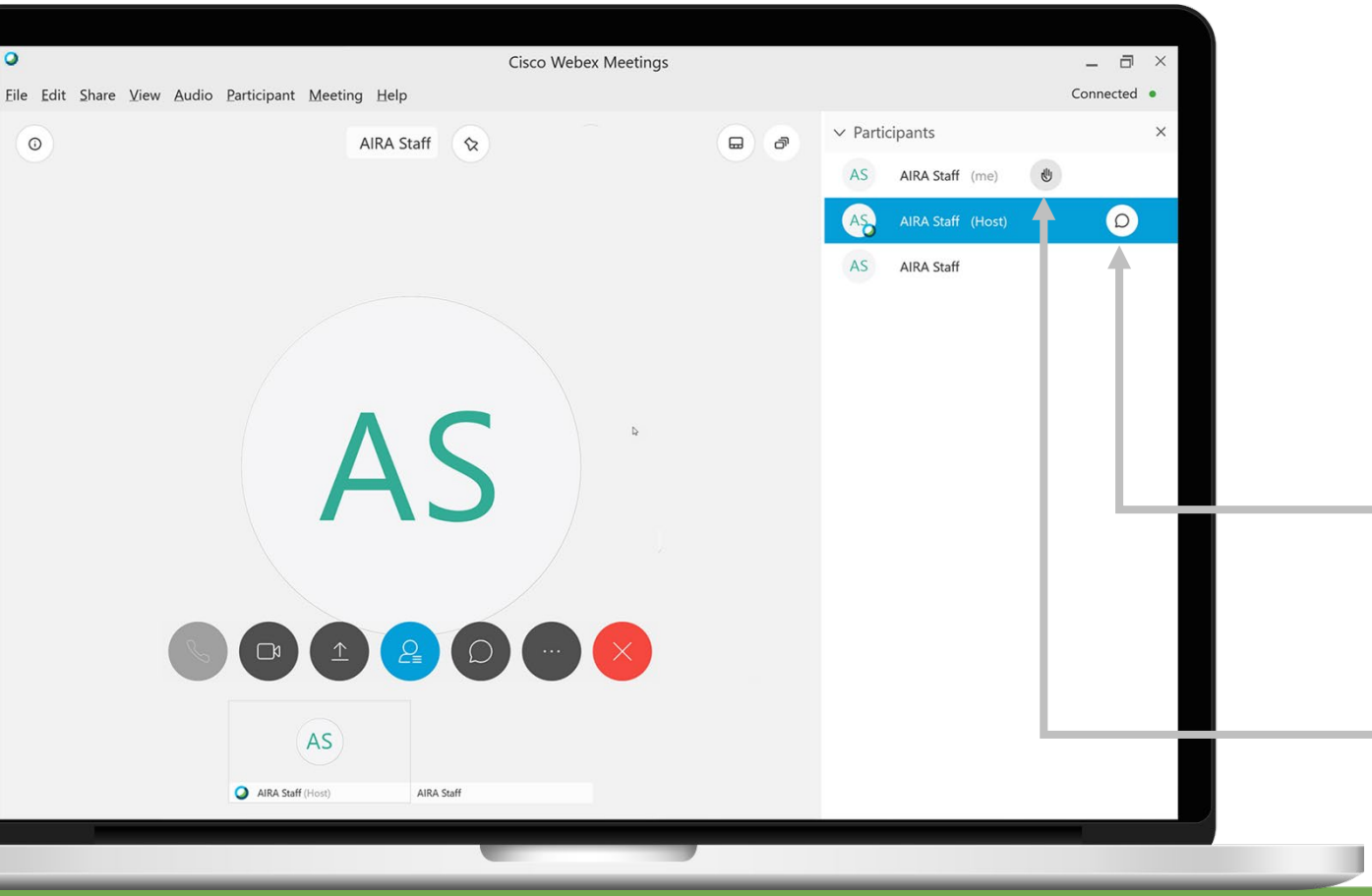
AIRA Resources & Projects

- Smarty Streets
  - AIRA has a license available to all AIRA member IIS programs
  - Fast service, several ways to integrate and use
  - Improves patient matching and geo location information
  - https://www.immregistries.org/address-cleansing
- Message Quality Evaluator (MQE)
  - Can be used to evaluate incoming data
  - New Beta version will be released Spring 2020
  - https://repository.immregistries.org/resource/mqe-project-tools-and-documents/

AIRA Resources & Projects

- Measurement & Improvement
  - Data Quality: Incoming/Ongoing Data
    - Will measure ability of IIS to handle data quality problems
    - Look for first assessment results in 2020
  - Data Quality: Data-at-Rest
    - Discovery testing pilot round #2 underway in 2020

Questions, Comments, Discussion?



- **How do I ask a question?**
  - To unmute your line press *6
  - Via WebEx:

Select the chat icon next to the host and type question into the chat box.

Select the hand icon next to your name and you will be called on.

Thank you to our presenters, and thanks to all of you for joining us!

A brief evaluation survey will be sent out following this webinar