Immunization Information Systems (IIS) Fundamentals: Overview and Development

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NVAC Meeting
June 6, 2017
Washington, D.C.

Overview

❑ What are IIS?

❑ Functionalities/Capabilities of IIS

❑ Data collection and applications

❑ State of IIS across the United States

IIS Vision: Real-time, consolidated immunization data and services for all ages are available for authorized clinical, administrative, and public health users and consumers, anytime and anywhere

What are Immunization Information Systems (IIS)?

❑ Immunization information systems (IIS) are confidential, population-based, computerized databases that record all immunization doses administered by participating providers to persons residing within a given geopolitical area

❑ Why are IIS important?

- At the **point of clinical care**, an IIS can provide consolidated immunization histories for use by a vaccination provider in determining appropriate client vaccinations

- At the **population level**, an IIS provides aggregate data on vaccinations for use in surveillance and program operations, and in guiding public health action with the goals of improving vaccination rates and reducing vaccine-preventable disease

- Community Preventive Services Task Force recommends immunization information systems on the basis of strong evidence of effectiveness in increasing vaccination rates.
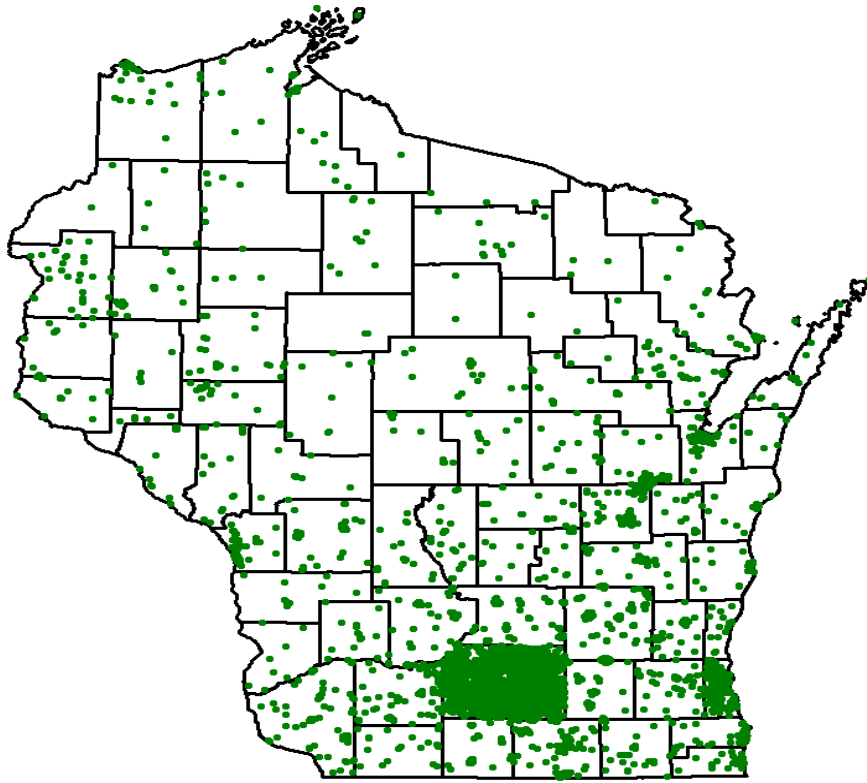 https://www.thecommunityguide.org/findings/vaccination-programs-immunization-information-systems

*All States will have an IIS with New Hampshire pilot test late summer 2017

IIS Functions

❏ Functional standards are intended to identify operational, programmatic, and technical capacities that all IIS should achieve by the end of 2017

❏ Some standards are environmental, and can only be implemented in conjunction with the broader Department of Health or State/Local infrastructure

❏ The Functional Standards are intended to reflect necessary functions, whether those functions are implemented by the IIS program or others

❏ In some cases, current law or policy may preempt full implementation unless changed. In these instances, an unmet standard may serve as a suggestion for possible revisions to such law or policy

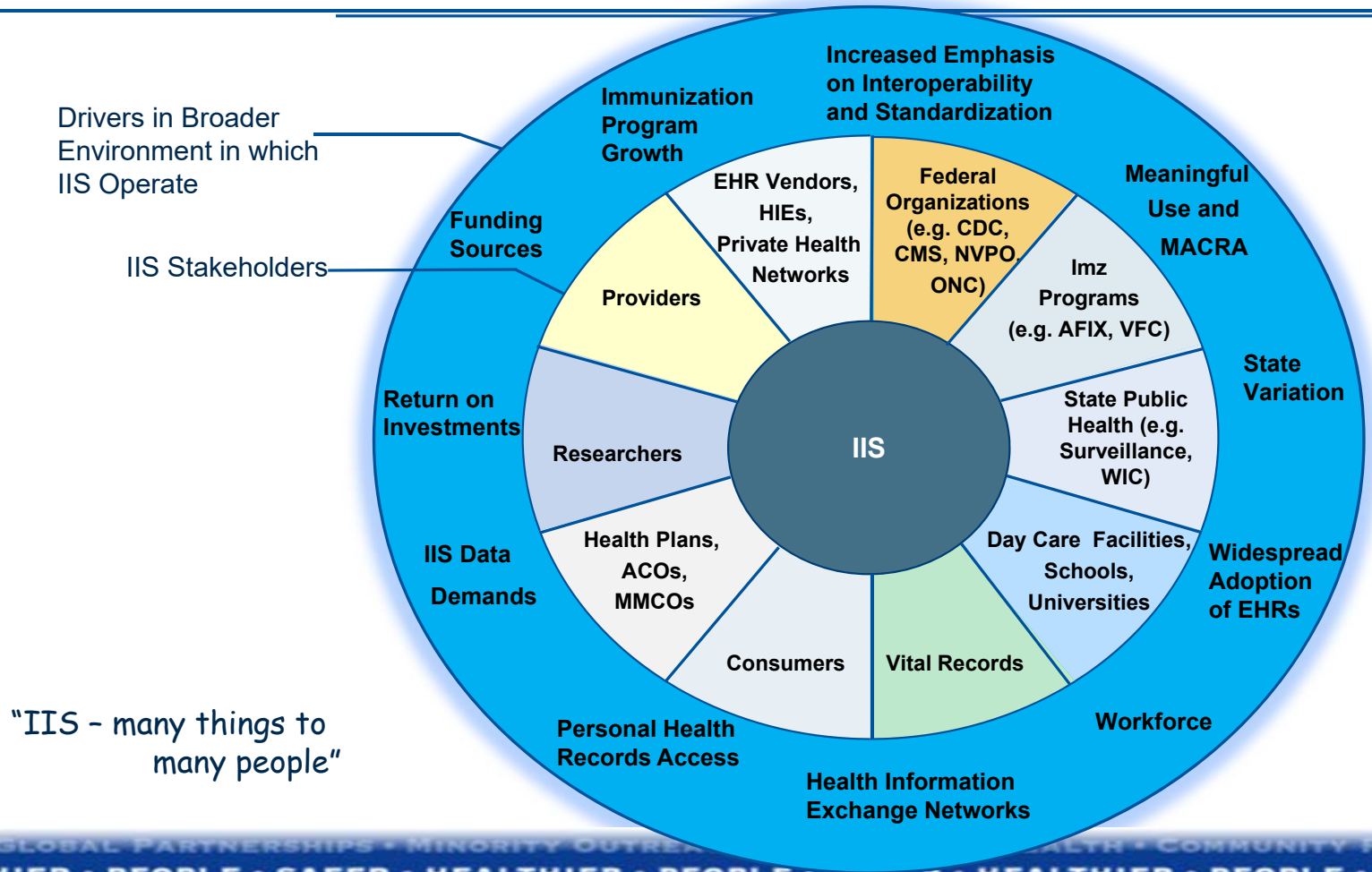❖ The 2013-2017 Functional Standards can be found at https://www.cdc.gov/vaccines/programs/iis/func-stds.html
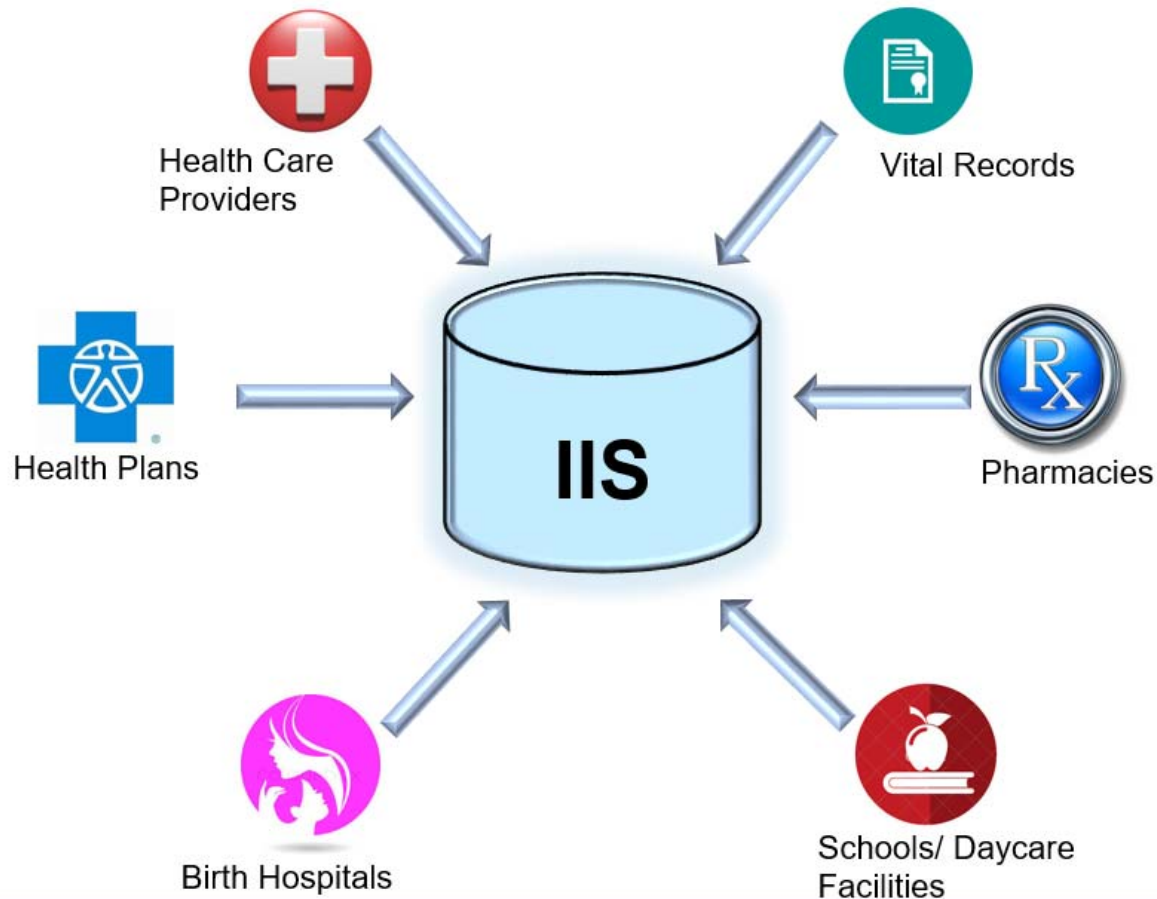
Why IIS are Important

Patients with at least 1 immunization from Dane County Health Department, Wisconsin

❑ By two years of age, over 20% of the children in the U.S. typically have seen more than one healthcare provider, resulting in scattered paper medical records.

❑ Immunization information systems (IIS) help providers and families by consolidating immunization information into one reliable source.

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Current IIS Environment

Drivers in Broader Environment in which IIS Operate

IIS Stakeholders

"IIS – many things to many people"

Increased Emphasis on Interoperability and Standardization

Immunization Program Growth

Funding Sources

Return on Investments

IIS Data Demands

EHR Vendors, HIEs, Private Health Networks

Providers

Researchers

Health Plans, ACOs, MMCOs

Consumers

Personal Health Records Access

Federal Organizations (e.g. CDC, CMS, NVPO, ONC)

Imz Programs (e.g. AFIX, VFC)

State Public Health (e.g. Surveillance, WIC)

Day Care Facilities, Schools, Universities

Vital Records

Health Information Exchange Networks

IIS

Meaningful Use and MACRA

State Variation

Widespread Adoption of EHRs

Workforce

IIS Data Sources

IIS Platforms

Envision (15)
- Arkansas
- Colorado
- Delaware
- Kansas
- Kentucky
- Nevada
- New Mexico
- Philadelphia
- Pacific Islands (6)
- San Antonio

STC (10)
- Alaska
- Arizona
- Indiana
- Louisiana
- Mississippi
- New Hampshire
- Tennessee
- Washington
- West Virginia
- Wyoming

WIR (18)
- California
- Georgia
- Hawaii
- Idaho
- Iowa
- Maine
- Maryland
- Minnesota
- Montana
- Nebraska
- New York State
- North Carolina
- Oregon
- Puerto Rico
- Texas
- U.S. Virgin Islands
- Virginia
- Wisconsin

❖ The remaining 21 federally funded immunization programs either developed their own IIS or are supported by a smaller vendor.

IIS Interoperability

❑ Interoperability between IIS and EHRs can improve surveillance while simultaneously reducing administrative burden

❑ Enhancing EHR-IIS interoperability improves data quality challenges by addressing:
  ▪ Accuracy
  ▪ Timeliness
  ▪ Completeness

❑ EHR-IIS interoperability supported by CDC include:
  ▪ Educating EHR vendors on requirements to build IIS functionality into EHR systems
  ▪ Developing capacity for HL7 2.5.1
  ▪ Implementing bi-directional data exchanges through a web services interface
  ▪ Assessing IIS progress towards meeting IIS Functional Standards

IIS Challenges and Opportunities

IIS Challenges	IIS Strategic Opportunities

IIS Challenges

- Incomplete data reporting

- Differences in performance levels across IIS

- Diversity in stakeholder standards, technologies and policies

- Standards Implementation Variability

IIS Strategic Opportunities

- Enhance IIS Performance

- Promote Adherence to IIS Standards
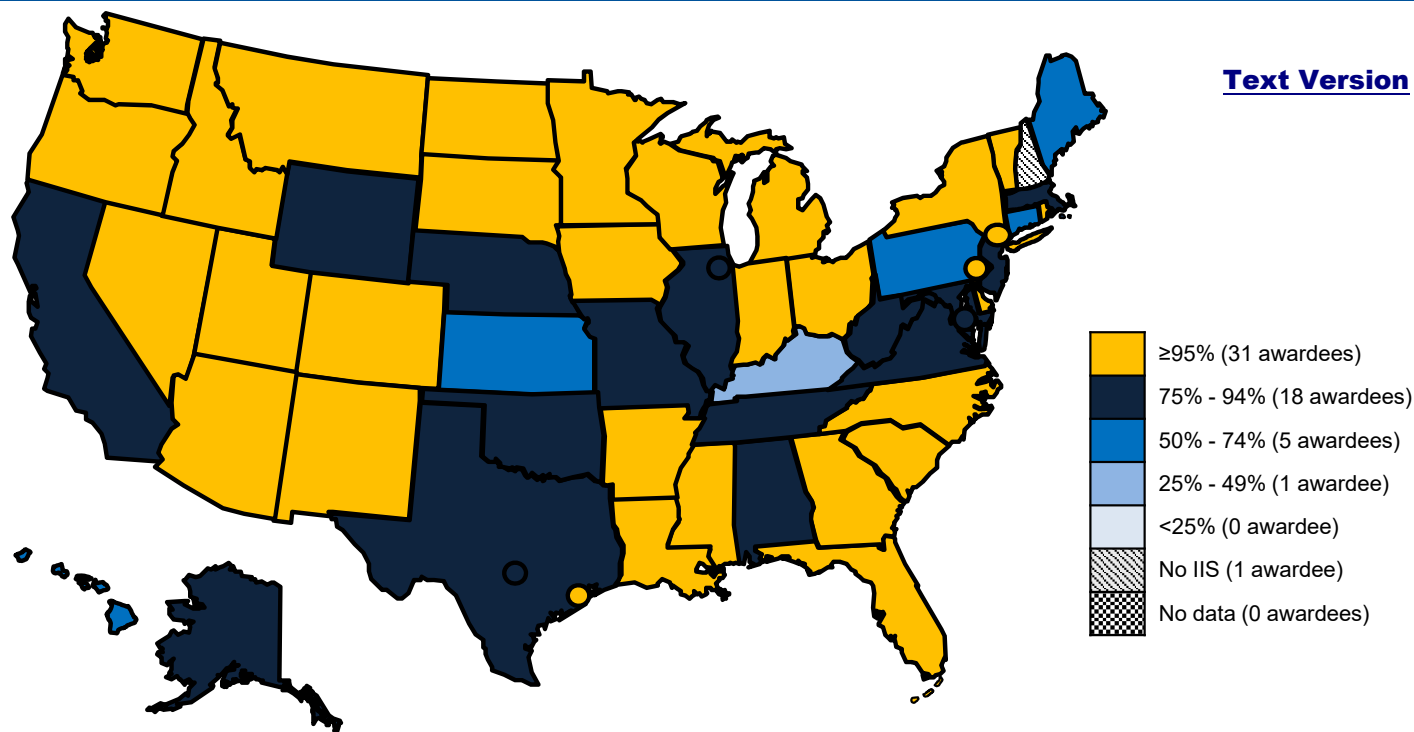
- Sustain the IIS Community

- Influence and Monitor the Health IT Environment

IIS Participation – Legal/Structural Landscape

A CDC legislative survey of all states plus Washington DC revealed that:

❑ 47 of 50 states plus Washington DC are *lifespan* IISs

❑ 42 of 50 states plus Washington DC are *opt-out* IISs for adults

❑ IIS interstate data sharing remains an issue

❑ Martin, DW et al. **Immunization Information Systems: A Decade of Progress in Law and Policy.** Journal of Public Health Management & Practice: May/June 2015 - Volume 21 - Issue 3 - p 296–303 (online open-access at http://journals.lww.com/jphmp/Citation/2015/05000/Immunization_Information_Systems___A_Decade_of.10.aspx)

Percentage of children aged < 6 years participating in an Immunization Information System -- United States, five cities[§], and D.C., 2015
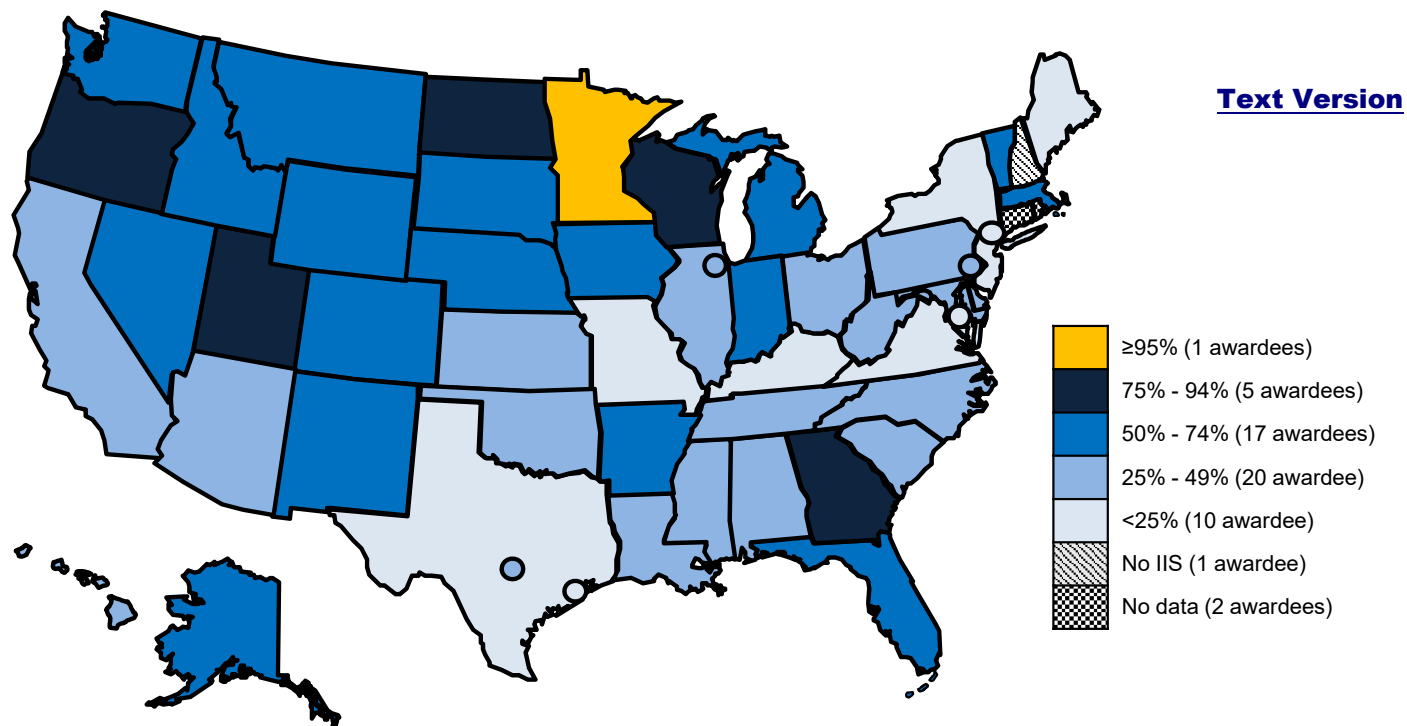
Text Version

Legend:
- ≥95% (31 awardees)
- 75% - 94% (18 awardees)
- 50% - 74% (5 awardees)
- 25% - 49% (1 awardee)
- <25% (0 awardee)
- No IIS (1 awardee)
- No data (0 awardees)

National Participation: 92% (excluding Territories)
Source: CY2015 IISAR

§ Chicago, IL; Houston, TX; New York City, NY; Philadelphia, PA; San Antonio, TX

*Awardees are federally funded immunization programs

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Percentage of adults aged ≥19 years participating in an Immunization Information System -- United States, five cities [§], and D.C., 2015

Text Version

Legend:
- ≥95% (1 awardees)
- 75% - 94% (5 awardees)
- 50% - 74% (17 awardees)
- 25% - 49% (20 awardee)
- <25% (10 awardee)
- No IIS (1 awardee)
- No data (2 awardees)

National Participation: 39% (excluding Territories)
Source: CY2015 IISAR

§ Chicago, IL; Houston, TX; New York City, NY; Philadelphia, PA; San Antonio, TX.

*Awardees are federally funded immunization programs

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IIS are a Critical Piece Vaccine Ordering and Inventory
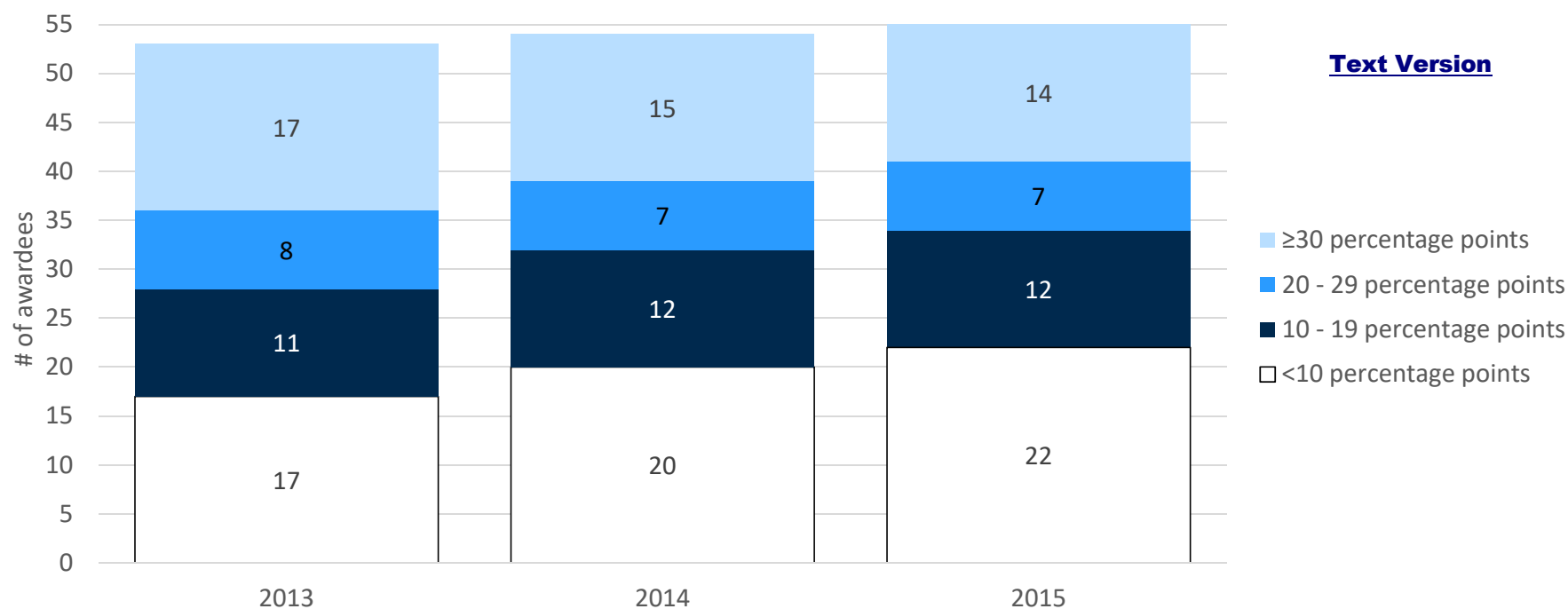
Progress to Date

Percentages of vaccine orders processed through VFC/317 vaccine ordering system (VTrckS) in calendar year 2016

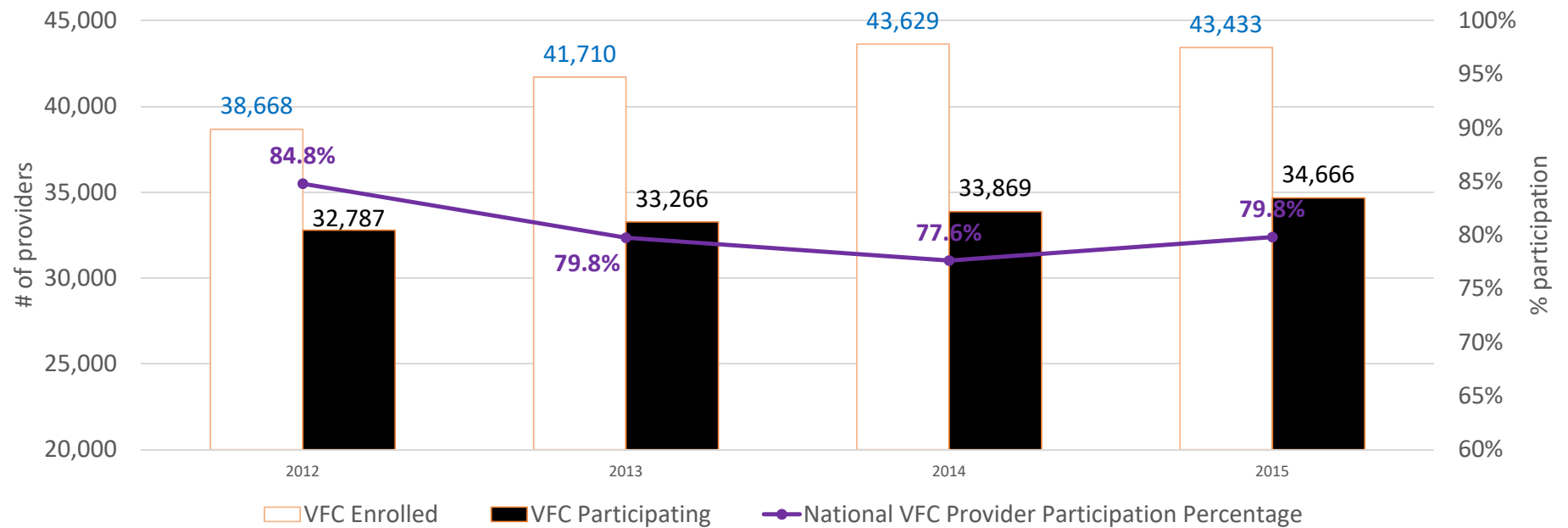Total number of orders in 2016 was 580,885

48 federally funded immunization programs order vaccine directly through their IIS in to the central VFC/317 vaccine ordering system (94% orders, 547,665)

16 immunization programs either order vaccine on behalf of their providers or allow providers to order directly (6% orders, 33,220)

Percentage point differences between National Immunization Survey and IIS for combined 7-vaccine series completion – 2013-2015

VFC Provider Participation, 2012 –2015

Text Version

Key Partners

Partnerships are a critical component of the success and evolution of IIS

NON FEDERAL

- ❑ Public Health Informatics Institute (PHII)
- ❑ America Immunization Registry Association (AIRA)
- ❑ American Immunization Managers (AIM)
- ❑ American Academy of Pediatrics (AAP)
- ❑ Association of State and Territorial Health Officials (ASTHO)

JURISDICTIONAL

- ❑ States
- ❑ Awardees

FEDERAL

- ❑ Office of the National Coordinator (ONC)
- ❑ National Institute of Standards and Technology (NIST)
- ❑ Centers for Medicaid and Medicare Services (CMS)
- ❑ National Vaccine Program Office (NVPO)

Conclusions

❑ IIS provide consolidated record of immunizations administered by different providers across the lifespan

❑ Operate in a complex environment and rely on data streams from multiple immunization providers and health systems

❑ IIS provide value to providers, public health, health insurers, schools and other stakeholders*

❑ Current challenges provide new opportunities to improve data access and reporting through adherence to standards and interoperability, and increasing IIS performance

❑ As IIS across the nation mature and provider participation rates increase, the value of IIS to all stakeholders increases

*www.thecommunityguide.org/findings/vaccination-programs-immunization-information-systems

Text only Versions

Percentage of children aged < 6 years participating in an Immunization Information System -- United States, five cities, and D.C., 2015

>95% (31 Awardees)

- Washington
- Oregon
- Idaho
- Montana
- North Dakota
- South Dakota
- Minnesota
- Iowa
- Wisconsin
- Michigan
- Nevada

- Utah
- Colorado
- Arizona
- New Mexico
- Indiana
- Ohio
- Arkansas
- Louisiana
- Mississippi
- New York
- Vermont

- North Carolina
- South Carolina
- Georgia
- Florida
- Delaware
- Rhode Island

- New York City
- Philadelphia
- Houston

75% - 94% (18 Awardees)

- Alaska
- California
- Wyoming
- Nebraska
- Oklahoma
- Texas
- Missouri

- Illinois
- Massachusetts
- New Jersey
- Maryland
- Virginia
- West Virginia
- Tennessee

- Alabama

- Washington DC
- San Antonio
- Chicago

50% - 74% (5 awardees)

- Maine
- Pennsylvania
- Kansas
- Hawaii
- Connecticut

25% - 49% (1 awardee)
Kentucky

No IIS (1 awardee)
New Hampshire

Percentage of adults aged ≥19 years participating in an Immunization Information System -- United States, five cities, and D.C., 2015

>95% (1 Awardee)
Minnesota

75% - 94% (5 Awardees)
- Oregon
- Utah
- North Dakota
- Wisconsin
- Georgia

50% - 74% (17 Awardees)

Alaska	Colorado	Michigan
Washington	New Mexico	Indiana
Nevada	South Dakota	Florida
Idaho	Nebraska	Vermont
Montana	Iowa	Massachusetts
Wyoming	Arkansas	

25% - 49% (20 Awardees)

Arizona	Alabama	Maryland
California	Tennessee	Pennsylvania
Hawaii	Illinois	Deleware
Oklahoma	Ohio	
Kansas	West Virginia	San Antonio
Louisiana	North Carolina	Chicago
Mississippi	South Carolina	Philadelpia

<25% (10 Awardees)

Maine	Kentucky	New York City
New York	Texas	Houston
New Jersey	Missouri	Washington D.C.
Virginia		

No IIS (1 awardee)
New Hampshire

No Data (2 awardees)
- Connecticut
- Rhode Island

Percentage point differences between National Immunization Survey and IIS for combined 7-vaccine series completion – 2013-2015

	2013	2014	2015
>= 30 percentage points	17	15	14
20 – 29 percentage points	8	7	7
10 – 19 percentage points	11	12	12
<10 percentage points	17	20	22

VFC Provider Participation, 2012 −2015

	2012	2013	2014	2015
VFC Enrolled	38,668	41,710	43,629	43,433
VFC Participating	32,787	33,266	33,869	34,666
National VFC Provider Percentage	84.8%	79.8%	77.6%	79.8%