

# Comparing IIS and Vaccine Tracking System (VTrckS) Data to Improve IIS Data Quality

**Jessica Rao, MPH**

**Melissa Mickle-Hope, MPH, Vikki Papadouka, PhD, MPH,  
Jane R. Zucker, MD, MSc**

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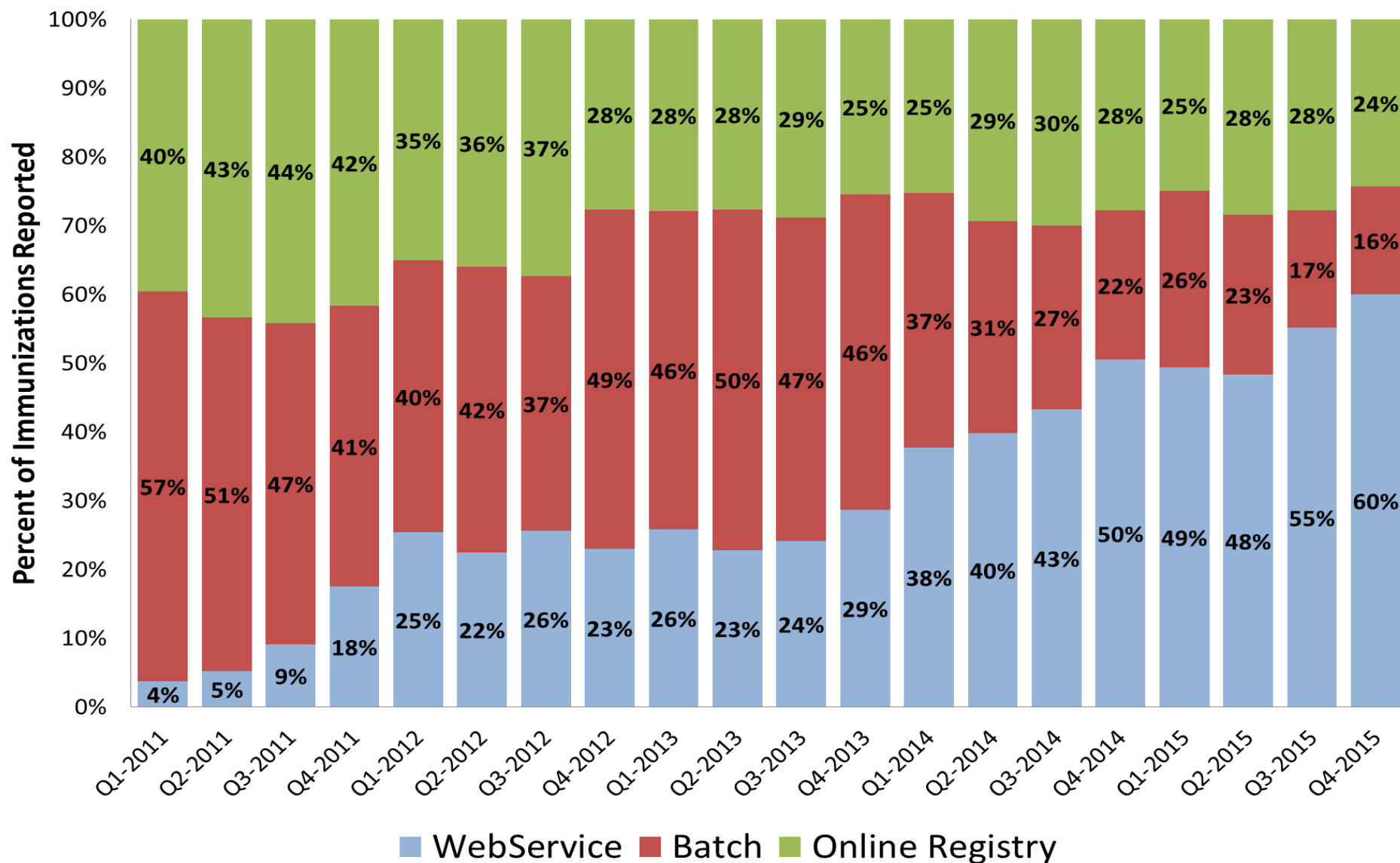
# Outline

- Background
  - Citywide Immunization Registry
  - NYC Vaccines for Children Program
  - Introduction of HPV9
- Problem: Misreporting of HPV9
- Objective: Use VTrckS and IIS Data to Identify and Correct Misreported Doses of HPV9
- Methods and Strategies
- Results
- Conclusions and Next Steps

# Citywide Immunization Registry (CIR)

- Immunization Information System (IIS) for New York City (NYC)
- Started citywide in 1997
- Mandatory reporting of immunizations for children 0-18 years; reporting for adults  $\geq 19$  years requires consent (verbal or written)
- Contains over **6 million** people with over **82 million** immunizations
- Methods of reporting (all electronic)
  - 1) Online Registry (OLR) user interface
  - 2) Non-standard batch file transfer
  - 3) HL7 Web service

# Pediatric Immunizations Reported to the CIR by Method of Reporting, 2011-2015



# New York City (NYC) Vaccines for Children Program (VFC)

- Over 1,400 enrolled providers (85% of pediatric provider sites in NYC participate in VFC)
  - ~74% of NYC children 0-18 years are eligible for vaccines distributed through VFC
- Distributes >3 million doses of vaccine annually valued at >\$140 million
- Providers order all VFC vaccines through the CIR's Online Ordering Tool (OT)
- VFC distribution is linked to CIR reporting
  - Doses Administered Report (DAR) = Doses reported to the CIR/Doses received by provider from VFC
  - Providers with a DAR <80% may have their vaccine order reduced

# VFC Vaccine Distribution Workflow

## Provider places VFC Vaccine order in CIR OLR

- Provider reports on-hand vaccine inventory
- OLR provides order recommendations

## VFC vaccine order sent to internal Provider Profile DB

- Provider gets order confirmation
- Order and provider's DAR is analyzed by CIR staff

## Vaccine order information is sent to VTrckS

- CDC processes order
- Provider receives confirmation of doses that will be shipped

## McKesson packs and ships out vaccine

- VTrckS ship file is updated with vaccine info, including lot #
- CIR staff downloads ship file daily

## Provider receives VFC vaccine

- Provider administers and reports immunization to CIR, including lot #

# Introduction of HPV9 (NYC)

December 2014: Gardasil9 (HPV9), third HPV vaccine licensed by the FDA



February 2015: HPV9 recommended by ACIP



April 2015: CDC made HPV9 available through the VFC Program



April 2015: NYC communicated new vaccine information to providers



May 2015: HPV9 was available for ordering in the OLR's OT



October 2015: Only HPV9 available for ordering in the OLR's OT

# Problem with Reporting HPV9 to the CIR

- Providers initially alerted us of this issue at NYC's quarterly Coalition for Childhood Immunization Initiative meeting in June 2015
- Providers were unable to enter HPV9 in their EHR system
  - HPV9 CVX code (vaccine administered code) was unavailable in a number of EHRs
  - HPV9s were being misreported as other vaccines
- Many providers had ordered HPV9 but very little reporting for HPV9 was seen in the CIR

Objective: Use VTrckS and IIS Data to  
Identify and Correct Misreported  
Doses of HPV9

# Identification Method

- VTrckS ship file data was used to identify HPV9 lot numbers shipped to VFC providers
- CIR database was queried to identify immunizations reported with lot numbers from the VFC ship file with CVX code other than 165
  - Most commonly misreported as
    - HPV4 / Gardasil / CVX 62
    - HPV2 / Cervarix / CVX 118
    - HPV Not otherwise specified (NOS) / CVX 137

# Strategies to Correct HPV9 Misreporting

## 1. Provider Outreach

- VFC Providers

## 2. Database Clean-up

- Conducted by CIR's vendor
- Both VFC and non-VFC Providers

# Provider Outreach Methods

- Weekly calls to high-volume sites
  - Worked with sites as well as their EHR vendors
  - Lists with patient and immunization details were sent via fax for provider follow-up
- Email blasts were sent to providers urging them to contact their EHR vendors to update their tables
  - July 31, 2015
    - Email notification sent to 228 sites
  - January 15, 2016
    - Follow-up email notification sent to 94 of the 228 original sites still misreporting
    - Another email notification sent to 178 new sites

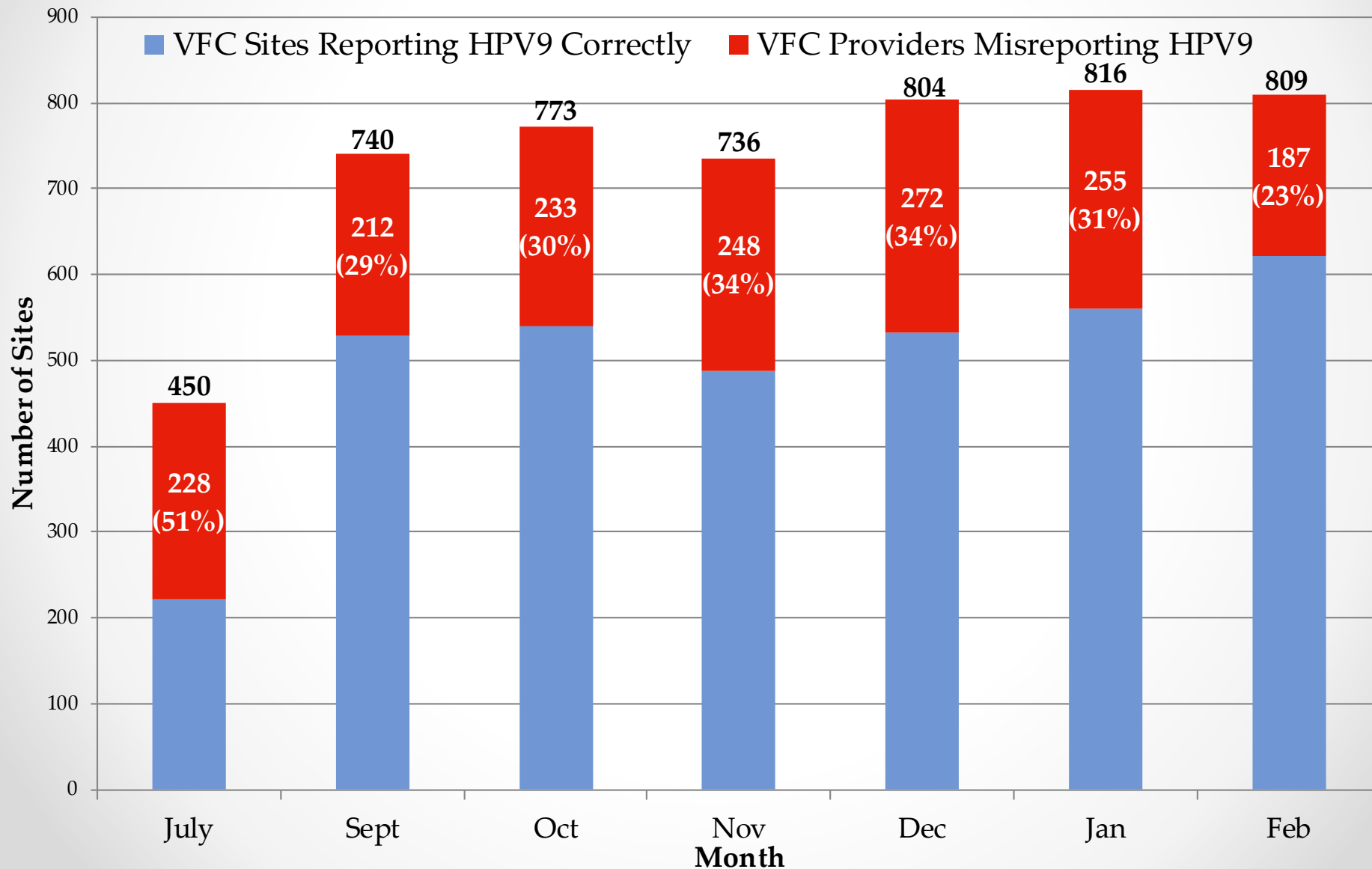
# Clean-Up Methods

- Weekly recoding of any misreported HPV9
  - CVX Code Clean-Up Criteria
    - HPV9 lot numbers
    - Immunization date > May 5, 2015
    - CVX code 62, 118 or 137 → 165
- If both a correct and incorrect HPV immunization was found during the clean-up, the CVX code was not updated to avoid creating a duplicate record
  - In those cases, the immunization with the incorrect vaccine code was deleted
- Incorrect reporting with patient-level data was captured and saved prior to clean-up each week

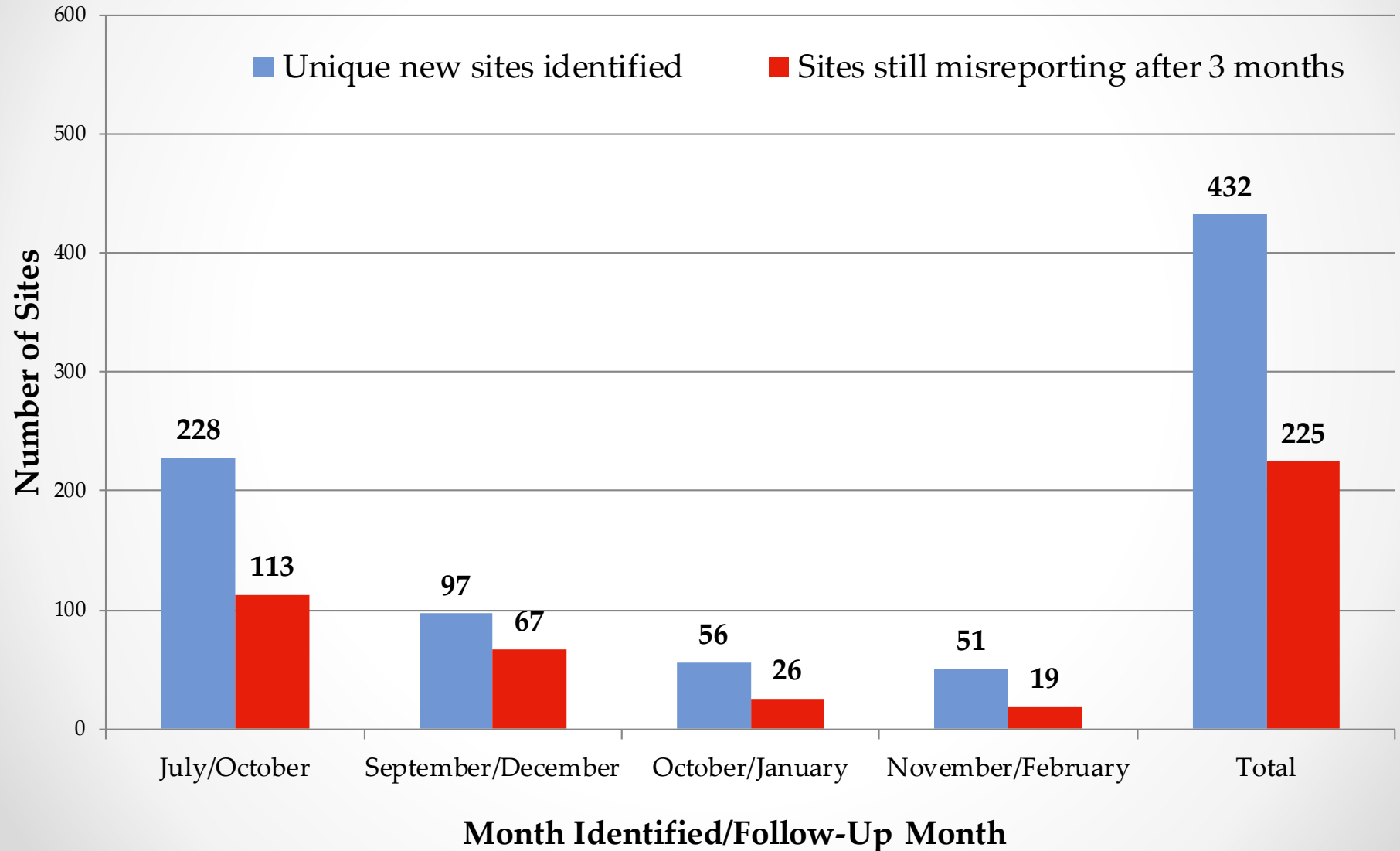
# Results

# VFC Sites Reporting/Misreporting HPV9

## July 2015-February 2016

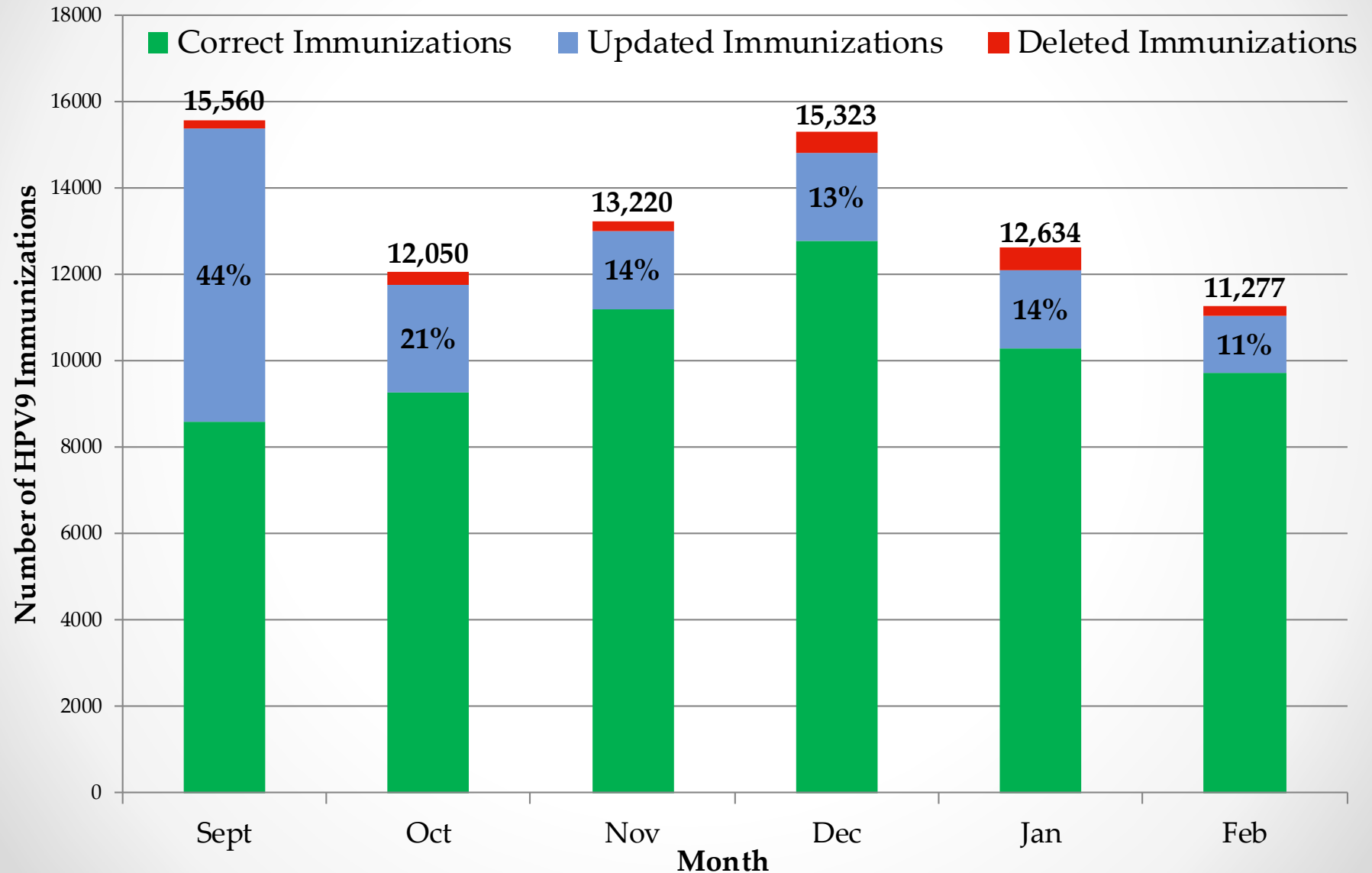


# VFC Sites Misreporting HPV9, 3-Month Follow-Up July 2015-February 2016



# CVX Clean-Up Summary, VFC and non-VFC Sites

## September 2015 – February 2016



# Challenges/Limitations

- Challenges to Clean-up
  - EHR Vendors
    - The provider may have to rely on their EHR vendor to update their tables
  - Immunizations without VFC lot numbers
    - Unable to identify mistakes for clean-up
- Challenges to Analysis
  - Small Practices
    - May not administer vaccines frequently
    - May appear to have corrected their issue when they have not

# Lessons Learned/Resources

- Notify providers of upcoming changes and new CVX codes well before vaccine is available could minimize reporting issues
- Encourage providers and EHR vendors to use CDC as a resource
  - Maintain lists of code sets
    - Current HL7 Standard CVX Code Set
  - Subscription to email updates
    - Free email subscription service, allows users to receive alerts by email when new information is available
    - <http://www.cdc.gov/other/emailupdates/>

# Conclusions

- Comparing lot numbers from ship file data from VTrckS and CIR data is an effective method to improve IIS data quality
  - ~83% of immunizations are reported with lot number
  - Now able to compare and identify misreported doses
- This methodology has the potential to:
  - Prevent under- and/or over-immunization
  - Improve immunization coverage rates
  - Improve the accuracy of a patient's record

# Next Steps

- Evaluate need to continue recoding July 2016
- New Vaccine Inventory Management (VIM) system expected to deploy in 2016
  - Accurate CVX codes and lot numbers will be essential for dose decrementing in VIM
    - VFC inventory will be automatically decremented based on CIR reporting
    - Mismatched CVX codes/lot numbers could negatively affect VFC accountability and lead to VFC order cuts
    - VIM will incentivize reporting of CVX codes/lot numbers
- Identification and clean-up methodology can be applied to new vaccines

# Thank You!

**Jessica Rao**

Phone: 347-396-2591

Fax: 347-396-2559

Email: [jrao@health.nyc.gov](mailto:jrao@health.nyc.gov)