

**Child Health Evaluation
and Research Unit**



University of Michigan



**University of Michigan
C.S. Mott Children's Hospital**

Evaluating IIS Address Data Quality following HL7 Implementation by a Retail Pharmacy Chain

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April 6, 2016

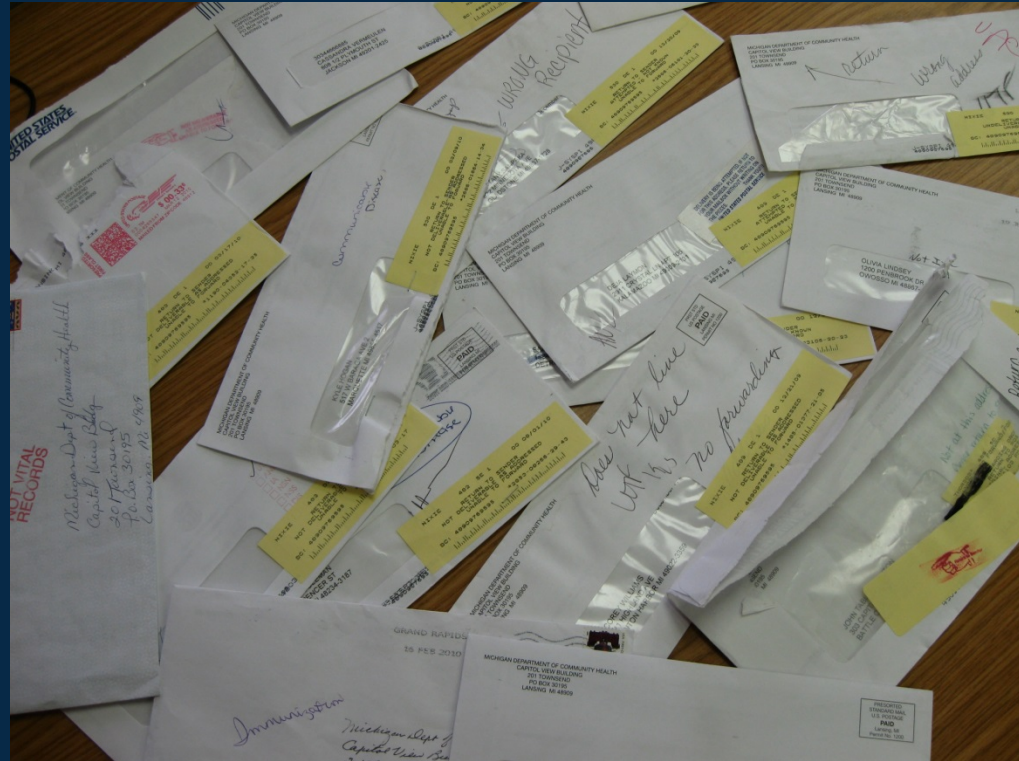
Background

- Historically, reminder / recall efforts have been hampered by outdated or missing contact information



Background

- Expensive:
 - mailing / postage
 - follow-up for undeliverable notices
- Notifications must be delivered in order to be effective



Background

- Since 2012, the Michigan Care Improvement Registry (MCIR) is receiving HL7 VXU messages directly from EHRs – now >2,200 sites
- All HL7 messages include a street address
- Typical medical practice work flows include verification of contact information with each patient visit

Background

- State law requires reporting of all immunizations administered to MCIR for persons <21 years
- No requirement to report for adults
- However, MCIR is authorized accept data for all age groups

Questions

- To what extent can HL7 messaging improve the quality of contact information among adults in MCIR?
- What are the potential implications for successful MCIR-based reminder / recall among adults?

Objective

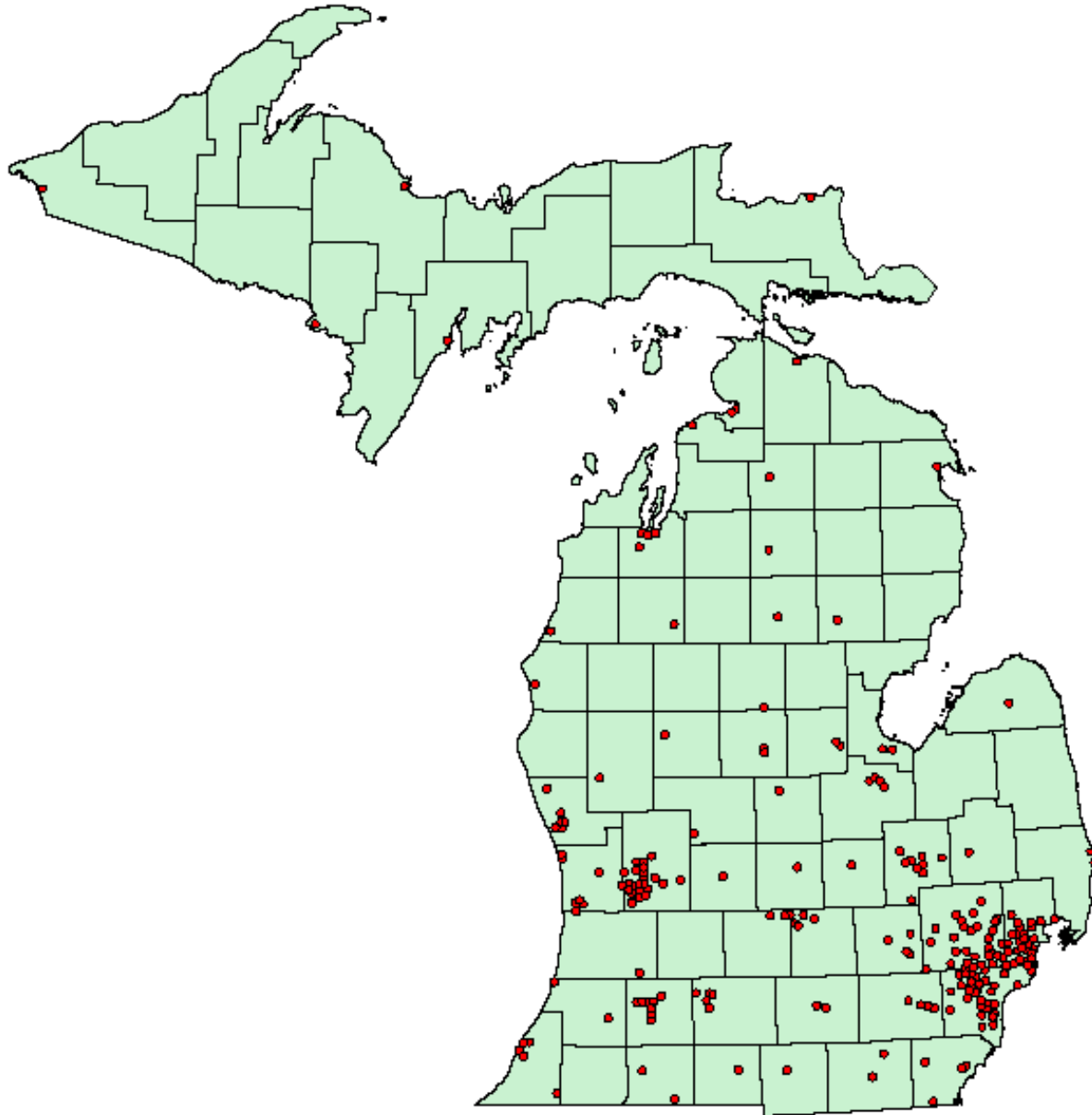
- To assess the extent to which the quality of contact information reported following HL7 differs in terms of:
 - completeness
 - changes
- Evaluate the demographic characteristics of persons receiving doses:
 - age
 - geographic location [see Session 7, Track B]

Methods

- Vaccination records reported by all Walgreens pharmacies in Michigan, 2013-2014 flu season



Walgreens Pharmacies



Methods

- HL7 (VXU) reporting by Walgreens commenced in October 2013
- Pre-HL7 reporting was electronic batch file transfer
- Information was matched with subjects' historical contact information in MCIR:
 - street address
 - telephone number

Methods

Comparison of HL7 address information to historical MCIR data was classified as:

- Same – identical values
- Changed – a new physical location
- Updated – same location, refined information (e.g., ZIP+4)
- New – person previously not in MCIR

Methods

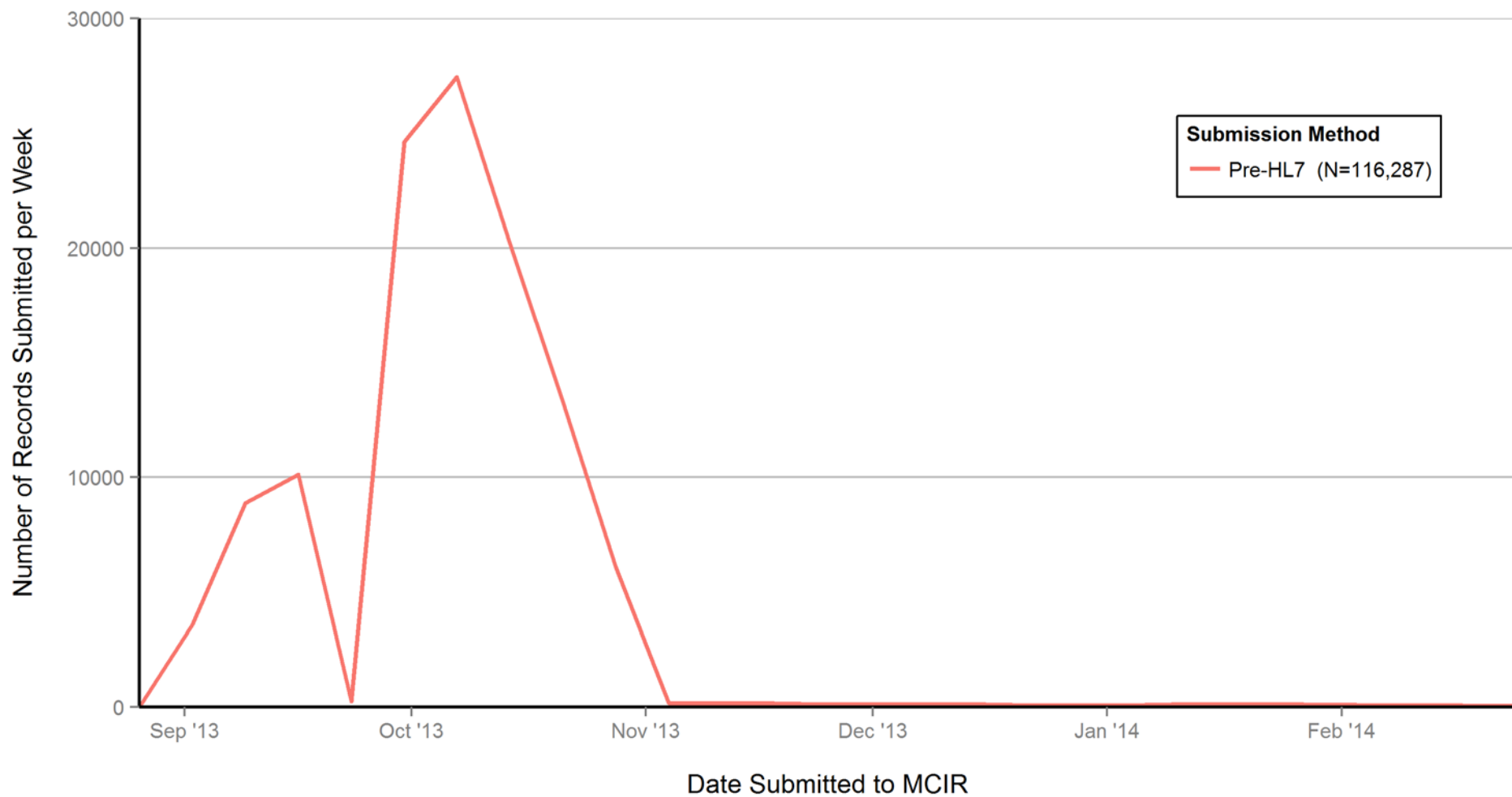
Comparison of HL7 telephone information to historical MCIR data was classified as:

- Same – identical values
- Changed – a different phone number
- Updated – same number, added information
- New – person's phone number was not previously in MCIR
- Deleted – number removed from MCIR

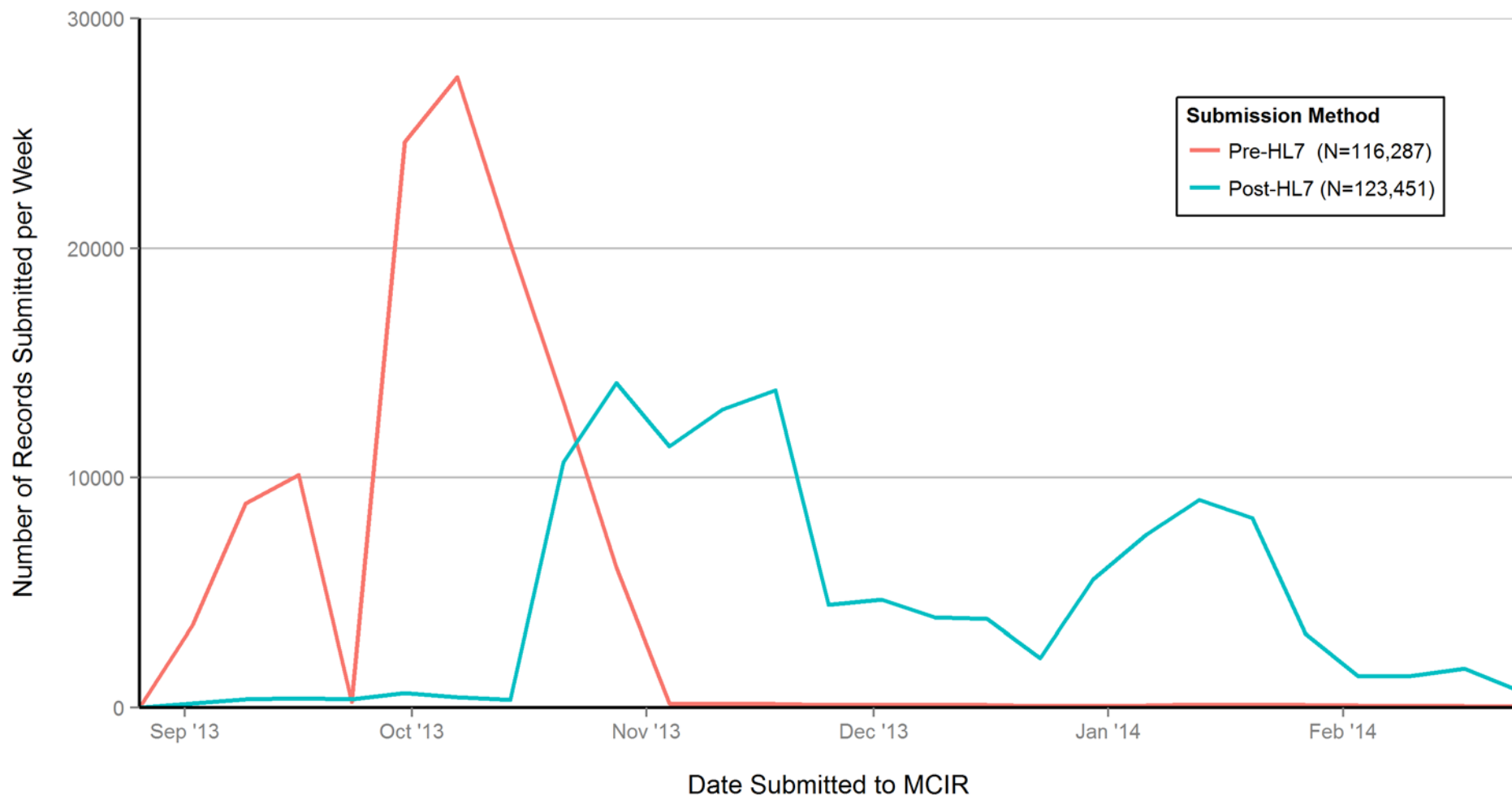
Results

- Overall, 215,766 persons received vaccinations at Walgreens in Michigan during the 2013-14 flu season:
 - 107,788 pre-HL7
 - 107,978 post-HL7

Walgreens
Unique Vaccine Records Submitted to MCIR
2013-2014 Flu Season

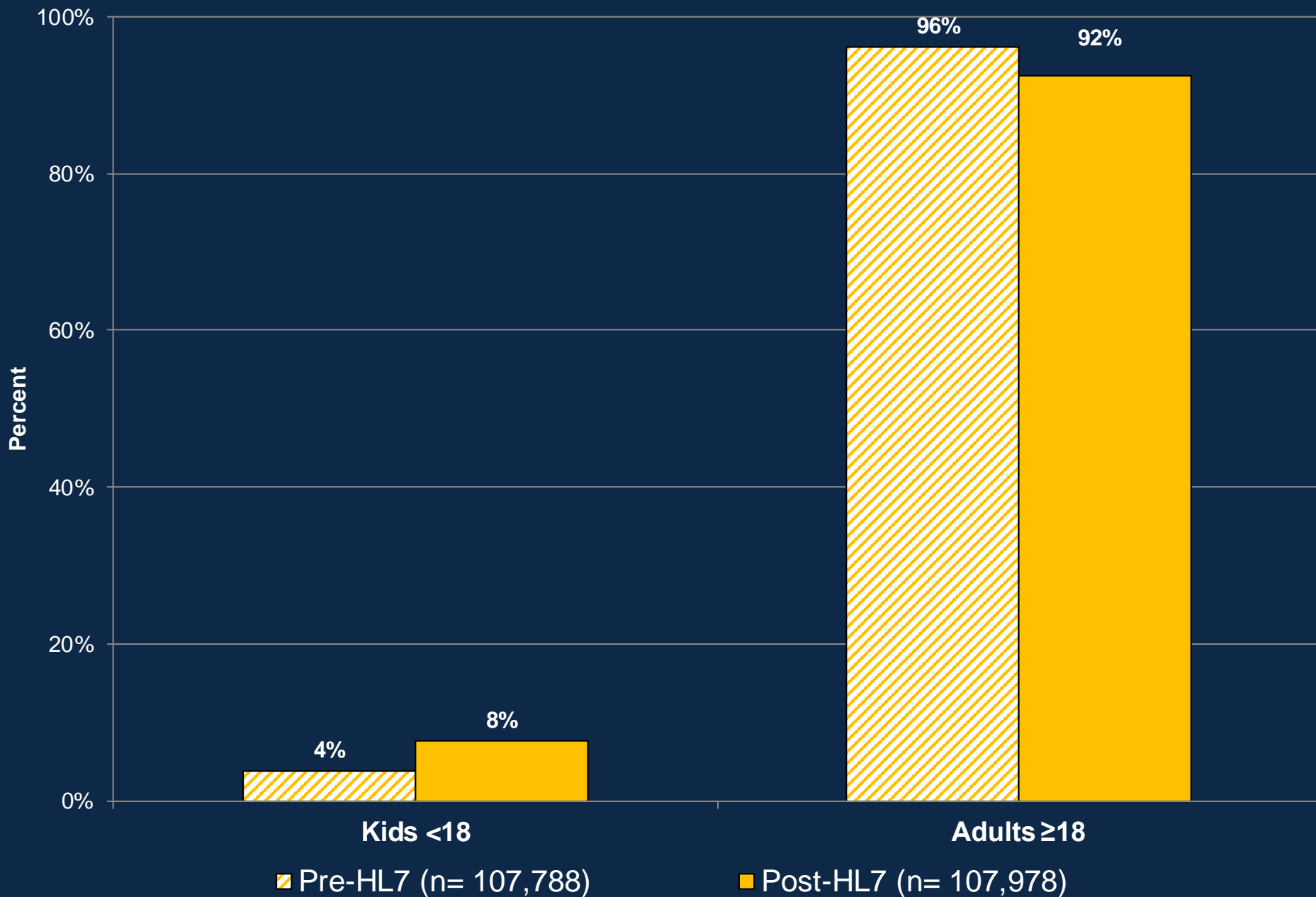


Walgreens
Unique Vaccine Records Submitted to MCIR
2013-2014 Flu Season

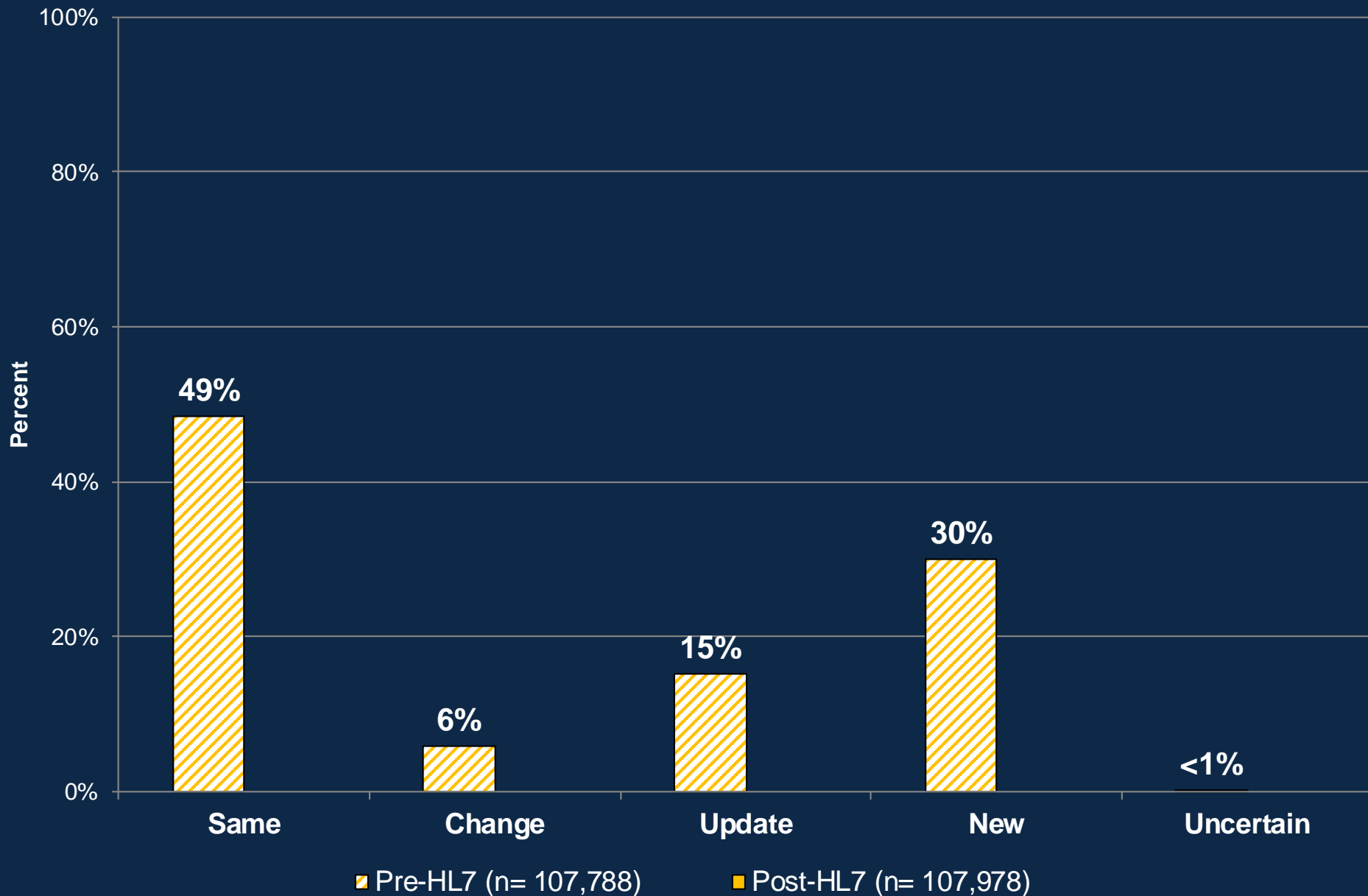


Walgreens Immunization Patients

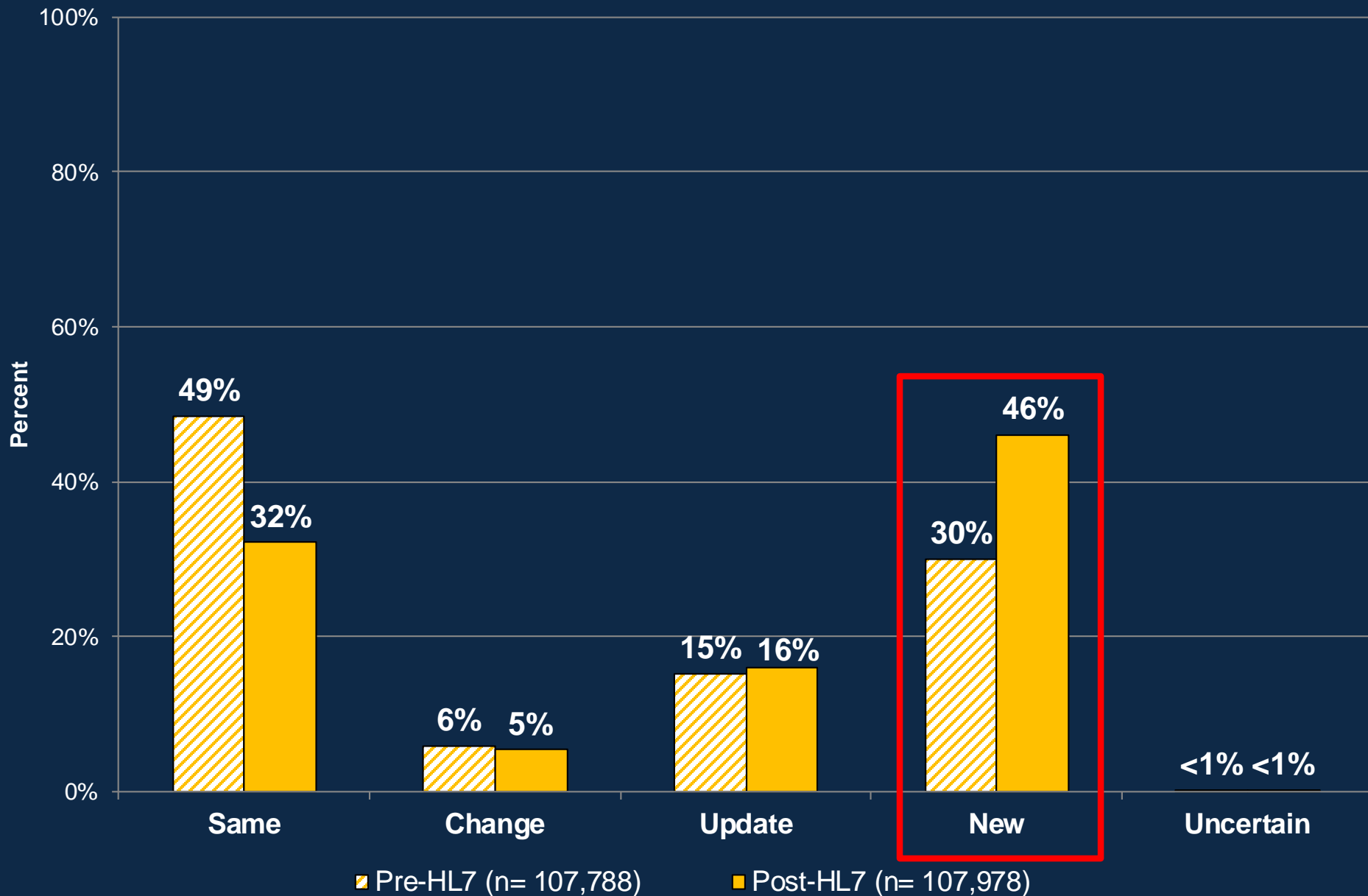
2013-2014 Flu Season



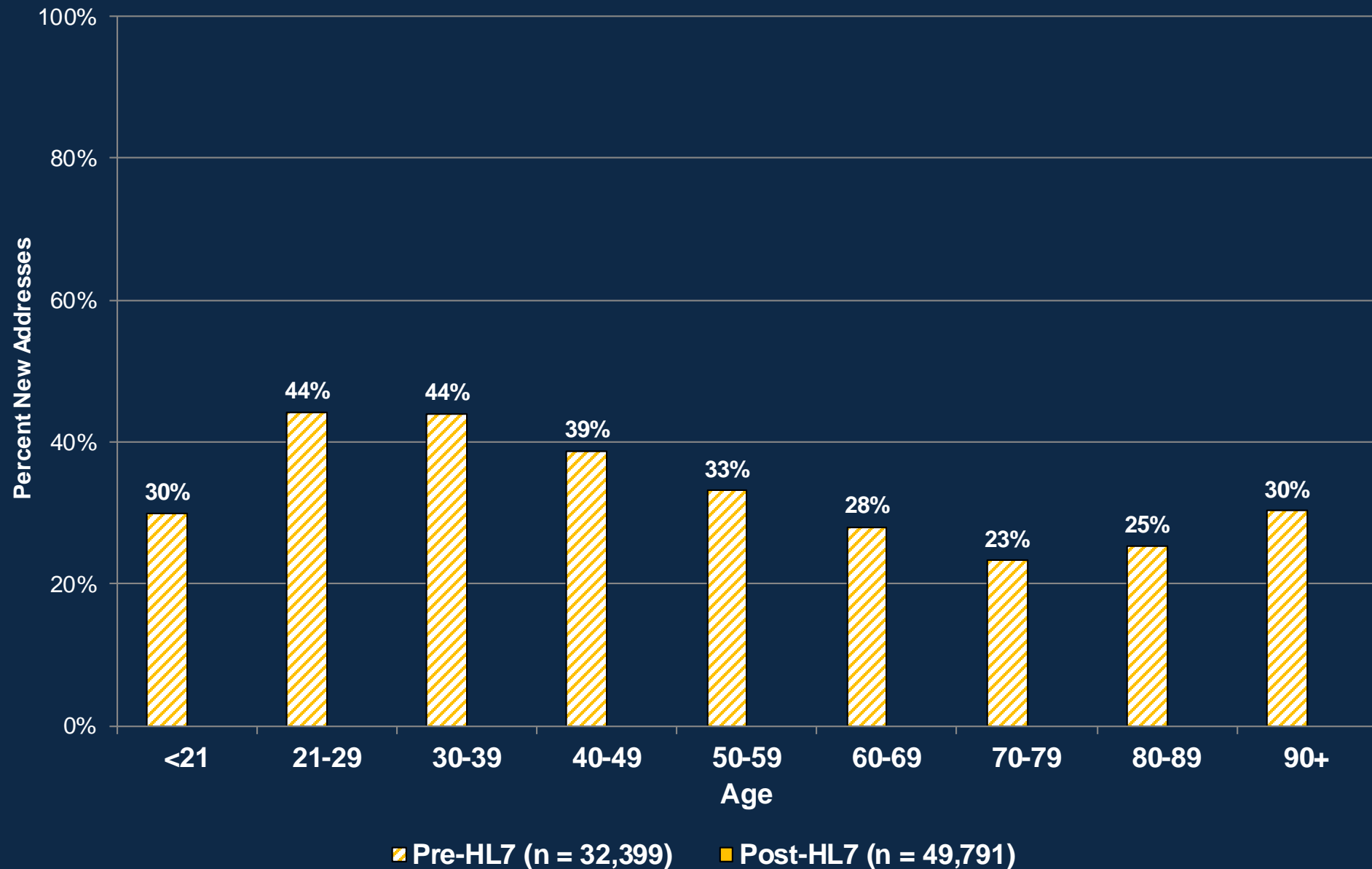
Walgreens Immunization Patients Current Address vs. Historical 2013-2014 Flu Season



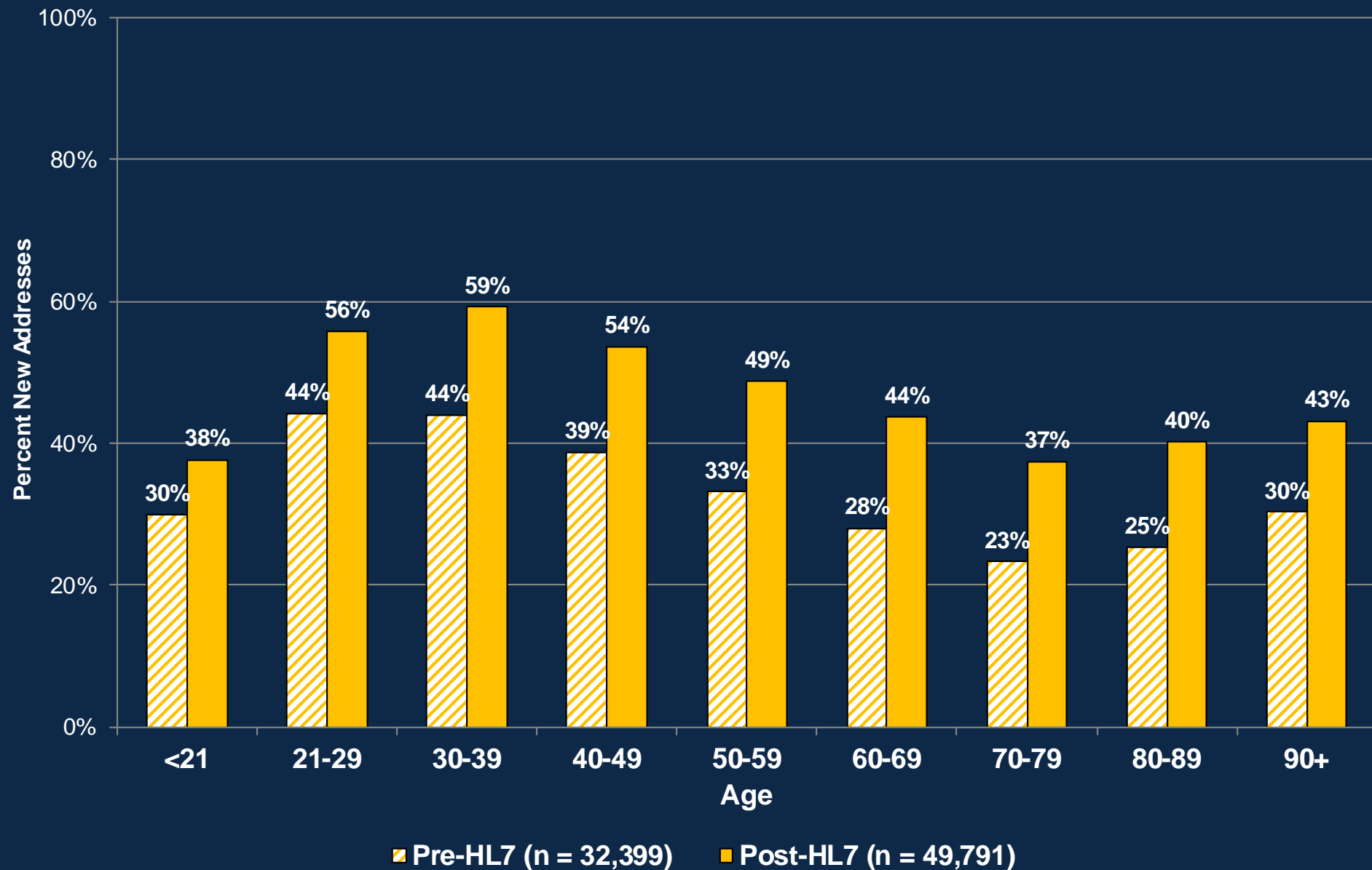
Walgreens Immunization Patients Current Address vs. Historical 2013-2014 Flu Season



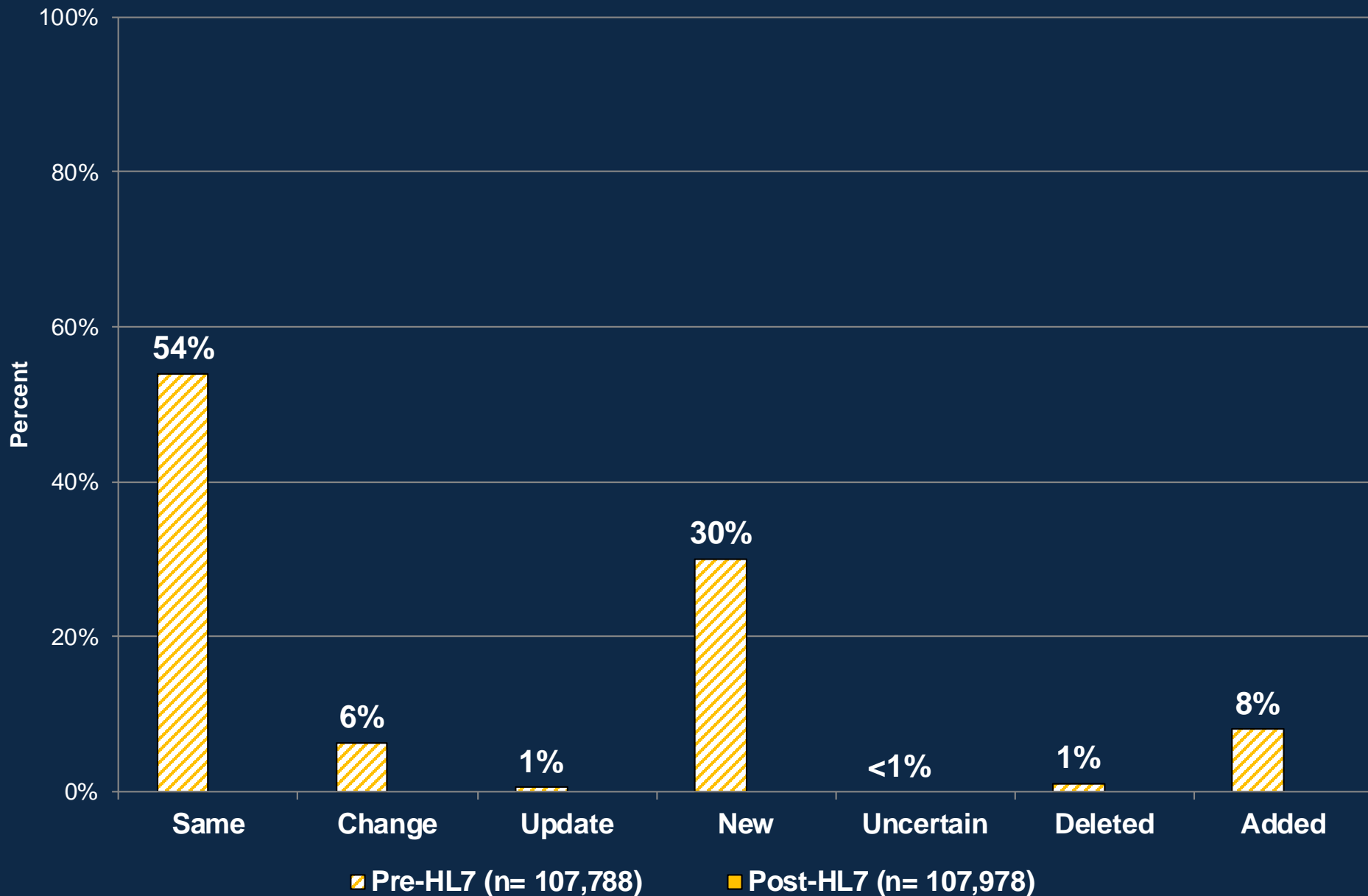
Walgreens Patients Percent New Persons By Age Group



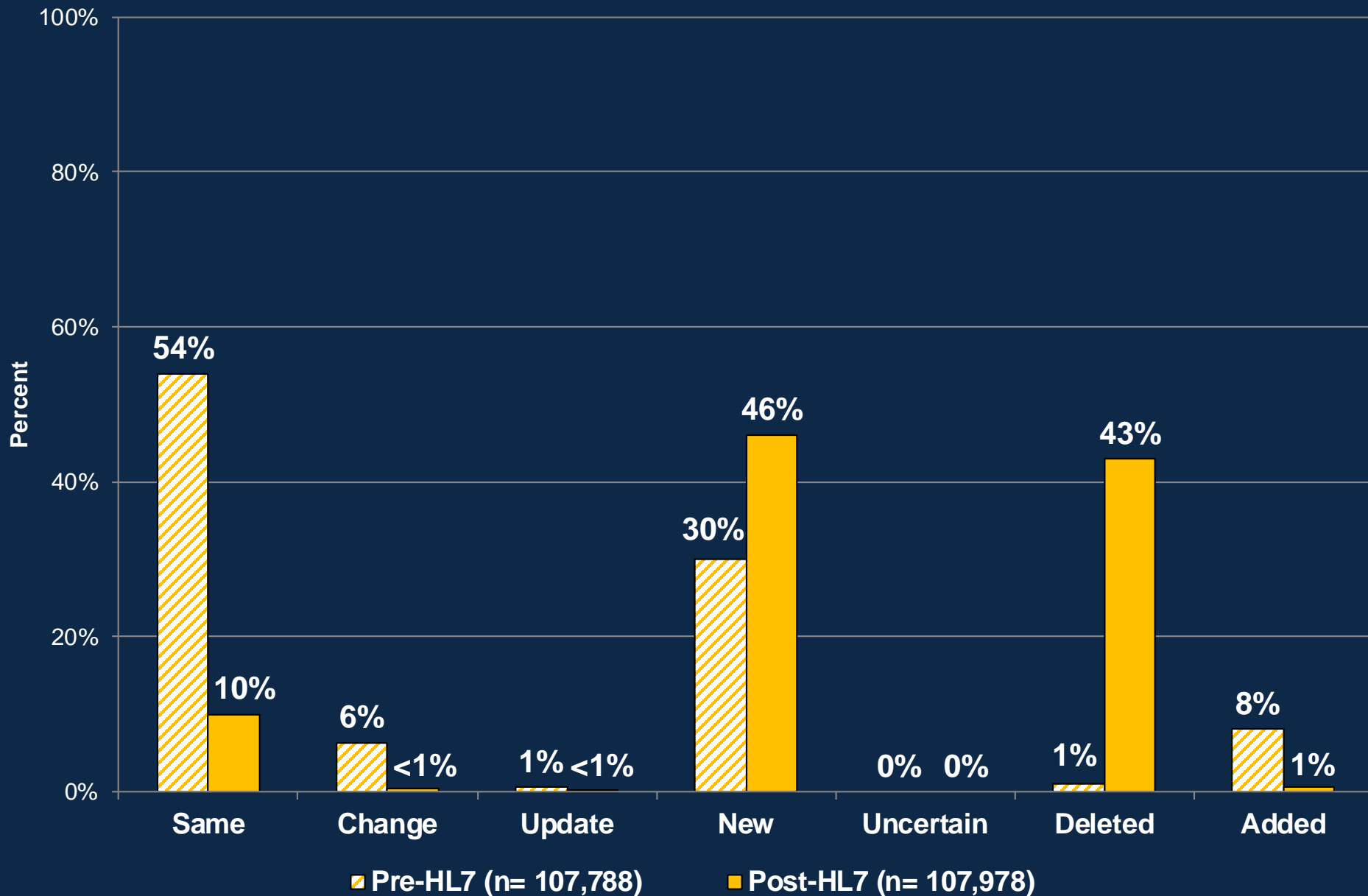
Walgreens Patients Percent New Persons By Age Group



Walgreens Immunization Patients Current Phone Number vs. Historical 2013-2014 Flu Season



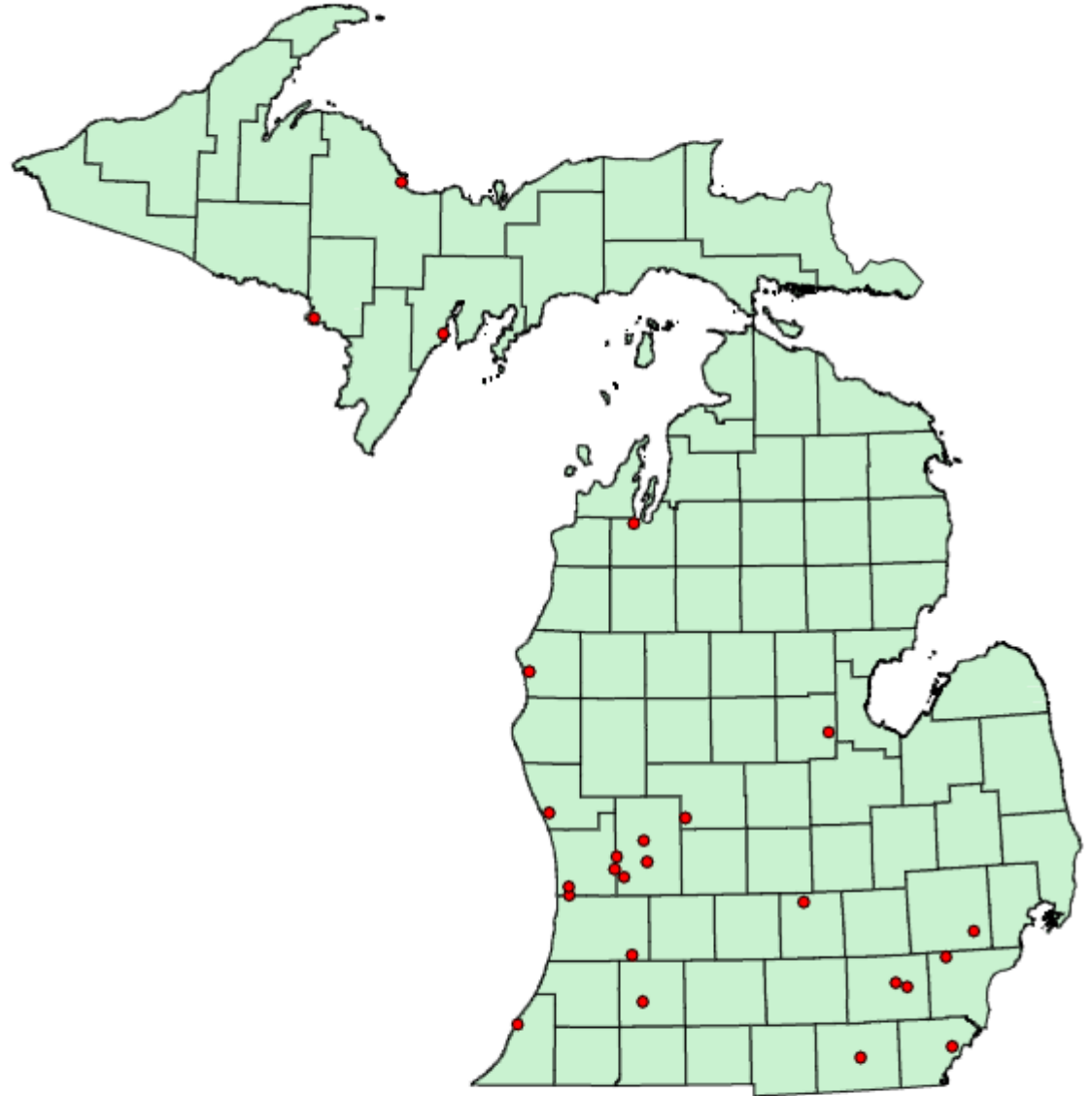
Walgreens Immunization Patients Current Phone Number vs. Historical 2013-2014 Flu Season



Changes by Location

- Most sites (n=117) reported an increased number of persons post-HL7
- Most sites (n=197) reported >90% adults
- Increases were observed at locations across the state

Top 25 Walgreens Sites



Conclusions

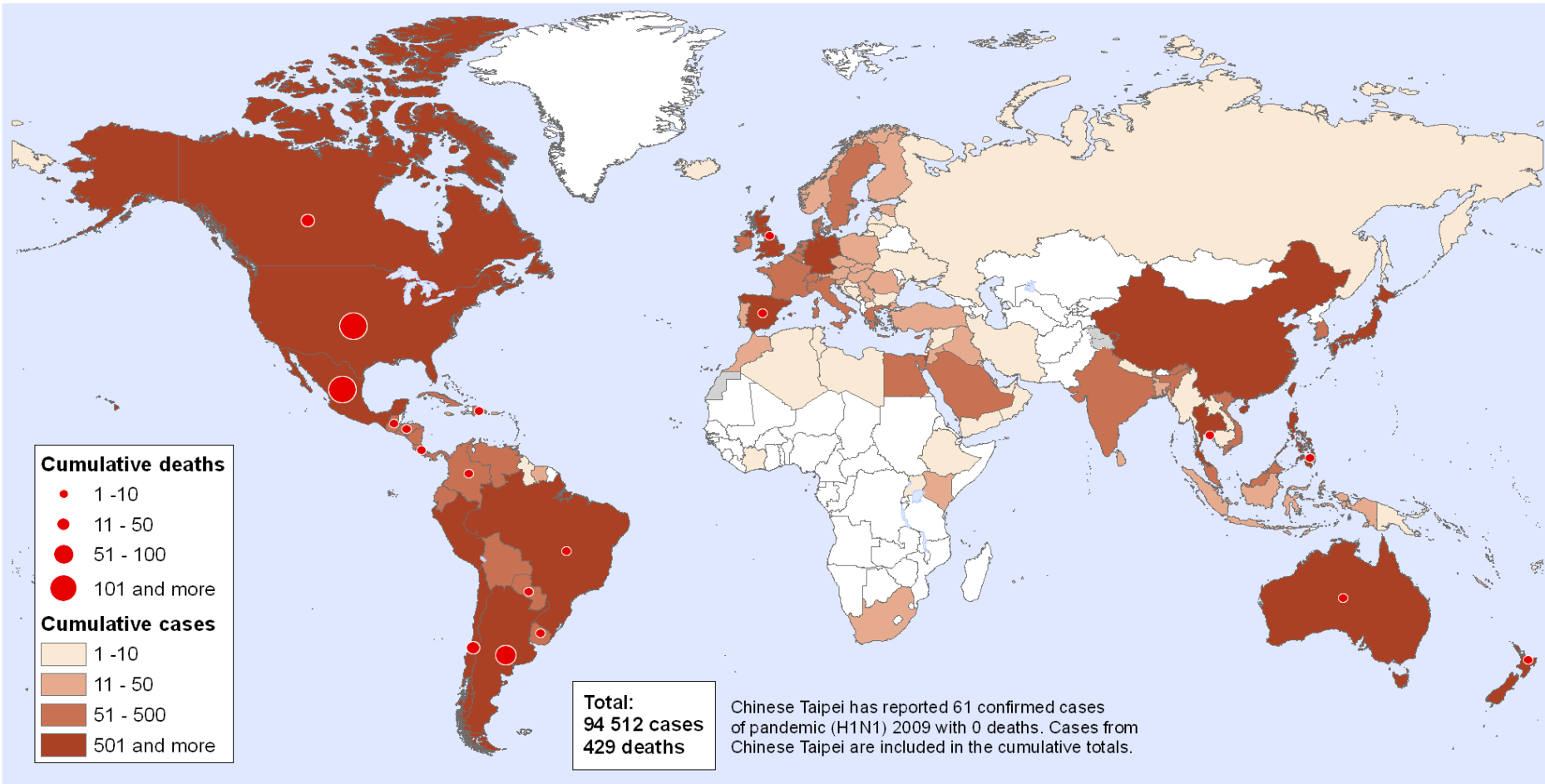
- Walgreens pharmacies submit a large number of doses to MCIR during the flu season
- Doses were submitted primarily for adults
- Nearly half of persons post-HL7 were new to MCIR

Implications

- Although not required by law, a huge amount of information is being reported electronically for adults
- “The HL7 dividend” – practices that must report doses for kids have no barrier to also reporting for adults, i.e., a tiny marginal cost
- More complete denominator
- More complete vaccination history
- More accurate contact information

**Pandemic (H1N1) 2009,
Number of laboratory confirmed cases as reported to WHO**

**Status as of 06 July 2009
09:00 GMT**



The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

Map produced: 06 July 2009 09:00 GMT

Data Source: World Health Organization
Map Production: Public Health Information
and Geographic Information Systems (GIS)
World Health Organization



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Benefits:

- Pandemic Preparedness
- More complete and accurate contact information
- Minimize issues where Sent ≠ Delivered



JENNIFER M. GRANHOLM
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF COMMUNITY HEALTH
LANSING

JANET OLSZEWSKI
DIRECTOR

December 7, 2009

LITTLE MICHIGANDER
12345 ANYWHERE ST
DETROIT MI 48202

Dear Parent,

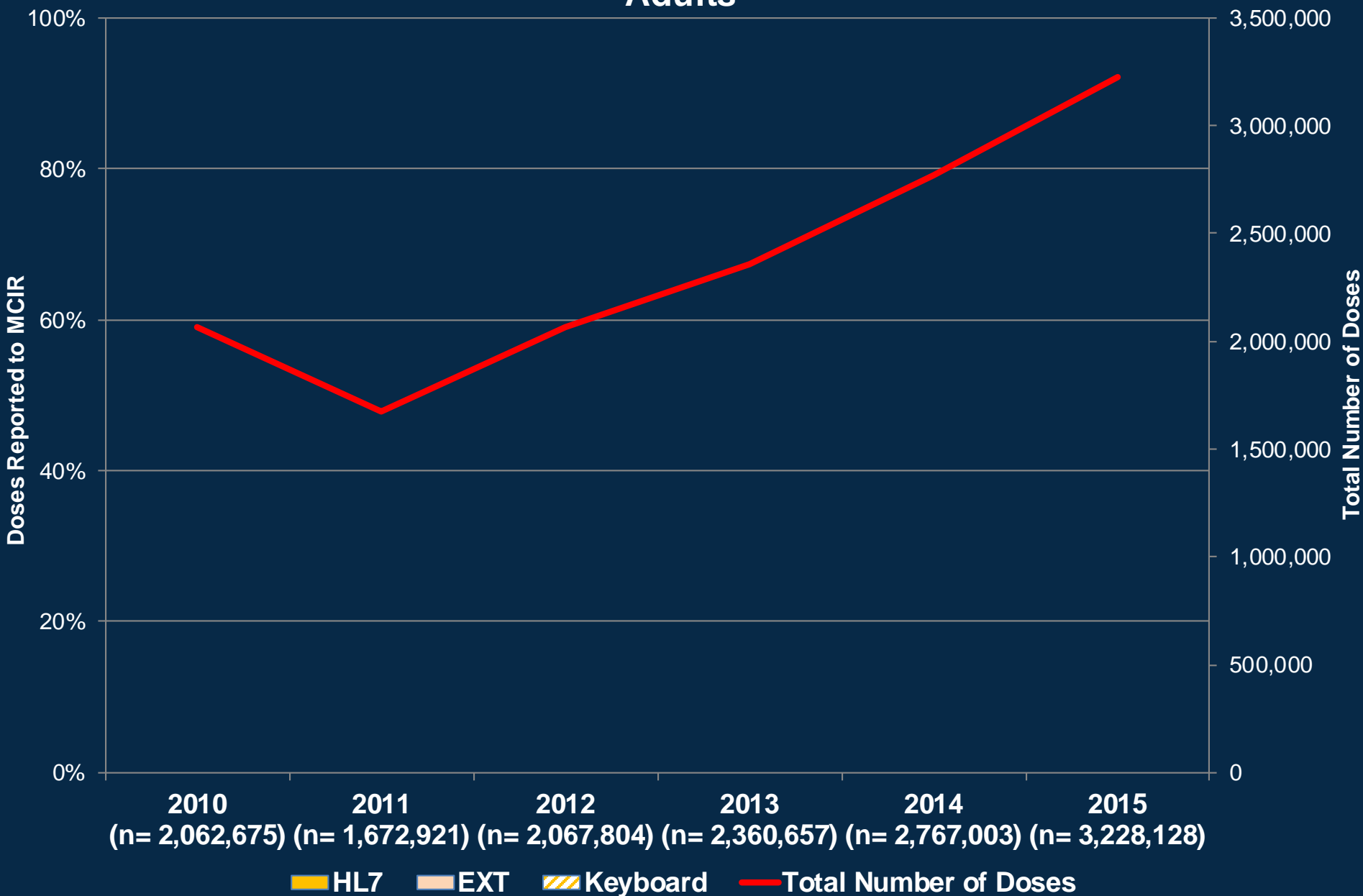
Your child is at increased risk for influenza (flu) which can cause serious illness and hospitalizations. This flu season a new and very different flu virus (called 2009 H1N1) can cause a lot more children to get sick than during a regular flu season. Here are some things you can do to help protect your child:

- **Get your child vaccinated with 2009 H1N1 flu vaccine now if you have not already done so.** Please contact your child's health care provider or your local health department today to make an appointment to get this flu vaccine.
- **Children 6 months through 9 years of age need 2 doses of 2009 H1N1 vaccine to be protected.** Contact your child's health care provider or local health department to make an appointment if your child has not had 2 doses of this flu vaccine.
- **Children and persons 10 years of age and older need only 1 dose of vaccine to be protected.**
- **In addition to 2009 H1N1 vaccine, children need seasonal flu vaccine to be fully protected.** Ask your child's health care provider or local health department if your child needs seasonal flu vaccine.
- **Individuals who have experienced flu-like symptoms, but have not been laboratory confirmed for H1N1 or seasonal flu, should consider getting vaccinated.**

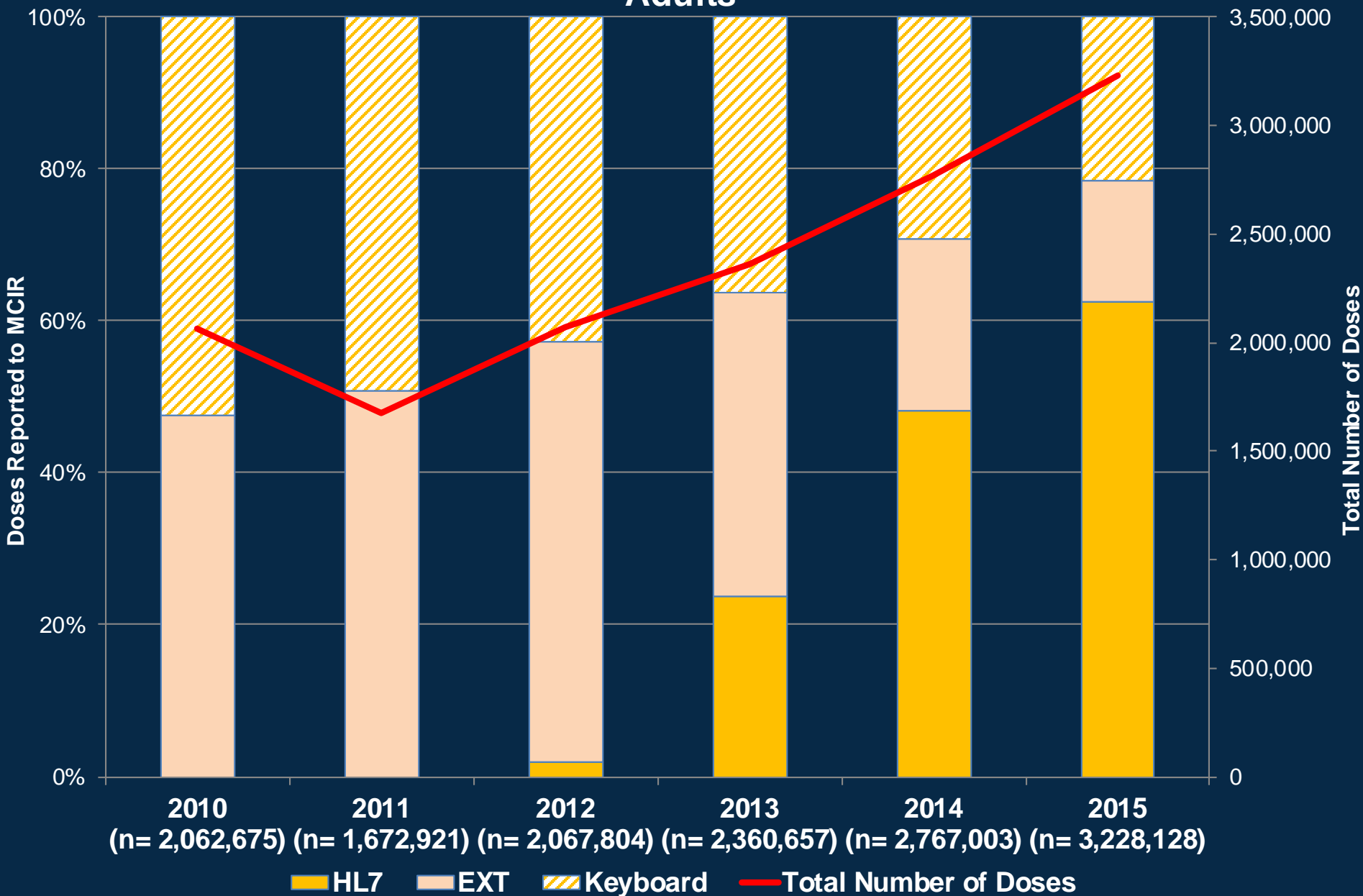
There is no cost for the 2009 H1N1 vaccine; however there may be a fee for administration of the vaccine. If your child does not have health insurance, or does not have insurance that covers seasonal flu vaccine, ask your doctor or local health department about the Vaccines for Children (VFC) program. This program is available for eligible children 18 years of age or younger.

If you have questions about seasonal and/or H1N1 flu vaccine, please contact your doctor or local health department or go online to www.michigan.gov/flu for more information. To find a flu clinic near you click on the flu clinic locator at www.michigan.gov/flu ([Where can I get the flu Vaccine?](#)) or call 211 on your phone. If your child has received both 2009 H1N1 and seasonal flu vaccines please disregard this letter and thank you for protecting your child and community from a serious illness.

Doses Reported to MCIR 2010-2015 Adults



Doses Reported to MCIR 2010-2015 Adults



Retail Pharmacies Reporting HL7

- Retail pharmacy reporting via HL7 to MCIR:
 - Walgreens (2013)
 - CVS (2014)
 - Meijer (2014)
 - Walmart (2105)
 - Sam's Club (2015)
- Over 700 retail pharmacy chain sites

Collaborators

- Derek Van
- Hannah Jary
- Michigan Department of Health and Human Services / MCIR team

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