

# Influenza Epidemiology and Surveillance Update

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Advisory Committee on Immunization Practices

October 20, 2016



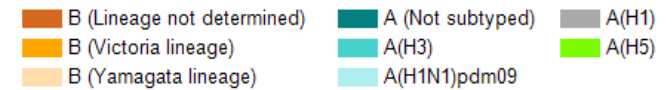
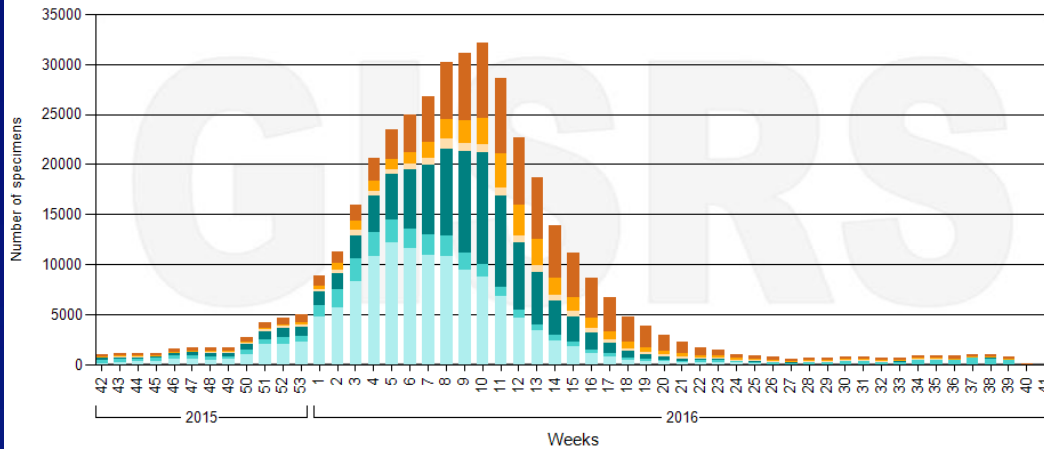
## Outline

- **International influenza activity update**
- **Recent U.S. influenza activity**
- **Southern Hemisphere vaccine recommendations**

# International Influenza Activity, 2015-16 Season

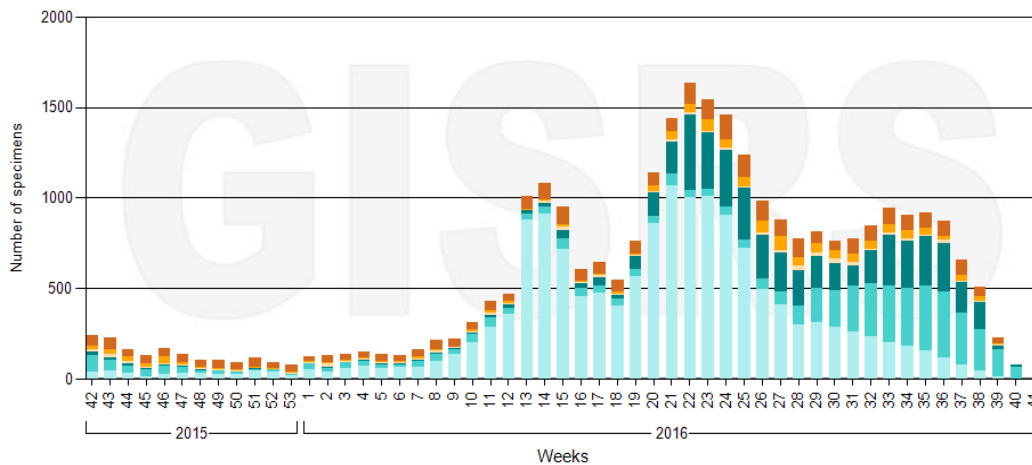
## Northern hemisphere

Number of specimens positive for influenza by subtype



## Southern hemisphere

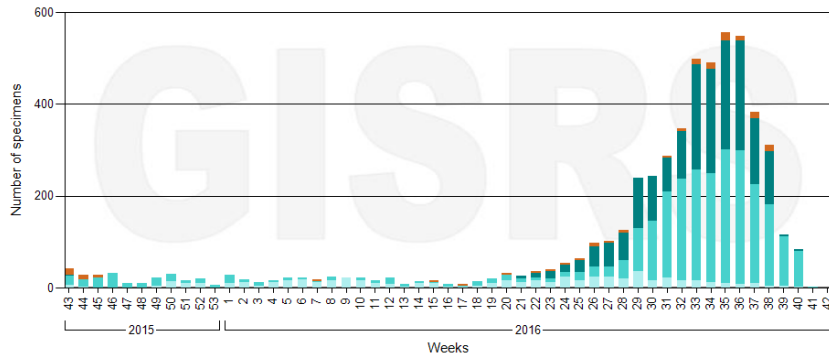
Number of specimens positive for influenza by subtype



# Southern Hemisphere Influenza Activity, Select Countries: November 2015 – October 2016

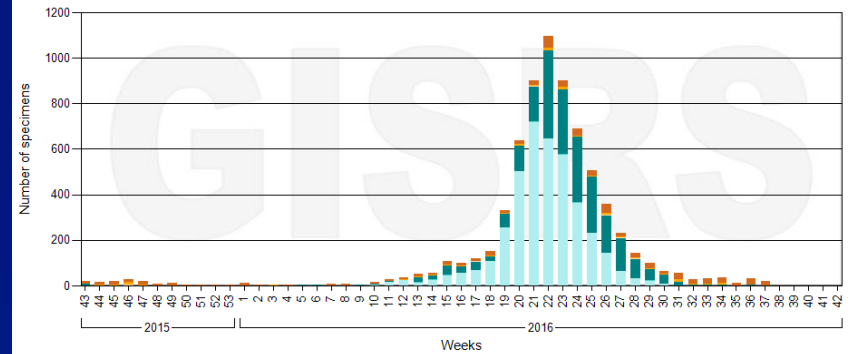
Australia

Number of specimens positive for influenza by subtype



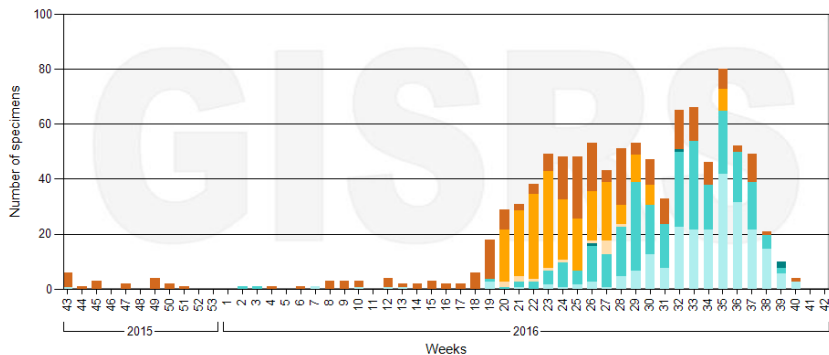
Argentina

Number of specimens positive for influenza by subtype



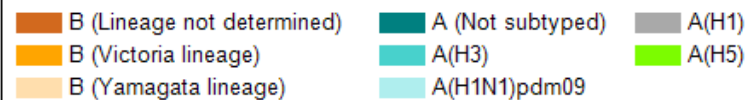
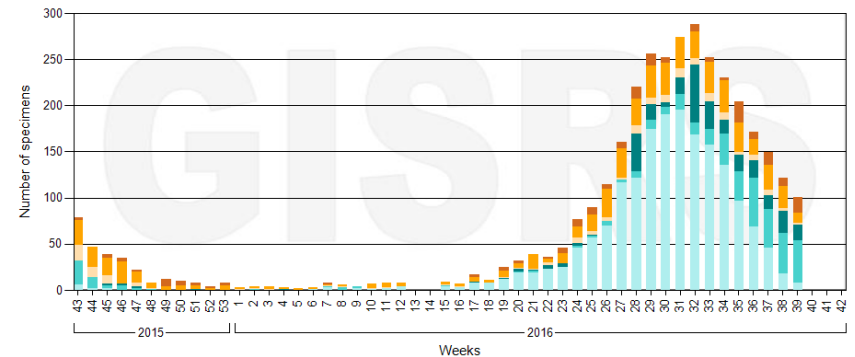
South Africa

Number of specimens positive for influenza by subtype

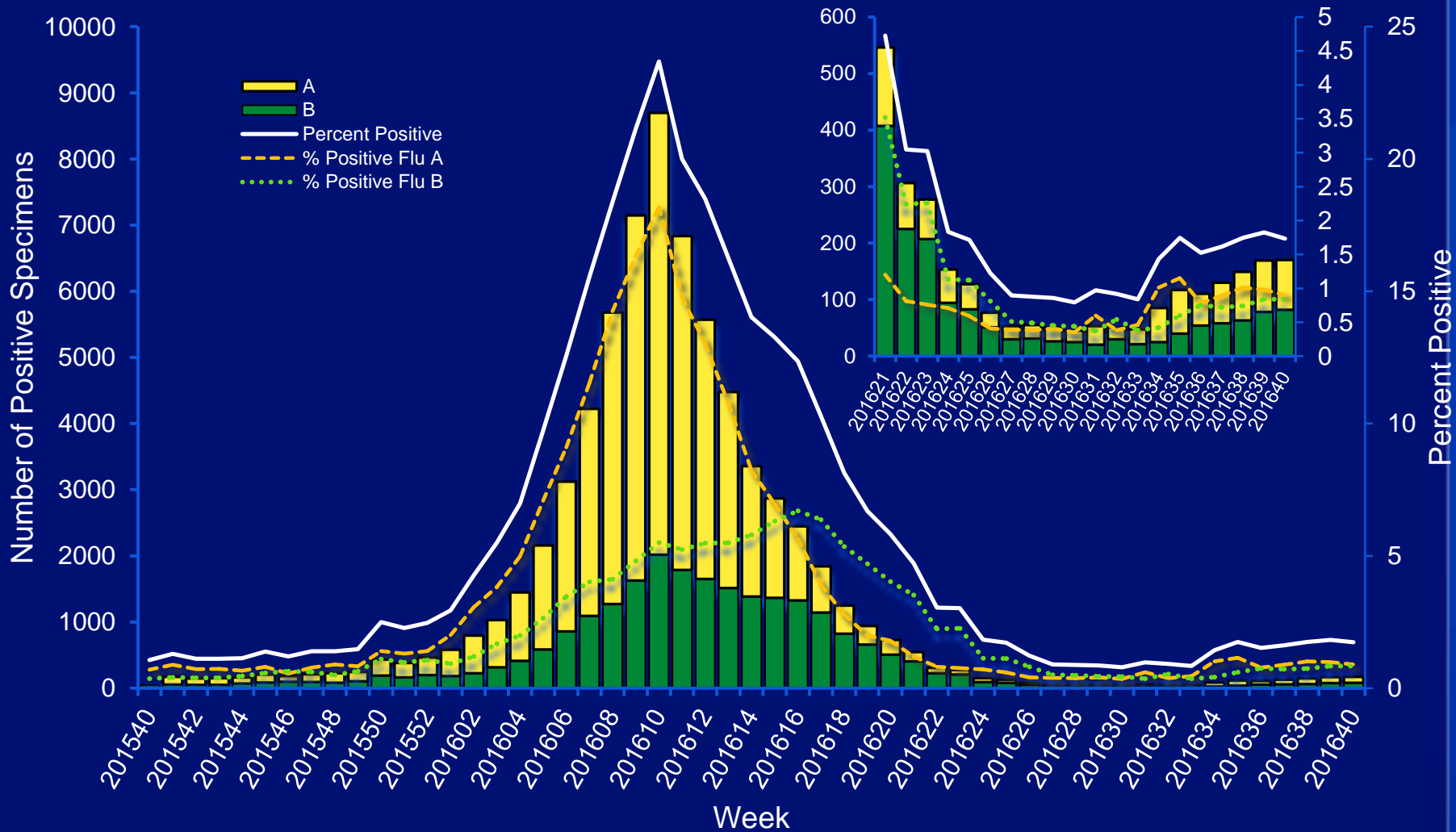


Chile

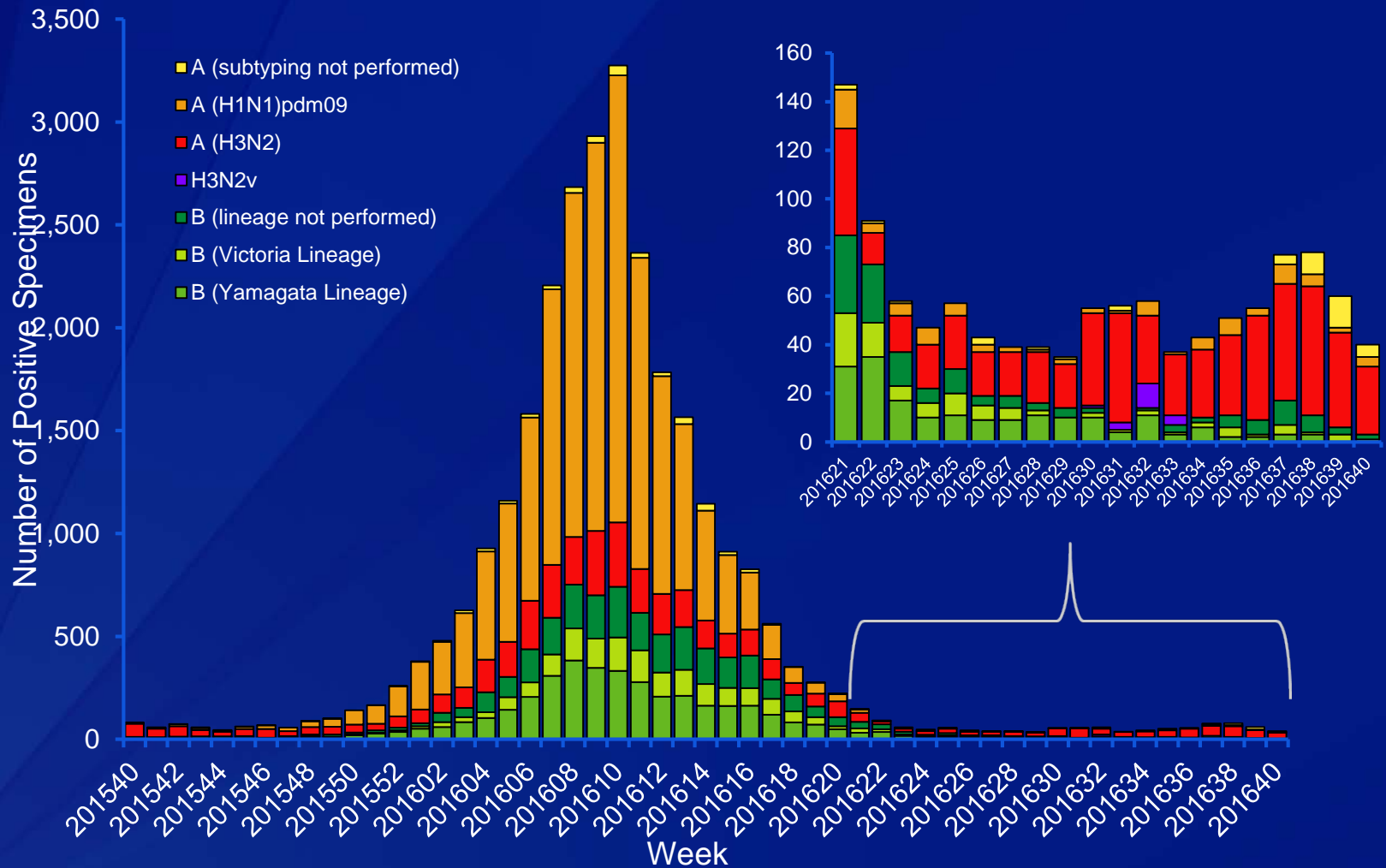
Number of specimens positive for influenza by subtype



# Influenza Positive Tests Reported by U.S. Clinical Laboratories, October 4, 2015 – October 8, 2016

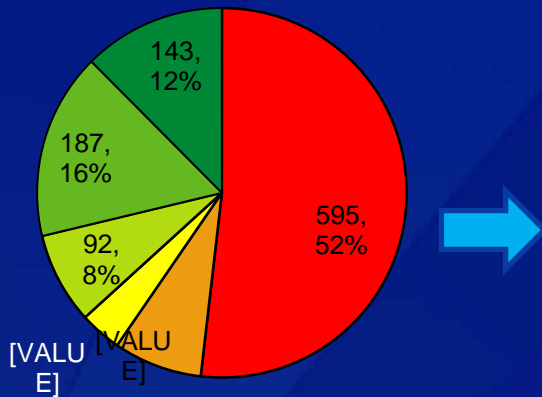


# Influenza Positive Tests Reported by U.S. Public Health Laboratories, October 4, 2015 – October 8, 2016

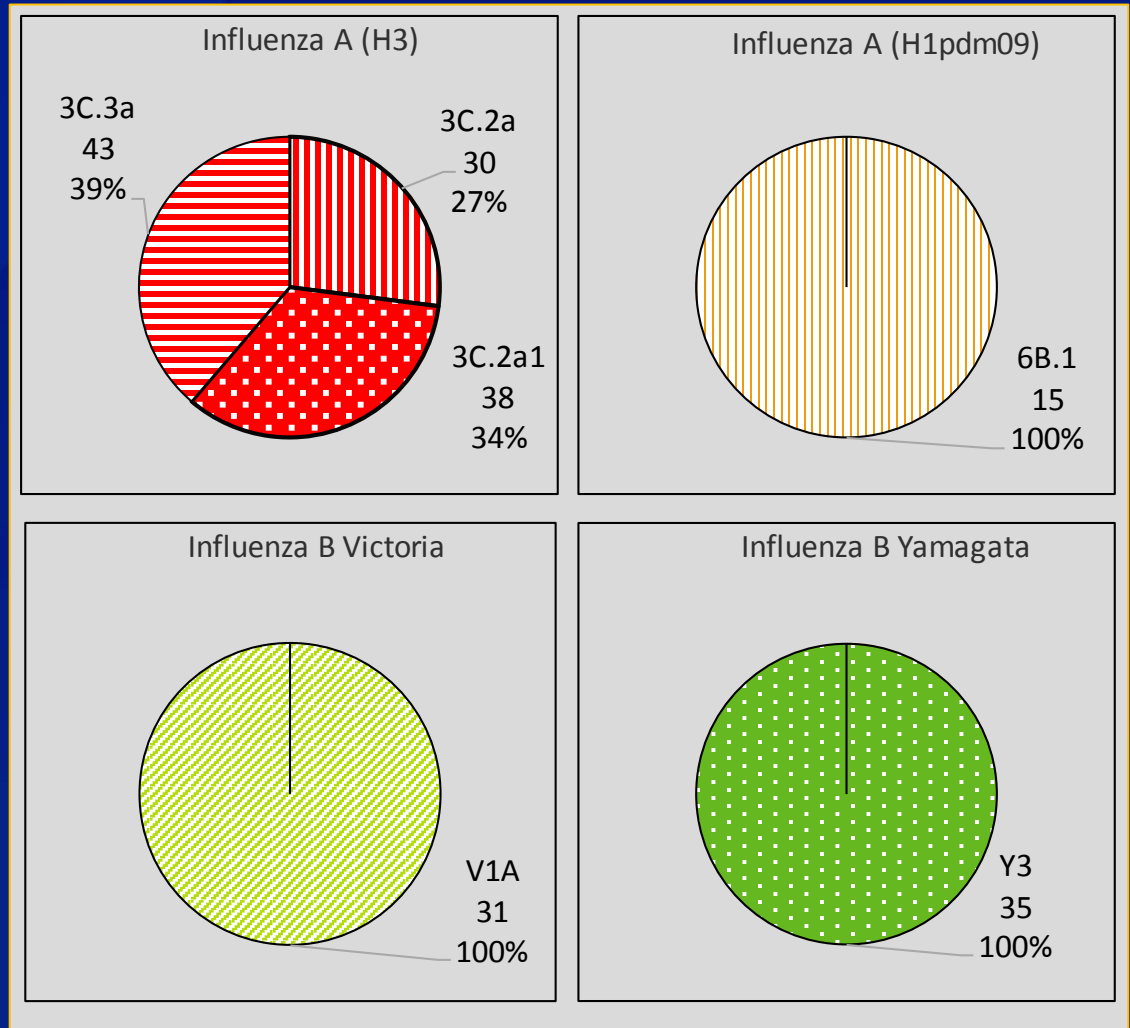


## Sequence Results, by Genetic Group, of Specimens Submitted to CDC by U.S. Public Health Laboratories, Cumulative, May 22 - October 8, 2016

### Influenza Positive Specimens Reported by U.S. Public Health Laboratories, Cumulative, May 22 - October 8, 2016



- Influenza A (H3)
- Influenza A (H1pdm09)
- Influenza A (subtype unknown)
- Influenza B Victoria
- Influenza B Yamagata
- Influenza B (lineage not determined)

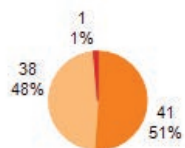


### H3N2 Genetic Groups Since May 1st, 2016 Based on HA Sequence Availability

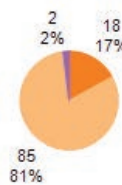


Genetic Group  
■ 3C.2a  
■ 3C.2a1  
■ 3C.3  
■ 3C.3a

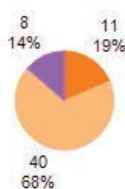
#### Africa



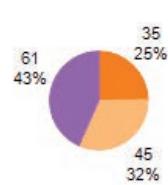
#### Asia



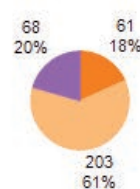
#### Europe



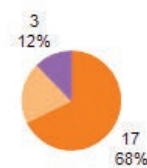
#### North America



#### Oceania



#### Central and South America



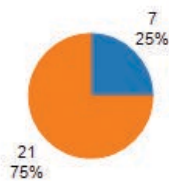


# H1N1pdm09 Genetic Groups Since May 1st, 2016 Based on HA Sequence Availability

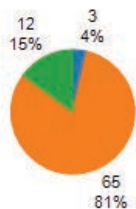


Genetic Group  
■ 6B  
■ 6B.1  
■ 6B.2

## Africa



## Asia



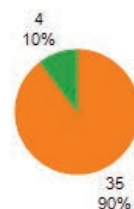
## Europe



## North America



## Oceania



## Central and South America



# Antigenic Characterization of Influenza A Viruses, May 22 – September 30, 2016

- **A (H1N1)pdm09 [8]**
  - All 8 antigenically characterized as A/California/7/2009-like
    - A (H1N1) component of the 2016-2017 Northern Hemisphere vaccine
- **A (H3N2) [53]**
  - 44 (83%) of 53 influenza A (H3N2) viruses were antigenically characterized as A/Hong Kong/4801/2014-like (genetic group 3C.2a)
    - A (H3N2) component of the 2016-2017 Northern Hemisphere vaccine
  - Among the viruses that reacted poorly with ferret antisera raised against A/Hong Kong/4801/2014-like viruses, 8 of 9 (90%) are more closely related to A/Switzerland/9715293/2013 (genetic group 3C.3a)

# Antigenic Characterization of Influenza B Viruses

## May 22 – September 30, 2016

- **Victoria Lineage [26]**

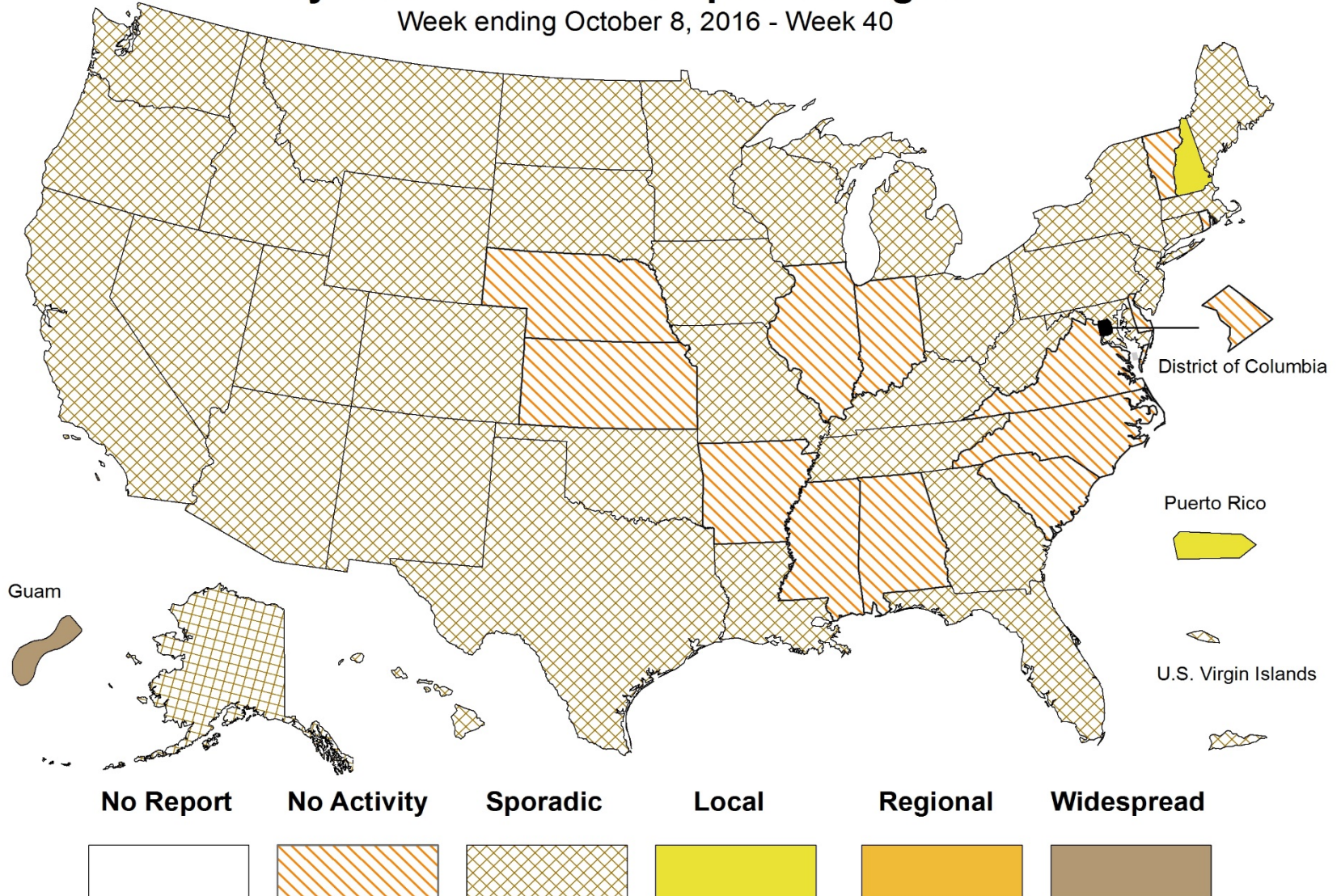
- All 26 B/Victoria-lineage viruses were antigenically characterized as B/Brisbane/60/2008-like
  - influenza B component of the 2016-2017 Northern Hemisphere trivalent and quadrivalent influenza vaccines.

- **Yamagata Lineage [33]**

- All 33 B/Yamagata-lineage viruses were antigenically characterized using ferret post-infection antisera as B/Phuket/3073/2013-like
  - influenza B component of the 2016-2017 Northern Hemisphere quadrivalent influenza vaccines.

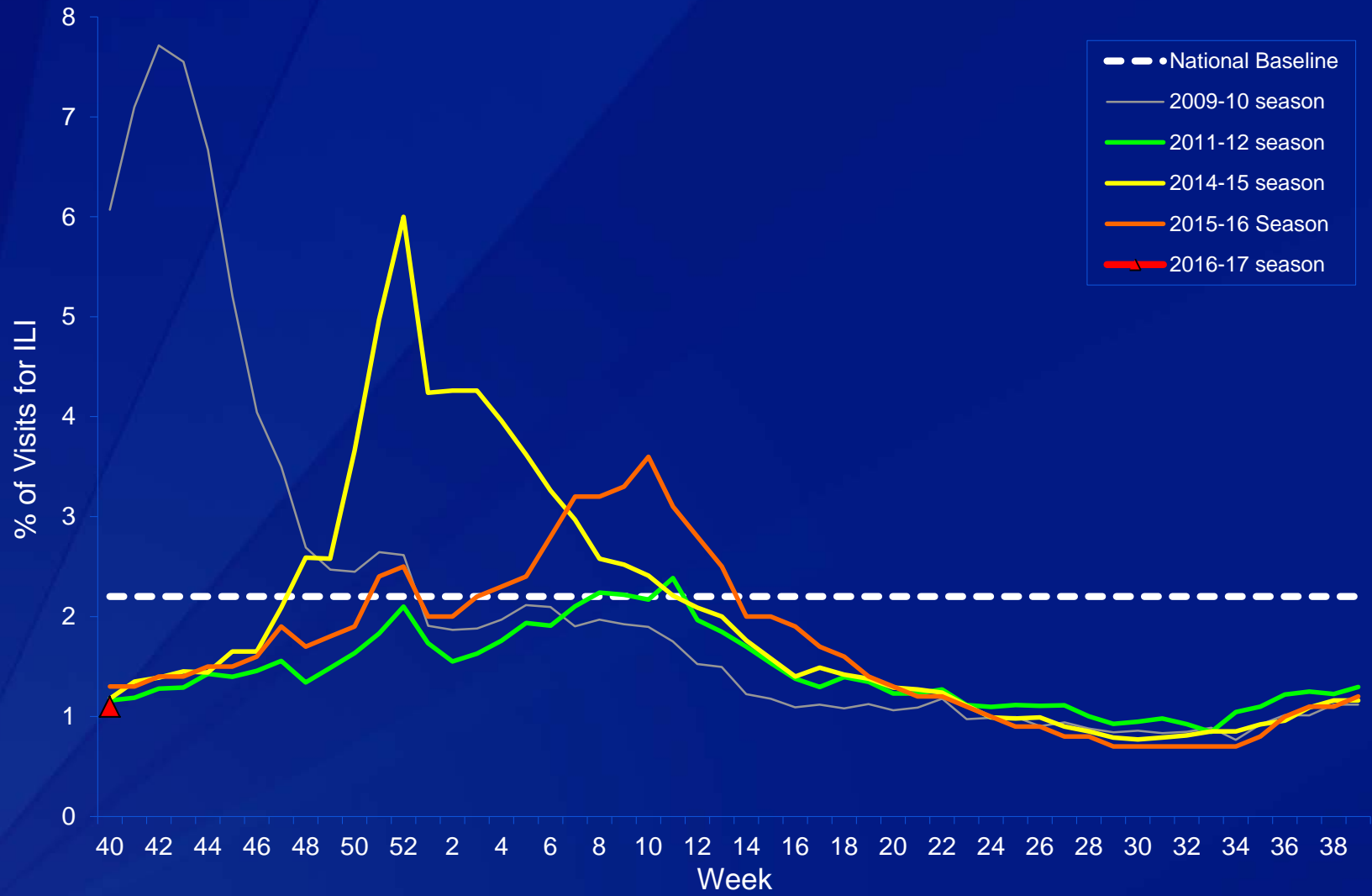
# Weekly Influenza Activity Estimates Reported by State & Territorial Epidemiologists\*

Week ending October 8, 2016 - Week 40



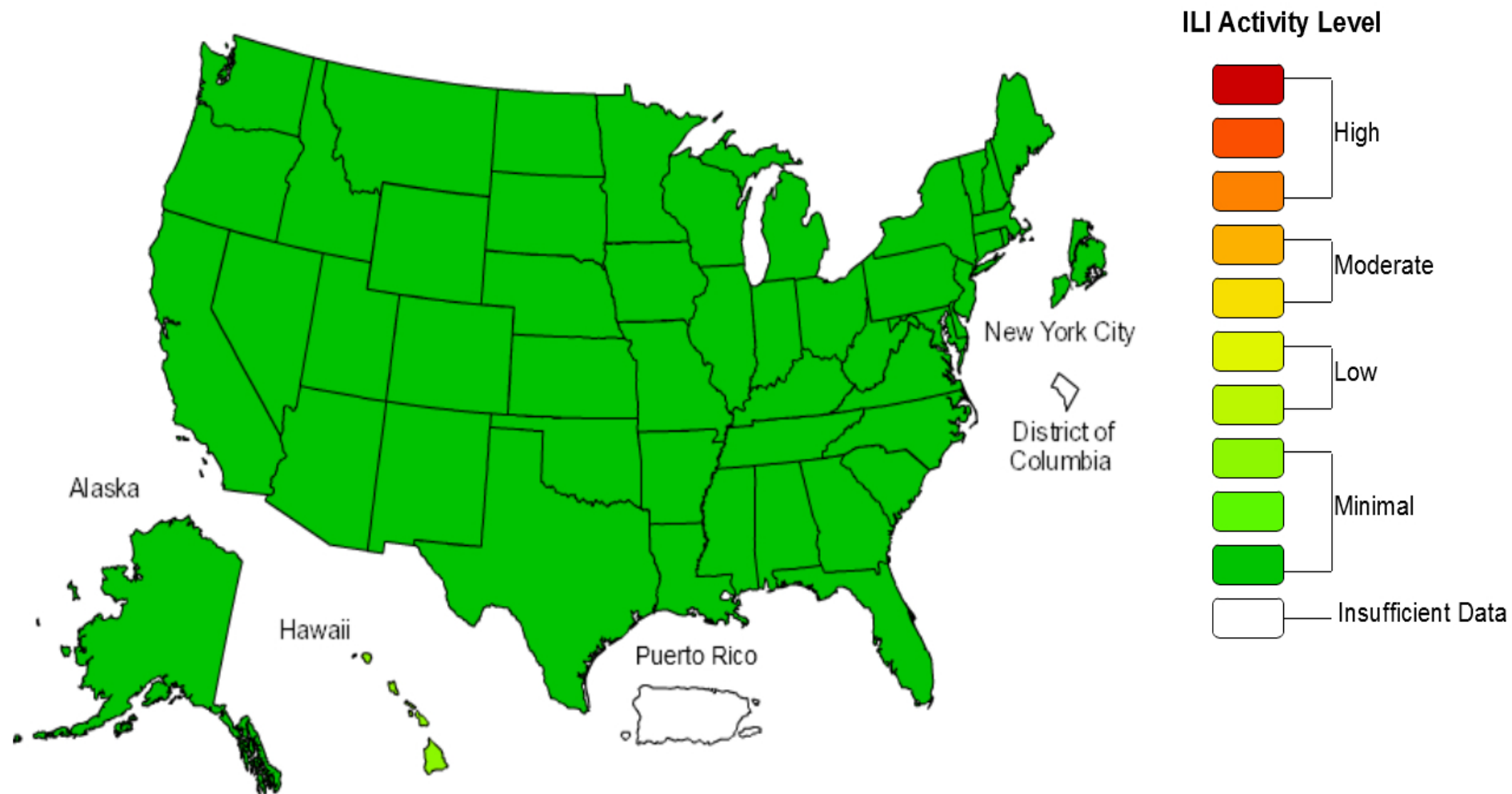
\* This map indicates geographic spread & does not measure the severity of influenza activity

# Percentage of Visits for Influenza-like Illness (ILI) Reported by the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Weekly National Summary, 2016-2017 and Selected Previous Seasons



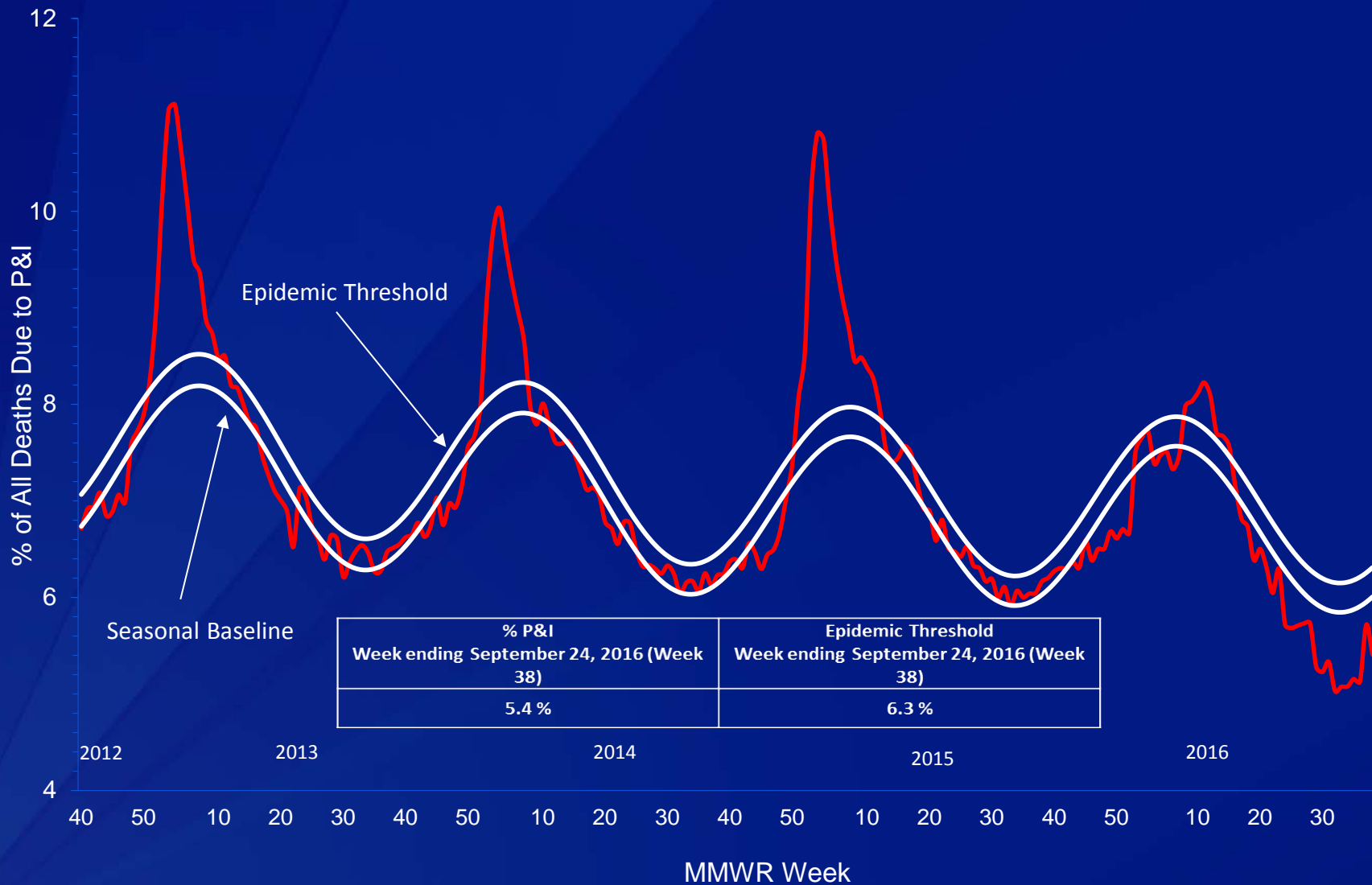
# Influenza-Like Illness (ILI) Activity Level Indicator Determined by Data Reported to ILINet

## 2016-17 Influenza Season Week 40 ending Oct 08, 2016



# Pneumonia and Influenza Mortality from the National Center for Health Statistics Mortality Surveillance System

Data through the week ending September 24, 2016, as of October 12, 2016



## **Recommendation for 2017 Southern Hemisphere Influenza Vaccine**

- **It is recommended that the following viruses be used for trivalent influenza vaccines in the 2017 Southern Hemisphere influenza season:**
  - an A/Michigan/45/2015 (H1N1)pdm09-like virus;
  - an A/Hong Kong/4801/2014 (H3N2)-like virus; and
  - a B/Brisbane/60/2008-like virus.
- **For quadrivalent vaccines containing 2 B components:**
  - Above 3, plus
  - A B/Phuket/3073/2013-like virus



## Summary

- **Influenza A(H1N1)pdm09, A(H3N2), and both lineages of influenza B viruses continue to circulate worldwide**
- **Activity in the United States and other Northern Hemisphere countries remains low at this time**
- **The recommended components for the 2017 Southern Hemisphere vaccine includes an updated H1N1 virus**
  - **First change in the H1 component since the 2009 pandemic**

## Summary

- **Global laboratory data continue to indicate that most currently circulating viruses are antigenically similar to the vaccine viruses included in the 2016-17 U.S. vaccines**
- **This suggests that vaccination with Northern Hemisphere influenza vaccine should offer protection against the majority of circulating viruses analyzed to date**

Questions?