

# Influenza Surveillance

Lyn Finelli, DrPH, MS  
Lead, Influenza Surveillance and Outbreak Response Team  
Epidemiology and Prevention Branch  
Influenza Division  
NCIRD



[www.pandemicflu.gov](http://www.pandemicflu.gov)

[www.cdc.gov/flu](http://www.cdc.gov/flu)

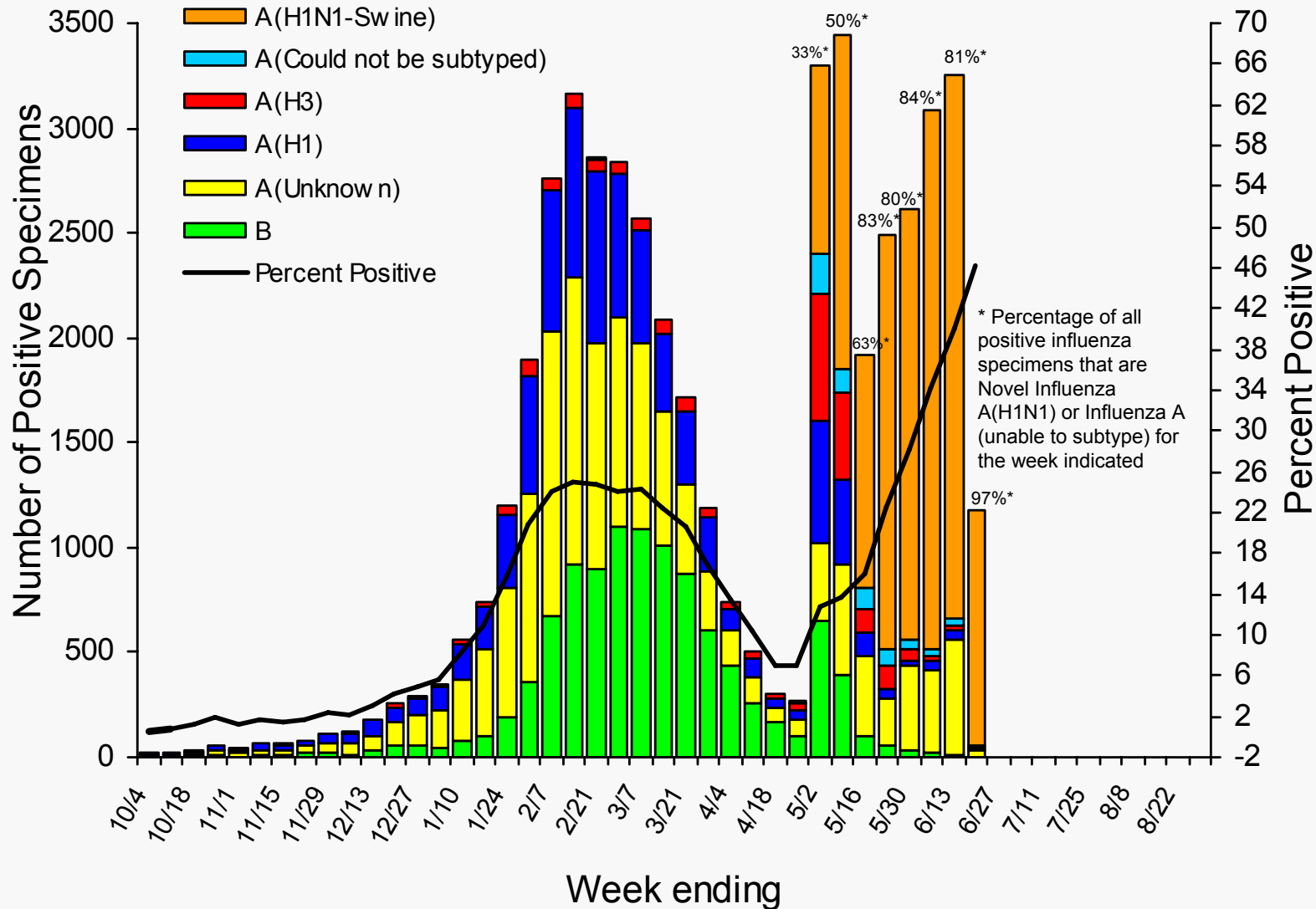




# Epidemiology/Surveillance Pandemic (H1N1) - 25 JUN 2009



## U.S. WHO/NREVSS Collaborating Laboratories Summary, 2008-09

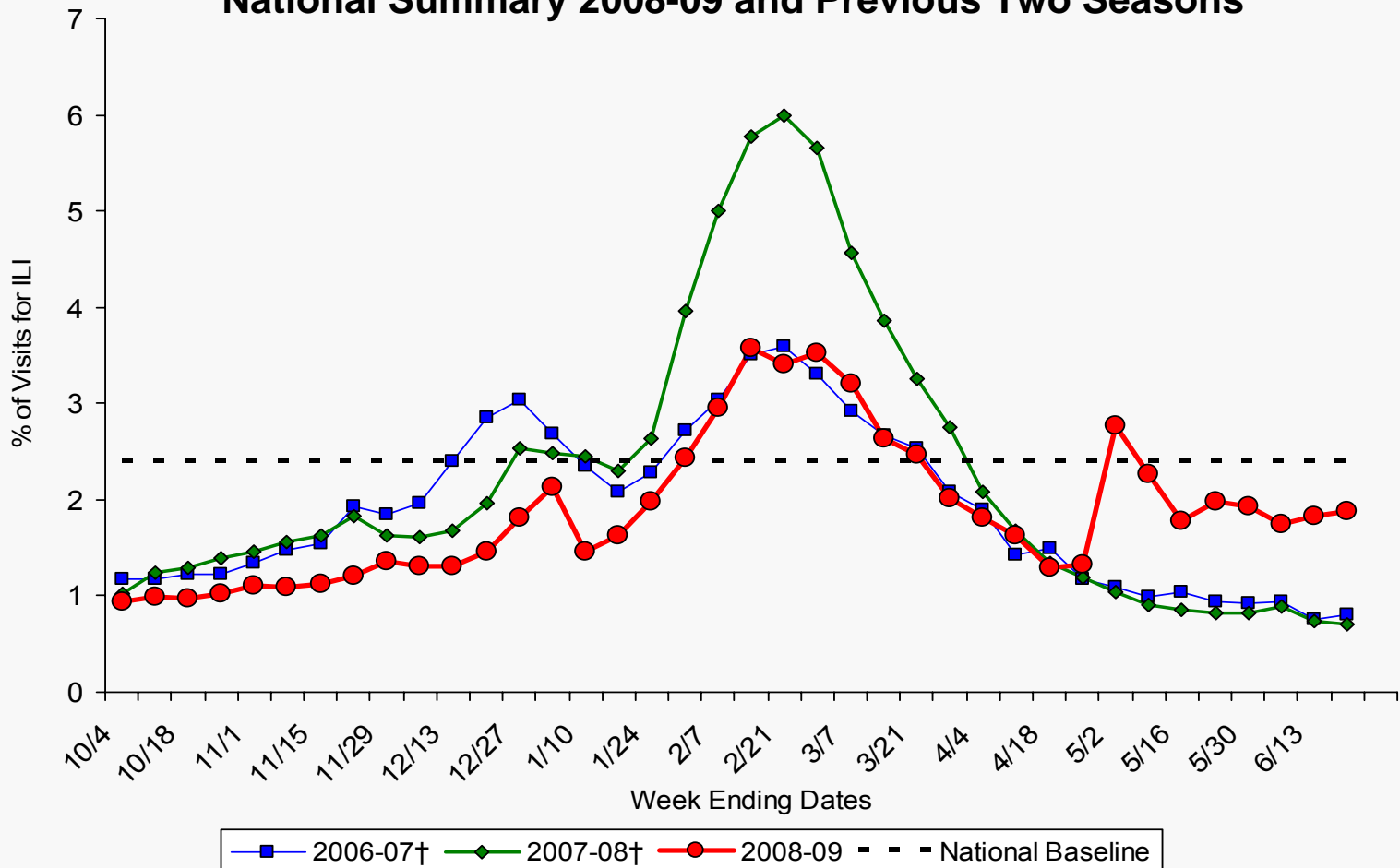




# Epidemiology/Surveillance

## Pandemic H1N1 – 25 JUN 2009 EDT

### Percentage of Visits for Influenza-like Illness (ILI) Reported by the US Outpatient Influenza-like Illness Surveillance Network (ILINet), National Summary 2008-09 and Previous Two Seasons



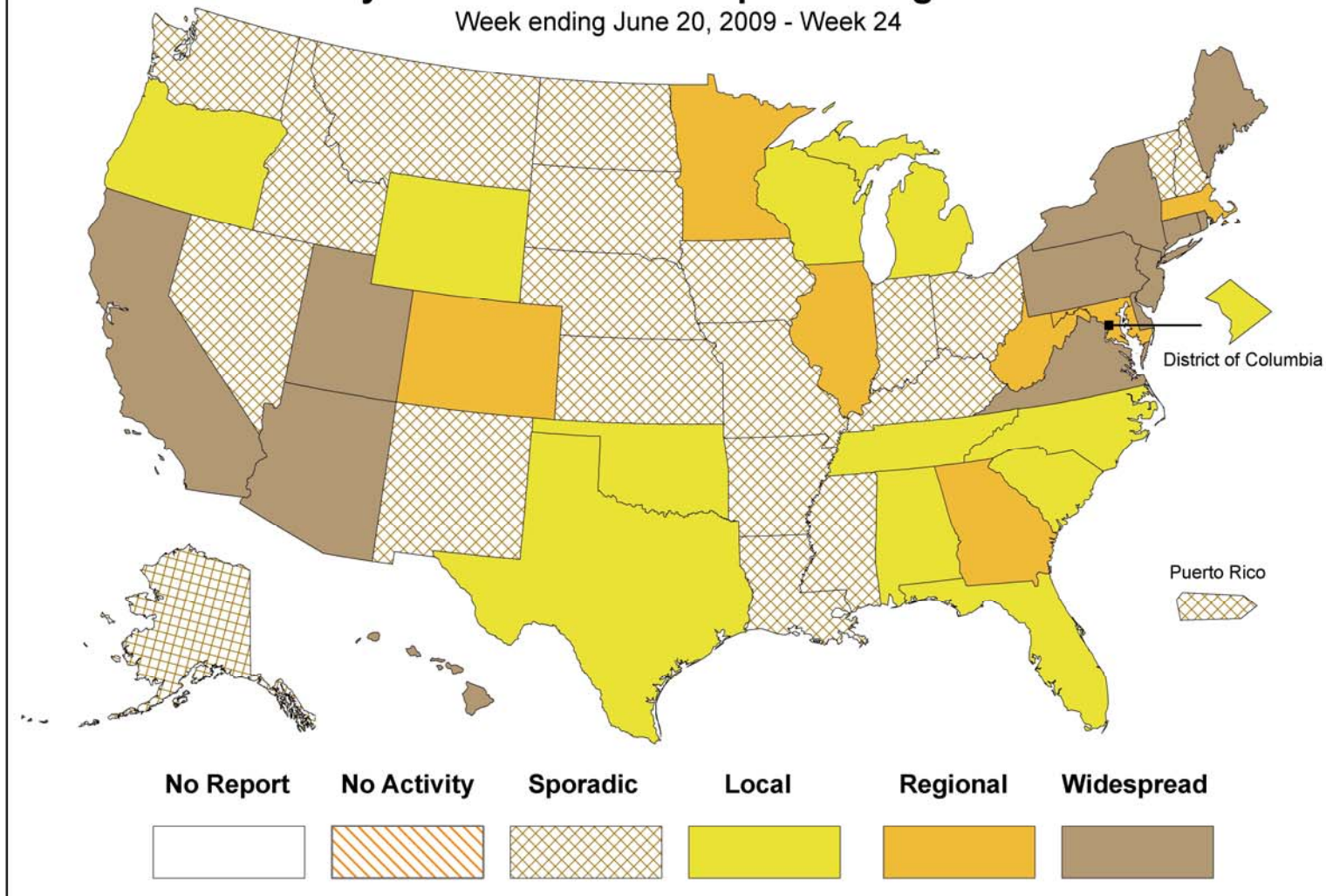
NOTE: Week ending dates vary by influenza season

\*Preliminary ILI data for week 24, as of June 24, 2009 (n=818 weekly ILI reports received from 50 states)

† There was no week 53 during the 2006-07 and 2007-08 seasons, therefore the week 53 data point for those seasons is an average of weeks 52 and 1.

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

Week ending June 20, 2009 - Week 24



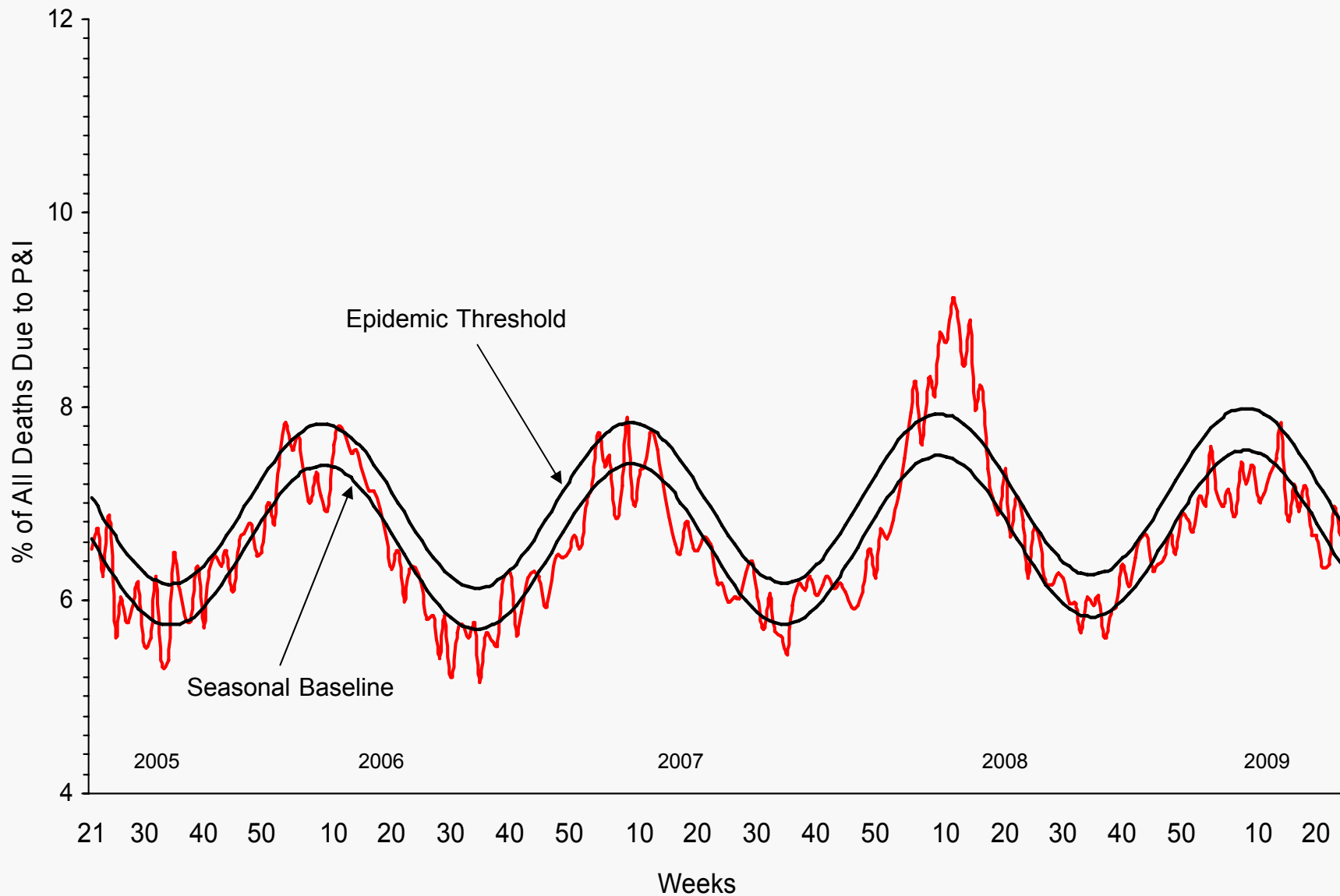
\* This map indicates geographic spread & does not measure the severity of influenza activity



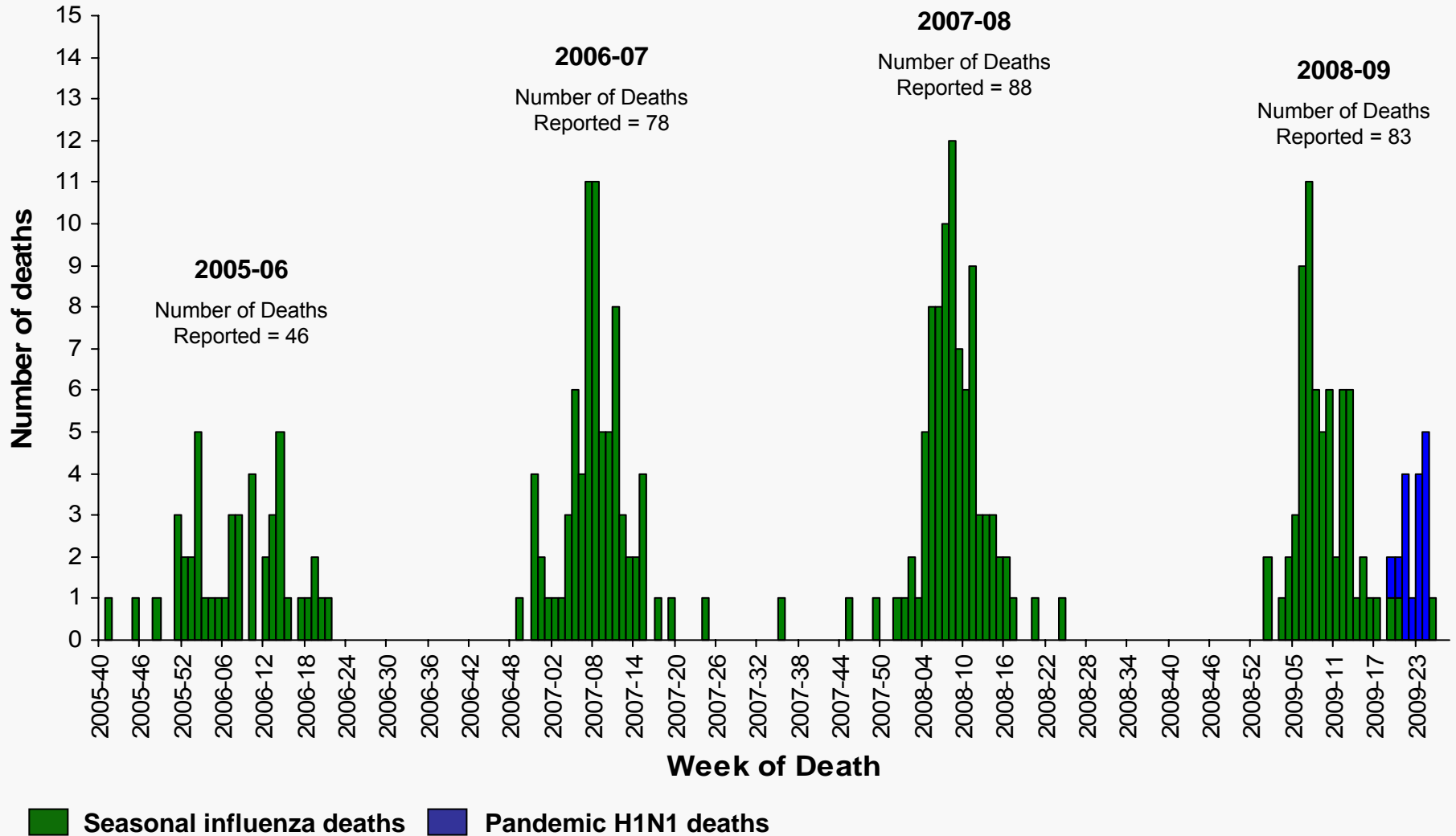
# Epidemiology/Surveillance Pandemic H1N1 - 25 Jun 2009



## *Pneumonia and Influenza Mortality for 122 U.S. Cities* Week Ending 06/20/2009

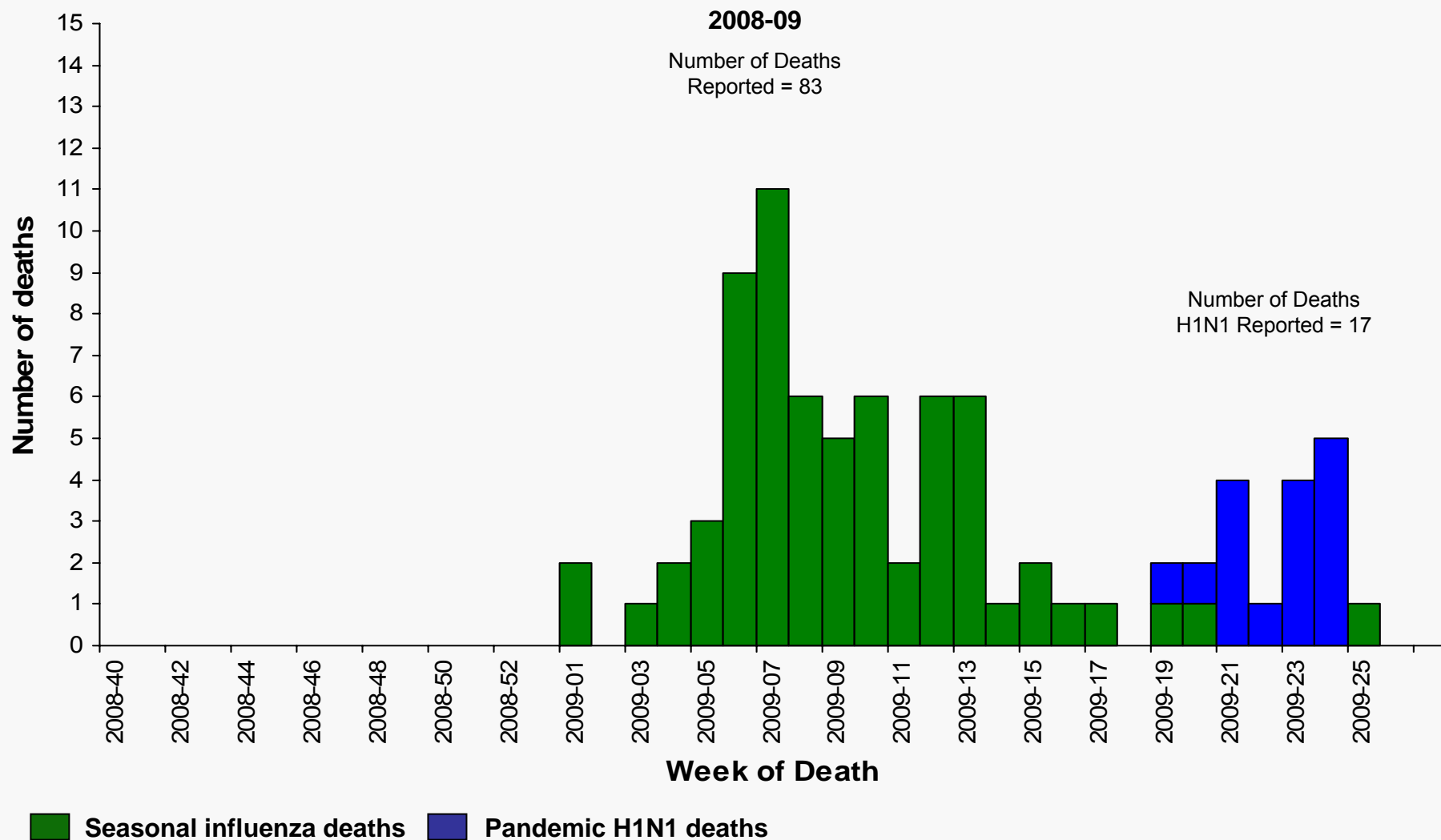


# Number of Influenza-Associated Pediatric Deaths by Week of Death: 2005-06 season to present





# Number of Influenza-Associated Pediatric Deaths by Week of Death: 2008-09 season to present



# Antigenic Characterization, 2008-09 Influenza Viruses, United States

**CDC characterized 1,626 influenza viruses since October 1, 2008\***

## Seasonal influenza A(H1N1) [n=947]:

- 947 (100%) similar to A/Brisbane/59/2007 (2008-09 vaccine strain)
- Includes H1N1 resistant to oseltamivir

## Influenza A(H3N2) [n=162]

- 162 (100%) similar to A/Brisbane/10/2007 (2008-09 vaccine strain)

## Influenza B [n=517]

- 65 (13%) in B/Yamagata lineage
  - Similar to B/Florida/04/2006 (2008-09 vaccine strain)
- 452 (87%) in B/Victoria lineage

## Pandemic influenza A (H1N1) [n=125]

- 125 (100%) similar to prototype a/California/07/2009 – proposed pandemic influenza vaccine strain

\*as of June 12, 2009



# Pandemic H1N1 in the United States

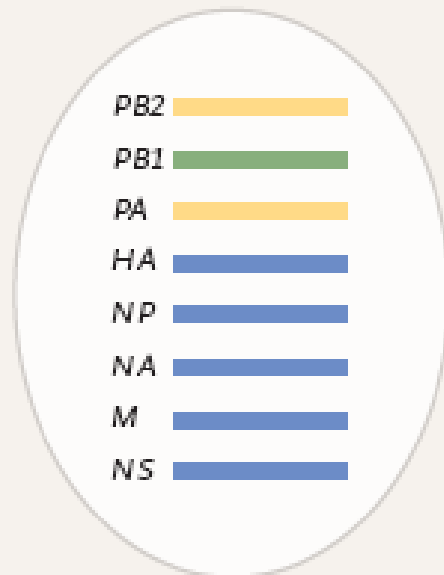


[www.pandemicflu.gov](http://www.pandemicflu.gov)

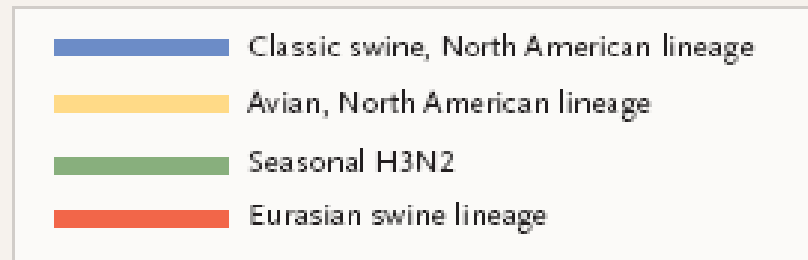
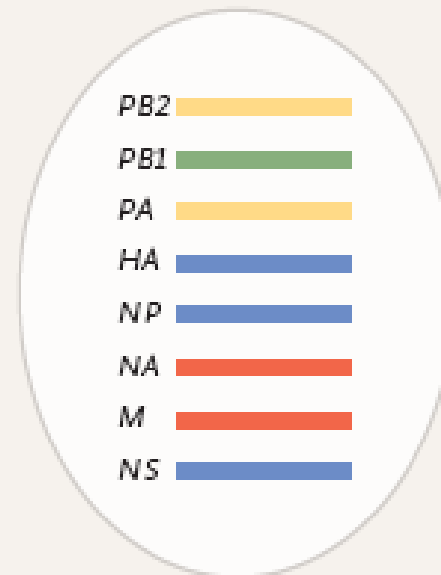
[www.cdc.gov/flu](http://www.cdc.gov/flu)



### Human H1N1 Cases from Triple-Reassortant Swine



### Human H1N1 Cases in California



HA denotes the hemagglutinin gene, M the M protein gene, NA the neuraminidase gene, NP the nucleoprotein gene, NS the nonstructural protein gene, PA the polymerase PA gene, PB1 the polymerase PB1 gene, and PB2 the polymerase PB2 gene

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[www.cdc.gov/flu](http://www.cdc.gov/flu)

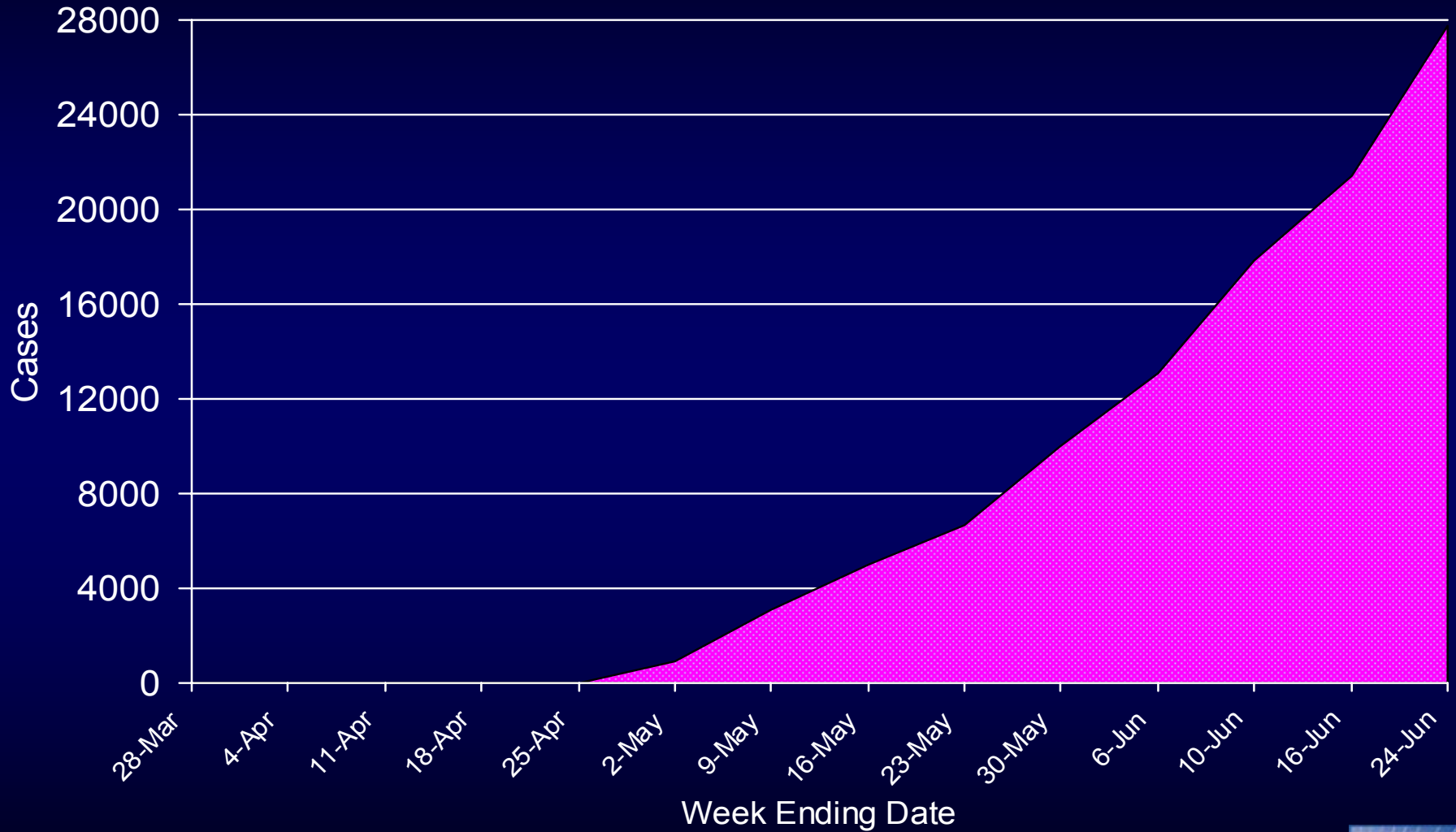


# Summary of Events

- Between April 15-17, 2009,
  - 2 cases of febrile respiratory illness
  - residents of adjacent counties in southern California
  - swine influenza A (H1N1) virus
- Both viruses are genetically closely related to each other
  - resistant to amantadine and rimantadine
  - contain a unique combination of gene segments previously not recognized among swine or human influenza viruses in the United States
- Neither child had contact with pigs



# Confirmed and Probable Novel H1N1 Cases by Report Date 24 JUN 2009 (N=27,717)



[www.pandemicflu.gov](http://www.pandemicflu.gov)

[www.cdc.gov/flu](http://www.cdc.gov/flu)





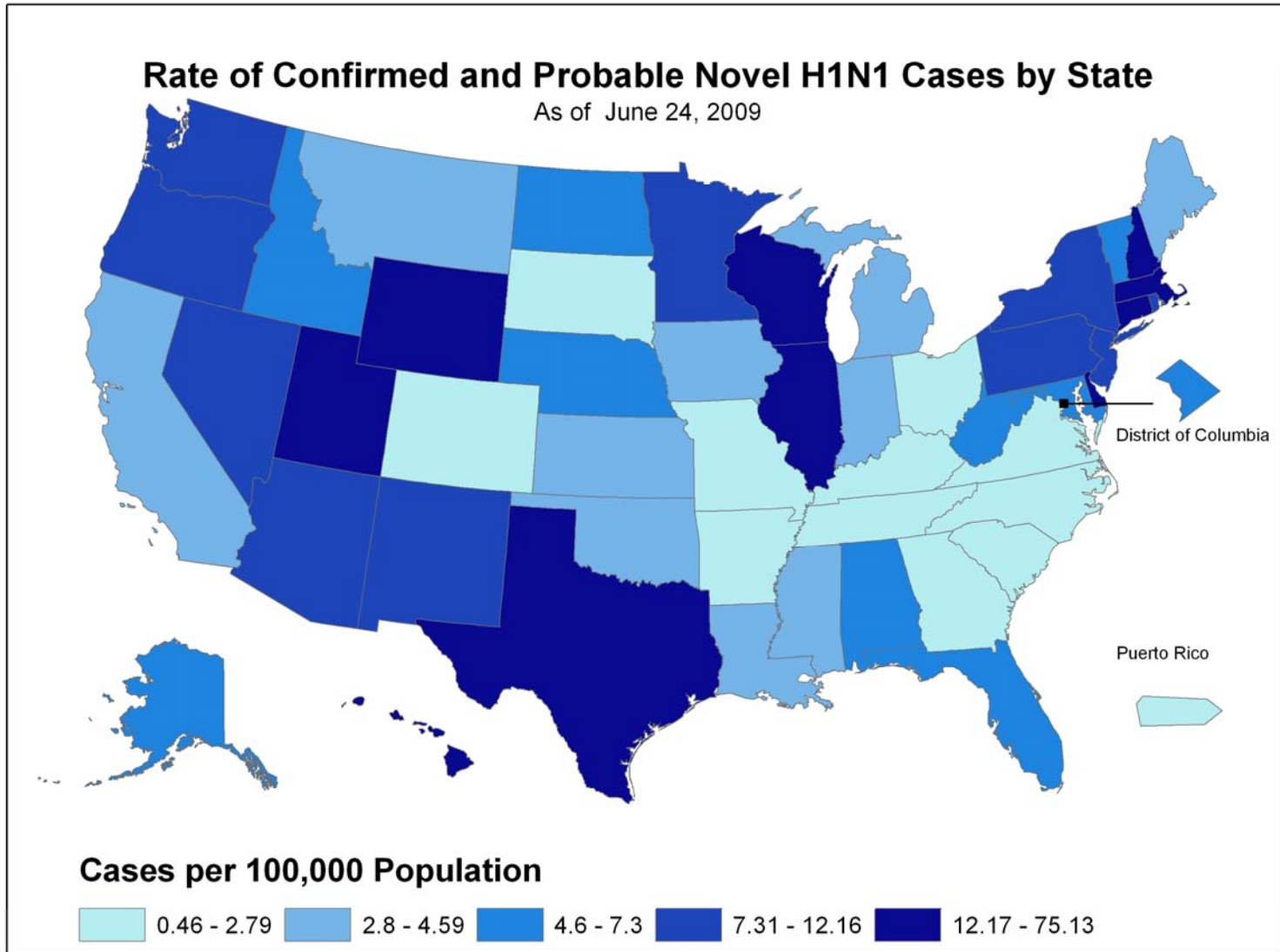
## Descriptive Statistics of Novel Influenza A (H1N1) Cases Reported to CDC by States-- 17 JUN 2009 (n=27,717)



- **27,717 cases reported to CDC**
- **Hospitalizations: 3,065 (11%)**
- **Deaths: 127 (0.4%)**
- **Sex: 50% male/female**
- **Median age:**
  - **all cases 12 years**
  - **hospitalized 20 years**
  - **died 37 years**

## Rate of Confirmed and Probable Novel H1N1 Cases by State

As of June 24, 2009

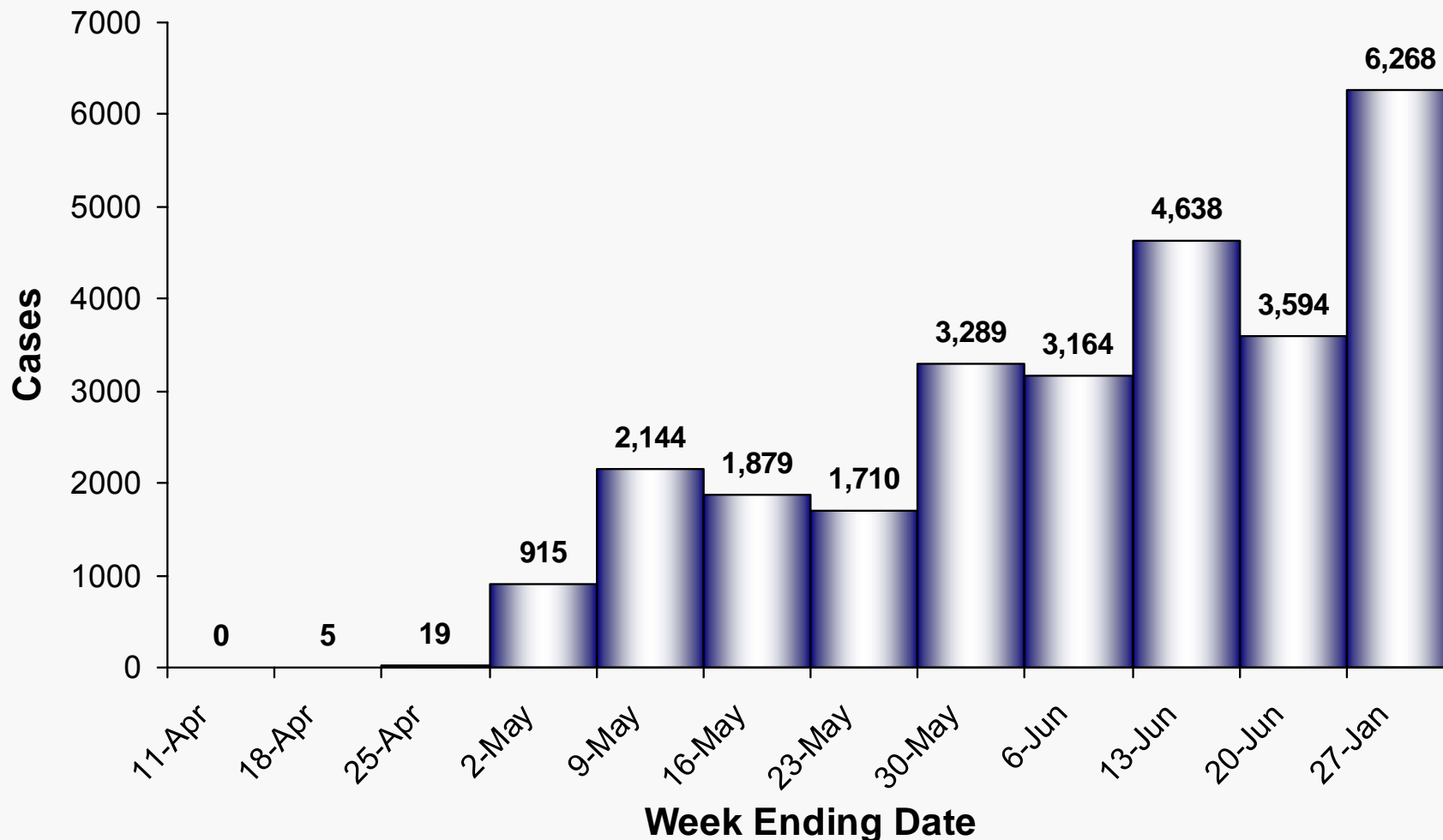




# Epidemiology/Surveillance

## Pandemic H1N1 Cases by Report Date

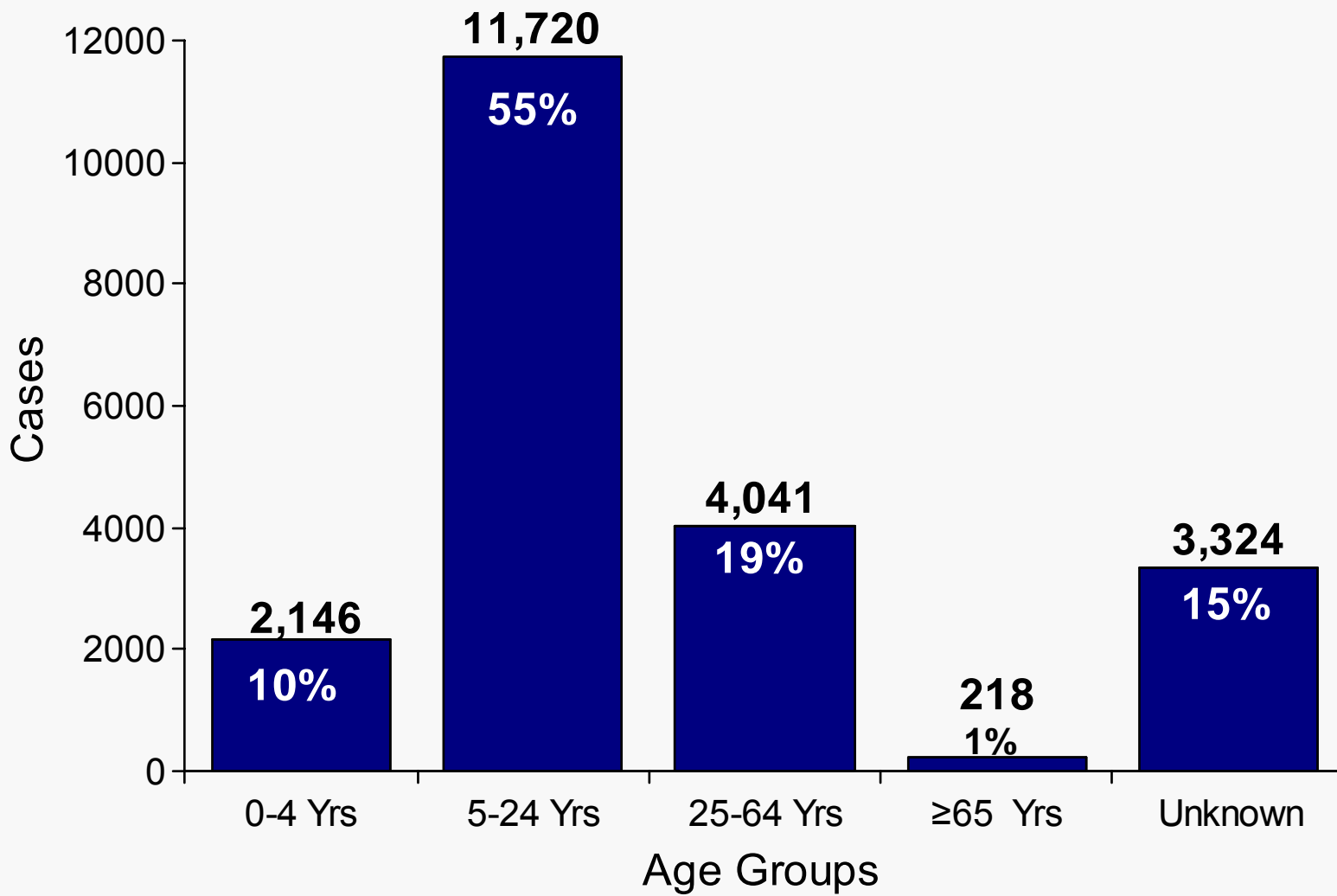
As of 18 JUN 2009 (n=27,717) (Weekly\*)



\*Data for week ending 20 June 2009 include reports submitted between 1:00 AM EDT 6/17/2009 and 11:00 AM.  
Dates not available for 92 cases.



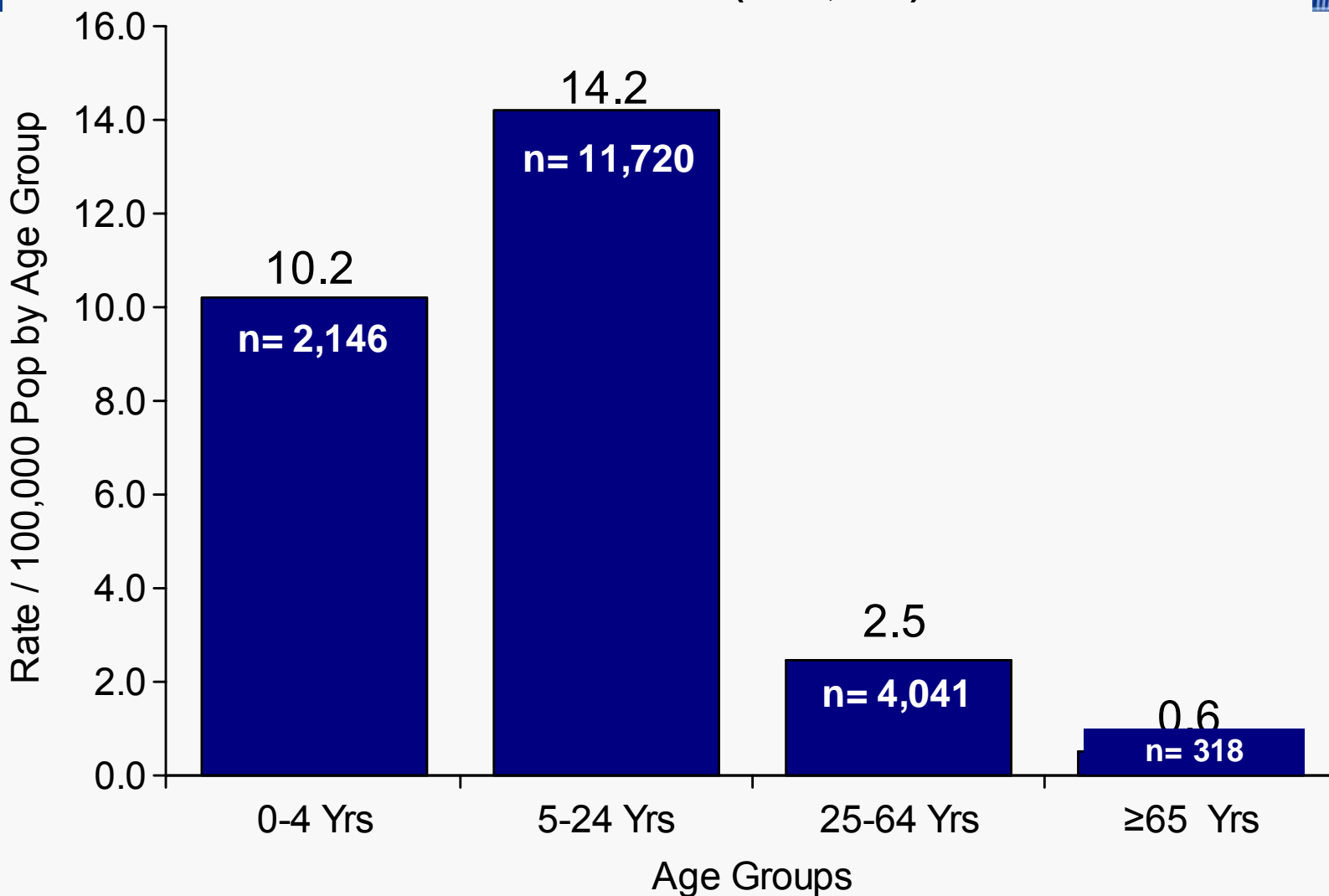
**Epidemiology/Surveillance**  
**Pandemic H1N1 Cases by Age Group**  
**Data reported as of 18 JUN 2009 (n=21,449)**  
Percentages represent proportion of total cases





# Epidemiology/Surveillance

## Pandemic H1N1 Cases Rate per 100,000 Population by Age Group As of 18 JUN 2009 (n=18,125\*)



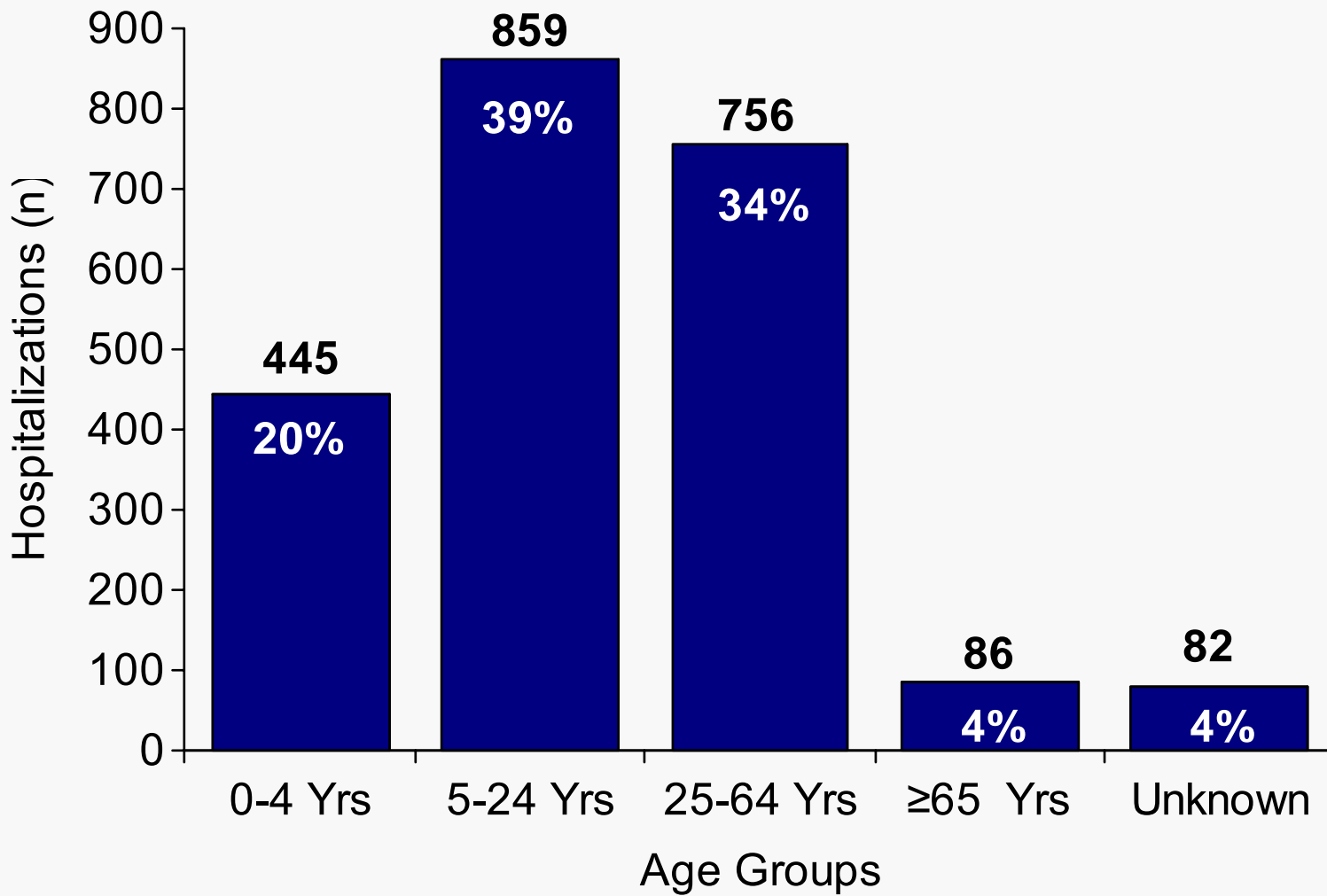
\*Excludes 3,324 cases with missing ages.

Rate / 100,000 by Single Year Age Groups: Denominator source: 2008 Census Estimates, U.S. Census Bureau at:

<http://www.census.gov/popest/national/asrh/files/NC-EST2007-ALLDATA-R-File24.csv>



**Epidemiology/Surveillance**  
**Pandemic H1N1 Hospitalizations by Age Group**  
**Data reported as of 18 JUN 2009 (n=2,228)**  
Percentages Represent Proportion of Total Hospitalizations



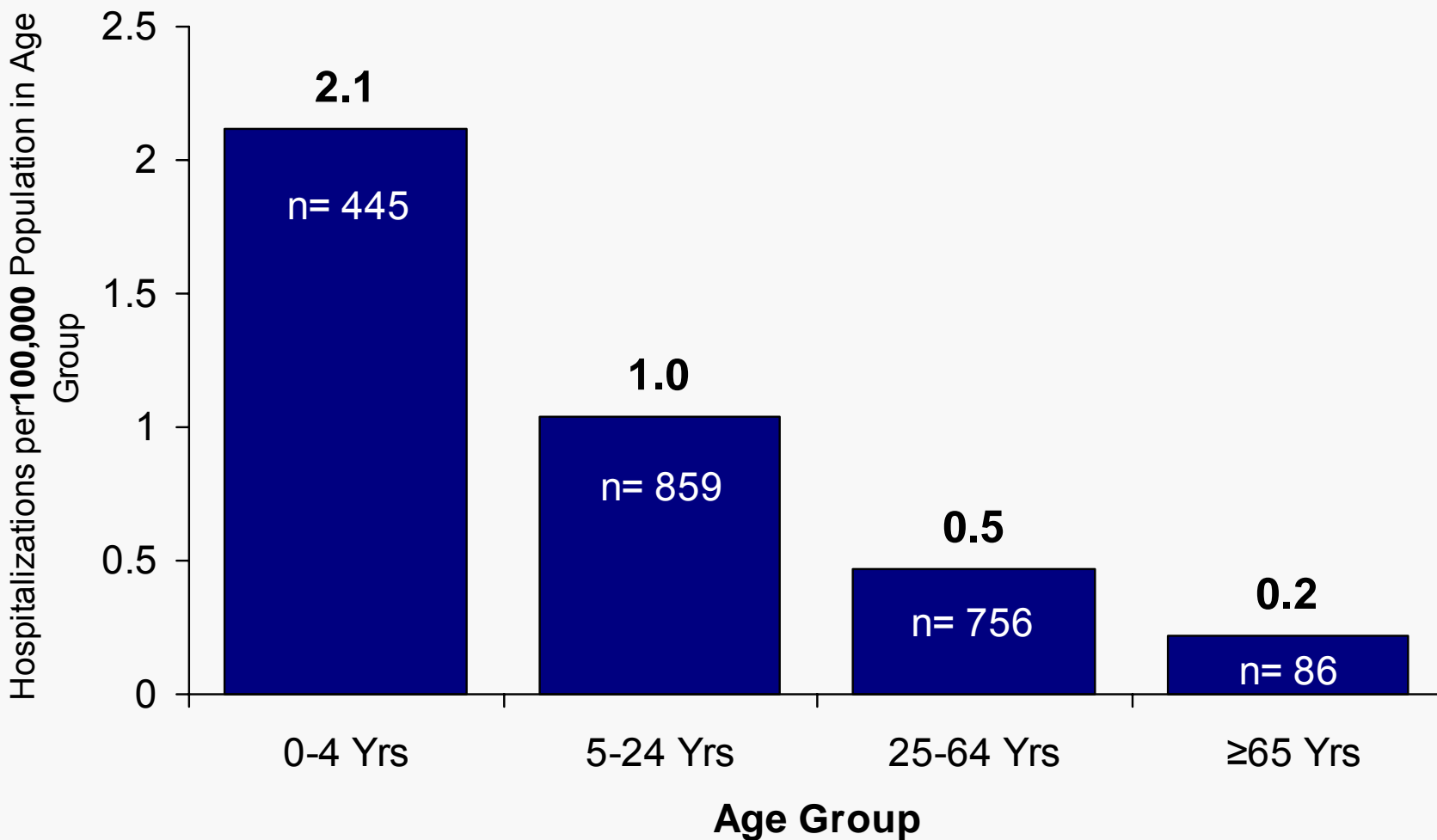


# Epidemiology/Surveillance

## Pandemic H1N1

### Hospitalization Rates\* by Age Group (n=2,228)

As of 18 Jun 2009



\*Hospitalizations with unknown ages are not included (n=82)

\*Rate / 100,000 by Single Year Age Groups: Denominator source: 2008 Census Estimates, U.S. Census Bureau at:

<http://www.census.gov/popest/national/asrh/files/NC-EST2007-ALLDATA-R-File24.csv>

# Hospitalizations

- **3,065 hospitalizations among 27,717 cases**
- **Detailed clinical data available on ~268 patients**
  - **21% admitted ICU**
  - **13% mechanical ventilation**
  - **17 deaths**
- **Median time from onset of illness to hospital admission**
  - **3 days (range 1-14 days)**
- **Median length of stay**
  - **3 days (range 1-53)**



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# Descriptive Epidemiology

- 128 female (48%), 140 male (52%)
- Median age 22 years (range 21 days-86 years)

Age Groups	Hospitalized No (%)
	n=268
0-23 months	24 (9)
2-4 years	20 (8)
5-9 years	28 (10)
10-18 years	55 (20)
19-49 years	95 (35)
50-64 years	31 (12)
≥65 years	15 (6)



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# Underlying Conditions

Condition	No (%)
Asthma or COPD	32%
Diabetes	16%
Immunocompromised	12%
Chronic cardiovascular disease**	11%
Neurocognitive disorder	8%
Neuromuscular disorder	8%
Current Smoker	10%
Pregnant	7%
Chronic Renal Disease	8%
Seizure disorder	6%
Cancer	3%

\*\* Excludes hypertension

71% with underlying conditions

\* 51 people had more than one underlying condition; median 1 (range 1-6)

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# Clinical Information

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<b>Chest radiograph with pneumonia at admission</b>	<b>35%</b>
<b>ARDS</b>	<b>16%</b>
<b>Dx with sepsis at admission</b>	<b>12%</b>
<b>Mechanical ventilation</b>	<b>13%</b>
<b>Treated with antivirals</b>	<b>73%</b>
<b>Treated with antibiotics</b>	<b>78%</b>
<b>Treated with steroids</b>	<b>35%</b>
<b>Recovered</b>	<b>94%</b>

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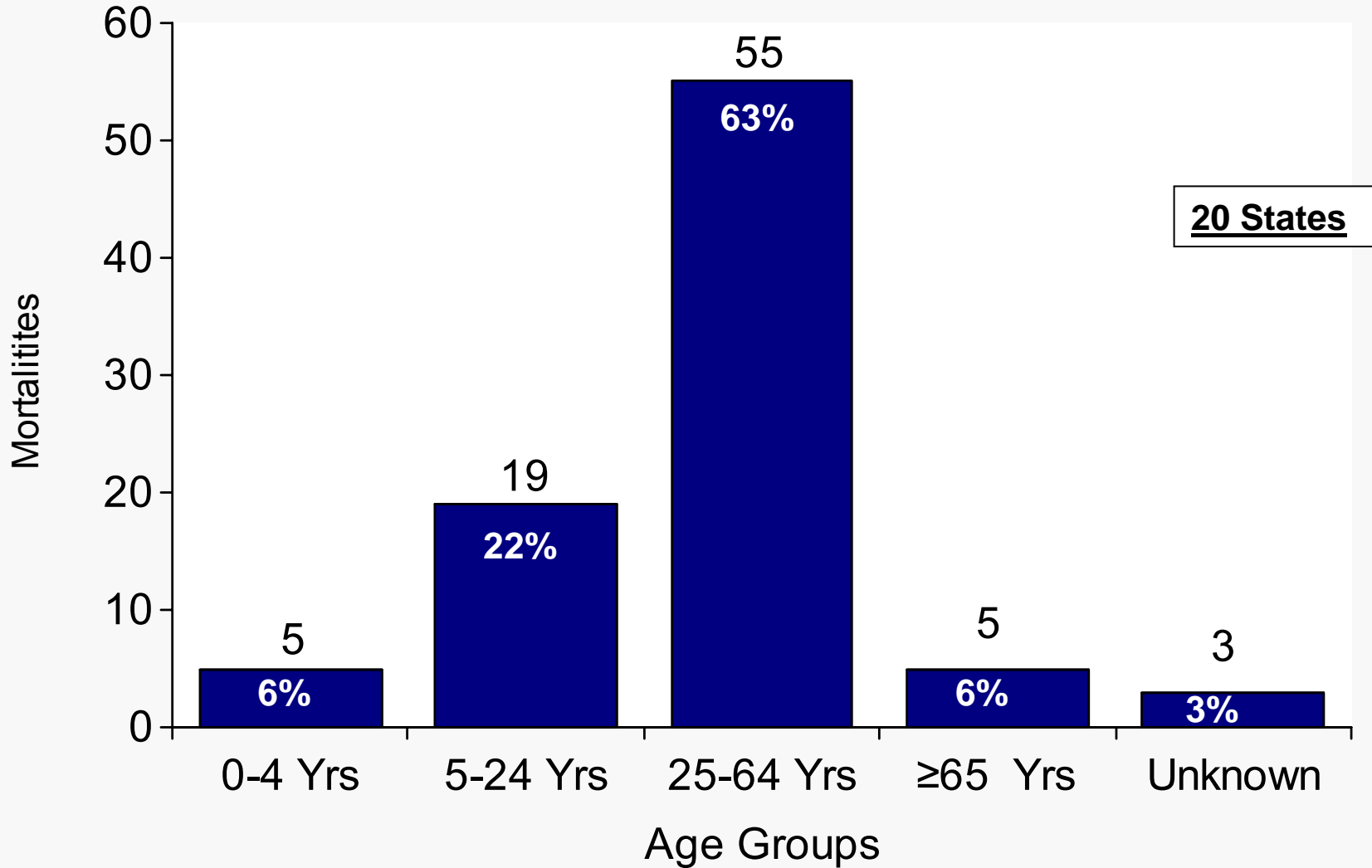


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# Epidemiology/Surveillance Pandemic H1N1 Deaths by Age Group As of 18 JUN 2009 (n=87)



# Conclusions

- On April 15, 2009 a novel swine-origin influenza A H1N1 virus was identified in a boy in California
- 27,717 reported cases in US
- 55,000 reported worldwide
- Majority of persons hospitalized and who died had underlying conditions
- Given the rapidly evolving outbreak more cases are expected and transmission will likely continue into the influenza season



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# Acknowledgements

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**CSTE**



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