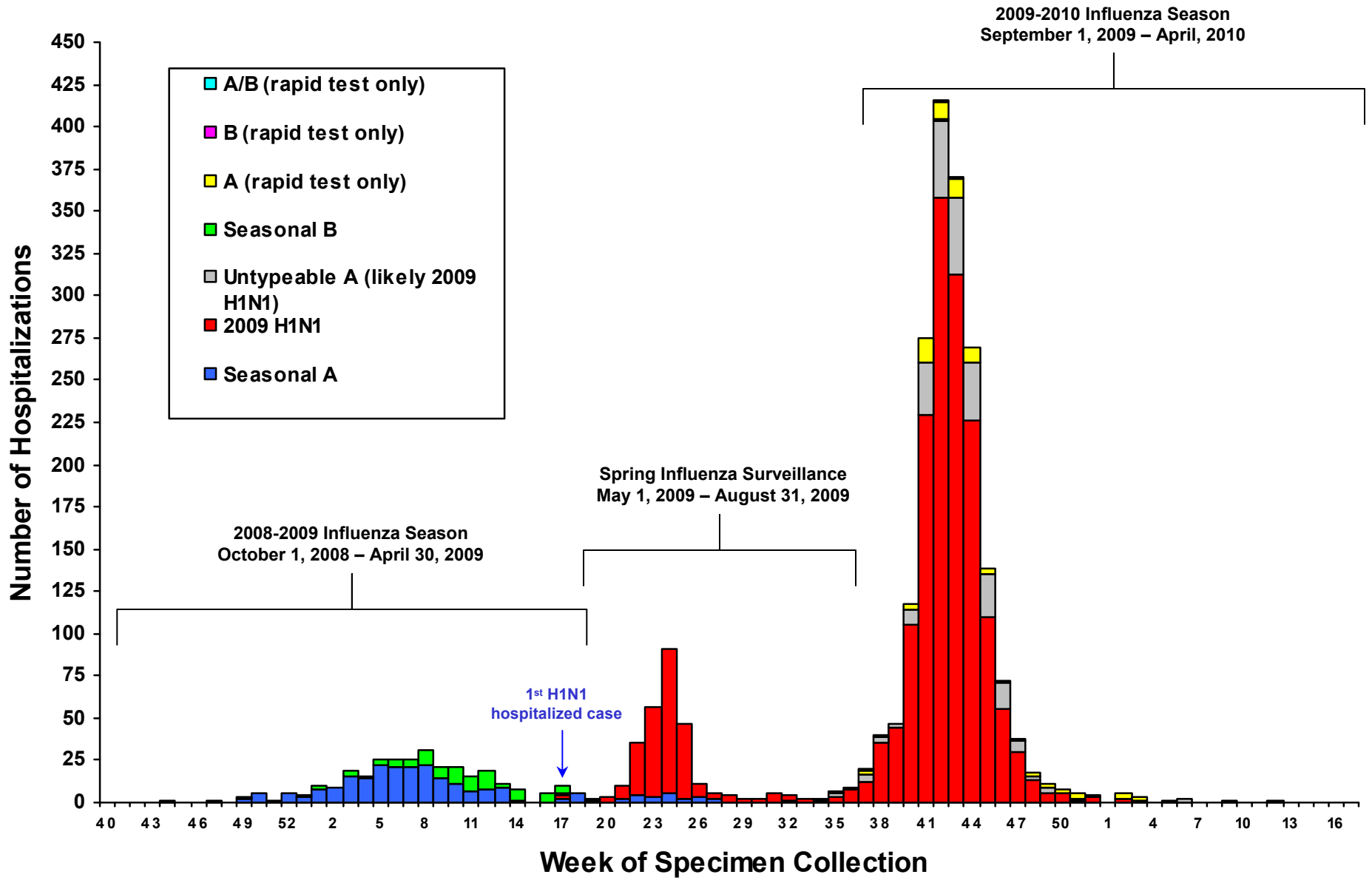


2009 H1N1 Influenza in Minnesota Epidemiology

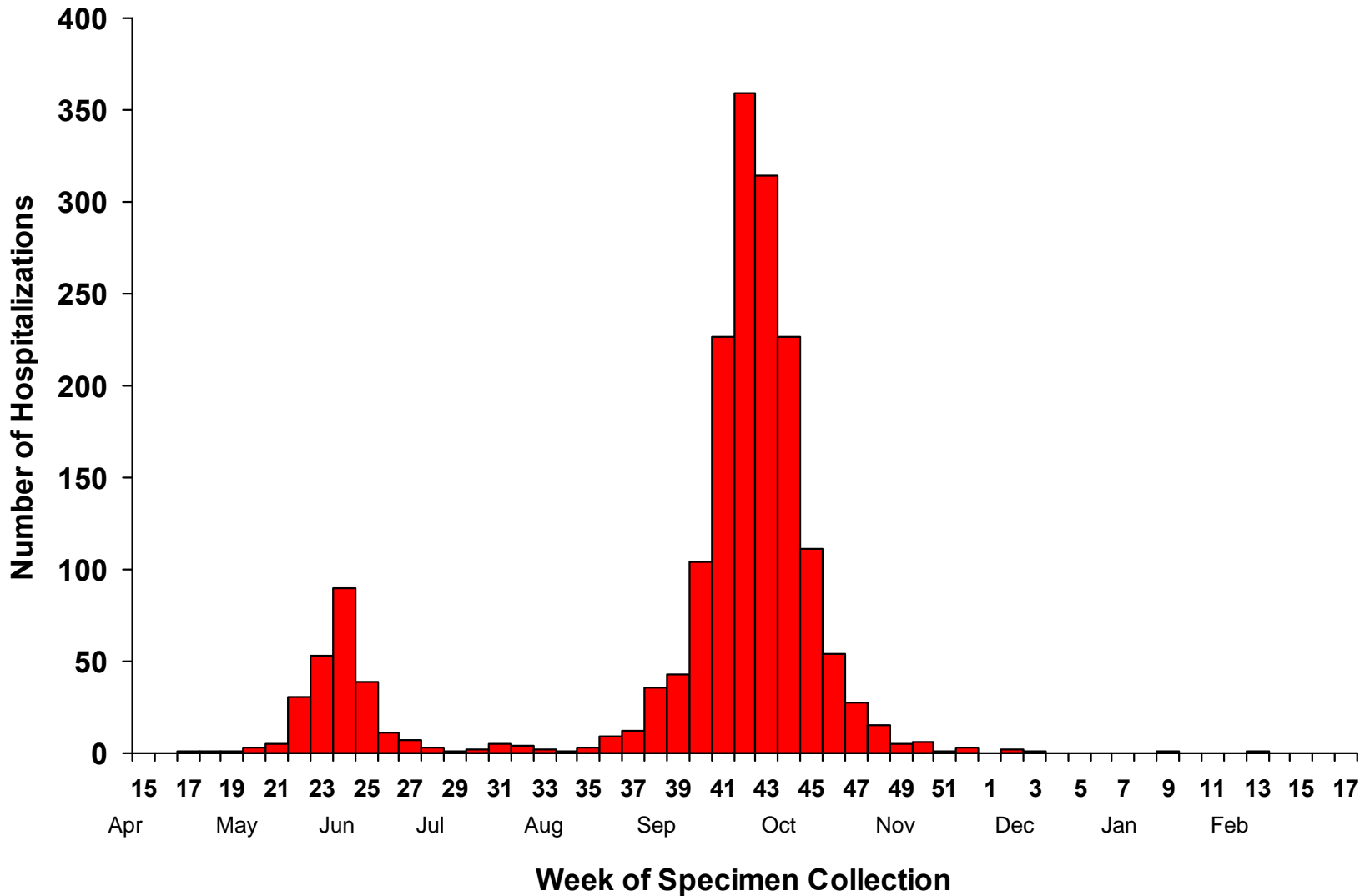


Infectious Disease Epidemiology,
Prevention and Control Division
PO Box 64975
St. Paul, MN 55164-0975

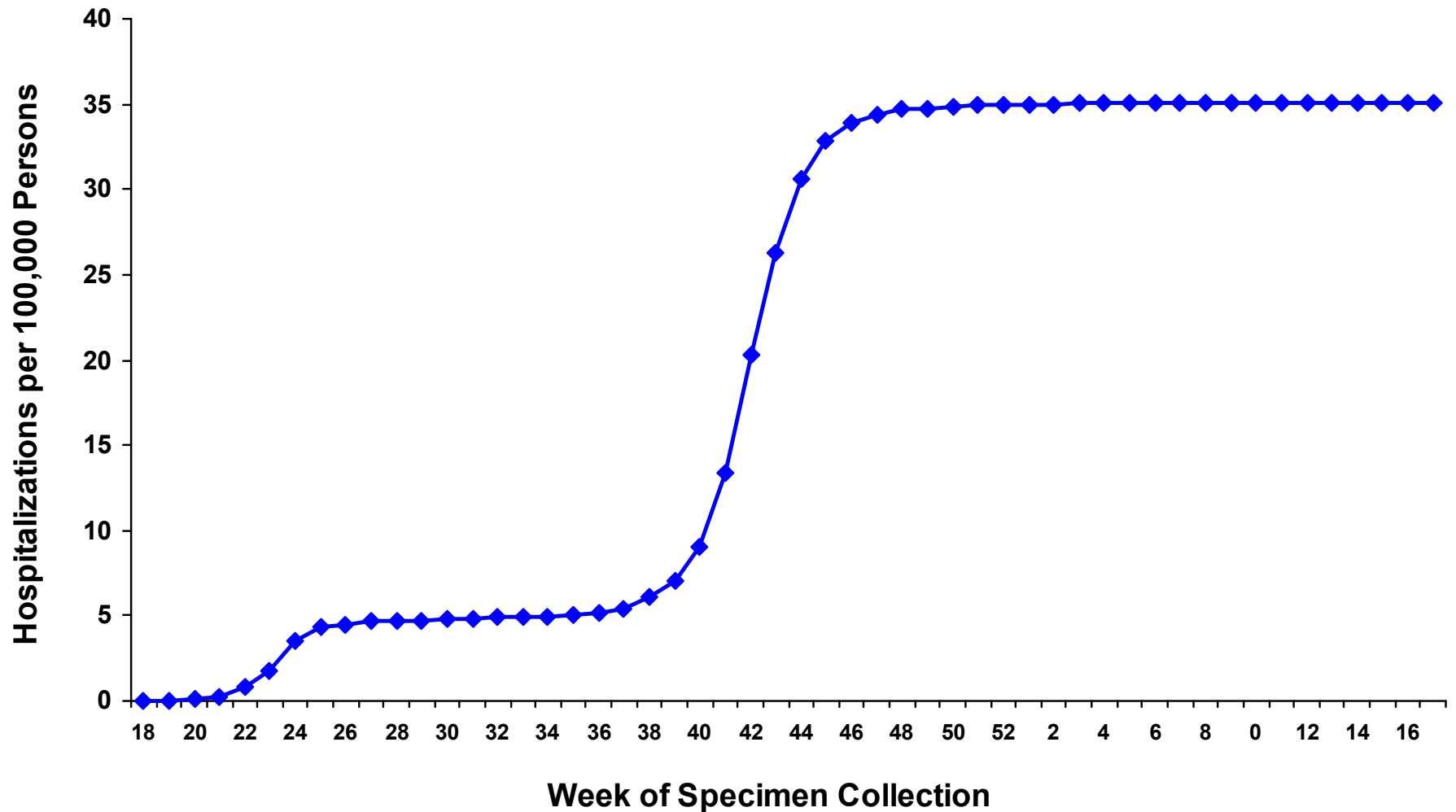
Number of Hospitalized Cases of Influenza by Influenza Type, Minnesota, October 2008 – April 2010



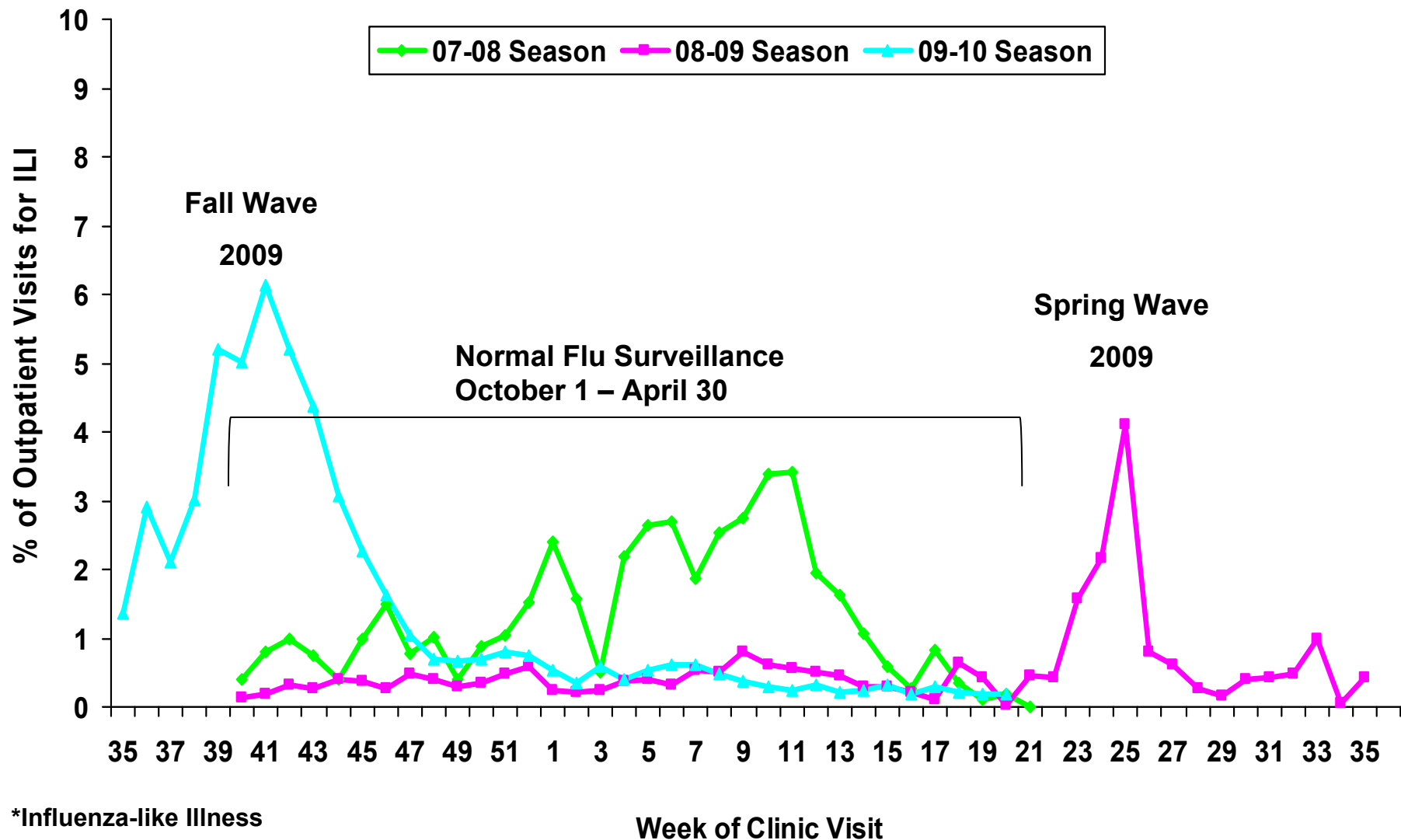
Number of Hospitalized PCR-confirmed 2009 H1N1 Influenza Cases, Minnesota, April 2009 – April 2010



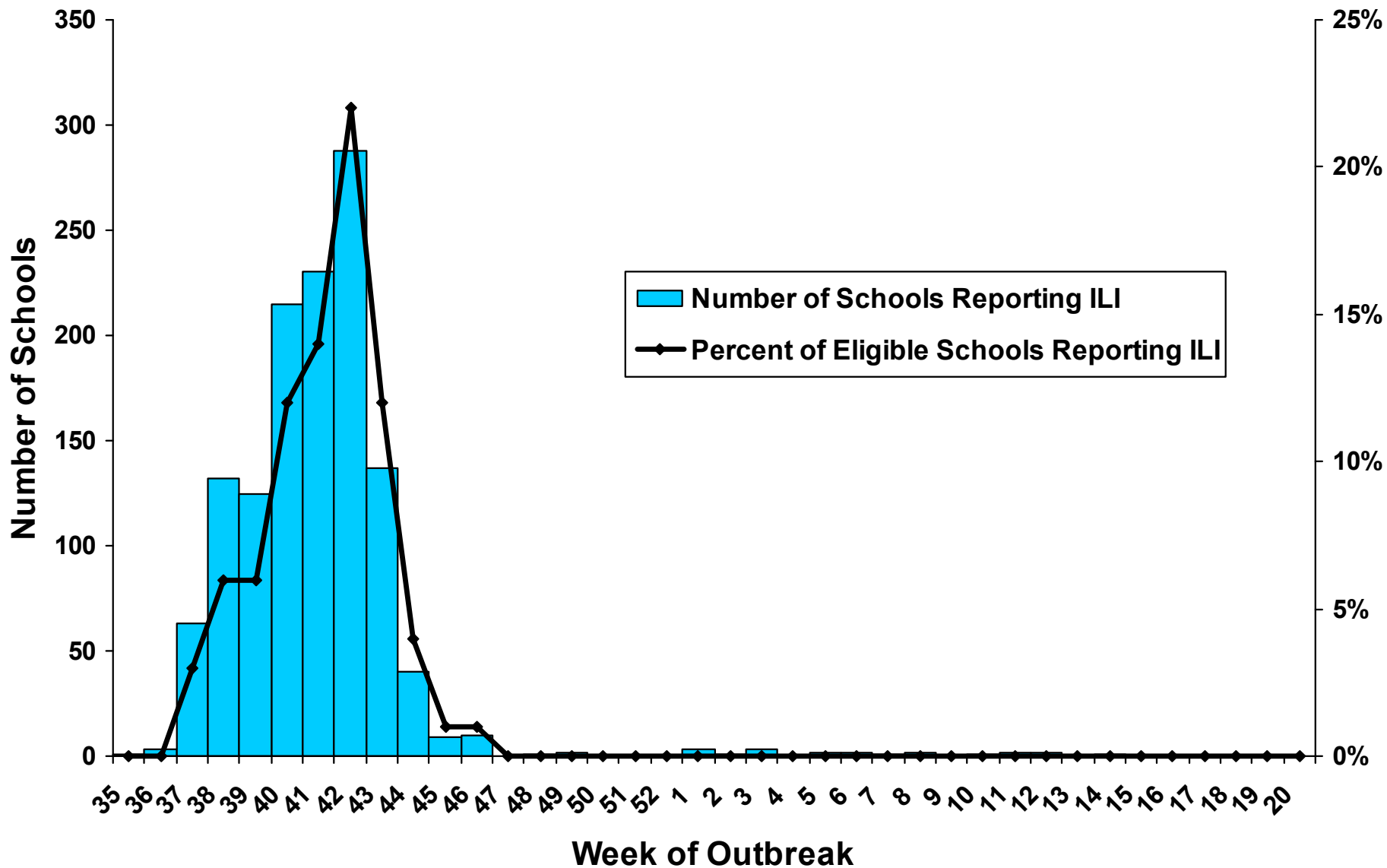
Cumulative Incidence of Hospitalized PCR-confirmed 2009 H1N1 Influenza Cases, Minnesota, April 2009 - April 2010



Percentage of Outpatient Visits for ILI*, Sentinel Surveillance Sites by Season, Minnesota, September 2007 – April 2010

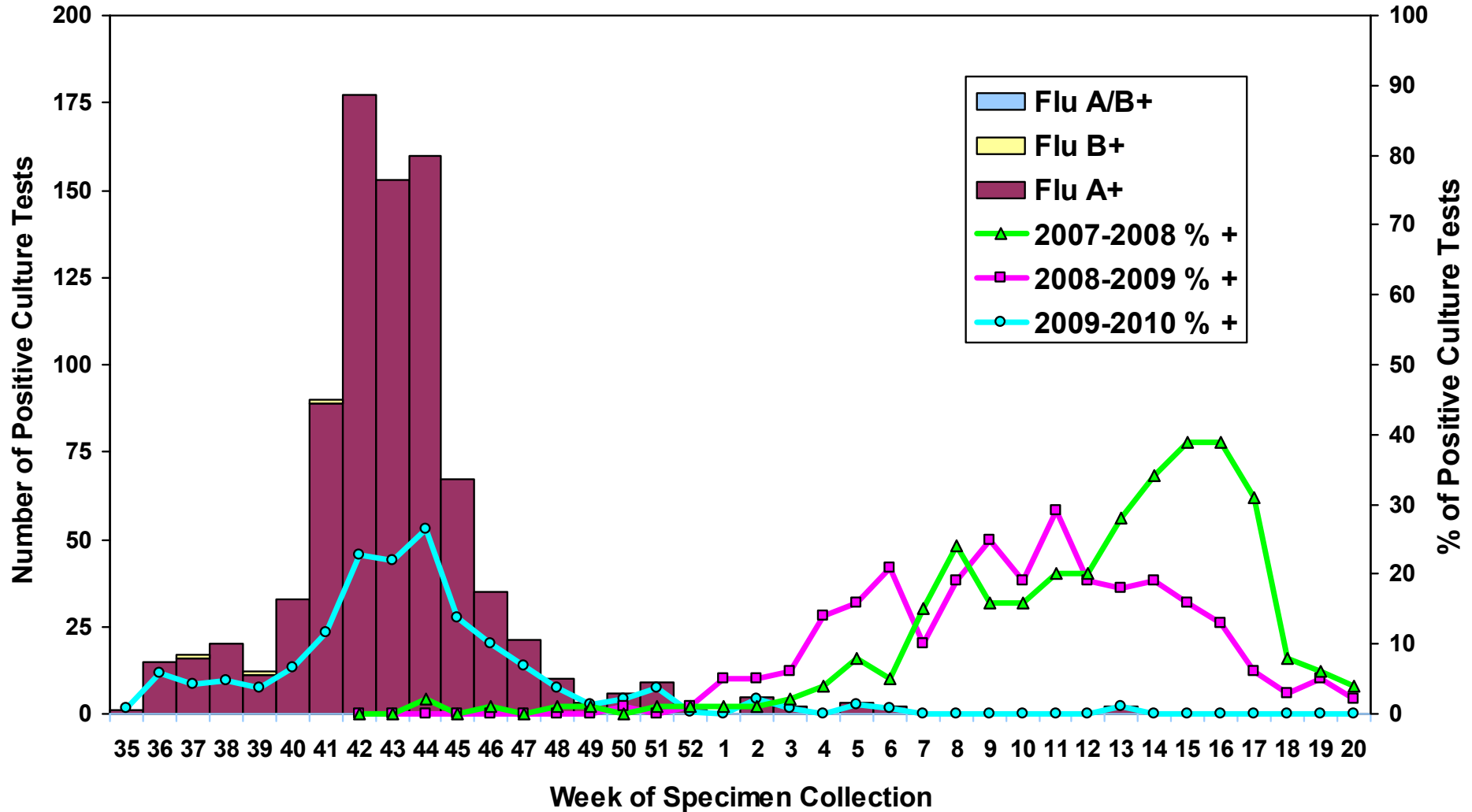


Number and Percentage of Schools Reporting Outbreaks of ILI*, Minnesota, September 2009 – April 2010

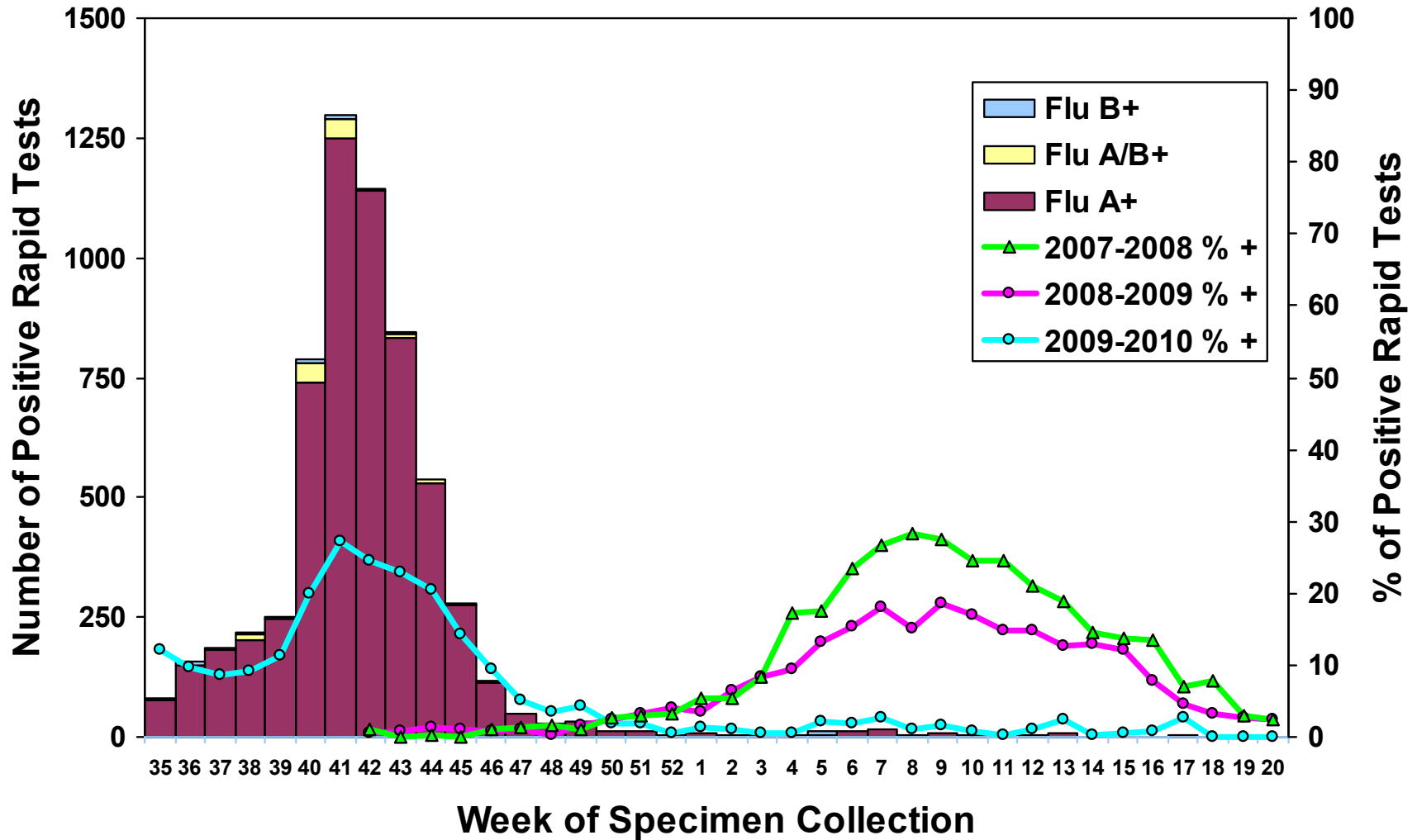


*Influenza-like Illness

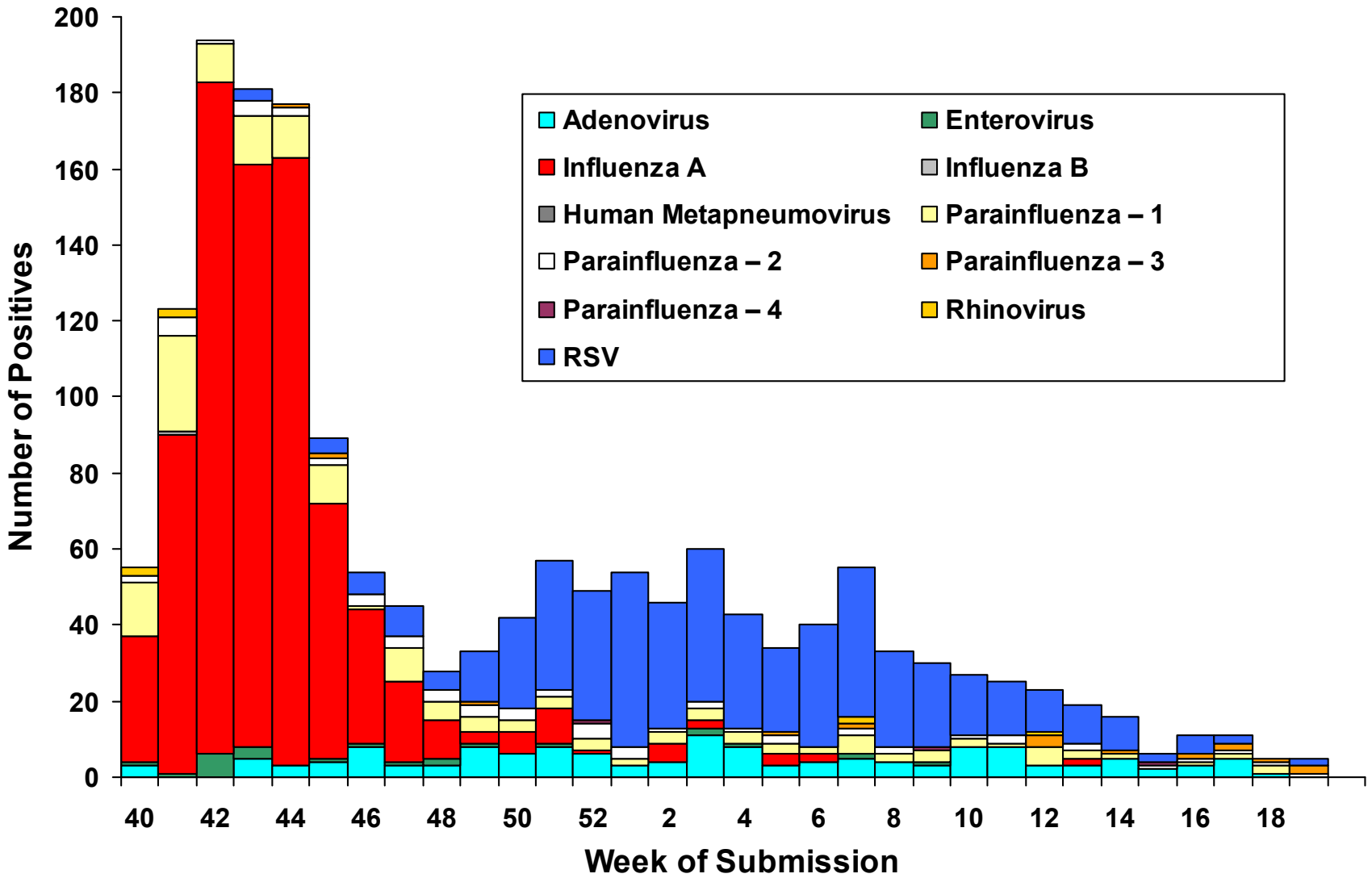
Number and Percentage of Culture-Confirmed Influenza Specimens, Minnesota Virology Laboratories, September 2007 – April 2010



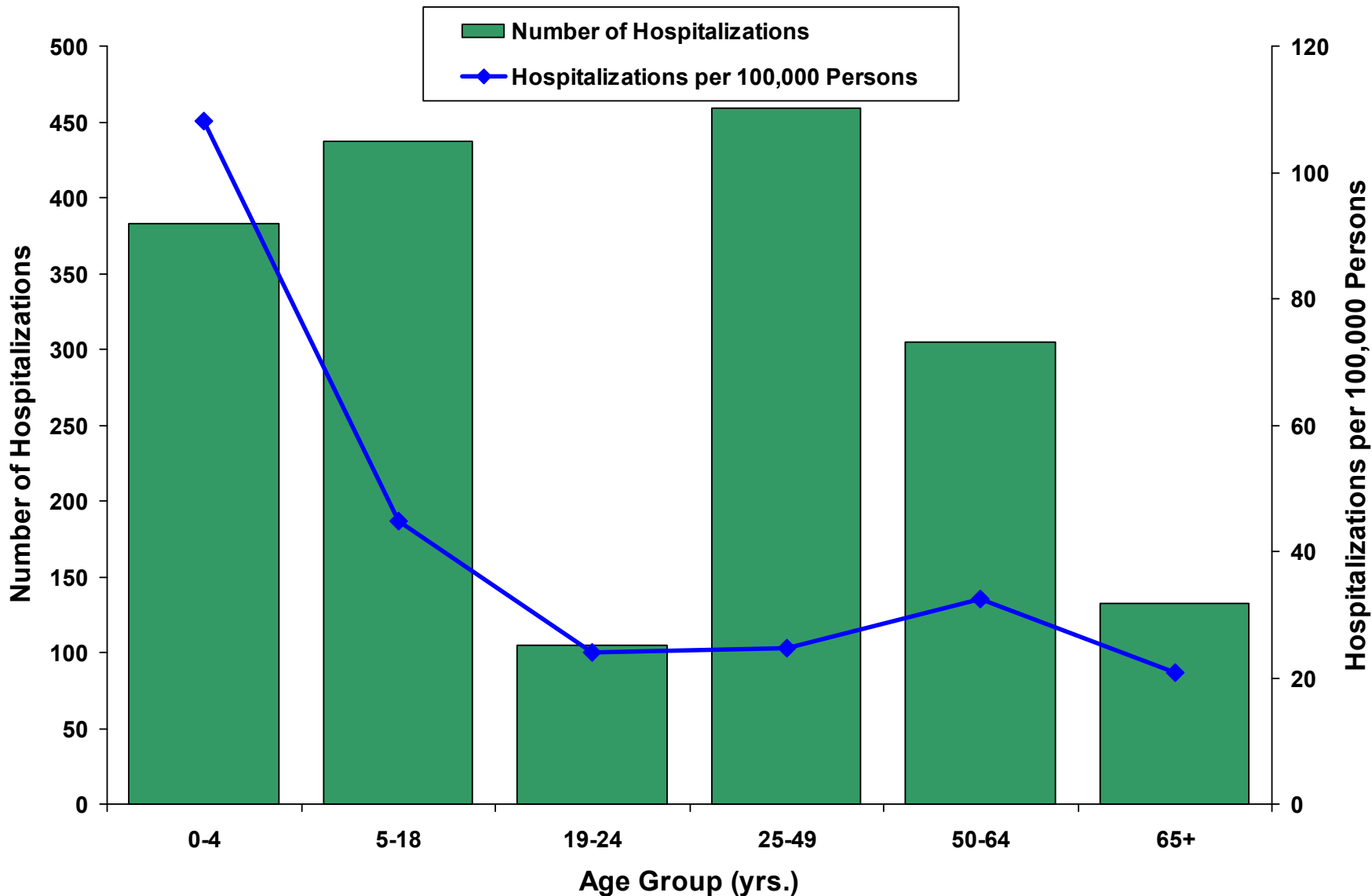
Number and Percentage of Positive Influenza Rapid Test Results, Minnesota Rapid Testing Sites, September 2007 – April 2010



Circulating Respiratory Viruses, Laboratory Influenza Surveillance Program, Minnesota, October 2009 – April 2010

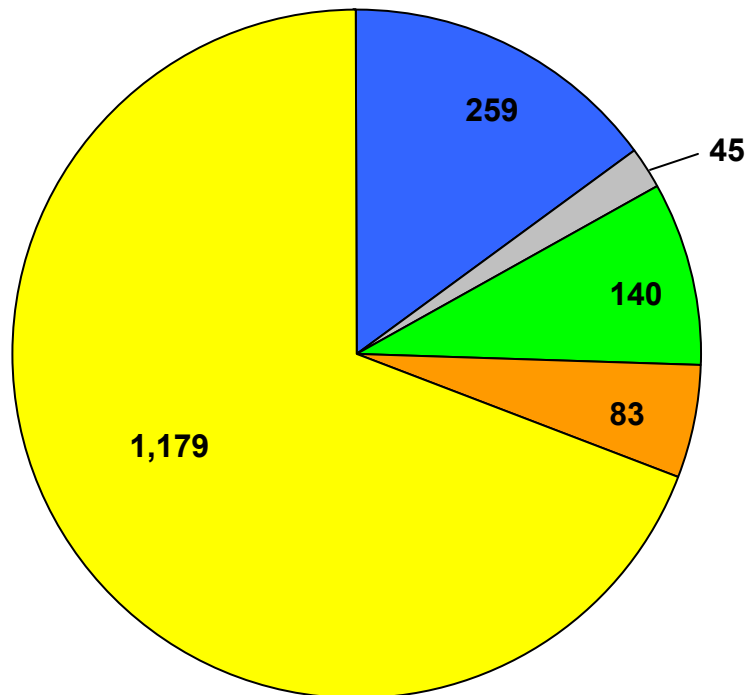


Number and Incidence of Hospitalized PCR-confirmed 2009 H1N1 Influenza by Age Group, Minnesota, April 2009 – April 2010

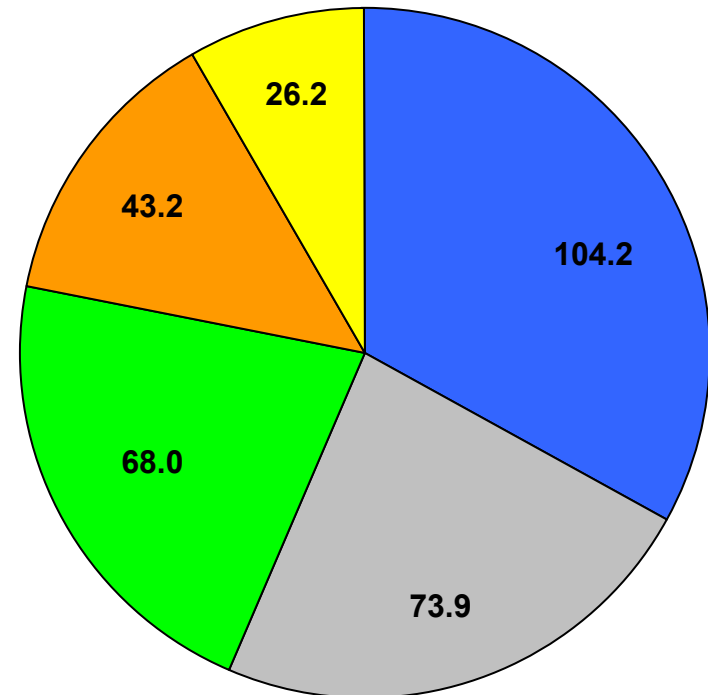


Number and Incidence of Hospitalized PCR-confirmed 2009 H1N1 Influenza Cases by Race/Ethnicity, Minnesota, April 2009 – April 2010

Number of Cases

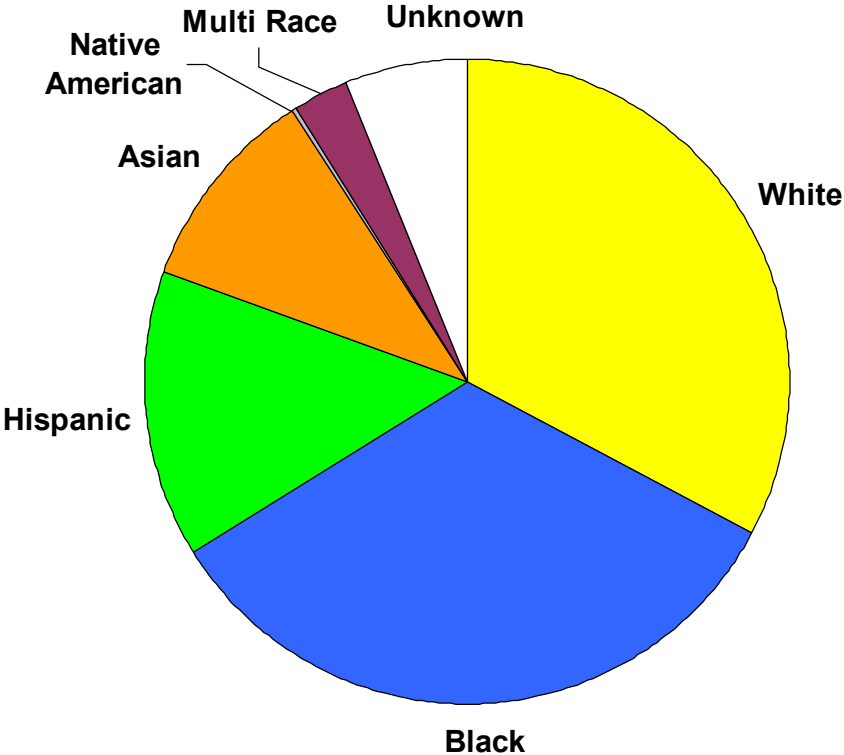


Incidence per 100,000

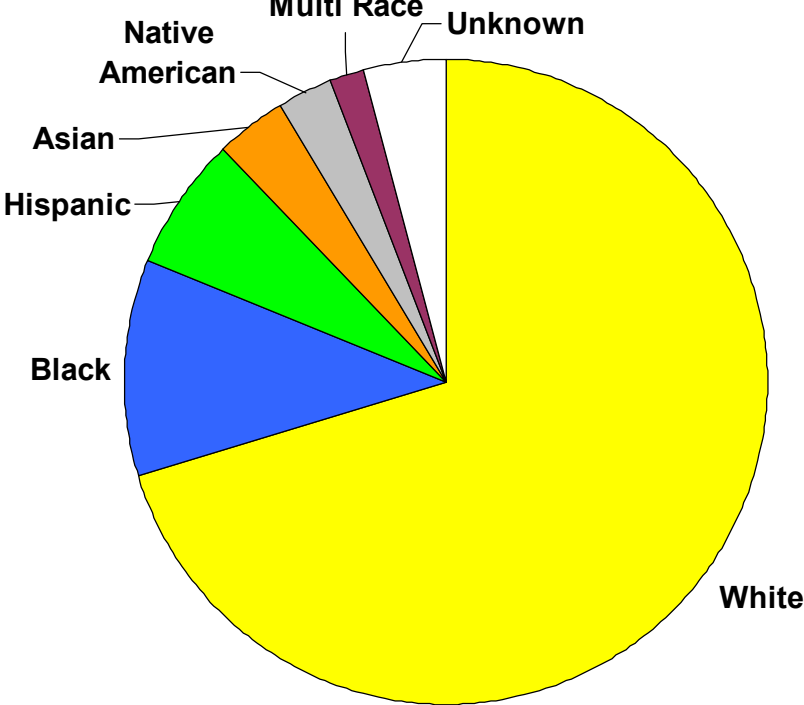


Proportion of Hospitalized PCR-confirmed 2009 H1N1 Influenza Cases by Race/Ethnicity, Minnesota, April 2009 – April 2010

Spring Wave



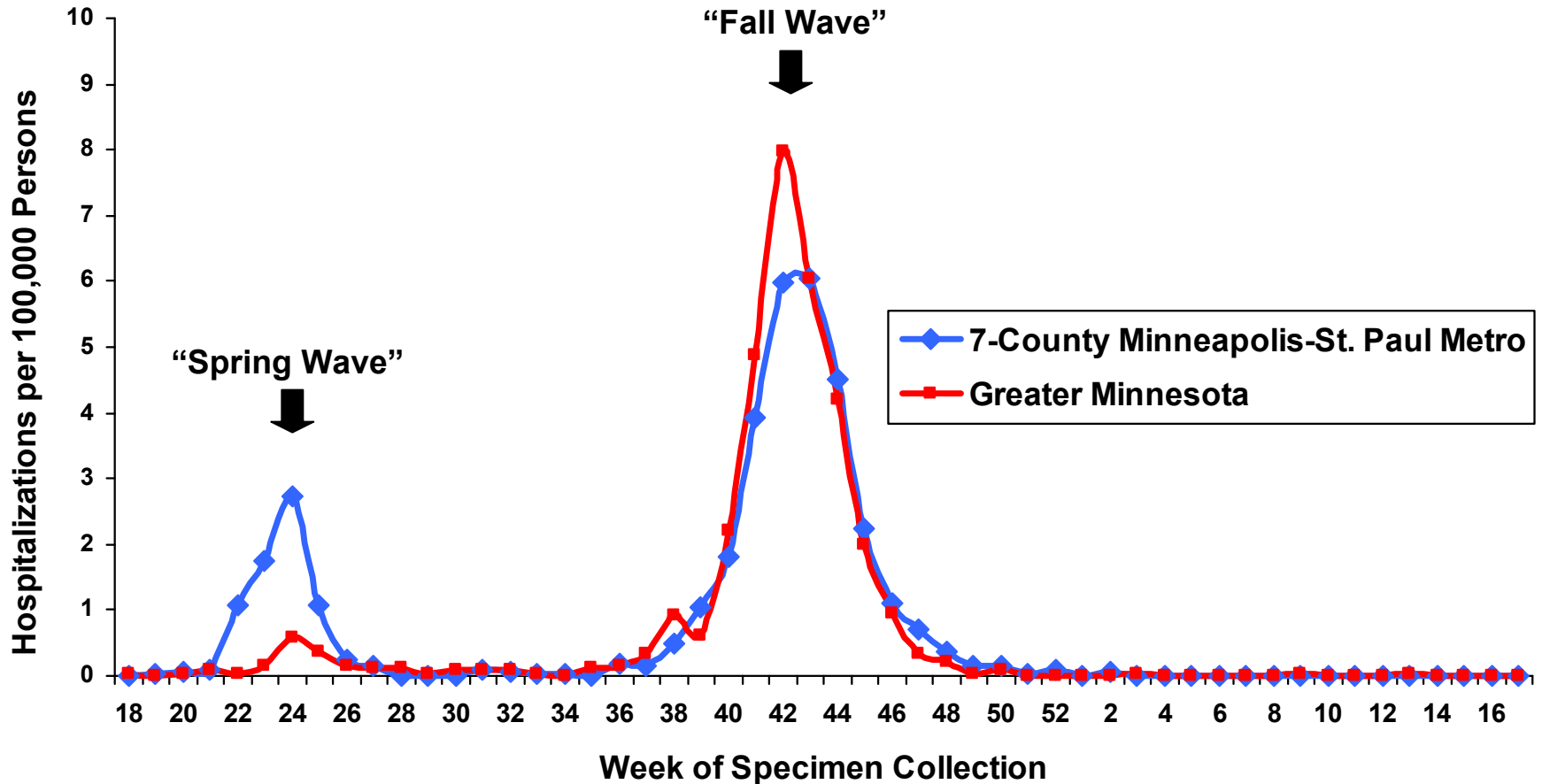
Fall Wave



**Median Age of Hospitalized PCR-confirmed 2009
H1N1 Influenza Cases by Race/Ethnicity,
Minnesota, April 2009 – April 2010**

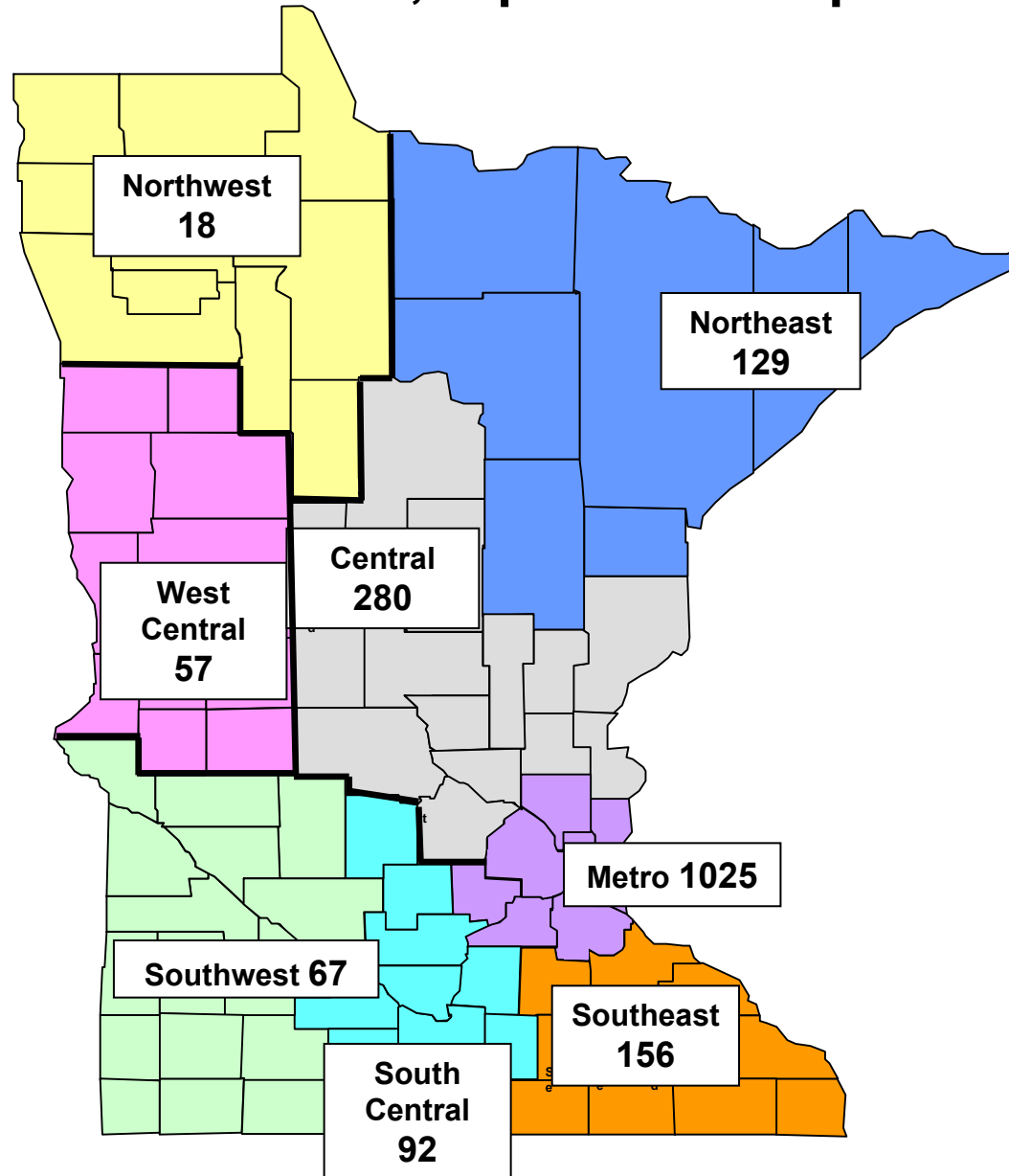
<u>Race/Ethnicity</u>	<u>Spring Wave</u>	<u>Fall Wave</u>
White	16.9 yrs.	30.0 yrs.
Black	12.3 yrs.	20.3 yrs.
Hispanic	5.3 yrs.	8.4 yrs.
Asian	5.4 yrs.	11.7 yrs.
Native American	48.2 yrs.	36.3 yrs.
<u>All Races</u>	<u>11.1 yrs.</u>	<u>26.8 yrs.</u>

Incidence of Hospitalized PCR-confirmed 2009 H1N1 Influenza by Week, Minnesota, April 2009 – April 2010

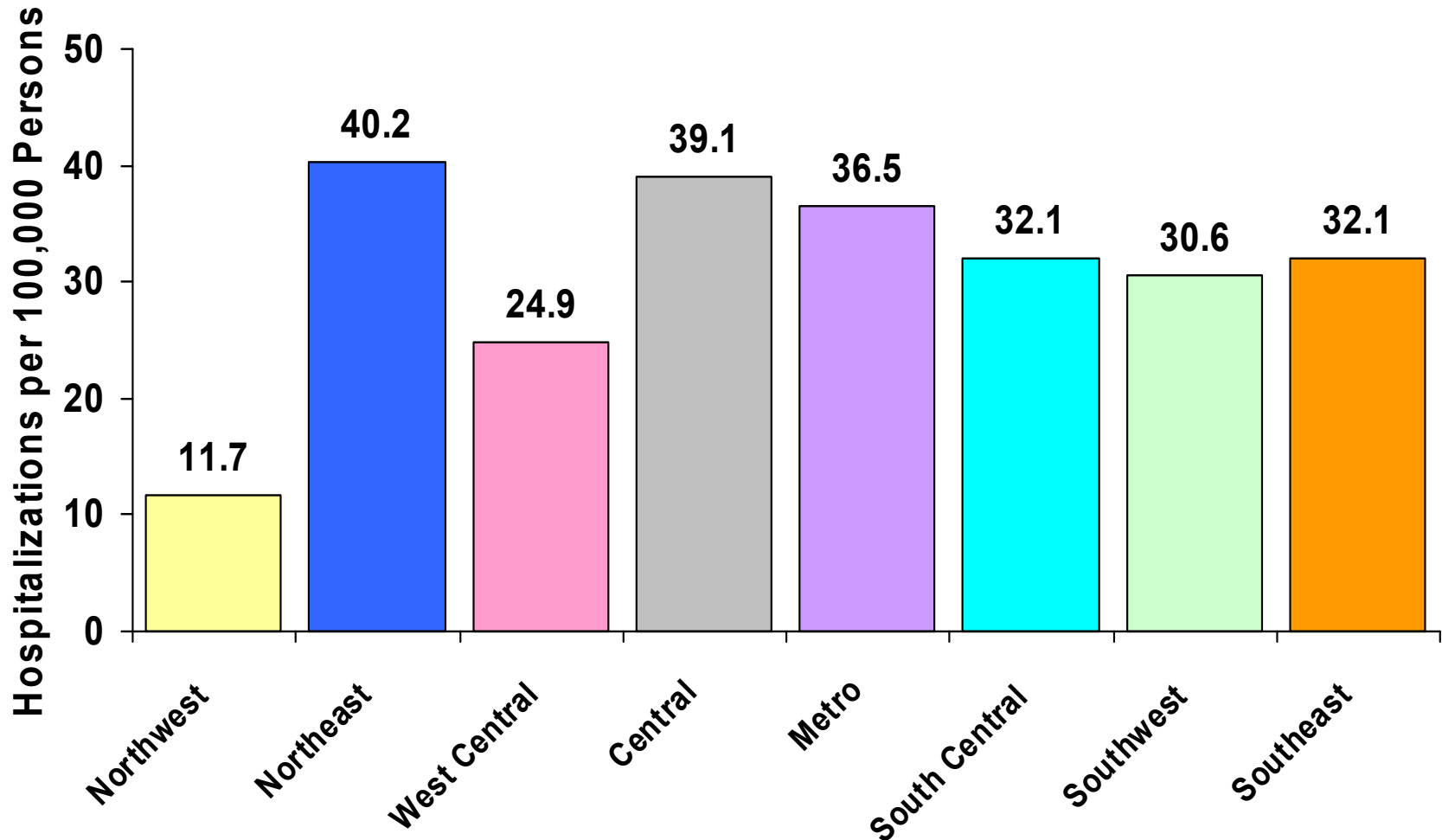


Smoothed lines

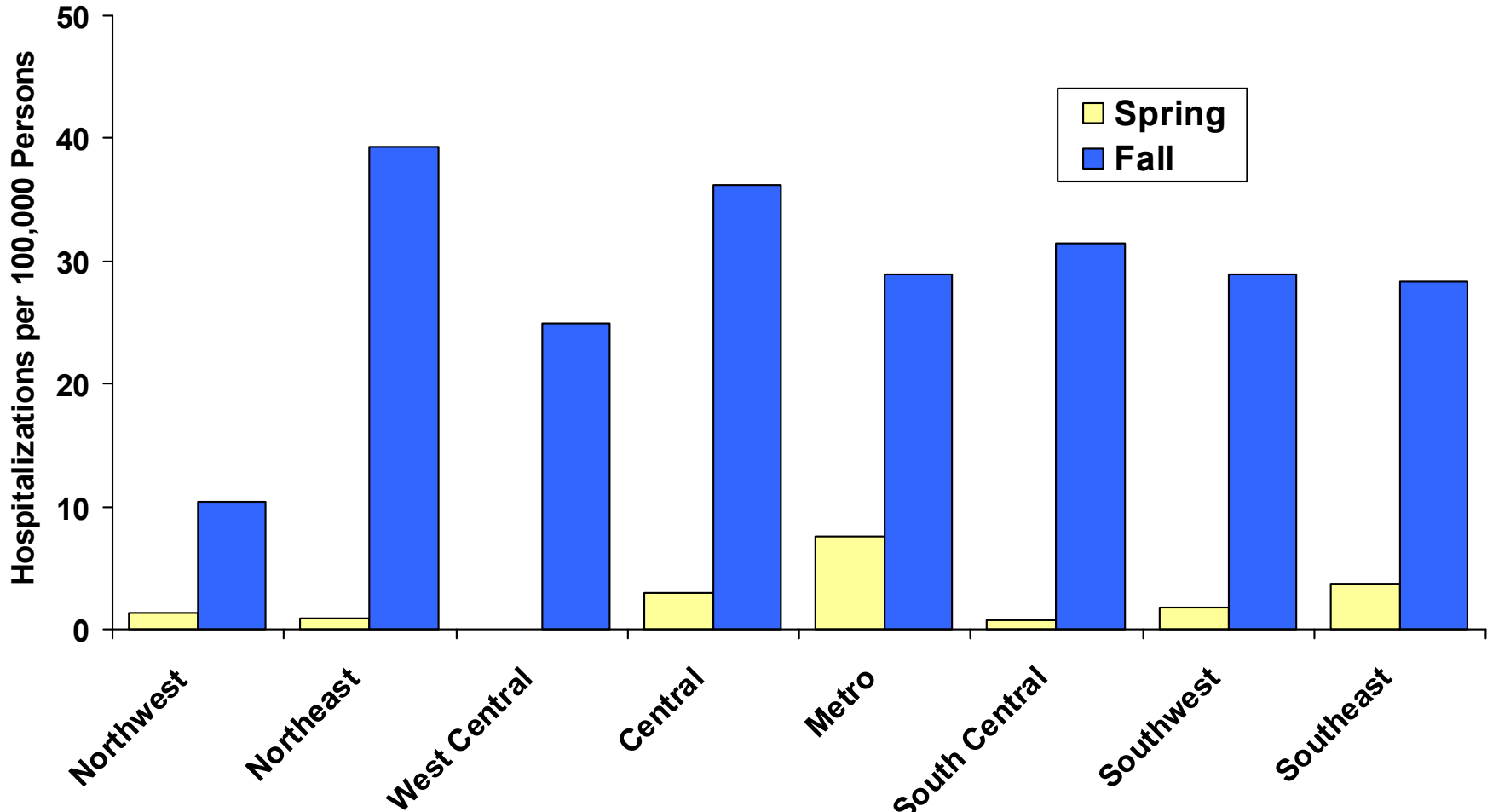
Number of Hospitalized PCR-confirmed 2009 H1N1 Cases by District of Residence, April 2009 – April 2010



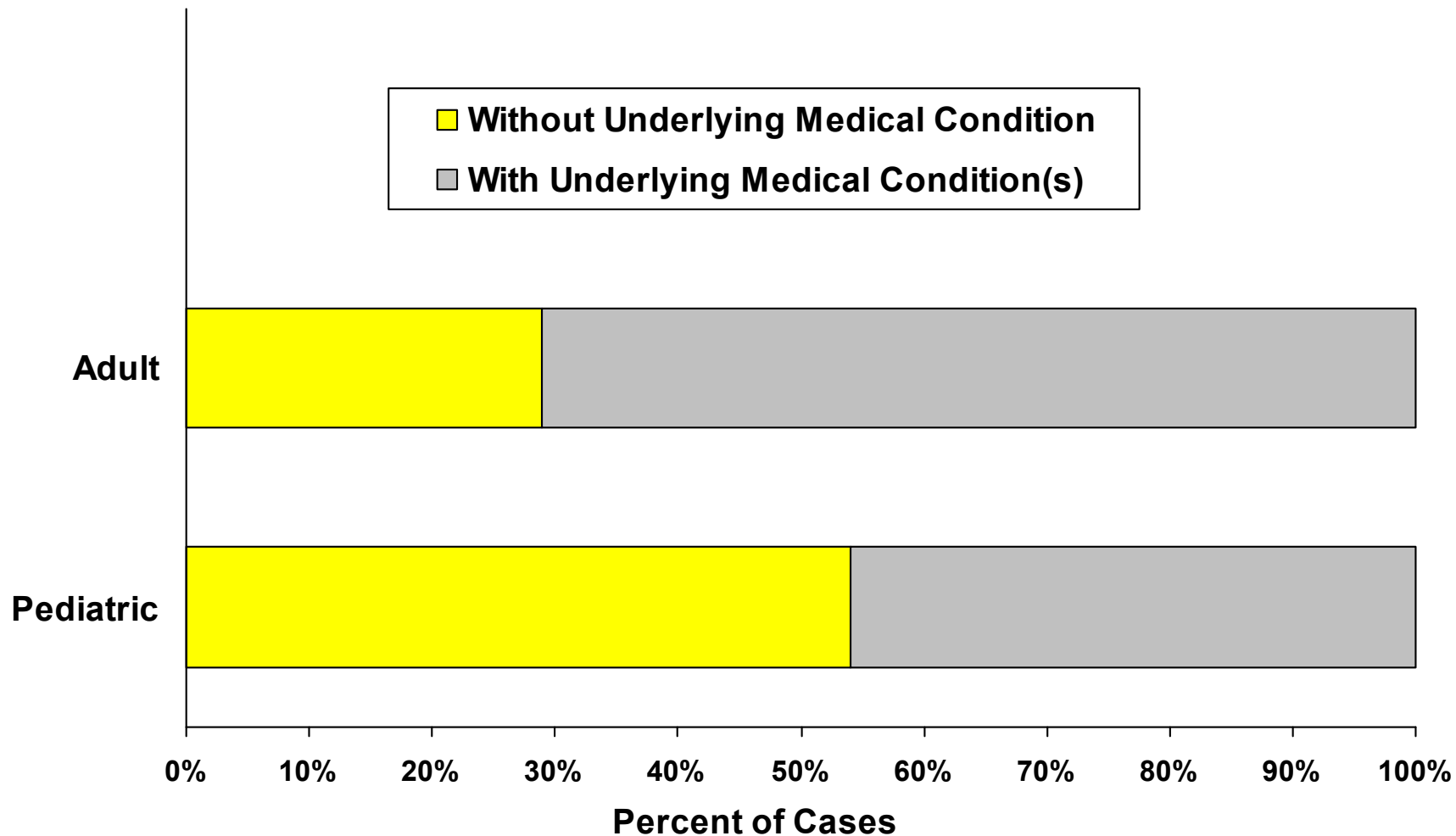
Incidence of Hospitalized PCR-confirmed 2009 H1N1 Influenza by District of Residence, Minnesota, April 2009 – April 2010



Incidence of Hospitalized PCR-confirmed 2009 H1N1 Influenza by District of Residence and Wave, Minnesota, April 2009 – April 2010



Hospitalized PCR-confirmed 2009 H1N1 Influenza Cases by Age Group and Presence of Underlying Medical Conditions, Minnesota, April 2009 – April 2010



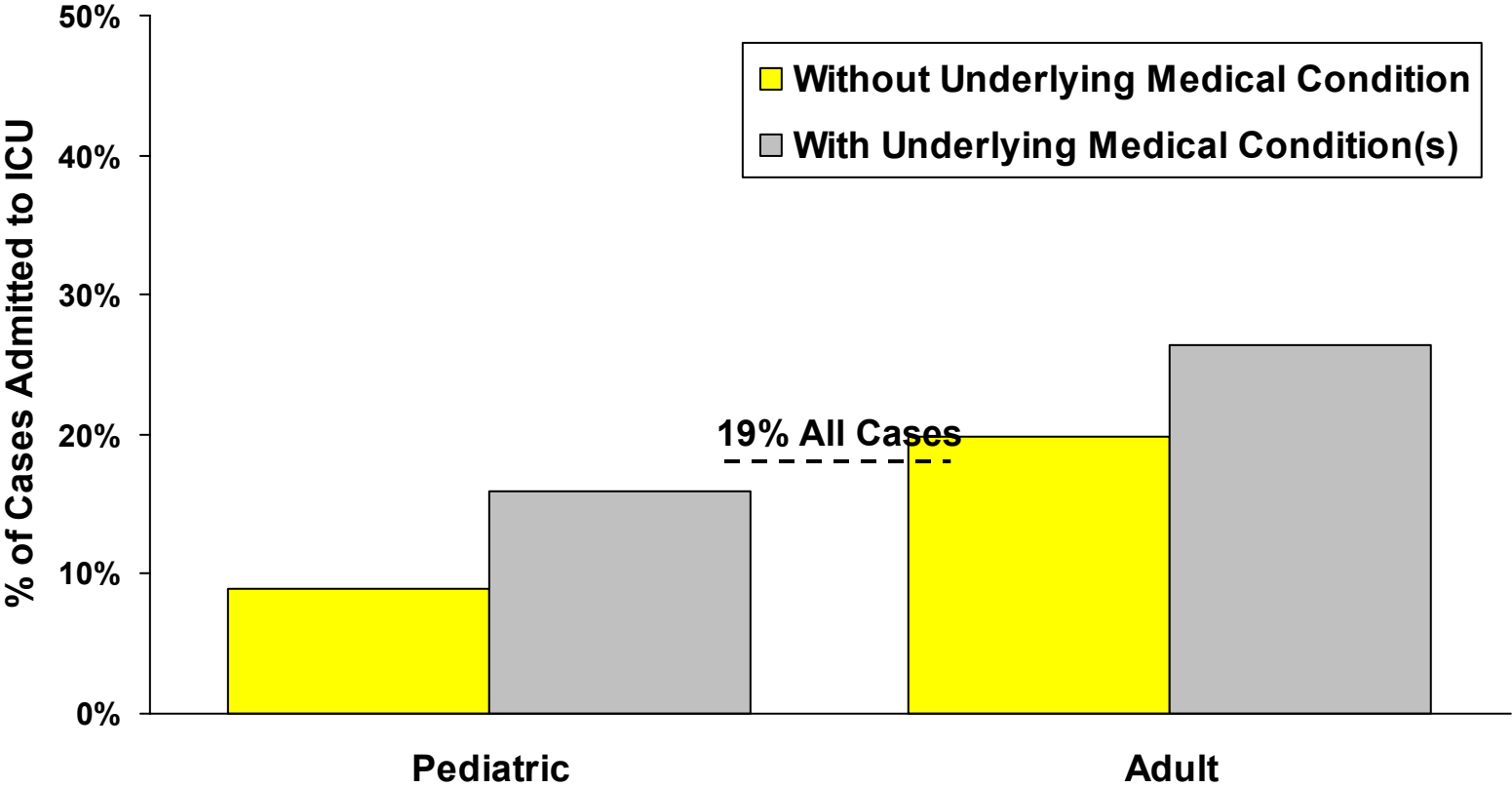
Underlying Medical Conditions of Hospitalized PCR-confirmed 2009 H1N1 Influenza Adult (≥ 18 yrs.) Cases, Minnesota, April 2009 – April 2010

<u>Underlying Medical Condition</u>	<u>Total</u>	<u>Percent</u>
Asthma	328	32%
Chronic Metabolic Disease	288	28%
Chronic Lung Disease	201	20%
Chronic Cardiovascular Disease	225	22%
Immunosuppressive Condition	108	11%
Cognitive Dysfunction	54	5%
Neuromuscular Disorder	62	6%
Cystic Fibrosis	7	1%
Chronic Renal Disease	92	9%
Cancer	30	3%

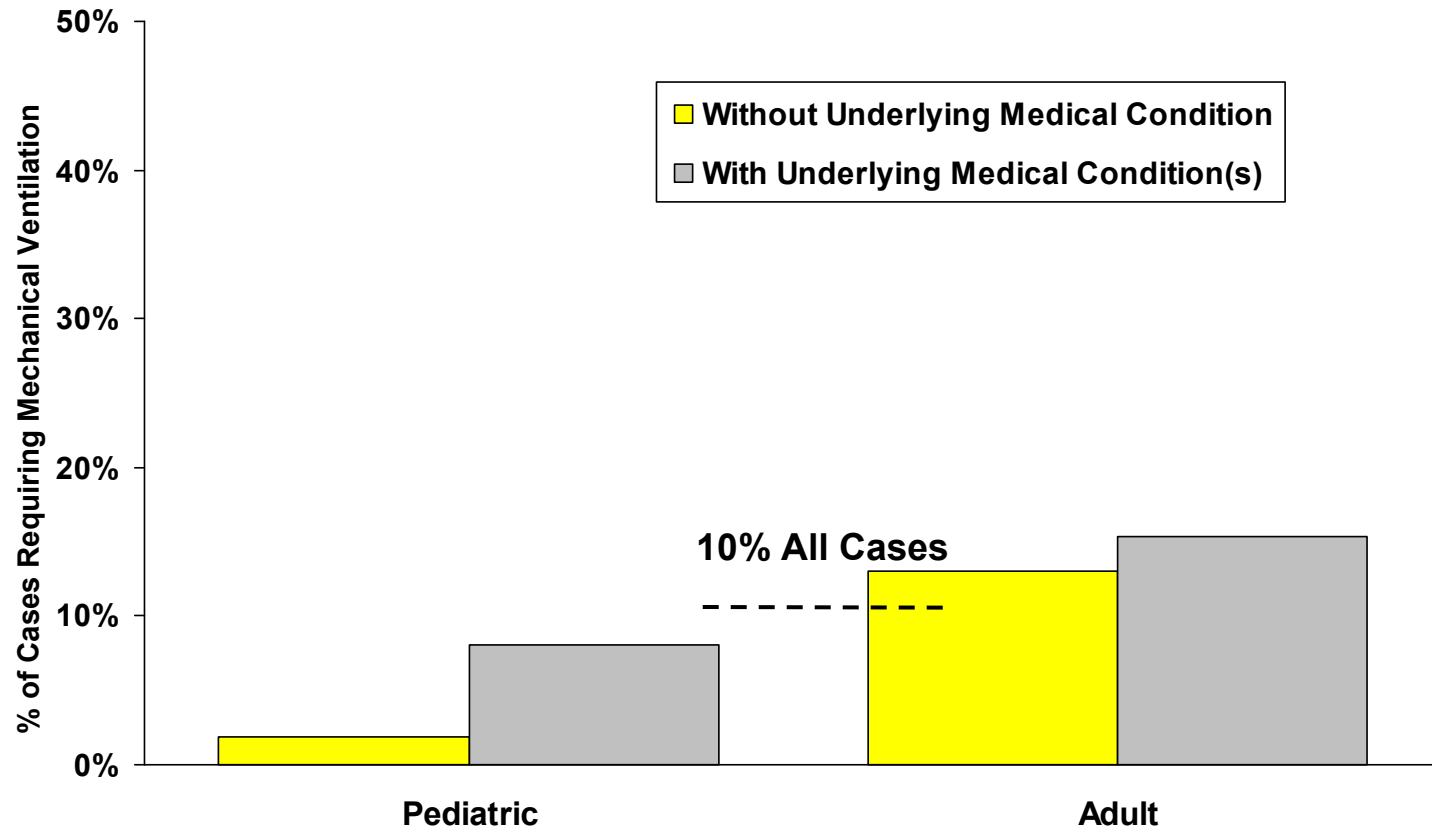
Underlying Medical Conditions of Hospitalized PCR-confirmed 2009 H1N1 Influenza Pediatric (<18 yrs.) Cases, Minnesota, April 2009 – April 2010

<u>Underlying Medical Conditions</u>	<u>Total</u>	<u>Percent</u>
Asthma	228	28%
Chronic Metabolic Disease	26	3%
Chronic Lung Disease	30	4%
Chronic Cardiovascular Disease	24	3%
Immunosuppressive Condition	32	4%
Developmental Delay	65	8%
Neuromuscular Disorder	37	5%
Cystic Fibrosis	2	<1%
Seizure Disorder	39	5%

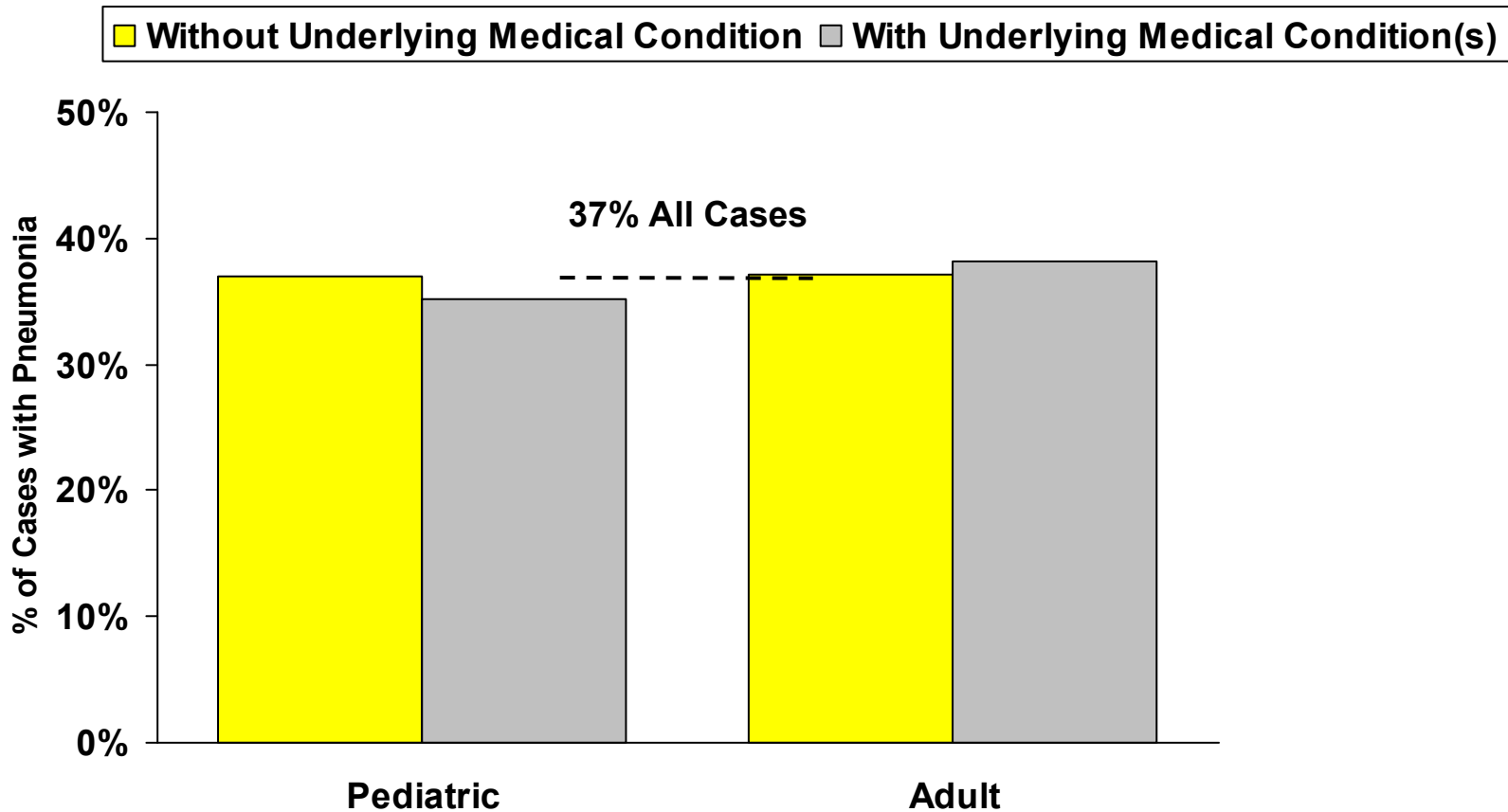
Proportion of Hospitalized PCR-confirmed 2009 H1N1 Influenza Cases Admitted to ICU by Age Group and Presence of Underlying Medical Conditions, Minnesota, April 2009 – April 2010



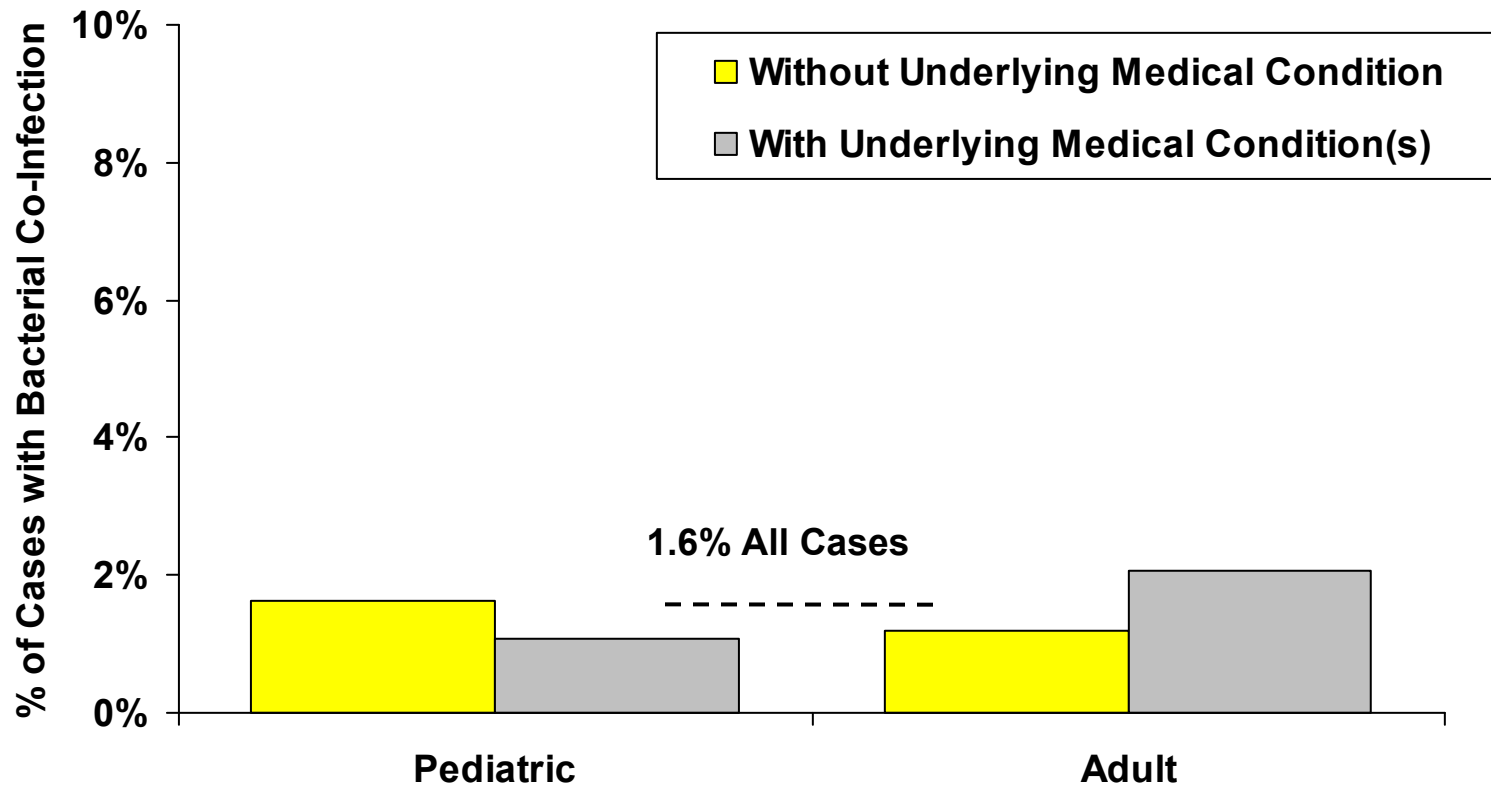
Proportion of Hospitalized PCR-confirmed 2009 H1N1 Influenza Cases Requiring Mechanical Ventilation by Age Group and Presence of Underlying Medical Conditions, Minnesota, April 2009 – April 2010



Proportion of Hospitalized PCR-confirmed 2009 H1N1 Influenza Cases Diagnosed with Pneumonia by Age Group and Presence of Underlying Medical Conditions, Minnesota, April 2009 – April 2010



Proportion of Hospitalized PCR-confirmed 2009 H1N1 Influenza Cases with Bacterial Co-Infection* by Age Group and Presence of Underlying Medical Conditions, Minnesota, April 2009 – April 2010



*Cultural confirmation of a bacterial pathogen from sterile site within 3 days of admission.

Number and Percentage of Female Hospitalized PCR-confirmed 2009 H1N1 Influenza Cases Ages 13-49 Who Were Pregnant, Minnesota, April 2009 – April 2010

	Spring Wave	Fall Wave	Total
Females 13-49 Yrs.	n=54	n=329	n=383
Pregnant Cases	20 (37%)	46 (14%)	66 (17%)

Hospitalized PCR-confirmed 2009 H1N1 Influenza Cases in Minnesota: Summary

From April 1, 2009 to April 30, 2010: 1,824 hospitalized PCR-confirmed 2009 H1N1 Influenza cases; 1,564 since September 1, 2009

- In Spring wave:**
 - Median age, 11.8 years**
 - 17% in ICU**
 - 81% Cases from Metro Area**
- In Fall wave:**
 - Median age, 26.5 years**
 - 20% in ICU**
 - 52% Cases from Metro Area**
- Pregnancy among hospitalized women 13 - 49 years of age:**
 - 17% (of 384)**

Number of Deaths Related to Influenza A, Minnesota, April 2009 – April 2010

67 Deaths Related to Influenza A

- **63 2009 H1N1 Influenza**
- **4 Influenza A, Not Subtyped**

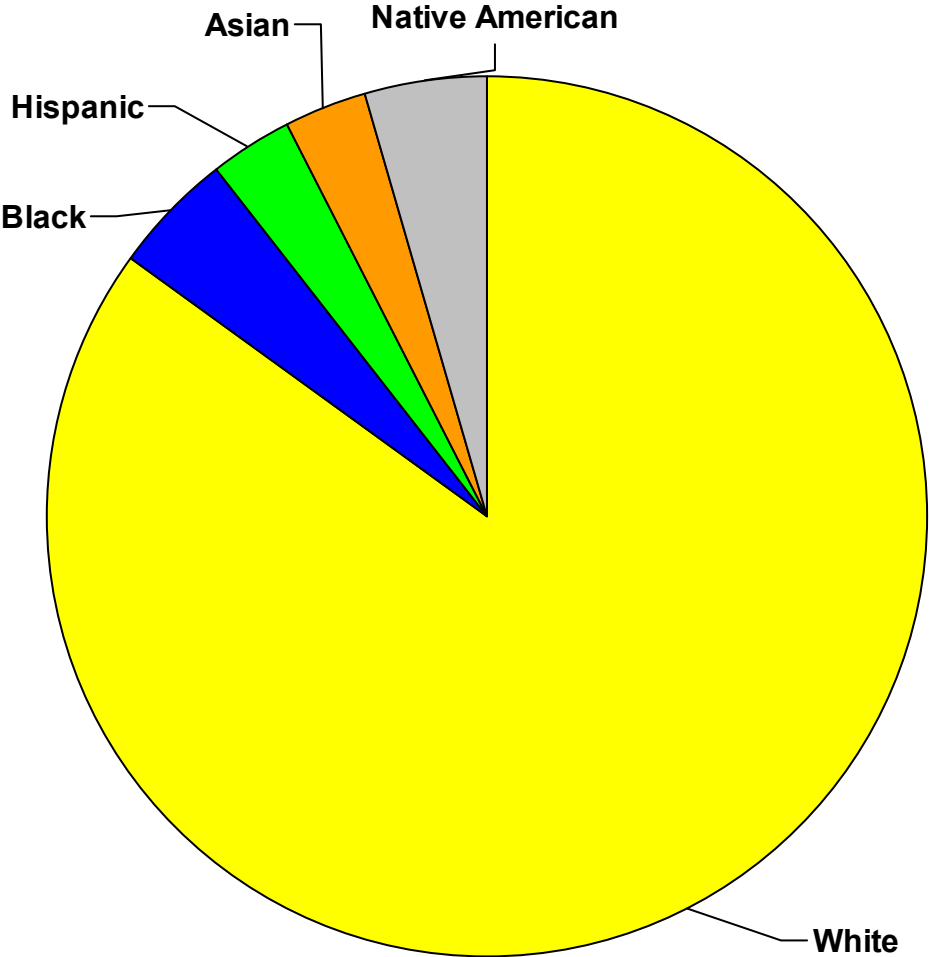
- **55 Hospitalized**
- **12 Non-hospitalized**

Deaths Related to Influenza A by Wave and Age Group, Minnesota, April 2009 – April 2010

<u>Age Group (yrs.)</u>	<u>Spring</u>	<u>Fall</u>	<u>Total</u>
<18	2	6	8
18-64	1	45	46
65+	1	12	13
<hr/>	<hr/>	<hr/>	<hr/>
Total Deaths	4	63	67

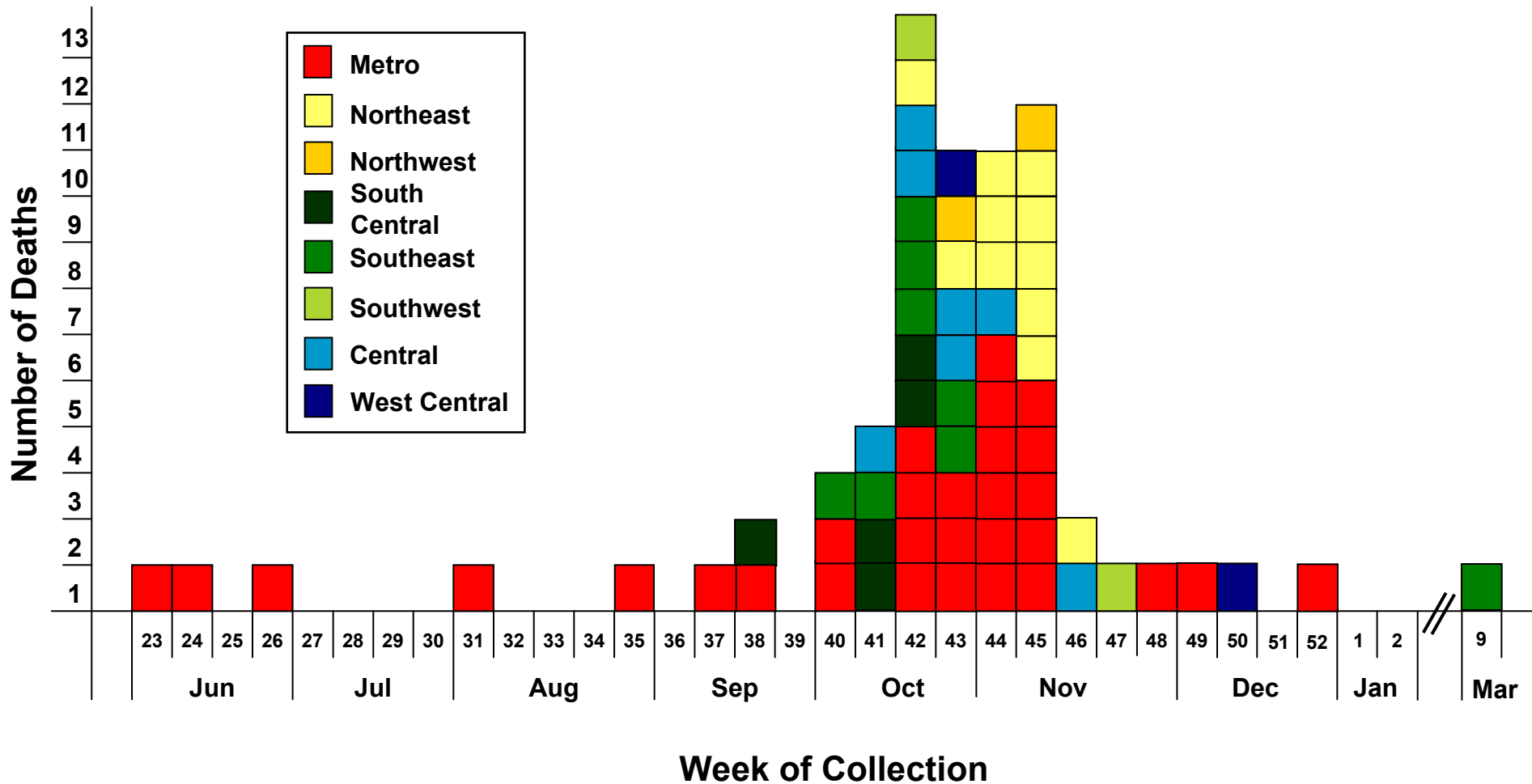
Deaths Related to Influenza A by Race/Ethnicity, Minnesota, April 2009 – April 2010

(63=2009 H1N1; 4=unspecified Influenza A)



Influenza A Deaths in Minnesota by Week of Collection, (N=67)

Minnesota, April 2009 – April 2010



Influenza A Crude Death Rates by District of Residence, Minnesota, April 2009 – April 2010

(63=2009 H1N1; 4=unspecified Influenza A)

District	Deaths n=67	Crude Death Rate per 100,000 Persons
Northwest	2	1.34
Northeast	11	3.43
West Central	2	0.77
Central	7	0.99
Metro*	30	1.07
South Central	5	1.93
Southwest	2	0.91
Southeast	8	1.65

*All 4 deaths in spring wave occurred in Metro district residents

**Deaths Related to Influenza A by Age Group and Presence
of Underlying Medical Condition(s),
Minnesota, April 2009 – April 2010
(63=2009 H1N1; 4=unspecified Influenza A)**

Age Group (yrs.)	Total Deaths	% With Underlying Medical Condition(s)
<18	8	75.0%
18-64	46	84.8%
≥65	13	92.3%
All Ages	67	87.7%

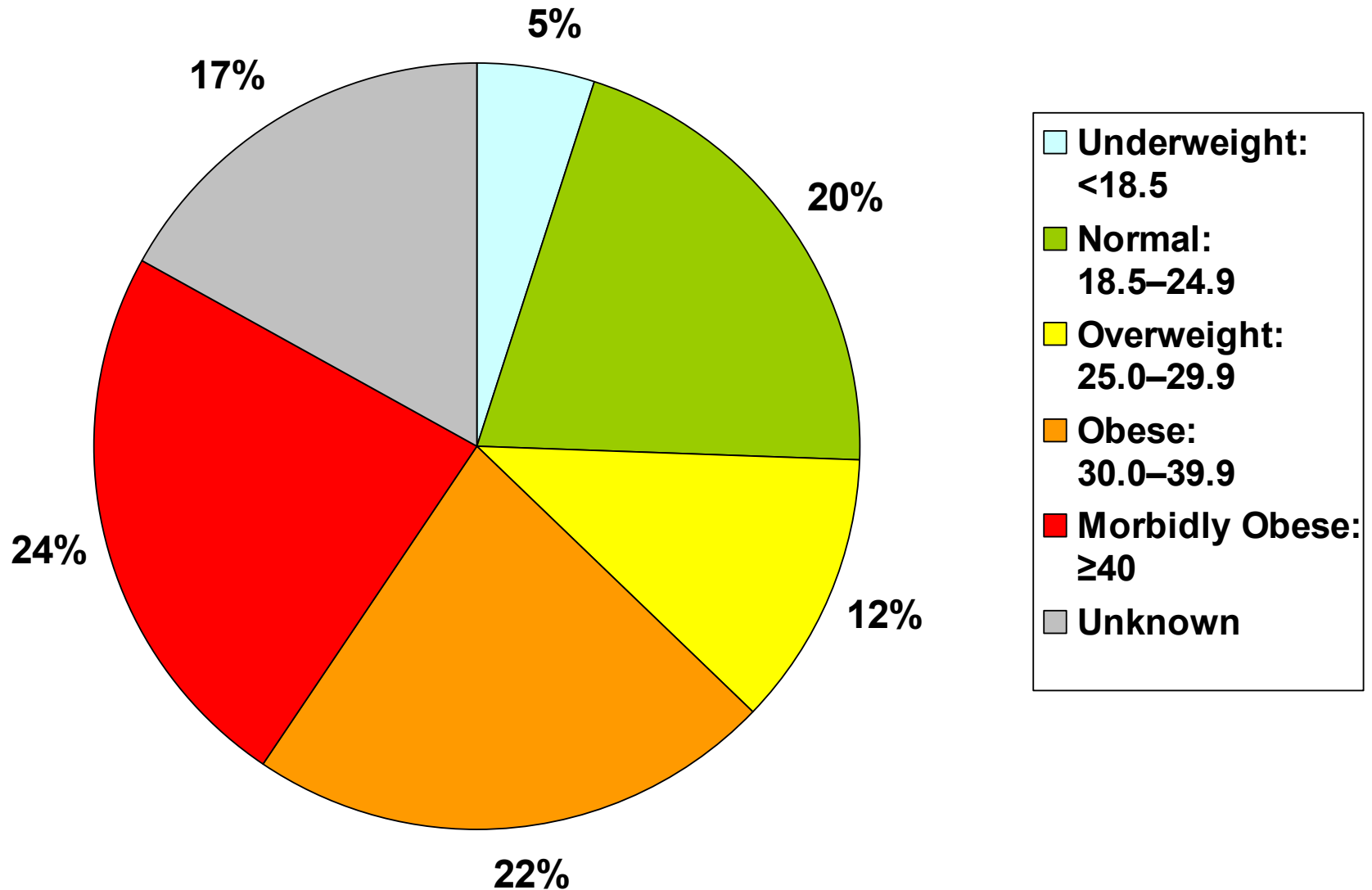
Underlying Medical Conditions among Deaths Related to Influenza A, Minnesota, April 2009 – April 2010

(63=2009 H1N1; 4=unspecified Influenza A)

<u>Underlying Medical Condition</u>	<u>Total</u>	<u>Percent</u>
Obesity	30	46.9%
Chronic Cardiovascular Disease	27	42.2%
Chronic Metabolic Disease	21	32.8%
Immunosuppressive Condition	15	23.4%
Chronic Lung Disease	11	17.2%
Renal Disease	9	14.1%
Neuromuscular Disorder	7	10.9%
History of Lymphoma/Leukemia	6	9.4%
Cognitive Dysfunction	6	9.4%
Asthma	6	9.4%
Cancer Diagnosis in last 12 months	4	6.3%
Seizure Disorder	4	6.3%
Pregnant	0	0.0%

BMI of Adult Deaths Related to Influenza A, Minnesota, April 2009 – April 2010

(55=2009 H1N1; 4=unspecified Influenza A)



Clinical Outcomes of Deaths Related to Influenza A by Age Group, Minnesota, April 2009 – April 2010

(63=2009 H1N1; 4=unspecified Influenza A)

Clinical Outcome	Pediatric <18 yrs. n=8	Adult 18+ yrs. n=59
Hospitalized	5 (62.5%)	50 (84.7%)
ICU	5 (62.5%)	46 (78.0%)
Mechanical Ventilation	6 (75%)	40 (67.8%)
ARDS	1 (12.5%)	16 (27.1%)
Pneumonia	5 (62.5%)	48 (81.4%)
Viral	0	10 (16.9%)
Bacterial	1 (12.5%)	3 (5.5%)
Both	0	3 (5.5%)

Bacterial Co-Infections in Deaths Related to Influenza A, Minnesota, April 2009 – April 2010

(63=2009 H1N1; 4=unspecified Influenza A)

	Sterile	Non-sterile*	Combined
	Total (%)	Total (%)	Total (%)
Persons with Bacterial Co-infection(s)	10 (15%)	10 (15%)	20 (30%)
<i>Staphylococcus aureus</i>	5 (7%)	4 (6%)	9 (13%)
MRSA	3 (4%)	2 (3%)	5 (7%)
MSSA	0	1 (1%)	1 (1%)
Unknown	2 (3%)	1 (1%)	3 (4%)
<i>Streptococcus pneumoniae</i>	3 (4%)	0	3 (4%)
<i>Group B Streptococcus</i>	2 (3%)	4 (6%)	6 (9%)
<i>Pseudomonas aeruginosa</i>	1 (1%)	1 (1%)	2 (3%)
Bacterial Other**	2 (3%)	7 (10%)	9 (13%)

*Non-sterile sites include sputum, endotracheal aspirate, lung tissue, and stool

***Stenotrophomonas maltophilia*, *Enterobacter cloacae*, *Staphylococcus saprophyticus*, *Staphylococcus* coagulase negative, *Enterococcal* sepsis, *Moraxella catarrhalis*, Group A *Streptococcus*, *Escherichia coli*, VRE

Summary of Deaths Related to Influenza A, Minnesota, April 2009 – April 2010

In Spring wave

- 4 deaths (all PCR-confirmed 2009 H1N1)
- 2 in children; 1 in an adult age 65 or older
- 1 with no underlying conditions
- 100% 7-county MSP area

In Fall wave

- 63 deaths (59 2009 H1N1, 4 Influenza A-type unspecified)
- 6 in children; 12 \geq 65 y
- 7 no underlying conditions
- 41% (26/63) 7-county MSP area

For More Information Please Contact:

**Minnesota Department of Health
Acute Disease Investigation and Control**

651-201-5414

1-877-676-5414

www.health.state.mn.us