

# California Influenza Surveillance Project

## Viral and Rickettsial Disease Laboratory

### 2008-2009

## Influenza Update – Week 22 (May 31 – June 6, 2009)

### Overall California Influenza Activity for Week 22

This week, influenza activity in California remained “regional” (defined by the CDC as outbreaks of influenza or increases in ILI and recent laboratory confirmed influenza in at least two but less than half the regions of the state) based on the decreased level of laboratory detections of influenza A [both seasonal human subtypes H1 and H3 and novel influenza A (H1N1)] throughout the state. Of note, we have received several reports from local health jurisdictions in Northern California/the San Francisco Bay Area of increased ILI activity and influenza A positive test results.

### National Influenza Activity for Week 22

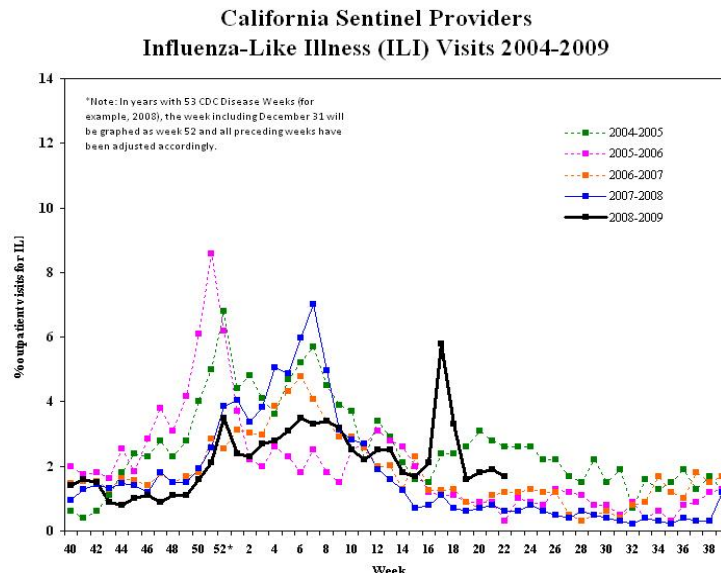
During week 22, influenza activity decreased in the United States, however, there are still higher levels of influenza-like illness than is normal for this time of year. Two thousand six hundred eighty-one (40.2%) specimens tested by U.S. World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) collaborating laboratories and reported to CDC/Influenza Division were positive for influenza. Approximately 89% of all influenza viruses being reported to CDC were novel influenza A (H1N1) viruses. Three influenza-associated pediatric deaths were reported; two were associated with novel influenza A (H1N1) virus infection and one was associated with seasonal influenza A (H1N1) virus infection.

### Seasonal Influenza A Surveillance

#### 1. CDC Influenza Sentinel Providers

Sentinel providers report the number of outpatient visits for influenza-like illness and the total number of visits per week. This data is reported weekly as a percentage of total visits. A total of 46 sentinel providers reported during Week 22.

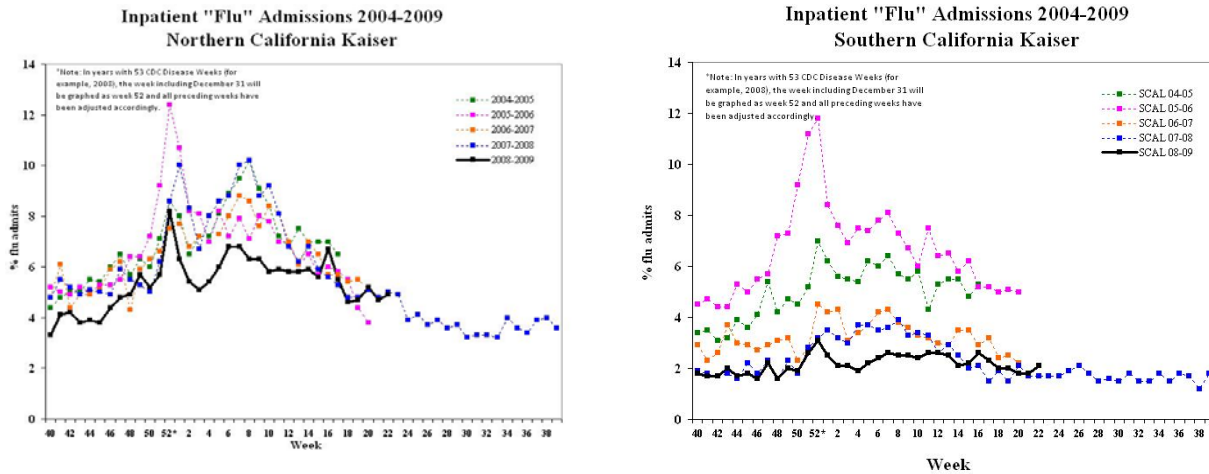
**Figure 1.** California Sentinel Providers – Influenza-Like Visits, 2004-2009. This figure shows that the percentage of outpatient ILI visits peaked during Week 17 and has since declined. This was an unusual peak of activity at this time of year compared to previous years.



## 2. Kaiser Permanente Hospitalization Data (“Flu Admits”)

The admission diagnoses of flu, pneumonia, and influenza (“Flu Admits”) serve as surrogate markers for the more accurate discharge diagnoses. Influenza activity is tracked by dividing the number of Flu Admits by the total number of hospital admissions for the same day to obtain a percentage of influenza and pneumonia admissions.

**Figures 2-3.** Inpatient “Flu” Admissions at Kaiser Facilities, 2004-2009. This figure shows that in Northern and Southern California the percentage of Kaiser hospitalizations for P&I (pneumonia and influenza) peaked during Week 17 and has since declined. This was an unusual peak of activity at this time of year compared to previous years.



## 3. California Respiratory Project

The California Respiratory Project is a laboratory-based surveillance project testing children admitted with clinical symptoms and signs suggestive of viral pneumonia to sentinel pediatric ICUs\*. The main objective is early detection of emerging respiratory viruses in a vulnerable pediatric population where they may likely first appear, such as novel influenza strains or Severe Acute Respiratory Syndrome (SARS). Current participating sites include Children’s Hospital Oakland, University of California San Francisco, University of California Davis, and Cedars Sinai Los Angeles

**Table 1.** California Respiratory Project, 2008-2009.

	Total Specimens Tested	Total Positive Specimens	Percent Positive Specimens
<b>Week 22</b>	0	0	N/A
<b>Total to date</b>	251 <sup>a</sup>	182 <sup>b,c</sup>	73%

<sup>a</sup> San Francisco Bay Area (182); Sacramento Area (67); Los Angeles (2)

<sup>b</sup> 47 specimens had multiple detections

<sup>c</sup> rhinovirus (100); RSV (69); adenovirus (15); human metapneumovirus (14); parainfluenza virus type 2 (8); parainfluenza virus type 3 (8); enterovirus (8); influenza A (6-subtype pending); influenza B (5); parainfluenza type 4 (4); parainfluenza type 1 (1)

\*Case definition: age 0-17 years; a clinical syndrome consistent with viral pneumonia; and have been admitted to the PICU within ≤ three days.

#### 4. Laboratory Positive Results Data

Positive influenza and other virus results from sentinel laboratories, local public health laboratories and VRDL.

**Table 2.** Influenza and other respiratory virus detections, May 31 – June 6, 2009.

		Sentinel Laboratories/Respiratory Laboratory Network <sup>‡</sup>	Sentinel Providers
<b>Week 22</b>	<b>Number of Sites Reporting</b>	19	628 specimens submitted (277 positive by PCR)
	<b>Influenza A</b>	312 <sup>a</sup> Total tested week 22: 1062 Total detections to date: 6633	10 <sup>e</sup> Total tested week 22: 14 Total detections to date: 173
	<b>Influenza B</b>	6 <sup>b</sup> Total tested week 22: 894 Total detections to date: 3187	0 Total tested week 22: 0 Total detections to date: 104
	<b>RSV</b>	4 <sup>c</sup> Total tested week 22: 867 Total detections to date: 7403	N/A
	<b>Other Respiratory Viruses</b>	14 <sup>d</sup> Total tested week 20: 226 Total detections to date: 391	N/A

<sup>‡</sup>Sentinel laboratories are hospital, academic, private, and public health laboratories located throughout California that provide data on the number of laboratory-confirmed influenza and other respiratory virus detections and isolations. The Respiratory Laboratory Network (RLN) is a network of 23 local public health laboratories that offer enhanced diagnostic testing with the “R-mix” shell vial assay, which detects several respiratory pathogens, including influenza A and B viruses, respiratory syncytial virus, parainfluenza virus, and adenovirus. Some RLN labs also offer PCR testing for influenza A and B.

- <sup>a</sup> Alameda (64); Contra Costa (65); Fresno (2); Long Beach (6); Los Angeles (1); Marin (1); Monterey (1); Napa (1); Orange (15); Placer (7); Sacramento (11); San Diego (6); San Francisco (23); San Joaquin (1); San Mateo (18); Santa Barbara (3); Santa Clara (63); Solano (13); Sonoma (5); Stanislaus (2); Yolo (4)
- <sup>b</sup> Alameda (1); Contra Costa (1); Orange (1); Sacramento (1); Santa Clara (2)
- <sup>c</sup> San Diego (1); San Mateo (1); Santa Clara (1); Unknown (1)
- <sup>d</sup> parainfluenza type 3 (11); adenovirus (1); human metapneumovirus (1); parainfluenza type 1 (1)
- <sup>e</sup> Alameda (1); Mono (1); Santa Barbara (7); Santa Clara (1)

#### *Novel Influenza A (H1N1) Surveillance*

Since April 15 and 17, 2009 when the first two cases of novel influenza A (H1N1) infection were identified from two southern California counties, novel influenza A (H1N1) cases have been documented throughout California and the world, with most cases occurring in the United States and Mexico. As the epidemic unfolds, CDPH continues to perform surveillance and provide PCR testing for influenza, confirmatory testing for novel influenza A (H1N1), and guidance and assistance to our local public health partners.

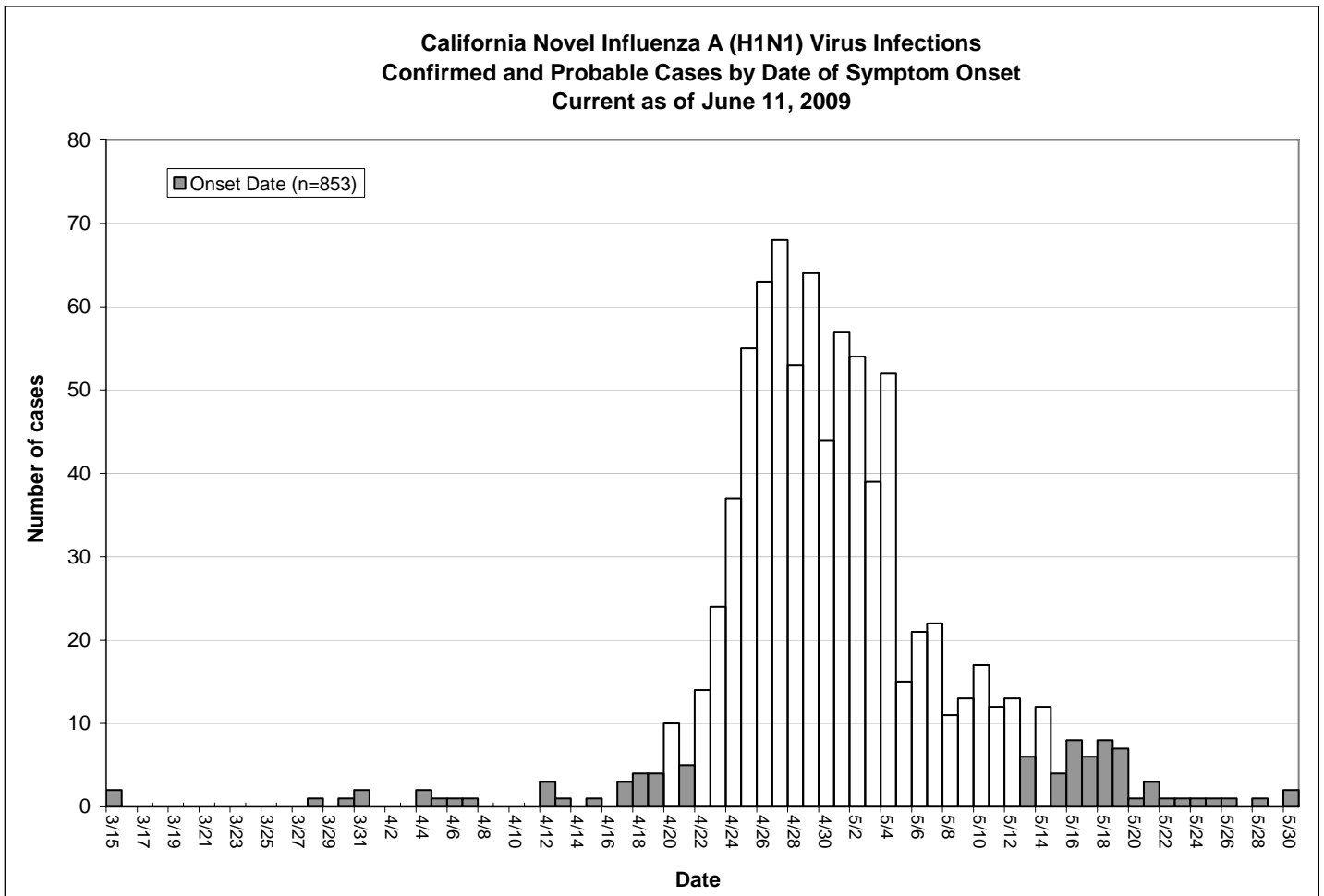
#### 1. Epi- Surveillance Update (Updated 6/11/2009)

##### **Highlights:**

- CDPH has received reports of 1,121 cases (918 confirmed, 203 probable) from 41 local health jurisdictions.
- 77 cases have been hospitalized, with 13 requiring intensive care.
- Six fatal cases were reported this week in Alameda (2), Contra Costa (1), Los Angeles (1), Orange (1), and San Bernardino (1) counties.
- Of all cases reported, 18 (15 confirmed, 3 probable) have been in pregnant women.
- Of all cases reported, 43 (36 confirmed, 7 probable) have occurred in health care workers.
- Fresno counties reported their first (ever) cases this week.

a. Daily epi curve:

Figure 1. Novel Influenza A (H1N1) cases, by date of onset, California, 2009.



**b. Current California case counts for novel influenza A (H1N1) infection in humans:**

**Table 1.** Provisional number of novel influenza A (H1N1) cases by local health jurisdiction, as of 06/11/09.

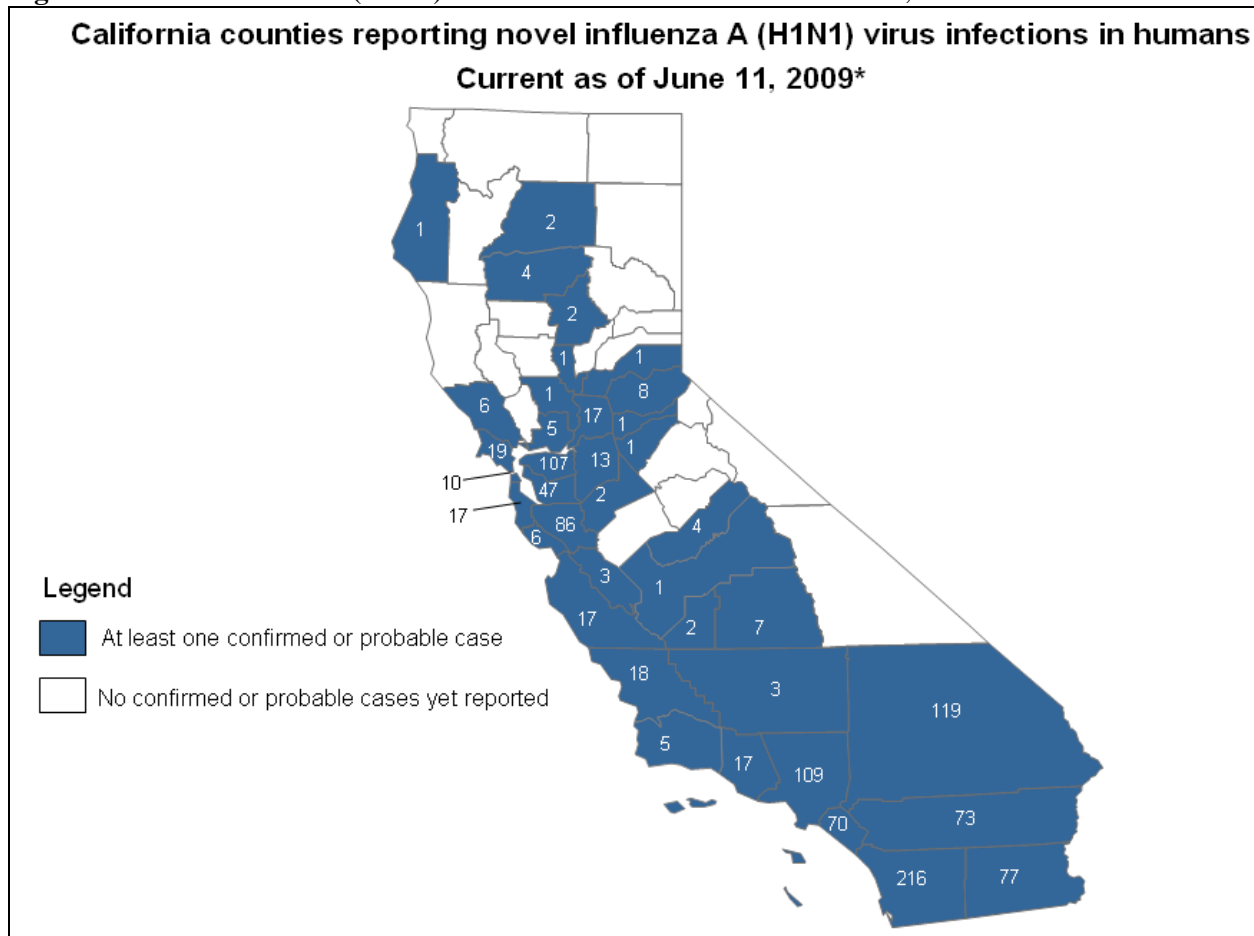
Jurisdiction	Total Cases	Confirmed	Probable	Hospitalizations <sup>a</sup>	Deaths
CALIFORNIA	1121	918	203	77	6
County Undetermined	0	0	0	0	0
Alameda	47	41	6	2	2
Amador	1	1	0	0	0
Berkeley City	5	4	1	1	0
Butte	2	2	0	0	0
Calaveras	1	1	0	0	0
Contra Costa	107	96	11	5	1
El Dorado	8	6	2	0	0
<b>Fresno</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>
Humboldt	1	1	0	1	0
Imperial	77	68	9	6	0
Kern	3	3	0	0	0
Kings	2	2	0	0	0
Long Beach City	16	12	4	1	0
Los Angeles	109	80	29	13	1
Madera	4	3	1	0	0
Marin	19	17	2	2	0
Monterey	17	13	4	1	0
Orange	70	57	13	7	1
Pasadena City	2	2	0	0	0
Placer	1	1	0	0	0
Riverside	73	66	7	4	0
Sacramento	17	14	3	0	0
San Benito	3	1	2	1	0
San Bernardino	119	104	15	8	1
San Diego	216	199	17	14	0
San Francisco	10	10	0	0	0
San Joaquin	13	10	3	3	0
San Luis Obispo	18	18	0	0	0
San Mateo	17	7	10	1	0
Santa Barbara	5	4	1	0	0
Santa Clara	86	46	40	6	0
Santa Cruz	6	0	6	0	0
Shasta	2	1	1	0	0
Solano	5	0	5	0	0
Sonoma	6	5	1	0	0
Stanislaus	2	0	2	0	0
Sutter	1	1	0	0	0
Tehama	4	4	0	0	0
Tulare <sup>b</sup>	7	7	0	1	0
Ventura	17	10	7	0	0
Yolo	1	1	0	0	0

a. This number does not include reports of hospitalized cases not yet validated by LHJ, represents cases ever hospitalized

b. Includes one patient diagnosed out of county

**Bold** indicates the first (ever) report of probable or confirmed cases by the county

**Figure 2.** Novel influenza A (H1N1) virus infections in humans - California, 2009.



**c. Characteristics of all novel influenza A (H1N1) cases**

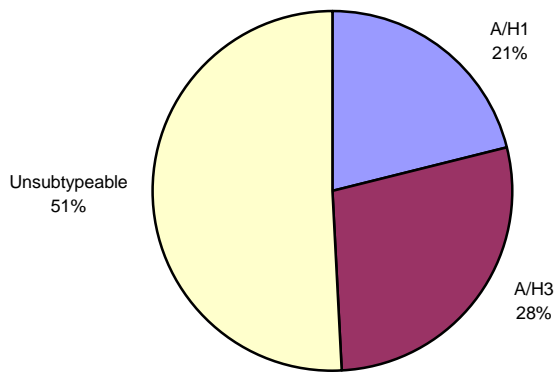
- Symptom onset has ranged from March 15, 2009 to May 30, 2009
- Of all reported cases, the median age is 16 years old (<1 to 87 years old); 51% are male
- Most frequent symptoms include: fever, cough, and sore throat

**2. Laboratory Surveillance Update**

**VRDL Influenza PCR Results (Updated 6/11/09)**

- VRDL performs PCR testing for influenza A, influenza A subtyping, and Novel Influenza A (H1N1). Some specimens are screened at local public health or reference laboratories before being submitted to VRDL for additional or confirmatory testing.
- VRDL has received 2,804 specimens for Novel Influenza A (H1N1)-related testing.
- Of 2,428 specimens tested at VRDL for influenza A, 1,334 (55%) have been positive.
- A total of 808 influenza A-positive specimens have been subtyped at VRDL (See Figure 5).
- Of 749 specimens tested at VRDL for novel influenza A (H1N1), 719 (96%) have been positive.

**Figure 3.** VRDL Influenza A Subtyping Results, as of 6/11/09



**Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results (Updated 6/11/09)**

As noted in the RLN tables below, approximately 11% of specimens received by the public health laboratory network statewide have been positive by influenza A. Of these, 22% are subtype H1, 26% are subtype H3 and 48% are unsubtypeable. In addition, Los Angeles, Orange, San Bernardino, San Diego, and Tulare County Public Health Laboratories are now also performing confirmatory novel influenza A (H1N1) testing.

**Table 2.** Respiratory Laboratory Network (RLN) Influenza PCR Surveillance Results, April 27 - June 11, 2009.

	Total tested	Flu A (% of total)	H1 (% of Flu A)	H3 (% of Flu A)	Unsubtypeable (% of Flu A)
<b>All RLN*</b>	<b>11950</b>	<b>1266 (11%)</b>	<b>281 (22%)</b>	<b>327 (26%)</b>	<b>603 (48%)</b>
Northern	4929	461 (9%)	96 (21%)	120 (26%)	243 (53%)
Central	3118	183 (6%)	87 (48%)	55 (30%)	38 (21%)
Southern	3903	622 (16%)	98 (16%)	152 (24%)	322 (52%)

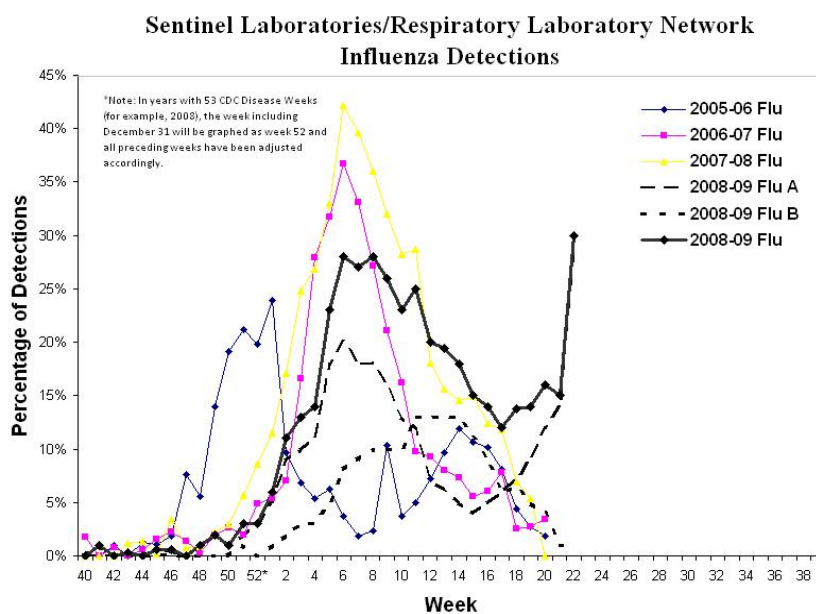
\* 22 of 23 RLN laboratories reporting, including:

Northern CA: Contra Costa, El Dorado, Marin, Monterey, Sacramento, San Francisco, San Mateo, Santa Clara, Shasta, Sonoma

Central CA: Fresno, Stanislaus, San Joaquin, Tulare

Southern CA: Long Beach, Los Angeles, Orange, Riverside, San Bernardino, San Diego, Santa Barbara, Ventura

**Figure 4.** Influenza Detections at Sentinel Laboratories/Respiratory Laboratory Network (RLN)



### **Antiviral Resistance for Novel Influenza A (H1N1)**

At VRDL, antiviral resistance testing is being performed on a subset of specimens tested to monitor for changing resistance patterns.

**Table 3.** Antiviral resistance testing at VRDL, 2009.

	<b>Oseltamivir Resistant</b>	<b>Adamantanes Resistant</b>
<b>Novel influenza virus (H1N1)</b>	<b>0/28</b>	<b>28/28</b>