

# Influenza and Other Respiratory Viruses Weekly Report

California Influenza Surveillance Program



**Highlights** (Week 48: November 24, 2019 – November 30, 2019)

## Statewide Activity



- ▶ **Deaths:** 16\* since Sept. 29, 2019
- ▶ **Outbreaks:** 5 since Sept. 29, 2019
- ▶ **Laboratory:** 17.3% flu positive
- ▶ **Outpatient ILI:** Above expected levels
- ▶ **Hospitalizations:** Within expected levels

### Regions with Elevated Activity



\*Influenza-coded deaths from death certificates  
*Click on images and links for more information*

## Key messages:

- Influenza activity is increasing in California.
- Influenza B viruses are predominating in California, but influenza A (H3) and A (H1)pdm09 viruses are also circulating.
- Now is the time to get vaccinated; everyone over the age of 6 months needs a flu shot.
- Pregnant women, children <5, adults 65+, and people with chronic medical conditions are at high-risk for flu-related complications.

**Note:** This report includes data from many sources of influenza surveillance and it should be viewed as a preliminary “snapshot” of influenza activity for each surveillance week. Because data are preliminary, the information may be updated in later reports as additional data are received. These data should not be considered population-based or representative of all California public health jurisdictions.

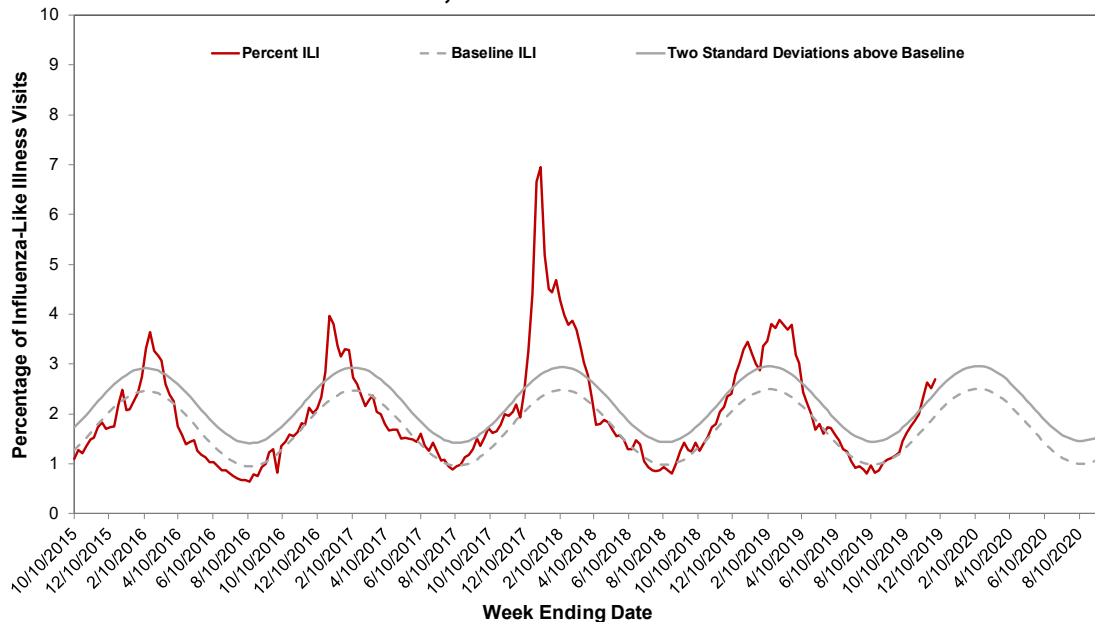
## A. Outpatient, Inpatient, and Death Data

### 1. Influenza Sentinel Providers

Sentinel providers (physicians, nurse practitioners, and physician assistants) situated throughout California report on a weekly basis the number of patients seen with influenza-like illness (ILI) and the total number of patients seen for any reason. ILI is defined as any illness with fever ( $\geq 100^{\circ}\text{F}$  or  $37.8^{\circ}\text{C}$ ) AND cough and/or sore throat (in the absence of a known cause other than influenza).

A total of 91 enrolled sentinel providers have reported data for Week 48. Based on available data, the percentage of visits for ILI during Week 48 was 2.7% compared to Week 47 (2.5%) and is above expected levels for this time of year (Figure 1).

**Figure 1. Percentage of Influenza-like Illness Visits Among Patients Seen by California Sentinel Providers, 2015–2020**



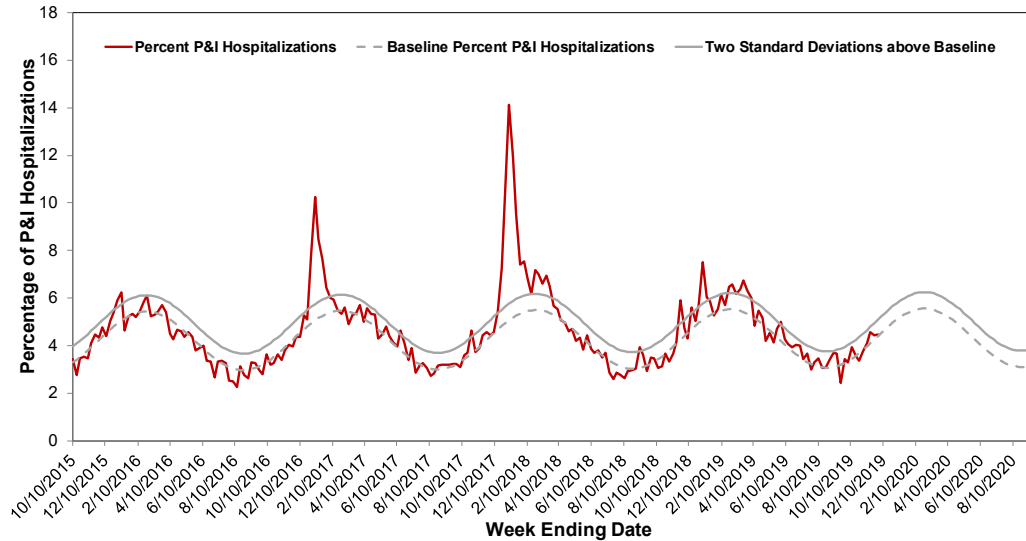
The seasonal baseline was calculated using a regression model applied to data from the previous five years. Two standard deviations above the seasonal baseline is the point at which the observed percentage of ILI is significantly higher than would be expected at that time of year.

### 2. Kaiser Permanente Hospitalization Data

Inpatients at Kaiser Permanente facilities with an admission diagnosis including the keywords “flu,” “influenza,” “pneumonia,” or variants of the keywords are defined as pneumonia and influenza (P&I)-related admissions. The number of P&I admissions is divided by the total number of hospital admissions occurring in the same time period to estimate the percentage of P&I admissions. Admissions for pregnancy, labor and delivery, birth, and outpatient procedures are excluded from the denominator.

The percentage of admissions for pneumonia and influenza (P&I) in Kaiser Permanente facilities in northern California during Week 48 was 4.5% compared to Week 47 (4.4%) and is within expected levels for this time of the year (Figure 2).

**Figure 2. Percentage of P&I Admissions in Kaiser Permanente Northern California Hospitals, 2015–2020**

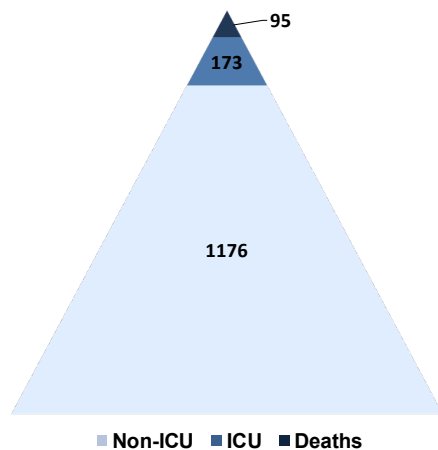


The seasonal baseline was calculated using a regression model applied to data from the previous five years. Two standard deviations above the seasonal baseline and is the point at which the observed percentage of pneumonia and influenza hospitalizations in Kaiser Permanente hospitals in Northern California is significantly higher than would be expected at that time of the year.

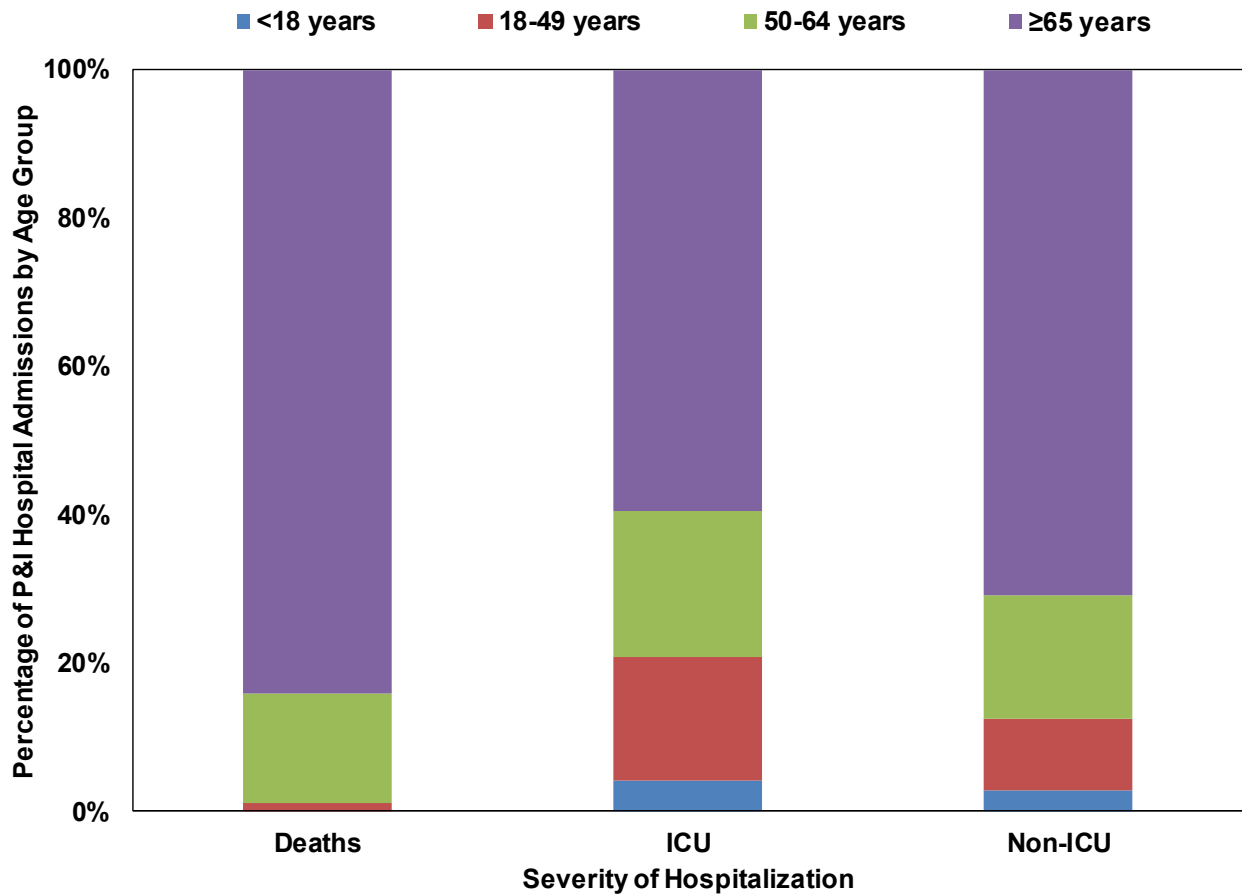
The majority of admissions for pneumonia and influenza did not result in intensive care unit (ICU) admission or death; however, 173 ICU admissions and 95 deaths have occurred among persons with P&I admission diagnoses (Figure 3a). The majority of P&I admissions occurred among persons  $\geq 65$  years of age across all severity categories, especially among deaths (Figure 3b). Please note that pneumonia and influenza admissions serve as a proxy for influenza activity, but do not necessarily represent influenza infections.

**Figure 3. Number (a) and age group distribution (b) of non-ICU, ICU, and deaths associated with P&I Admissions in Kaiser Permanente Northern California hospitals, 2019–2020 season to date**

(a)



(b)

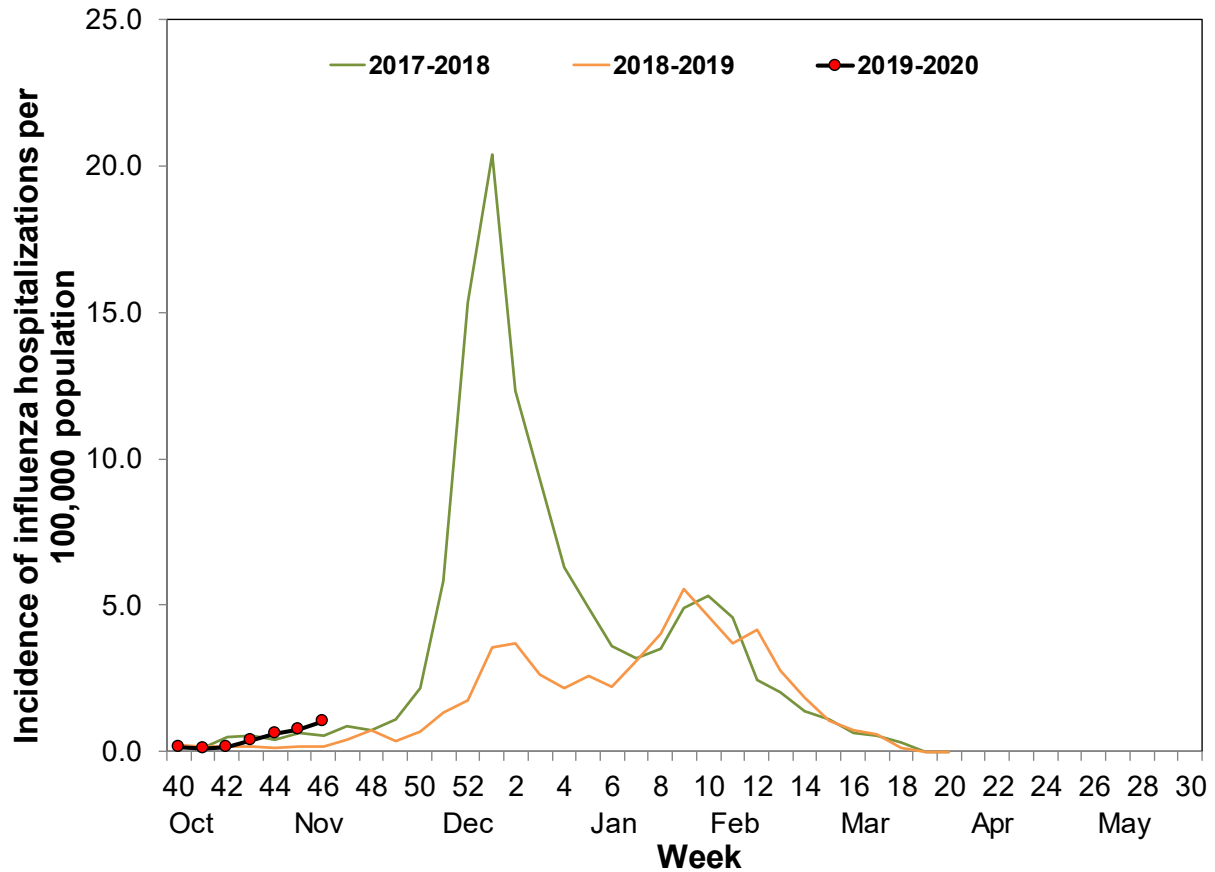


### 3. Influenza-Associated Hospitalizations, California Emerging Infections Program

The California Emerging Infections Program (CEIP), Influenza Surveillance Network (FluSurv-NET) conducts population-based surveillance for laboratory-confirmed influenza-associated hospitalizations among patients of all ages in Alameda, Contra Costa, and San Francisco counties.

The incidence of influenza-associated hospitalizations per 100,000 population was higher in week 46 (1.03) compared to Week 45 (0.76) (Figure 4). Data for the most recent two weeks are not presented because results are still being collected and are likely to change.

**Figure 4. Incidence of Influenza Hospitalizations in CEIP Counties, 2017–2020**

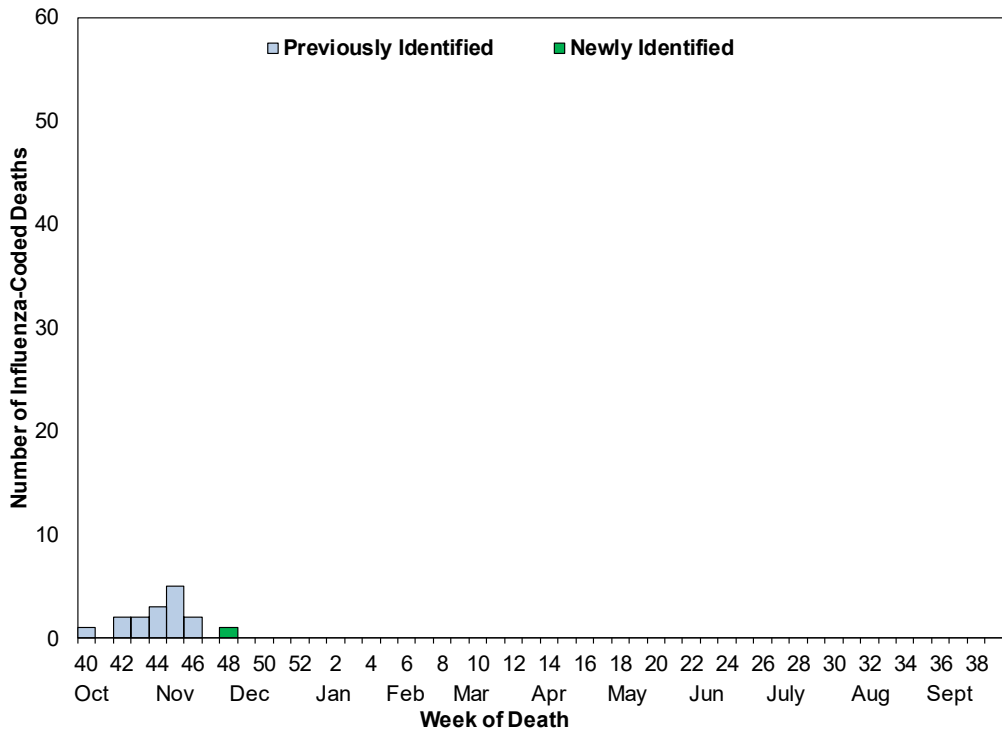


**4. Influenza Mortality Surveillance from Death Certificates**

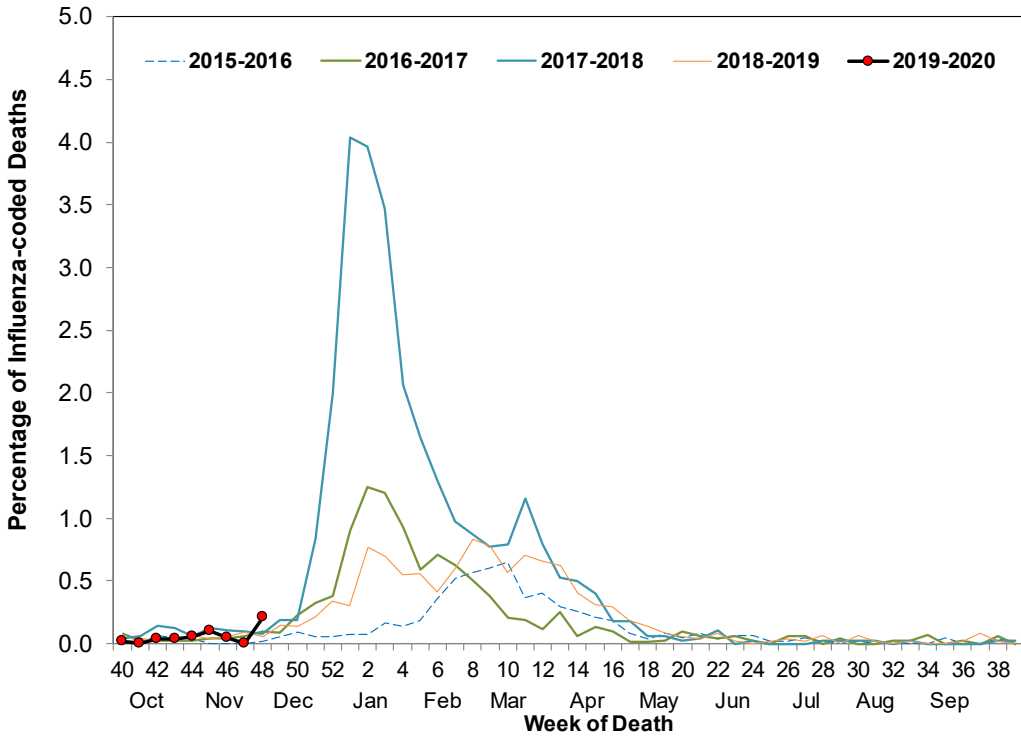
Deaths occurring in California among residents who had influenza noted in any cause of death field on the death certificate (text or coded) are defined as influenza-coded deaths. The percentage of influenza-coded deaths is calculated by dividing the number of influenza-coded deaths by the total number of all cause deaths during the same period. Influenza-coded deaths are not necessarily laboratory-confirmed and are an underestimate of all influenza-associated deaths.

During Week 48, one new influenza-coded death was identified. In addition, two new influenza-coded deaths were identified during Week 47. To date during the 2019–2020 influenza season, 16 influenza-coded deaths have been identified (Figure 5). The percentage of deaths coded as influenza during Week 48 was 0.2% compared to 0.0% during Week 47 (Figure 6).

**Figure 5. Number of Influenza-coded Deaths Identified from Death Certificates by Week of Death, 2019–2020 Season**



**Figure 6. Percentage of Influenza-coded Deaths Occurring in California among California Residents, 2015–2020**



## 5. Laboratory-Confirmed Severe Influenza-associated Pediatric Deaths

Influenza-associated deaths in children <18 years of age are nationally notifiable. The weekly influenza report includes confirmed deaths formally reported to CDPH through November 30, 2019 (Week 48).

Two laboratory-confirmed influenza-associated fatalities in children <18 years of age were reported to CDPH since the last published report, one in Week 47 and one in Week 48. To date, CDPH has received two reports of laboratory-confirmed influenza-associated deaths among children <18 years of age during the 2019–2020 influenza season.

### **B. Laboratory Update – Influenza**

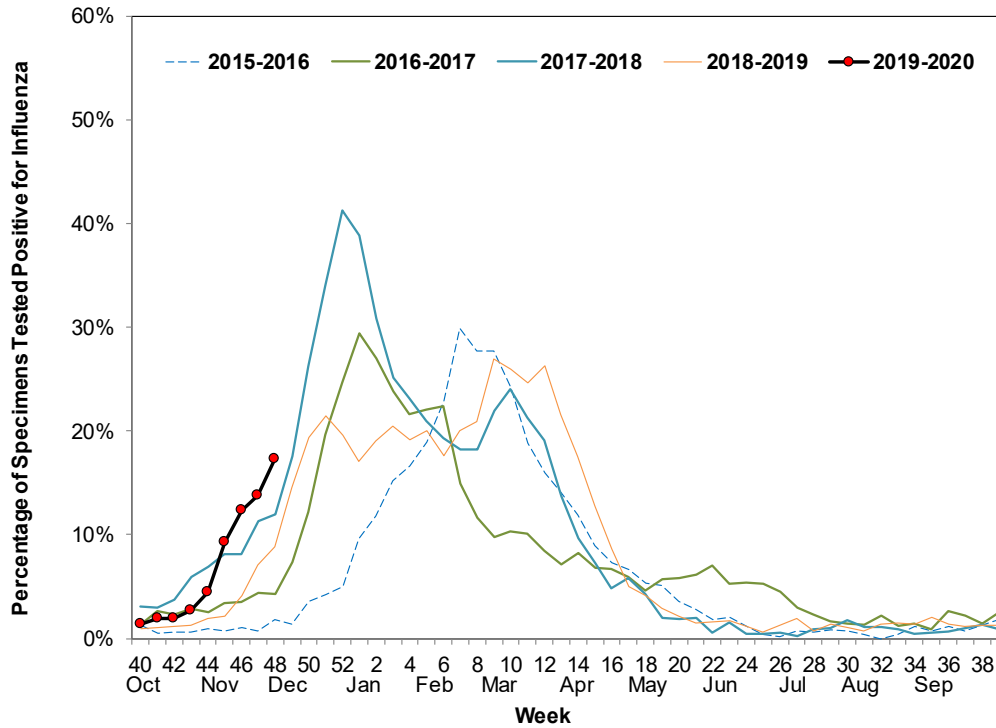
#### 1. Respiratory Laboratory Network (RLN) and Clinical Sentinel Laboratory Surveillance Results

Laboratory surveillance for influenza and other respiratory viruses involves the use of data from clinical sentinel laboratories (hospital, academic, and private laboratories) and public health laboratories in the Respiratory Laboratory Network located throughout California. These laboratories report the number of laboratory-confirmed influenza and other respiratory virus detections and isolations on a weekly basis.

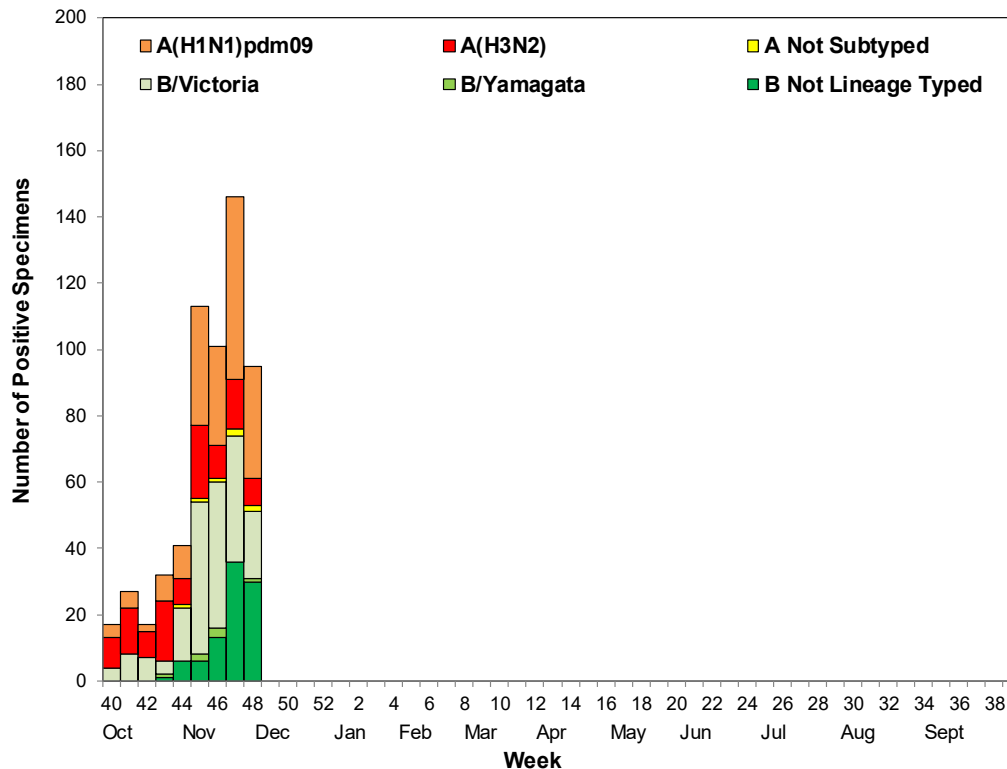
The overall percentage of influenza detections in clinical sentinel laboratories in Week 48 (17.3%) was higher than Week 47 (13.7%) (Figure 7). Additional details, including influenza typing and subtyping information from public health laboratories can be found in Figures 7 and 8 and Tables 1 and 2.

Neither the RLN nor CDPH-VRDL has identified any influenza viruses by polymerase chain reaction (PCR) that are suggestive of a novel influenza virus.

**Figure 7. Percentage of Influenza Detections at Clinical Sentinel Laboratories, 2015–2020**



**Figure 8. Number of Influenza Detections by Type and Subtype Detected in the Respiratory Laboratory Network, 2019–2020**





**Table 1. Respiratory Specimens Testing Positive for Influenza — Clinical Sentinel Laboratories, Current Week and Season to Date**

	<b>Current Week Number</b>	<b>Current Week Percent</b>	<b>Season to Date Number</b>	<b>Season to Date Percent</b>
<b>Number of Specimens Tested</b>	2,630		22,985	
<b>Influenza Positive</b>	454	17.3	1,821	7.9
<b>A</b>	143	31.5*	683	37.5*
<b>B</b>	311	68.5*	1,138	62.5*

\* Percent of specimens positive for influenza

**Table 2. Respiratory Specimens Testing Positive for Influenza by Influenza Type and Subtype — Respiratory Laboratory Network, Current Week and Season to Date**

	<b>Current Week Number</b>	<b>Current Week Percent</b>	<b>Season to Date Number</b>	<b>Season to Date Percent</b>
<b>Influenza Positive</b>	95		589	
<b>A</b>	44	46.3*	303	51.4*
<b>A (H1)pdm09</b>	34	77.3 <sup>†</sup>	184	60.7 <sup>†</sup>
<b>A (H3)</b>	8	18.2 <sup>†</sup>	112	37.0 <sup>†</sup>
<b>A, not subtyped</b>	2	4.5 <sup>†</sup>	7	2.3 <sup>†</sup>
<b>B</b>	51	53.7*	286	48.6*
<b>B Victoria</b>	20	39.2 <sup>‡</sup>	187	65.4 <sup>‡</sup>
<b>B Yamagata</b>	1	2.0 <sup>‡</sup>	7	2.4 <sup>‡</sup>
<b>B, not lineage typed</b>	30	58.8 <sup>‡</sup>	92	32.2 <sup>‡</sup>

\* Percent of specimens positive for influenza

<sup>†</sup> Percent of influenza A positives

<sup>‡</sup> Percent of influenza B positives

## 2. Influenza Virus Characterization

Close monitoring of influenza viruses is required to better assess the potential impact on public health. CDC characterizes influenza viruses through one or more tests including genetic characterization by analyzing viral [genome sequences](#), and antigenic characterization by [hemagglutination inhibition \(HI\)](#) assays and/or neutralization based Focus Reduction assays (FRA). These data are used to compare how similar, or well-inhibited, currently circulating influenza viruses are to the reference viruses. Antigenic and genetic characterization of circulating influenza viruses gives an indication of the influenza vaccines ability to induce an immune response against the wide array of influenza viruses that are co-circulating every season. However, annual [vaccine effectiveness estimates](#) are needed to determine how much protection was provided to the population by vaccination.

Ten influenza A (H3N2) viruses from California have been genetically characterized to

date during the 2019–2020 influenza season. All 10 influenza A (H3N2) viruses were members of the 3c.2a1 subclade (Table 3a). Antigenic characterization information will be presented once available.

Four influenza A (H1N1)pdm09 viruses from California have been genetically characterized to date during the 2019–2020 influenza season. The four influenza A (H1N1)pdm09 viruses were members of the 6B.1A clade (Table 3b). Antigenic characterization information will be presented once available.

Thirteen influenza B (Victoria) viruses from California have been genetically characterized to date during the 2019–2020 influenza season, of which three were antigenically characterized. The 13 influenza B (Victoria) viruses were members of V1A.3 clade. Of the three influenza B (Victoria) viruses antigenically characterized, one (33.3%) was well-inhibited by B/Colorado/06/2017-like (Victoria) antisera and two (66.7%) were poorly inhibited by B/Colorado/06/2017-like (Victoria) antisera (Table 3c).

No influenza B (Yamagata) viruses from California have been genetically or antigenically characterized to date during the 2019–2020 influenza season (Table 3d).

**Table 3 a–d. Influenza virus antigenic characterization and genomic sequencing by influenza A subtype and influenza B lineage type — California, 2019–2020 influenza season**

**a. Influenza A (H3N2) viruses**

Antigenic Characterization	Virus Clade/Subclade		Total
	3C.2a1	3C.3a*	
Well inhibited by A/Kansas/14/2017*	0	0	0
Poorly inhibited by A/Kansas/14/2017*	0	0	0
Not antigenically characterized	10	0	10
<b>Total A (H3N2)</b>	10	0	10

\* A/Kansas/14/2017 is the influenza A (H3N2) component included in the 2019–2020 quadrivalent and trivalent influenza vaccines and is a member of the 3c.3a clade

**b. Influenza A (H1N1)pdm09 viruses**

Antigenic Characterization	Virus Clade		Total
	6B.1	6B.1A*	
Well inhibited by A/Brisbane/02/2018*	0	0	0
Poorly inhibited by A/Brisbane/02/2018*	0	0	0
Not antigenically characterized	0	4	4
<b>Total A (H1N1)pdm09</b>	0	4	4

\* A/Brisbane/02/2018 is the influenza A (H1N1)pdm09 component included in the 2019–2020 quadrivalent and trivalent influenza vaccines and is a member of the 6B.1A clade

### c. Influenza B (Victoria) viruses

Antigenic Characterization	Virus Subclade		Total
	V1A.1*	V1A.3	
Well inhibited by B/Colorado/06/2017*	0	1	1
Poorly inhibited by B/Colorado/06/2017*	0	2	2
Not antigenically characterized	0	10	10
<b>Total B (Victoria)</b>	0	13	13

\* B/Colorado/06/2017-like is the influenza B (Victoria) lineage component included in the 2019–2020 quadrivalent and trivalent influenza vaccines and is a member of the V1A.1 subclade

### d. Influenza B (Yamagata) viruses

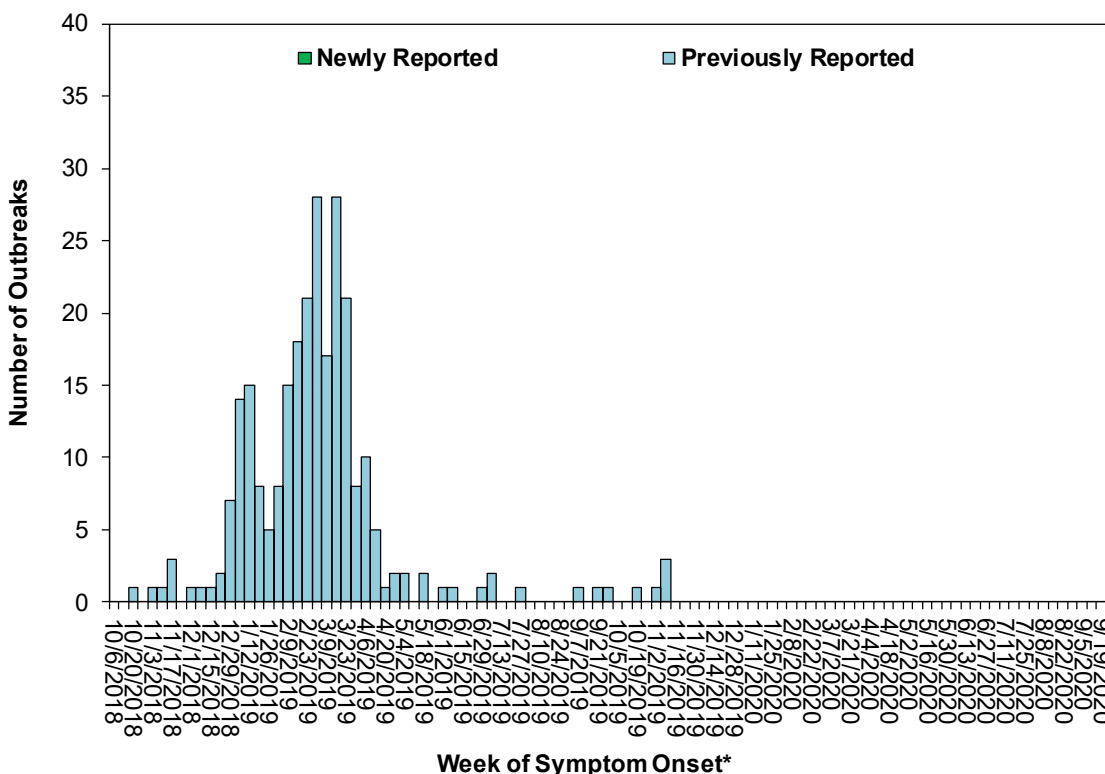
Antigenic Characterization	Virus Clade	
	Y3*	Total
Well inhibited by B/Phuket/3073/2013*	0	0
Poorly inhibited by B/Phuket/3073/2013*	0	0
Not antigenically characterized	0	0
<b>Total B (Yamagata)</b>	0	0

\* B/Phuket/3073/2013 is the influenza B (Yamagata) component included in the 2019–2020 quadrivalent influenza vaccine and is a member of the Y3 clade

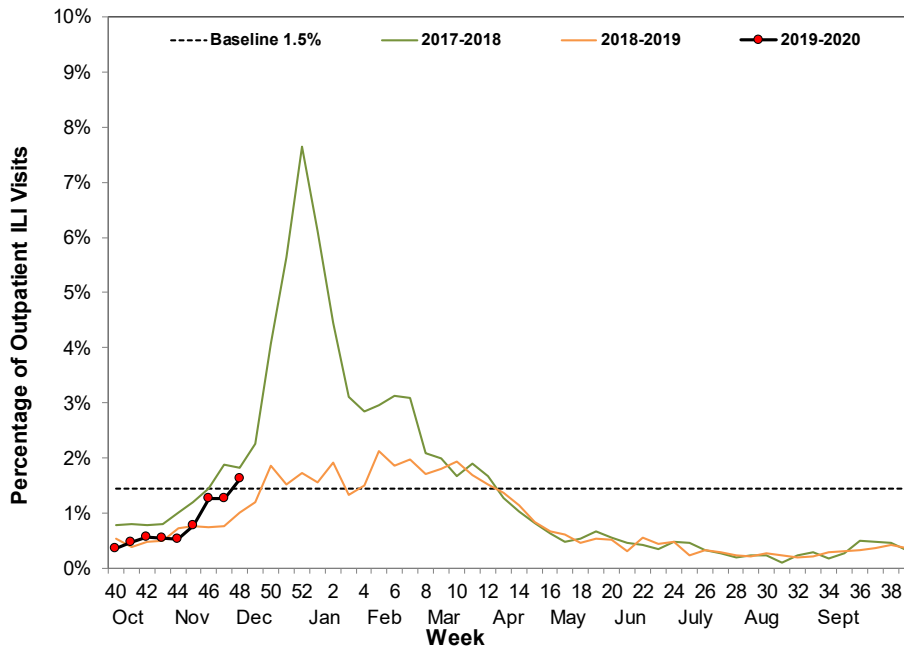
## D. Influenza-Associated Outbreaks

No laboratory-confirmed influenza outbreaks were reported to CDPH during Week 47 and Week 48. To date, five laboratory-confirmed influenza outbreaks have been reported to CDPH for the 2019–2020 season.

**Figure 9. Number of Laboratory-Confirmed Influenza-Associated Outbreaks by Week of First Onset, 2018–2020**



**Figure 10. Percentage of Influenza-like Illness Visits among Patients Seen by Sentinel Providers – California Border Region, 2017–2020**



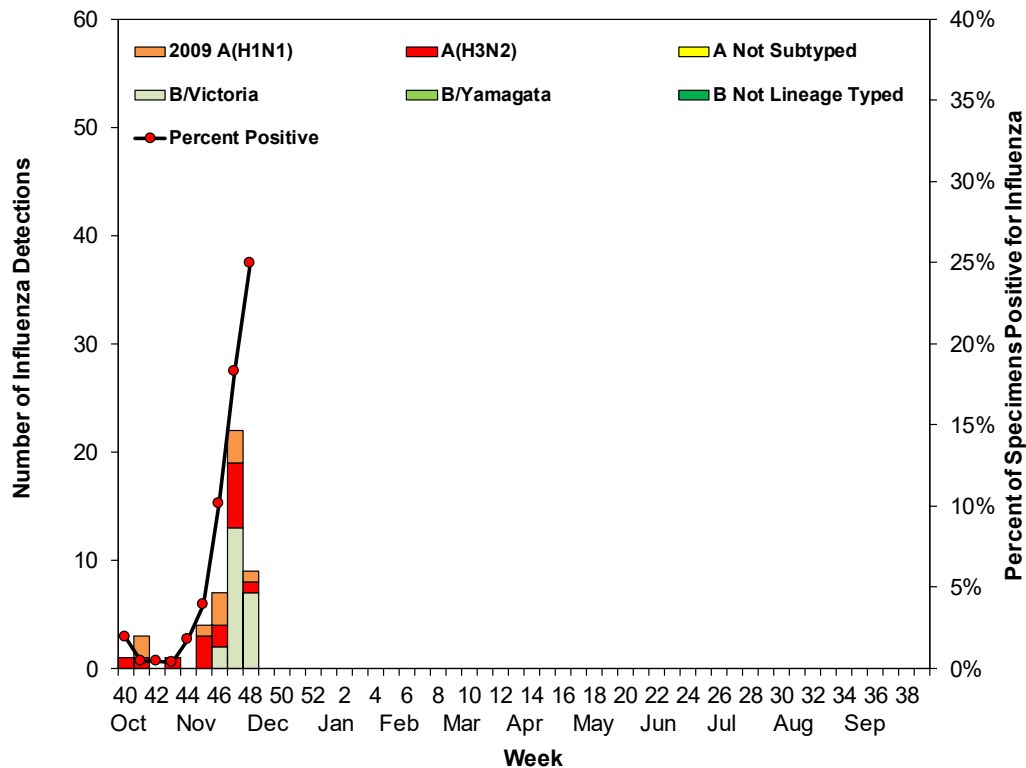
## 2. Virologic Surveillance Update

During Week 48, 477 respiratory specimens were tested from border region sentinel clinical laboratories; of these, 119 (24.9%) tested positive for influenza (19 [16.0%] influenza A and 100 [84.0%] influenza B). Cumulatively this season, a total of 3,053 respiratory specimens were tested from border region sentinel clinical laboratories; of these, 297 (9.7%) tested positive for influenza (45 [15.2%] influenza A; 252 [84.8%] influenza B).

During Week 48, nine influenza positive specimens were detected at border region RLN laboratories; of which, two (22.2%) were influenza A and seven (77.8%) were influenza B. Of the specimens that tested positive for influenza A at RLN laboratories, one (50.0%) was subtyped as A (H1)pdm09 and one (50.0%) was subtyped as A (H3). Of the specimens that tested positive for influenza B at RLN laboratories, seven (100.0%) were lineage typed as B (Victoria). Cumulatively this season, a total of 47 influenza positive specimens have been detected at border region RLN laboratories; of which, 25 (53.2%) were influenza A and 22 (46.8%) were influenza B. Of the 25 specimens that tested positive for influenza A at RLN laboratories, 10 (40.0%) were subtyped as A (H1)pdm09 and 15 (60.0%) were subtyped as A (H3). Of the 22 specimens that tested positive for influenza B, 22 (100.0%) were lineage typed as B (Victoria).

Laboratory data summarized in Figure 11 include data from border region influenza clinical sentinel laboratories (percentage of specimens testing positive for influenza) as well as data from border region RLN laboratories (influenza type and subtype/lineage type).

**Figure 11. Number of Influenza Detections by Type and Subtype Detected in Respiratory Laboratory Network Laboratories and the Percentage of Specimens Testing Positive at Clinical Sentinel Laboratories — California Border Region, 2019–2020**



**F. Other Respiratory Viruses**

**1. Laboratory-Confirmed Severe Respiratory Syncytial Virus Case Reports**

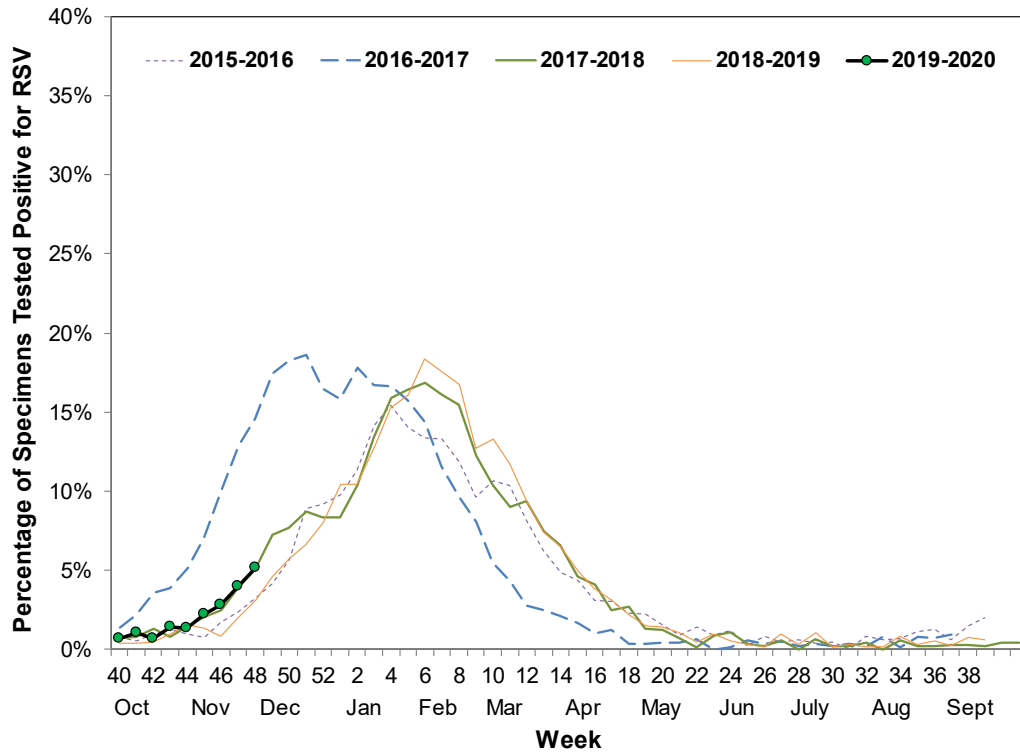
Currently, as mandated under Section 2500 of the California Code of Regulations, deaths among children aged 0–4 years with laboratory-confirmed respiratory syncytial virus (RSV) are reportable to CDPH. The weekly influenza report includes confirmed deaths formally reported to CDPH through November 30, 2019 (Week 48).

No laboratory-confirmed RSV-associated deaths among children <5 years of age were reported to CDPH during Week 47 or Week 48. To date, CDPH has received no reports of laboratory-confirmed RSV-associated deaths among children <5 years of age during the 2019–2020 influenza season.

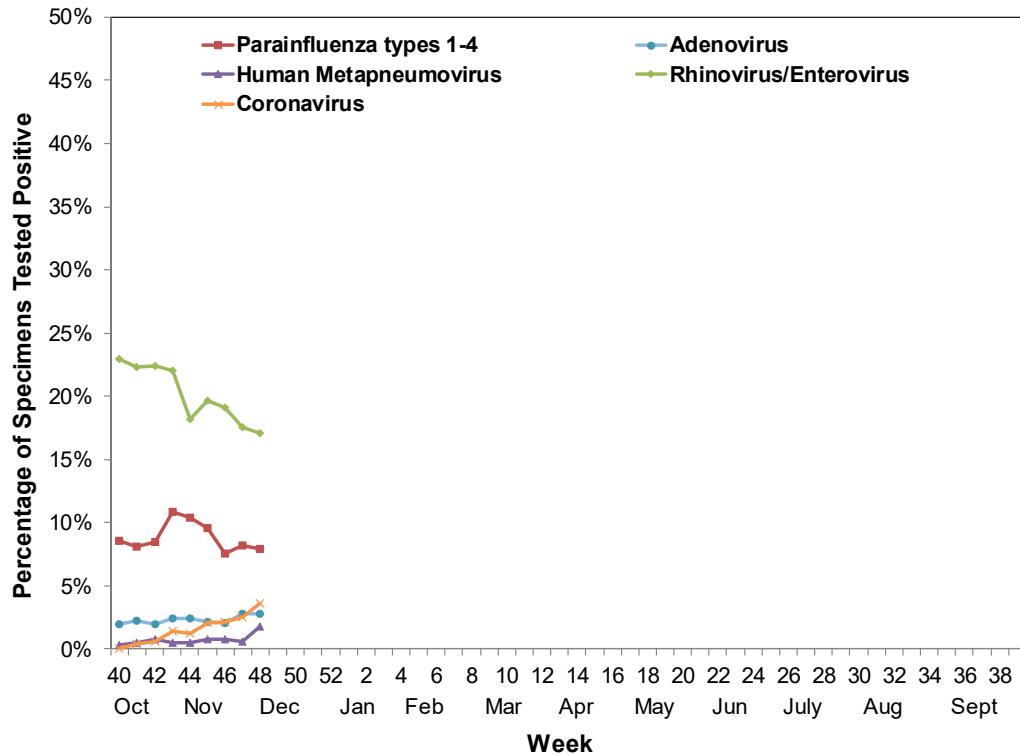
**2. Other Respiratory Virus Laboratory Update**

During Week 48, 2,311 specimens were tested for RSV and 119 (5.1%) were positive, which is higher compared to Week 47 (4.0%) (Figure 12). During Week 48, coronavirus and human metapneumovirus activity increased, rhinovirus/enterovirus and parainfluenza virus activity decreased; and adenovirus activity remained the same (Figure 13).

**Figure 12. Percentage of RSV Detections at Clinical Sentinel Laboratories, 2015–2020**



**Figure 13. Percentage of Other Respiratory Pathogen Detections at Clinical Sentinel Laboratories, 2019–2020**



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### **Activity Levels:**

**No Activity:** No laboratory-confirmed cases of influenza and no reported increase in the number of cases of ILI.

**Sporadic:** Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.

**Local:** Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in a single region of the state.

**Regional:** 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 with recent laboratory evidence of influenza in those regions.

**Widespread:** Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

### **California Regions:**

**Northern:** Alpine, Amador, Butte, Colusa, Del Norte, El Dorado, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Nevada, Placer, Plumas, Sacramento, Shasta, Sierra, Siskiyou, Sutter, Tehama, Trinity, Yolo, and Yuba counties

**Bay Area:** Alameda, Contra Costa, Marin, Napa, Solano, San Francisco, San Mateo, Santa Clara, Santa Cruz, and Sonoma counties

**Central Valley:** Calaveras, Fresno, Inyo, Kings, Mono, Madera, Mariposa, Merced, Monterey, San Benito, San Joaquin, Stanislaus, Tulare, and Tuolumne counties

**Upper Southern:** Kern, Los Angeles, San Luis Obispo, Santa Barbara, and Ventura counties

**Lower Southern:** Imperial, Orange, Riverside, San Bernardino, and San Diego counties

For questions regarding influenza surveillance and reporting in California, please email [InfluenzaSurveillance@cdph.ca.gov](mailto:InfluenzaSurveillance@cdph.ca.gov). This account is monitored daily by several epidemiologists.

To obtain additional information regarding influenza, please visit the [CDPH influenza website](https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/Immunization/Influenza.aspx) (<https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/Immunization/Influenza.aspx>).

A copy of the case report form for reporting any laboratory-confirmed influenza case that was either admitted to the ICU or died can be downloaded from the [CDPH influenza website](https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/Immunization/Influenza.aspx) (<https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/Immunization/Influenza.aspx>).

For information about national influenza activity, please visit the Centers for Disease Control and Prevention's [FluView](https://www.cdc.gov/flu/weekly/index.htm) (<https://www.cdc.gov/flu/weekly/index.htm>) and [FluView Interactive](https://www.cdc.gov/flu/weekly/fluviewinteractive.htm) (<https://www.cdc.gov/flu/weekly/fluviewinteractive.htm>) websites.

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