

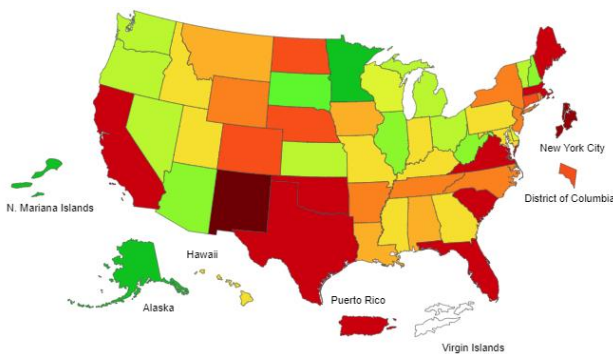
County of Riverside Weekly Influenza Surveillance Report

2023 CDC Disease Week 1 (1/1/2023-1/7/2023), Issue 14

Influenza (flu) is a contagious respiratory illness caused by influenza viruses that infect the nose, throat, and lungs. Some people, such as older people, young children, and people with certain health conditions, are at higher risk for serious flu complications. According to CDC's Weekly Influenza Surveillance Report and CDPH's Influenza and Other Respiratory Viruses Weekly Report (Figure 1), the current influenza and influenza-like illness (ILI) activity level in Riverside County was Low^{1,2}. Riverside County collects influenza data through a variety of sources, including CDC's Electronic Surveillance System for the Early Notification of Community-based Epidemics (ESSENCE), California Integrated Vital Records System (Cal-IVRS), California Immunization Registry (CAIR), Riverside County Public Health Laboratory, Riverside University Health System (RUHS) and sentinel providers. This report summarizes the current influenza surveillance data in the county.

Figure 1a. National ILI Activity Level Map from CDC, Week 1

Figure 1b. State ILI Activity Level Map from CDPH, Week 1



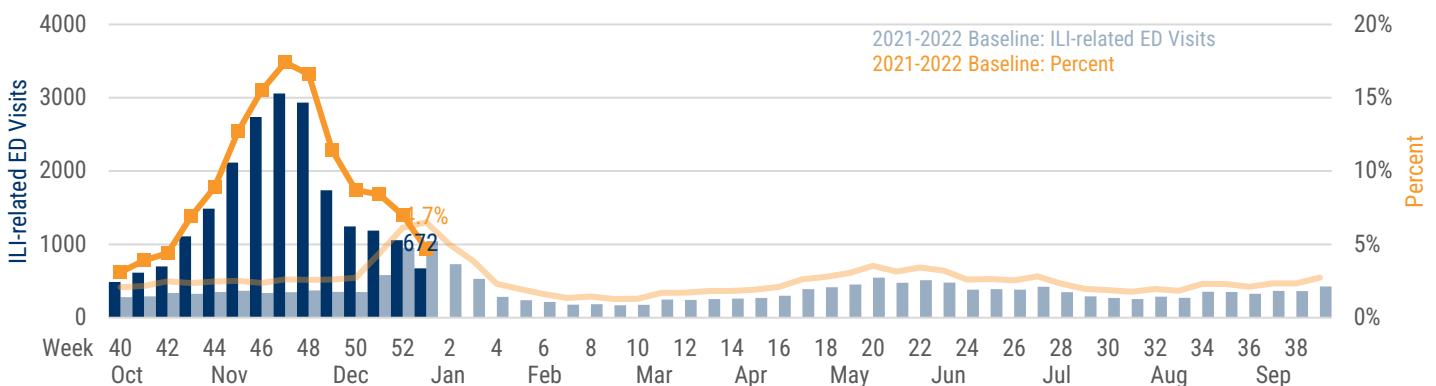
WEEK 1 Key Points at-a-glance

- Low ILI activity level in Riverside County
- 7.0% ➔ 4.7% ILI among emergency department visits
- 5.1% ➔ 3.3% ILI among outpatient service visits
- 9.3% ➔ 7.5% positivity rate for influenza
- 532 cumulative deaths due to pneumonia and influenza
- 21.6% ➔ 21.9% influenza vaccination rate in residents

Emergency Department Syndromic Surveillance

Emergency department (ED) data are retrieved from ESSENCE. ILI records were captured based on discharge diagnosis. During week 1, ILI accounted for 4.7% (N=672) of all ED visits in Riverside County (Figure 2), 18 of them (2.7%) were admitted to the hospital after ED visit (Figure 3). Comparing to the previous week, ILI-related ED visits decreased by 2.3% while percent of patients hospitalized after ILI-related ED visit increased by 0.7%. ILI-related ED visits occurred across all age groups (Figure 4). However, after adjustment for age³, children aged 0-4 accounted for 62.5% of all ILI-related ED visits during this influenza season (Figure 5).

Figure 2. ILI-related ED Visits and Percent of All ED Visits



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Figure 3. Numbers of Patients Hospitalized after ILI-related ED Visit and Percent of All ILI-related ED Visits

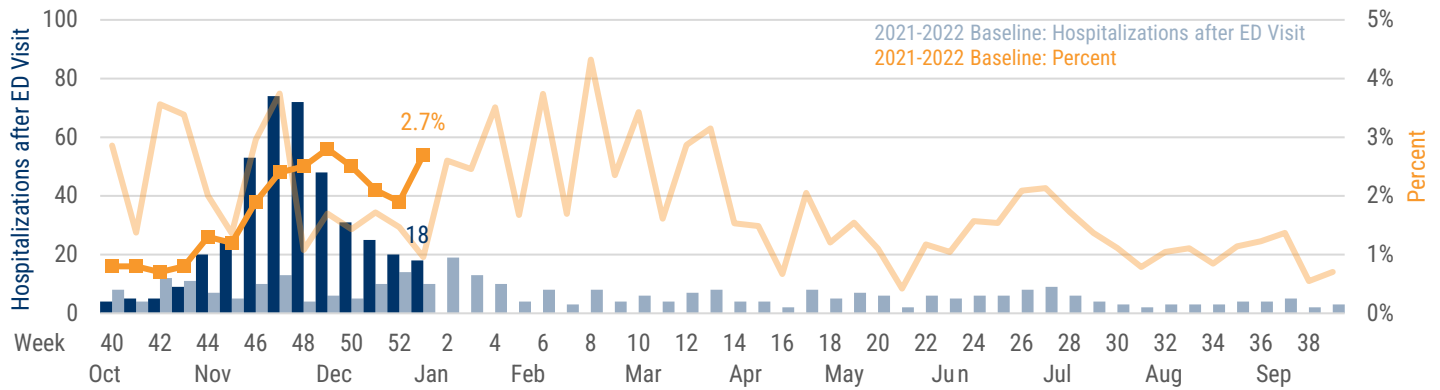


Figure 4. ILI-related ED Visits by Age Group

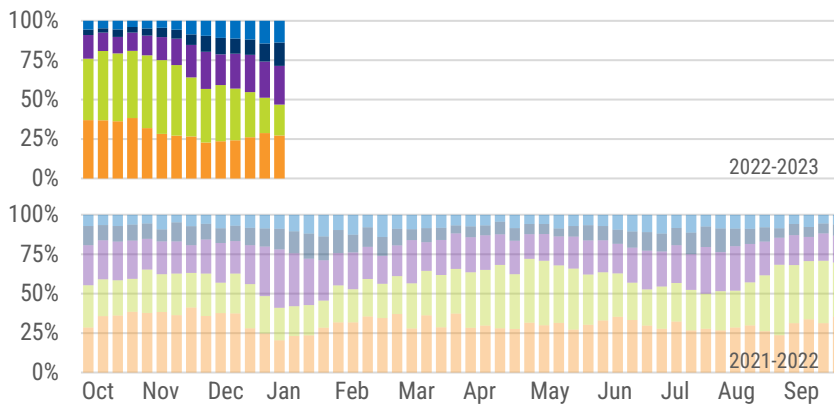
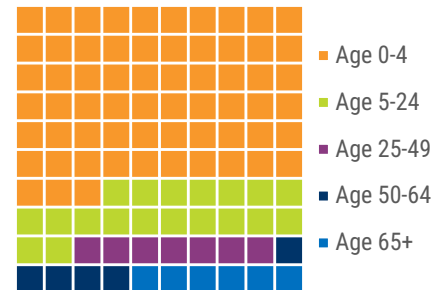
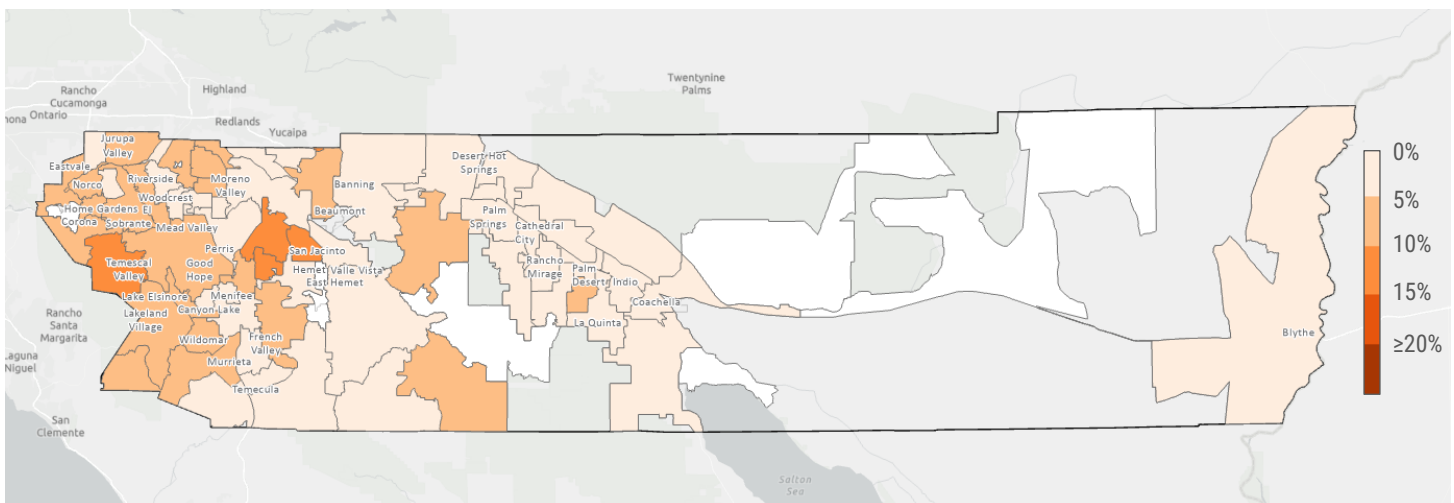


Figure 5. Cumulative Age-adjusted Proportion of ILI-related ED Visits by Age Group, 2022-2023



In order to better understand the potential geographic differences in ILI activity level, a heat map was produced based on the proportion of ILI-related ED visits over the total ED visits by patient's zip code (Figure 6). Areas with higher ILI levels could be considered for additional outreach regarding prevention and mitigation of respiratory illnesses.

Figure 6. Proportion of ILI-related ED Visits Over the Total ED Visits by Patient's Zip Code, Week 1



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Outpatient Service Syndromic Surveillance

RUHS reports ILI-related outpatient visits weekly, including any face-to-face, phone and video visits. ILI records were retrieved based on visit diagnosis, which was not laboratory-confirmed. During week 1, the percentage of outpatient visits attributed to ILI was 3.3% (N=186) with a decrease of 1.8% than the previous week (Figure 7). Similarly, ILI-related outpatient visits occurred across all age groups (Figure 8). After adjustment for age³, children aged 0-4 accounted for 56.3% of all ILI-related outpatient visits during this influenza season (Figure 9).

Figure 7. ILI-related Outpatient Visits and Percent of All Outpatient Visits

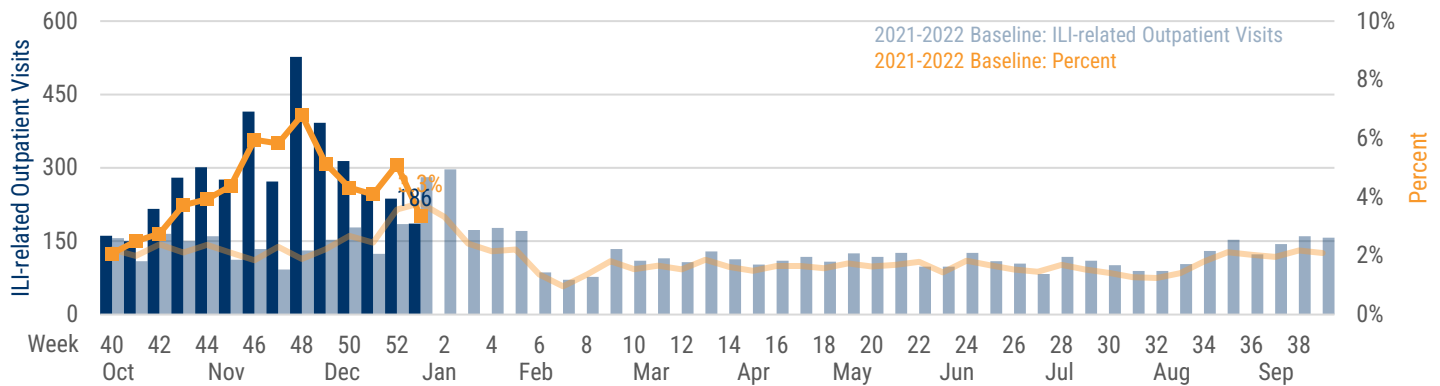


Figure 8. ILI-related RUHS Outpatient Visits by Age Group

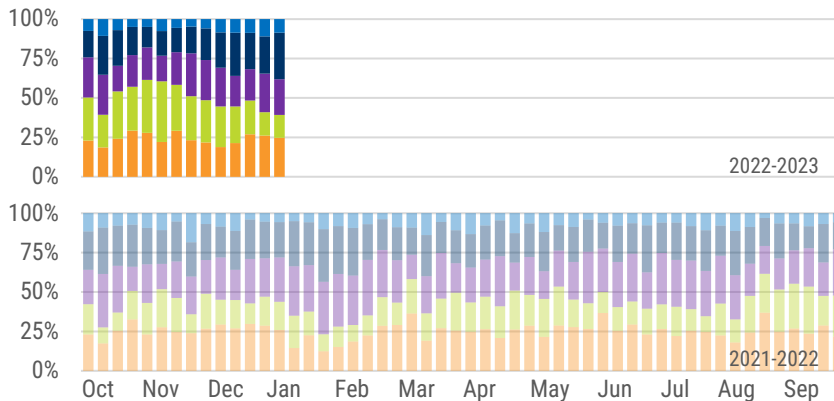
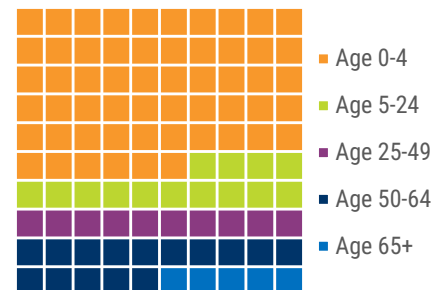


Figure 9. Cumulative Age-adjusted Proportion of ILI-related Outpatient Visits by Age Group, 2022-2023



Clinical Laboratory Surveillance

Clinical laboratory surveillance data are provided by RUHS where influenza tests or multiplex tests are used to detect and identify influenza as well as pathogens that are most commonly associated with respiratory infections, including SARS-CoV-2 and respiratory syncytial virus. During week 1, 545 specimens were tested and 41 of them (7.5%) were positive for influenza virus (Figure 10). Influenza A was the dominant strain, accounting for 95.1% of positive specimens. Between weeks 40 and 1, the cumulative positivity rate for influenza was 16.5%, higher than the California average of 15.6% but lower than the national average of 16.8%^{2,5} (Table 1).

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Figure 10. Specimens Tested for Influenza and Positivity Rate

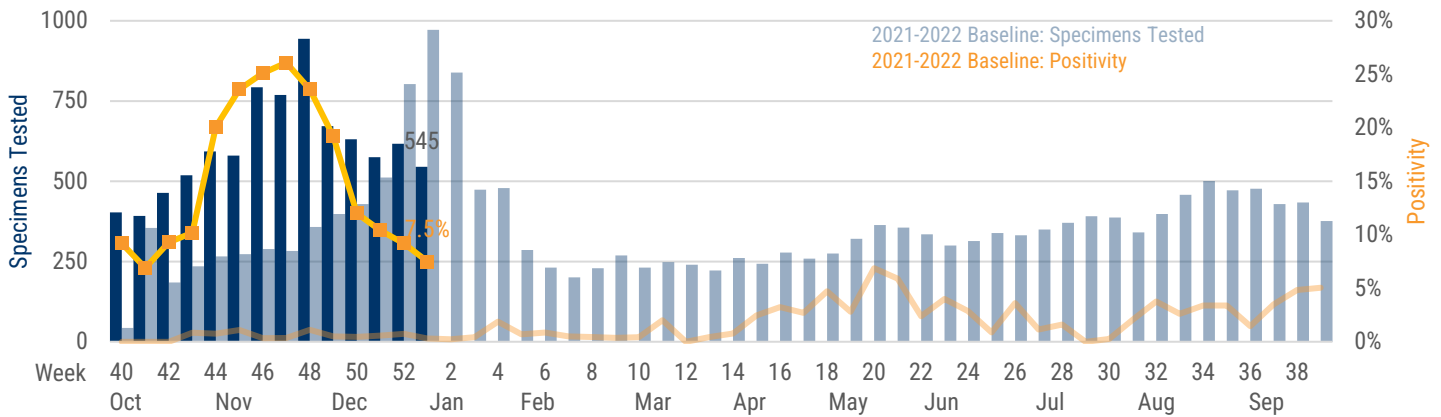
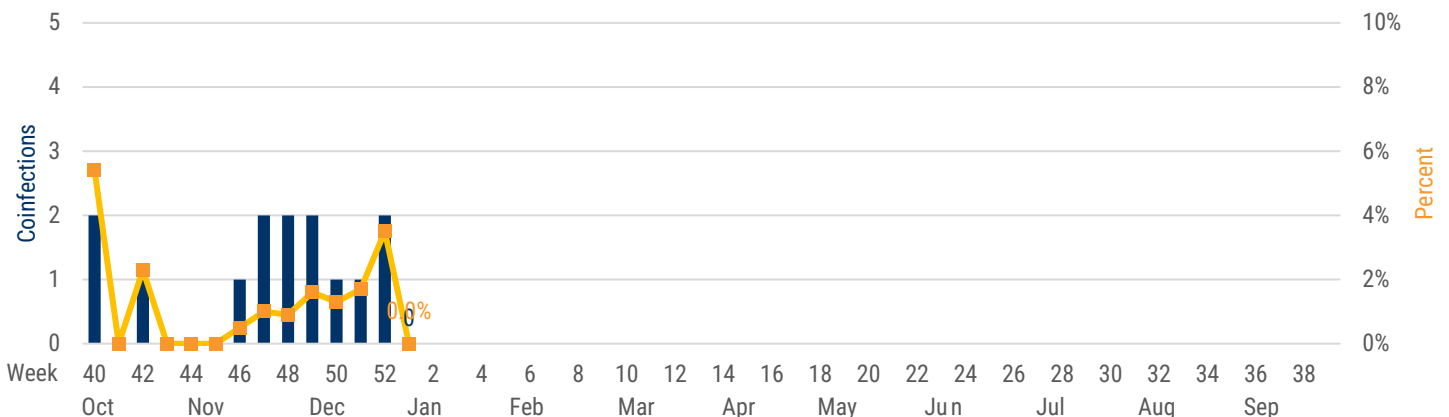


Table 1. Specimens Tested for Influenza by Type, This Week and Season to Date

	Riverside County		California ²		Nationwide ⁵	
	Week 1	Data Cumulative Since Week 40	Week 1	Data Cumulative Since Week 40	Week 1	Data Cumulative Since Week 40
Specimens Tested	545	8497	18,365	338,441	96,123	1,791,474
Positive Specimens	41 (7.5%)	1402 (16.5%)	1,289 (7.0%)	52,939 (15.6%)	8,281 (8.6%)	300,365 (16.8%)
Positive Specimens by Type						
Influenza A	39 (95.1%)	1384 (98.7%)	1,279 (99.2%)	52,800 (99.7%)	8,169 (98.6%)	298,392 (99.3%)
Influenza B	2 (4.9%)	18 (1.3%)	10 (0.8%)	139 (0.3%)	112 (1.4%)	1,973 (0.7%)

Riverside County actively monitors coinfections with both influenza and SARS-CoV-2 using clinical laboratory data. According to the state guidance, an influenza and SARS-CoV-2 coinfection case is defined as a patient who tested positive for both influenza and SARS-CoV-2 simultaneously with a multiplex test or with separate tests (PCR or antigen) within 14 days apart. During week 1, no coinfection cases were identified (Figure 11).

Figure 11. Numbers of Influenza and SARS-CoV-2 Coinfections and Percent



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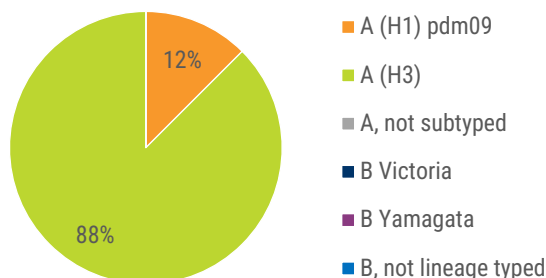
Public Health Laboratory Surveillance

Riverside County Public Health Laboratory monitors the proportion of circulating viruses that belong to each influenza subtype or lineage. Public Health Laboratory Surveillance is important to detect novel influenza viruses. Details can be found in Table 2 and Figure 12.

Table 2. Influenza Specimens by Subtype or Lineage

	Week 1	Data Cumulative Since Week 40
Specimens Tested	19	217
A positive	1	24
A (H1) pdm09	0	3
A (H3)	1	21
A, not subtyped	0	0
B positive	0	0
B Victoria	0	0
B Yamagata	0	0
B, not lineage typed	0	0

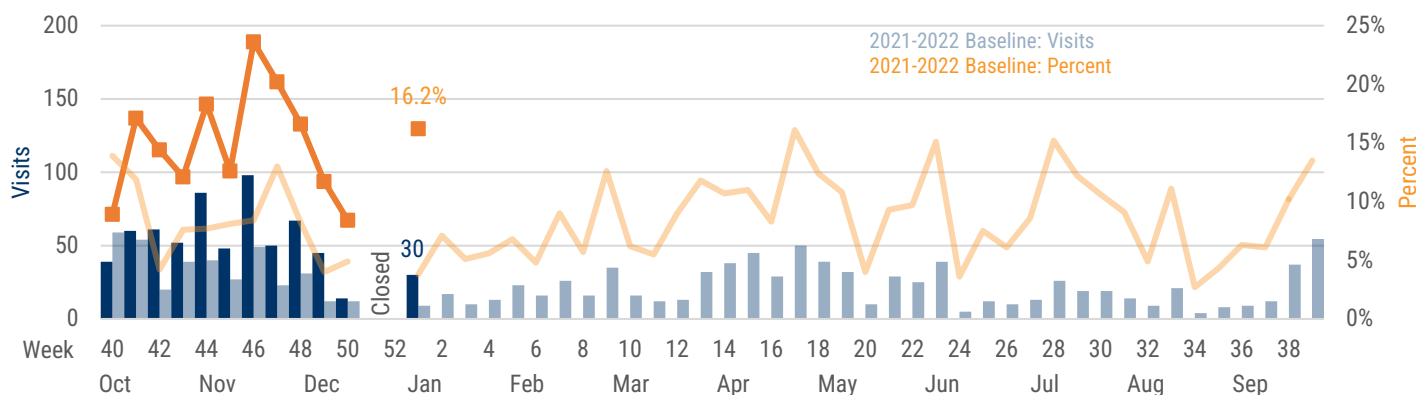
Figure 12. Percent of Influenza Strains by Subtype/Lineage



Sentinel Site Surveillance

Sentinel providers are recruited to facilitate a comprehensive influenza surveillance program, providing critical data for monitoring the impact of influenza and guiding prevention and control activities, vaccine strain selection, and patient care in Riverside County. During week 1, ILI accounted for 16.2% (N=30) of all sentinel site visits with an increase of 7.8% than the previous week (Figure 13). 15 of them were tested for influenza and none of them were positive (Figure 14). Data from sentinel sites are significantly affected by their served population and the results may not be applicable to the general population.

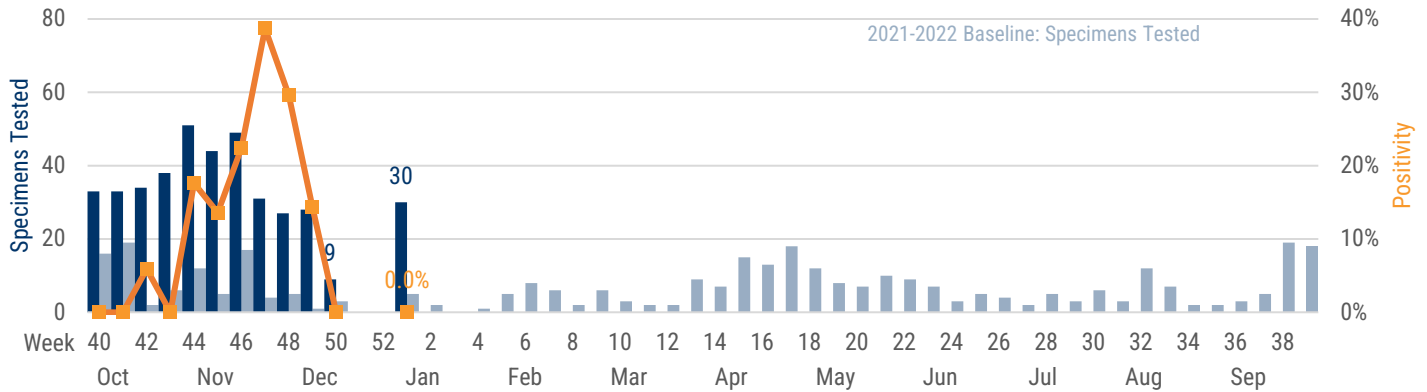
Figure 13. Sentinel Site ILI-related Visits and Percent



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Figure 14. Sentinel Site Specimens Tested for Influenza and Positivity Rate



Deaths Registered with Either or Both of Pneumonia and Influenza

Pneumonia and influenza (P&I) are among the leading causes of death in the United States, accounting for over 1.6% of all deaths in 2020. During week 1, 13.5% (N=18) of deaths were due, in part, to P&I in Riverside County (Figure 15). Between weeks 40 and 1, the cumulative proportion of P&I death was 10.5%. P&I deaths in the recent weeks may be undercounted because of the lengthy death certificate processing time. Newly identified P&I deaths will be added to the according week. Overall, people aged 65+ accounted for the majority of P&I deaths in Riverside County and very few P&I deaths happened among young people aged 0-24 (Table 3). Pneumonia, rather than influenza, contributed to the majority of P&I deaths, which were largely affected by other pneumonia causing diseases such as SARS-CoV-2.

Figure 15. Numbers of P&I Deaths and Percent

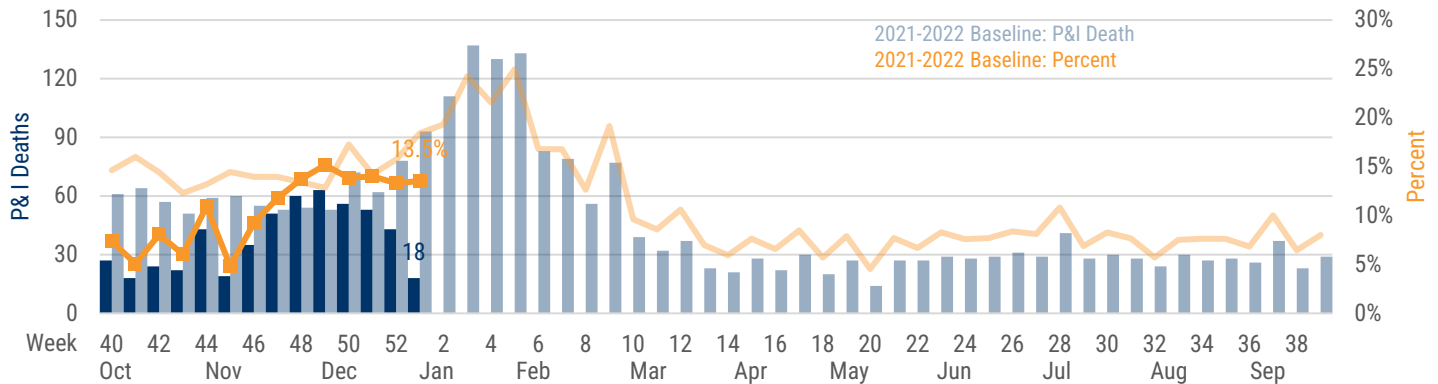


Table 3. Percent of P&I Deaths by Age Group

	Age 0-4	Age 5-24	Age 25-49	Age 50-64	Age 65+	Total
P&I Death & Percent	1 (0.2%)	6 (1.1%)	21 (3.9%)	63 (11.8%)	441 (82.9%)	532

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Influenza Vaccinations

Influenza causes millions of illnesses, hundreds of thousands of hospitalizations and tens of thousands of deaths in the United States, but less than half of Americans get an annual flu vaccine. Flu vaccine distribution generally begins in August and continues until all of the vaccines are distributed. The date of first dose was used for those who received two doses of flu vaccine. By the end of week 1, 21.9% of residents in Riverside County (N=549,680) had received a flu vaccine, 1.5% higher than the corresponding cumulative coverage rate during the 2021-2022 influenza season (Figure 16). Vaccination coverage was highest among people aged 65+ and lowest among people aged 5-24 (Table 4). Only 58.1% of the records had valid race and ethnicity information. Proportionately, Whites, American Indians or Alaska Natives and Black or African American were slightly underrepresented than their counterparts (Table 5). Please note currently providers are not required to submit flu vaccine data to CAIR. Therefore, the vaccinated population may be underestimated.

Figure 16. Influenza Vaccinations in Riverside County, August 2022-Present

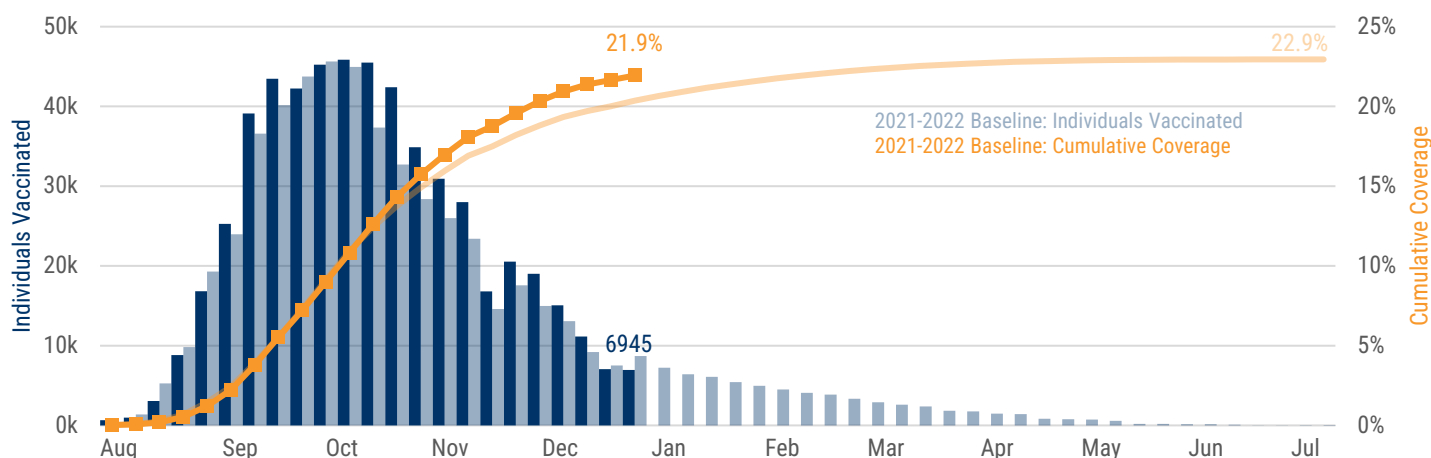


Table 4. Influenza Vaccinations by Age Group in Riverside County, August 2022-Present

	Age 0-4	Age 5-24	Age 25-49	Age 50-64	Age 65+	Total
Influenza Vaccination & Percent	28,798 (19.6%)	93,432 (13.5%)	113,639 (14.4%)	125,672 (27.8%)	188,139 (44.1%)	549,680 (21.9%)

Table 5. Influenza Vaccinations by Racial/Ethnic Group in Riverside County, August 2022-Present

	American Indian or Alaska Native	Asian	Native Hawaiian or Other Pacific Islander	Black or African American	White	Latinx
Influenza Vaccination & Proportion	846 (0.3%)	25,310 (7.9%)	2,620 (0.8%)	19,444 (6.1%)	110,448 (34.6%)	160,506 (50.3%)
Proportion Based on Standard Population ³	0.5%	6.2%	0.3%	6.2%	38.1%	48.7%
Representation	Under by 0.2%	Over by 1.7%	Over by 0.5%	Under by 0.1%	Under by 3.5%	Over by 1.6%

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Public Health Recommendations

The best way to reduce risk from seasonal flu infection and its potentially serious complications is to get vaccinated annually. Flu vaccines are designed to protect against the four viruses that will be most common this influenza season and are recommended for individuals 6 months and older. Flu vaccines for the 2022-2023 influenza season are available now. COVID-19 preventive measures, such as social distancing, hand washing, and mask wearing, can also effectively prevent influenza.

References

1. Weekly US Map: Influenza Summary Update: <https://www.cdc.gov/flu/weekly/usmap.htm>
2. Influenza and Other Respiratory Viruses Weekly Report: <https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/Immunization/Influenza.aspx>
3. Population estimates in Riverside County were retrieved from 2022 population estimates from California Department of Finance
4. National and regional baseline information for outpatient illness surveillance: <https://www.cdc.gov/flu/weekly/overview.htm>
5. U.S. Virologic Surveillance: <https://www.cdc.gov/flu/weekly/index.htm#ClinicalLaboratories>