Riverside University HEALTH SYSTEM
Public Health

HEALTH MATTERS BRIEF

Influenza Immunizations in Riverside County, CA

Epidemiology & Program Evaluation • December 2024

INTRODUCTION

The Centers for Disease Control and Prevention (CDC) recommends influenza vaccines for most of the population ages 6 months and over (Grohskopf et al, 2023).

With an estimated effectiveness of 38%, the influenza vaccine has been pivotal in reducing illness, irregular medical visits, hospitalizations, and deaths. Vaccine effectiveness is measured by observing how well the vaccine works to protect communities as a whole.

Because influenza viruses are constantly evolving, the influenza vaccine is reformulated each year to target the most prevalent strain and maximize the vaccine effectiveness at preventing severe illness. (Rolfes et al 2019). The effectiveness of the vaccine can vary from year to year depending on how closely the vaccine formulation matches the circulating strains.

Receiving an annual vaccination in the fall of each season can reduce an individual's risk of illness while reducing the spread of infection throughout the community.

Children ages 6 months to 4 years are 41% less likely to require hospitalization from the influenza virus if they are vaccinated.

This brief will examine influenza vaccine coverage in Riverside County by exploring data from the California Immunization Registry (CAIR). The statewide database allows for characterization of vaccine distribution across the County and identify populations that would benefit from increased access to vaccination information and resources. Influenza vaccination trends will comprise the first in a continuing series of briefs examining immunization coverage in Riverside County.

RIVERSIDE COUNTY KEY FINDINGS

Nearly 75% of communities[1] had lower influenza vaccine coverage than the county average[2]

Women are more likely than men to receive a dose of influenza vaccine in all age groups except 65+ years

Roughly 1 in 4 Riverside County residents receives an influenza vaccine dose each season

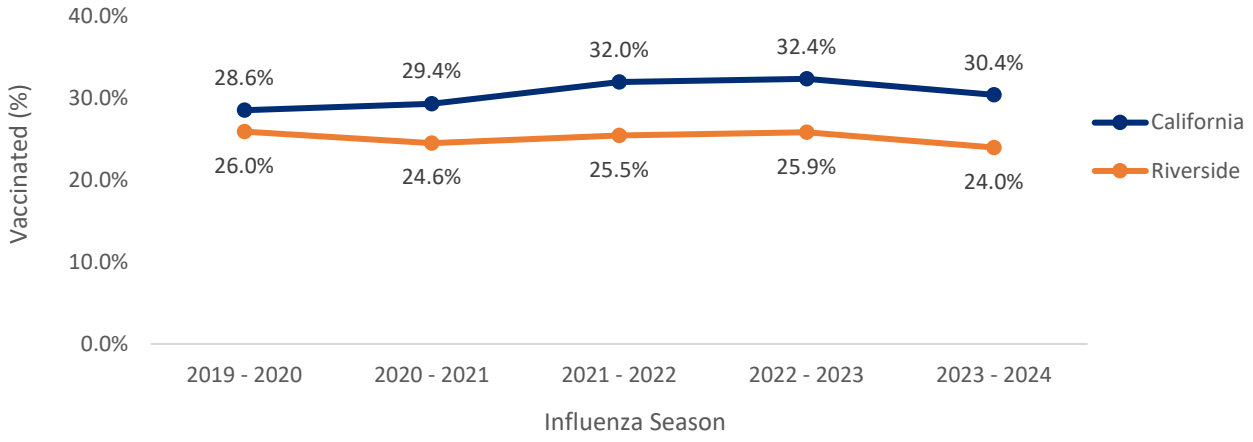
Recent trends show a decrease in toddlers receiving influenza vaccines while vaccination among seniors has been increasing

SEASONALITY

For the purposes of this brief, each influenza season starts July 1st and extends through June 30th of the following year. Influenza vaccine coverage has remained steady in recent years at around 25% of eligible residents. Local coverage has remained roughly 5% lower than Statewide levels since the COVID-19 pandemic began in 2019-20.

With the passage of AB 1797 in late 2022, implementing a California-wide mandate to report immunizations to the California Department of Public Health (CDPH), it was anticipated that reported vaccine coverage levels would increase due to an increased number of records entering the system; however, there is little evidence that the change in reporting requirements has led to an observable spike in influenza vaccination coverage levels as show in Figure 1 below.

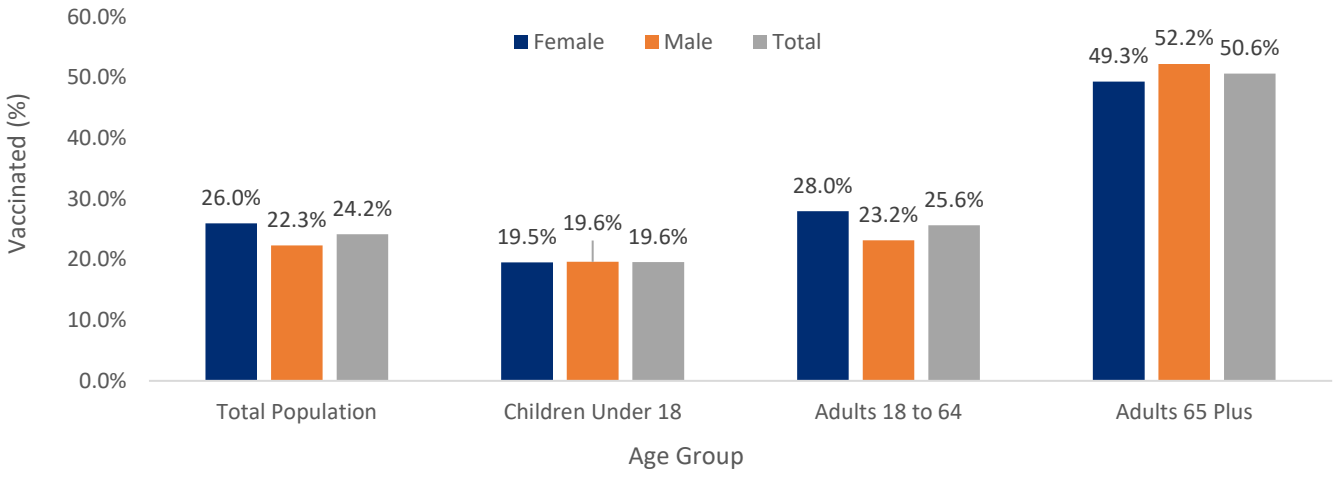
Figure 1. Percent of Population Receiving Influenza Vaccine by Season, 2019-2024



DEMOGRAPHICS OF VACCINE COVERAGE

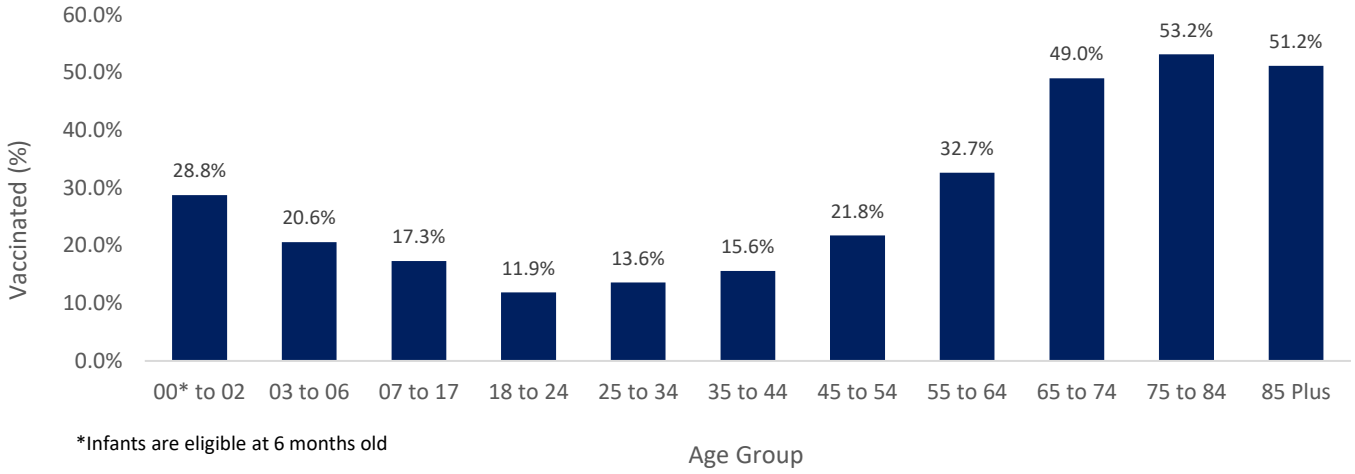
During the 2023-24 influenza season, vaccine coverage varied widely across age groups with the highest coverage levels seen among the oldest county residents. Influenza vaccine coverage among adults 65 plus was nearly twice as high as other age groups (Figure 2). Females have higher coverage levels than males across all age groups except among those 65 and older where males have a slightly higher coverage level. A more detailed breakdown of vaccine coverage by age is provided in Figure 3, while an analysis of influenza vaccination trends by race/ethnicity will be provided in future reports.

Figure 2. Percent of Population Receiving Influenza Vaccine by Age and Sex, 2023-24 Season



DETAILED AGE GROUP COVERAGE

Figure 3. Percent of Population Receiving Influenza Vaccine by Detailed Age Groups, 2023-24

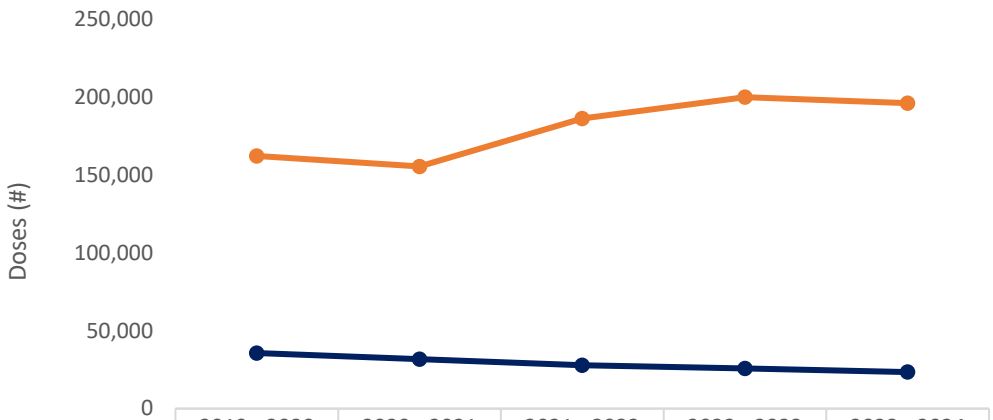


*Infants are eligible at 6 months old

Recent data from the 2023-2024 influenza season (Figure 3) demonstrates a dramatic variation in the vaccination coverage across the age spectrum, with seniors nearly 5 times more likely to have received an influenza vaccine dose than residents in their early 20's and 30's. Although nearly one out of three children 6 months through 2 years of age had received an influenza vaccine dose, the coverage level declined through adolescence.

Figure 4 below illustrates that the number of influenza vaccine doses administered among the two most vulnerable population age groups has been displaying a diverging trend for the past five seasons with fewer doses given to toddlers and more doses given to seniors. While it is unclear what may be driving this trend, it is possible that the severe morbidity and mortality impacts of COVID-19, along with targeted vaccine messaging, has prompted an increase in the perceived benefits of vaccination among the senior population. In fact, recent data from the CDC confirms that childhood influenza vaccination rates have continued to decline since the start of the COVID-19 pandemic with national coverage levels down 8.3% since 2019-2020 among children 6 months through 17 years of age (CDC, 2024).

Figure 4. Influenza Vaccination Doses Administered Among Vulnerable Age Groups, 2019-2024

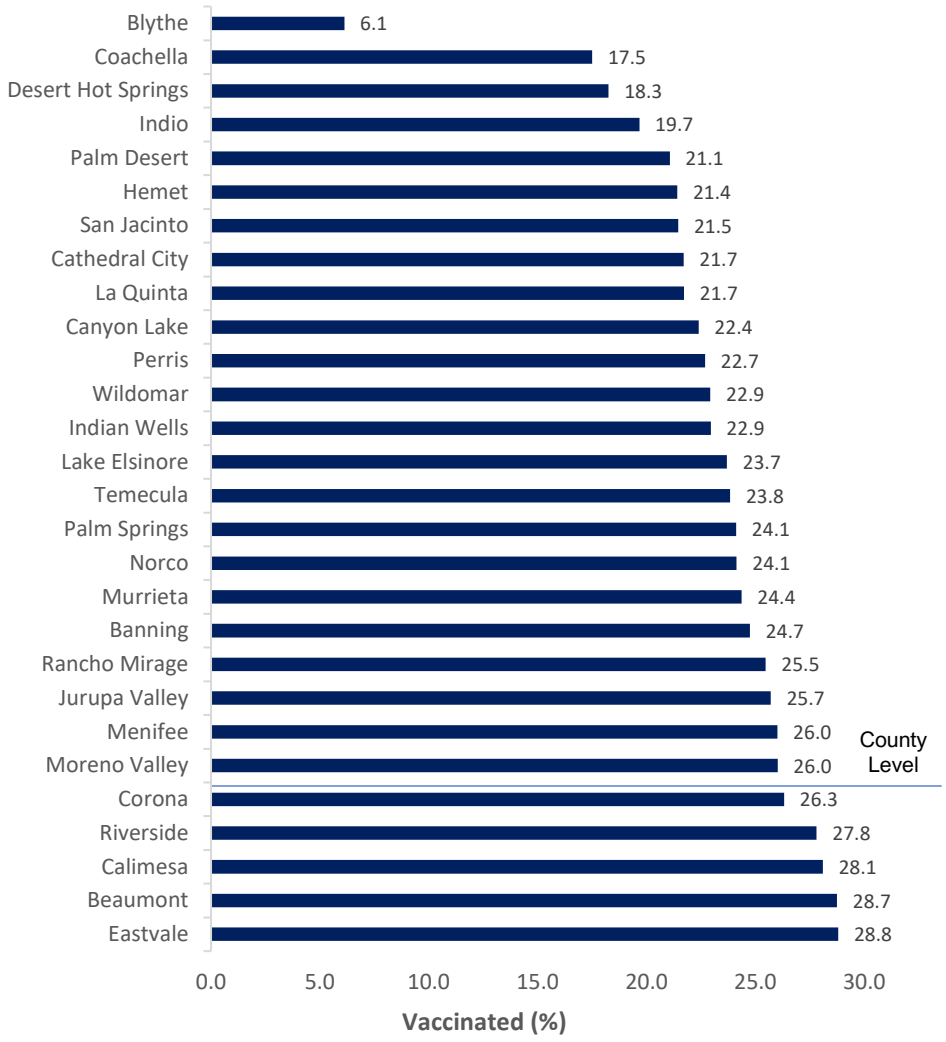


	2019 - 2020	2020 - 2021	2021 - 2022	2022 - 2023	2023 - 2024
00* to 02	35,713	31,684	27,973	25,921	23,477
65 Plus	162,333	155,652	186,477	200,147	196,358

*Infants are eligible at 6 months old

REGIONS

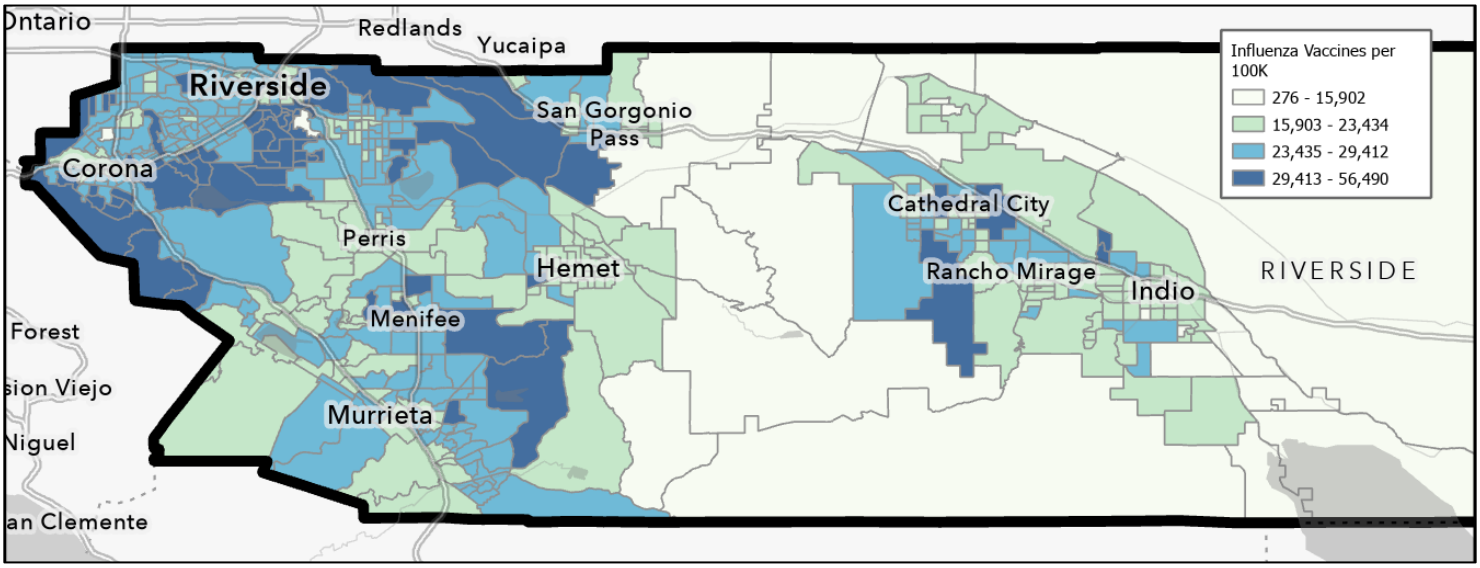
Figure 5. Percent of Population Receiving Influenza Vaccine by City, 2019-2020



Immunization data from the 2019-2020 influenza season was matched with 2020 census population data to provide the most accurate estimates of vaccine distribution at the sub-county level. The results shown in Figure 5 illustrate the substantial variation in influenza vaccination coverage across Riverside County with 21 out of 28 (75%) incorporated communities below the County flu vaccine coverage level of 26% (Figure 1).

Figure 6 provides an even more detailed visual representation of vaccine coverage at the neighborhood level by using census tracts to display the age-adjusted rates of influenza vaccination in the 2019-2020 season. This level of detail highlights the disparities in vaccine coverage that can occur within larger cities that appear to have a higher coverage level overall. This data provides actionable insights to community planners and health providers for allocating resources like mobile clinics and culturally appropriate vaccine messaging. Areas in light green would be most likely to benefit from increased public health intervention to increase vaccine coverage levels.

Figure 6. Age-Adjusted Influenza Vaccine Coverage Rates by Census Tract, 2019-2020



CONCLUSIONS

Influenza vaccinations are essential in reducing severe health outcomes and spread of infection to vulnerable populations. Vaccination levels among the most at-risk age groups are higher than the Riverside County baseline level but remain substantially lower than recommended national benchmarks. Vaccine levels among residents 65 and older approached 50% in the most recent season which provides a good level of protection for this vulnerable population, but increasing education and vaccine access could ensure that seniors have the maximum immunity possible when influenza viruses are circulating. Vaccine levels are lowest among working age adults which has real implications for workforce productivity by increasing the number of individuals who may be sick and require time off or potentially infect others in the workplace. Overall, influenza vaccination levels have remained relatively stable over the past five seasons and have consistently remained below California coverage rates. Vaccine coverage rates also vary dramatically within Riverside County with many cities and census tracts far below the County baseline. These geographic disparities represent an opportunity for the public health community and its partners to increase vaccine coverage levels through coordinated interventions aimed at boosting vaccine awareness and access. As Public Health continues to promote the equitable distribution of vaccines, future briefs will explore vaccine coverage across different racial/ethnic communities and examine the impact of socioeconomic factors within Riverside County.

NOTES

1. Communities are defined as Census Designated Places (CDPs). There are 75 CDP's in Riverside County including a mix of incorporated and unincorporated areas.
2. The County influenza coverage was determined by averaging the coverage levels over 5 influenza seasons (2019- 2024).
3. Census Bureau population estimates for 2020 and population projections across time were used for denominator values in coverage level calculations.

REFERENCES

- Grohskopf LA, Blanton LH, Ferdinands JM, Chung JR, Broder KR, Talbot HK. *Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2023–24 Influenza Season*. MMWR Recomm Rep 2023;72(No. RR-2):1–25. DOI:http://dx.doi.org/10.15585/mmwr.rr7202a1CA
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SUGGESTED CITATION

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