

**Assessment of Human Papillomavirus (HPV)  
Attributable Cancers and Vaccination Rates in  
California: Report of Findings of the California  
HPV Vaccination Roundtable**

**2023 Addendum**

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## 2023 Addendum for the Assessment of Human Papillomavirus (HPV) Attributable Cancers and Vaccination Rates in California: Report of Findings of the California HPV Vaccination Roundtable

### Introduction

This 2023 addendum report to the “Assessment of Human Papillomavirus (HPV) Attributable Cancers and Vaccination Rates in California: Report of Finding of the California HPV Vaccination Roundtable” includes data on:

- HPV-attributable cancer rates in California from 2015-2019
- HPV vaccination among 13-year-olds residing in California, 2020 and 2021.

First licensed in 2006 for females and in 2009 for males, the HPV vaccine offers the opportunity to eliminate a large fraction of oropharyngeal and anogenital cancers in males and females, including cervical cancer in women. A global cervical cancer elimination effort adopted by the World Health Organization in August 2020 is focused on eliminating cervical cancer around the world through HPV vaccination, HPV testing, and cervical cancer screening, early detection and treatment. This addendum report continues to focus on vaccination for young adolescents to align with the American Cancer Society’s Mission: HPV Cancer Free goal of 80% vaccination completion coverage for 13-year-olds by 2026 -- the 20-year anniversary of the FDA’s approval of the first HPV vaccine.

This report illustrates the hindrance in our progress towards the 2026 goal due to the COVID-19 pandemic. Especially during the first two years of the pandemic, many adolescents fell victim to missed opportunities for routine healthcare, wellness visits, and vaccination.

Since our last addendum in 2021 with 2019 estimates, national vaccination data have been updated. The 2021 National Immunization Survey-Teen remained essentially unchanged compared to 2020 with 77% of the nation’s adolescents (ages 13-17) initiating the HPV vaccination series and only 62% completing it, compared to 90% for Tdap.<sup>1</sup> California has slightly higher NIS-Teen 2021 estimates with 82% of 13-to-17-year-olds starting, and 69% completing, the HPV vaccination series. It’s important to note that NIS-Teen 2021 likely does not illustrate the impact of the COVID-19 pandemic on preteens who typically receive their routinely recommended vaccines at ages 11 and 12 years, as it samples adolescents 13 to 17

<sup>1</sup> Pingali C, Yankey D, Elam-Evans LD, et al. National Vaccination Coverage Among Adolescents Aged 13–17 Years — National Immunization Survey-Teen, United States, 2021. *MMWR Morb Mortal Wkly Rep* 2022;71:1101–1108. DOI: <http://dx.doi.org/10.15585/mmwr.mm7135a1>.

years of age – most of whom would have received their routine immunizations before the pandemic began.

For this addendum, we evaluated “on time” HPV vaccination rates for the recommended ages of 9 to 13 years using California Immunization Registry (CAIR) data. Across California, vaccination rates essentially remained unchanged through the COVID-19 pandemic from 2020 to 2021. In 2021, slightly more than half of 9-to-13-year-olds had started the series (56%) and nearly one-third had completed (30%) the series.

The [original report](#) and the two addenda are closely related and should be reviewed and referenced as a comprehensive review of methods, discussion, and evidence-based recommendations.

## METHODS

### HPV-attributable cancer incidence

California Cancer Registry data were used to obtain 5-year (2015-19) incidence counts of each HPV-attributable cancer by county, for each 5-year age group (<1, 1-4, 5-9, 10-14, 15-19, 20-24, etc.). Based on Advisory Committee on Immunization Practices (ACIP) recommendations to determine cancers that are most likely to be HPV-attributable, the following classifications were used for cancer site and morphology<sup>2</sup>[i]:

- Cervical: histologic types 8010-8761, 8940-8941
- Vaginal, vulvar, penile, anal, and rectal: histologic types 8050-8084, 8120-8131
- Oropharyngeal: histologic types 8050-8084, 8120-8131, and primary sites 19,24,28,51-52, 90-91,98-104,108-109,140-142,148.

Five-year HPV-attributable cancer incidence counts were determined by county and age group, based on HPV types detected in a genotyping study,<sup>3</sup> Table 1. County rates are displayed in Figure 1 below:

<sup>2</sup> Watson, M. , Saraiya, M. , Ahmed, F. , Cardinez, C. J., Reichman, M. E., Weir, H. K. and Richards, T. B. (2008), Using population-based cancer registry data to assess the burden of human papillomavirus-associated cancers in the United States: Overview of methods . Cancer, 113: 2841-2854. doi:[10.1002/cncr.23758](https://doi.org/10.1002/cncr.23758)

<sup>3</sup> Saraiya M, Unger ER, Thompson TD, et al. US assessment of HPV types in cancers: implications for current and 9-valent HPV vaccines. J Natl Cancer Inst. 2015;107(6):djv086. Published 2015 Apr 29. doi:10.1093/jnci/djv086

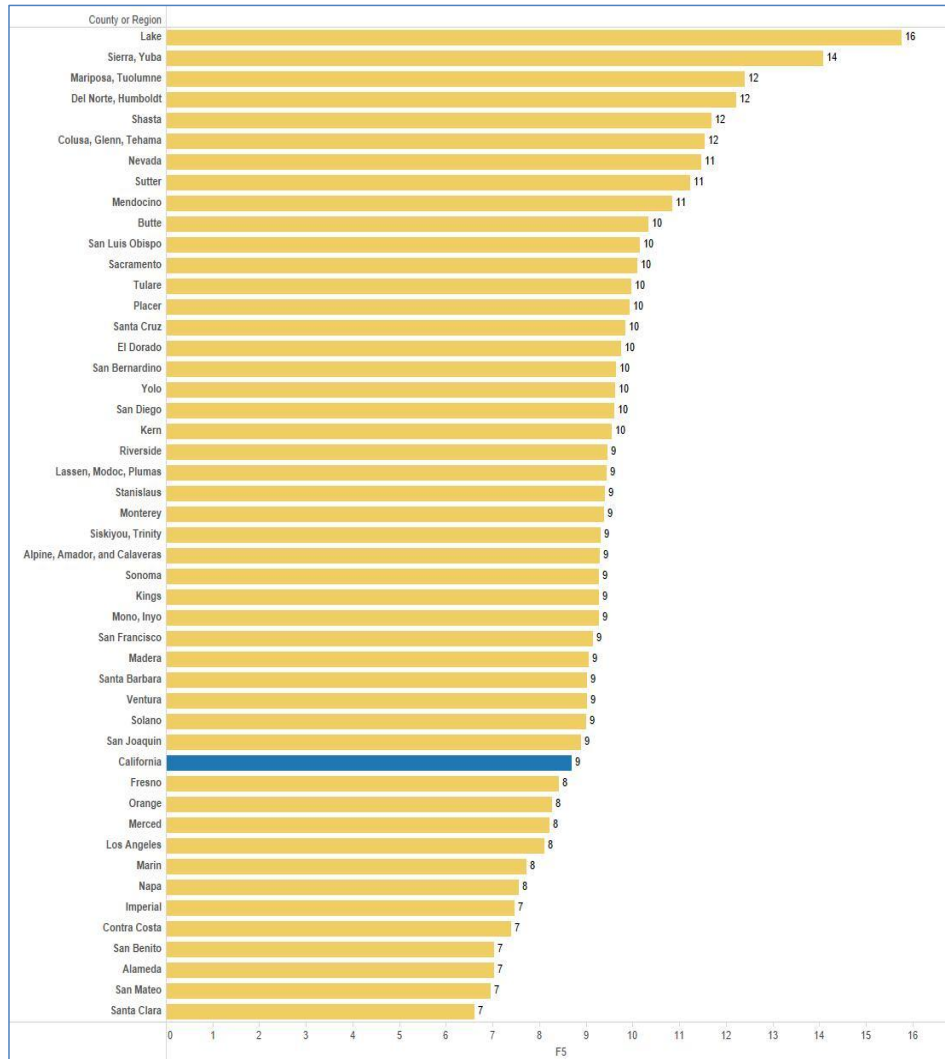
**Table 1. HPV-associated and HPV-attributable cancers in California by Anatomic Site, 2015-2019**

| <b>Cancer type</b>   | <b>Average number cancers per year (HPV-associated) in California</b> | <b>Percent probably caused by any HPV type (HPV-attributable*)<sup>4</sup></b> | <b>Estimated number HPV-attributable in California per year</b> |
|----------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------|
| <i>Cervical</i>      | 1,466                                                                 | 91%                                                                            | 1,334                                                           |
| <i>Anal</i>          | 702                                                                   | 91%                                                                            | 639                                                             |
| <i>Vaginal</i>       | 97                                                                    | 75%                                                                            | 73                                                              |
| <i>Oropharyngeal</i> | 1,831                                                                 | 70%                                                                            | 1,282                                                           |
| <i>Vulvar</i>        | 333                                                                   | 69%                                                                            | 230                                                             |
| <i>Penile</i>        | 146                                                                   | 63%                                                                            | 92                                                              |
|                      | 4,575                                                                 |                                                                                | 2,316                                                           |

\*Attributable to HPV 16/18/31/33/45/52/58 which are covered by the HPV vaccine

<sup>4</sup>Viens LJ, Henley SJ, Watson M, et al. Human Papillomavirus–Associated Cancers — United States, 2008–2012. *MMWR Morb Mortal Wkly Rep* 2016;65:661–666. DOI: <http://dx.doi.org/10.15585/mmwr.mm6526a1>

**Figure 1. HPV-attributable age-adjusted cancer rates per 100,000 population, California (2015-19)\***



\*County rates are individual rates except in the cases of these following groupings: Alpine, Amador, and Calaveras; Del Norte and Humboldt; Modoc, Lassen and Plumas; Mono and Inyo; Sierra and Yuba; Siskiyou and Trinity; Tehama, Colusa and Glenn; Tuolumne and Mariposa.

After determining the site-specific HPV-attributable cancer incidence counts by age group and county, all sites were added together to get a total count of 2015-2019 HPV-attributable

*California HPV Vaccination Roundtable: "Using and Improving HPV Vaccination Data" Workgroup, 2023 Update*

cancers by age group and county. California Cancer Registry standard county groupings were used to address data suppression issues in the smaller counties where the 2015-2019 total HPV-attributable case counts were <11. The following counties were grouped together: Alpine, Amador, and Calaveras; Colusa, Glenn, and Tehama; Del Norte and Humboldt; Inyo and Mono; Lassen, Modoc, and Plumas; Mariposa and Tuolumne; Sierra and Yuba; and Siskiyou and Trinity.

The National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) Program's methodology was used to calculate age-adjusted rates of HPV-attributable cancers for each county or county grouping, standardized to the 2000 U.S. Standard Population age distribution.<sup>5</sup> Adjusting by age provides a standardized way to compare cancer rates across counties with different population distributions by age. For example, counties with older populations will generally have higher crude cancer incidence rates which may skew rate estimates. Five-year populations from SEER were used as denominators for each age group in each county.

#### **HPV vaccination coverage**

For this addendum, adolescent HPV vaccination coverage was assessed using the California Immunization Registry (CAIR). CAIR includes data reported from providers in all 58 California counties. This is a change from the Roundtable's previous report and addendum, when there were still three distinct immunization information systems (IIS) in the state. The largest IIS in California is CAIR, which is operated by the California Department of Public Health on behalf of 50 of the 58 California counties. The San Diego Immunization Registry (SDIR) transitioned to CAIR in early 2022. Healthy Futures (HF) IIS operates in 8 counties located in California's Central Valley. Through a data sharing agreement implemented in 2022, Healthy Futures data are uploaded into CAIR daily. Due to incomplete reporting by clinicians to CAIR administering vaccines throughout California, actual vaccination coverage rates might be higher than estimated in this report.

HPV vaccine coverage was assessed in CAIR using the following methodology:

- HPV series initiation for 2020 and 2021:
  - Percentage of 13-year-olds who received at least one dose of any HPV vaccine before their 13<sup>th</sup> birthday
- HPV series completion for 2020 and 2021:
  - Percentage of 13-year-olds who received at least two doses of any HPV vaccine before their 13<sup>th</sup> birthday

<sup>5</sup> SEER is supported by the Surveillance Research Program (SRP) in NCI's Division of Cancer Control and Population Sciences (DCCPS). SRP provides national leadership in the science of cancer surveillance as well as analytical tools and methodological expertise in collecting, analyzing, interpreting, and disseminating reliable population-based statistics.

Adolescents who received at least two doses of HPV vaccine were considered to have completed the series, although it is possible that some may have received the doses at a shorter interval than recommended thereby requiring a third dose of HPV vaccine per ACIP recommendations.

Individuals were included in the denominator if they met three criteria:

- Were born January 1, 2007 through December 31, 2007 (13-year-old cohort) for 2020 or were born January 1, 2008 through December 31, 2008 (13-year-old cohort) for 2021
- Had at least two total vaccine doses of any non-COVID vaccine in CAIR
- Were California residents

California residents born in 2007 or 2008 who showed receipt of two doses of any vaccine, excluding COVID vaccines, in CAIR were included in the 2020 or 2021 *13-year-old* cohorts, respectively. *HPV series initiators* were evaluated as those receiving at least one dose of HPV vaccine before their 13th birth dates. *HPV series completers* were similarly evaluated as having received two doses before their 13th birth dates.

## RESULTS

### HPV-attributable cancer incidence

This report evaluates the HPV-attributable cancer incidence rates in California from 2015 through 2019. Regarding the percentage of cancers attributable to HPV, cervical and anal are the highest (91%), with somewhat fewer that are HPV-attributed in vaginal, vulvar, and penile (63%-75%) or oropharyngeal (70%) cancers [Table 2]. County-specific HPV cancer rates are contrasted by county, from greatest to least [Figure 1]. In California, 36% of counties are classified as rural, consistent with our prior report. All rural counties (21) showed rates of HPV-attributable cancer that were higher than the statewide average (9 cases/100,000). Overall, rates of HPV-attributable cancer in rural counties were 1.06 to 7.1-fold higher than prior results [Figure 1]. A detailed table of HPV-attributable cancers by county or region, including number of cancers, 5-year population, crude rate, and age-adjusted rate appear in an appendix table [Appendix A1]. Those counties where there was more than a 2.0/100,000 rate change between measurement periods are highlighted with the direction of change noted with an arrow.

## HPV vaccination coverage data

Aggregate data from CAIR were compiled to provide statewide and county-level estimates of HPV vaccine initiation (i.e., at least one dose of HPV vaccine) and series completion rates for 13-year-olds in California. Data representing counties with small populations were combined to adequately de-identify all individuals. In 2020, 56% (328,176/592,984) of 13-year-olds in California had initiated the HPV vaccine series [Figures 2, 4, and 6] and 30% (143,956/590,203) completed the series before their 13<sup>th</sup> birthday [Table 2, Figures 3, 5, and 6]. In 2021, 55% (324,748/589,328) of 13-year-olds in California had initiated the HPV vaccine series [Figures 2, 4, 6] and 30% (173,604/589,328) completed the series before their 13<sup>th</sup> birthday [Table 2, Figures 3, 5, and 6]. A wide range of HPV vaccine initiation (range 33-72%) and completion (range 12-47%) rates were observed across counties in 2021; figures 4 and 5 display these variations in rates in map format [Figures 4, 5].

**Table 2. HPV vaccine series completion by data source, 2018-2021<sup>126</sup>**

| Year        | Region                           |                            |                                  |                        |
|-------------|----------------------------------|----------------------------|----------------------------------|------------------------|
|             | United States                    |                            | California                       |                        |
|             | NIS-Teen<br>(13-to-17-year-olds) | NIS-Teen<br>(13-year-olds) | NIS-Teen<br>(13-to-17-year-olds) | CAIR<br>(13-year-olds) |
| <b>2021</b> | 62%<br>(60-63)*                  | 49%<br>(46-53)*            | 69%<br>(61-76)*                  | 30%                    |
| <b>2020</b> | 59%<br>(57-60) <sup>7</sup> *    | 46%<br>(43-49)*            | 62%<br>(55-69)*                  | 30%                    |
| <b>2019</b> | 54%<br>(53-56) <sup>8</sup> *    | 45%<br>(42-49)*            | 56%<br>(47-65)*                  | 30%                    |
| <b>2018</b> | 51%<br>(50-53) <sup>9</sup> *    | 40%<br>(37-43)*            | 53%<br>(45-60)*                  | 28%                    |

**Commented [JG1]:** Incorrect in online version, but correct here.

\* % (95% confidence interval)

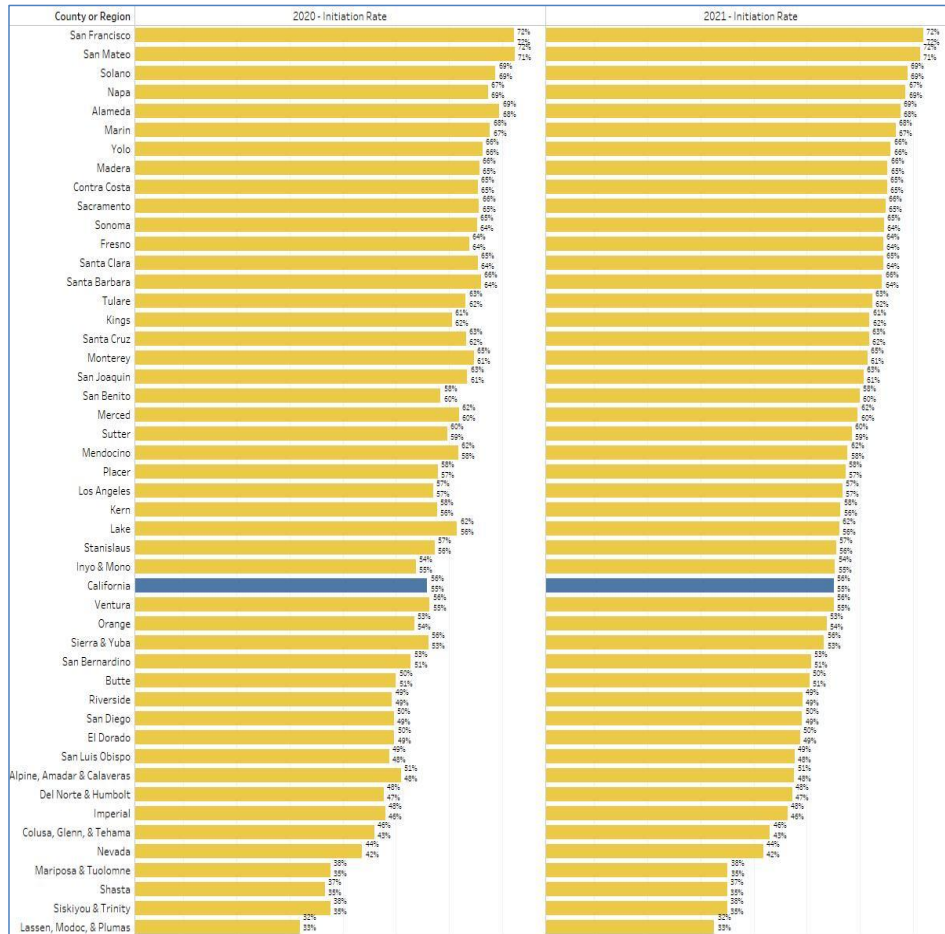
<sup>6</sup> Ibid.

<sup>7</sup> Pingali C, Yankey D, Elam-Evans LD, et al. National, Regional, State, and Selected Local Area Vaccination Coverage Among Adolescents Aged 13–17 Years — United States, 2020. MMWR Morb Mortal Wkly Rep 2021;70:1183–1190. DOI: <http://dx.doi.org/10.15585/mmwr.mm7035a1external> icon.

<sup>8</sup> Elam-Evans LD, Yankey D, Singleton JA, et al. National, Regional, State, and Selected Local Area Vaccination Coverage Among Adolescents Aged 13–17 Years — United States, 2019. MMWR Morb Mortal Wkly Rep 2020;69:1109–1116. DOI: <http://dx.doi.org/10.15585/mmwr.mm6933a1external> icon.

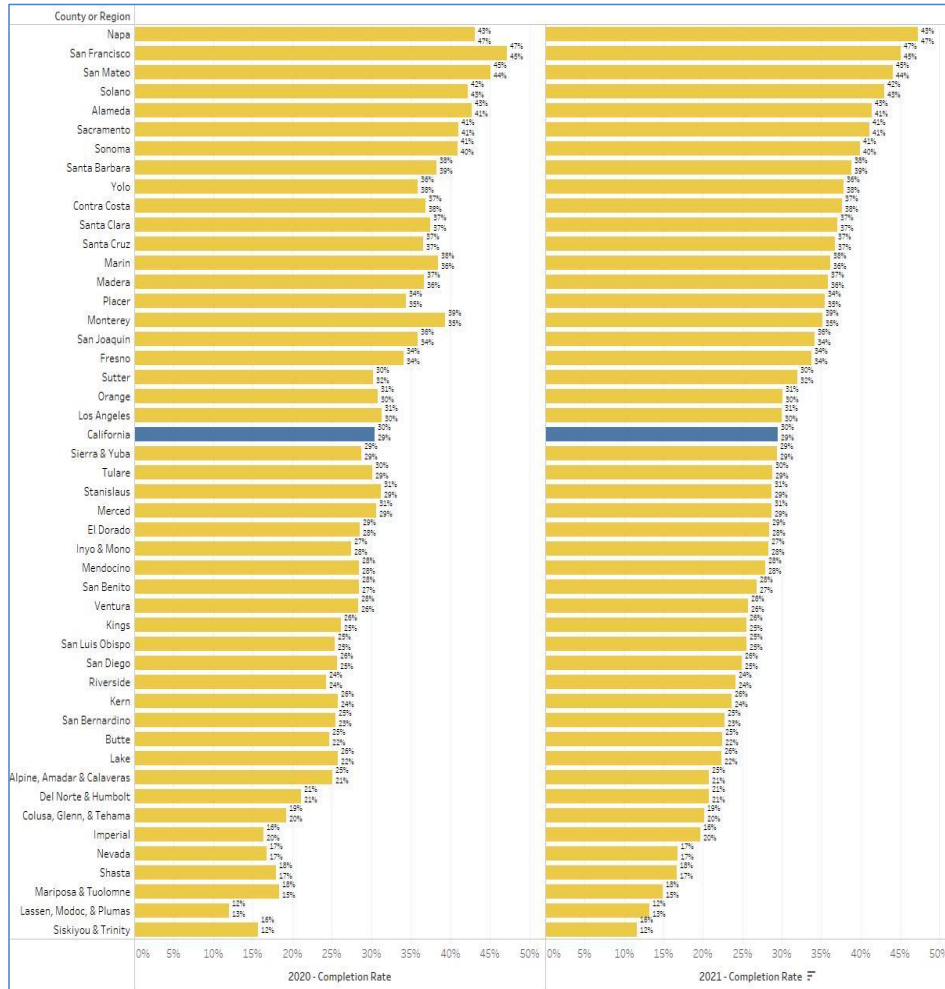
<sup>9</sup> Walker TY, Elam-Evans LD, Yankey D, et al. National, Regional, State, and Selected Local Area Vaccination Coverage Among Adolescents Aged 13–17 Years — United States, 2018. MMWR Morb Mortal Wkly Rep 2019;68:718–723. DOI: <http://dx.doi.org/10.15585/mmwr.mm6833a2external> icon.

**Figure 2. Proportion of 13-year-olds initiating HPV vaccine series as recorded in CAIR by California county, 2020 & 2021 (Source: CAIR)\***



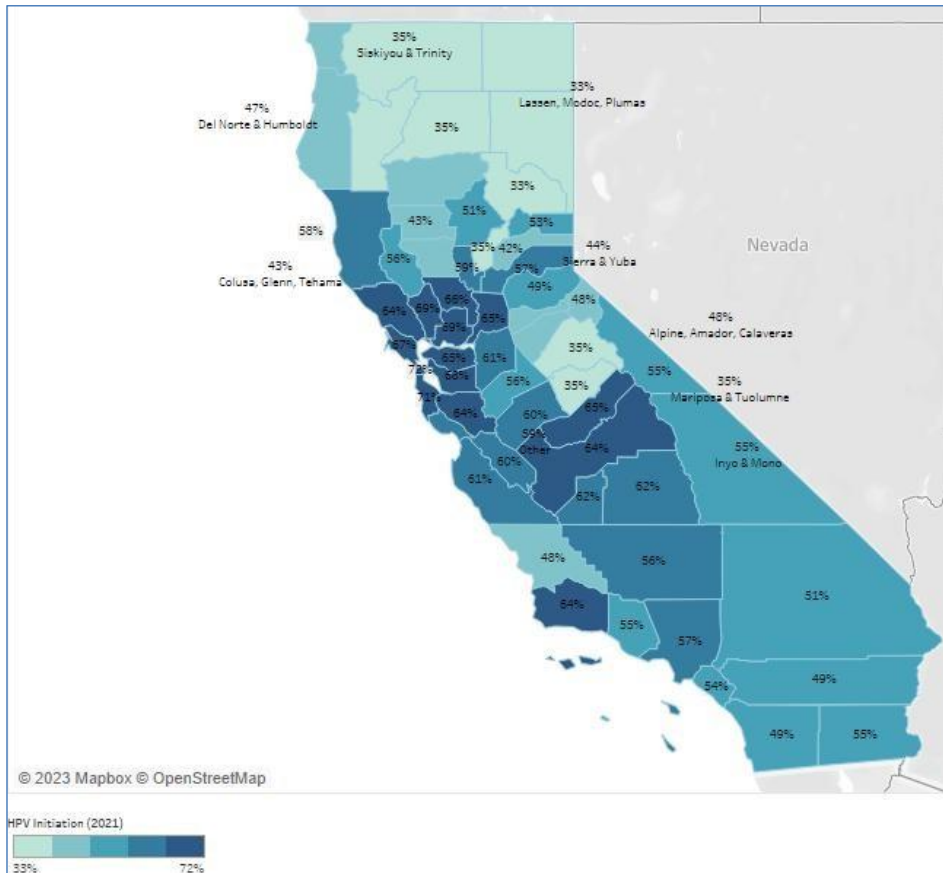
\*County rates are individual rates except in the cases of these following groupings: Alpine, Amador, and Calaveras; Del Norte and Humboldt; Modoc, Lassen and Plumas; Mono and Inyo; Sierra and Yuba; Siskiyou and Trinity; Tehama, Colusa and Glenn; Tuolumne and Mariposa.

**Figure 3. Proportion of 13-year-olds completing HPV vaccine series as recorded in CAIR by California county, 2020 & 2021 (Source: CAIR)\***



\*County rates are individual rates except in the cases of these following groupings: Alpine, Amador, and Calaveras; Del Norte and Humboldt; Lassen, Modoc and Plumas; Inyo and Mono; Sierra and Yuba; Siskiyou and Trinity; Colusa, Glenn, and Tehama; Mariposa and Tuolumne.

**Figure 4. Proportion of 13-year-olds initiating HPV vaccine series by county, California, 2021 (Source: CAIR)\***



\*County rates are individual rates except in the cases of these following groupings: Alpine, Amador, and Calaveras; Del Norte and Humboldt; Lassen, Modoc and Plumas; Inyo and Mono; Sierra and Yuba; Siskiyou and Trinity; Colusa, Glenn, and Tehama; Mariposa and Tuolumne.

**Figure 5. Proportion of 13-year-olds completing HPV vaccine series by county, California, 2021**  
 (Source: CAIR)\*



\*County rates are individual rates except in the cases of these following groupings: Alpine, Amador, and Calaveras; Del Norte and Humboldt; Lassen, Modoc and Plumas; Inyo and Mono; Sierra and Yuba; Siskiyou and Trinity; Colusa, Glenn, and Tehama; Mariposa and Tuolumne.

### HPV vaccination by sex and/or gender

HPV vaccination initiation and series completion remained stable year over year for females and males, with about a 1% change for each gender and each measure year over year. Gender data in the registry are self-reported data entered by the vaccine provider. The greatest changes were seen in adolescents who identified their gender as Non-Binary (<60), but these rates are more likely to be variable given small numbers. Perhaps the increase in Non-Binary

reflects the ongoing upwards trend of teens identifying as “gender diverse”<sup>10</sup>. Furthermore, it's possible that medical record systems are catching up to allow data collection beyond “male/female”. This year, 13-year-olds identifying as “Other” were not included in Table A4 below due to having very small counts (<11 in 2020). Data for each county by gender, where the category exceeds 10 persons is displayed in the Appendices, Table A4.

**Figure 6. Comparison of HPV vaccine initiation and completion by year and gender, California 2020-2021 (Source: CAIR)\***

| Gender       | % Initiating HPV Vaccination |              |              | % Completing HPV Vaccination |              |              |
|--------------|------------------------------|--------------|--------------|------------------------------|--------------|--------------|
|              | 2020 Results                 | 2021 Results | Δ Initiation | 2020 Results                 | 2021 Results | Δ Completion |
| Female       | 57%                          | 56%          | -1%          | 32%                          | 30%          | -1%          |
| Male         | 55%                          | 55%          | -1%          | 30%                          | 29%          | -1%          |
| Unidentified | 6%                           | 8%           | 1%           | 2%                           | 3%           | 1%           |
| Non-Binary   | 56%                          | 61%          | 5%           | 22%                          | 37%          | 15%          |

\*For females, in 2020 n=289,483 and in 2021 n=287,379. For males, in 2020 n=301,517 and in 2021 n=300,288. For unidentified, in 2020 n=1,916 and in 2021 n=1,596. For non-binary, in 2020 n=59 and in 2021 n=49.

#### HPV vaccination by race/ethnicity

With the requirement for healthcare providers participating in the federal COVID-19 Vaccination Program to [report race/ethnicity](#) along with COVID-19 vaccine administration into the IIS, the number of people with a completed race/ethnicity field in CAIR has increased, allowing for additional analyses of racial/ethnic disparities in HPV vaccination. Over three-quarters (77%) of 13-year-olds included in our analyses had race/ethnicity information reported 458,742/592,984 in 2020 and 456,486/589,328 in 2021. Tables 3 and 4 present 2020 and 2021 completion rates by race/ethnicity, with chi square tests used to examine variations in comparison to the Hispanic/Latino population. The decision to use the Hispanic/Latino population as the referent group was made given their position as the largest racial/ethnic group in the state. Completion rates were higher in some racial and ethnic groups than others. For example, when compared to the largest group, Hispanic/Latino youth (35.4%), those reported as non-Hispanic from Asian (41.6%), multi-racial (37.8%), and "others" (40.6%) showed higher HPV vaccination completion in 2020. However, completion rates in other races and ethnic groups were lower (11.6% to 31.5%). Completion rates in 2021 similarly differed from Hispanic/Latino youth. See the Appendices [Tables A5-A8] for county data by race/ethnicity for 2021 and for state level vaccine initiation rates by race/ethnicity [Table A8, A9].

<sup>10</sup> Kacie M. Kidd, Gina M. Sequeira, Claudia Douglas, Taylor Paglisotti, David J. Inwards-Breland, Elizabeth Miller, Robert W. S. Coulter; Prevalence of Gender-Diverse Youth in an Urban School District. *Pediatrics* June 2021; 147 (6): e2020049823. 10.1542/peds.2020-049823

**Table 3. Number and proportion of 13-year-olds who completed the HPV vaccine series by race/ethnicity, 2020**  
(Source: CAIR)

| Race/ethnicity                                       | Number of 13-year-olds who completed HPV vaccine series | % of racial/ethnic group who completed HPV vaccine series | P value |
|------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------|---------|
| Hispanic or Latino                                   | 78,216                                                  | 35%                                                       | REF     |
| Not Hisp/Latino American Indian and Alaska Native    | 270                                                     | 23%                                                       | <0.05   |
| Not Hisp/Latino Asian                                | 13,132                                                  | 42%                                                       | <0.05   |
| Not Hisp/Latino Black                                | 5,233                                                   | 30%                                                       | <0.05   |
| Not Hisp/Latino Multiracial                          | 26,957                                                  | 38%                                                       | <0.05   |
| Not Hisp/Latino Native Hawaiian and Pacific Islander | 368                                                     | 32%                                                       | <0.05   |
| Not Hisp/Latino Other                                | 14,265                                                  | 41%                                                       | <0.05   |
| Not Hisp/Latino White                                | 19,790                                                  | 25%                                                       | <0.05   |
| Unknown                                              | 15,373                                                  | 12%                                                       | <0.05   |

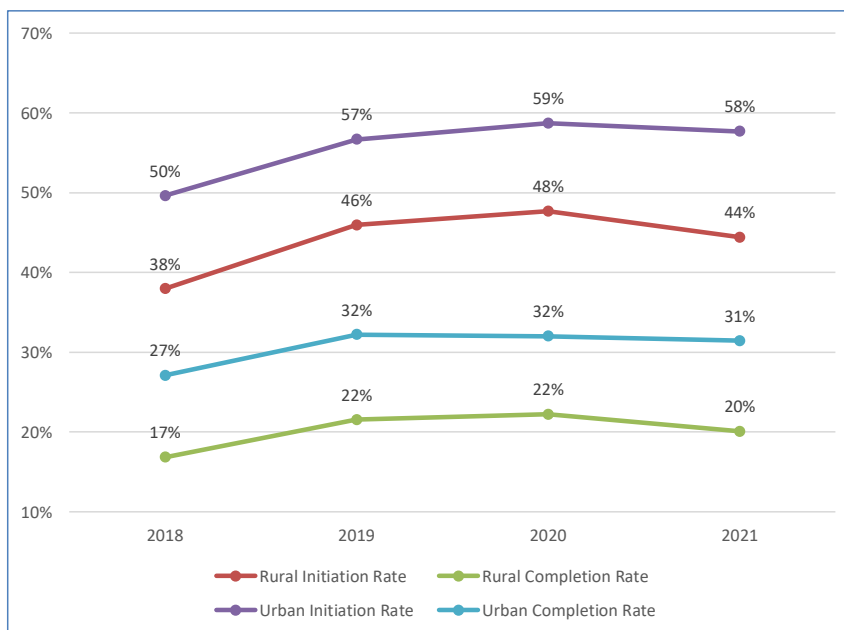
**Table 4. Number and proportion of 13-year-olds who completed the HPV vaccine series by race/ethnicity, 2021**  
(Source: CAIR)

| Race/ethnicity                                       | Number of 13-year-olds who completed HPV vaccine series | % of racial/ethnic group who completed HPV vaccine series | P value |
|------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------|---------|
| Hispanic or Latino                                   | 82,452                                                  | 37%                                                       | REF     |
| Not Hisp/Latino American Indian and Alaska Native    | 289                                                     | 26%                                                       | <0.05   |
| Not Hisp/Latino Asian                                | 13,536                                                  | 42%                                                       | <0.05   |
| Not Hisp/Latino Black                                | 5,352                                                   | 32%                                                       | <0.05   |
| Not Hisp/Latino Multiracial                          | 27,071                                                  | 38%                                                       | <0.05   |
| Not Hisp/Latino Native Hawaiian and Pacific Islander | 366                                                     | 33%                                                       | <0.05   |
| Not Hisp/Latino Other                                | 13,855                                                  | 41%                                                       | <0.05   |
| Not Hisp/Latino White                                | 20,369                                                  | 26%                                                       | <0.05   |
| Unknown                                              | 17,267                                                  | 13%                                                       | <0.05   |

### HPV vaccination by urbanicity

Counties with the lowest HPV vaccine initiation and vaccination rates tend to be classified as rural (see Table A9 in the Appendix for county classifications), when we sum the denominators and numerators of rural counties and urban counties, we document these significant trends [Figure 6]. The overall rates for both initiation and completion of the HPV vaccination series by age 13 is higher among adolescents in urban versus rural areas (57.7% vs. 44.4%). Additionally, the difference between the rural and urban initiation rates has now widened by at least 2 percentage points from 2020 to 2021 from 11.0% to 13.3%. Of note, the HPV vaccine initiation rate decreased by over 3 percentage points from 2020 to 2021 in rural counties from 47.7% to 44.4%, the most out of any group in this graph; urban rates for initiation and completion dropped <1 percentage point from 2020 to 2021. Finally, the rate of both rural and urban HPV vaccine completion dropped below pre-pandemic levels to just 20.1% and 32.2% respectively. This is likely due to the impact of the COVID-19 pandemic and limited access to primary care that was associated with the pandemic and continues to persist in many locales.

**Figure 6. HPV vaccine initiation and completion rates among 13-year-olds by urbanicity classification, 2018-2021 (Source: CAIR)**



## DISCUSSION

Like what is observed at the national level, in California we saw an increase in the number of new HPV-attributable cancer cases each year as compared with previous assessments. Though adolescents in California have been receiving the HPV vaccine since 2006, cancer rates are a lagging indicator of the effectiveness of HPV vaccination in the prevention of cancers because these cancers develop approximately 10 to 20 years after infection. Thus, HPV-associated cancer rates have remained essentially stable since vaccine debut, and, it may take another decade to see significant declines in the overall rates of these cancers. However, we are beginning to see cancer prevention benefits in the earliest recipients of the HPV vaccine. From 2012-2019, rates of cervical cancer for California women ages 20-24 have dropped steeply (by 17% per year).<sup>11</sup> These women were among the first to receive the HPV vaccine and as time goes on, we expect to see more evidence of the long-term cancer prevention benefits of vaccination.

Figure 1 illustrates that those counties with the greatest age-specific rates of HPV-attributable cancers are classified as rural [Table 7]. Additionally, it is mostly rural counties where rate increases from previous measurement years (2015-2019 vs. 2012-2016) were observed, notably Sierra/Yuba (+5 percentage points [ppt]), Lake (+4 ppt), Nevada (+4 ppt), and Mariposa/Tuolumne (+3 ppt). In contrast, urban counties are where we observe rate decreases, including Marin (-3 ppt), Napa (-3 ppt), and San Benito (-3 ppt). These differences point to the continued disparity rural populations experience in HPV-attributable cancers.

Our analysis of CAIR data for HPV vaccination coverage in California over 2020 and 2021 shows a small decrease of approximately 1% for both series initiation and completion, possibly due to the pandemic and the consequential temporary decrease in routine healthcare, wellness visits, and vaccination opportunities, as well as increases in vaccine hesitancy. At the county level, we observed variability to different degrees. The largest decreases in series completion from 2020 to 2021 were observed in Alpine/Amador/Calaveras, Monterey, and Lake counties; all but Monterey considered a rural county. The largest increases in series completion from 2020 to 2021 were observed in Napa, Imperial, and Yolo counties.

When looking at rates by sex or gender, we see that in California the gender gap has closed with male and female HPV vaccine initiation and completion rates less than 2 percentage points apart for both 2020 and 2021 (Figure 6). In Females, completion rates were 31.5% and 30.4% for 2020 and 2021 respectively. For males, completion rates were 29.6% and 28.7% in 2020 and

<sup>11</sup> Personal correspondence with the California Cancer Registry, July 21, 2023.

2021 respectively, therefore in 2021 completion rates between females and males was just 1.7% ppt. Few adolescent residents identified as non-binary or other genders.

At both the national and state level, we see the reverse being true regarding HPV vaccine with many minority populations getting vaccinated at a rate higher than white populations. In California, the lowest completion rates were observed in American Indian/Alaska Native and White populations in both 2020 and 2021. The highest series completion rates were seen in Asian and Other populations.

Rural and urban areas differ in the racial and ethnic population distribution, income levels of the communities, health care access, educational attainment and other determinants of health.<sup>12</sup> Rural areas are noted in the literature as lagging in HPV vaccination rates due to multiple factors including health care access, lack of school mandates, need for clinician training, and at the individual level parental concerns about vaccine side effects, how the vaccine's use relates to alleged subsequent teen sexual activity among some of the concerns.<sup>13</sup> Using 2021 population estimates from the California Department of Finance, we estimate that just 6.3% of the state population resides in the areas considered rural here (rural county definition, see Table A9). This disparity in immunization coverage reflects many factors in the rural setting, likely most of all, access to primary care. The roundtable in 2022 and 2023 focused specifically on two rural counties with a short-term special grant program recognizing these areas as struggling the most to protect children and teens against HPV. This also speaks to the opportunity to address access as a barrier (e.g., location of providers, need more vaccinators). This also shows the need for more vaccinators, potentially through expansion of the Vaccines for Children (VFC) network to include pharmacies and potentially oral health clinicians.

Regarding immunization registry participation, prior to 2023 state law generally authorized, but did not require, health care providers to report immunization information into a California immunization registry. Only pharmacists were mandated to submit doses administered into the registry. In September 2022, Governor Gavin Newsom signed AB1797, a bill aimed at improving the immunization registry statute. This new bill, which went into effect on January 1, 2023, requires all health care providers who administer vaccines to enter immunization information into a California immunization registry (CAIR or Healthy Futures) and adds patient race/ethnicity to the list of information that must be reported by clinicians administering

<sup>12</sup> Tsai Y, Lindley MC, Zhou F, Stokley S. Urban-Rural Disparities in Vaccination Service Use Among Low-Income Adolescents. *J Adolesc Health*. 2021 Jul;69(1):114-120. doi: 10.1016/j.jadohealth.2020.10.021. Epub 2020 Dec 4. PMID: 33288460; PMCID: PMC8175462.

<sup>13</sup> Fish LJ, Harrison SE, McDonald JA, Yelverton V, Williams C, Walter EB, Vasudevan L. Key stakeholder perspectives on challenges and opportunities for rural HPV vaccination in North and South Carolina. *Hum Vaccin Immunother*. 2022 Nov 30;18(5):2058264. doi: 10.1080/21645515.2022.2058264. Epub 2022 Apr 19. PMID: 35439108; PMCID: PMC9248957.

vaccine. With this new law in place, reporting to the registry is expected to increase substantially, resulting in more complete and accurate data. This important policy change will better equip healthcare providers, health departments, and this coalition to assess health disparities in immunization coverage.

Strategies to catch up by offering vaccines at every encounter starting at age 9 years and prioritizing population subgroups are needed. We encourage you to share this report, review the original report for detailed recommendations.

Resources for increasing HPV vaccination rates:

- American Academy of Pediatrics: <https://www.aap.org/en/patient-care/immunizations/human-papillomavirus-vaccines/>
- American Cancer Society: <https://www.cancer.org/health-care-professionals/hpv-vaccination-information-for-health-professionals/hpv-vaccination-resources-for-health-professionals.html>
- American College of Obstetricians and Gynecologists: <https://www.acog.org/Womens-Health/Human-Papillomavirus-HPV>
- California Department of Public Health: <https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/HPV.aspx>
- Centers for Disease Control and Prevention: <https://www.cdc.gov/hpv/hcp/educational-materials.html>
- Immunize.org (formerly Immunization Action Coalition): <https://www.immunize.org/handouts/hpv-vaccines.asp>
- National Cancer Institute: <https://www.cancer.gov/about-cancer/causes-prevention/risk/infectious-agents/hpv-and-cancer>
- National Foundation for Infectious Diseases: <https://www.nfid.org/infectious-diseases/hpv-resource-center/>
- National HPV Roundtable: <https://hpvroundtable.org/resource-library/>

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## Appendices

**Table A1: Comparison of the total number of HPV-attributable cancers, 5-year population (2012-2016 and 2015-2019), crude rate, and age-adjusted rate by county**

| County or Region              | 2012-2016                                            |                                                             | 2015-2019                                            |                                                             |
|-------------------------------|------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------|
|                               | Crude rate of HPV-attributable cancers (per 100,000) | Age-specific rate of HPV-attributable cancers (per 100,000) | Crude rate of HPV-attributable cancers (per 100,000) | Age-specific rate of HPV-attributable cancers (per 100,000) |
| California                    | 9                                                    | 9                                                           | 10                                                   | 9                                                           |
| Alameda                       | 8                                                    | 7                                                           | 8                                                    | 7                                                           |
| Alpine, Amador, and Calaveras | 15                                                   | 10                                                          | 13                                                   | 9                                                           |
| Butte                         | 13                                                   | 11                                                          | 12                                                   | 10                                                          |
| Colusa, Glenn, Tehama         | 14                                                   | 12                                                          | 14                                                   | 12                                                          |
| Contra Costa                  | 9                                                    | 8                                                           | 9                                                    | 7                                                           |
| Del Norte, Humboldt           | 14                                                   | 11                                                          | 14                                                   | 12                                                          |
| El Dorado                     | 13                                                   | 10                                                          | 13                                                   | 10                                                          |
| Fresno                        | 7                                                    | 8                                                           | 8                                                    | 8                                                           |
| Imperial                      | 7                                                    | 8                                                           | 7                                                    | 7                                                           |
| Inyo, Mono                    | 12                                                   | 9                                                           | 12                                                   | 9                                                           |
| Kern                          | 9                                                    | 9                                                           | 9                                                    | 10                                                          |
| Kings                         | 8                                                    | 10                                                          | 8                                                    | 9                                                           |
| Lake ↑                        | 16                                                   | 11                                                          | 21                                                   | 16                                                          |
| Lassen, Modoc, Plumas         | 13                                                   | 10                                                          | 13                                                   | 9                                                           |
| Los Angeles                   | 8                                                    | 8                                                           | 9                                                    | 8                                                           |
| Madera                        | 8                                                    | 9                                                           | 9                                                    | 9                                                           |
| Marin ↓                       | 15                                                   | 10                                                          | 12                                                   | 8                                                           |

|                      |    |    |    |    |
|----------------------|----|----|----|----|
| Mariposa, Tuolumne ↑ | 15 | 10 | 19 | 12 |
| Mendocino            | 13 | 10 | 14 | 11 |
| Merced               | 7  | 8  | 7  | 8  |
| Monterey             | 9  | 9  | 10 | 9  |
| Napa ↓               | 13 | 10 | 10 | 8  |
| Nevada ↑             | 14 | 8  | 18 | 11 |
| Orange               | 9  | 8  | 9  | 8  |
| Placer               | 12 | 10 | 13 | 10 |
| Riverside            | 10 | 10 | 10 | 9  |
| Sacramento           | 11 | 10 | 11 | 10 |
| San Benito ↓         | 10 | 10 | 7  | 7  |
| San Bernardino       | 9  | 9  | 9  | 10 |
| San Diego            | 10 | 9  | 10 | 10 |
| San Francisco        | 10 | 9  | 11 | 9  |
| San Joaquin          | 9  | 9  | 9  | 9  |
| San Luis Obispo      | 11 | 9  | 13 | 10 |
| San Mateo            | 8  | 7  | 8  | 7  |
| Santa Barbara        | 9  | 8  | 10 | 9  |
| Santa Clara          | 7  | 6  | 7  | 7  |
| Santa Cruz           | 11 | 9  | 12 | 10 |
| Shasta               | 14 | 11 | 16 | 12 |
| Sierra, Yuba ↑       | 9  | 9  | 14 | 14 |
| Siskiyou, Trinity    | 16 | 10 | 16 | 9  |
| Solano               | 10 | 9  | 10 | 9  |
| Sonoma               | 13 | 10 | 12 | 9  |
| Stanislaus           | 9  | 9  | 10 | 9  |

|         |    |    |    |    |
|---------|----|----|----|----|
| Sutter  | 10 | 9  | 13 | 11 |
| Tulare  | 9  | 10 | 9  | 10 |
| Ventura | 10 | 9  | 10 | 9  |
| Yolo    | 8  | 8  | 9  | 10 |

Highlighted cells represent a >2.0 /100,000 rate change between the original 2012-2016 estimates and the updated 2015-2019 estimates. An up arrow (↑) indicates an upward shift and the green (↓) indicates a downward shift in the age-adjusted rates between the two time periods.

Table A2. HPV vaccine initiation rates and percentage point change by county, 2020 vs. 2021

| County or Region           | 2020 - Initiation Rate | 2021 - Initiation Rate | Δ Initiation |
|----------------------------|------------------------|------------------------|--------------|
| Alameda                    | 69%                    | 68%                    | -2%          |
| Alpine, Amador & Calaveras | 51%                    | 48%                    | -3%          |
| Butte                      | 50%                    | 51%                    | 1%           |
| Colusa, Glenn, & Tehama    | 46%                    | 43%                    | -3%          |
| Contra Costa               | 65%                    | 65%                    | 0%           |
| Del Norte & Humboldt       | 48%                    | 47%                    | -1%          |
| El Dorado                  | 50%                    | 49%                    | -1%          |
| Fresno                     | 64%                    | 64%                    | 0%           |
| Imperial                   | 48%                    | 46%                    | -2%          |
| Inyo & Mono                | 54%                    | 55%                    | 2%           |
| Kern                       | 58%                    | 56%                    | -2%          |
| Kings                      | 61%                    | 62%                    | 1%           |
| Lake                       | 62%                    | 56%                    | -6%          |
| Lassen, Modoc, & Plumas    | 32%                    | 33%                    | 1%           |
| Los Angeles                | 57%                    | 57%                    | 0%           |
| Madera                     | 66%                    | 65%                    | -1%          |
| Marin                      | 68%                    | 67%                    | -1%          |
| Mariposa & Tuolumne        | 38%                    | 35%                    | -3%          |
| Mendocino                  | 62%                    | 58%                    | -4%          |
| Merced                     | 62%                    | 60%                    | -2%          |
| Monterey                   | 65%                    | 61%                    | -4%          |
| Napa                       | 67%                    | 69%                    | 2%           |
| Nevada                     | 44%                    | 42%                    | -2%          |
| Orange                     | 53%                    | 54%                    | 1%           |
| Placer                     | 58%                    | 57%                    | -1%          |
| Riverside                  | 49%                    | 49%                    | 0%           |
| Sacramento                 | 66%                    | 65%                    | -1%          |
| San Benito                 | 58%                    | 60%                    | 2%           |
| San Bernardino             | 53%                    | 51%                    | -2%          |
| San Diego                  | 50%                    | 49%                    | -1%          |
| San Francisco              | 72%                    | 72%                    | 0%           |
| San Joaquin                | 63%                    | 61%                    | -2%          |
| San Luis Obispo            | 49%                    | 48%                    | -1%          |
| San Mateo                  | 72%                    | 71%                    | -1%          |
| Santa Barbara              | 66%                    | 64%                    | -2%          |
| Santa Clara                | 65%                    | 64%                    | -1%          |
| Santa Cruz                 | 63%                    | 62%                    | -1%          |
| Shasta                     | 37%                    | 35%                    | -2%          |
| Sierra & Yuba              | 56%                    | 53%                    | -3%          |
| Siskiyou & Trinity         | 38%                    | 35%                    | -3%          |
| Solano                     | 69%                    | 69%                    | 0%           |
| Sonoma                     | 65%                    | 64%                    | -1%          |
| Stanislaus                 | 57%                    | 56%                    | -1%          |
| Sutter                     | 60%                    | 59%                    | -1%          |
| Tulare                     | 63%                    | 62%                    | -1%          |
| Ventura                    | 56%                    | 55%                    | -1%          |
| Yolo                       | 66%                    | 66%                    | 0%           |
| California                 | 56%                    | 55%                    | -1%          |

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Table A3. HPV vaccine completion rates and percentage point change by county, 2020 vs. 2021

| County or Region           | 2020 – Completion Rate | 2021 – Completion Rate | Δ Completion |
|----------------------------|------------------------|------------------------|--------------|
| Alameda                    | 43%                    | 41%                    | -1%          |
| Alpine, Amador & Calaveras | 25%                    | 21%                    | -4%          |
| Butte                      | 25%                    | 22%                    | -2%          |
| Colusa, Glenn, & Tehama    | 19%                    | 20%                    | 1%           |
| Contra Costa               | 37%                    | 38%                    | 1%           |
| Del Norte & Humboldt       | 21%                    | 21%                    | 0%           |
| El Dorado                  | 29%                    | 28%                    | 0%           |
| Fresno                     | 34%                    | 34%                    | 0%           |
| Imperial                   | 16%                    | 20%                    | 3%           |
| Inyo & Mono                | 27%                    | 28%                    | 1%           |
| Kern                       | 26%                    | 24%                    | -2%          |
| Kings                      | 26%                    | 25%                    | -1%          |
| Lake                       | 26%                    | 22%                    | -3%          |
| Lassen, Modoc, & Plumas    | 12%                    | 13%                    | 1%           |
| Los Angeles                | 31%                    | 30%                    | -1%          |
| Madera                     | 37%                    | 36%                    | -1%          |
| Marin                      | 38%                    | 36%                    | -2%          |
| Mariposa & Tuolumne        | 18%                    | 15%                    | -3%          |
| Mendocino                  | 28%                    | 28%                    | 0%           |
| Merced                     | 31%                    | 29%                    | -2%          |
| Monterey                   | 39%                    | 35%                    | -4%          |
| Napa                       | 43%                    | 47%                    | 4%           |
| Nevada                     | 17%                    | 17%                    | 0%           |
| Orange                     | 31%                    | 30%                    | -1%          |
| Placer                     | 34%                    | 35%                    | 1%           |
| Riverside                  | 24%                    | 24%                    | 0%           |
| Sacramento                 | 41%                    | 41%                    | 0%           |
| San Benito                 | 28%                    | 27%                    | -1%          |
| San Bernardino             | 25%                    | 23%                    | -2%          |
| San Diego                  | 26%                    | 25%                    | -1%          |
| San Francisco              | 47%                    | 45%                    | -2%          |
| San Joaquin                | 36%                    | 34%                    | -2%          |
| San Luis Obispo            | 25%                    | 25%                    | 0%           |
| San Mateo                  | 45%                    | 44%                    | -1%          |
| Santa Barbara              | 38%                    | 39%                    | 1%           |
| Santa Clara                | 37%                    | 37%                    | 0%           |
| Santa Cruz                 | 37%                    | 37%                    | 0%           |
| Shasta                     | 18%                    | 17%                    | -1%          |
| Sierra & Yuba              | 29%                    | 29%                    | 0%           |
| Siskiyou & Trinity         | 16%                    | 12%                    | -4%          |
| Solano                     | 42%                    | 43%                    | 1%           |
| Sonoma                     | 41%                    | 40%                    | -1%          |
| Stanislaus                 | 31%                    | 29%                    | -2%          |
| Sutter                     | 30%                    | 32%                    | 2%           |
| Tulare                     | 30%                    | 29%                    | -1%          |
| Ventura                    | 28%                    | 26%                    | -2%          |
| Yolo                       | 36%                    | 38%                    | 2%           |
| California                 | 30%                    | 29%                    | -1%          |

**Table A4. Number of 13-year-olds by count of HPV vaccine doses, by county and gender, 2021**

| County or Region              | Gender | No Dose | One Dose | More Than One Dose | Total  |
|-------------------------------|--------|---------|----------|--------------------|--------|
| Alameda                       | Female | 3,459   | 2,829    | 4,651              | 10,939 |
| Alameda                       | Male   | 3,781   | 3,032    | 4,626              | 11,439 |
| Alpine, Amador, and Calaveras | Female | 197     | 99       | 90                 | 386    |
| Alpine, Amador, and Calaveras | Male   | 207     | 109      | 71                 | 387    |
| Butte                         | Female | 573     | 337      | 260                | 1,170  |
| Butte                         | Male   | 617     | 338      | 280                | 1,235  |
| Colusa, Glenn, and Tehama     | Female | 197     | 99       | 90                 | 386    |
| Colusa, Glenn, and Tehama     | Male   | 207     | 109      | 71                 | 387    |
| Contra Costa                  | Female | 2,862   | 2,290    | 3,316              | 8,468  |
| Contra Costa                  | Male   | 3,187   | 2,496    | 3,218              | 8,901  |
| Del Norte and Humboldt        | Female | 548     | 291      | 223                | 1,062  |
| Del Norte and Humboldt        | Male   | 617     | 295      | 236                | 1,148  |
| El Dorado                     | Female | 534     | 193      | 304                | 1,031  |
| El Dorado                     | Male   | 562     | 240      | 303                | 1,105  |
| Fresno                        | Female | 2,998   | 2,574    | 2,997              | 8,569  |
| Fresno                        | Male   | 3,204   | 2,755    | 2,887              | 8,846  |
| Imperial                      | Female | 1,066   | 554      | 454                | 2,074  |
| Imperial                      | Male   | 1,231   | 593      | 387                | 2,211  |
| Inyo and Mono                 | Female | 92      | 68       | 63                 | 223    |
| Inyo and Mono                 | Male   | 100     | 49       | 60                 | 209    |
| Kern                          | Female | 3,883   | 2,870    | 2,216              | 8,969  |
| Kern                          | Male   | 4,078   | 3,086    | 2,094              | 9,258  |
| Kings                         | Female | 491     | 497      | 362                | 1,350  |

| County or Region         | Gender       | No Dose | One Dose | More Than One Dose | Total  |
|--------------------------|--------------|---------|----------|--------------------|--------|
| Kings                    | Male         | 546     | 490      | 330                | 1,366  |
| Lake                     | Female       | 173     | 150      | 94                 | 417    |
| Lake                     | Male         | 201     | 138      | 97                 | 436    |
| Lassen, Modoc and Plumas | Female       | 226     | 74       | 56                 | 356    |
| Lassen, Modoc and Plumas | Male         | 242     | 60       | 36                 | 338    |
| Los Angeles              | Female       | 26,425  | 16,540   | 19,092             | 62,057 |
| Los Angeles              | Male         | 28,399  | 17,276   | 18,838             | 64,513 |
| Los Angeles              | Non-Binary   | -       | -        | -                  | 14     |
| Los Angeles              | Unidentified | 23      | -        | -                  | 38     |
| Madera                   | Female       | 497     | 418      | 525                | 1,440  |
| Madera                   | Male         | 512     | 431      | 515                | 1,458  |
| Marin                    | Female       | 547     | 544      | 571                | 1,662  |
| Marin                    | Male         | 596     | 512      | 675                | 1,783  |
| Mendocino                | Female       | 221     | 157      | 174                | 552    |
| Mendocino                | Male         | 256     | 179      | 140                | 575    |
| Merced                   | Female       | 956     | 742      | 752                | 2,450  |
| Merced                   | Male         | 1,005   | 758      | 641                | 2,404  |
| Mariposa and Tuolumne    | Female       | 196     | 68       | 50                 | 314    |
| Mariposa and Tuolumne    | Male         | 226     | 63       | 47                 | 336    |
| Monterey                 | Female       | 1,533   | 1,066    | 1,448              | 4,047  |
| Monterey                 | Male         | 1,608   | 1,072    | 1,419              | 4,099  |
| Napa                     | Female       | 277     | 200      | 465                | 942    |
| Napa                     | Male         | 324     | 209      | 442                | 975    |
| Nevada                   | Female       | 351     | 138      | 109                | 598    |

| County or Region | Gender       | No Dose | One Dose | More Than One Dose | Total  |
|------------------|--------------|---------|----------|--------------------|--------|
| Nevada           | Male         | 352     | 163      | 94                 | 609    |
| Orange           | Female       | 9,721   | 5,078    | 6,630              | 21,429 |
| Orange           | Male         | 10,618  | 5,335    | 6,603              | 22,556 |
| Placer           | Female       | 1,130   | 557      | 922                | 2,609  |
| Placer           | Male         | 1,098   | 578      | 930                | 2,606  |
| Riverside        | Female       | 9,724   | 4,870    | 4,819              | 19,413 |
| Riverside        | Male         | 10,657  | 5,172    | 4,840              | 20,669 |
| Sacramento       | Female       | 3,660   | 2,518    | 4,428              | 10,606 |
| Sacramento       | Male         | 4,014   | 2,664    | 4,557              | 11,235 |
| San Benito       | Female       | 202     | 162      | 156                | 520    |
| San Benito       | Male         | 194     | 166      | 110                | 470    |
| San Bernardino   | Female       | 8,795   | 4,950    | 4,257              | 18,002 |
| San Bernardino   | Male         | 9,382   | 5,397    | 4,141              | 18,920 |
| San Diego        | Female       | 13,070  | 6,487    | 6,797              | 26,354 |
| San Diego        | Male         | 14,002  | 6,744    | 6,807              | 27,553 |
| San Diego        | Unidentified | 811     | 32       | 18                 | 861    |
| San Francisco    | Female       | 830     | 793      | 1,358              | 2,981  |
| San Francisco    | Male         | 912     | 870      | 1,439              | 3,221  |
| San Joaquin      | Female       | 2,557   | 1,784    | 2,348              | 6,689  |
| San Joaquin      | Male         | 2,752   | 1,802    | 2,264              | 6,818  |
| San Luis Obispo  | Female       | 909     | 365      | 432                | 1,706  |
| San Luis Obispo  | Male         | 877     | 392      | 438                | 1,707  |
| San Mateo        | Female       | 1,259   | 1,156    | 2,002              | 4,417  |
| San Mateo        | Male         | 1,346   | 1,321    | 2,003              | 4,670  |

| County or Region     | Gender | No Dose | One Dose | More Than One Dose | Total  |
|----------------------|--------|---------|----------|--------------------|--------|
| Santa Barbara        | Female | 1,034   | 741      | 1,172              | 2,947  |
| Santa Barbara        | Male   | 1,151   | 806      | 1,195              | 3,152  |
| Santa Clara          | Female | 3,990   | 3,127    | 4,443              | 11,560 |
| Santa Clara          | Male   | 4,449   | 3,346    | 4,335              | 12,130 |
| Santa Cruz           | Female | 631     | 421      | 668                | 1,720  |
| Santa Cruz           | Male   | 711     | 455      | 619                | 1,785  |
| Shasta               | Female | 734     | 203      | 200                | 1,137  |
| Shasta               | Male   | 748     | 214      | 181                | 1,143  |
| Sierra and Yuba      | Female | 323     | 170      | 209                | 702    |
| Sierra and Yuba      | Male   | 360     | 178      | 221                | 759    |
| Siskiyou and Trinity | Female | 201     | 84       | 42                 | 327    |
| Siskiyou and Trinity | Male   | 256     | 80       | 40                 | 376    |
| Solano               | Female | 911     | 720      | 1,331              | 2,962  |
| Solano               | Male   | 955     | 843      | 1,255              | 3,053  |
| Sonoma               | Female | 1,087   | 708      | 1,238              | 3,033  |
| Sonoma               | Male   | 1,069   | 784      | 1,186              | 3,039  |
| Stanislaus           | Female | 1,877   | 1,114    | 1,221              | 4,212  |
| Stanislaus           | Male   | 1,920   | 1,178    | 1,232              | 4,330  |
| Sutter               | Female | 343     | 217      | 266                | 826    |
| Sutter               | Male   | 364     | 234      | 280                | 878    |
| Tehama               | Female | 300     | 132      | 97                 | 529    |
| Tehama               | Male   | 346     | 123      | 101                | 570    |
| Tulare               | Female | 1,688   | 1,501    | 1,353              | 4,542  |
| Tulare               | Male   | 1,782   | 1,585    | 1,293              | 4,660  |

| County or Region    | Gender       | No Dose | One Dose | More Than One Dose | Total  |
|---------------------|--------------|---------|----------|--------------------|--------|
| Ventura             | Female       | 2,415   | 1,594    | 1,503              | 5,512  |
| Ventura             | Male         | 2,567   | 1,659    | 1,357              | 5,583  |
| Yolo                | Female       | 510     | 416      | 558                | 1,484  |
| Yolo                | Male         | 499     | 406      | 558                | 1,463  |
| County Unidentified | Female       | 10,281  | 775      | 610                | 11,666 |
| County Unidentified | Male         | 11,440  | 845      | 583                | 12,868 |
| County Unidentified | Unidentified | 596     | 26       | 19                 | 641    |

**Table A5. Number of 13-year-olds by race/ethnicity in California, 2020 and 2021**

| Race/Ethnicity                                          | Count of 13-Year-Olds |         |
|---------------------------------------------------------|-----------------------|---------|
|                                                         | 2020                  | 2021    |
| Hispanic or Latino                                      | 225,094               | 220,836 |
| Not Hispanic/Latino American Indian or Alaskan Native   | 1,126                 | 1,152   |
| Not Hispanic/Latino Asian                               | 32,163                | 31,570  |
| Not Hispanic/Latino Black                               | 16,836                | 17,354  |
| Not Hispanic/Latino Multiracial                         | 70,870                | 71,312  |
| Not Hispanic/Latino Native Hawaiian or Pacific Islander | 1,095                 | 1,169   |
| Not Hispanic/Latino Other                               | 33,660                | 35,109  |
| Not Hispanic/Latino White                               | 77,898                | 77,984  |

|                    |                |                |
|--------------------|----------------|----------------|
| Unknown            | 134,242        | 132,842        |
| <b>Grand Total</b> | <b>592,984</b> | <b>589,328</b> |

**Table A6. Number of 13-year-olds by count of HPV vaccine doses, by county and race/ethnicity, 2021**

| County or Region           | Race/Ethnicity              | No Doses     | One Dose     | More Than One Dose | Total Persons     |
|----------------------------|-----------------------------|--------------|--------------|--------------------|-------------------|
| Alameda                    | Hispanic or Latino          | 1,160        | 1,673        | 2,602              | 5,435             |
| Alameda                    | Not Hisp/Latino AIAN        | —            | —            | —                  | 17                |
| Alameda                    | Not Hisp/Latino Asian       | 777          | 820          | 1,708              | 3,305             |
| Alameda                    | Not Hisp/Latino Black       | 363          | 421          | 431                | 1,215             |
| Alameda                    | Not Hisp/Latino Multiracial | 949          | 1,272        | 2,115              | 4,336             |
| Alameda                    | Not Hisp/Latino NHPI        | 29           | 31           | 23                 | 83                |
| Alameda                    | Not Hisp/Latino Other       | 426          | 527          | 1,068              | 2,021             |
| Alameda                    | Not Hisp/Latino White       | 682          | 569          | 787                | 2,038             |
| Alameda                    | Unknown                     | 2,854        | 545          | 538                | 3,937             |
| Alameda                    | <b>Total</b>                | <b>7,245</b> | <b>5,863</b> | <b>9,279</b>       | <b>22,387</b>     |
| Alpine, Amador & Calaveras | Hispanic or Latino          | 38           | 38           | 35                 | 111               |
| Alpine, Amador & Calaveras | Not Hisp/Latino AIAN        | —            | —            | —                  | Min Count Not Met |
| Alpine, Amador & Calaveras | Not Hisp/Latino Asian       | —            | —            | —                  | Min Count Not Met |
| Alpine, Amador & Calaveras | Not Hisp/Latino Black       | —            | —            | —                  | Min Count Not Met |
| Alpine, Amador & Calaveras | Not Hisp/Latino Multiracial | 26           | 20           | —                  | 56                |

|                                       |                             |             |            |            |                   |
|---------------------------------------|-----------------------------|-------------|------------|------------|-------------------|
| <b>Alpine, Amador &amp; Calaveras</b> | Not Hisp/Latino NHPI        | —           | —          | —          | Min Count Not Met |
| <b>Alpine, Amador &amp; Calaveras</b> | Not Hisp/Latino Other       | 14          | 13         | 15         | 42                |
| <b>Alpine, Amador &amp; Calaveras</b> | Not Hisp/Latino White       | 181         | 77         | 70         | 328               |
| <b>Alpine, Amador &amp; Calaveras</b> | Unknown                     | 139         | 55         | 28         | 222               |
| <b>Alpine, Amador &amp; Calaveras</b> | <b>Total</b>                | <b>406</b>  | <b>208</b> | <b>161</b> | <b>775</b>        |
| <b>Butte</b>                          | Hispanic or Latino          | 132         | 138        | 166        | 436               |
| <b>Butte</b>                          | Not Hisp/Latino AIAN        | 12          | 12         | —          | 29                |
| <b>Butte</b>                          | Not Hisp/Latino Asian       | 23          | 34         | 28         | 85                |
| <b>Butte</b>                          | Not Hisp/Latino Black       | 18          | —          | —          | 33                |
| <b>Butte</b>                          | Not Hisp/Latino Multiracial | 164         | 91         | 66         | 321               |
| <b>Butte</b>                          | Not Hisp/Latino NHPI        | —           | —          | —          | Min Count Not Met |
| <b>Butte</b>                          | Not Hisp/Latino Other       | 18          | 21         | 12         | 51                |
| <b>Butte</b>                          | Not Hisp/Latino White       | 446         | 289        | 229        | 964               |
| <b>Butte</b>                          | Unknown                     | 374         | 80         | 29         | 483               |
| <b>Butte</b>                          | <b>Total</b>                | <b>1190</b> | <b>675</b> | <b>540</b> | <b>2405</b>       |
| <b>Colusa, Glenn and Tehama</b>       | Hispanic or Latino          | 237         | 171        | 195        | 603               |
| <b>Colusa, Glenn and Tehama</b>       | Not Hisp/Latino AIAN        | —           | —          | —          | Min Count Not Met |
| <b>Colusa, Glenn and Tehama</b>       | Not Hisp/Latino Asian       | —           | —          | —          | Min Count Not Met |
| <b>Colusa, Glenn and Tehama</b>       | Not Hisp/Latino Black       | —           | —          | —          | Min Count Not Met |
| <b>Colusa, Glenn and Tehama</b>       | Not Hisp/Latino Multiracial | 67          | 52         | 33         | 152               |
| <b>Colusa, Glenn and Tehama</b>       | Not Hisp/Latino NHPI        | —           | —          | —          | Min Count Not Met |

|                                 |                             |              |              |              |                   |
|---------------------------------|-----------------------------|--------------|--------------|--------------|-------------------|
| <b>Colusa, Glenn and Tehama</b> | Not Hisp/Latino Other       | 20           | 13           | 11           | 44                |
| <b>Colusa, Glenn and Tehama</b> | Not Hisp/Latino White       | 209          | 117          | 87           | 413               |
| <b>Colusa, Glenn and Tehama</b> | Unknown                     | 577          | 84           | 60           | 721               |
| <b>Colusa, Glenn and Tehama</b> | <b>Total</b>                | <b>1,116</b> | <b>448</b>   | <b>396</b>   | <b>1,960</b>      |
| <b>Contra Costa</b>             | Hispanic or Latino          | 1,412        | 1,639        | 1,987        | 5,038             |
| <b>Contra Costa</b>             | Not Hisp/Latino AIAN        | —            | —            | —            | Min Count Not Met |
| <b>Contra Costa</b>             | Not Hisp/Latino Asian       | 327          | 357          | 617          | 1,301             |
| <b>Contra Costa</b>             | Not Hisp/Latino Black       | 251          | 292          | 320          | 863               |
| <b>Contra Costa</b>             | Not Hisp/Latino Multiracial | 680          | 847          | 1,365        | 2,892             |
| <b>Contra Costa</b>             | Not Hisp/Latino NHPI        | 13           | 22           | 16           | 51                |
| <b>Contra Costa</b>             | Not Hisp/Latino Other       | 324          | 402          | 726          | 1,452             |
| <b>Contra Costa</b>             | Not Hisp/Latino White       | 1,159        | 754          | 1,020        | 2,933             |
| <b>Contra Costa</b>             | Unknown                     | 1,886        | 472          | 479          | 2,837             |
| <b>Contra Costa</b>             | <b>Total</b>                | <b>6,053</b> | <b>4,787</b> | <b>6,534</b> | <b>17,374</b>     |
| <b>County Unspecified</b>       | Hispanic or Latino          | 1,789        | 219          | 145          | 2,153             |
| <b>County Unspecified</b>       | Not Hisp/Latino AIAN        | 13           | —            | —            | 15                |
| <b>County Unspecified</b>       | Not Hisp/Latino Asian       | 114          | 44           | 43           | 201               |
| <b>County Unspecified</b>       | Not Hisp/Latino Black       | 83           | 22           | 15           | 120               |
| <b>County Unspecified</b>       | Not Hisp/Latino Multiracial | 141          | 62           | 87           | 290               |
| <b>County Unspecified</b>       | Not Hisp/Latino NHPI        | —            | —            | —            | 11                |
| <b>County Unspecified</b>       | Not Hisp/Latino Other       | 178          | 32           | 20           | 230               |
| <b>County Unspecified</b>       | Not Hisp/Latino White       | 928          | 103          | 80           | 1,111             |
| <b>County Unspecified</b>       | Unknown                     | 19,067       | 1,162        | 816          | 21,045            |

| County Unspecified     | Total                       | 22,319       | 1,646      | 1,211      | 25,176            |
|------------------------|-----------------------------|--------------|------------|------------|-------------------|
| Del Norte and Humboldt | Hispanic or Latino          | 91           | 86         | 129        | 306               |
| Del Norte and Humboldt | Not Hisp/Latino AIAN        | 54           | 56         | 37         | 147               |
| Del Norte and Humboldt | Not Hisp/Latino Asian       | 16           | 17         | —          | 42                |
| Del Norte and Humboldt | Not Hisp/Latino Black       | —            | —          | —          | 15                |
| Del Norte and Humboldt | Not Hisp/Latino Multiracial | 115          | 101        | 66         | 282               |
| Del Norte and Humboldt | Not Hisp/Latino NHPI        | —            | —          | —          | Min Count Not Met |
| Del Norte and Humboldt | Not Hisp/Latino Other       | —            | —          | —          | 12                |
| Del Norte and Humboldt | Not Hisp/Latino White       | 478          | 272        | 186        | 936               |
| Del Norte and Humboldt | Unknown                     | 391          | 41         | 27         | 459               |
| Del Norte and Humboldt | <b>Total</b>                | <b>1,165</b> | <b>586</b> | <b>459</b> | <b>2,210</b>      |
| El Dorado              | Hispanic or Latino          | 102          | 94         | 116        | 312               |
| El Dorado              | Not Hisp/Latino AIAN        | —            | —          | —          | Min Count Not Met |
| El Dorado              | Not Hisp/Latino Asian       | 20           | 13         | 21         | 54                |
| El Dorado              | Not Hisp/Latino Black       | —            | —          | —          | Min Count Not Met |
| El Dorado              | Not Hisp/Latino Multiracial | 90           | 60         | 117        | 267               |
| El Dorado              | Not Hisp/Latino NHPI        | —            | —          | —          | Min Count Not Met |
| El Dorado              | Not Hisp/Latino Other       | 50           | 30         | 70         | 150               |
| El Dorado              | Not Hisp/Latino White       | 343          | 162        | 180        | 685               |
| El Dorado              | Unknown                     | 482          | 74         | 100        | 656               |

|                      |                             |              |              |              |                   |
|----------------------|-----------------------------|--------------|--------------|--------------|-------------------|
| <b>El Dorado</b>     | <b>Total</b>                | <b>1,096</b> | <b>433</b>   | <b>608</b>   | <b>2,137</b>      |
| <b>Fresno</b>        | Hispanic or Latino          | 2,260        | 2,994        | 2,923        | 8,177             |
| <b>Fresno</b>        | Not Hisp/Latino AIAN        | 18           | 21           | 16           | 55                |
| <b>Fresno</b>        | Not Hisp/Latino Asian       | 155          | 202          | 253          | 610               |
| <b>Fresno</b>        | Not Hisp/Latino Black       | 83           | 132          | 100          | 315               |
| <b>Fresno</b>        | Not Hisp/Latino Multiracial | 367          | 373          | 540          | 1,280             |
| <b>Fresno</b>        | Not Hisp/Latino NHPI        | —            | —            | —            | 11                |
| <b>Fresno</b>        | Not Hisp/Latino Other       | 138          | 98           | 258          | 494               |
| <b>Fresno</b>        | Not Hisp/Latino White       | 900          | 529          | 559          | 1,988             |
| <b>Fresno</b>        | Unknown                     | 2,277        | 980          | 1,230        | 4,487             |
| <b>Fresno</b>        | <b>Total</b>                | <b>6,204</b> | <b>5,329</b> | <b>5,884</b> | <b>17,417</b>     |
| <b>Imperial</b>      | Hispanic or Latino          | 1,082        | 924          | 717          | 2,723             |
| <b>Imperial</b>      | Not Hisp/Latino AIAN        | —            | —            | —            | Min Count Not Met |
| <b>Imperial</b>      | Not Hisp/Latino Asian       | —            | —            | —            | Min Count Not Met |
| <b>Imperial</b>      | Not Hisp/Latino Black       | —            | —            | —            | 15                |
| <b>Imperial</b>      | Not Hisp/Latino Multiracial | 50           | 30           | 31           | 111               |
| <b>Imperial</b>      | Not Hisp/Latino NHPI        | —            | —            | —            | Min Count Not Met |
| <b>Imperial</b>      | Not Hisp/Latino Other       | 50           | 21           | 13           | 84                |
| <b>Imperial</b>      | Not Hisp/Latino White       | 57           | 33           | 21           | 111               |
| <b>Imperial</b>      | Unknown                     | 1,046        | 127          | 54           | 1,227             |
| <b>Imperial</b>      | <b>Total</b>                | <b>2,297</b> | <b>1,147</b> | <b>841</b>   | <b>4,285</b>      |
| <b>Inyo and Mono</b> | Hispanic or Latino          | 26           | 44           | 47           | 117               |
| <b>Inyo and Mono</b> | Not Hisp/Latino AIAN        | —            | —            | 17           | 26                |

|               |                             |              |              |              |                   |
|---------------|-----------------------------|--------------|--------------|--------------|-------------------|
| Inyo and Mono | Not Hisp/Latino Asian       | —            | —            | —            | Min Count Not Met |
| Inyo and Mono | Not Hisp/Latino Black       | —            | —            | —            | Min Count Not Met |
| Inyo and Mono | Not Hisp/Latino Multiracial | —            | 15           | 21           | 41                |
| Inyo and Mono | Not Hisp/Latino NHPI        | —            | —            | —            | Min Count Not Met |
| Inyo and Mono | Not Hisp/Latino Other       | —            | —            | —            | Min Count Not Met |
| Inyo and Mono | Not Hisp/Latino White       | 58           | 39           | 31           | 128               |
| Inyo and Mono | Unknown                     | 99           | —            | —            | 113               |
| Inyo and Mono | <b>Total</b>                | <b>194</b>   | <b>117</b>   | <b>123</b>   | <b>434</b>        |
| Kern          | Hispanic or Latino          | 3,434        | 3,698        | 2,688        | 9,820             |
| Kern          | Not Hisp/Latino AIAN        | —            | —            | —            | 11                |
| Kern          | Not Hisp/Latino Asian       | 45           | 53           | 65           | 163               |
| Kern          | Not Hisp/Latino Black       | 131          | 179          | 77           | 387               |
| Kern          | Not Hisp/Latino Multiracial | 553          | 727          | 544          | 1,824             |
| Kern          | Not Hisp/Latino NHPI        | —            | —            | —            | Min Count Not Met |
| Kern          | Not Hisp/Latino Other       | 185          | 222          | 254          | 661               |
| Kern          | Not Hisp/Latino White       | 1,491        | 696          | 448          | 2,635             |
| Kern          | Unknown                     | 2,114        | 375          | 232          | 2,721             |
| Kern          | <b>Total</b>                | <b>7,961</b> | <b>5,957</b> | <b>4,312</b> | <b>18,230</b>     |
| Kings         | Hispanic or Latino          | 400          | 703          | 486          | 1,589             |
| Kings         | Not Hisp/Latino AIAN        | —            | —            | —            | 23                |
| Kings         | Not Hisp/Latino Asian       | —            | —            | —            | 19                |
| Kings         | Not Hisp/Latino Black       | 11           | 28           | —            | 43                |
| Kings         | Not Hisp/Latino Multiracial | 48           | 43           | 42           | 133               |

|                                    |                             |              |            |            |                   |
|------------------------------------|-----------------------------|--------------|------------|------------|-------------------|
| <b>Kings</b>                       | Not Hisp/Latino NHPI        | —            | —          | —          | Min Count Not Met |
| <b>Kings</b>                       | Not Hisp/Latino Other       | 11           | —          | 12         | 28                |
| <b>Kings</b>                       | Not Hisp/Latino White       | 146          | 104        | 68         | 318               |
| <b>Kings</b>                       | Unknown                     | 408          | 86         | 67         | 561               |
| <b>Kings</b>                       | <b>Total</b>                | <b>1,037</b> | <b>987</b> | <b>692</b> | <b>2,716</b>      |
| <b>Lake</b>                        | Hispanic or Latino          | 57           | 122        | 88         | 267               |
| <b>Lake</b>                        | Not Hisp/Latino AIAN        | 16           | —          | —          | 28                |
| <b>Lake</b>                        | Not Hisp/Latino Asian       | —            | —          | —          | Min Count Not Met |
| <b>Lake</b>                        | Not Hisp/Latino Black       | —            | —          | —          | Min Count Not Met |
| <b>Lake</b>                        | Not Hisp/Latino Multiracial | 30           | 30         | 28         | 88                |
| <b>Lake</b>                        | Not Hisp/Latino NHPI        | —            | —          | —          | Min Count Not Met |
| <b>Lake</b>                        | Not Hisp/Latino Other       | 14           | 21         | —          | 42                |
| <b>Lake</b>                        | Not Hisp/Latino White       | 133          | 90         | 60         | 283               |
| <b>Lake</b>                        | Unknown                     | 118          | 13         | —          | 136               |
| <b>Lake</b>                        | <b>Total</b>                | <b>375</b>   | <b>288</b> | <b>191</b> | <b>854</b>        |
| <b>Lassen, Modoc, &amp; Plumas</b> | Hispanic or Latino          | 34           | 21         | 19         | 74                |
| <b>Lassen, Modoc, &amp; Plumas</b> | Not Hisp/Latino AIAN        | 13           | —          | —          | 16                |
| <b>Lassen, Modoc, &amp; Plumas</b> | Not Hisp/Latino Asian       | —            | —          | —          | Min Count Not Met |
| <b>Lassen, Modoc, &amp; Plumas</b> | Not Hisp/Latino Black       | —            | —          | —          | Min Count Not Met |
| <b>Lassen, Modoc, &amp; Plumas</b> | Not Hisp/Latino Multiracial | 26           | 13         | —          | 46                |
| <b>Lassen, Modoc, &amp; Plumas</b> | Not Hisp/Latino NHPI        | —            | —          | —          | Min Count Not Met |

|                         |                             |               |               |               |                   |
|-------------------------|-----------------------------|---------------|---------------|---------------|-------------------|
| Lassen, Modoc, & Plumas | Not Hisp/Latino Other       | —             | —             | —             | Min Count Not Met |
| Lassen, Modoc, & Plumas | Not Hisp/Latino White       | 201           | 67            | 46            | 314               |
| Lassen, Modoc, & Plumas | Unknown                     | 180           | 21            | 13            | 214               |
| Lassen, Modoc, & Plumas | <b>Total</b>                | <b>468</b>    | <b>134</b>    | <b>92</b>     | <b>694</b>        |
| Los Angeles             | Hispanic or Latino          | 16,269        | 17,473        | 20,430        | 54,172            |
| Los Angeles             | Not Hisp/Latino AIAN        | 44            | 18            | 26            | 88                |
| Los Angeles             | Not Hisp/Latino Asian       | 1,938         | 1,392         | 1,990         | 5,320             |
| Los Angeles             | Not Hisp/Latino Black       | 1,907         | 1,794         | 1,583         | 5,284             |
| Los Angeles             | Not Hisp/Latino Multiracial | 5,485         | 4,147         | 4,848         | 14,480            |
| Los Angeles             | Not Hisp/Latino NHPI        | 62            | 54            | 46            | 162               |
| Los Angeles             | Not Hisp/Latino Other       | 3,142         | 2,900         | 3,969         | 10,011            |
| Los Angeles             | Not Hisp/Latino White       | 4,583         | 2,006         | 1,946         | 8,535             |
| Los Angeles             | Unknown                     | 21,424        | 4,042         | 3,107         | 28,573            |
| Los Angeles             | <b>Total</b>                | <b>54,854</b> | <b>33,826</b> | <b>37,945</b> | <b>126,625</b>    |
| Madera                  | Hispanic or Latino          | 285           | 394           | 661           | 1,340             |
| Madera                  | Not Hisp/Latino AIAN        | —             | —             | —             | 17                |
| Madera                  | Not Hisp/Latino Asian       | —             | —             | —             | Min Count Not Met |
| Madera                  | Not Hisp/Latino Black       | —             | —             | —             | 15                |
| Madera                  | Not Hisp/Latino Multiracial | 38            | 38            | 63            | 139               |
| Madera                  | Not Hisp/Latino NHPI        | —             | —             | —             | Min Count Not Met |
| Madera                  | Not Hisp/Latino Other       | 34            | 25            | 55            | 114               |
| Madera                  | Not Hisp/Latino White       | 144           | 101           | 100           | 345               |
| Madera                  | Unknown                     | 497           | 277           | 149           | 923               |

|                                |                             |              |              |              |                   |
|--------------------------------|-----------------------------|--------------|--------------|--------------|-------------------|
| <b>Madera</b>                  | <b>Total</b>                | <b>1,009</b> | <b>849</b>   | <b>1,040</b> | <b>2,898</b>      |
| <b>Marin</b>                   | Hispanic or Latino          | 126          | 345          | 329          | 800               |
| <b>Marin</b>                   | Not Hisp/Latino AIAN        | —            | —            | —            | Min Count Not Met |
| <b>Marin</b>                   | Not Hisp/Latino Asian       | 28           | 23           | 33           | 84                |
| <b>Marin</b>                   | Not Hisp/Latino Black       | —            | —            | —            | 28                |
| <b>Marin</b>                   | Not Hisp/Latino Multiracial | 205          | 261          | 332          | 798               |
| <b>Marin</b>                   | Not Hisp/Latino NHPI        | —            | —            | —            | Min Count Not Met |
| <b>Marin</b>                   | Not Hisp/Latino Other       | 37           | 64           | 95           | 196               |
| <b>Marin</b>                   | Not Hisp/Latino White       | 354          | 289          | 394          | 1,037             |
| <b>Marin</b>                   | Unknown                     | 387          | 65           | 51           | 503               |
| <b>Marin</b>                   | <b>Total</b>                | <b>1,147</b> | <b>1,056</b> | <b>1,246</b> | <b>3,449</b>      |
| <b>Mariposa</b>                | Hispanic or Latino          | 18           | 12           | —            | 36                |
| <b>Mariposa &amp; Tuolumne</b> | Hispanic or Latino          | 46           | 25           | 19           | 90                |
| <b>Mariposa &amp; Tuolumne</b> | Not Hisp/Latino AIAN        | —            | —            | —            | Min Count Not Met |
| <b>Mariposa &amp; Tuolumne</b> | Not Hisp/Latino Asian       | —            | —            | —            | Min Count Not Met |
| <b>Mariposa &amp; Tuolumne</b> | Not Hisp/Latino Black       | —            | —            | —            | Min Count Not Met |
| <b>Mariposa &amp; Tuolumne</b> | Not Hisp/Latino Multiracial | 14           | —            | —            | 26                |
| <b>Mariposa &amp; Tuolumne</b> | Not Hisp/Latino NHPI        | —            | —            | —            | Min Count Not Met |
| <b>Mariposa &amp; Tuolumne</b> | Not Hisp/Latino Other       | 15           | —            | —            | 28                |
| <b>Mariposa &amp; Tuolumne</b> | Not Hisp/Latino White       | 271          | 73           | 61           | 405               |
| <b>Mariposa &amp; Tuolumne</b> | Unknown                     | 59           | 13           | —            | 76                |
| <b>Mariposa &amp; Tuolumne</b> | <b>Total</b>                | <b>422</b>   | <b>131</b>   | <b>97</b>    | <b>650</b>        |
| <b>Mendocino</b>               | Hispanic or Latino          | 105          | 158          | 163          | 426               |

|                  |                             |              |              |              |                   |
|------------------|-----------------------------|--------------|--------------|--------------|-------------------|
| <b>Mendocino</b> | Not Hisp/Latino AIAN        | 33           | 19           | —            | 59                |
| <b>Mendocino</b> | Not Hisp/Latino Asian       | —            | —            | —            | Min Count Not Met |
| <b>Mendocino</b> | Not Hisp/Latino Black       | —            | —            | —            | Min Count Not Met |
| <b>Mendocino</b> | Not Hisp/Latino Multiracial | 62           | 51           | 49           | 162               |
| <b>Mendocino</b> | Not Hisp/Latino NHPI        | —            | —            | —            | Min Count Not Met |
| <b>Mendocino</b> | Not Hisp/Latino Other       | 25           | 18           | 12           | 55                |
| <b>Mendocino</b> | Not Hisp/Latino White       | 163          | 68           | 58           | 289               |
| <b>Mendocino</b> | Unknown                     | 84           | 18           | 21           | 123               |
| <b>Mendocino</b> | <b>Total</b>                | <b>477</b>   | <b>336</b>   | <b>314</b>   | <b>1,127</b>      |
| <b>Merced</b>    | Hispanic or Latino          | 1,063        | 1,019        | 982          | 3,064             |
| <b>Merced</b>    | Not Hisp/Latino AIAN        | —            | —            | —            | Min Count Not Met |
| <b>Merced</b>    | Not Hisp/Latino Asian       | 53           | 27           | 37           | 117               |
| <b>Merced</b>    | Not Hisp/Latino Black       | 40           | 32           | 23           | 95                |
| <b>Merced</b>    | Not Hisp/Latino Multiracial | 55           | 46           | 45           | 146               |
| <b>Merced</b>    | Not Hisp/Latino NHPI        | —            | —            | —            | Min Count Not Met |
| <b>Merced</b>    | Not Hisp/Latino Other       | 52           | 31           | 43           | 126               |
| <b>Merced</b>    | Not Hisp/Latino White       | 228          | 132          | 96           | 456               |
| <b>Merced</b>    | Unknown                     | 462          | 210          | 165          | 837               |
| <b>Merced</b>    | <b>Total</b>                | <b>1,961</b> | <b>1,500</b> | <b>1,393</b> | <b>4,854</b>      |
| <b>Monterey</b>  | Hispanic or Latino          | 1,523        | 1,659        | 2,442        | 5,624             |
| <b>Monterey</b>  | Not Hisp/Latino AIAN        | —            | —            | —            | Min Count Not Met |
| <b>Monterey</b>  | Not Hisp/Latino Asian       | 20           | 13           | 11           | 44                |
| <b>Monterey</b>  | Not Hisp/Latino Black       | 12           | —            | —            | 25                |

|                 |                             |              |              |              |                   |
|-----------------|-----------------------------|--------------|--------------|--------------|-------------------|
| <b>Monterey</b> | Not Hisp/Latino Multiracial | 331          | 175          | 128          | 634               |
| <b>Monterey</b> | Not Hisp/Latino NHPI        | —            | —            | —            | Min Count Not Met |
| <b>Monterey</b> | Not Hisp/Latino Other       | 46           | 19           | 18           | 83                |
| <b>Monterey</b> | Not Hisp/Latino White       | 315          | 94           | 111          | 520               |
| <b>Monterey</b> | Unknown                     | 891          | 169          | 152          | 1,212             |
| <b>Monterey</b> | <b>Total</b>                | <b>3,143</b> | <b>2,138</b> | <b>2,869</b> | <b>8,150</b>      |
| <b>Napa</b>     | Hispanic or Latino          | 122          | 198          | 434          | 754               |
| <b>Napa</b>     | Not Hisp/Latino AIAN        | —            | —            | —            | Min Count Not Met |
| <b>Napa</b>     | Not Hisp/Latino Asian       | —            | 11           | 38           | 56                |
| <b>Napa</b>     | Not Hisp/Latino Black       | —            | —            | 13           | 23                |
| <b>Napa</b>     | Not Hisp/Latino Multiracial | 58           | 58           | 125          | 241               |
| <b>Napa</b>     | Not Hisp/Latino NHPI        | —            | —            | —            | Min Count Not Met |
| <b>Napa</b>     | Not Hisp/Latino Other       | 25           | 28           | 87           | 140               |
| <b>Napa</b>     | Not Hisp/Latino White       | 98           | 60           | 125          | 283               |
| <b>Napa</b>     | Unknown                     | 286          | 48           | 85           | 419               |
| <b>Napa</b>     | <b>Total</b>                | <b>602</b>   | <b>409</b>   | <b>907</b>   | <b>1,918</b>      |
| <b>Nevada</b>   | Hispanic or Latino          | 66           | 64           | 38           | 168               |
| <b>Nevada</b>   | Not Hisp/Latino AIAN        | —            | —            | —            | 13                |
| <b>Nevada</b>   | Not Hisp/Latino Asian       | —            | —            | —            | Min Count Not Met |
| <b>Nevada</b>   | Not Hisp/Latino Black       | —            | —            | —            | Min Count Not Met |
| <b>Nevada</b>   | Not Hisp/Latino Multiracial | 114          | 82           | 52           | 248               |
| <b>Nevada</b>   | Not Hisp/Latino NHPI        | —            | —            | —            | Min Count Not Met |

|               |                             |               |               |               |                   |
|---------------|-----------------------------|---------------|---------------|---------------|-------------------|
| <b>Nevada</b> | Not Hisp/Latino Other       | 17            | —             | —             | 26                |
| <b>Nevada</b> | Not Hisp/Latino White       | 339           | 126           | 89            | 554               |
| <b>Nevada</b> | Unknown                     | 154           | 21            | 14            | 189               |
| <b>Nevada</b> | <b>Total</b>                | <b>703</b>    | <b>301</b>    | <b>203</b>    | <b>1,207</b>      |
| <b>Orange</b> | Hispanic or Latino          | 3,873         | 3,890         | 5,029         | 12,792            |
| <b>Orange</b> | Not Hisp/Latino AIAN        | 13            | —             | —             | 30                |
| <b>Orange</b> | Not Hisp/Latino Asian       | 1,523         | 981           | 1,647         | 4,151             |
| <b>Orange</b> | Not Hisp/Latino Black       | 130           | 80            | 103           | 313               |
| <b>Orange</b> | Not Hisp/Latino Multiracial | 1,757         | 1,578         | 2,092         | 5,427             |
| <b>Orange</b> | Not Hisp/Latino NHPI        | 28            | 20            | 23            | 71                |
| <b>Orange</b> | Not Hisp/Latino Other       | 740           | 645           | 777           | 2,162             |
| <b>Orange</b> | Not Hisp/Latino White       | 2,827         | 1,380         | 1,604         | 5,811             |
| <b>Orange</b> | Unknown                     | 9,454         | 1,831         | 1,951         | 13,236            |
| <b>Orange</b> | <b>Total</b>                | <b>20,345</b> | <b>10,415</b> | <b>13,233</b> | <b>43,993</b>     |
| <b>Placer</b> | Hispanic or Latino          | 261           | 214           | 314           | 789               |
| <b>Placer</b> | Not Hisp/Latino AIAN        | 21            | —             | —             | 31                |
| <b>Placer</b> | Not Hisp/Latino Asian       | 66            | 65            | 98            | 229               |
| <b>Placer</b> | Not Hisp/Latino Black       | 21            | 23            | 28            | 72                |
| <b>Placer</b> | Not Hisp/Latino Multiracial | 259           | 223           | 368           | 850               |
| <b>Placer</b> | Not Hisp/Latino NHPI        | —             | —             | —             | Min Count Not Met |
| <b>Placer</b> | Not Hisp/Latino Other       | 146           | 92            | 231           | 469               |
| <b>Placer</b> | Not Hisp/Latino White       | 746           | 368           | 579           | 1,693             |
| <b>Placer</b> | Unknown                     | 708           | 144           | 227           | 1,079             |
| <b>Placer</b> | <b>Total</b>                | <b>2,229</b>  | <b>1,136</b>  | <b>1,852</b>  | <b>5,217</b>      |

|                   |                             |               |               |              |                   |
|-------------------|-----------------------------|---------------|---------------|--------------|-------------------|
| <b>Riverside</b>  | Hispanic or Latino          | 8,588         | 5,252         | 4,875        | 18,715            |
| <b>Riverside</b>  | Not Hisp/Latino AIAN        | 25            | 19            | —            | 48                |
| <b>Riverside</b>  | Not Hisp/Latino Asian       | 270           | 186           | 235          | 691               |
| <b>Riverside</b>  | Not Hisp/Latino Black       | 531           | 348           | 351          | 1,230             |
| <b>Riverside</b>  | Not Hisp/Latino Multiracial | 2,155         | 1,621         | 1,765        | 5,541             |
| <b>Riverside</b>  | Not Hisp/Latino NHPI        | 35            | 24            | 18           | 77                |
| <b>Riverside</b>  | Not Hisp/Latino Other       | 895           | 582           | 808          | 2,285             |
| <b>Riverside</b>  | Not Hisp/Latino White       | 3,952         | 1,206         | 1,136        | 6,294             |
| <b>Riverside</b>  | Unknown                     | 3,934         | 805           | 468          | 5,207             |
| <b>Riverside</b>  | <b>Total</b>                | <b>20,385</b> | <b>10,043</b> | <b>9,660</b> | <b>40,088</b>     |
| <b>Sacramento</b> | Hispanic or Latino          | 1,144         | 1,277         | 2,200        | 4,621             |
| <b>Sacramento</b> | Not Hisp/Latino AIAN        | 21            | 15            | 15           | 51                |
| <b>Sacramento</b> | Not Hisp/Latino Asian       | 462           | 476           | 1,006        | 1,944             |
| <b>Sacramento</b> | Not Hisp/Latino Black       | 372           | 421           | 564          | 1,357             |
| <b>Sacramento</b> | Not Hisp/Latino Multiracial | 718           | 818           | 1,390        | 2,926             |
| <b>Sacramento</b> | Not Hisp/Latino NHPI        | 34            | 42            | 48           | 124               |
| <b>Sacramento</b> | Not Hisp/Latino Other       | 405           | 424           | 1,095        | 1,924             |
| <b>Sacramento</b> | Not Hisp/Latino White       | 1,280         | 695           | 1,195        | 3,170             |
| <b>Sacramento</b> | Unknown                     | 3,243         | 1,016         | 1,474        | 5,733             |
| <b>Sacramento</b> | <b>Total</b>                | <b>7,679</b>  | <b>5,184</b>  | <b>8,987</b> | <b>21,850</b>     |
| <b>San Benito</b> | Hispanic or Latino          | 152           | 161           | 143          | 456               |
| <b>San Benito</b> | Not Hisp/Latino AIAN        | —             | —             | —            | Min Count Not Met |
| <b>San Benito</b> | Not Hisp/Latino Asian       | —             | —             | —            | 12                |
| <b>San Benito</b> | Not Hisp/Latino Black       | —             | —             | —            | Min Count Not Met |

|                |                             |               |               |              |                   |
|----------------|-----------------------------|---------------|---------------|--------------|-------------------|
| San Benito     | Not Hisp/Latino Multiracial | 27            | 20            | 19           | 66                |
| San Benito     | Not Hisp/Latino NHPI        | —             | —             | —            | Min Count Not Met |
| San Benito     | Not Hisp/Latino Other       | —             | —             | 15           | 31                |
| San Benito     | Not Hisp/Latino White       | 42            | 26            | 22           | 90                |
| San Benito     | Unknown                     | 162           | 109           | 60           | 331               |
| San Benito     | <b>Total</b>                | <b>397</b>    | <b>328</b>    | <b>266</b>   | <b>991</b>        |
| San Bernardino | Hispanic or Latino          | 8,055         | 5,290         | 4,550        | 17,895            |
| San Bernardino | Not Hisp/Latino AIAN        | 13            | —             | —            | 24                |
| San Bernardino | Not Hisp/Latino Asian       | 304           | 217           | 267          | 788               |
| San Bernardino | Not Hisp/Latino Black       | 595           | 553           | 306          | 1,454             |
| San Bernardino | Not Hisp/Latino Multiracial | 1,662         | 1,557         | 1,451        | 4,670             |
| San Bernardino | Not Hisp/Latino NHPI        | 26            | 12            | —            | 47                |
| San Bernardino | Not Hisp/Latino Other       | 729           | 707           | 636          | 2,072             |
| San Bernardino | Not Hisp/Latino White       | 2,739         | 1,066         | 682          | 4,487             |
| San Bernardino | Unknown                     | 4,061         | 943           | 490          | 5,494             |
| San Bernardino | <b>Total</b>                | <b>18,184</b> | <b>10,349</b> | <b>8,398</b> | <b>36,931</b>     |
| San Diego      | Hispanic or Latino          | 6,932         | 5,381         | 5,518        | 17,831            |
| San Diego      | Not Hisp/Latino AIAN        | 80            | 21            | 22           | 123               |
| San Diego      | Not Hisp/Latino Asian       | 1,209         | 783           | 998          | 2,990             |
| San Diego      | Not Hisp/Latino Black       | 1,088         | 504           | 411          | 2,003             |
| San Diego      | Not Hisp/Latino Multiracial | 2,482         | 2,267         | 2,550        | 7,299             |
| San Diego      | Not Hisp/Latino NHPI        | 74            | 39            | 51           | 164               |
| San Diego      | Not Hisp/Latino Other       | 1,696         | 817           | 957          | 3,470             |
| San Diego      | Not Hisp/Latino White       | 6,352         | 2,827         | 2,728        | 11,907            |

|                 |                             |               |               |               |                   |
|-----------------|-----------------------------|---------------|---------------|---------------|-------------------|
| San Diego       | Unknown                     | 7,971         | 625           | 392           | 8,988             |
| San Diego       | <b>Total</b>                | <b>27,884</b> | <b>13,264</b> | <b>13,627</b> | <b>54,775</b>     |
| San Francisco   | Hispanic or Latino          | 319           | 463           | 724           | 1,506             |
| San Francisco   | Not Hisp/Latino AIAN        | —             | —             | —             | Min Count Not Met |
| San Francisco   | Not Hisp/Latino Asian       | 333           | 277           | 779           | 1,389             |
| San Francisco   | Not Hisp/Latino Black       | 77            | 92            | 99            | 268               |
| San Francisco   | Not Hisp/Latino Multiracial | 286           | 432           | 640           | 1,358             |
| San Francisco   | Not Hisp/Latino NHPI        | —             | —             | —             | 22                |
| San Francisco   | Not Hisp/Latino Other       | 80            | 111           | 203           | 394               |
| San Francisco   | Not Hisp/Latino White       | 244           | 212           | 275           | 731               |
| San Francisco   | Unknown                     | 394           | 68            | 68            | 530               |
| San Francisco   | <b>Total</b>                | <b>1,743</b>  | <b>1,663</b>  | <b>2,797</b>  | <b>6,203</b>      |
| San Joaquin     | Hispanic or Latino          | 1,799         | 1,641         | 1,911         | 5,351             |
| San Joaquin     | Not Hisp/Latino AIAN        | —             | —             | —             | 23                |
| San Joaquin     | Not Hisp/Latino Asian       | 391           | 277           | 460           | 1,128             |
| San Joaquin     | Not Hisp/Latino Black       | 247           | 218           | 245           | 710               |
| San Joaquin     | Not Hisp/Latino Multiracial | 282           | 256           | 425           | 963               |
| San Joaquin     | Not Hisp/Latino NHPI        | 26            | 19            | 29            | 74                |
| San Joaquin     | Not Hisp/Latino Other       | 278           | 257           | 478           | 1,013             |
| San Joaquin     | Not Hisp/Latino White       | 696           | 342           | 484           | 1,522             |
| San Joaquin     | Unknown                     | 1,582         | 570           | 572           | 2,724             |
| San Joaquin     | <b>Total</b>                | <b>5,310</b>  | <b>3,586</b>  | <b>4,612</b>  | <b>13,508</b>     |
| San Luis Obispo | Hispanic or Latino          | 209           | 236           | 461           | 906               |
| San Luis Obispo | Not Hisp/Latino AIAN        | —             | —             | —             | Min Count Not Met |

|                        |                             |              |              |              |                   |
|------------------------|-----------------------------|--------------|--------------|--------------|-------------------|
| <b>San Luis Obispo</b> | Not Hisp/Latino Asian       | 11           | —            | —            | 22                |
| <b>San Luis Obispo</b> | Not Hisp/Latino Black       | —            | —            | —            | 14                |
| <b>San Luis Obispo</b> | Not Hisp/Latino Multiracial | 178          | 106          | 131          | 415               |
| <b>San Luis Obispo</b> | Not Hisp/Latino NHPI        | —            | —            | —            | Min Count Not Met |
| <b>San Luis Obispo</b> | Not Hisp/Latino Other       | 40           | 13           | —            | 63                |
| <b>San Luis Obispo</b> | Not Hisp/Latino White       | 581          | 297          | 214          | 1,092             |
| <b>San Luis Obispo</b> | Unknown                     | 756          | 98           | 44           | 898               |
| <b>San Luis Obispo</b> | <b>Total</b>                | <b>1,787</b> | <b>758</b>   | <b>870</b>   | <b>3,415</b>      |
| <b>San Mateo</b>       | Hispanic or Latino          | 464          | 707          | 1,132        | 2,303             |
| <b>San Mateo</b>       | Not Hisp/Latino AIAN        | —            | —            | —            | Min Count Not Met |
| <b>San Mateo</b>       | Not Hisp/Latino Asian       | 289          | 291          | 511          | 1,091             |
| <b>San Mateo</b>       | Not Hisp/Latino Black       | 21           | 20           | 20           | 61                |
| <b>San Mateo</b>       | Not Hisp/Latino Multiracial | 449          | 592          | 1,041        | 2,082             |
| <b>San Mateo</b>       | Not Hisp/Latino NHPI        | 14           | 11           | 23           | 48                |
| <b>San Mateo</b>       | Not Hisp/Latino Other       | 148          | 226          | 390          | 764               |
| <b>San Mateo</b>       | Not Hisp/Latino White       | 484          | 438          | 601          | 1,523             |
| <b>San Mateo</b>       | Unknown                     | 735          | 192          | 286          | 1,213             |
| <b>San Mateo</b>       | <b>Total</b>                | <b>2,605</b> | <b>2,477</b> | <b>4,006</b> | <b>9,088</b>      |
| <b>Santa Barbara</b>   | Hispanic or Latino          | 688          | 1,052        | 1,818        | 3,558             |
| <b>Santa Barbara</b>   | Not Hisp/Latino AIAN        | —            | —            | —            | Min Count Not Met |
| <b>Santa Barbara</b>   | Not Hisp/Latino Asian       | 21           | 19           | 15           | 55                |
| <b>Santa Barbara</b>   | Not Hisp/Latino Black       | 12           | —            | 16           | 33                |
| <b>Santa Barbara</b>   | Not Hisp/Latino Multiracial | 227          | 162          | 150          | 539               |

|                      |                             |              |              |              |                   |
|----------------------|-----------------------------|--------------|--------------|--------------|-------------------|
| <b>Santa Barbara</b> | Not Hisp/Latino NHPI        | —            | —            | —            | Min Count Not Met |
| <b>Santa Barbara</b> | Not Hisp/Latino Other       | 45           | 25           | 43           | 113               |
| <b>Santa Barbara</b> | Not Hisp/Latino White       | 295          | 160          | 165          | 620               |
| <b>Santa Barbara</b> | Unknown                     | 896          | 122          | 155          | 1,173             |
| <b>Santa Barbara</b> | <b>Total</b>                | <b>2,186</b> | <b>1,547</b> | <b>2,368</b> | <b>6,101</b>      |
| <b>Santa Clara</b>   | Hispanic or Latino          | 1,858        | 2,452        | 2,694        | 7,004             |
| <b>Santa Clara</b>   | Not Hisp/Latino AIAN        | —            | —            | —            | 12                |
| <b>Santa Clara</b>   | Not Hisp/Latino Asian       | 1,506        | 1,040        | 1,720        | 4,266             |
| <b>Santa Clara</b>   | Not Hisp/Latino Black       | 84           | 91           | 80           | 255               |
| <b>Santa Clara</b>   | Not Hisp/Latino Multiracial | 1,356        | 1,305        | 2,219        | 4,880             |
| <b>Santa Clara</b>   | Not Hisp/Latino NHPI        | 23           | 21           | 14           | 58                |
| <b>Santa Clara</b>   | Not Hisp/Latino Other       | 360          | 412          | 667          | 1,439             |
| <b>Santa Clara</b>   | Not Hisp/Latino White       | 960          | 610          | 935          | 2,505             |
| <b>Santa Clara</b>   | Unknown                     | 2,290        | 538          | 447          | 3,275             |
| <b>Santa Clara</b>   | <b>z</b>                    | <b>8,442</b> | <b>6,474</b> | <b>8,778</b> | <b>23,694</b>     |
| <b>Santa Cruz</b>    | Hispanic or Latino          | 490          | 474          | 887          | 1,851             |
| <b>Santa Cruz</b>    | Not Hisp/Latino AIAN        | —            | —            | —            | Min Count Not Met |
| <b>Santa Cruz</b>    | Not Hisp/Latino Asian       | —            | —            | —            | 20                |
| <b>Santa Cruz</b>    | Not Hisp/Latino Black       | —            | —            | —            | Min Count Not Met |
| <b>Santa Cruz</b>    | Not Hisp/Latino Multiracial | 187          | 139          | 147          | 473               |
| <b>Santa Cruz</b>    | Not Hisp/Latino NHPI        | —            | —            | —            | Min Count Not Met |
| <b>Santa Cruz</b>    | Not Hisp/Latino Other       | 26           | 14           | 16           | 56                |
| <b>Santa Cruz</b>    | Not Hisp/Latino White       | 375          | 185          | 193          | 753               |

|                             |                             |              |            |              |                   |
|-----------------------------|-----------------------------|--------------|------------|--------------|-------------------|
| <b>Santa Cruz</b>           | Unknown                     | 257          | 54         | 36           | 347               |
| <b>Santa Cruz</b>           | <b>Total</b>                | <b>1,344</b> | <b>876</b> | <b>1,288</b> | <b>3,508</b>      |
| <b>Shasta</b>               | Hispanic or Latino          | 108          | 70         | 69           | 247               |
| <b>Shasta</b>               | Not Hisp/Latino AIAN        | 33           | 16         | —            | 55                |
| <b>Shasta</b>               | Not Hisp/Latino Asian       | —            | —          | —            | 13                |
| <b>Shasta</b>               | Not Hisp/Latino Black       | 14           | —          | —            | 28                |
| <b>Shasta</b>               | Not Hisp/Latino Multiracial | 214          | 124        | 141          | 479               |
| <b>Shasta</b>               | Not Hisp/Latino NHPI        | —            | —          | —            | Min Count Not Met |
| <b>Shasta</b>               | Not Hisp/Latino Other       | 166          | 82         | 103          | 351               |
| <b>Shasta</b>               | Not Hisp/Latino White       | 279          | 70         | 36           | 385               |
| <b>Shasta</b>               | Unknown                     | 660          | 42         | 18           | 720               |
| <b>Shasta</b>               | <b>Total</b>                | <b>1,482</b> | <b>417</b> | <b>381</b>   | <b>2,280</b>      |
| <b>Sierra and Yuba</b>      | Hispanic or Latino          | 97           | 111        | 181          | 389               |
| <b>Sierra and Yuba</b>      | Not Hisp/Latino AIAN        | —            | —          | —            | 11                |
| <b>Sierra and Yuba</b>      | Not Hisp/Latino Asian       | 16           | 19         | 20           | 55                |
| <b>Sierra and Yuba</b>      | Not Hisp/Latino Black       | —            | —          | —            | 22                |
| <b>Sierra and Yuba</b>      | Not Hisp/Latino Multiracial | 39           | 36         | 55           | 128               |
| <b>Sierra and Yuba</b>      | Not Hisp/Latino NHPI        | —            | —          | —            | Min Count Not Met |
| <b>Sierra and Yuba</b>      | Not Hisp/Latino Other       | 11           | 15         | 14           | 40                |
| <b>Sierra and Yuba</b>      | Not Hisp/Latino White       | 183          | 93         | 114          | 390               |
| <b>Sierra and Yuba</b>      | Unknown                     | 325          | 63         | 27           | 415               |
| <b>Sierra and Yuba</b>      | <b>Total</b>                | <b>683</b>   | <b>348</b> | <b>430</b>   | <b>1,461</b>      |
| <b>Siskiyou and Trinity</b> | Hispanic or Latino          | 40           | 31         | 16           | 87                |
| <b>Siskiyou and Trinity</b> | Not Hisp/Latino AIAN        | 20           | -          | —            | 33                |

|                             |                             |              |              |              |                   |
|-----------------------------|-----------------------------|--------------|--------------|--------------|-------------------|
| <b>Siskiyou and Trinity</b> | Not Hisp/Latino Asian       | —            | —            | —            | Min Count Not Met |
| <b>Siskiyou and Trinity</b> | Not Hisp/Latino Black       | —            | —            | —            | Min Count Not Met |
| <b>Siskiyou and Trinity</b> | Not Hisp/Latino Multiracial | 29           | 30           | 14           | 73                |
| <b>Siskiyou and Trinity</b> | Not Hisp/Latino NHPI        | —            | —            | —            | Min Count Not Met |
| <b>Siskiyou and Trinity</b> | Not Hisp/Latino Other       | 11           | —            | —            | 14                |
| <b>Siskiyou and Trinity</b> | Not Hisp/Latino White       | 176          | 63           | 39           | 278               |
| <b>Siskiyou and Trinity</b> | Unknown                     | 175          | 15           | —            | 196               |
| <b>Siskiyou and Trinity</b> | <b>Total</b>                | <b>457</b>   | <b>164</b>   | <b>82</b>    | <b>703</b>        |
| <b>Solano</b>               | Hispanic or Latino          | 387          | 568          | 787          | 1,742             |
| <b>Solano</b>               | Not Hisp/Latino AIAN        | —            | —            | —            | Min Count Not Met |
| <b>Solano</b>               | Not Hisp/Latino Asian       | 50           | 72           | 157          | 279               |
| <b>Solano</b>               | Not Hisp/Latino Black       | 148          | 174          | 229          | 551               |
| <b>Solano</b>               | Not Hisp/Latino Multiracial | 176          | 187          | 403          | 766               |
| <b>Solano</b>               | Not Hisp/Latino NHPI        | —            | 13           | —            | 28                |
| <b>Solano</b>               | Not Hisp/Latino Other       | 102          | 136          | 370          | 608               |
| <b>Solano</b>               | Not Hisp/Latino White       | 243          | 189          | 299          | 731               |
| <b>Solano</b>               | Unknown                     | 754          | 220          | 328          | 1,302             |
| <b>Solano</b>               | <b>Total</b>                | <b>1,866</b> | <b>1,563</b> | <b>2,586</b> | <b>6,015</b>      |
| <b>Sonoma</b>               | Hispanic or Latino          | 527          | 680          | 1,126        | 2,333             |
| <b>Sonoma</b>               | Not Hisp/Latino AIAN        | 16           | 17           | 16           | 49                |
| <b>Sonoma</b>               | Not Hisp/Latino Asian       | 31           | 36           | 40           | 107               |
| <b>Sonoma</b>               | Not Hisp/Latino Black       | 25           | 14           | 18           | 57                |
| <b>Sonoma</b>               | Not Hisp/Latino Multiracial | 209          | 194          | 318          | 721               |

|                   |                             |              |              |              |                   |
|-------------------|-----------------------------|--------------|--------------|--------------|-------------------|
| <b>Sonoma</b>     | Not Hisp/Latino NHPI        | —            | —            | —            | 12                |
| <b>Sonoma</b>     | Not Hisp/Latino Other       | 116          | 125          | 293          | 534               |
| <b>Sonoma</b>     | Not Hisp/Latino White       | 609          | 316          | 457          | 1,382             |
| <b>Sonoma</b>     | Unknown                     | 618          | 109          | 150          | 877               |
| <b>Sonoma</b>     | <b>Total</b>                | <b>2,156</b> | <b>1,492</b> | <b>2,424</b> | <b>6,072</b>      |
| <b>Stanislaus</b> | Hispanic or Latino          | 1,813        | 1,366        | 1,445        | 4,624             |
| <b>Stanislaus</b> | Not Hisp/Latino AIAN        | —            | —            | —            | 11                |
| <b>Stanislaus</b> | Not Hisp/Latino Asian       | 81           | 53           | 77           | 211               |
| <b>Stanislaus</b> | Not Hisp/Latino Black       | 87           | 47           | 68           | 202               |
| <b>Stanislaus</b> | Not Hisp/Latino Multiracial | 108          | 101          | 125          | 334               |
| <b>Stanislaus</b> | Not Hisp/Latino NHPI        | —            | —            | —            | 25                |
| <b>Stanislaus</b> | Not Hisp/Latino Other       | 191          | 106          | 170          | 467               |
| <b>Stanislaus</b> | Not Hisp/Latino White       | 677          | 299          | 304          | 1,280             |
| <b>Stanislaus</b> | Unknown                     | 833          | 307          | 253          | 1,393             |
| <b>Stanislaus</b> | <b>Total</b>                | <b>3,799</b> | <b>2,294</b> | <b>2,454</b> | <b>8,547</b>      |
| <b>Sutter</b>     | Hispanic or Latino          | 129          | 156          | 250          | 535               |
| <b>Sutter</b>     | Not Hisp/Latino AIAN        | —            | —            | —            | Min Count Not Met |
| <b>Sutter</b>     | Not Hisp/Latino Asian       | 16           | 50           | 55           | 121               |
| <b>Sutter</b>     | Not Hisp/Latino Black       | —            | —            | —            | 15                |
| <b>Sutter</b>     | Not Hisp/Latino Multiracial | 52           | 47           | 80           | 179               |
| <b>Sutter</b>     | Not Hisp/Latino NHPI        | —            | —            | —            | Min Count Not Met |
| <b>Sutter</b>     | Not Hisp/Latino Other       | 11           | 14           | —            | 31                |
| <b>Sutter</b>     | Not Hisp/Latino White       | 169          | 113          | 110          | 392               |
| <b>Sutter</b>     | Unknown                     | 325          | 66           | 35           | 426               |

| <b>Sutter</b>  | <b>Total</b>                | <b>707</b>   | <b>452</b>   | <b>546</b>   | <b>1,705</b>      |
|----------------|-----------------------------|--------------|--------------|--------------|-------------------|
| <b>Tulare</b>  | Hispanic or Latino          | 1,313        | 2,166        | 1,930        | 5,409             |
| <b>Tulare</b>  | Not Hisp/Latino AIAN        | —            | —            | —            | Min Count Not Met |
| <b>Tulare</b>  | Not Hisp/Latino Asian       | 35           | 55           | 25           | 115               |
| <b>Tulare</b>  | Not Hisp/Latino Black       | 15           | 18           | 12           | 45                |
| <b>Tulare</b>  | Not Hisp/Latino Multiracial | 128          | 137          | 133          | 398               |
| <b>Tulare</b>  | Not Hisp/Latino NHPI        | —            | —            | —            | Min Count Not Met |
| <b>Tulare</b>  | Not Hisp/Latino Other       | 30           | 23           | 29           | 82                |
| <b>Tulare</b>  | Not Hisp/Latino White       | 561          | 369          | 261          | 1,191             |
| <b>Tulare</b>  | Unknown                     | 1,387        | 316          | 253          | 1,956             |
| <b>Tulare</b>  | <b>Total</b>                | <b>3,471</b> | <b>3,086</b> | <b>2,646</b> | <b>9,203</b>      |
| <b>Ventura</b> | Hispanic or Latino          | 1,384        | 2,042        | 1,876        | 5,302             |
| <b>Ventura</b> | Not Hisp/Latino AIAN        | —            | —            | —            | Min Count Not Met |
| <b>Ventura</b> | Not Hisp/Latino Asian       | 127          | 72           | 72           | 271               |
| <b>Ventura</b> | Not Hisp/Latino Black       | 34           | 13           | 16           | 63                |
| <b>Ventura</b> | Not Hisp/Latino Multiracial | 580          | 356          | 350          | 1,286             |
| <b>Ventura</b> | Not Hisp/Latino NHPI        | —            | —            | —            | 12                |
| <b>Ventura</b> | Not Hisp/Latino Other       | 220          | 121          | 112          | 453               |
| <b>Ventura</b> | Not Hisp/Latino White       | 922          | 412          | 306          | 1,640             |
| <b>Ventura</b> | Unknown                     | 1,707        | 234          | 124          | 2,065             |
| <b>Ventura</b> | <b>Total</b>                | <b>4,986</b> | <b>3,253</b> | <b>2,860</b> | <b>11,099</b>     |
| <b>Yolo</b>    | Hispanic or Latino          | 198          | 352          | 437          | 987               |
| <b>Yolo</b>    | Not Hisp/Latino AIAN        | —            | —            | —            | 12                |
| <b>Yolo</b>    | Not Hisp/Latino Asian       | 48           | 52           | 58           | 158               |

|             |                             |              |            |              |              |
|-------------|-----------------------------|--------------|------------|--------------|--------------|
| <b>Yolo</b> | Not Hisp/Latino Black       | 17           | 24         | 25           | 66           |
| <b>Yolo</b> | Not Hisp/Latino Multiracial | 115          | 107        | 229          | 451          |
| <b>Yolo</b> | Not Hisp/Latino NHPI        | —            | —          | —            | 12           |
| <b>Yolo</b> | Not Hisp/Latino Other       | 41           | 44         | 81           | 166          |
| <b>Yolo</b> | Not Hisp/Latino White       | 179          | 129        | 199          | 507          |
| <b>Yolo</b> | Unknown                     | 402          | 109        | 79           | 590          |
| <b>Yolo</b> | <b>Total</b>                | <b>1,009</b> | <b>824</b> | <b>1,116</b> | <b>2,949</b> |

**Table A7. Number and proportion of 13-year-olds who initiated the HPV vaccine series by race/ethnicity, 2020 (Source: CAIR)**

| Race/ethnicity                                       | Number of 13-year-olds who initiated HPV vaccine series | % of racial/ethnic group who initiated HPV vaccine series |
|------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------|
| Hispanic or Latino                                   | 148,147                                                 | 67.08%                                                    |
| Not Hisp/Latino American Indian and Alaska Native    | 615                                                     | 53.39%                                                    |
| Not Hisp/Latino Asian                                | 21,207                                                  | 67.17%                                                    |
| Not Hisp/Latino Black                                | 10,862                                                  | 62.59%                                                    |
| Not Hisp/Latino Multiracial                          | 47,964                                                  | 67.26%                                                    |
| Not Hisp/Latino Native Hawaiian and Pacific Islander | 717                                                     | 61.33%                                                    |
| Not Hisp/Latino Other                                | 23,774                                                  | 67.71%                                                    |

|                       |        |        |
|-----------------------|--------|--------|
| Not Hisp/Latino White | 38,505 | 49.38% |
| Unknown               | 32,957 | 24.81% |

**Table A8. Number and proportion of 13-year-olds who initiated the HPV vaccine series by race/ethnicity, 2021 (Source: CAIR)**

| Race/ethnicity                                       | Number of 13-year-olds who initiated HPV vaccine series | % of racial/ethnic group who initiated HPV vaccine series |
|------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------|
| Hispanic or Latino                                   | 152,404                                                 | 67.71%                                                    |
| Not Hisp/Latino American Indian and Alaska Native    | 644                                                     | 57.19%                                                    |
| Not Hisp/Latino Asian                                | 21,432                                                  | 66.64%                                                    |
| Not Hisp/Latino Black                                | 10,905                                                  | 64.77%                                                    |
| Not Hisp/Latino Multiracial                          | 47,275                                                  | 66.71%                                                    |
| Not Hisp/Latino Native Hawaiian and Pacific Islander | 734                                                     | 67.03%                                                    |
| Not Hisp/Latino Other                                | 22,959                                                  | 68.21%                                                    |
| Not Hisp/Latino White                                | 39,017                                                  | 50.09%                                                    |
| Unknown                                              | 36,039                                                  | 26.85%                                                    |

**Table A9. Urbanicity classifications\***

| Urbanicity Classification |
|---------------------------|
|---------------------------|

| <b>Rural<br/>Counties</b> | <b>Urban<br/>Counties</b> |
|---------------------------|---------------------------|
| Alpine                    | Alameda                   |
| Amador                    | Butte                     |
| Calaveras                 | Contra Costa              |
| Colusa                    | El Dorado                 |
| Del Norte                 | Fresno                    |
| Glenn                     | Imperial                  |
| Humboldt                  | Kern                      |
| Inyo                      | Kings                     |
| Lake                      | Los Angeles               |
| Lassen                    | Madera                    |
| Mariposa                  | Marin                     |
| Mendocino                 | Merced                    |
| Modoc                     | Monterey                  |
| Mono                      | Napa                      |
| Nevada                    | Orange                    |
| Plumas                    | Placer                    |
| Sierra                    | Riverside                 |
| Siskiyou                  | Sacramento                |
| Solano                    | San Benito                |
| Trinity                   | San Bernardino            |
| Tulare                    | San Diego                 |
| Ventura                   | San Francisco             |
|                           | San Joaquin               |
|                           | San Luis Obispo           |
|                           | San Mateo                 |
|                           | Santa Barbara             |
|                           | Santa Clara               |
|                           | Santa Cruz                |
|                           | Shasta                    |
|                           | Sonoma                    |
|                           | Stanislaus                |
|                           | Sutter                    |
|                           | Tehama                    |
|                           | Tuolumne                  |
|                           | Yolo                      |
|                           | Yuba                      |

\*By CDC's "National Center for Health Statistics (NCHS) 2013 Urban-Rural Classification Scheme for Counties"  
[https://www.cdc.gov/nchs/data\\_access/urban\\_rural.htm#2013\\_Urban-Rural\\_Classification\\_Scheme\\_for\\_Counties](https://www.cdc.gov/nchs/data_access/urban_rural.htm#2013_Urban-Rural_Classification_Scheme_for_Counties)