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.[1] 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

[1] 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[2][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,[3] Table 1. County rates are displayed in Figure 1 below:

[2] 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

[3] 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:10.109jnci/djv086

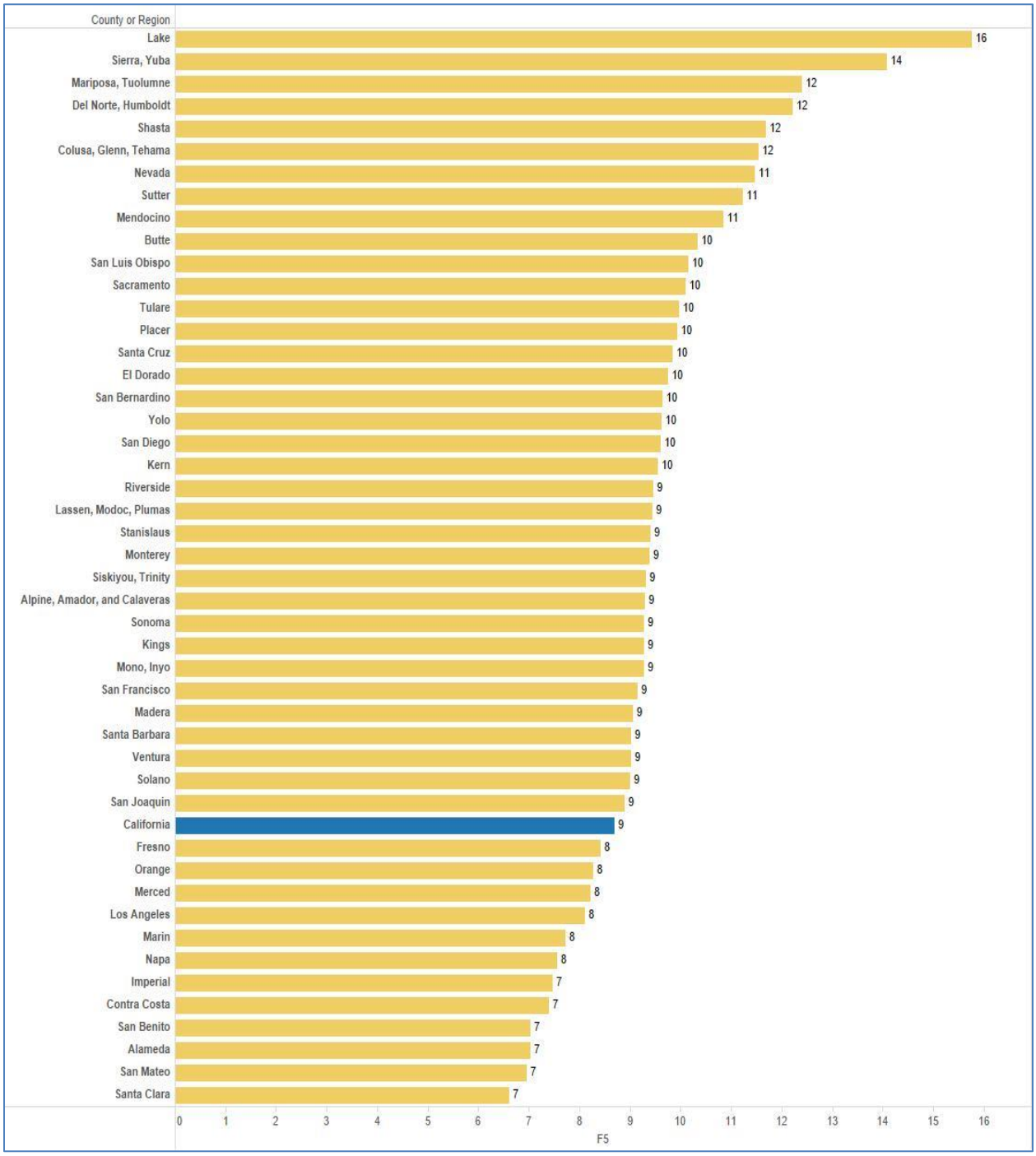
Table 1. HPV-associated and HPV-attributable cancers in California by Anatomic Site, 2015-2019

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

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

[4]*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

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.[5] 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 13th 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 13th birthday

[5] 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 Californian, 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 13th 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 13th 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, 2018-2022[6]

Year	Region			
	United States		California	
	NIS-Teen (13-to-17-year-olds)	NIS-Teen (13-year-olds)	NIS-Teen (13-to-17-year-olds)	CAIR (13-year-olds)
2021	62% (60-63)*	49% (46-53)*	69% (61-76)*	30%
2020	59% (57-60)[7]*	46% (43-49)*	62% (55-69)*	30%
2019	54% (53-56)[8]*	45% (42-49)*	56% (47-65)*	30%
2018	511% (50-53)[9]*	40% (37-43)*	53% (45-60)*	28%

* % (95% confidence interval)

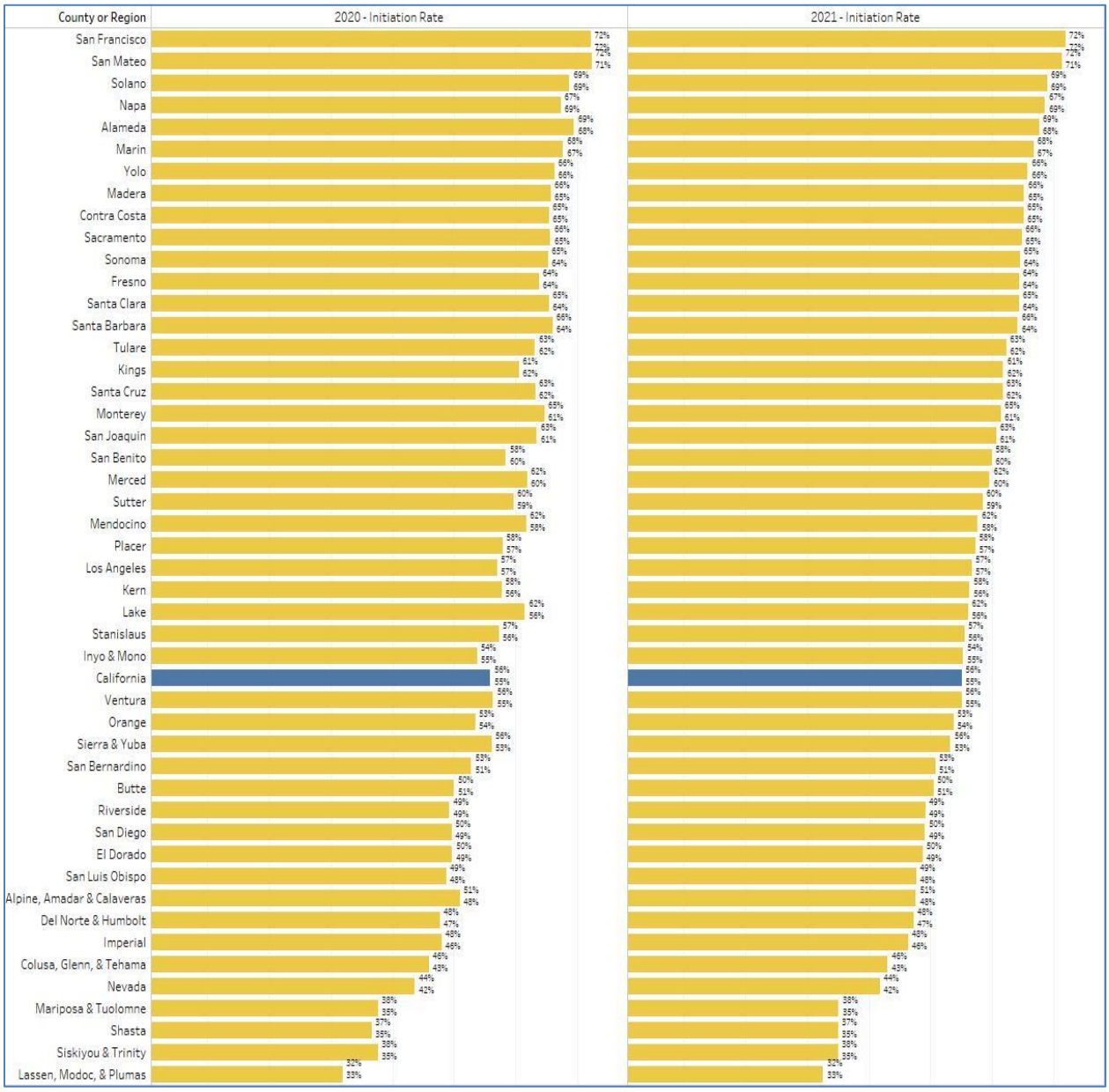
[6] Ibid.

[7] 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.

[8] 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.

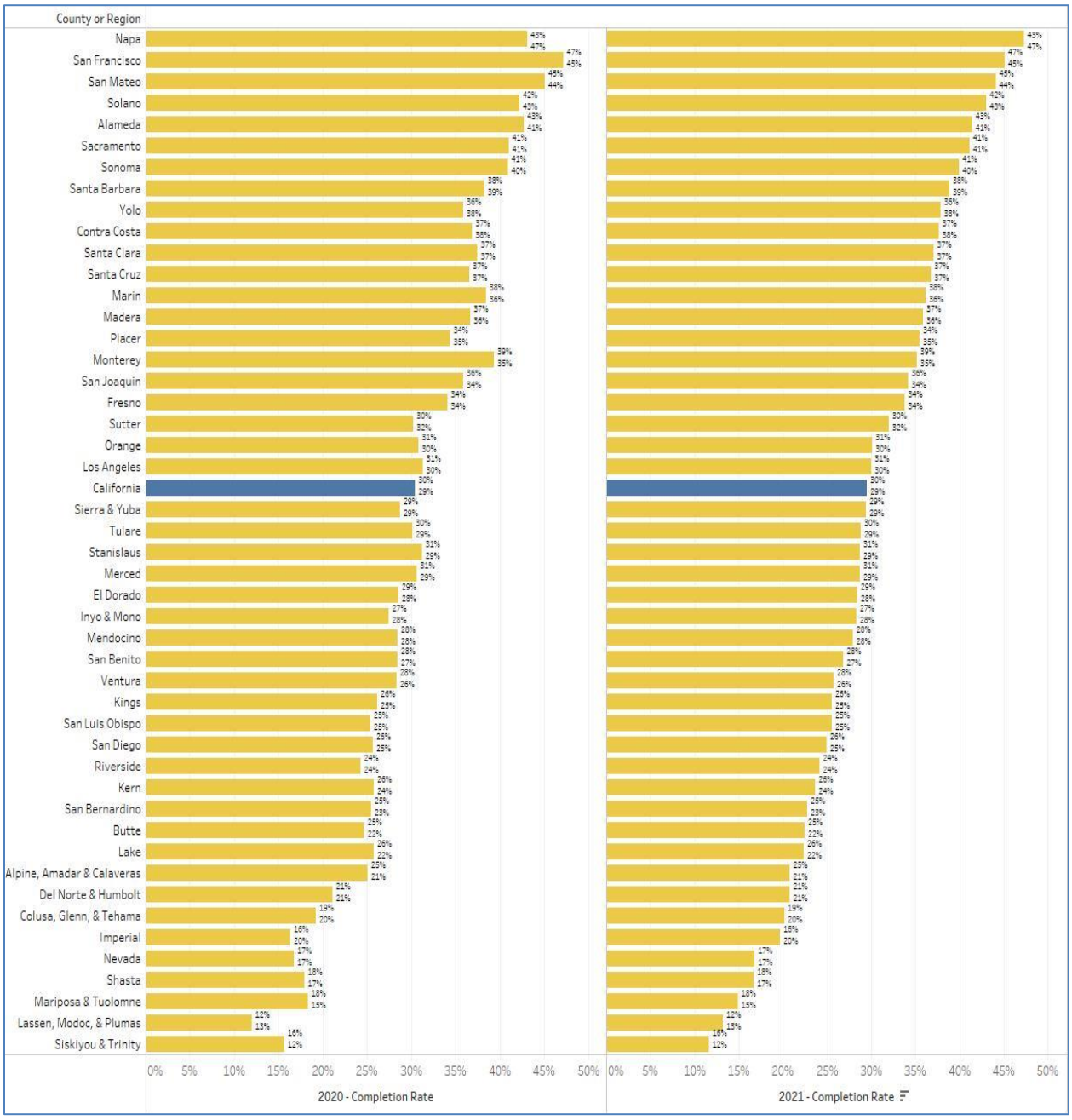
[9] Walker TY, Elam-Evans LD, Yankey D, et al. National, Regional, State, and Selected Local Area Vaccination Coverage Among Adolescents Aged 13–17 Years — United States, 2018. MMWR Morb Mortal Wkly Rep 2019;68:718–723. DOI: http://dx.doi.org/10.15585/mmwr.mm6833a2external icon.

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



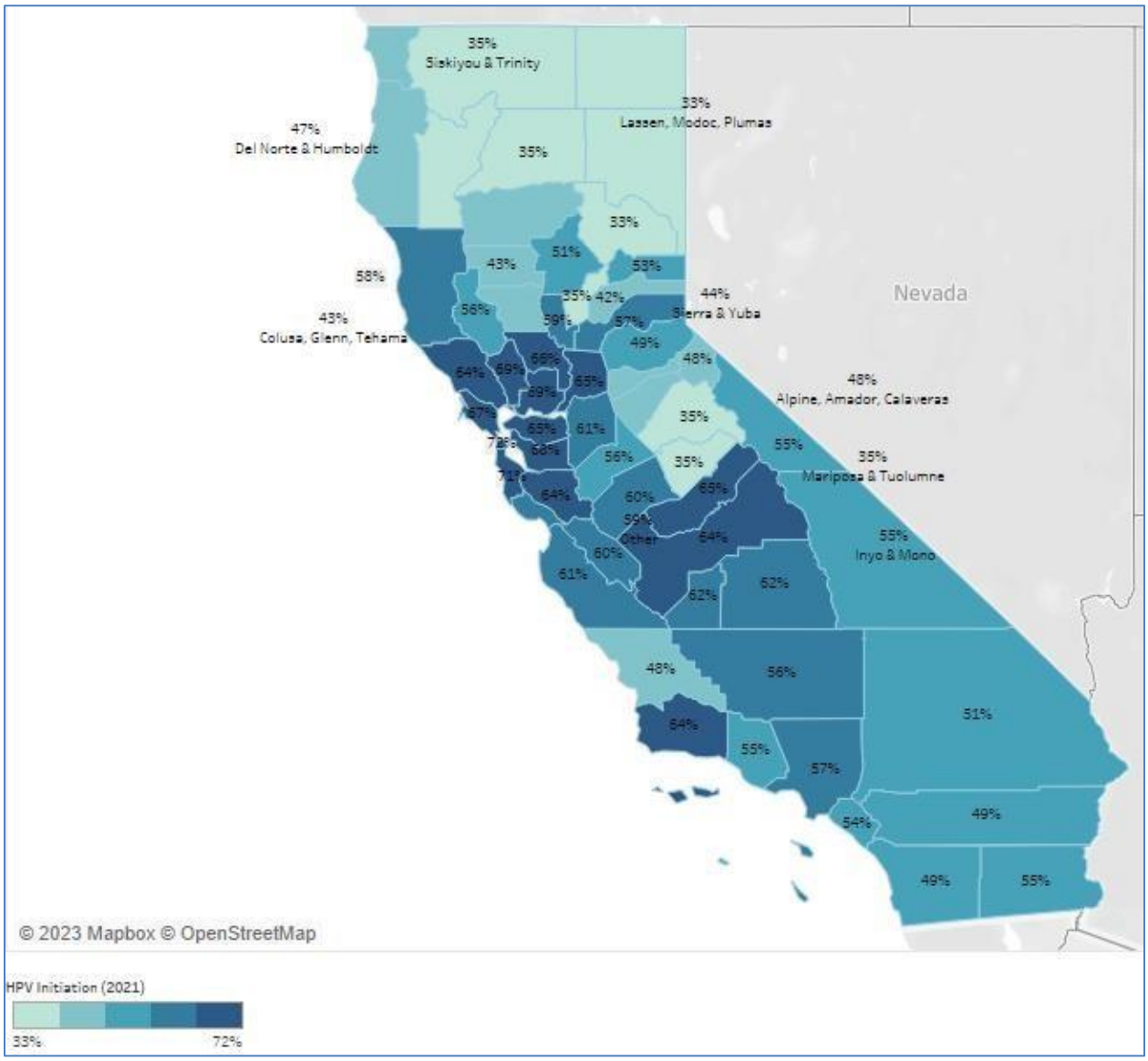
*County rates are individual rates except in the cases of these following groupings: Alpine, Amador, and Calaveras; Del Norte and Humboldt; Modoc, Lassen and Plumas; Mono and Inyo; Sierra and Yuba; Siskiyou and Trinity; Tehama, Colusa and Glenn; Tuolumne and Mariposa.

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"[10]. 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)*

	% Initiating HPV Vaccination			% Completing HPV Vaccination		
Gender	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].

[10] 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

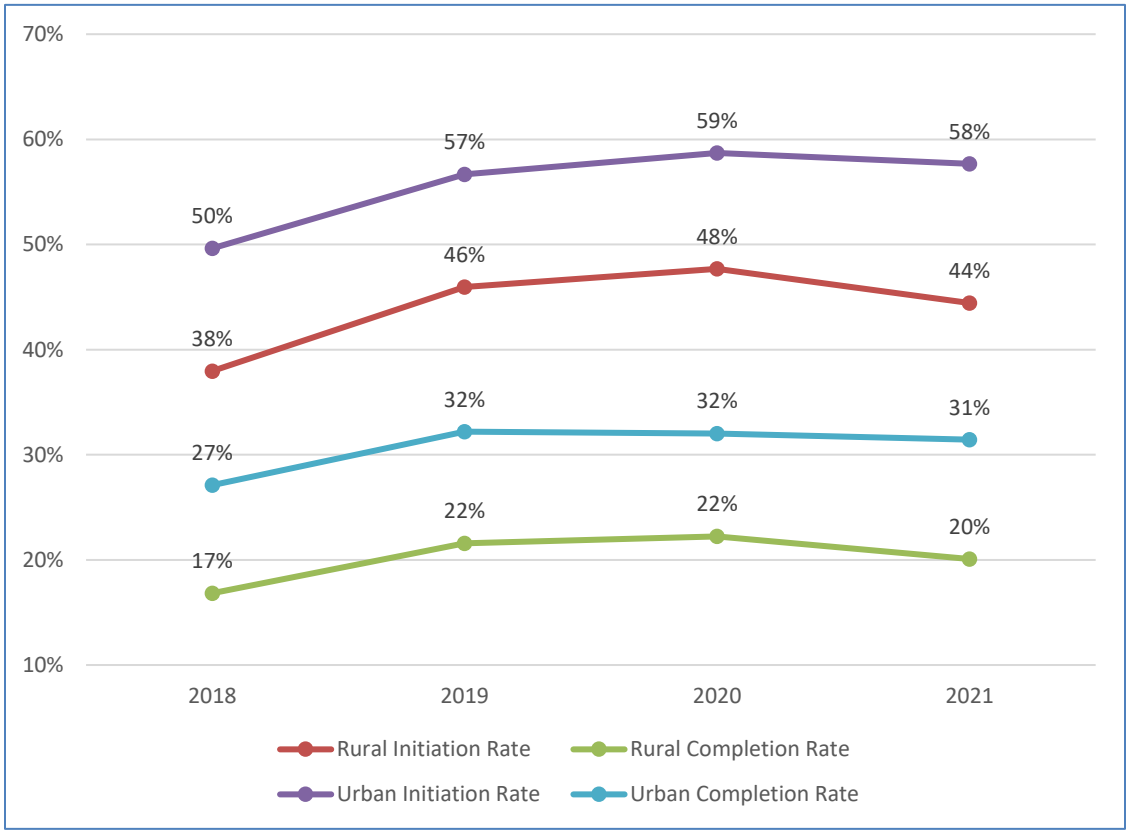
Table 4. Number and proportion of 13-year-olds who completed the HPV vaccine series by race/ethnicity, 2021 (Source: CAIR)

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).[11] 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

[11] 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.[12] 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.[13] 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

[12] 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.

[13] 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 & Humbolt	48%	47%	0%
El Dorado	50%	49%	-1%
Fresno	64%	64%	1%
Imperial	48%	46%	-2%
Inyo & Mono	54%	55%	2%
Kern	58%	56%	-1%
Kings	61%	62%	1%
Lake	62%	56%	-5%
Lassen, Modoc, & Plumas	32%	33%	1%
Los Angeles	57%	57%	0%
Madera	66%	65%	-1%
Marin	68%	67%	-1%
Mariposa & Tuolomne	38%	35%	-3%
Mendocino	62%	58%	-4%
Merced	62%	60%	-2%
Monterey	65%	61%	-3%
Napa	67%	69%	1%
Nevada	44%	42%	-2%
Orange	53%	54%	0%
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%	-3%
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%	-2%
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%	-2%
Sutter	60%	59%	-1%
Tulare	63%	62%	-1%
Ventura	56%	55%	-1%
Yolo	66%	66%	-1%
California	56%	55%	-1%

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 & Humbolt	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 & Tuolomne	18%	15%	-3%
Mendocino	28%	28%	-1%
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%	-2%
San Bernardino	25%	23%	-3%
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%	1%
Siskiyou & Trinity	16%	12%	-4%
Solano	42%	43%	1%
Sonoma	41%	40%	-1%
Stanislaus	31%	29%	-3%
Sutter	30%	32%	2%
Tulare	30%	29%	-1%
Ventura	28%	26%	-3%
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

	Count of 13-Year-Olds	
Race/Ethnicity	**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
Grand Total	**592,984**	**589,328**

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	**Total**	**7,245**	**5,863**	**9,279**	**22,387**
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

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

Colusa, Glenn and Tehama	Not Hisp/Latino Other	20	13	11	44
Colusa, Glenn and Tehama	Not Hisp/Latino White	209	117	87	413
Colusa, Glenn and Tehama	Unknown	577	84	60	721
Colusa, Glenn and Tehama	**Total**	**1,116**	**448**	**396**	**1,960**
Contra Costa	Hispanic or Latino	1,412	1,639	1,987	5,038
Contra Costa	Not Hisp/Latino AIAN	—	—	—	Min Count Not Met
Contra Costa	Not Hisp/Latino Asian	327	357	617	1,301
Contra Costa	Not Hisp/Latino Black	251	292	320	863
Contra Costa	Not Hisp/Latino Multiracial	680	847	1,365	2,892
Contra Costa	Not Hisp/Latino NHPI	13	22	16	51
Contra Costa	Not Hisp/Latino Other	324	402	726	1,452
Contra Costa	Not Hisp/Latino White	1,159	754	1,020	2,933
Contra Costa	Unknown	1,886	472	479	2,837
Contra Costa	**Total**	**6,053**	**4,787**	**6,534**	**17,374**
County Unspecified	Hispanic or Latino	1,789	219	145	2,153
County Unspecified	Not Hisp/Latino AIAN	13	—	—	15
County Unspecified	Not Hisp/Latino Asian	114	44	43	201
County Unspecified	Not Hisp/Latino Black	83	22	15	120
County Unspecified	Not Hisp/Latino Multiracial	141	62	87	290
County Unspecified	Not Hisp/Latino NHPI	—	—	—	11
County Unspecified	Not Hisp/Latino Other	178	32	20	230
County Unspecified	Not Hisp/Latino White	928	103	80	1,111
County Unspecified	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	**Total**	**1,165**	**586**	**459**	**2,210**
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

El Dorado	**Total**	**1,096**	**433**	**608**	**2,137**
Fresno	Hispanic or Latino	2,260	2,994	2,923	8,177
Fresno	Not Hisp/Latino AIAN	18	21	16	55
Fresno	Not Hisp/Latino Asian	155	202	253	610
Fresno	Not Hisp/Latino Black	83	132	100	315
Fresno	Not Hisp/Latino Multiracial	367	373	540	1,280
Fresno	Not Hisp/Latino NHPI	—	—	—	11
Fresno	Not Hisp/Latino Other	138	98	258	494
Fresno	Not Hisp/Latino White	900	529	559	1,988
Fresno	Unknown	2,277	980	1,230	4,487
Fresno	**Total**	**6,204**	**5,329**	**5,884**	**17,417**
Imperial	Hispanic or Latino	1,082	924	717	2,723
Imperial	Not Hisp/Latino AIAN	—	—	—	Min Count Not Met
Imperial	Not Hisp/Latino Asian	—	—	—	Min Count Not Met
Imperial	Not Hisp/Latino Black	—	—	—	15
Imperial	Not Hisp/Latino Multiracial	50	30	31	111
Imperial	Not Hisp/Latino NHPI	—	—	—	Min Count Not Met
Imperial	Not Hisp/Latino Other	50	21	13	84
Imperial	Not Hisp/Latino White	57	33	21	111
Imperial	Unknown	1,046	127	54	1,227
Imperial	**Total**	**2,297**	**1,147**	**841**	**4,285**
Inyo and Mono	Hispanic or Latino	26	44	47	117
Inyo and Mono	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	**Total**	**194**	**117**	**123**	**434**
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	**Total**	**7,961**	**5,957**	**4,312**	**18,230**
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

Kings	Not Hisp/Latino NHPI	—	—	—	Min Count Not Met
Kings	Not Hisp/Latino Other	11	—	12	28
Kings	Not Hisp/Latino White	146	104	68	318
Kings	Unknown	408	86	67	561
Kings	**Total**	**1,037**	**987**	**692**	**2,716**
Lake	Hispanic or Latino	57	122	88	267
Lake	Not Hisp/Latino AIAN	16	—	—	28
Lake	Not Hisp/Latino Asian	—	—	—	Min Count Not Met
Lake	Not Hisp/Latino Black	—	—	—	Min Count Not Met
Lake	Not Hisp/Latino Multiracial	30	30	28	88
Lake	Not Hisp/Latino NHPI	—	—	—	Min Count Not Met
Lake	Not Hisp/Latino Other	14	21	—	42
Lake	Not Hisp/Latino White	133	90	60	283
Lake	Unknown	118	13	—	136
Lake	**Total**	**375**	**288**	**191**	**854**
Lassen, Modoc, & Plumas	Hispanic or Latino	34	21	19	74
Lassen, Modoc, & Plumas	Not Hisp/Latino AIAN	13	—	—	16
Lassen, Modoc, & Plumas	Not Hisp/Latino Asian	—	—	—	Min Count Not Met
Lassen, Modoc, & Plumas	Not Hisp/Latino Black	—	—	—	Min Count Not Met
Lassen, Modoc, & Plumas	Not Hisp/Latino Multiracial	26	13	—	46
Lassen, Modoc, & Plumas	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	**Total**	**468**	**134**	**92**	**694**
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	**Total**	**54,854**	**33,826**	**37,945**	**126,625**
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

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

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

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

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

Riverside	Hispanic or Latino	8,588	5,252	4,875	18,715
Riverside	Not Hisp/Latino AIAN	25	19	—	48
Riverside	Not Hisp/Latino Asian	270	186	235	691
Riverside	Not Hisp/Latino Black	531	348	351	1,230
Riverside	Not Hisp/Latino Multiracial	2,155	1,621	1,765	5,541
Riverside	Not Hisp/Latino NHPI	35	24	18	77
Riverside	Not Hisp/Latino Other	895	582	808	2,285
Riverside	Not Hisp/Latino White	3,952	1,206	1,136	6,294
Riverside	Unknown	3,934	805	468	5,207
Riverside	**Total**	**20,385**	**10,043**	**9,660**	**40,088**
Sacramento	Hispanic or Latino	1,144	1,277	2,200	4,621
Sacramento	Not Hisp/Latino AIAN	21	15	15	51
Sacramento	Not Hisp/Latino Asian	462	476	1,006	1,944
Sacramento	Not Hisp/Latino Black	372	421	564	1,357
Sacramento	Not Hisp/Latino Multiracial	718	818	1,390	2,926
Sacramento	Not Hisp/Latino NHPI	34	42	48	124
Sacramento	Not Hisp/Latino Other	405	424	1,095	1,924
Sacramento	Not Hisp/Latino White	1,280	695	1,195	3,170
Sacramento	Unknown	3,243	1,016	1,474	5,733
Sacramento	**Total**	**7,679**	**5,184**	**8,987**	**21,850**
San Benito	Hispanic or Latino	152	161	143	456
San Benito	Not Hisp/Latino AIAN	—	—	—	Min Count Not Met
San Benito	Not Hisp/Latino Asian	—	—	—	12
San Benito	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	**Total**	**397**	**328**	**266**	**991**
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	**Total**	**18,184**	**10,349**	**8,398**	**36,931**
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	**Total**	**27,884**	**13,264**	**13,627**	**54,775**
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	**Total**	**1,743**	**1,663**	**2,797**	**6,203**
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	**Total**	**5,310**	**3,586**	**4,612**	**13,508**
San Luis Obispo	Hispanic or Latino	209	236	461	906
San Luis Obispo	Not Hisp/Latino AIAN	—	—	—	Min Count Not Met

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

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

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

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

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

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

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

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

Rural Counties	Urban Counties
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)