



# Pertussis Report

January 7, 2015

California is currently experiencing a pertussis epidemic. Pertussis is cyclical and peaks every 3-5 years as the numbers of susceptible persons in the population increases due to waning of immunity following both vaccination and disease. The last epidemic in California occurred in 2010, however, the overall incidence of pertussis has increased since the 1990s. One reason for the increase is the use of acellular pertussis vaccines, which cause fewer reactions than the whole-cell vaccines that preceded them, but do not protect as long. Young infants are at greatest risk of hospitalization and death from pertussis, therefore pregnant women are encouraged to receive pertussis vaccine (Tdap) during the 3rd trimester of every pregnancy. Pertussis antibodies are transferred from vaccinated mothers to their infants and will help protect them until they are old enough to be vaccinated. The primary DTaP vaccine series is essential for reducing severe disease in young infants and should not be delayed. DTaP can be given to infants at an accelerated schedule with the first dose given as early as 6 weeks of age. Even one dose of DTaP may offer some protection against severe pertussis disease in infants.

**10,831 cases with onset in 2014** have been reported to CDPH for a state rate of 28.35 cases per 100,000 population (Table 1). Data for 2014 are still preliminary.

- Pertussis activity is widespread throughout California (Figure 1).
- Pertussis incidence is higher than was reported in 2010 (Figures 2-3)
- 376 cases have been hospitalized; 85 (23%) of these required intensive care.
  - 227 (60%) of hospitalized patients were infants <4 months of age.
- Two deaths have been reported with disease onset in 2014; both were infants who were  $\leq 5$  weeks old at time of disease onset.
  - Two additional deaths occurring in 2014 but with disease onset in 2013 have been reported. These cases will be attributed to 2013. Both infants were  $\leq 2$  months of age at disease onset.
- Of the 243 (53%) cases <4 months of age whose mothers vaccination history was available, 38 (16%) reported receiving Tdap during the third trimester of pregnancy between 27-36 weeks gestation, as is recommended by ACIP and ACOG.
- The majority of cases with known age have occurred in infants and children <18 years of age (8,223; 89%) and the peak ages are <1 year and 15 years old (Figure 4).
  - 659 (8%) of pediatric cases were infants <6 months of age.
  - 5,285 (64%) of pediatric cases were children/adolescents 7-16 years of age.
  - Among 7,081 (85%) of pediatric cases with vaccination history information, 720 (10%) had never received any doses of pertussis-containing vaccine.
- Elementary, middle and high school outbreaks have been reported from counties all over California.
- Overall pertussis rates are highest for infants <1 year of age and older children and adolescents and teens 10-17 years of age. Rates by race/ethnicity are highest for Hispanic infants <1 year of age and White, non-Hispanic adolescents and teens aged 10-17 years of age (Figure 5).

**Table 1. Pertussis cases and rate\* by year of onset and local health jurisdiction – California, 2010-2014\*\***

	2010¶		2011¶		2012¶		2013¶		2014**	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
<b>CALIFORNIA</b>	<b>9159</b>	<b>24.55</b>	<b>3016</b>	<b>8.03</b>	<b>1023</b>	<b>2.70</b>	<b>2537</b>	<b>6.64</b>	<b>10831</b>	<b>28.35</b>
ALAMEDA	423	30.21	206	14.59	62	4.35	124	8.55	354	24.41
City of Berkeley†	13	11.51	3	2.62	6	5.20	13	11.29	55	47.77
ALPINE	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
AMADOR	4	10.56	11	29.48	1	2.74	2	5.52	1	2.76
BUTTE	32	14.55	16	7.26	3	1.36	33	14.87	30	13.52
CALAVERAS	9	19.80	5	11.08	0	0.00	2	4.39	17	37.35
COLUSA	11	51.20	1	4.65	0	0.00	0	0.00	0	0.00
CONTRA COSTA	205	19.48	114	10.74	24	2.24	69	6.37	463	42.78
DEL NORTE	16	56.06	0	0.00	0	0.00	0	0.00	2	7.16
EL DORADO	54	29.85	11	6.09	3	1.64	4	2.18	33	18.00
FRESNO	550	58.99	58	6.17	16	1.69	44	4.59	391	40.78
GLENN	1	3.55	1	3.54	0	0.00	0	0.00	1	3.54
HUMBOLDT	58	43.07	15	11.09	1	0.74	5	3.71	140	103.84
IMPERIAL	9	5.13	3	1.69	8	4.49	3	1.68	10	5.58
INYO	8	43.17	0	0.00	1	5.29	0	0.00	0	0.00
KERN	376	44.70	49	5.77	2	0.23	31	3.58	156	17.99
KINGS	26	17.03	7	4.61	0	0.00	2	1.33	15	9.97
LAKE	5	7.74	3	4.66	2	3.11	3	4.66	4	6.21
LASSEN	1	2.85	0	0.00	0	0.00	0	0.00	5	15.28
LOS ANGELES	1303	14.12	612	6.61	209	2.24	342	3.63	1906	20.25
City of Long Beach†	68	14.70	17	3.66	4	0.86	16	3.44	183	39.32
City of Pasadena†	24	17.54	15	10.80	1	0.72	2	1.44	23	16.50
MADERA	120	79.30	8	5.26	0	0.00	10	6.53	46	30.06
MARIN	351	138.90	26	10.22	5	1.97	184	71.91	264	103.17
MARIPOSA	10	54.96	1	5.56	0	0.00	0	0.00	0	0.00
MENDOCINO	27	30.71	3	3.41	0	0.00	6	6.77	10	11.28
MERCED	131	51.19	27	10.42	0	0.00	1	0.38	9	3.42
MODOC	0	0.00	0	0.00	0	0.00	0	0.00	6	64.74
MONO	18	126.43	2	13.98	21	146.07	2	14.11	0	0.00
MONTEREY	132	31.71	38	9.05	17	4.03	49	11.54	126	29.67
NAPA	25	18.28	11	7.99	6	4.35	13	9.35	136	97.77
NEVADA	23	23.32	2	2.03	5	5.11	70	71.51	16	16.34
ORANGE	499	16.54	142	4.66	73	2.37	113	3.64	445	14.33
PLACER	80	22.84	19	5.33	11	3.05	86	23.55	122	33.41
PLUMAS	2	10.05	4	20.06	0	0.00	1	5.19	1	5.19
RIVERSIDE	467	21.31	166	7.48	46	2.04	80	3.53	449	19.80
SACRAMENTO	175	12.32	69	4.82	35	2.44	70	4.84	443	30.60
SAN BENITO	7	12.65	3	5.36	1	1.76	1	1.75	10	17.46
SAN BERNARDINO	182	8.93	115	5.60	54	2.62	39	1.88	195	9.39
SAN DIEGO	1140	36.74	398	12.73	162	5.14	408	12.82	1856	58.33
SAN FRANCISCO	141	17.49	70	8.61	30	3.65	59	7.10	117	14.08
SAN JOAQUIN	84	12.23	27	3.90	15	2.15	26	3.69	211	29.98
SAN LUIS OBISPO	371	137.54	15	5.55	14	5.17	17	6.25	44	16.19
SAN MATEO	191	26.54	58	7.97	23	3.13	104	14.00	127	17.10
SANTA BARBARA	66	15.57	18	4.23	11	2.58	28	6.48	113	26.14
SANTA CLARA	478	26.76	176	9.74	45	2.46	254	13.70	554	29.89
SANTA CRUZ	87	33.05	22	8.28	13	4.84	54	19.89	161	59.30
SHASTA	32	18.03	27	15.16	2	1.12	7	3.92	30	16.82
SIERRA	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
SISKIYOU	10	22.27	0	0.00	2	4.41	5	11.05	7	15.47
SOLANO	40	9.68	12	2.90	10	2.38	15	3.54	145	34.26
SONOMA	246	50.82	116	23.83	18	3.68	51	10.36	700	142.18
STANISLAUS	159	30.86	43	8.30	11	2.10	16	3.03	90	17.07
SUTTER	5	5.28	1	1.06	0	0.00	2	2.06	8	8.25
TEHAMA	10	15.75	1	1.57	0	0.00	0	0.00	38	59.90
TRINITY	0	0.00	0	0.00	0	0.00	0	0.00	5	37.21
TULARE	230	51.91	77	17.20	27	5.97	25	5.48	38	8.33
TUOLUMNE	32	58.03	4	7.27	1	1.85	2	3.68	16	29.48
VENTURA	372	45.09	163	19.63	15	1.80	36	4.28	349	41.53
YOLO	17	8.44	5	2.47	6	2.93	4	1.94	145	70.32
YUBA	3	4.15	0	0.00	1	1.37	4	5.46	10	13.65

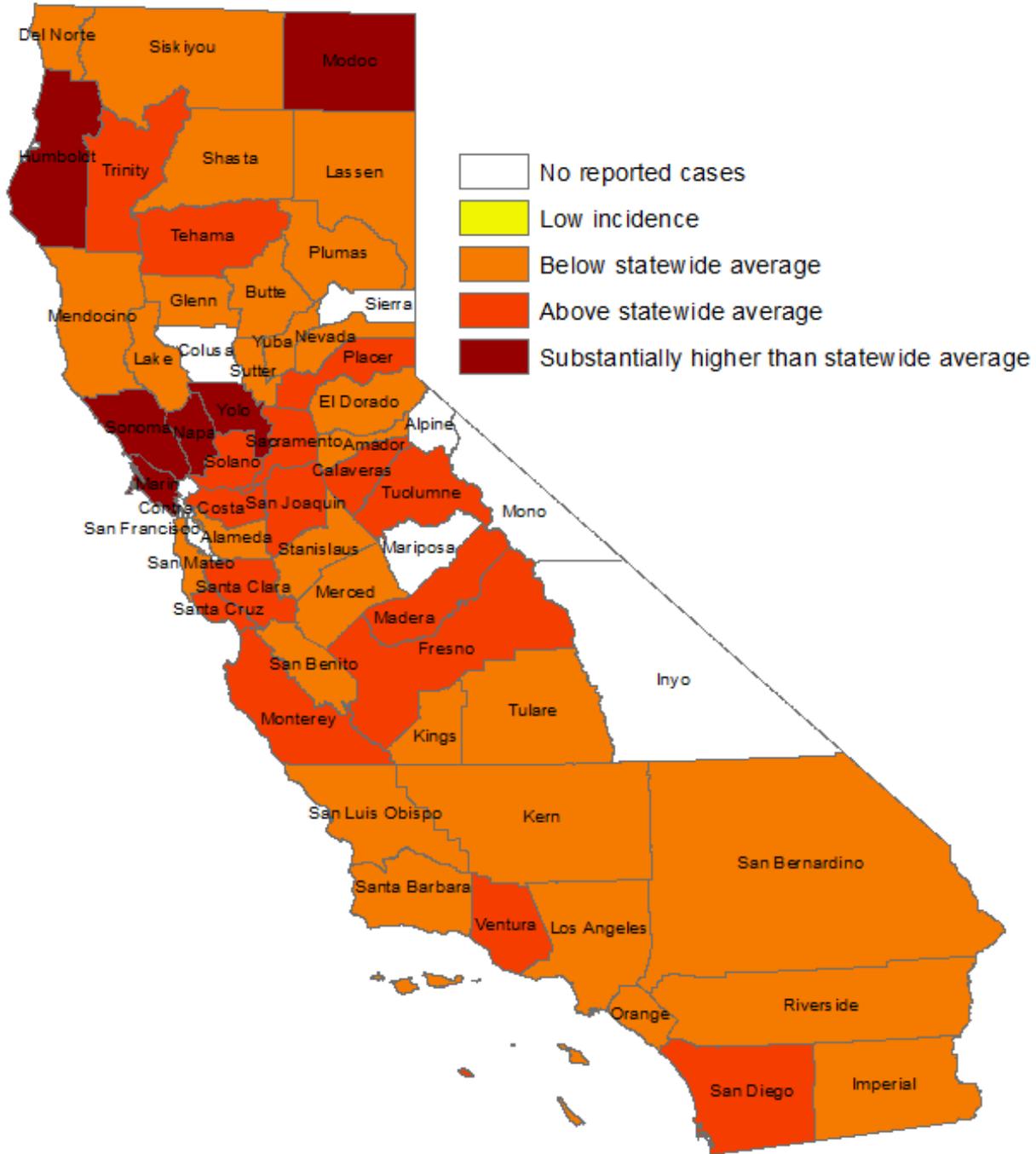
\*Incidence rate per 100,000 persons

\*\*Includes cases reported to CDPH as of 1/7/2015

¶Data have been updated from previous reports; population denominator data from the Department of Finance have been standardized with 2010 Census data

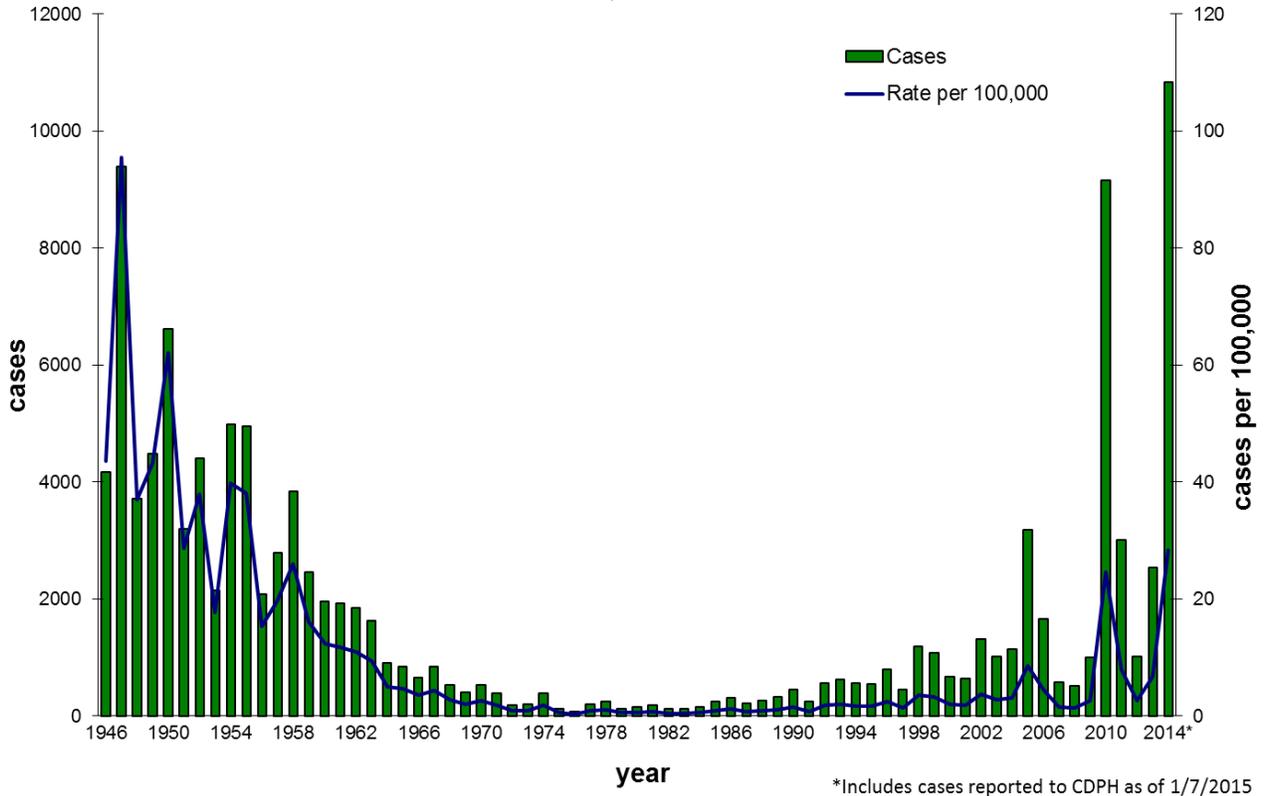
†City health jurisdictions not included in county total

**Figure 1. Pertussis incidence per 100,000 population, by county – California, 2014\***

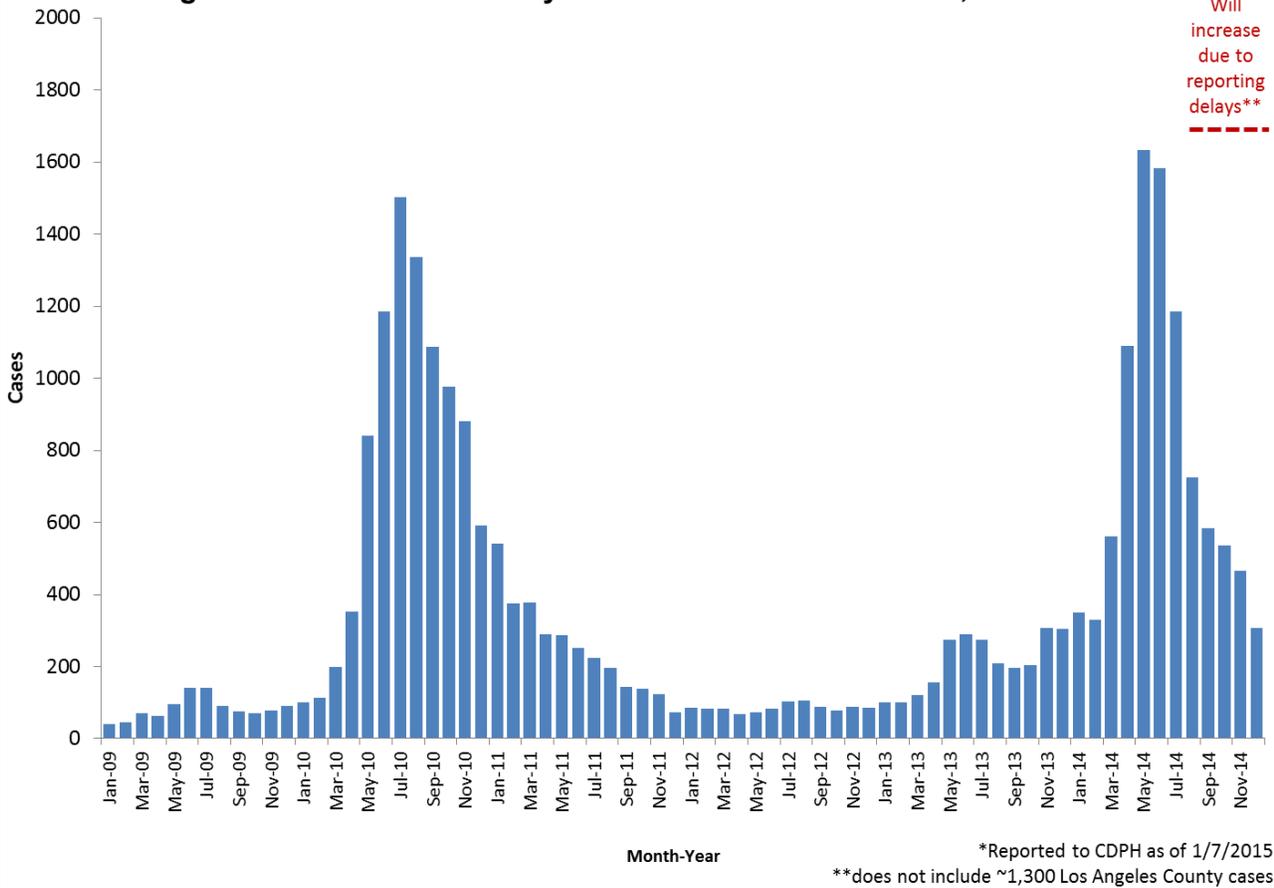


\*reported to CDPH as of 1/7/2015  
 Corresponding category ranges: 0; 0.1-2.7; 2.8-28.4; 28.5-60.0; 60.1-142.2

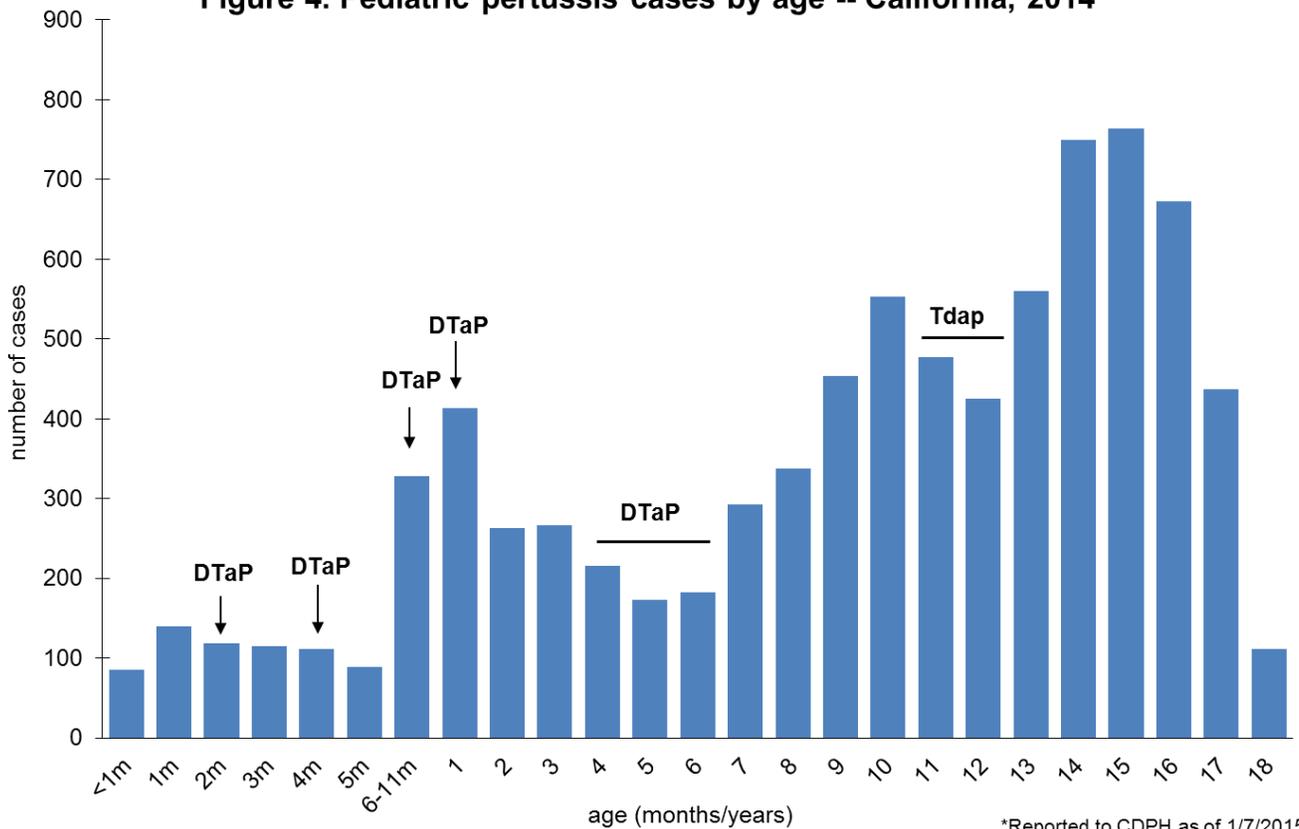
**Figure 2. Number and incidence of reported pertussis cases by year of onset -- California, 1946-2014\***



**Figure 3. Pertussis cases by month of onset -- California, 2009-2014\***

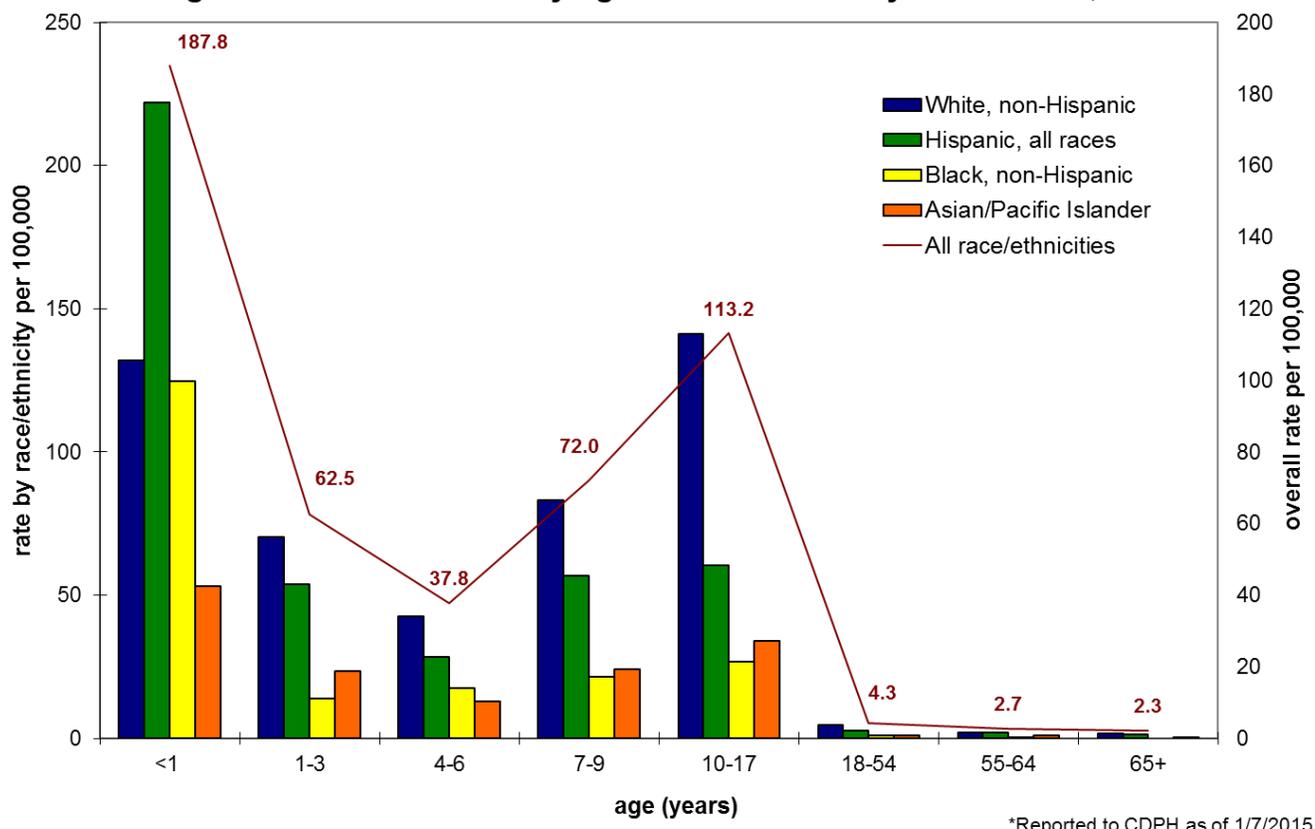


**Figure 4. Pediatric pertussis cases by age -- California, 2014\***



\*Reported to CDPH as of 1/7/2015  
 annotations in black indicated recommended vaccine doses

**Figure 5. Pertussis rates by age and race/ethnicity -- California, 2014\***



\*Reported to CDPH as of 1/7/2015