



Pertussis Report

August 18, 2014

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.

7,503 cases with onset in 2014 have been reported to CDPH for a state rate of 19.6 cases per 100,000 population (Table 1).

- Pertussis activity is widespread throughout California (Figures 1-3).
- 214 cases have been hospitalized; 45 (21%) of these required intensive care.
 - 133 (62%) of hospitalized patients were infants <4 months of age.
- One death has been reported with disease onset in 2014 in an infant who was 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 ≤ 2 months of age at disease onset.
- Of the 116 (43%) cases <4 months of age whose mothers vaccination history was available, 94 (81%) did not receive Tdap during the third trimester of pregnancy between 27-36 weeks gestation.
- The majority of cases with known age have occurred in infants and children <18 years of age (5,627; 89%) and the peak age is 15 years (Figure 4).
 - 387 (7%) of pediatric cases were infants <6 months of age.
 - 3,833 (68%) of pediatric cases were children/adolescents 7-16 years of age.
 - Among 4,622 (82%) of pediatric cases with vaccination history information, 9% 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 7-17 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
CALIFORNIA	9159	24.55	3016	8.03	1023	2.70	2531	6.62	7503	19.64
ALAMEDA	423	30.21	206	14.59	62	4.35	122	8.41	235	16.21
City of Berkeley†	13	11.51	3	2.62	6	5.20	12	10.42	42	36.48
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	21	9.46
CALAVERAS	9	19.80	5	11.08	0	0.00	2	4.39	10	21.97
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	264	24.39
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	18	9.82
FRESNO	550	58.99	58	6.17	16	1.69	41	4.28	338	35.25
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	85	63.05
IMPERIAL	9	5.13	3	1.69	8	4.49	3	1.68	4	2.23
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	114	13.15
KINGS	26	17.03	7	4.61	0	0.00	2	1.33	10	6.65
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	4	12.22
LOS ANGELES	1303	14.12	612	6.61	209	2.24	342	3.63	1227	13.03
City of Long Beach‡	68	14.70	17	3.66	4	0.86	16	3.44	152	32.66
City of Pasadena‡	24	17.54	15	10.80	1	0.72	2	1.44	16	11.48
MADERA	120	79.30	8	5.26	0	0.00	10	6.53	37	24.18
MARIN	351	138.90	26	10.22	5	1.97	184	71.91	203	79.33
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	8	9.02
MERCED	131	51.19	27	10.42	0	0.00	1	0.38	6	2.28
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	90	21.19
NAPA	25	18.28	11	7.99	6	4.35	13	9.35	126	90.58
NEVADA	23	23.32	2	2.03	5	5.11	70	71.51	15	15.32
ORANGE	499	16.54	142	4.66	73	2.37	113	3.64	311	10.02
PLACER	80	22.84	19	5.33	11	3.05	85	23.28	95	26.02
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	259	11.42
SACRAMENTO	175	12.32	69	4.82	35	2.44	70	4.84	319	22.03
SAN BENITO	7	12.65	3	5.36	1	1.76	1	1.75	7	12.22
SAN BERNARDINO	182	8.93	115	5.60	54	2.62	38	1.83	126	6.07
SAN DIEGO	1140	36.74	398	12.73	162	5.14	408	12.82	1141	35.86
SAN FRANCISCO	141	17.49	70	8.61	30	3.65	59	7.10	53	6.38
SAN JOAQUIN	84	12.23	27	3.90	15	2.15	26	3.69	151	21.45
SAN LUIS OBISPO	371	137.54	15	5.55	14	5.17	17	6.25	37	13.61
SAN MATEO	191	26.54	58	7.97	23	3.13	104	14.00	81	10.91
SANTA BARBARA	66	15.57	18	4.23	11	2.58	28	6.48	69	15.96
SANTA CLARA	478	26.76	176	9.74	45	2.46	257	13.86	390	21.04
SANTA CRUZ	87	33.05	22	8.28	13	4.84	54	19.89	81	29.83
SHASTA	32	18.03	27	15.16	2	1.12	7	3.92	25	14.01
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	4	8.84
SOLANO	40	9.68	12	2.90	10	2.38	15	3.54	124	29.30
SONOMA	246	50.82	116	23.83	18	3.68	51	10.36	666	135.27
STANISLAUS	159	30.86	43	8.30	11	2.10	16	3.03	73	13.84
SUTTER	5	5.28	1	1.06	0	0.00	2	2.06	1	1.03
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	3	22.32
TULARE	230	51.91	77	17.20	27	5.97	25	5.48	18	3.94
TUOLUMNE	32	58.03	4	7.27	1	1.85	1	1.84	16	29.48
VENTURA	372	45.09	163	19.63	15	1.80	36	4.28	255	30.35
YOLO	17	8.44	5	2.47	6	2.93	4	1.94	114	55.29
YUBA	3	4.15	0	0.00	1	1.37	4	5.46	6	8.19

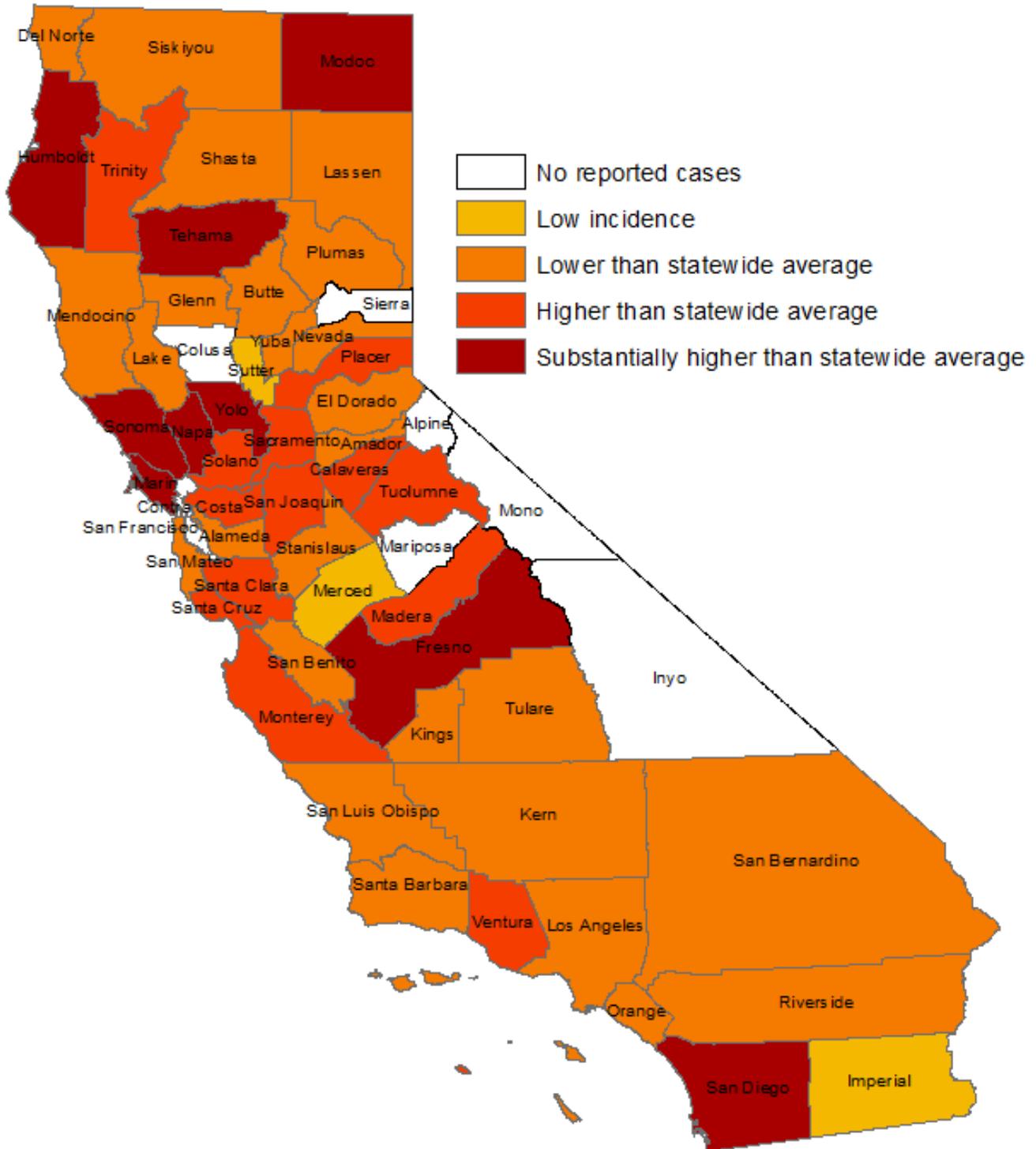
*Incidence rate per 100,000 persons

**Includes cases reported to CDPH as of 8/18/2014

¶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 8/18/2014
 Corresponding category ranges: 0; 0.1-2.7; 2.8-19.6; 19.7-35.0; 35.1-135.3

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

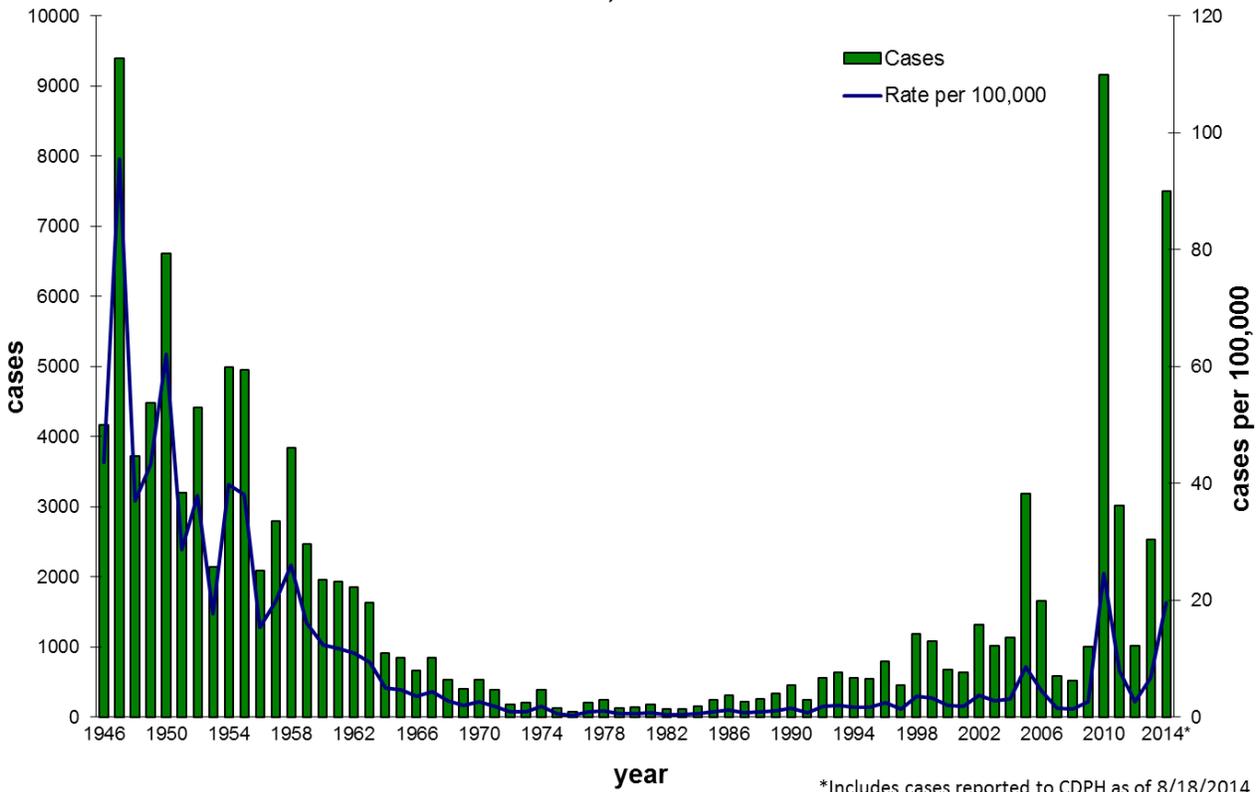


Figure 3. Pertussis cases by month of onset -- California, 2009-2014*

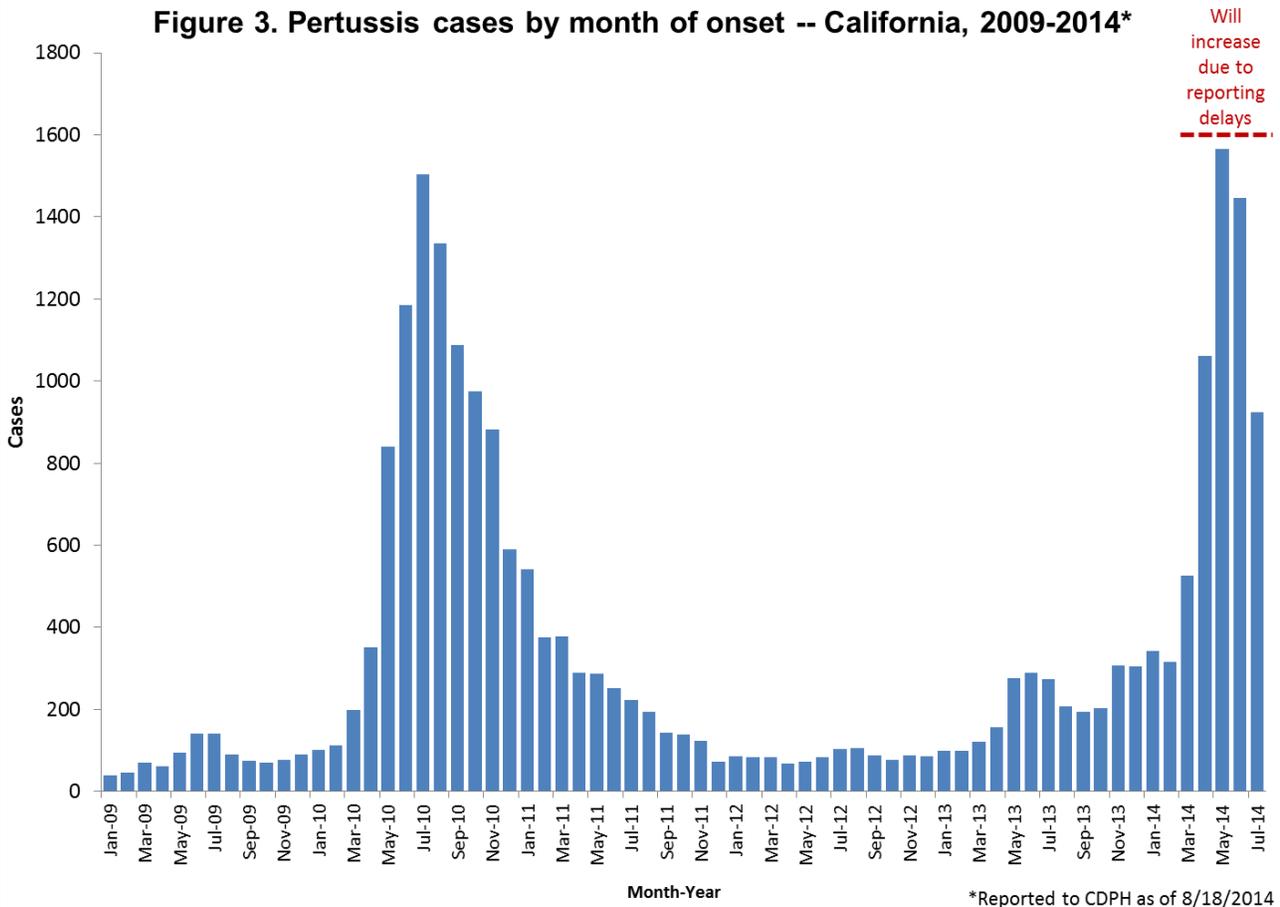
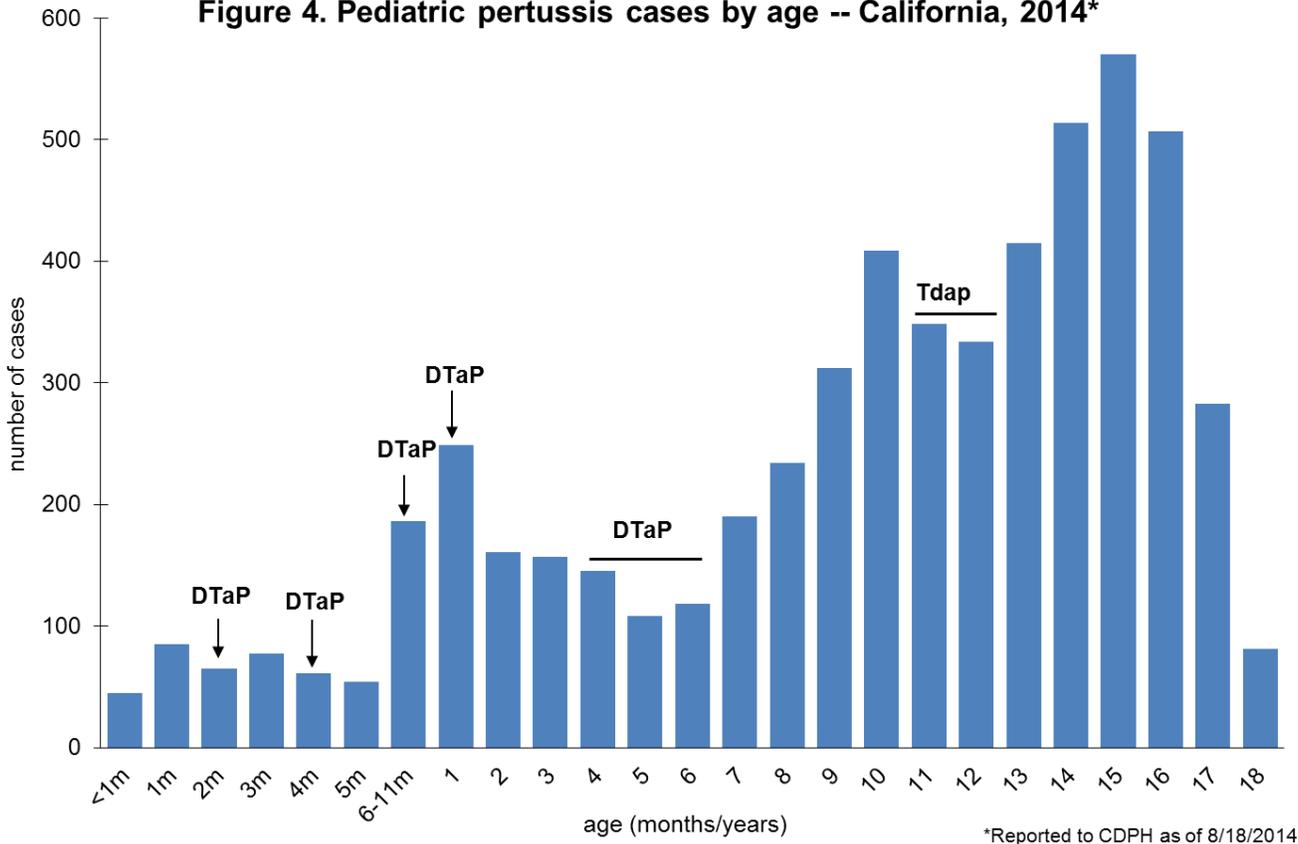
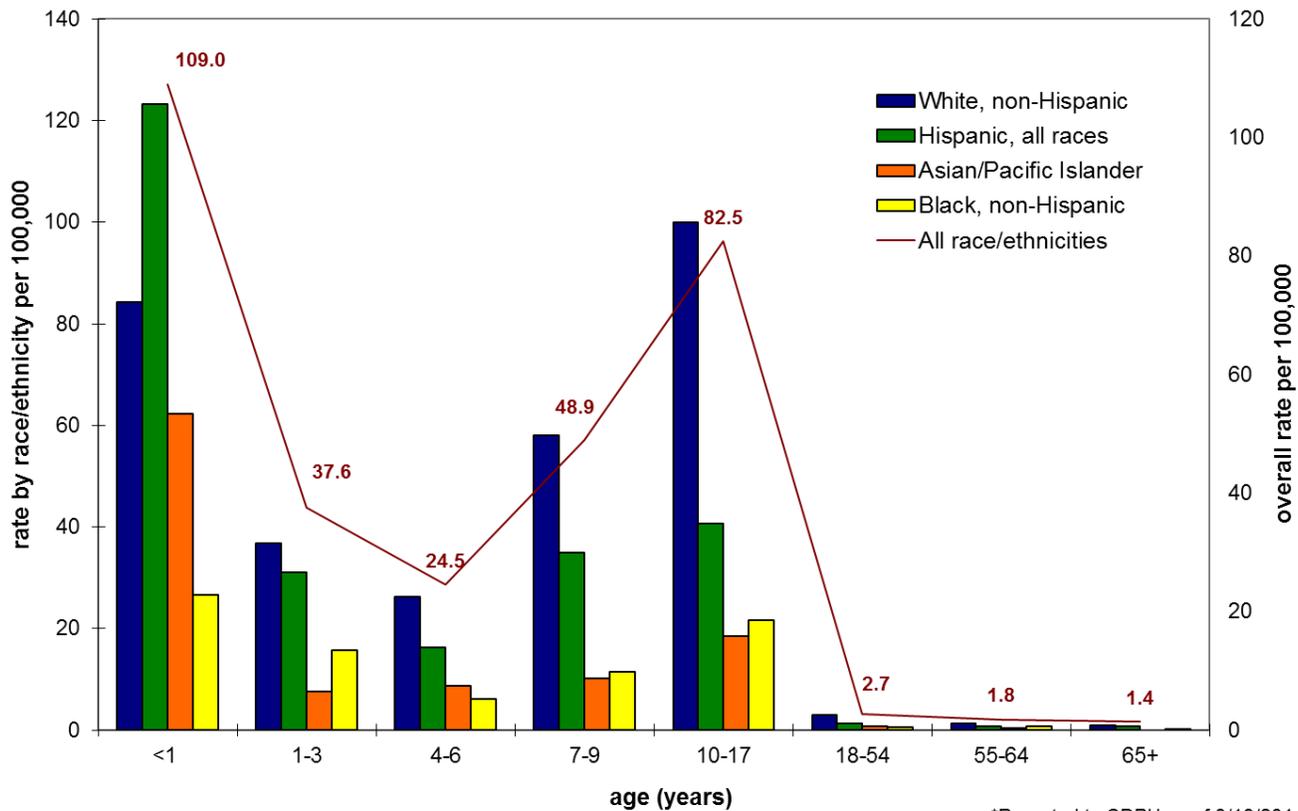


Figure 4. Pediatric pertussis cases by age -- California, 2014*



*Reported to CDPH as of 8/18/2014
 annotations in black indicated recommended vaccine doses

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



*Reported to CDPH as of 8/18/2014