

2010-2011 KINDERGARTEN RETROSPECTIVE SURVEY RESULTS  
CALIFORNIA DEPARTMENT OF PUBLIC HEALTH, IMMUNIZATION BRANCH

### Introduction

The annual Kindergarten Retrospective Survey (KRS) is a primary source of information about childhood immunization coverage in California. This survey provides estimates of immunization coverage among kindergarten students at various age checkpoints. This report presents results from this year's Kindergarten Retrospective Survey and the attached tables and figures present comparisons of immunization coverage by a variety of factors, including region and race/ethnicity.

### Methods and Participants

This year's Kindergarten Retrospective Survey was conducted in a sample of approximately 3.5% of California's kindergartens in concurrence with spring selective review. Local health departments visited 286 schools with kindergartens and collected copies of every sixth student immunization record (blue card). Demographic information and immunization history were extracted from each record. Data were analyzed using birth dates and immunization dates to retrospectively estimate immunization coverage at various age checkpoints. Age checkpoints are defined according to whether or not children are up-to-date for DTaP, Polio, MMR, Hep B, and Varicella vaccines at 3, 5, 7, 13, 19 and 24 months.

This year's sample consists of 2,872 kindergarten students. Children in this sample were born between 2004 and 2006. Since this is a retrospective survey, estimates of immunization coverage represent levels among toddlers approximately 3-4 years ago.

### Results and Discussion

Results from this year's Kindergarten Retrospective Survey indicate that the percentage of California's kindergarten students at 24 months of age with the 4:3:1 series (4+ DTP, 3+ Polio, and 1+ MMR) was 76.9 $\pm$ 2.5%. Immunization coverage for individual vaccines ranged from 79.9 $\pm$ 1.7% for 4+DTaP to 92.7 $\pm$ 1.1% 1+MMR. Table 1 shows a comparison of this year's Kindergarten Retrospective Survey and the 2007 National Immunization Survey. Estimates of immunization coverage for individual vaccines and the 4:3:1 series were similar in both surveys.

Table 2 and Figure A shows immunization coverage by region. This year, the percentage of kindergarten students at 24 months of age with the 4:3:1 vaccine series was 81.6 $\pm$ 3.2% among children in Los Angeles, 74.8 $\pm$ 3.2% among children in Southern California, 82.4 $\pm$ 4.0% among children in the Bay Area, 74.4 $\pm$ 8.6% among children in the Central Coast, 72.8 $\pm$ 7.9% among children in the Central Valley, 72.1 $\pm$ 7.4% among children in the North Central Valley, and 76.2 $\pm$ 10.5% among children in rural Northern California. Although the point estimates may seem different, once confidence intervals are factored in, it becomes clear that any observed differences are not statistically significant.

Table 3 shows immunization coverage among California's children by race/ethnicity. This year, the percentage of kindergarten students at 24 months of age with the 4:3:1 vaccine series was  $77.3 \pm 3.5\%$  among white children,  $77.9 \pm 2.4\%$  among Hispanic children,  $66.4 \pm 8.6\%$  among Black children, and  $78.0 \pm 5.2\%$  among Asian children. The Kindergarten Retrospective Survey is one of the only sources of information on subpopulations of Black and Asian children. Coverage at the 7 and 19 month age checkpoints among Black children is significantly lower than White, Hispanic, and Asian children (Figure B) taking into account confidence intervals. Figure C shows coverage among Black children at 7 months for the 3:2:0:-:2 series over the past five years has tended to be significantly lower than other racial/ethnic groups. Black children catch-up by age 24 months. Reducing geographic, racial, and ethnic disparities in childhood immunization rates by using various reminder/recall interventions in primary care practices may reduce this disparity.<sup>1</sup> Overall, community health worker visits and other outreach methods for families may be most effective in increasing immunization rates.<sup>2</sup>

#### Description of Attached Tables

Enclosed are tables and figures showing this year's results. Table 1 compares immunization coverage as measured by the Kindergarten Retrospective Survey and the National Immunization Survey. Table 2 shows immunization coverage among kindergarten students at 24 months of age by region. Figure A is a map of 4:3:1 vaccine series coverage by region. Table 3 shows immunization coverage among kindergarten students at 24 months of age by race/ethnicity. Figure B shows coverage at age checkpoints by race/ethnicity. Figure C shows coverage at age 7 months over the past five years for the 3:2:0:-:2 series by race/ethnicity. Tables 4-8 show immunization coverage among kindergarten students at 3, 5, 7, 13 and 19 months of age by race/ethnicity. In conclusion, overall rates are not significantly different from NIS. Immunization coverage across regions is similar. Lastly, racial disparities do appear to exist.

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<sup>1</sup> Szilagyi, Peter G., Schaffer, Stanley, Shone, Laura, Barth, Richard, Humiston, Sharon G., Sander, Mardy, Rodewalkd, Lance E. Reducing Geographic, Racial, and Ethnic Disparities in Childhood Immunization Rates by Using Reminder/Recall Interventions in Urban Primary Care Practices. *Pediatrics*, 2002;110:e58

<sup>2</sup> Chin, MH, Alexander-Young M, Burnet DL. Health care quality-improvement approaches to reducing childhood disparities. *Pediatrics*. 2009 Nov;124 Suppl 3:S224-36.

**KINDERGARTEN RETROSPECTIVE SURVEY**  
CALIFORNIA, 2010-2011

TABLE 1: COMPARISON OF IMMUNIZATION COVERAGE AS MEASURED BY THE KINDERGARTEN RETROSPECTIVE SURVEY (KRS) AND THE NATIONAL IMMUNIZATION SURVEY (NIS)<sup>1</sup>

	n	DTaP (4+) <sup>2</sup>	Polio (3+) <sup>3</sup>	MMR (1+) <sup>4</sup>	Hep B (3+) <sup>5</sup>	Var (1+) <sup>6</sup>	4:3:1 <sup>7</sup>
KRS (24 mo.)	2,872	79.9% $\pm$ 1.7%	92.3% $\pm$ 1.2%	92.7% $\pm$ 1.1%	91.3% $\pm$ 1.2%	88.1% $\pm$ 1.7%	77.4% $\pm$ 1.9%
NIS (24 mo.)	n/a	82.8% $\pm$ 4.2%	90.7% $\pm$ 3.6%	93.9% $\pm$ 2.4%	90.6% $\pm$ 3.3%	91.8% $\pm$ 3.8%	80.0% $\pm$ 4.6%

1. Data from the 2007 NIS are used for comparison because data from the KRS are retrospective; Children in both surveys were born between 2004 and 2006
2. Four or more doses of any diphtheria and tetanus toxoids and pertussis vaccines including diphtheria and tetanus toxoids, and any acellular pertussis vaccine (DTP/DTaP/DT)
3. Three or more doses of any poliovirus vaccine
4. One or more doses of measles-mumps-rubella vaccine
5. Three or more doses of hepatitis B vaccine
6. One or more doses of varicella vaccine, unadjusted for history of varicella disease
7. Four or more doses of DTaP, three or more doses of Polio, and one or more doses of MMR

**KINDERGARTEN RETROSPECTIVE SURVEY**  
CALIFORNIA, 2010-2011

TABLE 2: IMMUNIZATION COVERAGE AMONG KINDERGARTEN STUDENTS AT 24 MONTHS OF AGE BY REGION<sup>1</sup>

	n	DTaP (4+) <sup>2</sup>	Polio (3+) <sup>3</sup>	MMR (1+) <sup>4</sup>	Hep B (3+) <sup>5</sup>	Var (1+) <sup>6</sup>	4:3:1 <sup>7</sup>	4:3:1:-:3 <sup>8</sup>	4:3:1:-:3:1 <sup>9</sup>
ALL	2,872	79.9% ± 1.7%	92.3% ± 1.2%	92.7% ± 1.1%	91.3% ± 1.2%	88.1% ± 1.7%	77.4% ± 1.9%	75.0% ± 1.8%	71.0% ± 2.1%
Los Angeles	861	83.8% ± 3.0%	94.1% ± 2.0%	95.0% ± 1.6%	92.3% ± 1.8%	87.9% ± 4.9%	81.6% ± 3.2%	77.9% ± 2.9%	72.1% ± 5.0%
Other So California	797	78.7% ± 2.9%	91.4% ± 2.1%	92.1% ± 2.1%	90.5% ± 2.6%	90.4% ± 2.5%	74.8% ± 3.2%	72.5% ± 3.4%	70.2% ± 3.6%
SF Bay Area	535	84.2% ± 3.8%	93.0% ± 2.5%	92.8% ± 2.4%	91.1% ± 2.9%	86.6% ± 3.3%	82.4% ± 4.0%	79.2% ± 4.1%	74.0% ± 4.5%
Central Coast	152	77.1% ± 9.0%	93.7% ± 4.7%	90.6% ± 5.6%	90.4% ± 5.8%	88.4% ± 5.2%	74.4% ± 8.6%	73.1% ± 8.7%	71.8% ± 8.8%
Central Valley	200	73.8% ± 7.3%	91.4% ± 3.9%	92.6% ± 4.1%	93.4% ± 3.8%	88.7% ± 4.8%	72.8% ± 7.9%	71.7% ± 7.8%	68.9% ± 7.5%
North Central Valley	212	74.1% ± 7.1%	90.5% ± 6.6%	91.1% ± 4.0%	89.3% ± 4.8%	83.5% ± 7.0%	72.1% ± 7.4%	70.6% ± 7.2%	66.3% ± 6.9%
Rural No California	115	76.3% ± 10.4%	88.0% ± 9.6%	89.8% ± 7.3%	92.9% ± 5.7%	84.3% ± 6.6%	76.2% ± 10.5%	76.2% ± 10.5%	70.4% ± 10.5%

1. Regions do not exactly match Field Rep assigned regions:

Los Angeles includes Los Angeles County

Other So. California includes Imperial, Orange, Riverside, San Bernardino, and San Diego Counties

SF Bay Area includes Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties

Central Coast includes Monterey, San Luis Obispo, Santa Barbara, Santa Cruz, and Ventura Counties

Central Valley includes Fresno, Kern, Kings, Madera, Merced, and Tulare Counties

North Central Valley includes Sacramento, San Joaquin, and Stanislaus Counties

Rural No. California includes Alpine, Amador, Butte, Calaveras, Colusa, Del Norte, El Dorado, Glenn, Humboldt, Inyo, Lake, Lassen, Mariposa, Mendocino, Modoc, Mono, Nevada,

Placer, Plumas, San Benito, Shasta, Sierra, Siskiyou, Sutter, Tehama, Trinity, Tuolumne, Yolo, and Yuba Counties

2. Four or more doses of any diphtheria and tetanus toxoids and pertussis vaccines including diphtheria and tetanus toxoids, and any acellular pertussis vaccine (DTP/DTaP/DT)

3. Three or more doses of any poliovirus vaccine

4. One or more doses of measles-mumps-rubella vaccine

5. Three or more doses of hepatitis B vaccine

6. One or more doses of varicella vaccine, unadjusted for history of varicella disease

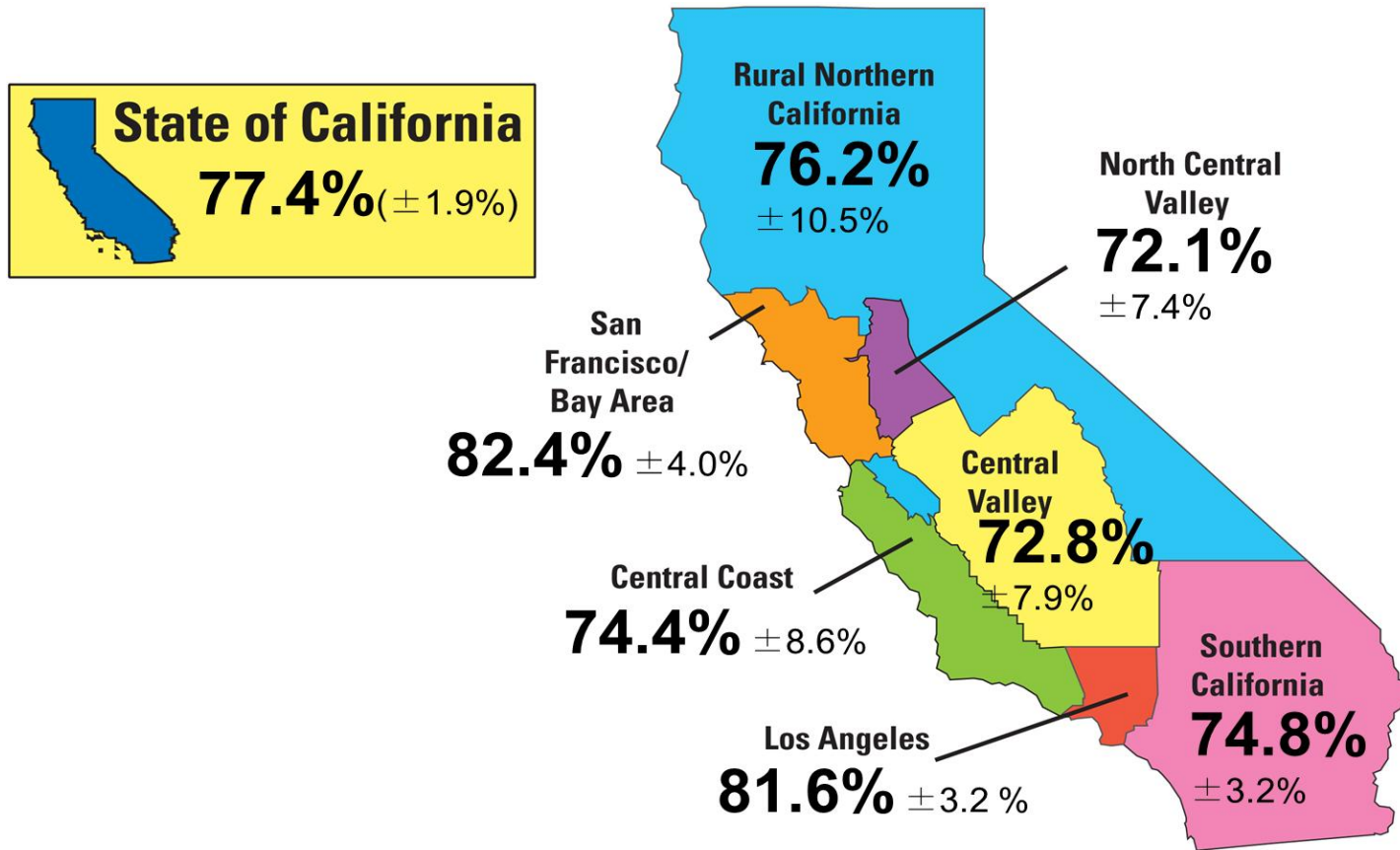
7. Four or more doses of DTaP, three or more doses of Polio, and one or more doses of MMR

8. Four or more doses of DTaP, three or more doses of Polio, one or more doses of MMR, and three or more doses of Hep B

9. Four or more doses of DTaP, three or more doses of Polio, one or more doses of MMR, three or more doses of Hep B, and one or more doses of varicella

KINDERGARTEN RETROSPECTIVE SURVEY  
CALIFORNIA, 2010-2011

FIGURE A: 4:3:1<sup>1</sup> COVERAGE AMONG KINDERGARTEN STUDENTS AT 24 MONTHS OF AGE BY REGION<sup>2</sup>



1. Four or more doses of DTaP, three or more doses of polio, and one or more doses of MMR

2. Regions do not exactly match Field Rep assigned regions:

Los Angeles includes Los Angeles County

Other So. California includes Imperial, Orange, Riverside, San Bernardino, and San Diego Counties

SF Bay Area includes Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma Counties

Central Coast includes Monterey, San Luis Obispo, Santa Barbara, Santa Cruz, and Ventura Counties

Central Valley includes Fresno, Kern, Kings, Madera, Merced, and Tulare Counties

North Central Valley includes Sacramento, San Joaquin, and Stanislaus Counties

Rural No. California includes Alpine, Amador, Butte, Calaveras, Colusa, Del Norte, El Dorado, Glenn, Humboldt, Inyo, Lake, Lassen, Mariposa, Mendocino, Modoc, Mono, Nevada, Placer, Plumas, San Benito, Shasta, Sierra, Siskiyou, Sutter, Tehama, Trinity, Tuolumne, Yolo, and Yuba Counties

**KINDERGARTEN RETROSPECTIVE SURVEY**  
CALIFORNIA, 2010-2011

**TABLE 3: IMMUNIZATION COVERAGE AMONG KINDERGARTEN STUDENTS AT 24 MONTHS OF AGE BY RACE/ETHNICITY<sup>1</sup>**

	n	DTaP (4+) <sup>2</sup>	Polio (3+) <sup>3</sup>	MMR (1+) <sup>4</sup>	Hep B (3+) <sup>5</sup>	Var (1+) <sup>6</sup>	4:3:1 <sup>7</sup>	4:3:1:-:3 <sup>8</sup>	4:3:1:-:3:1 <sup>9</sup>
ALL	2,872	79.9% $\pm$ 1.7%	92.3% $\pm$ 1.2%	92.7% $\pm$ 1.1%	91.3% $\pm$ 1.2%	88.1% $\pm$ 1.7%	77.4% $\pm$ 1.9%	75.0% $\pm$ 1.8%	71.0% $\pm$ 2.1%
White	666	80.2% $\pm$ 3.3%	90.2% $\pm$ 2.5%	90.3% $\pm$ 2.1%	90.1% $\pm$ 2.1%	83.2% $\pm$ 4.4%	77.3% $\pm$ 3.5%	75.1% $\pm$ 3.6%	68.6% $\pm$ 4.8%
Hispanic	1,342	80.2% $\pm$ 2.3%	93.6% $\pm$ 1.3%	94.9% $\pm$ 1.2%	92.8% $\pm$ 1.4%	91.1% $\pm$ 1.6%	77.9% $\pm$ 2.4%	75.3% $\pm$ 2.4%	72.7% $\pm$ 2.4%
Black	318	68.1% $\pm$ 8.5%	84.5% $\pm$ 6.0%	88.3% $\pm$ 4.9%	85.8% $\pm$ 5.5%	84.8% $\pm$ 5.9%	66.4% $\pm$ 8.6%	64.4% $\pm$ 8.9%	61.2% $\pm$ 8.8%
Asian	273	81.7% $\pm$ 4.6%	94.3% $\pm$ 2.8%	92.2% $\pm$ 3.4%	92.5% $\pm$ 3.6%	88.8% $\pm$ 4.0%	78.0% $\pm$ 5.2%	75.1% $\pm$ 5.6%	72.0% $\pm$ 5.7%
Other	125	81.1% $\pm$ 5.9%	93.4% $\pm$ 3.9%	89.2% $\pm$ 5.4%	87.1% $\pm$ 7.6%	84.9% $\pm$ 6.3%	78.6% $\pm$ 7.3%	77.8% $\pm$ 7.4%	72.0% $\pm$ 7.2%
Unknown	148	84.5% $\pm$ 7.4%	93.4% $\pm$ 4.9%	92.3% $\pm$ 5.3%	90.8% $\pm$ 4.7%	88.0% $\pm$ 5.5%	83.1% $\pm$ 7.6%	80.1% $\pm$ 7.9%	74.2% $\pm$ 8.6%

1. As recorded on student immunization record (blue card). Individual racial groups do not include Hispanic children. Children of Hispanic ethnicity may be of any race

2. Four or more doses of any diphtheria and tetanus toxoids and pertussis vaccines including diphtheria and tetanus toxoids, and any acellular pertussis vaccine (DTP/DTaP/DT)

3. Three or more doses of any poliovirus vaccine

4. One or more doses of measles-mumps-rubella vaccine

5. Three or more doses of hepatitis B vaccine

6. One or more doses of varicella vaccine, unadjusted for history of varicella disease

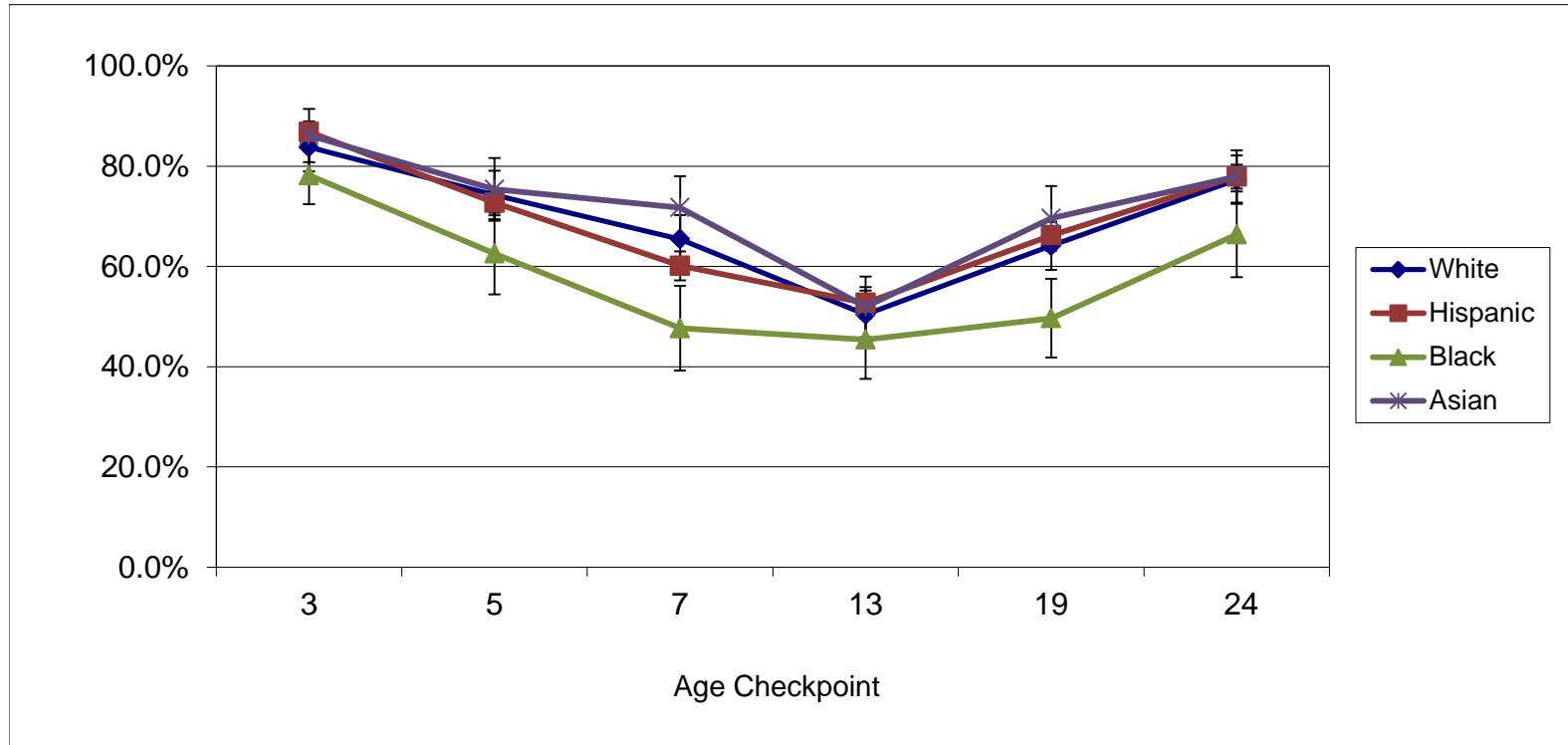
7. Four or more doses of DTaP, three or more doses of Polio, and one or more doses of MMR

8. Four or more doses of DTaP, three or more doses of Polio, one or more doses of MMR, and three or more doses of Hep B

9. Four or more doses of DTaP, three or more doses of Polio, one or more doses of MMR, three or more doses of Hep B, and one or more doses of varicella

**KINDERGARTEN RETROSPECTIVE SURVEY**  
CALIFORNIA, 2010-2011

FIGURE B: 4:3:1<sup>1</sup> COVERAGE AMONG KINDERGARTEN STUDENTS BY AGE CHECKPOINT<sup>2</sup> AND RACE/ETHNICITY<sup>3</sup>



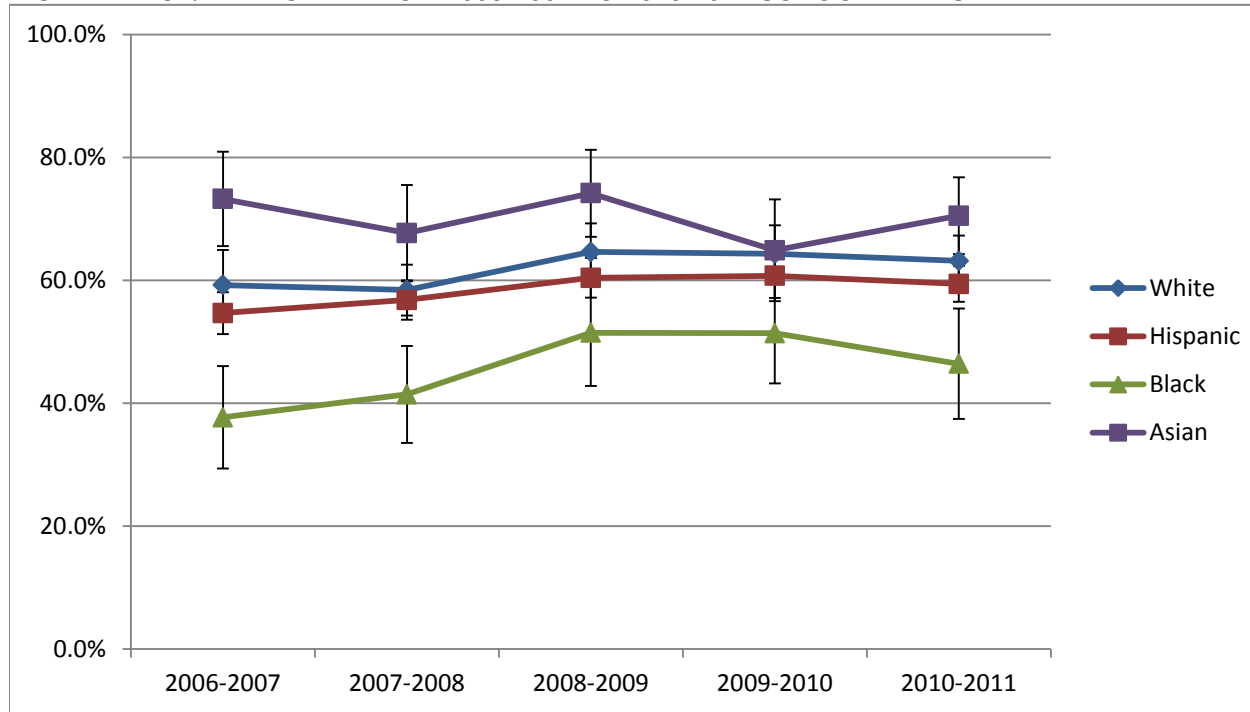
1. Age appropriate doses of DTaP, polio, and MMR

2. Age checkpoints are defined according to whether or not children are up-to-date for age appropriate doses of DTaP, polio, and MMR at 3, 5, 7, 13, 19 and 24 months

3. As recorded on student immunization record (blue card). Individual racial groups do not include Hispanic children. Children of Hispanic ethnicity may be of any race

**KINDERGARTEN RETROSPECTIVE SURVEY**  
CALIFORNIA, 2010-2011

**FIGURE C: 3:2:0-:2<sup>1</sup> IMMUNIZATION COVERAGE AMONG KINDERGARTEN STUDENTS AT 7 MONTHS OF AGE BY RACE/ETHNICITY<sup>2</sup> FROM 2006-2007 TO 2010-2011 SCHOOL YEARS**



1. Three or more doses of DTaP, two or more doses of polio, and two or more doses of Hep B

2. As recorded on student immunization record (blue card). Individual racial groups do not include Hispanic children. Children of Hispanic ethnicity may be of any race



**KINDERGARTEN RETROSPECTIVE SURVEY**  
CALIFORNIA, 2010-2011

TABLE 4: IMMUNIZATION COVERAGE AMONG KINDERGARTEN STUDENTS AT 3 MONTHS OF AGE BY RACE/ETHNICITY<sup>1</sup>

	n	DTaP (1+) <sup>2</sup>	Polio (1+) <sup>3</sup>	Hep B (1+) <sup>4</sup>	1:1:0 <sup>5</sup>	1:1:0:-:1 <sup>6</sup>
ALL	2,872	87.6% $\pm$ 1.5%	86.1% $\pm$ 1.6%	90.9% $\pm$ 1.2%	85.5% $\pm$ 1.6%	83.7% $\pm$ 1.7%
White	666	86.9% $\pm$ 2.7%	84.3% $\pm$ 3.0%	89.0% $\pm$ 2.3%	83.8% $\pm$ 3.0%	80.8% $\pm$ 3.3%
Hispanic	1,342	88.3% $\pm$ 2.0%	87.3% $\pm$ 2.0%	92.3% $\pm$ 1.5%	86.8% $\pm$ 2.1%	85.7% $\pm$ 2.1%
Black	318	79.0% $\pm$ 5.9%	78.2% $\pm$ 5.7%	88.1% $\pm$ 5.5%	78.2% $\pm$ 5.7%	77.4% $\pm$ 6.3%
Asian	273	89.7% $\pm$ 4.1%	87.0% $\pm$ 5.2%	90.0% $\pm$ 3.6%	86.1% $\pm$ 5.3%	83.1% $\pm$ 5.4%
Other	125	90.2% $\pm$ 4.9%	91.2% $\pm$ 5.4%	94.2% $\pm$ 3.7%	89.3% $\pm$ 5.1%	88.4% $\pm$ 4.9%
Unknown	148	88.2% $\pm$ 5.3%	85.4% $\pm$ 6.5%	89.2% $\pm$ 5.0%	84.3% $\pm$ 6.7%	81.7% $\pm$ 6.5%

1. As recorded on student immunization record (blue card). Individual racial groups do not include Hispanic children. Children of Hispanic ethnicity may be of any race

2. One or more doses of any diphtheria and tetanus toxoids and pertussis vaccines including diphtheria and tetanus toxoids, and any pertussis vaccine (DTP/DTaP/DT)

3. One or more doses of any poliovirus vaccine

4. One or more doses of hepatitis B vaccine

5. One or more doses of DTaP and one or more doses of Polio

6. One or more doses of DTaP, one or more doses of polio, and one or more doses of Hep B

**KINDERGARTEN RETROSPECTIVE SURVEY**  
CALIFORNIA, 2010-2011

TABLE 5: IMMUNIZATION COVERAGE AMONG KINDERGARTEN STUDENTS AT 5 MONTHS OF AGE BY RACE/ETHNICITY<sup>1</sup>

	n	DTaP (2+) <sup>2</sup>	Polio (2+) <sup>3</sup>	Hep B (2+) <sup>4</sup>	2:2:0 <sup>5</sup>	2:2:0:-:2 <sup>6</sup>
ALL	2,872	75.9% ± 1.9%	73.9% ± 2.0%	79.7% ± 1.8%	73.3% ± 2.0%	68.9% ± 2.1%
White	666	78.7% ± 3.6%	74.7% ± 3.8%	76.4% ± 3.4%	74.3% ± 3.7%	66.3% ± 4.0%
Hispanic	1,342	74.1% ± 2.5%	73.3% ± 2.5%	81.4% ± 2.4%	72.7% ± 2.5%	70.2% ± 2.7%
Black	318	63.4% ± 8.4%	64.2% ± 8.0%	73.2% ± 7.9%	62.6% ± 8.1%	61.2% ± 8.4%
Asian	273	81.0% ± 5.2%	76.5% ± 6.0%	84.5% ± 4.9%	75.4% ± 6.3%	72.6% ± 6.3%
Other	125	83.7% ± 5.9%	82.8% ± 5.8%	80.5% ± 7.5%	82.8% ± 5.8%	74.6% ± 6.5%
Unknown	148	76.5% ± 7.8%	73.3% ± 8.3%	76.5% ± 7.9%	72.5% ± 8.7%	66.3% ± 8.7%

1. As recorded on student immunization record (blue card). Individual racial groups do not include Hispanic children. Children of Hispanic ethnicity may be of any race

2. Two or more doses of any diphtheria and tetanus toxoids and pertussis vaccines including diphtheria and tetanus toxoids, and any pertussis vaccine (DTP/DTaP/DT)

3. Two or more doses of any poliovirus vaccine

4. Two or more doses of hepatitis B vaccine

5. Two or more doses of DTaP and two or more doses of Polio

6. Two or more doses of DTaP, two or more doses of polio, and two or more doses of Hep B

**KINDERGARTEN RETROSPECTIVE SURVEY**  
CALIFORNIA, 2010-2011

TABLE 6: IMMUNIZATION COVERAGE AMONG KINDERGARTEN STUDENTS AT 7 MONTHS OF AGE BY RACE/ETHNICITY<sup>1</sup>

	n	DTaP (3+) <sup>2</sup>	Polio (2+) <sup>3</sup>	Hep B (2+) <sup>4</sup>	3:2:0 <sup>5</sup>	3:2:0:-:2 <sup>6</sup>
ALL	2,872	63.6% ± 2.4%	89.8% ± 1.3%	90.3% ± 1.2%	62.7% ± 2.3%	61.4% ± 2.3%
White	666	66.8% ± 4.0%	88.7% ± 2.7%	86.3% ± 2.5%	65.4% ± 4.1%	63.2% ± 4.2%
Hispanic	1,342	60.5% ± 2.9%	90.6% ± 1.6%	92.8% ± 1.5%	60.1% ± 2.9%	59.4% ± 2.9%
Black	318	48.4% ± 8.6%	82.7% ± 5.9%	86.7% ± 6.1%	47.7% ± 8.4%	46.4% ± 9.0%
Asian	273	73.5% ± 6.4%	92.4% ± 3.7%	91.7% ± 3.5%	71.7% ± 6.3%	70.5% ± 6.3%
Other	125	69.1% ± 9.2%	93.2% ± 4.7%	89.3% ± 4.5%	69.1% ± 9.2%	66.3% ± 9.0%
Unknown	148	69.2% ± 10.3%	86.7% ± 7.8%	88.0% ± 5.5%	66.6% ± 10.6%	65.0% ± 9.6%

1. As recorded on student immunization record (blue card). Individual racial groups do not include Hispanic children. Children of Hispanic ethnicity may be of any race
2. Three or more doses of any diphtheria and tetanus toxoids and pertussis vaccines including diphtheria and tetanus toxoids, and any pertussis vaccine (DTP/DTaP/DT)
3. Two or more doses of any poliovirus vaccine
4. Two or more doses of hepatitis B vaccine
5. Three or more doses of DTaP and two or more doses of Polio
6. Three or more doses of DTaP, two or more doses of polio, and two or more doses of Hep B

**KINDERGARTEN RETROSPECTIVE SURVEY**  
CALIFORNIA, 2010-2011

TABLE 7: IMMUNIZATION COVERAGE AMONG KINDERGARTEN STUDENTS AT 13 MONTHS OF AGE BY RACE/ETHNICITY<sup>1</sup>

	n	DTaP (3+) <sup>2</sup>	Polio (2+) <sup>3</sup>	MMR (1+) <sup>4</sup>	Hep B (2+) <sup>5</sup>	Var (1+) <sup>6</sup>	3:2:1 <sup>7</sup>	3:2:1:-:2 <sup>8</sup>	3:2:1:-:2:1 <sup>9</sup>
ALL	2,872	89.5% ± 1.4%	95.4% ± 0.8%	53.0% ± 2.4%	95.0% ± 0.8%	50.0% ± 2.6%	51.5% ± 2.4%	51.0% ± 2.3%	44.1% ± 2.4%
White	666	89.2% ± 2.6%	94.1% ± 1.7%	51.1% ± 4.9%	93.4% ± 1.8%	46.4% ± 5.0%	50.4% ± 4.9%	50.1% ± 4.9%	40.6% ± 5.2%
Hispanic	1,342	89.0% ± 1.7%	96.4% ± 1.1%	54.6% ± 3.3%	96.1% ± 1.1%	52.4% ± 3.2%	52.7% ± 3.1%	52.1% ± 3.1%	47.2% ± 3.0%
Black	318	79.0% ± 5.9%	89.7% ± 4.7%	49.9% ± 7.9%	92.5% ± 4.2%	49.8% ± 7.9%	45.4% ± 7.8%	45.4% ± 7.8%	43.4% ± 7.9%
Asian	273	96.9% ± 2.3%	98.0% ± 1.6%	52.6% ± 6.0%	95.8% ± 2.7%	48.6% ± 6.7%	51.9% ± 6.0%	51.5% ± 6.1%	41.8% ± 6.3%
Other	125	91.4% ± 5.8%	95.2% ± 4.0%	53.2% ± 9.8%	94.3% ± 3.7%	44.5% ± 8.9%	51.2% ± 10.0%	51.2% ± 10.0%	39.0% ± 8.4%
Unknown	148	91.6% ± 5.7%	94.1% ± 4.7%	51.0% ± 7.9%	95.1% ± 4.2%	51.9% ± 8.2%	51.0% ± 7.9%	51.0% ± 7.9%	41.8% ± 8.5%

1. As recorded on student immunization record (blue card). Individual racial groups do not include Hispanic children. Children of Hispanic ethnicity may be of any race

2. Three or more doses of any diphtheria and tetanus toxoids and pertussis vaccines including diphtheria and tetanus toxoids, and any acellular pertussis vaccine (DTP/DTaP/DT)

3. Two or more doses of any poliovirus vaccine

4. One or more doses of measles-mumps-rubella vaccine

5. Two or more doses of hepatitis B vaccine

6. One or more doses of varicella vaccine, unadjusted for history of varicella disease

7. Three or more doses of DTaP, two or more doses of Polio, and one or more doses of MMR

8. Three or more doses of DTaP, two or more doses of Polio, one or more doses of MMR, and two or more doses of Hep B

9. Three or more doses of DTaP, two or more doses of Polio, one or more doses of MMR, two or more doses of Hep B, and one or more doses of varicella

**KINDERGARTEN RETROSPECTIVE SURVEY**  
CALIFORNIA, 2010-2011

**TABLE 8: IMMUNIZATION COVERAGE AMONG KINDERGARTEN STUDENTS AT 19 MONTHS OF AGE BY RACE/ETHNICITY<sup>1</sup>**

	n	DTaP (4+) <sup>2</sup>	Polio (3+) <sup>3</sup>	MMR (1+) <sup>4</sup>	Hep B (3+) <sup>5</sup>	Var (1+) <sup>6</sup>	4:3:1 <sup>7</sup>	4:3:1:-:3 <sup>8</sup>	4:3:1:-:3:1 <sup>9</sup>
ALL	2,872	68.0% $\pm$ 2.0%	88.9% $\pm$ 1.3%	88.6% $\pm$ 1.3%	89.3% $\pm$ 1.3%	83.8% $\pm$ 1.8%	65.2% $\pm$ 2.1%	63.4% $\pm$ 2.0%	59.6% $\pm$ 2.2%
White	666	67.9% $\pm$ 3.8%	85.8% $\pm$ 2.7%	85.3% $\pm$ 2.6%	87.8% $\pm$ 2.4%	77.9% $\pm$ 4.5%	64.1% $\pm$ 3.9%	62.4% $\pm$ 3.9%	56.3% $\pm$ 4.7%
Hispanic	1,342	68.8% $\pm$ 2.5%	91.0% $\pm$ 1.6%	90.9% $\pm$ 1.6%	91.0% $\pm$ 1.5%	86.8% $\pm$ 1.8%	66.2% $\pm$ 2.7%	64.4% $\pm$ 2.6%	61.8% $\pm$ 2.7%
Black	318	50.7% $\pm$ 7.9%	78.9% $\pm$ 6.2%	83.0% $\pm$ 6.5%	81.8% $\pm$ 6.3%	80.9% $\pm$ 7.3%	49.7% $\pm$ 7.9%	48.1% $\pm$ 7.9%	46.4% $\pm$ 7.4%
Asian	273	72.0% $\pm$ 6.0%	91.2% $\pm$ 3.8%	90.5% $\pm$ 3.8%	91.8% $\pm$ 3.5%	87.0% $\pm$ 4.0%	69.6% $\pm$ 6.5%	67.6% $\pm$ 6.6%	63.6% $\pm$ 6.5%
Other	125	65.2% $\pm$ 7.9%	89.9% $\pm$ 5.0%	83.7% $\pm$ 6.5%	85.2% $\pm$ 7.4%	79.4% $\pm$ 7.8%	62.4% $\pm$ 7.6%	61.5% $\pm$ 7.7%	55.8% $\pm$ 8.6%
Unknown	148	73.3% $\pm$ 7.8%	90.5% $\pm$ 5.6%	90.0% $\pm$ 5.8%	88.3% $\pm$ 5.3%	85.6% $\pm$ 5.6%	70.5% $\pm$ 8.4%	69.0% $\pm$ 8.5%	63.1% $\pm$ 7.7%

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9. Four or more doses of DTaP, three or more doses of Polio, one or more doses of MMR, three or more doses of Hep B, and one or more doses of varicella