

2009-2010 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% of California's kindergartens in concurrence with selective review. Local health departments visited 256 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 4,192 kindergarten students. Children in this sample were born between 2003 and 2005. 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  $79.6 \pm 2.4\%$  for 4+DTaP to  $92.5 \pm 1.3\%$  for 3+ Polio and 1+MMR. Table 1 shows a comparison of this year's Kindergarten Retrospective Survey and the 2006 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. The percentage of kindergarten students at 24 months of age with the 4:3:1 vaccine series was  $75.9 \pm 4.9\%$  among children in Los Angeles,  $76.6 \pm 4.9\%$  among children in Southern California,  $86.7 \pm 2.7\%$  among children in the Bay Area,  $73.6 \pm 10.3\%$  among children in the Central Coast,  $68.9 \pm 9.5\%$  among children in the Central Valley,  $74.4 \pm 4.9\%$  among children in the North Central Valley, and  $65.9 \pm 21.5\%$  among children in rural Northern California.

Table 3 shows immunization coverage among California's children by race/ethnicity at 24 months. The percentage of kindergarten students at 24 months of age with the 4:3:1:-

:3:1 vaccine series was  $72.6 \pm 4.2\%$  among White children,  $73.6 \pm 3.9\%$  among Hispanic children,  $64.1 \pm 7.3\%$  among Black children, and  $69.2 \pm 8.7\%$  among Asian children. Coverage for the past five years among all racial/ethnic groups for the 4:3:1:-:3:1 series at 24 months is similar taking into account confidence intervals.

Figure C shows vaccine coverage by race/ethnicity by age checkpoint. Taking into account confidence intervals, vaccine coverage is similar across age checkpoints among White, Hispanic, Black and Asian children.

#### 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 for the 4:3:1:-:3:1 series at age 24 months over the past five years. Figure C shows 4:3:1 series coverage among children by race/ethnicity by age checkpoint. 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. Additionally, though immunization coverage differs slightly among regions, coverage is similar among the different racial/ethnic groups.

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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.)	4,192	79.6% $\pm$ 2.4%	92.5% $\pm$ 1.3%	92.5% $\pm$ 1.3%	91.5% $\pm$ 1.3%	88.5% $\pm$ 1.6%	76.9% $\pm$ 2.5%
NIS (24 mo.)	n/a	79.9% $\pm$ 4.3%	93.2% $\pm$ 2.3%	91.9% $\pm$ 2.7%	94.2% $\pm$ 1.9%	91.1% $\pm$ 3.0%	76.6% $\pm$ 4.6%

1. Data from the 2006 NIS are used for comparison because data from the KRS are retrospective; Children in both surveys were born between 2003 and 2005
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

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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	4,192	79.6% ± 2.4%	92.5% ± 1.3%	92.5% ± 1.3%	91.5% ± 1.3%	88.5% ± 1.6%	76.9% ± 2.5%	74.7% ± 2.7%	72.1% ± 2.7%
Los Angeles	1,016	79.6% ± 4.2%	91.8% ± 2.9%	93.6% ± 2.5%	92.1% ± 2.4%	89.5% ± 3.1%	75.9% ± 4.9%	74.1% ± 5.1%	71.7% ± 4.9%
Other So California	1,183	79.3% ± 4.7%	92.1% ± 2.3%	93.0% ± 2.0%	91.9% ± 2.2%	89.2% ± 3.0%	76.6% ± 4.9%	75.0% ± 5.3%	72.1% ± 5.3%
SF Bay Area	930	89.6% ± 2.8%	96.0% ± 2.0%	95.1% ± 2.1%	93.3% ± 2.6%	90.1% ± 2.9%	86.7% ± 2.7%	83.8% ± 2.9%	81.1% ± 3.4%
Central Coast	142	74.6% ± 10.2%	93.9% ± 3.2%	87.9% ± 7.1%	91.6% ± 7.1%	78.2% ± 9.5%	73.6% ± 10.3%	72.2% ± 11.6%	65.8% ± 13.7%
Central Valley	418	70.5% ± 8.1%	91.7% ± 5.3%	91.3% ± 4.6%	86.9% ± 5.5%	91.6% ± 3.6%	68.9% ± 9.5%	64.1% ± 11.1%	63.2% ± 11.1%
North Central Valley	400	78.2% ± 3.8%	91.7% ± 4.8%	89.4% ± 4.5%	92.8% ± 3.5%	87.7% ± 2.8%	74.4% ± 4.9%	72.5% ± 4.5%	71.8% ± 4.4%
Rural No California	103	66.7% ± 21.9%	81.9% ± 13.4%	83.2% ± 17.0%	80.4% ± 13.2%	78.1% ± 22.2%	65.9% ± 21.5%	65.0% ± 21.2%	62.0% ± 19.2%

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

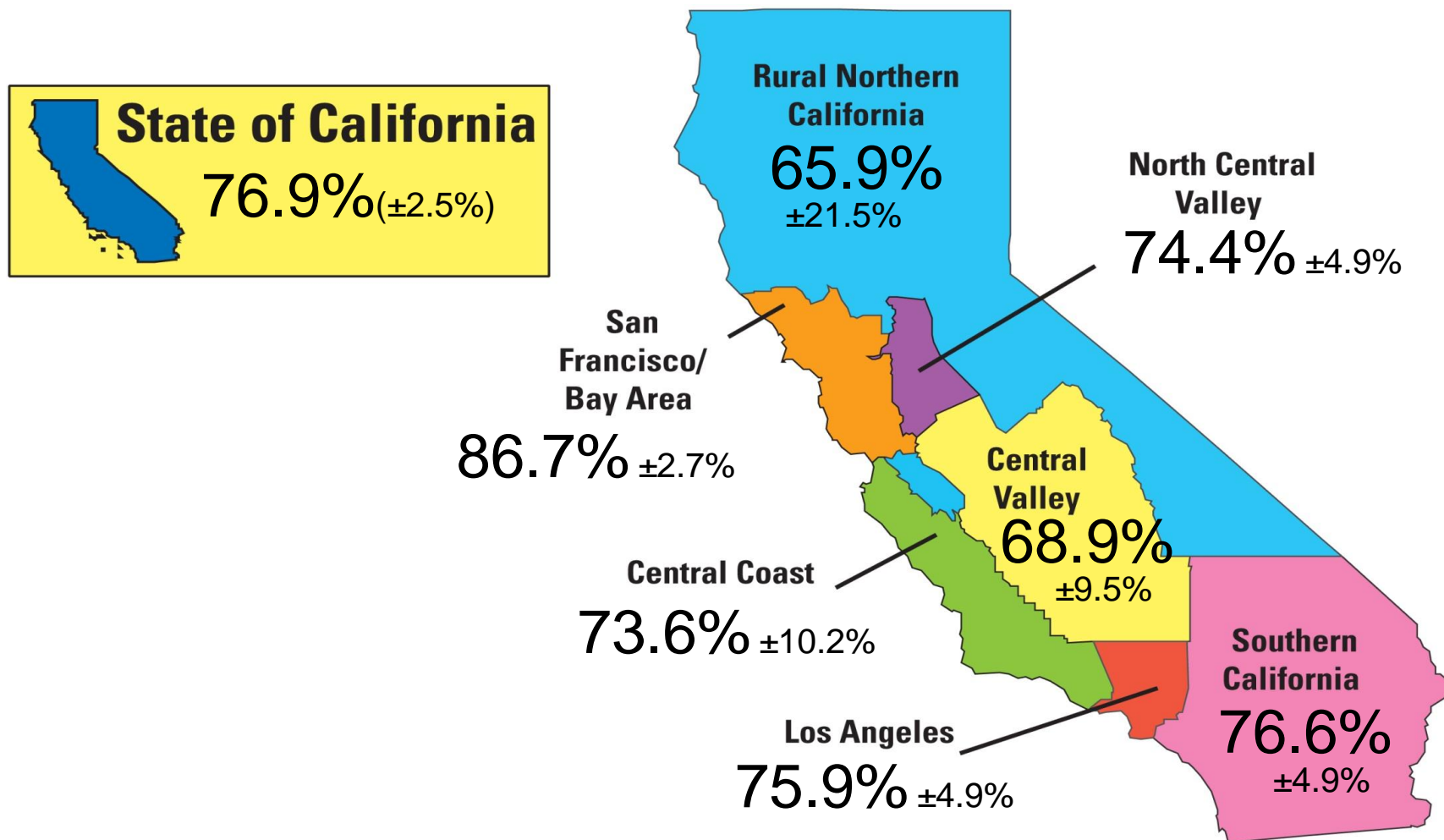
7. Four or more doses of DTaP, three or more doses of Polio, and one or more doses of MMR

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

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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

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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	4,192	79.6% ± 2.4%	92.5% ± 1.3%	92.5% ± 1.3%	91.5% ± 1.3%	88.5% ± 1.6%	76.9% ± 2.5%	74.7% ± 2.7%	72.1% ± 2.7%
White	1,190	80.5% ± 4.0%	90.8% ± 2.5%	90.5% ± 2.5%	90.2% ± 2.3%	86.6% ± 2.9%	77.5% ± 4.2%	75.6% ± 4.1%	72.6% ± 4.2%
Hispanic	1,745	80.4% ± 3.6%	94.0% ± 1.8%	93.6% ± 1.8%	93.2% ± 2.0%	89.7% ± 2.2%	77.5% ± 3.8%	75.8% ± 3.9%	73.6% ± 3.9%
Black	305	70.2% ± 6.1%	86.3% ± 6.0%	91.0% ± 5.3%	86.5% ± 5.3%	88.9% ± 6.1%	68.4% ± 6.3%	66.0% ± 6.9%	64.1% ± 7.3%
Asian	381	79.9% ± 7.4%	91.8% ± 4.5%	93.0% ± 4.6%	87.9% ± 6.2%	89.4% ± 5.4%	77.5% ± 7.7%	70.8% ± 8.5%	69.2% ± 8.7%
Other	249	82.0% ± 7.8%	97.2% ± 1.7%	94.5% ± 3.2%	95.7% ± 2.4%	87.5% ± 8.6%	80.3% ± 7.9%	78.9% ± 7.9%	72.8% ± 9.4%
Unknown	322	77.7% ± 9.1%	92.9% ± 3.9%	92.4% ± 4.7%	92.1% ± 3.6%	87.3% ± 6.0%	74.8% ± 8.8%	73.5% ± 8.8%	69.6% ± 9.9%

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

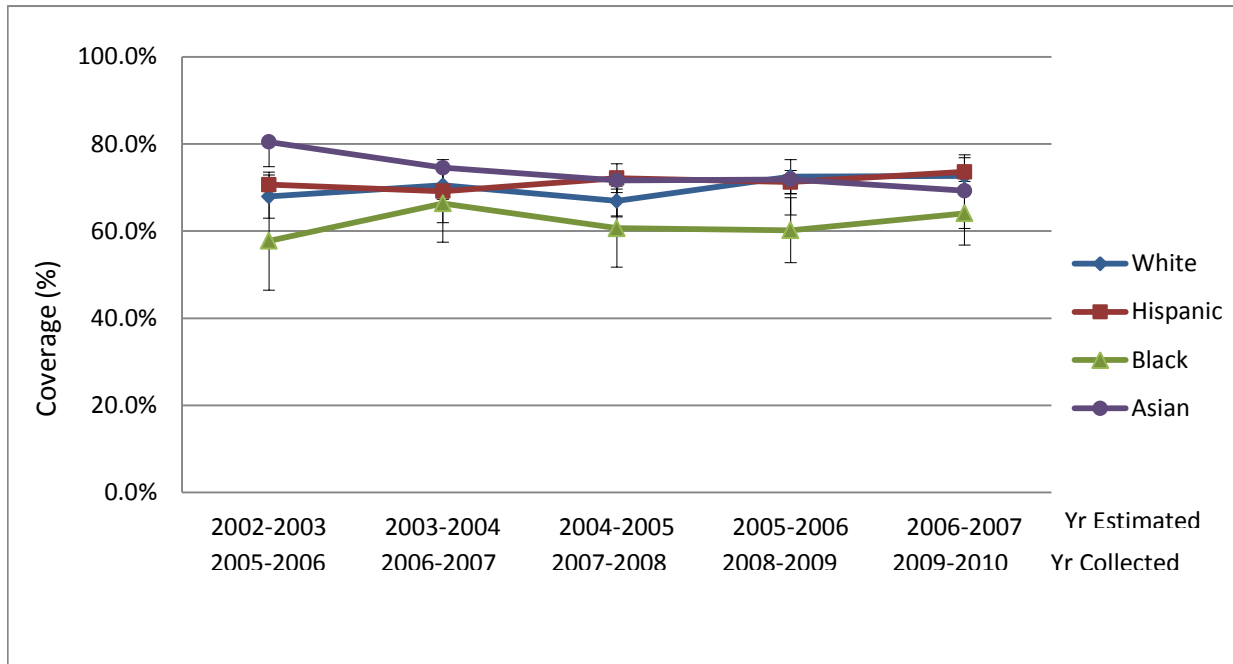
7. Four or more doses of DTaP, three or more doses of Polio, and one or more doses of MMR

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

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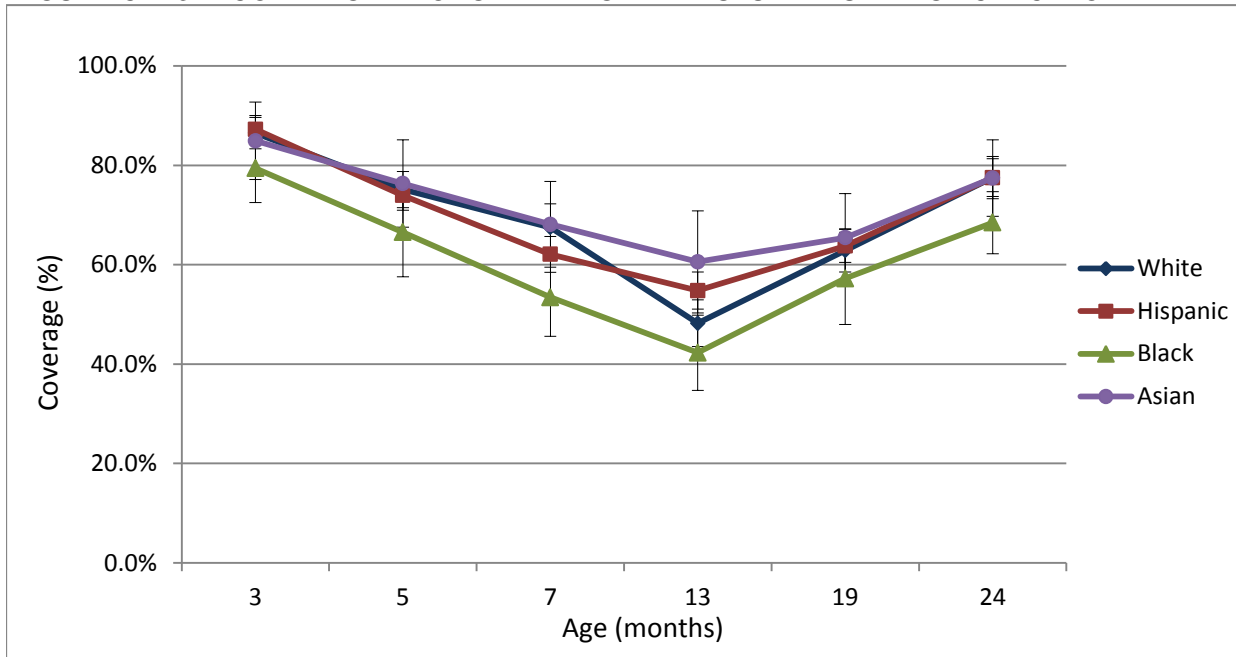
FIGURE B: 4:3:1:-:3:1<sup>1</sup> COVERAGE AMONG KINDERGARTEN STUDENTS AT 24 MONTHS OF AGE BY YEAR OF KRS<sup>2</sup> AND RACE/ETHNICITY<sup>3</sup>



1. Four or more doses of DTaP, three or more doses of polio, one or more doses of MMR, three or more doses of Hepatitis B and one or more doses of varicella.
2. Year of KRS: year collected is the school year that students were in kindergarten. Since this is a retrospective survey, year estimated reflects the year when kindergarten students were 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

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**FIGURE C: 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



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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	4,192	88.1% ± 1.8%	86.9% ± 1.8%	89.4% ± 1.5%	86.1% ± 1.9%	83.3% ± 2.0%
White	1,190	90.1% ± 2.7%	86.8% ± 3.1%	88.0% ± 2.7%	86.5% ± 3.2%	82.4% ± 3.4%
Hispanic	1,745	88.2% ± 2.8%	88.3% ± 2.5%	91.3% ± 2.2%	87.2% ± 2.8%	85.6% ± 2.9%
Black	305	80.7% ± 6.8%	79.5% ± 6.9%	83.8% ± 7.0%	79.4% ± 6.9%	74.8% ± 8.2%
Asian	381	87.4% ± 7.2%	86.9% ± 7.3%	87.9% ± 6.2%	84.9% ± 7.8%	81.1% ± 7.9%
Other	249	93.0% ± 5.2%	93.4% ± 4.4%	95.8% ± 2.4%	91.8% ± 5.5%	90.6% ± 5.7%
Unknown	322	83.7% ± 7.3%	80.9% ± 7.3%	86.2% ± 5.5%	80.8% ± 7.3%	78.0% ± 7.0%

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

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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	4,192	76.5% ± 2.4%	74.9% ± 2.3%	79.8% ± 2.2%	74.0% ± 2.4%	69.8% ± 2.4%
White	1,190	79.4% ± 3.7%	75.8% ± 3.6%	78.3% ± 4.0%	75.1% ± 3.7%	68.7% ± 4.1%
Hispanic	1,745	75.0% ± 3.2%	75.1% ± 2.9%	81.4% ± 3.2%	73.9% ± 3.0%	71.4% ± 3.2%
Black	305	68.6% ± 8.2%	66.9% ± 8.9%	74.5% ± 8.2%	66.5% ± 8.9%	62.7% ± 8.1%
Asian	381	78.8% ± 8.2%	76.6% ± 8.8%	78.8% ± 7.7%	76.3% ± 8.8%	68.5% ± 8.4%
Other	249	79.9% ± 8.9%	78.8% ± 9.1%	85.2% ± 5.5%	78.4% ± 9.2%	73.8% ± 8.4%
Unknown	322	76.4% ± 9.7%	72.2% ± 9.7%	78.0% ± 8.5%	72.0% ± 9.7%	68.7% ± 9.1%

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

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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	4,192	64.7% ± 2.9%	89.1% ± 1.6%	89.3% ± 1.4%	64.2% ± 2.9%	62.1% ± 2.9%
White	1,190	68.5% ± 4.8%	89.0% ± 2.6%	87.4% ± 2.9%	67.5% ± 4.7%	64.3% ± 4.6%
Hispanic	1,745	62.1% ± 3.6%	90.4% ± 2.4%	91.9% ± 2.0%	62.1% ± 3.6%	60.7% ± 3.6%
Black	305	53.9% ± 7.8%	80.5% ± 7.4%	81.6% ± 8.0%	53.4% ± 7.8%	51.4% ± 8.2%
Asian	381	68.4% ± 8.6%	88.7% ± 6.7%	84.8% ± 6.2%	68.1% ± 8.6%	64.9% ± 8.3%
Other	249	73.6% ± 8.1%	95.0% ± 2.5%	94.6% ± 2.6%	72.8% ± 8.2%	71.2% ± 8.1%
Unknown	322	65.9% ± 9.5%	85.9% ± 6.9%	88.4% ± 5.2%	64.8% ± 9.6%	63.2% ± 9.7%

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. 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

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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	4,192	88.8% ± 1.7%	95.9% ± 0.9%	53.6% ± 2.6%	95.0% ± 1.0%	50.6% ± 2.7%	52.0% ± 2.6%	51.5% ± 2.6%	43.4% ± 2.8%
White	1,190	90.2% ± 2.5%	95.0% ± 2.1%	49.4% ± 4.6%	93.1% ± 2.3%	47.6% ± 5.5%	48.2% ± 4.7%	47.7% ± 4.7%	39.2% ± 5.2%
Hispanic	1,745	89.0% ± 2.5%	97.0% ± 1.1%	56.7% ± 3.5%	96.6% ± 1.2%	52.2% ± 3.7%	54.8% ± 3.7%	54.2% ± 3.8%	46.2% ± 3.8%
Black	305	81.3% ± 5.6%	91.8% ± 4.7%	43.1% ± 7.6%	93.8% ± 4.1%	44.1% ± 8.8%	42.3% ± 7.5%	42.0% ± 7.5%	37.4% ± 7.7%
Asian	381	87.8% ± 6.5%	94.6% ± 3.5%	61.8% ± 9.8%	92.5% ± 3.7%	58.5% ± 9.7%	60.6% ± 10.3%	59.4% ± 9.7%	50.3% ± 9.8%
Other	249	92.9% ± 3.2%	97.6% ± 1.6%	47.5% ± 8.1%	96.8% ± 2.1%	43.9% ± 8.4%	46.7% ± 8.1%	46.1% ± 7.9%	36.6% ± 8.7%
Unknown	322	87.2% ± 6.3%	96.3% ± 3.2%	52.6% ± 8.0%	95.6% ± 3.2%	51.5% ± 8.6%	50.8% ± 7.7%	50.7% ± 7.7%	42.6% ± 7.7%

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. 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, 2009-2010

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	4,192	66.5% ± 2.5%	88.7% ± 1.6%	88.2% ± 1.8%	88.8% ± 1.7%	83.4% ± 2.1%	63.4% ± 2.5%	61.4% ± 2.7%	58.8% ± 2.7%
White	1,190	66.7% ± 4.8%	85.6% ± 3.4%	86.0% ± 3.0%	88.5% ± 2.7%	81.6% ± 3.6%	62.9% ± 4.4%	61.1% ± 4.5%	58.3% ± 4.6%
Hispanic	1,745	66.7% ± 3.3%	91.3% ± 2.0%	90.3% ± 2.1%	90.5% ± 2.4%	85.3% ± 2.7%	63.8% ± 3.3%	61.9% ± 3.6%	59.7% ± 3.7%
Black	305	59.1% ± 9.3%	83.0% ± 5.8%	83.6% ± 9.4%	84.3% ± 6.3%	81.3% ± 7.8%	57.2% ± 9.3%	54.9% ± 9.3%	51.8% ± 9.3%
Asian	381	67.7% ± 8.8%	86.7% ± 6.7%	86.5% ± 8.2%	80.8% ± 7.8%	81.9% ± 8.3%	65.4% ± 8.9%	60.7% ± 9.1%	58.9% ± 9.2%
Other	249	69.7% ± 9.0%	95.6% ± 2.3%	93.1% ± 3.5%	95.1% ± 2.5%	85.0% ± 10.6%	67.3% ± 9.1%	66.5% ± 9.2%	60.6% ± 10.1%
Unknown	322	67.3% ± 9.6%	87.3% ± 5.5%	86.6% ± 6.6%	88.4% ± 4.7%	81.4% ± 7.2%	63.2% ± 9.7%	62.2% ± 9.7%	59.4% ± 10.6%

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