



**County of Los Angeles Department of Health Services
Immunization Program
Annual School Immunization Assessment
Preschool and Kindergarten
July 2005**

Background

- State mandated immunization requirements for childcare/preschool entrance play an important role in keeping children up-to-date with their immunization series¹. California school immunization laws require that enrollees entering kindergarten or preschool receive a series of immunizations before admission to any licensed public or private school or preschool (Table 1).
- Every Fall, all licensed preschools, and public and private schools are required to report to the Los Angeles County Immunization Program (LACIP) the overall immunization status of their preschool and kindergarten enrollees, respectively.
- The objective of the annual immunization assessment of these two groups of enrollees is to monitor compliance with California school immunization laws in order to reduce the morbidity and mortality of vaccine-preventable diseases.

Methods

Study Population

- All enrollees attending public or private schools at preschool and kindergarten grade levels. Preschool children attending home day cares or residential based facilities are not included in the study population.
- Preschool enrollees' ages range from 24-59 months². Kindergarten enrollees' of all ages are included. For ungraded classes, only enrollees within the age range of 57-69 months are included³.

Data Collection Method

- Each September, standardized immunization assessment forms for each grade level are sent to licensed schools by the California State Immunization Program and to childcare facilities by LACIP.
- At each school/childcare facility, the immunization records of enrollees in each grade level are summarized and documented in the grade level-specific assessment form by school staff.

¹ Health and Safety Code, Division 105, Part 2, Chapter 1, Sections 120325-120380; California Code of Regulations, Title 17, Division 1, Chapter 4, Subchapter 8, Sections 6000-6075

² State of California-Health and Human Services Agency (DHS 8018A-Annual Immunization Report on Children Enrolled in Child Care Centers)

³ State of California-Health and Human Services Agency (PM 236-Immunization Assessment of Kindergarten Students Annual Report)

Collected Data

- The following are key data collected from each school's grade level-specific assessment form:
 1. Number of enrollees who have met the immunization requirements for the specific grade level.
 2. Number of enrollees who have not met the immunization requirements.
 3. Number of conditional entrants or follow-up enrollees who need to meet the immunization requirements.
 4. Number of enrollees with Permanent Medical Exemptions (PME) or Personal Beliefs Exemptions (PBE).
- Because of rounding estimation, the proportions indicated in this report may not yield the exact number of corresponding doses as cited in this report.

Results

The 2004 Fall School Assessment results are grouped into seven categories:

- I. Immunization requirements for school entry
- II. Population size
- III. Percent of preschool enrollees meeting immunization requirements by type of school
- IV. Percent of enrollees meeting immunization requirements by grade level and vaccine antigen
- V. Immunization coverage in Los Angeles County compared to other jurisdictions
- VI. Permanent Medical Exemption (PME) or Personal Beliefs Exemption (PBE) rate
- VII. Healthy People 2010 Objectives and Los Angeles County status

I. Immunization Requirements for School Entry

Table 1. Immunization requirements for school entry, California 2004

Grade Level	Vaccine					
	Polio	DTP/DTaP	MMR	Hep B	HiB	Varicella ¹
Preschool ²	3	4	1 ³	3	1 ³	1
Kindergarten ²	4 ⁴	5 ⁵	2 ⁶	3	-	1

¹Physician-documented varicella (chickenpox) disease history or immunity meets the varicella requirement.

²Health and Safety Code, Division 105, Part 2, Chapter 1, Sections 120325-120380; California Code of Regulations, Title 17, Division 1, Chapter 4, Subchapter 8, Sections 6000-6075

³Receipt of the dose up to (and including) 4 days before the birthday will satisfy the child care entry immunization requirement.

⁴Four doses at any age, but 3 doses meet requirement for age 4-6 years if at least one was given on or after the 4th birthday; 3 doses meet requirement for age 7-17 years if at least one was given on or after the 2nd birthday. Receipt of the dose up to (and including) 4 days before the birthday will satisfy the school entry immunization requirement.

⁵Five doses at any age, but 4 doses meet requirements for ages 4-6 years if at least one was on or after the 4th birthday. Receipt of the dose up to (and including) 4 days before the birthday will satisfy the school entry immunization requirement.

⁶Two doses of measles-containing vaccine required (both on or after 1st birthday). One dose of mumps and rubella-containing vaccine required; mumps vaccine is not required for children 7 years of age and older. Receipt of the dose up to (and including) 4 days before the birthday will satisfy the school entry immunization requirement.

II. Population size

Table 2. Preschool/Childcare facilities¹, Los Angeles County, 1995-2004

Assessment Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Enrolled Students	112,741	110,639	110,768	113,431	110,752	110,532	111,046	110,175	113,873	130,910
Total Schools	2,255	2,199	2,163	2,177	2,084	2,079	2,087	2,075	2,135	2,419
Public Schools	285 (12.6%)	269 (12.2%)	171 (7.9%)	194 (9.0%)	246 (11.8%)	292 (14.0%)	316 (15.1%)	331 (16.0%)	323 (15.1%)	359 (14.8%)
Private Schools	1,551 (68.8%)	1,499 (68.2%)	1,556 (71.9%)	1,527 (70.1%)	1,396 (67.0%)	1,331 (64.0%)	1,327 (63.6%)	1,271 (61.2%)	1,386 (64.9%)	1,538 (63.6%)
Head Start Schools	419 (18.6%)	431 (19.6%)	436 (20.2%)	456 (20.9%)	442 (21.2%)	456 (22.0%)	444 (21.3%)	473 (22.8%)	426 (20.0%)	522 (21.6%)

¹ Only includes facilities that submitted assessment forms

Compared to 2003, in 2004 the annual number of preschool facilities and enrollees that submitted assessment forms was up by 13.3% (n=284) and 15% (n=17,037), respectively. In addition, there was a slight increase in the number of facilities among all the three types of preschools. This increase is due in part to the employment of a newly introduced algorithm to identify more licensed preschool/childcare facilities in LAC. As seen in previous years, private schools represented the highest proportion of preschool facilities.

Table 3. Schools¹ with kindergarten enrollment, Los Angeles County, 1995-2004

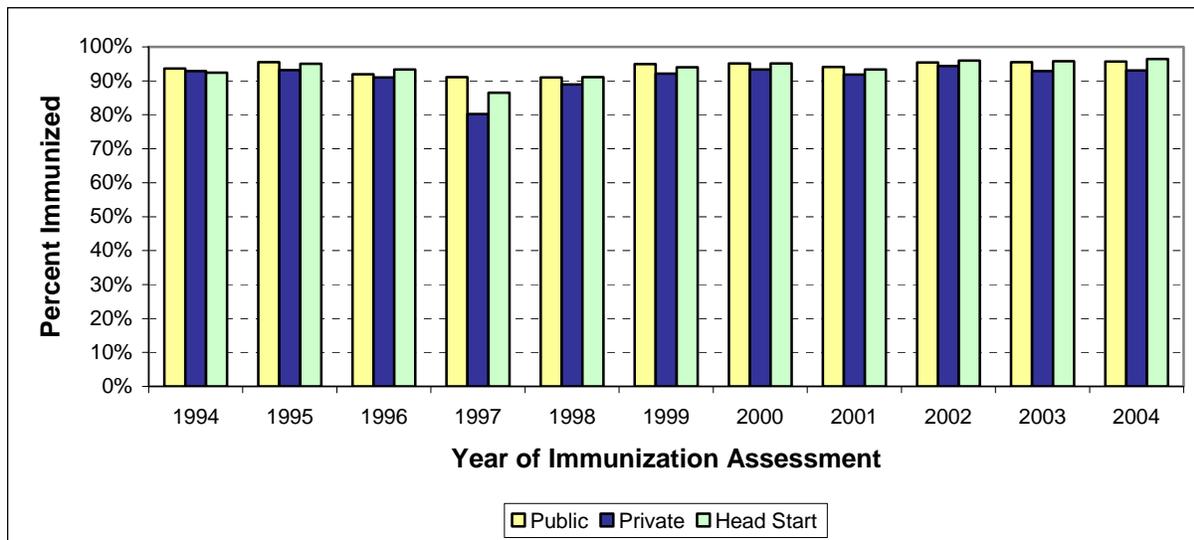
Assessment Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Enrolled Students	161,718	160,237	157,918	155,585	154,285	154,020	151,073	148,609	144,334	140,591
Total Schools	2,231	2,193	2,229	2,225	2,258	2,265	2,292	2,263	2,233	2,207
Public Schools	1,159 (51.9%)	1,165 (53.1%)	1,178 (52.8%)	1,187 (53.3%)	1,185 (52.5%)	1,210 (53.4%)	1,211 (52.8%)	1,217 (53.8%)	1,223 (54.8%)	1,227 (55.6%)
Private Schools	1,072 (48.1%)	1,028 (46.9%)	1,051 (47.2%)	1,038 (46.7%)	1,073 (47.5%)	1,055 (46.6%)	1,081 (47.2%)	1,046 (46.2%)	1,010 (45.2%)	980 (44.4%)

¹ Only includes facilities that submitted assessment forms

In 2004, there was a slight decrease (2.6%) in the number of enrolled kindergarten students, relative to 2003. The proportion of public schools with kindergarten enrollees increased by 1.5% (n=4) from 2003 to 2004, whereas the proportion in private schools decreased by 1.8% (n=30).

III. Percent of preschool enrollees meeting immunization requirements by type of school

Figure 1: Percent of preschool enrollees meeting immunization requirements¹, by type of child care center, Los Angeles County, 1994-2004²



¹ All Required Immunizations: Enrollee has received 4+DTP, 3+ Polio, 1 MMR, 1 Hib, 3 Hep B, and 1 Varicella.

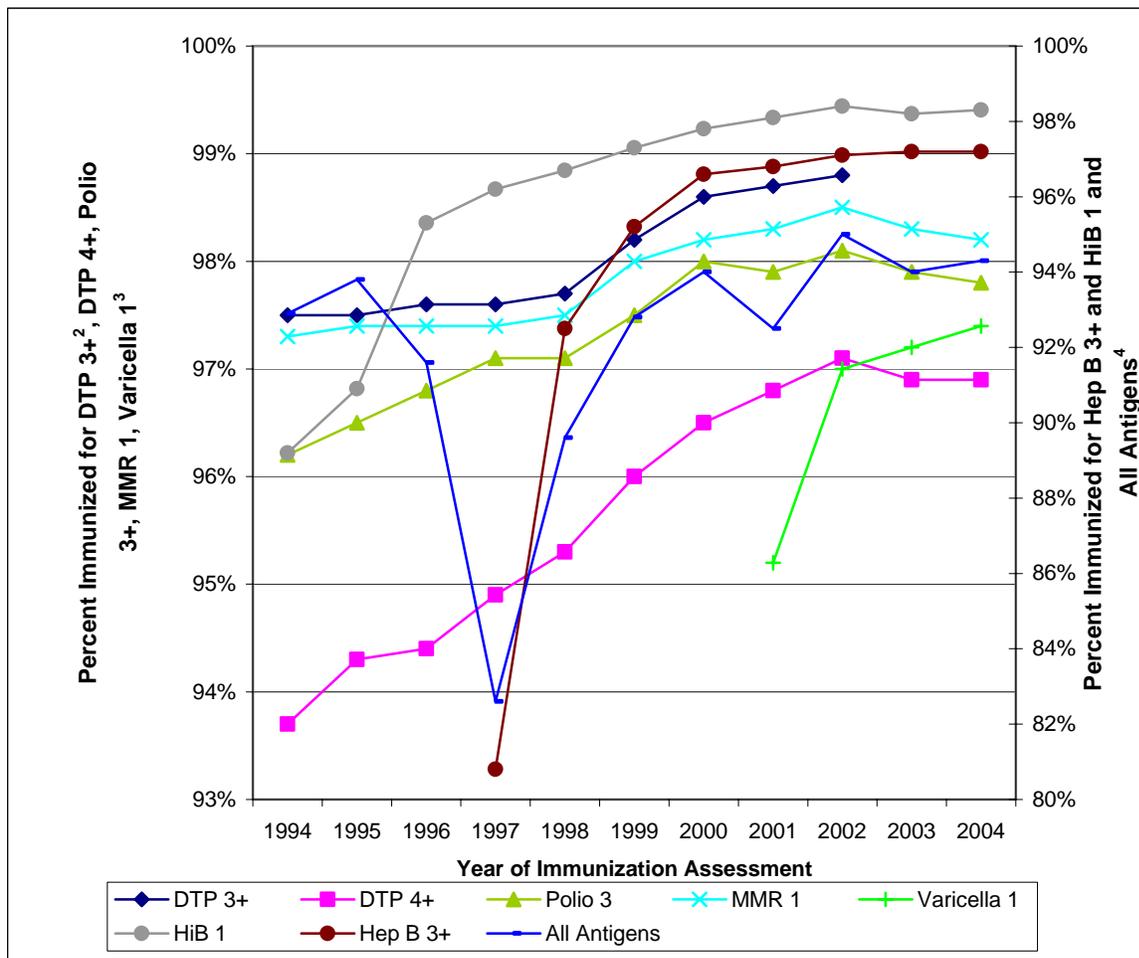
² Denominator includes enrollees with documented personal belief exemptions and personal medical exemptions

Compared to last year, all of the three types of preschool facilities showed a slight improvement of less than one percent in meeting immunization requirements. In 2004, head start preschools had the highest immunization coverage level of 96.4% (n=28,744). Private preschools consistently had the lowest proportion of enrollees meeting the immunization requirements.

Data are not available for the proportion of kindergarten enrollees meeting immunization requirements by type of school.

IV. Percent of enrollees meeting immunization requirements by grade level and vaccine antigen

Figure 2: Percent of preschool enrollees immunized, Los Angeles County, 1994-2004¹



¹ Denominator includes enrollees with documented personal belief exemptions and personal medical exemptions

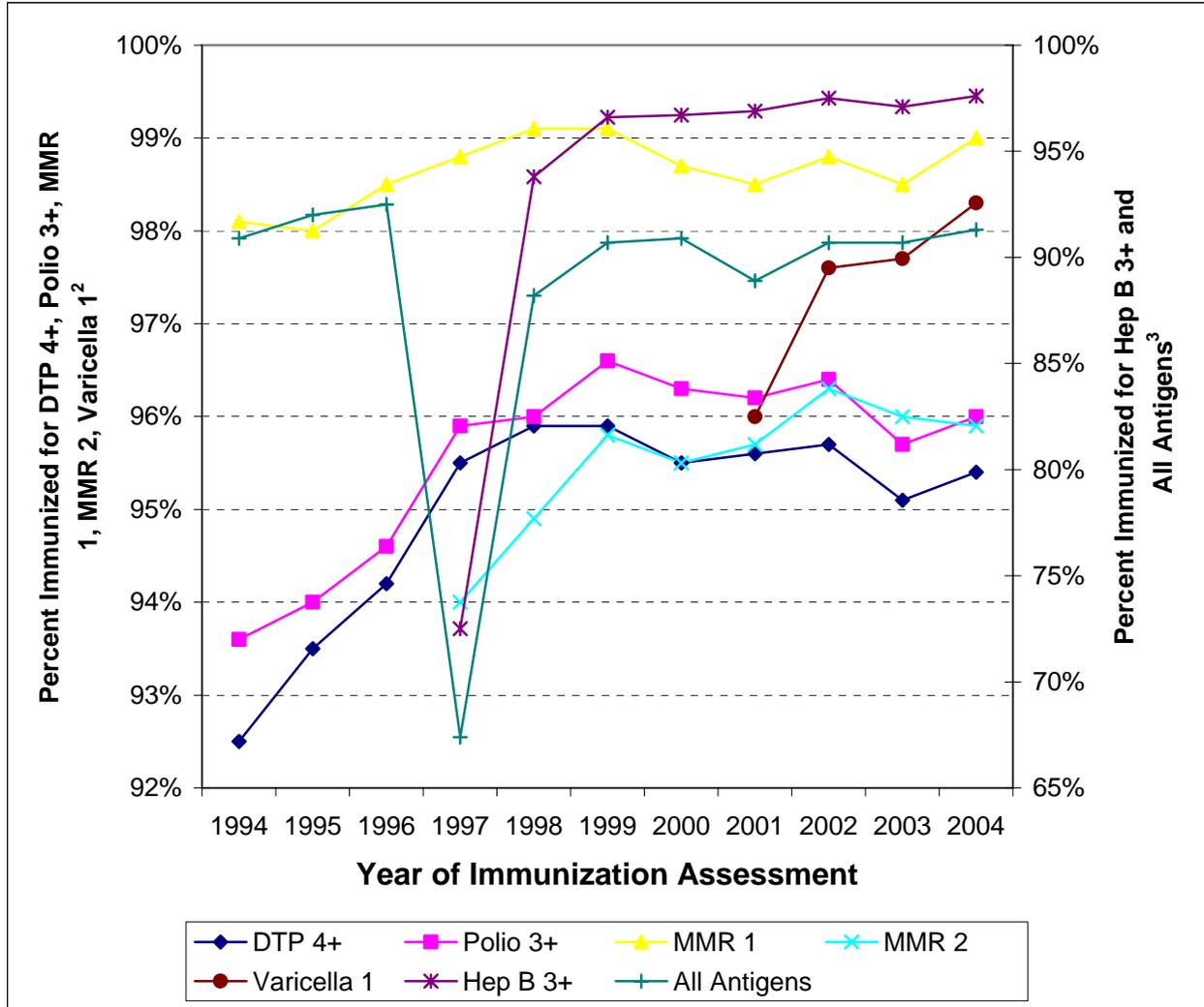
² No data available for DTP 3+ coverage in 2003 and 2004.

³ One dose of Varicella vaccine or physician documented disease/immunity.

⁴ All Required Immunizations: 1994-1995 (4+ DTP, 3+ Polio, 1 MMR), 1996 (4+ DTP, 3+ Polio, 1 MMR, 1 Hib), 1997-2000 (4+ DTP, 3+ Polio, 1 MMR, 1 Hib, 3 Hep B), 2001-2004 (4+ DTP, 3+ Polio, 1 MMR, 1 Hib, 3 Hep B, 1 Varicella).

In 2004, the first dose of HiB yielded the highest antigen-specific coverage level of 98.3% (n=128,681). Since 1999 over 97% of enrollees have been adequately immunized yearly with the first dose of HiB. The fourth dose of DTP continues to have the lowest antigen-specific coverage level: 96.9% (n=126,804) in 2004. Compared to 2003, the Varicella coverage level in 2004 has slightly risen by 0.2% to 97.4% (n=127,571). A slight decline (0.1%) in the coverage levels of both the third dose of Polio (n=128,075; 97.8%) and the first dose of MMR (n=128,495; 98.2%) was observed in 2004 relative to 2003. The lowest coverage level of all antigens was observed in 1997 and was due to the addition of Hep B 3+ into the required immunization series. Compared to 1998, the all antigens coverage rate improved by 5.24% in 2004.

Figure 3: Percent of kindergarten enrollees immunized, Los Angeles County, 1994-2004¹



¹ Denominator includes enrollees with documented personal belief exemptions and personal medical exemptions

² One dose of Varicella vaccine or physician documented disease/immunity.

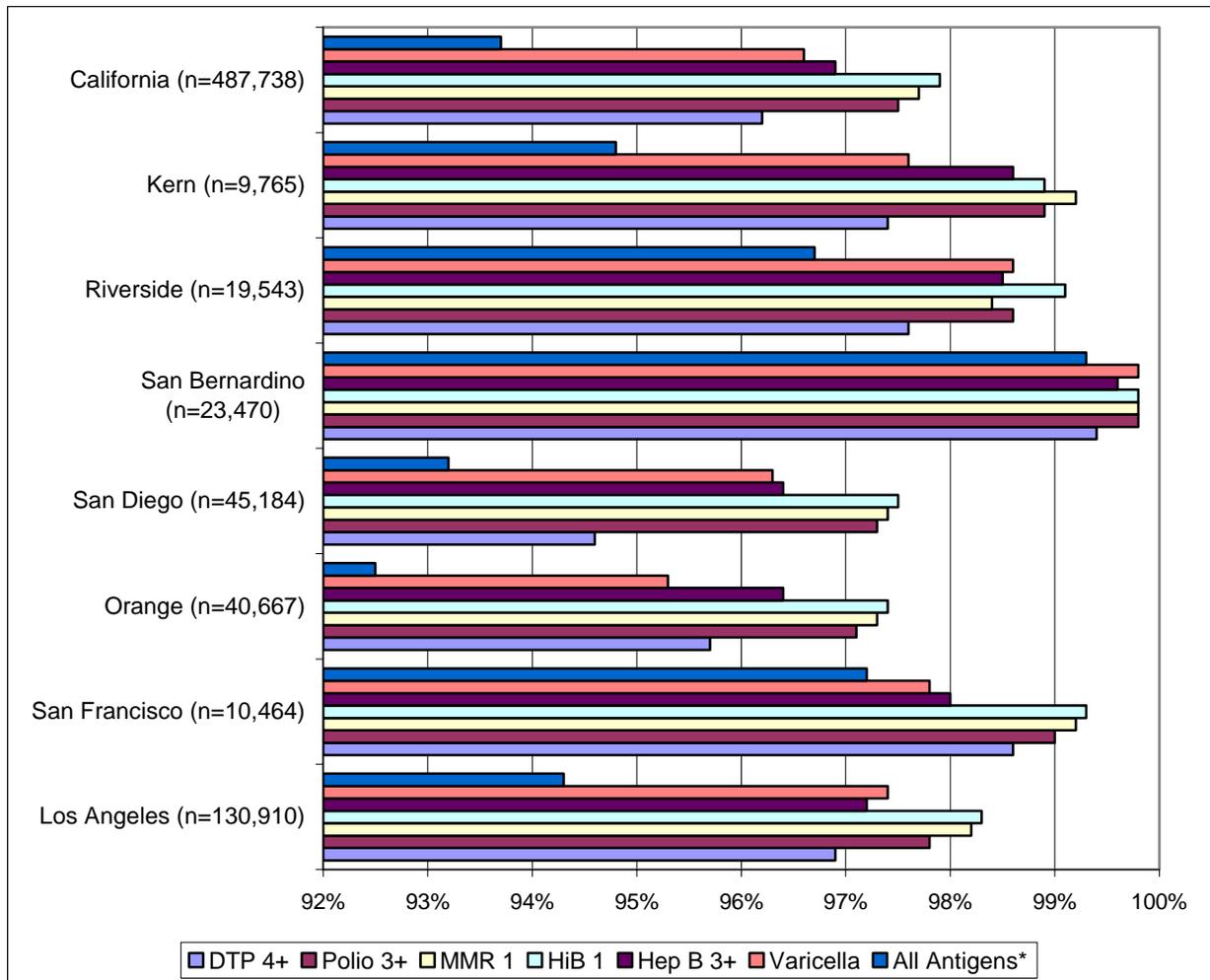
³ All Required Immunizations: 1994-1996 (4+ DTP, 3+ Polio, 1 MMR), 1997-2000 (4+ DTP, 3+ Polio, 2 MMR, 3 Hep B), 2001-2004 (4+ DTP, 3+ Polio, 2 MMR, 3 Hep B, 1 Varicella).

As evidenced in previous years, the first dose of MMR continued to have the highest antigen-specific coverage level in 2004: 98.9% (n=139,131). The coverage level for the second dose of MMR was 95.9% (n=134,809) in 2004, a 0.1% decline from the previous year. The fourth dose of DTP yielded the lowest antigen-specific coverage level of 95.4% (n=134,171) in 2004. However, the coverage level increased by 0.3% from 2003. Varicella coverage increased by 0.6% since 2003. The coverage level for the third dose of Hepatitis B, which is graphed using the right vertical axis scale, rose by 0.5% in 2004, relative to 2003. The lowest coverage level

of all antigens was observed in 1997 and was due to the addition of Hep B 3+ into the required immunization series. Compared to 1998, the all antigens coverage rate improved by 3.51% in 2004.

V. Immunization coverage in Los Angeles County compared to other jurisdictions, Fall Assessment 2004

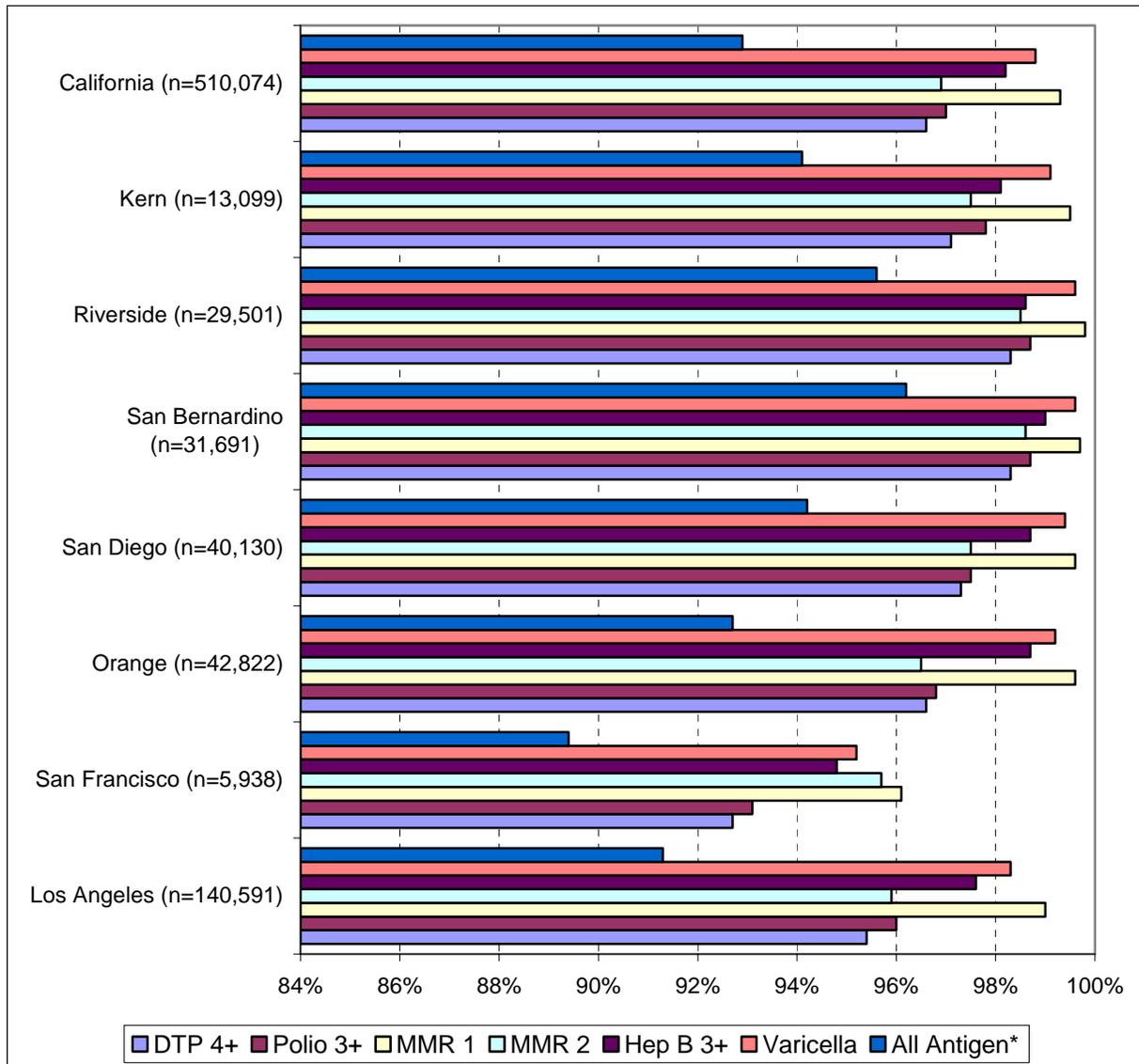
Figure 4: Percent of preschool enrollees immunized, by jurisdiction, California, 2004



* 4+ DTaP/DT, 3+ Polio, 1 MMR, 1 HiB, 3 Hep B, 1 Varicella vaccine or physician documented disease/immunity

In 2004, Los Angeles County preschool enrollees (n=130,910) had achieved higher coverage levels for each individual vaccine antigen than those of California overall. Los Angeles County preschool enrollees were ranked fifth for each antigen-specific coverage level and for all antigens coverage level, relative to other six jurisdictions.

Figure 5: Percent of kindergarten enrollees immunized, by jurisdiction, California, 2004

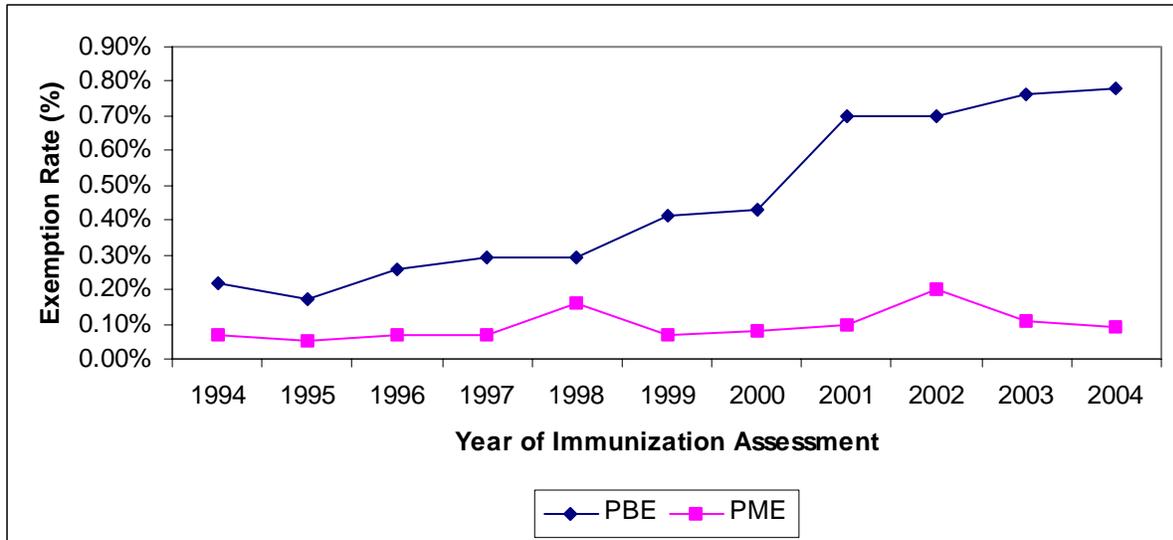


*4+ DTaP/DT, 3+ Polio, 2+ MMR, 3 Hep B, 1 Varicella vaccine or physician documented disease/immunity

In 2004, Los Angeles County kindergarten enrollees (n=140,591) had lower coverage levels for each individual vaccine antigen than those of California overall. Los Angeles County kindergarten enrollees were ranked sixth for each antigen-specific coverage level and for all antigens coverage level, relative to other six jurisdictions.

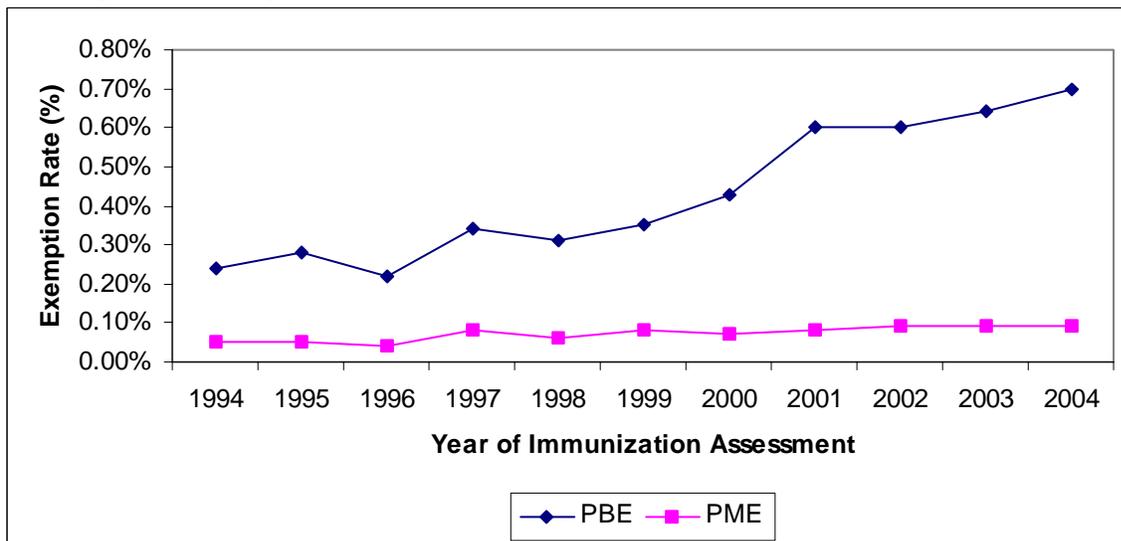
VI. Permanent medical exemption (PME) or personal beliefs exemptions (PBE) rate

Figure 6: Personal belief/medical belief exemptions among preschool enrollees, Los Angeles County, 1994-2004



The proportion of preschool enrollees with personal beliefs exemptions increased by 2.6%, from 0.76% (n=871) in 2003 to 0.78% (n=1,018) in 2004. The proportion of preschool enrollees with permanent medical exemptions dropped in 2004 by 18.2% from 2003.

Figure 7: Personal belief/medical belief exemptions among kindergarten enrollees, Los Angeles County, 1994-2004



The proportion of kindergarten enrollees with personal beliefs exemptions increased by 9.4%, from .64% (n=927) in 2003 to .70% (n=981) in 2004. The proportion of kindergarten enrollees with permanent medical exemptions has remained at .09% since 2002.

VII. Healthy People 2010 Objectives and Los Angeles County Status

Table 4. Immunization objectives for Healthy People 2010, target coverage levels vs. Los Angeles County Fall Assessment

Healthy People 2010 Objective	Healthy People 2010 Target (%)	Los Angeles County Fall Assessment (%), 2004	Previous 5-year average (%), Los Angeles County (1999-2003)
Maintenance of Vaccination Coverage Levels for Enrollees in licensed day care facilities¹			
Diphtheria-tetanus-acellular pertussis (DTaP) vaccine	95	96.9	96.7
Hepatitis B (hep B) vaccine	N/A ³	97.2	96.6
Measles-mumps-rubella (MMR) vaccine	95	98.2	98.3
Polio vaccine	95	97.8	97.9
Varicella vaccine	N/A ³	97.4 ⁴	96.5 ⁵
Maintenance of Vaccination Coverage Levels for Enrollees in kindergarten through the first grade²			
Diphtheria-tetanus-acellular pertussis (DTaP) vaccine	95	95.4	95.6
Hepatitis B (hep B) vaccine	N/A ³	97.6	96.9
Measles-mumps-rubella (MMR) vaccine	95	95.9	95.9
Polio vaccine	95	96.0	96.2
Varicella vaccine	N/A ³	98.3 ⁴	97.1 ⁵

¹ Health and Safety Code, Division 105, Part 2, Chapter 1, Sections 120325-120380; California Code of Regulations, Title 17, Division 1, Chapter 4, Subchapter 8, Sections 6000-6075 (California immunization requirements for Child Care: 4 doses of diphtheria-tetanus-acellular pertussis (DTaP) vaccine, 3 doses of hepatitis B vaccine, 1 dose of measles-mumps-rubella (MMR) vaccine, 3 doses of polio vaccine, 1 dose of varicella vaccine).

² Health and Safety Code, Division 105, Part 2, Chapter 1, Sections 120325-120380; California Code of Regulations, Title 17, Division 1, Chapter 4, Subchapter 8, Sections 6000-6075 (California immunizations requirements for school entry Grades K-12: 4 doses of diphtheria-tetanus-acellular pertussis (DTaP) vaccine, 3 doses of hepatitis B vaccine, 2 doses of measles-mumps-rubella (MMR) vaccine, 3 doses of polio vaccine, 1 dose of varicella vaccine).

³ In development

⁴ Physician documented varicella (chickenpox) disease history or immunity meets the varicella requirement.

⁵ The 3-year average (2001-2003) for varicella vaccine was calculated.

The 2004 Los Angeles County Fall Assessment antigen-specific vaccination coverage levels have reached the Healthy People 2010 vaccination coverage objectives and have fluctuated within one percent point above the target levels for the previous 5 years.

Table 5. Immunization objectives for Healthy People 2010, target coverage levels vs. Los Angeles County coverage estimates from different data sources

Healthy People 2010 Objective	Healthy People 2010 Target (%)	Fall Assessment 2004 ¹ (% enrollees 24-59 months in 2004)	Clinic Audits 2004 DHS ² Facilities (% enrollees 24-35 months in 2004)	Clinic Audits 2004 CHC ³ Facilities (% enrollees 24-35 months in 2004)
Increase in and Maintenance of Vaccination Coverage Levels for Among Enrollees Aged 19 to 35 Months				
4 doses DTaP	90	96.9	70.8	85.1
3 doses HiB	90	N/A	83.2	92.8
3 doses Hep B	90	97.2	82.1	92.4
1 dose MMR	90	98.2	85.7	92.2
3 doses polio	90	97.8	86.6	94.6
1 dose varicella	90	97.4	84.2	89.9
Increase in Coverage Levels of Universally Recommended Vaccines Among Enrollees Aged 19 to 35 Months				
4:3:1:3:3 ⁴	80	N/A	63.7	79.6
4:3:1 ⁵	N/A	N/A	67.5	81.9

¹ Only Preschool enrollees at 24-59 months of age.

² LAC Department of Health Services health centers and hospitals.

³ Community Health Centers (nonprofit healthcare providers that receive immunization subvention contract funds).

⁴ Four doses of DTaP/DT, three doses of poliovirus vaccine, one dose of MMR, three doses of HiB, and three doses of hepatitis B vaccine.

⁵ Four doses of DTaP/DT, three doses of poliovirus vaccine, one dose of MMR.

The 2004 Fall Assessment results showed higher vaccination coverage levels for all the required antigens, relative to the 2004 clinic audits. The wider age range of the enrollees included in the Fall Assessment (24-59 months) could be the reason for the higher vaccination coverage levels.

Discussion

Summary

Overall the 2004 Los Angeles County Fall Assessment antigen-specific vaccination coverage levels among enrollees in licensed day care facilities and in kindergarten grades were above 95%. These high coverage levels are likely due to the enforcement of the state mandated immunization requirements for school entrance.

However, the lowest coverage level of the fourth dose of DTP among kindergarten and preschool enrollees is of concern. A 20% increase in reported cases of pertussis was observed in Los Angeles County (LAC) from 2003 to 2004². Children without the fourth dose of DTP are not as protected from disease acquisition as those with the fourth dose.

In addition, with the exception of San Francisco, kindergarten enrollees in Los Angeles County had the lowest coverage rate of all required antigens over the past four years, compared to other jurisdictions in California. It has been a public health challenge for Los Angeles County (LAC) to serve a much larger and ethnically diverse population than any other jurisdiction in California.

It is noteworthy to point out that there has been an upward trend in vaccination personal belief exemptions among preschool and kindergarten enrollees. There is an easier process to claim such exemptions in California³. Parents only sign a waiver with the school at the time of school entrance. In some states, parents requesting nonmedical exemptions are required to attend an educational session on the risks and benefits of vaccination³. At both the school and the state level, a positive relationship was observed between the nonmedical exemption rates and the ease of obtaining immunization exemptions³. This ongoing trend could endanger public safety by creating a reservoir for resurgence of vaccine preventable diseases.

Limitations

The Fall School Assessment is a records-based estimation rather than a population-based survey, thus these results can only be generalized to enrollees attending licensed schools/childcare facilities in Los Angeles County.

References:

1. Davis MM, Gaglia MA. Associations of daycare and school entry vaccination requirements with varicella immunization rates. *Vaccine* 2005; 23:3053-3060
2. Pertussis Cases Increase in Los Angeles County. *The Public's Health* 2005; 5(5): 1
3. Salmon DA, Sapsin JW, Teret S, et al. Public Health and the Politics of School Immunization Requirements. *Am J Public Health*. 2005; 95:778-783