



**County of Los Angeles Department of Health Services
Immunization Program
Annual School Immunization Assessment
Preschool and Kindergarten
October 2006**

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 2005 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 2005

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, 1996-2005

Assessment Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Enrolled Students	110,639	110,768	113,431	110,752	110,532	111,046	110,175	113,873	130,910	129,556
Total Schools	2,199	2,163	2,177	2,084	2,079	2,087	2,075	2,135	2,419	2,331
Public Schools	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%)	354 (15.2%)
Private Schools	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%)	1,454 (62.4%)
Head Start Schools	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%)	523 (22.4%)

¹ Only includes facilities that submitted assessment forms

Compared to 2004, in 2005 the annual number of preschool facilities and enrollees that submitted assessment forms was down by 3.6% (n=88) and 1% (n=1,354), respectively. In addition, there was a slight decrease in the number of facilities among the public and private school types of preschools. This slight decrease is normal due in part to preschool/childcare facilities closing or losing funding from year to year 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, 1996-2005

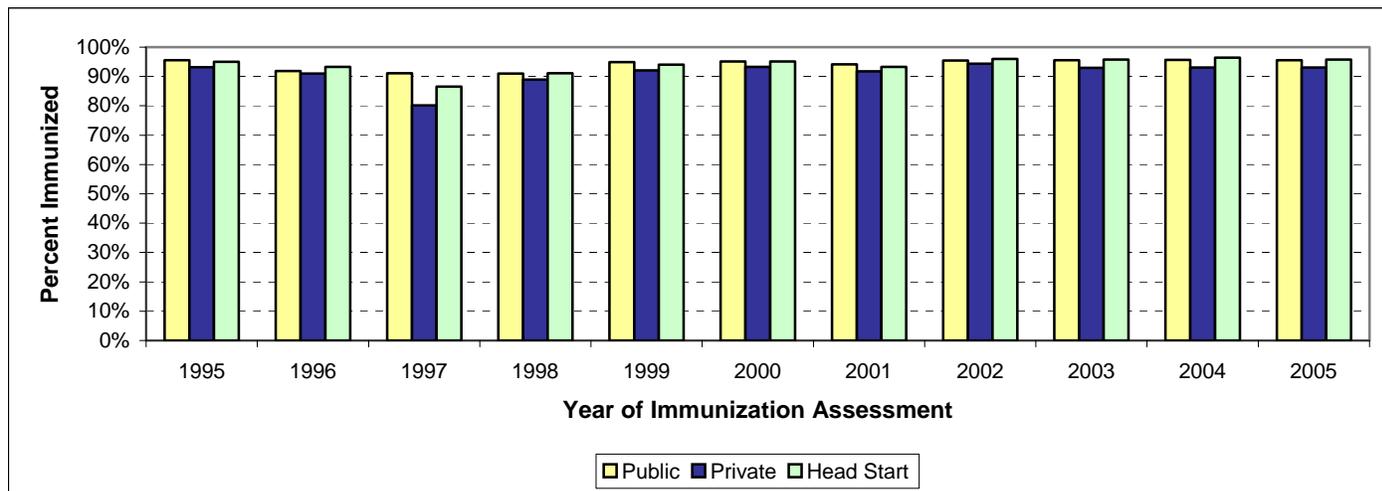
Assessment Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Enrolled Students	160,237	157,918	155,585	154,285	154,020	151,073	148,609	144,334	140,591	138,442
Total Schools	2,193	2,229	2,225	2,258	2,265	2,292	2,263	2,233	2,207	2,186
Public Schools	1,165 (53.1%)	1,178 (52.8%)	1,187 (53.3%)	1,185 (52.5%)	1,210 (53.4%)	1,211 (52.8%)	1,217 (53.8%)	1,223 (54.8%)	1,227 (55.6%)	1,240 (56.7%)
Private Schools	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%)	946 (43.3%)

¹ Only includes facilities that submitted assessment forms

In 2005, there was a slight decrease 1.5% (n=2,149) in the number of enrolled kindergarten students, relative to 2004. The proportion of public schools with kindergarten enrollees increased by 1.1% (n=13) from 2004 to 2005, whereas the proportion in private schools decreased by 1.6% (n=34).

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, 1995-2005²



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

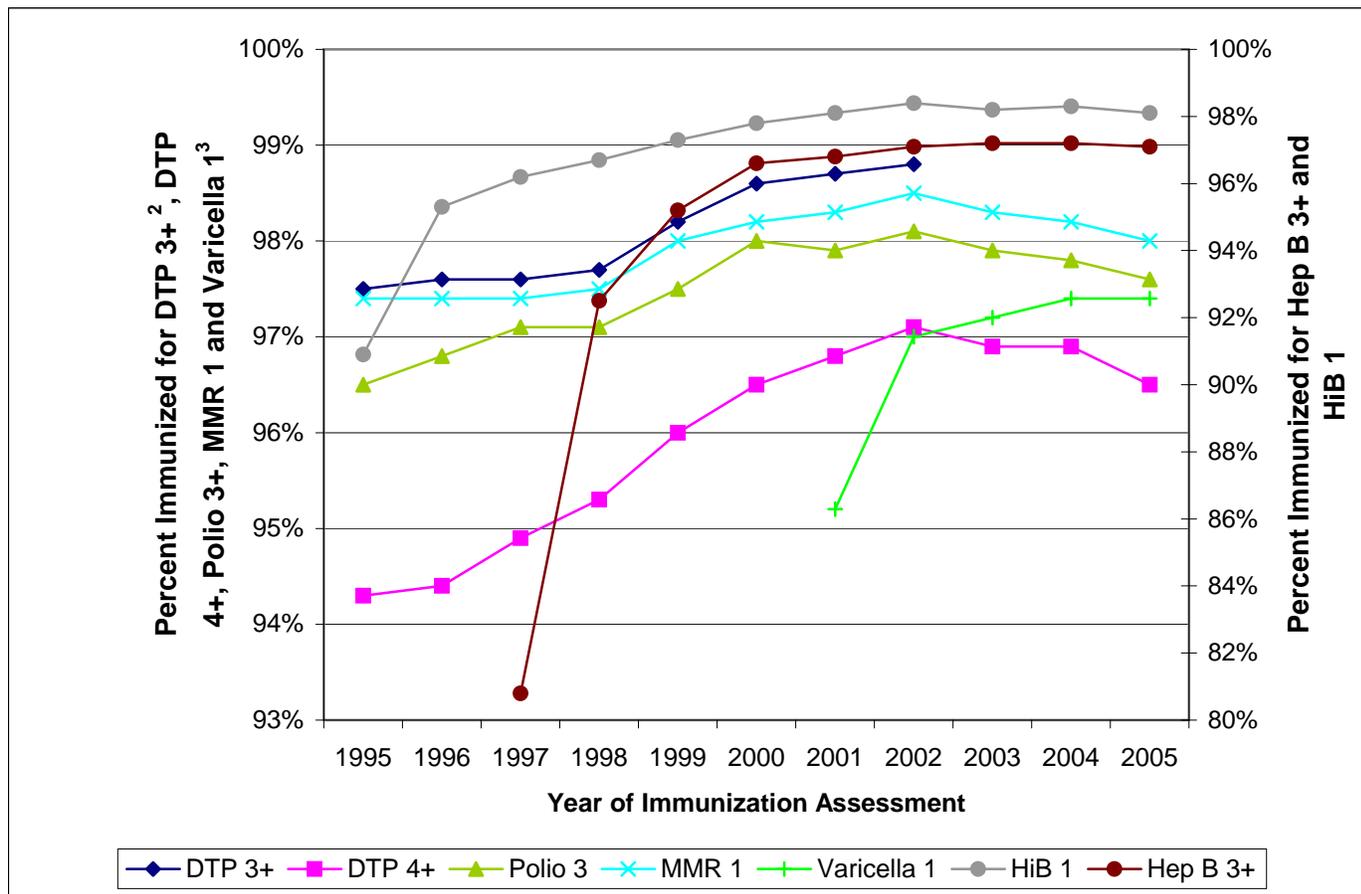
² Denominator includes enrollees with documented personal belief exemptions and personal medical exemptions

In 2005, head start preschools had the highest immunization coverage level of 95.8%. Public and Private preschools showed a slight decrease from 2004 of less than one percent in meeting immunization requirements. 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, 1995-2005¹



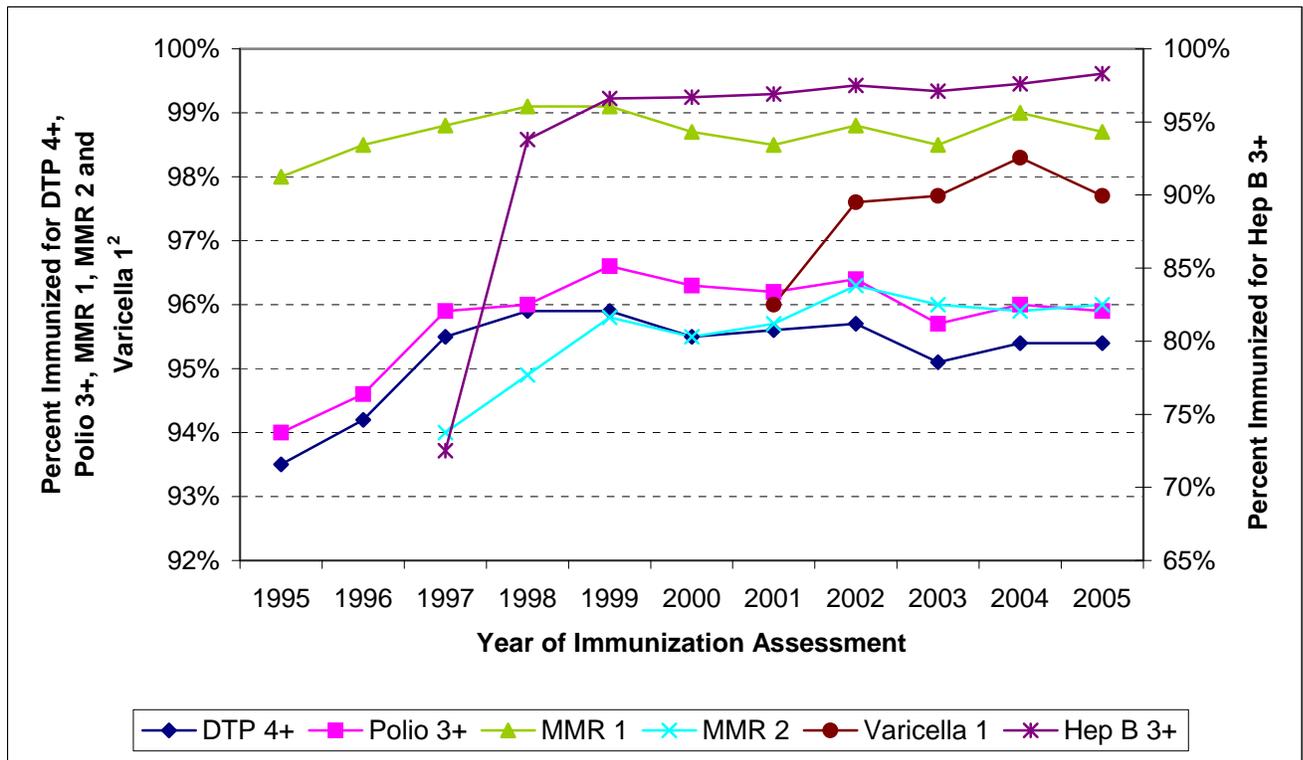
¹Denominator includes enrollees with documented personal belief exemptions and personal medical exemptions

² No data available for DTP 3+ coverage in 2004 and 2005.

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

In 2005, the first dose of HiB yielded the highest antigen-specific coverage level of 98.1% . Since 2001 over 98% 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: 96.5% in 2005. Compared to 2004, the Varicella coverage level in 2005 has stayed the same at 97.4%. A slight decline of (0.2%) in the coverage levels of both the third dose of Polio 97.6% and the first dose of MMR 98.0% was observed in 2005 relative to 2004.

Figure 3: Percent of kindergarten enrollees immunized, Los Angeles County, 1995-2005¹



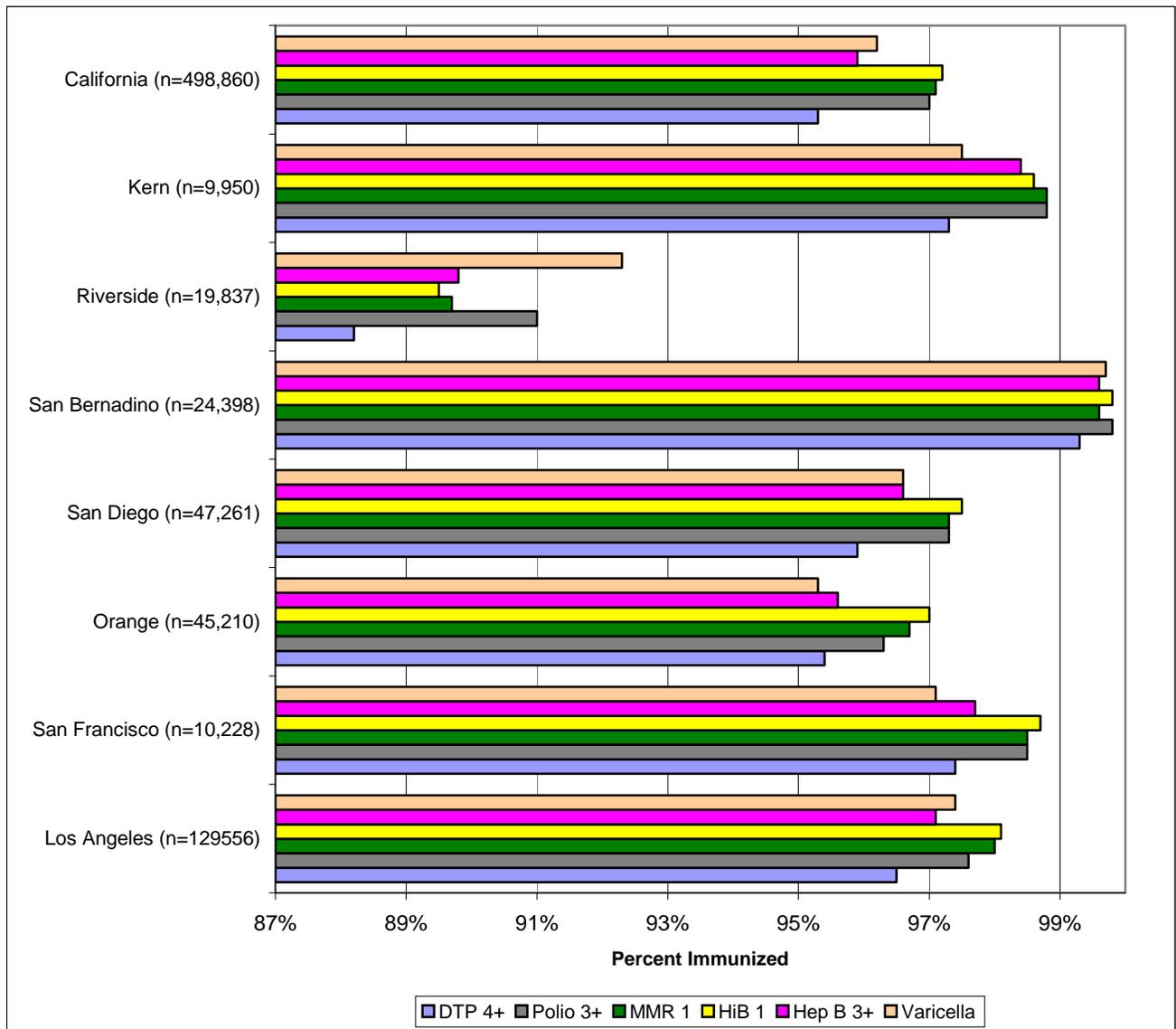
¹ Denominator includes enrollees with documented personal belief exemptions and personal medical exemptions

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

As evidenced in previous years, the first dose of MMR continued to have the highest antigen-specific coverage level in 2005: 98.7%. The coverage level for the second dose of MMR was 96.0% in 2005, a 0.1% increase from the previous year. The fourth dose of DTP yielded the lowest antigen-specific coverage level of 95.4% in 2005 this is the same as in 2004. The coverage level for the third dose of Hepatitis B, which is graphed using the right vertical axis scale, has the second highest coverage level in 2005 of 98.3%.

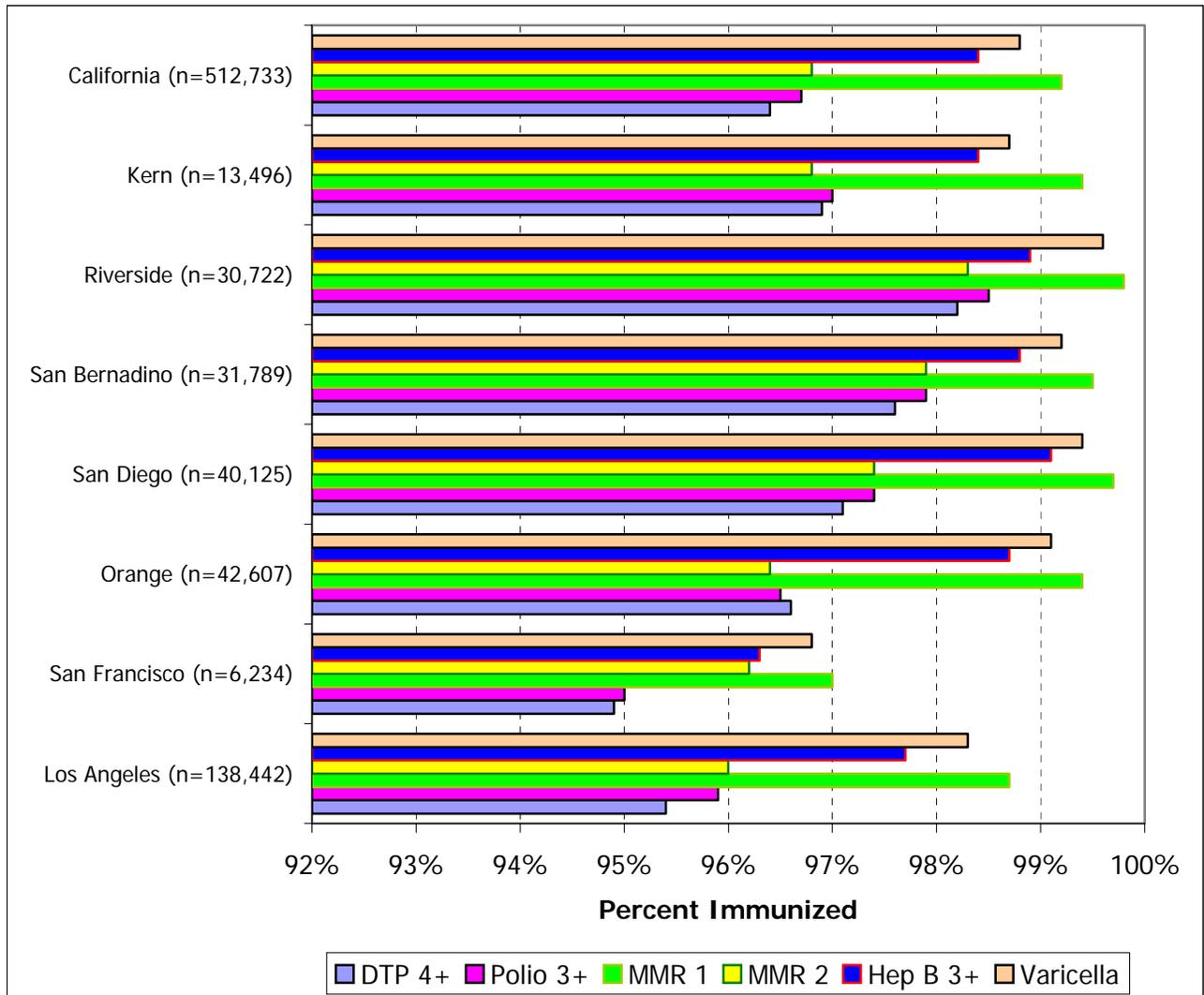
V. Immunization coverage in Los Angeles County compared to other jurisdictions, Fall Assessment 2005

Figure 4: Percent of preschool enrollees immunized, by jurisdiction, California, 2005



In 2005, Los Angeles County preschool enrollees (n=129,556) had achieved higher coverage levels for each individual vaccine antigen than those of California overall. Ranking the seven jurisdictions by their antigen-specific coverage level, Los Angeles County preschool enrollees were ranked third for Varicella and fourth in all other antigens (MMR 1, HiB 1, DTP 4+, Polio 3+, and Hep B 3+), relative to other jurisdictions.

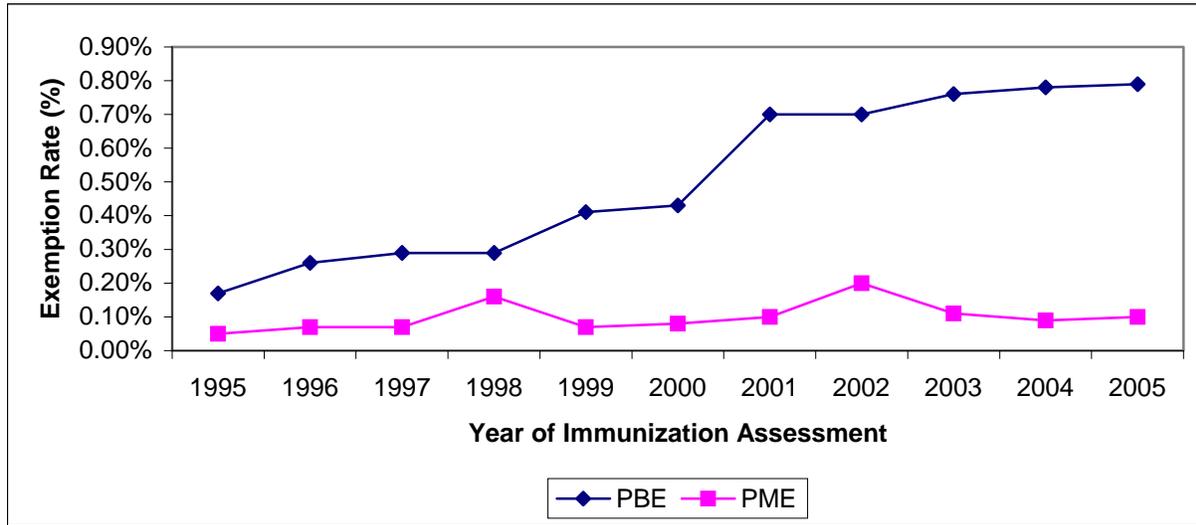
Figure 5: Percent of kindergarten enrollees immunized, by jurisdiction, California 2005



In 2005, Los Angeles County kindergarten enrollees (n=138,442) had lower coverage levels for each individual vaccine antigen than those of California overall. Ranking the seven jurisdictions for each antigen-specific coverage level, Los Angeles County kindergarten enrollees were ranked fifth for MMR1, sixth for DTP4+, Polio 3+, Hep B 3+, Varicella, and seventh for MMR 2, relative to the other jurisdictions.

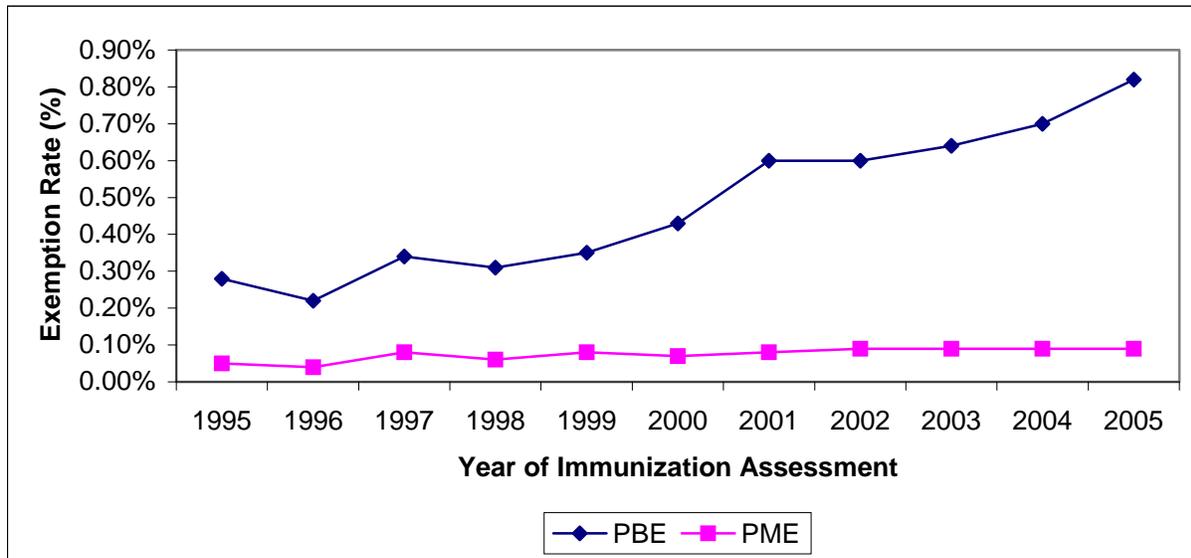
VI. Permanent medical exemption (PME) or personal beliefs exemptions (PBE) rate

Figure 6: Personal belief/medical belief exemptions among preschool enrollees, Los Angeles County, 1995-2005



The preschool enrollees with personal beliefs exemptions is at a all time high with 0.79% (n=1021) in 2005. The preschool enrollees with permanent medical exemptions is at 0.10% (n=130) in 2005.

Figure 7: Personal belief/medical belief exemptions among kindergarten enrollees, Los Angeles County, 1995-2005



The kindergarten enrollees with personal beliefs exemptions is also at an all time high with 0.82% (n=1136) in 2005. The 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 (%), 2005	Previous 5-year average (%), Los Angeles County (2000-2004)
Maintenance of Vaccination Coverage Levels for Enrollees in licensed day care facilities¹			
Diphtheria-tetanus-acellular pertussis (DTaP) vaccine	95	96.5	96.8
Hepatitis B (hep B) vaccine	N/A ³	97.1	97.0
Measles-mumps-rubella (MMR) vaccine	95	98.0	98.3
Polio vaccine	95	97.6	98.2
Varicella vaccine	N/A ³	97.4 ⁴	96.7 ⁵
Maintenance of Vaccination Coverage Levels for Enrollees in kindergarten through the first grade²			
Diphtheria-tetanus-acellular pertussis (DTaP) vaccine	95	95.4	95.5
Hepatitis B (hep B) vaccine	N/A ³	98.3	97.2
Measles-mumps-rubella (MMR) vaccine	95	96.0	95.9
Polio vaccine	95	95.9	96.1
Varicella vaccine	N/A ³	97.7 ⁴	97.4 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 4-year average (2001-2004) for varicella vaccine was calculated.

The 2005 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 2005 ¹ (% enrollees 24-59 months in 2005)	Clinic Audits 2005 DHS ² Facilities (% enrollees 24-35 months in 2005)	Clinic Audits 2005 CHC ³ Facilities (% enrollees 24-35 months in 2005)
Increase in and Maintenance of Vaccination Coverage Levels for Among Enrollees Aged 19 to 35 Months				
4 doses DTaP	90	96.5	70.8	85.1
3 doses HiB	90	N/A	83.2	92.8
3 doses Hep B	90	97.1	82.1	92.4
1 dose MMR	90	98.0	85.7	92.2
3 doses polio	90	97.6	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.

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

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

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

The 2005 Fall Assessment results showed higher vaccination coverage levels for all the required antigens, relative to the 2005 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 2005 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. ¹

Los Angeles County had the largest population of Kindergarten enrollees n=138,442 and preschool enrollees n=129,556 compared to other jurisdictions in California. The second largest population for Kindergarten enrollees is Orange with n=42,607 and San Diego n=47,261 for preschool enrollees. 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 California ². Parents only sign a waiver with the school at the time of school entrance. At both the school and the state level, a positive relationship was observed between the nonmedical exemption rates and the ease of obtaining immunization exemptions². This ongoing trend could endanger public safety by creating a reservoir for resurgence of vaccine preventable diseases. In some states, parents requesting nonmedical exemptions are required to attend an educational session on the risks and benefits of vaccination ².

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. 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