



**COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC HEALTH
IMMUNIZATION PROGRAM
2006-2007 INFLUENZA CAMPAIGN REPORT
NOVEMBER 2007**

Background

During the winter months of 1990-1999, influenza caused an average of 36,000 deaths in the United States each year.¹ During influenza epidemics, there is a twofold to fivefold increase in hospitalization rates in the elderly and persons with chronic medical conditions.² To lessen the impact of influenza, the Advisory Committee on Immunization Practices (ACIP) recommends that persons at risk for complications due to influenza be vaccinated each year.¹ The California Health and Safety Code Section 104900 mandates that publicly funded vaccine be made available to these high-risk persons, with priority given to all persons 60 years of age and older.

Vaccination Recommendations for the 2006-2007 Influenza Season

- ACIP recommendations¹
 - Adults aged 50 years and older.
 - All children aged 6-59 months.
 - Residents of nursing homes and other chronic care facilities.
 - All persons with chronic health conditions (e.g. cardiovascular disease, asthma, pulmonary disease).
 - All persons who required regular medical follow-up or hospitalization during the preceding year because of chronic metabolic diseases, renal dysfunction, hemoglobinopathies, or immunosuppression.
 - Children and adolescents receiving long-term aspirin therapy.
 - Pregnant women in their second or third trimester.
 - Health-care workers.
 - Household contacts of persons in high risk groups.
 - Close contacts of children aged 0-59 months.

- Los Angeles County (LAC) Department of Public Health (DPH) recommendations
 - All LAC-DPH recommendations for the 2006-2007 Influenza Campaign were the same as ACIP recommendations.

Influenza Campaign

- Publicly funded influenza vaccine from the California Department of Health Services and vaccine purchased by Los Angeles County are distributed by the Los Angeles County Immunization Program (LACIP) to public clinics, community and free clinics, and private providers who agree to hold public clinics. All other healthcare providers must purchase vaccine directly from the vaccine manufacturer for their patients and these data are not available.

- Participating healthcare providers immunize high-risk persons either in their clinics or during outreach programs (i.e., non-healthcare settings).

- Vaccine availability, the number of high-risk patients served by the provider, and the number of doses of vaccine used by the provider in previous years determine the amount of influenza vaccine each healthcare provider receives from LACIP.
- During the 2006-2007 influenza campaign, LAC received 2000 doses of intranasal vaccine. Most of the vaccine was used by non-profit health centers and by schools. Due to insufficient data the information is not quantified in this report.

Methods

Collected Data

- Vaccine accountability forms are distributed to each healthcare provider administering publicly funded vaccine in order to collect the following information:
 - Healthcare provider name and locating information.
 - Whether vaccine was administered at the in-house clinic or as an outreach activity.
 - Date of vaccine administration.
 - Age and ethnicity of vaccine recipient for every dose administered.
- Accountability forms have the healthcare provider's name pre-printed on them before distribution.
- Accountability forms are submitted weekly by in-house clinics; outreach clinics submit accountability forms at the conclusion of the clinic.

Exclusion criteria

- The 2006-2007 Influenza Campaign began October 23, 2006. Providers continued to administer the influenza vaccine until the supply was depleted or the vaccine expired.
- Data for this report were collected through June 30, 2007.
- Accountability forms submitted by providers not directly supplied with vaccine by LACIP were excluded.

Data Analysis

- Number of doses administered at the influenza clinics, by race/ethnicity and age of the recipients.
- Number of doses administered by type of provider: Community Health Provider (community and free clinics and other private providers who agree to hold public vaccine clinics), Personal Health Center, and Public Health Center.
- Number of doses administered in each Service Planning Area (SPA).

Results

The results are grouped into three categories:

- I. Vaccine Administration – Overall Summary & Trends by Provider Type.

- II. Vaccine Administration – Demographic Stratified Summary & Trends.
- III. 2006-2007 Influenza Campaign Results.

I. Vaccine Administration – Overall Summary & Trends by Provider Type.

Table 1. Influenza Vaccine Doses Administered, by Provider Type, Los Angeles County, 2002-2007 Influenza Campaigns.

Provider Type	Influenza Campaign Years									
	2002-2003		2003-2004		2004-2005		2005-2006		2006-2007	
	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Community Health Provider	22,698	(22.1)	30,331	(23.4)	20,199	(17.5)	43,215	(32.8)	41,038	(32.7)
Personal Health Center	9,480	(9.2)	15,555	(12.0)	1,698	(1.5)	8,496	(6.5)	10,614	(8.5)
Public Health Center [‡]	49,806	(48.5)	65,260	(50.4)	68,685	(59.6)	75,659	(57.5)	70,288	(56.0)
Skilled Nursing Facility	20,627	(20.1)	18,285	(14.1)	20,499	(17.8)	0 [#]	(0)	0 [#]	(0)
Other [§]	0	(0)	0	(0)	4,235	(3.7)	4,260	(3.2)	3,639	(2.9)
Total	102,611	(100)*	129,431	(100)*	115,316	(100)*	131,630	(100)*	125,579	(100)*

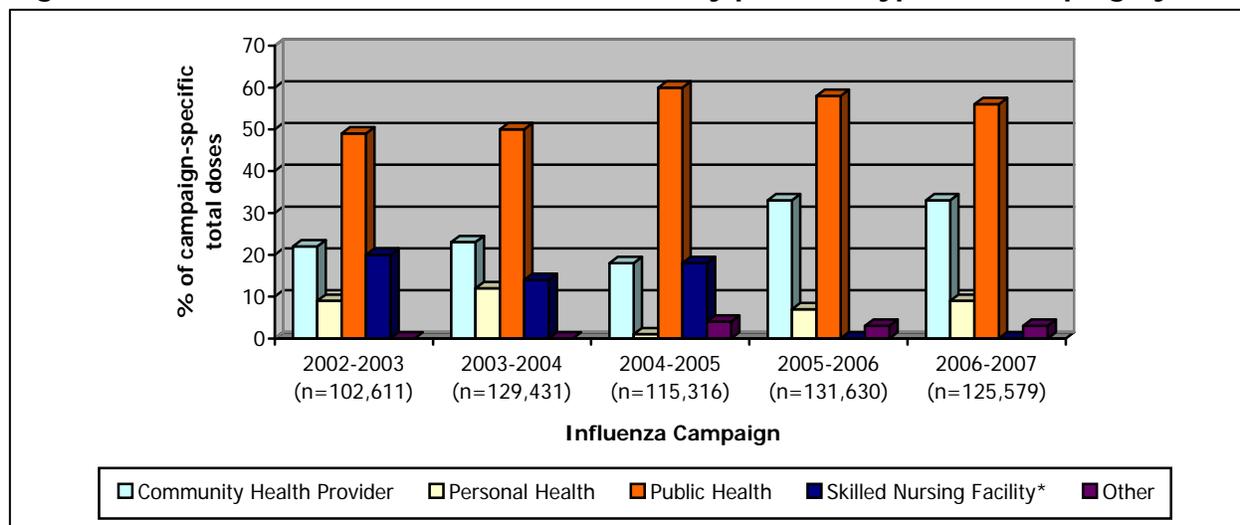
[‡] Includes outreach clinics.

[§] Includes prisons, fire departments, rehabilitation centers, churches, hospitals and other non-Los Angeles County Health agencies.

[#] Publicly-funded vaccine was no longer provided to skilled nursing facilities starting the 2005-2006 Influenza Campaign.

* Percentages may not add up to 100 due to rounding approximation.

Figure 1. Administration of influenza vaccine, by provider type and campaign year.

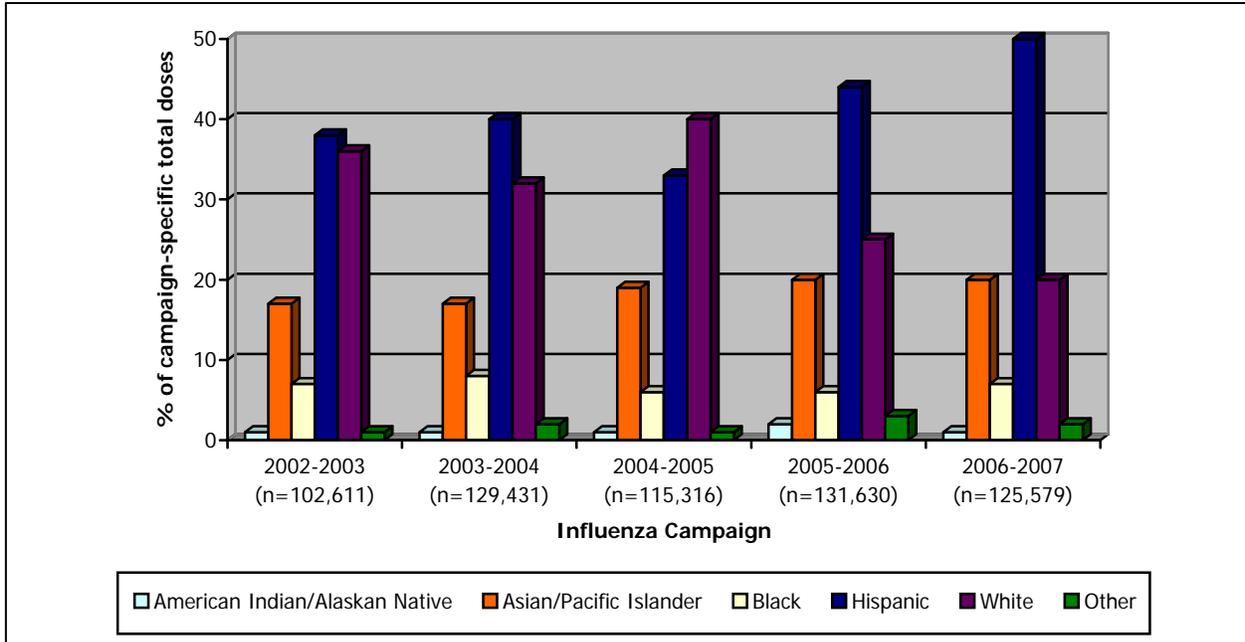


* Publicly-funded vaccine was no longer provided to skilled nursing facilities starting the 2005-2006 Influenza Campaign.

There was a 5% decrease (6,051 doses) in total doses administered during the 2006-2007 Influenza Campaign, compared to the 2005-2006 influenza campaign. However, except for the 2004-2005 campaign, the total number of doses administered during the 2006-2007 campaign does not differ much from the previous campaigns. In all five campaigns, Public Health providers administered the largest proportion of the vaccine (49%-60%).

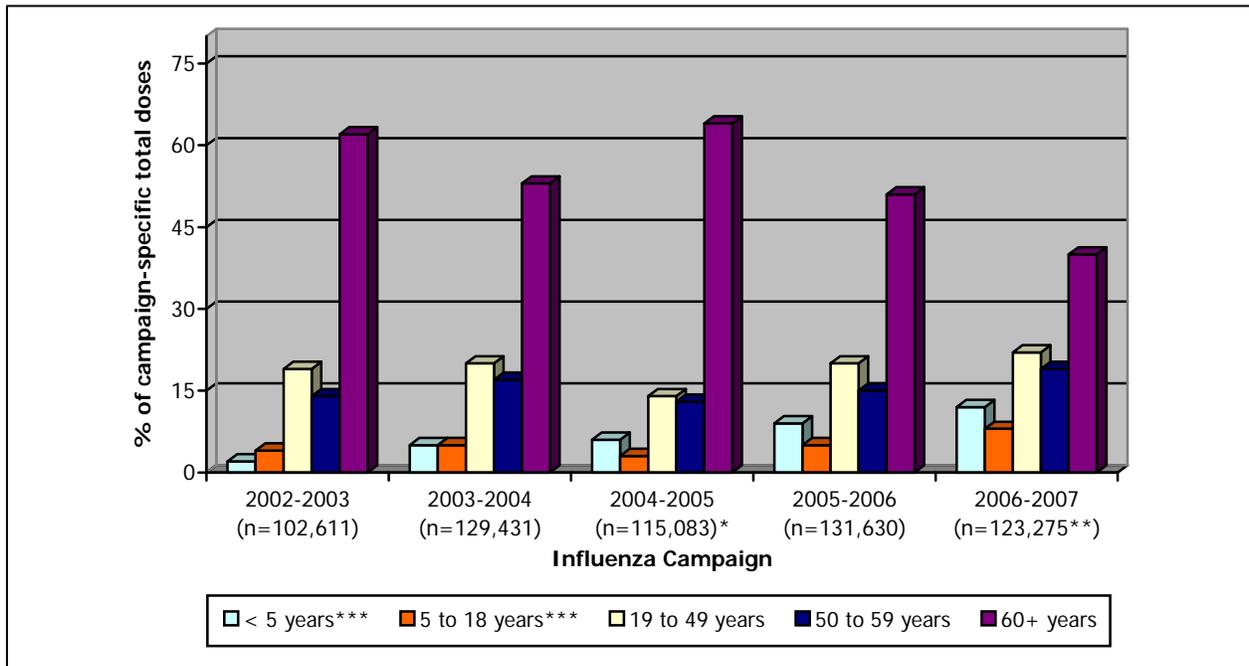
II. Vaccine Administration – Demographic Stratified Summary & Trends.

Figure 2. Ethnic distribution of persons receiving publicly funded influenza vaccine, by campaign year.



During the 2004-2005 influenza campaign, the largest proportion of the vaccine was administered to White clinic/outreach attendees (45,782 doses [40%]). During the 2002-2003, 2003-2004, 2005-2006, and 2006-2007 campaigns, a larger proportion of the vaccine was administered to Hispanics (39,313 doses [38%], 52,181 doses [40%], 58,528 doses [44%], and 61,204 [50%], respectively), compared to Whites (37,270 doses [36%], 41,039 doses [32%], 32,802 doses [25%], and 24,213 [20%], respectively). Approximately the same proportions of influenza vaccine have been administered to Asian/Pacific Islanders (APIs) and Blacks in each campaign (16%-20% and 6%-8%, respectively).

Figure 3. Age distribution of persons receiving publicly funded influenza vaccine, by campaign year.



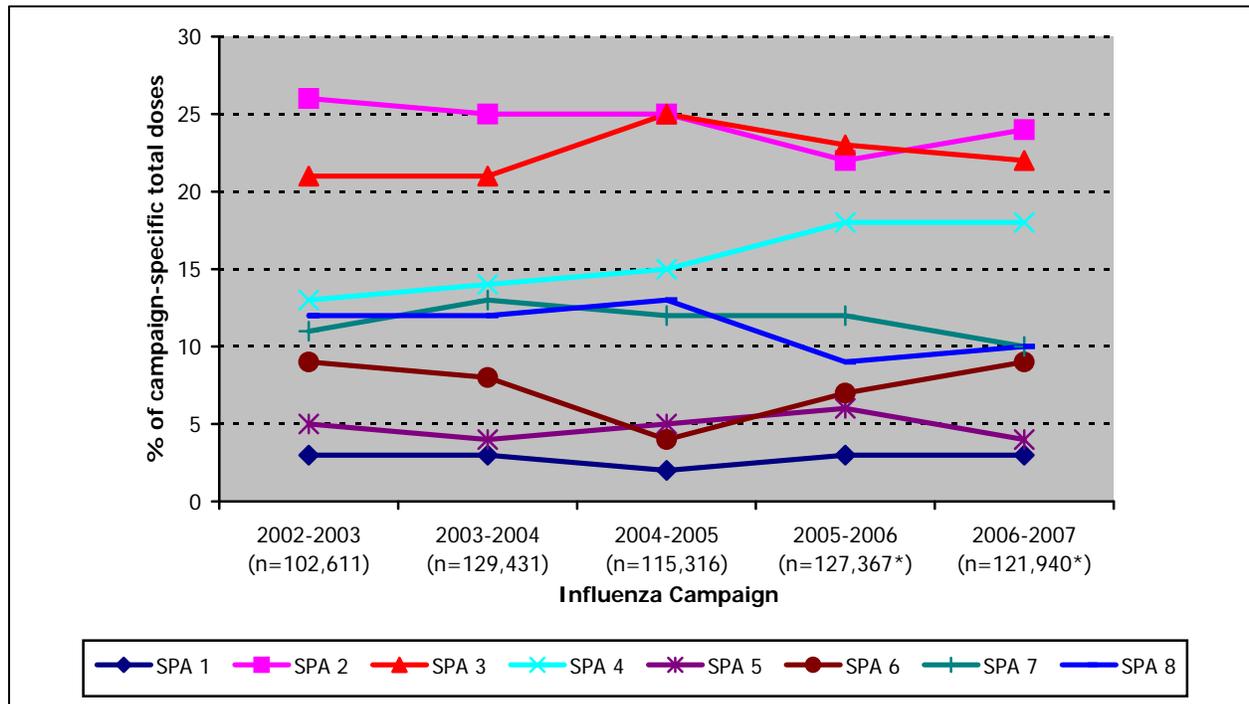
*Due to the use of a previous campaign year's vaccine accountability form by 6 providers, the vaccine usage in persons aged 2-18 years for these providers cannot be separated into the appropriate age categories and were not included in this figure. These providers administered 233 doses of influenza vaccine to persons aged 2-18 years.

**Because standard age categories were not collected by 3 providers, vaccine usage in persons aged 0-18 years for these providers cannot be separated into the appropriate age categories and were not included in this figure. These providers administered 2,304 doses of influenza vaccine to persons aged 0-18 years.

***For the 2004-2005 and 2005-2006 influenza campaigns the "<5 years" category was changed to "<6 years" and the "5 to 18 year" category was changed to "6 to 18 years."

In all five campaigns, the majority of the vaccine was administered to persons 50 years of age and older, as recommended by ACIP. However, the proportion administered to persons 60 years of age and older has decreased each year, from 62% (63,892 doses) in the 2002-2003 campaign to 38% (47,621 doses) in the 2006-2007 campaign. The increase seen during the 2004-2005 campaign in the proportion of influenza vaccine administered to persons 60+ resulted from the modification of ACIP recommendations in response to a vaccine shortage. The 65+ population received 26.5% (33,279 doses) of the total vaccine administered during the 2006-2007 campaign.

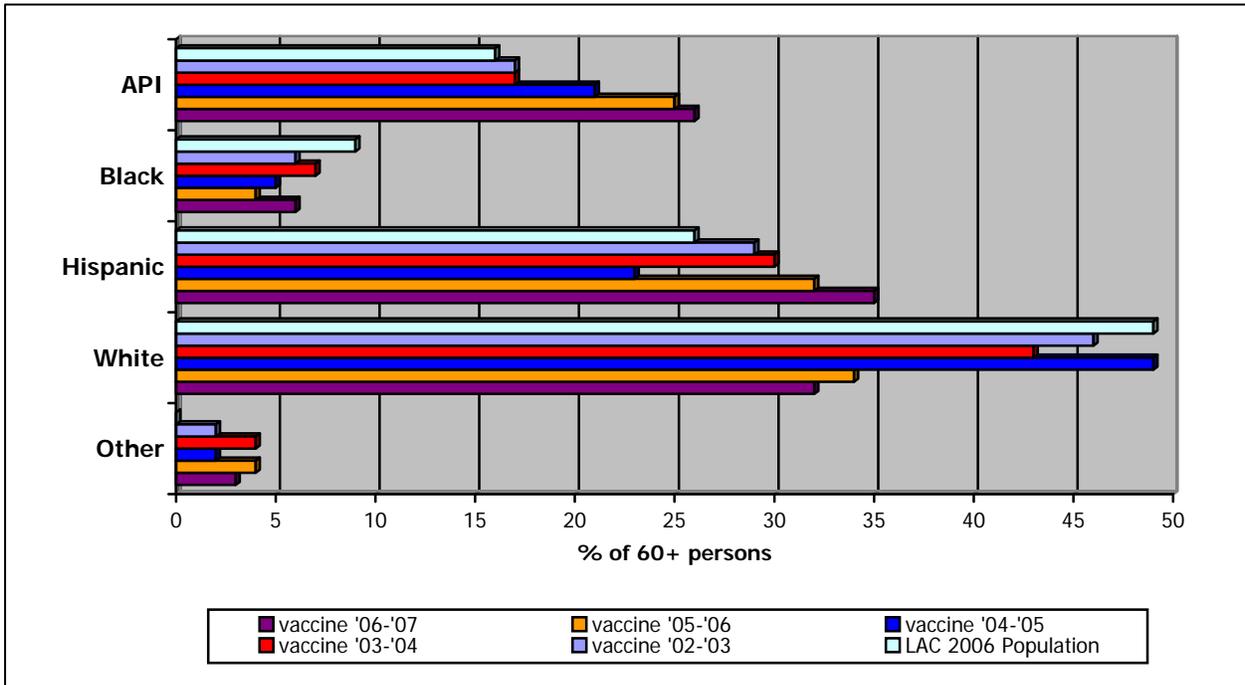
Figure 4. Proportion of total influenza vaccine administered in each SPA, by campaign year.



*Total doses for 2005-2006 and 2006-2007 do not include non-Los Angeles County Health Departments.

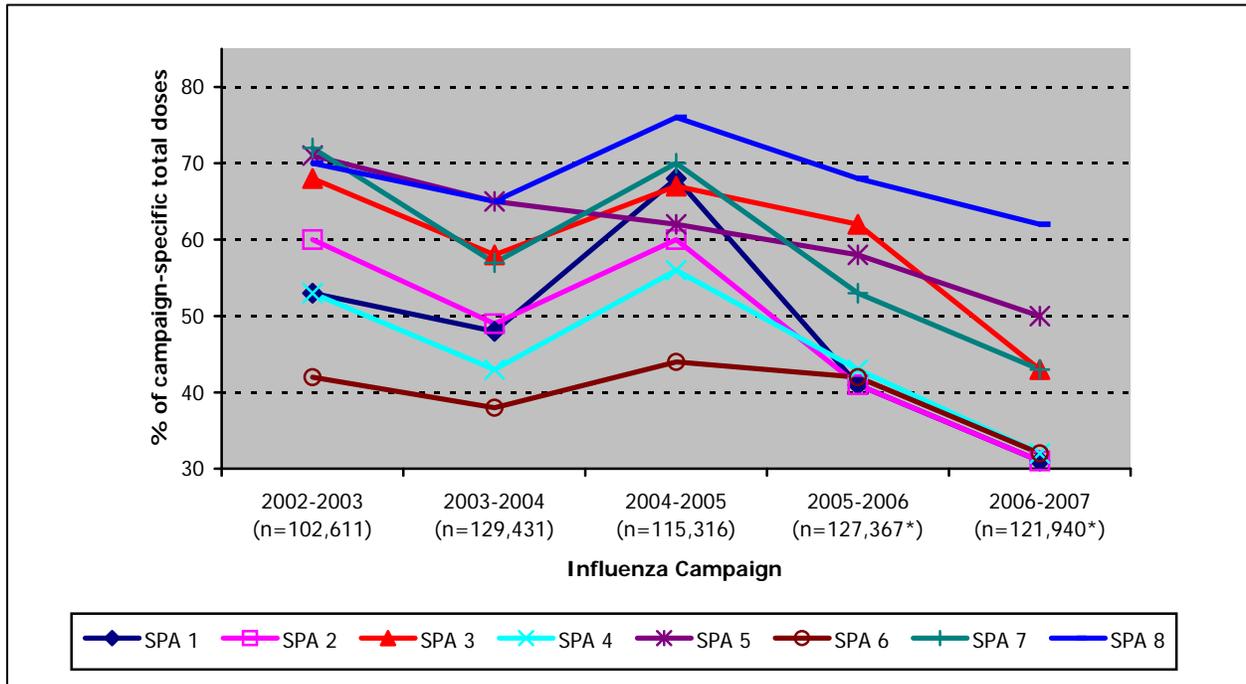
The amount of vaccine administered in each SPA is determined by the location of the provider administering the vaccine, not the residence of the vaccine recipients. For SPA 1 the proportion of the total influenza vaccine administered has remained approximately the same for each campaign year. SPAs 3, 5, and 7 experienced decreases in their proportion of the total influenza vaccine administered during the 2006-2007 campaign compared to the 2005-2006 campaign (23% to 22%, 6% to 4%, and 12% to 10%, respectively). SPAs 2, 6, and 8 experienced slight increases in their proportion of the total influenza vaccine administered during the 2006-2007 campaign compared to the 2005-2006 campaign (22% to 24%, 7% to 9%, and 9% to 10%, respectively).

Figure 5. Los Angeles County 60+ population and vaccine administered in persons 60 years and older, by race and campaign year.



In persons 60 years of age or older, there was an increase in the proportion of vaccine administered to Blacks (to 6% [2,734 doses]), Hispanics (to 35% [16,502 doses]), and APIs (to 26% [12,134 doses]) in the 2006-2007 campaign compared to the 2005-2006 campaign. However, decreases were seen in Whites (to 32% [15,206 doses]). The racial distribution of vaccine administered to persons 60 years of age and older differed from the racial distribution of the 2004 LAC population.

Figure 6. Percentage of total influenza vaccine administered to persons 60+ years, by SPA and campaign year.

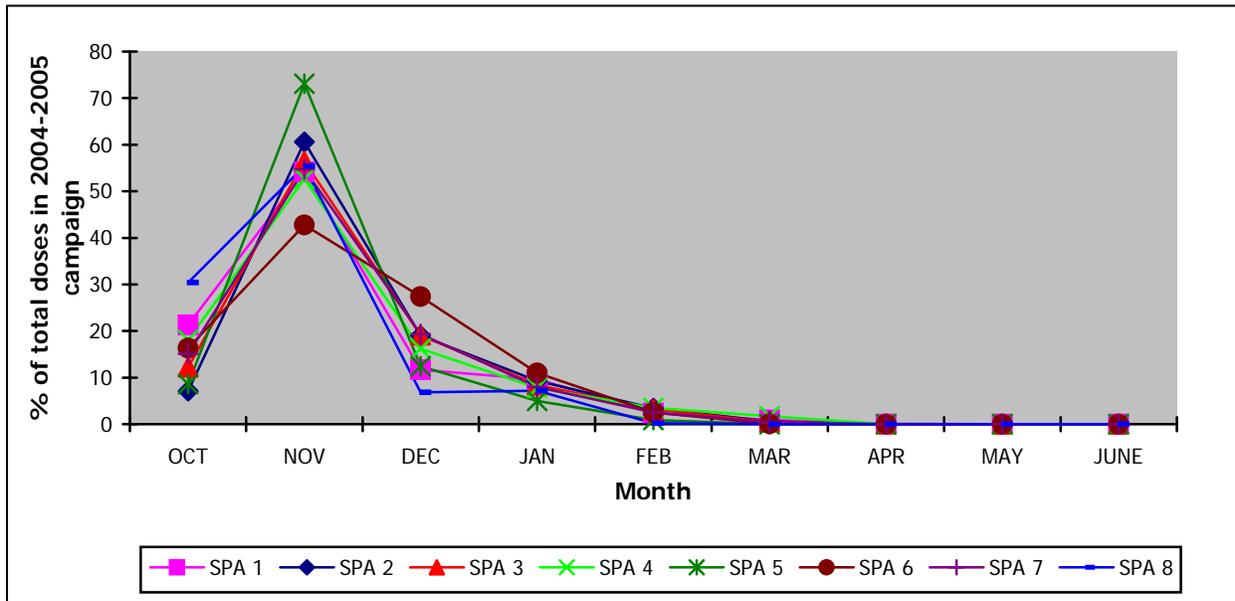


*Total doses for 2005-2006 and 2006-2007 do not include non-Los Angeles County Health Departments.

Since the 2004-2005 campaign, the proportion of influenza vaccine distributed to persons 60+ has decreased in each SPA with each successive campaign. During the 2004-2005 campaign a vaccine shortage prompted a modification of ACIP recommendations, which explains the increase in the proportion of influenza vaccine administered to persons 60+ during that influenza campaign. The largest decrease during the 2005-2006 campaign occurred in SPA 1 (68% [1,539 doses] in the 2004-2005 campaign to 41% [1,442 doses] in the 2005-2006 campaign). The largest decrease during the 2006-2007 campaign occurred in SPA 3 (62% [16,381 doses] in the 2005-2006 campaign to 43% [11,550 doses] in the 2006-2007 campaign).

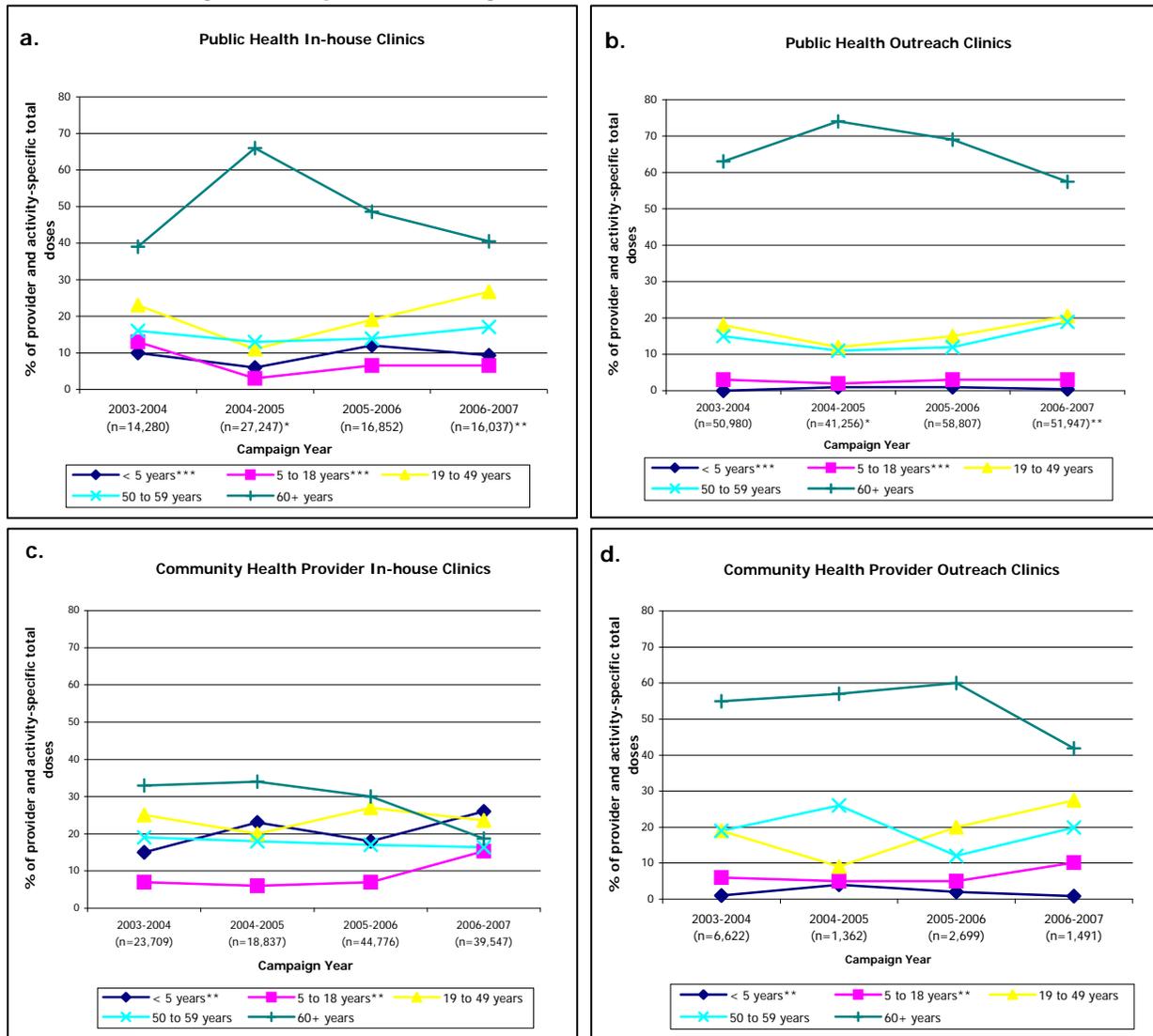
III. 2005-2006 Influenza Campaign Results

Figure 7. Influenza vaccine administration each month, by SPA.



During the 2006-2007 Campaign, all of the SPAs administered the largest proportion of vaccine doses in November. The majority of vaccine doses were administered during the first three months of the campaign.

Figure 8. Age distribution of persons receiving influenza vaccine from public health and community health providers, by outreach and in-house clinics.



*Due to the use of a previous campaign year's vaccine accountability form by 4 providers, the vaccine usage in persons aged 2-18 years for these providers cannot be separated into the appropriate age categories and were not included in this table. These providers administered 182 doses of influenza vaccine to persons aged 2-18 years. Of these 182 doses, 115 doses were administered during in-house clinics and 67 doses were administered during outreach clinics.

**Because standard age categories were not collected by 3 providers, vaccine usage in persons aged 0-18 years for these providers cannot be separated into the appropriate age categories and were not included in this figure. These providers administered 2,304 doses of influenza vaccine to persons aged 0-18 years. Of these 2,304 doses, 1,253 doses were administered during in-house clinics and 1,051 doses were administered during outreach clinics.

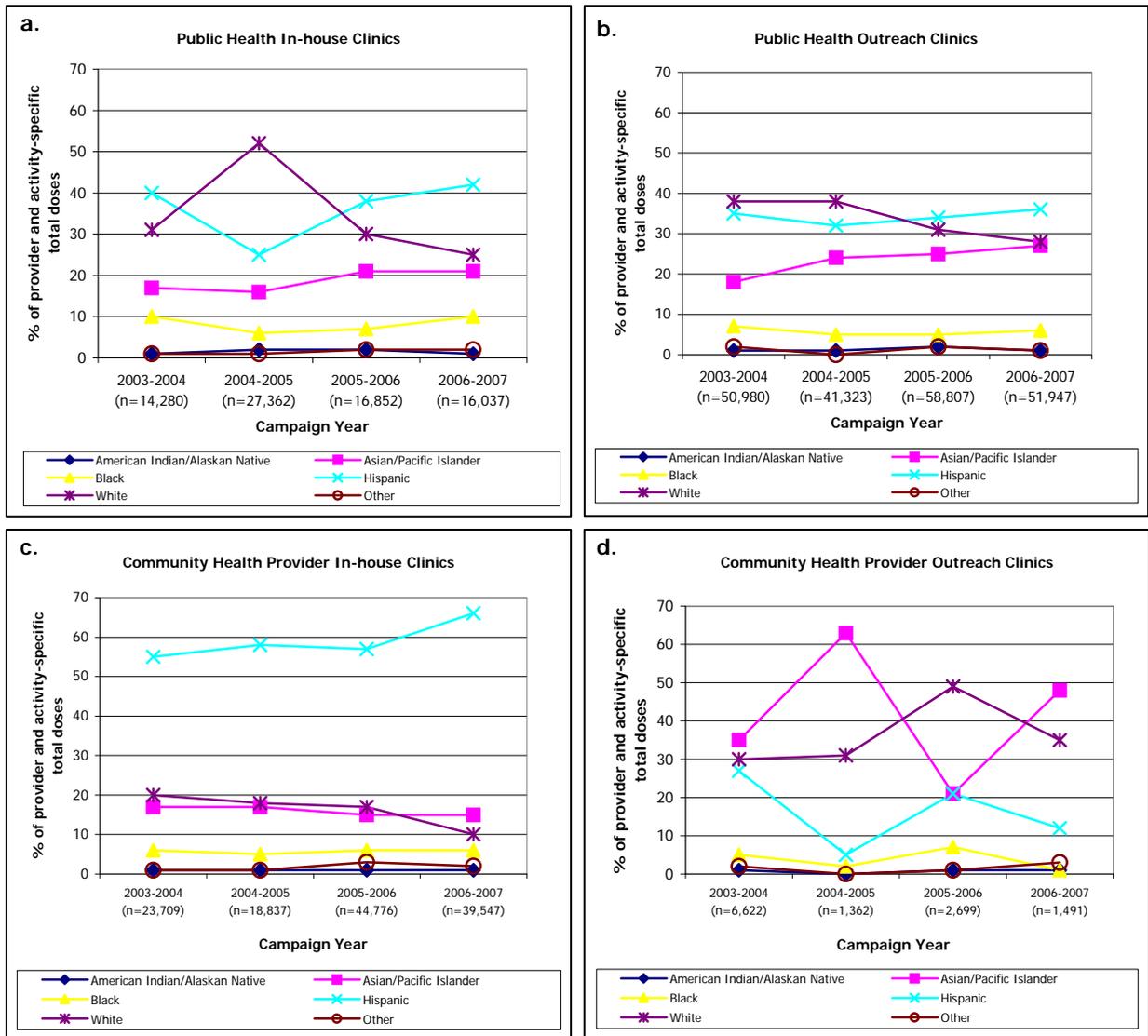
***For the 2004-2005 and 2005-2006 influenza campaigns the "< 5 years" category was changed to "< 6 years" and the "5 to 18 year" category was changed to "6 to 18 years."

Public Health and Community Health outreach clinics administered 44% (53,438 doses) of the influenza vaccine provided during the 2006-2007 campaign. Public Health in-house and outreach clinics (Figures 8a and 8b) and Community Health outreach clinics (Figure 8d) administered the largest proportion of their vaccine to persons 60 years of age or older (6,492 doses [41%], 29,852 doses [58%], and 624 doses [42%], respectively). Community Health in-

house clinics administered the largest proportion of their vaccine to persons 5 years of age or younger (10,284 doses [26%]).

When comparing the 2005-2006 and 2006-2007 campaigns, the age distribution of persons receiving vaccine in Public Health in-house clinics (Figure 8a), Public Health outreach clinics (Figure 8b), and Community Health outreach clinics (Figure 8d) remained the same. The age distribution of persons receiving vaccine during Community Health in-house clinics (Figure 8c) changed slightly from the 2005-2006 campaign to the 2006-2007 campaign. There was a decrease in the proportion of vaccine administered to persons 60+ in all in-house and outreach clinics.

Figure 9. Ethnic distribution of persons receiving influenza vaccine from public health and community health providers, by outreach and in-house clinics.



Comparing the 2005-2006 and 2006-2007 campaigns, there was not much change in the ethnic distribution of persons receiving vaccine in Public Health in-house clinics (Figure 9a) and Public

Health outreach clinics (Figure 9b). The largest changes in ethnic distribution occurred in Community Health outreach clinics (Figure 9d). There was an increase in the proportion of Hispanics receiving influenza vaccine at Public Health in-house, Public Health outreach, and Community Provider in-house clinics (11%, 6%, and 16%, respectively). Whites experienced a decrease in vaccine received in all clinics, the largest decrease occurring in Community Health in-house clinics (to 10% [4,043 doses]). There was little change in the proportion of Blacks and APIs receiving vaccine in each clinic type. Both Blacks and APIs experienced the largest change in the Community Health outreach clinics; APIs increased to 48% (718 doses) and Blacks decreased to 1% (18 doses).

During the 2006-2007 Campaign, Hispanic vaccine recipients made up a much larger proportion of the population receiving influenza vaccine at Community Health in-house clinics (66% [26,236 doses], Figure 9c) than the population receiving influenza vaccine at Public Health in-house clinics (42% [6,679 doses], Figure 9a). Predominantly Whites and Hispanics received influenza vaccine at Public Health outreach clinics (14,750 doses [28%] and 18,628 doses [36%], respectively), which was also the case in the Public Health in-house clinics (3,957 doses [25%] and 6,679 doses [42%], respectively). The majority of persons receiving influenza vaccine at outreach clinics conducted by Community Health Providers were API (718 doses [48%]), which was the case in campaigns prior to the 2005-2006 campaign. Blacks and American Indians/Alaskan natives received the smallest proportions of vaccine administered during all outreach and in-house clinics.

Overall, Public Health Providers seemed to reach the same ethnic/racial groups in their outreach clinics as in their in-house clinics, while Community Health Providers seemed to use their outreach clinics to target the ethnic/racial populations that do not attend their in-house clinics.

Discussion

Summary

- Public Health outreach clinics administered the largest proportion of publicly-funded influenza vaccine to the LAC population over the last five campaigns.
- In every influenza campaign, Community Health outreach clinics continue to provide influenza vaccine to a population that has a somewhat different ethnic distribution than their in-house clinics.
- Over the past five influenza seasons, the age distributions of persons receiving publicly funded vaccine through the influenza campaign has been consistent. The majority of the vaccine was administered to persons 60 years of age and older. However, this percentage has been decreasing yearly.
- According to the most recent LA Health Survey data, 61.6% of persons 65 years of age or older reported receiving the influenza vaccine in the last 12 months. We are unable to estimate what proportion of these persons received publicly-funded vaccine.
- In each campaign, the majority of the influenza vaccine was administered to Whites and Hispanics and the smallest proportion to Blacks and American Indian/Alaskan Natives. Part of the reason Blacks and American Indian/Alaskan Natives receive a smaller proportion of

the vaccine is that they make up the smallest proportions of the total LAC population (9.5% and 0.3%, respectively). However, special efforts to reach the American Indian/Alaskan Native and Black communities are still needed. For the past four influenza campaigns APIs have been the third largest group to receive vaccine. However, APIs and Whites accounted for the same proportion of persons receiving influenza vaccine during the 2006-2007 campaign. The racial distributions of persons receiving publicly funded vaccine through the influenza campaign have been somewhat consistent over the past five influenza seasons.

Limitations

- It is difficult to assess to what extent the annual influenza campaign reached its target population.
 - Age and race information is not maintained in the same manner at all clinic sites.
 - Information on chronic conditions is not currently collected. This makes it impossible to know whether the persons under 60 years of age receiving publicly-funded vaccine actually have a chronic condition listed in the ACIP recommendations.

- Information on vaccine usage during the influenza campaigns cannot be used to determine influenza vaccine coverage levels for LAC.
 - Currently, there are no reliable means for determining how many seniors or persons with chronic conditions receive non-publicly funded influenza vaccine from their primary medical doctor.

References

¹ Centers for Disease Control and Prevention. *Prevention and Control of Influenza. Recommendations From the Advisory Committee on Immunization Practices (ACIP)*. MMWR 2006; 55(No. RR-10).

² Centers for Disease Control and Prevention. *Surveillance for Influenza - United States, 1994-95, 1995-96, and 1996-97 Seasons*. MMWR 2000; 49(No. SS-3): 13-28.