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County Health Facts is a series of reports using California Health Interview Survey data to describe the health status of California's counties.

2003 HIGHLIGHTS

About 73.8 percent of older Californians, nearly 2.8 million people, received a flu shot in 2003.

The proportion of older Californians receiving flu shots increased by 9.5 percent between 2001 and 2003.

Influenza Vaccination in California Counties: 2003 Update

By Laura E. Lund, M.A.¹

This report presents 2003 data to update the report: "Influenza Vaccination in California Counties, 2001."² All data come from the California Health Interview Survey (CHIS) 2003.³ (See "Methods" on page two for a description of the survey and analytic methods used in this report.) The Centers for Disease Control and Prevention (CDC) recommends annual vaccinations to prevent the spread of influenza ("the flu").⁴ In addition, the United States (U.S.) Department of Health and Human Services *Healthy People 2010* (HP2010) initiative has established national objectives to reduce the burden of the flu in the U.S., including increasing the proportion of adults receiving annual flu vaccinations ("flu shots"), especially adults age 65 and older and those with high-risk conditions such as heart disease, diabetes, and chronic respiratory disease.⁵ The terms "rate", "percent", and "proportion" are used interchangeably throughout this report to refer to 12-month flu shot incidence among persons aged 65 and older.

Influenza Vaccination among Persons Aged 65 and Older

About 73.8 percent of Californians aged 65 and older, or nearly 2.8 million people, received a flu shot in 2003 (Table 1, page 4). This represents a statistically significant 9.5 percent increase in the proportion of older Californians receiving flu shots compared to 2001.

In 2003 there was considerable variation in flu shot rates across counties, from a low of 52.7 percent of persons aged 65 and older in Kings County to a high of 83.9 percent in Placer County. Comparing county rates with the overall California rate, one county and one region (Mendocino/Lake and Kings) had flu shot rates significantly below California's rate of 73.8 percent. Only one county, Placer, had a flu shot rate significantly higher than the State rate.

In two counties the proportion of residents receiving flu shots increased significantly in 2003 compared to 2001. In Los Angeles County the flu shot rate increased by 14.7 percent (from 63.9 percent in 2001 to 73.3 percent in 2003), and in Merced County the rate increased by 32.5

¹California Department of Health Services, Center for Health Statistics.

²Lund LE. "Influenza Vaccination in California Counties, 2001." California Department of Health Services, Center for Health Statistics. August 2004. URL: <http://www.dhs.ca.gov/hisp/chs/OHIR/reports/countyhealthfacts/influenza.pdf>

³CHIS 2003 asked respondents aged 65 and older, "During the past 12 months, have you had a flu shot?" Answers to this question provide a 12-month incidence estimate for flu vaccination.

⁴Centers for Disease Control and Prevention. Key Facts About the Flu: Overview. URL: <http://www.cdc.gov/flu/keyfacts.htm>.

⁵United States Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. 2nd ed. Washington D.C.: U.S. Government Printing Office. November 2000.

percent (from 58.2 in 2001 to 77.1 percent in 2003). There were no other significant differences in county flu shot rates between the two years.

HP2010 Objective 14-29a is to increase to 90 percent the proportion of non-institutionalized adults aged 65 and older receiving an annual influenza vaccination. Only one county, Placer, achieved this target.

Influenza Vaccination among Persons aged 65 and Older with High-Risk Conditions

Individuals with heart disease, diabetes, and chronic respiratory disease are at especially high risk for serious, and often fatal, complications resulting from the flu. This report refers to persons as “high-risk” if they had one or more of the following conditions: heart disease, diabetes, or asthma.⁶ Although flu shots are recommended for all persons aged 65 and older, persons in this age group with high-risk conditions are especially vulnerable to serious or fatal complications from the flu. Among high-risk Californians aged 65 and older, 78.1 percent, more than 1.2 million people, received a flu shot in 2003 (Table 2, page 5). This is a statistically significant 7.7 percent increase in the proportion of high risk older Californians receiving flu shots compared to 2001.

Placer County had the highest proportion of high-risk residents receiving flu shots in 2003, 90.3 percent. The Siskiyou/Lassen/Trinity/Modoc region had the lowest proportion receiving flu shots, 52.3 percent. One county and one region (Kings and Siskiyou/Trinity/Lassen/Modoc) had flu shot rates that were significantly lower than the State rate of 78.1 percent. Two counties and one region (Merced, Placer, and Nevada/Plumas/Sierra) had rates that were significantly higher than California’s rate.

Four counties experienced significant increases in the proportion of high-risk older residents receiving flu shots in 2003 compared to 2001. The largest increase occurred in Imperial County, where flu shot rates in the high-risk older group increased by 88 percent (from 40.1 percent in 2001 to 75.4 percent in 2003). Merced County experienced a 38.1 percent increase (from 64.3 percent in 2001 to 88.8 percent in 2003). San Mateo County’s rate increased by 36.9 percent (from 65.9 percent in 2001 to 90.2 percent in 2003), and Los Angeles County experienced a 10.9 percent increase (from 69.9 percent in 2001 to 77.5 percent in 2003). There were no other significant changes between the two years in county flu shot rates among high risk persons.

There are no HP2010 objectives specific to influenza vaccination in non-institutionalized high-risk adults aged 65 and older. However, applying the target of 90 percent for all persons aged 65 and older from HP2010 Objective 14-29a, 21 counties and five regions (Table 2) had flu shot rates that achieved the HP2010 target rate in the high-risk group.

Summary

Many Californians aged 65 and older are following national public health recommendations to get a flu shot every year, and the proportion receiving flu shots in the State has increased significantly since 2001. However, California continues to fall short of the Healthy People 2010 recommendation that at least 90 percent of adults aged 65 and older receive an annual influenza vaccination. Even among the most vulnerable persons, those with health conditions

⁶CHIS 2003 asked respondents: “Has a doctor ever told you that you have any kind of heart disease?”; “{Other than during pregnancy} Has a doctor ever told you that you have diabetes or sugar diabetes?”; “Has a doctor ever told you that you have asthma?” CHIS 2003 did not ask respondents about types of respiratory disease other than asthma.

that place them at high risk for serious, even fatal, complications from the flu, the vaccination rate is only 78.1 percent. This means that many Californians remain at risk from the serious and possibly life-threatening complications of this preventable disease. For more information on flu prevention and immunization activities in California, contact the California Department of Health Services Immunization Branch at <http://www.dhs.ca.gov/ps/dcdc/izgroup>

Methods

Data: CHIS 2003 is a population-based household telephone survey, representative of the non-institutionalized adult population of California, with more than 42,000 Californians participating. In addition to statewide data, CHIS 2003 provides representative samples for California counties with populations greater than 100,000. For smaller counties, CHIS 2003 provides representative data estimates for contiguous county groups, referred to as “regions” in this report. Respondents to the survey were randomly selected California residents aged 18 and older living in households with telephones. CHIS 2003 is a collaboration of the California Department of Health Services, the University of California at Los Angeles Center for Health Policy Research, and the Public Health Institute. More information on the CHIS 2003 sample is available at <http://www.chis.ucla.edu>

Analysis: In this report, age-specific rates for persons 65 years old and older are provided as measures of 12-month flu vaccination incidence. Details on the methods used to calculate rates are available from the author.

The 95 percent confidence intervals (CIs) are presented for each rate. Because CHIS data are collected through a sampling method, there may be some random error in the rate estimate. The CIs represent the range of values likely to contain the “true” population rate 95 percent of the time. In this report, rates are considered to be significantly different from each other when their confidence intervals do not overlap. When comparing county or State rates to HP2010 objectives in this report, a rate is not considered significantly different from an HP2010 objective if the confidence intervals of the rate include the target rate for the HP2010 objective.

Cases with missing information for flu vaccination were excluded from this analysis. CHIS 2003 asked about flu vaccination in persons aged 50 and older. Only persons aged 65 and older have been included here for comparability with earlier reports and consistency with HP2010 target populations.

Limitations: The CHIS 2003 data are self-reported by respondents to the survey, and may be subject to error, such as respondent failure to recall information about existing health conditions. Only persons living in households with telephones were included in the survey. Participation in CHIS 2003 is voluntary; persons who refused to participate may be different than those who were interviewed. Details on response rates, respondent characteristics, and other survey information can be obtained at <http://www.chis.ucla.edu>

For more information on CHIS 2003 contact:
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TABLE 1
12-MONTH INCIDENCE OF INFLUENZA VACCINATION IN CALIFORNIA
AMONG PERSONS AGED 65 AND OLDER, BY COUNTY OR REGION, 2003

County of Residence	Flu Vaccination Rate ¹	95% Confidence Interval		Estimated N
		Lower	Upper	
Kings*	52.7	39.0	66.4	5,000
Kern	60.8	43.9	77.7	45,000
Mendocino/Lake*	61.1	50.5	71.7	14,000
Siskiyou/Lassen/Trinity/Modoc	63.1	52.7	73.4	10,000
Imperial	65.6	54.3	76.9	10,000
Tulare	66.3	55.1	77.5	22,000
Butte	66.9	58.6	75.1	21,000
Napa	69.3	59.9	78.6	12,000
Fresno	70.7	59.3	82.1	56,000
Riverside	70.8	64.4	77.3	157,000
Santa Barbara	71.3	62.0	80.5	35,000
Stanislaus	71.3	61.4	81.1	34,000
Tuolumne/Calaveras/Amador/Inyo/Mariposa/Mono/Alpine	72.0	63.5	80.5	24,000
San Diego	72.2	66.3	78.2	224,000
El Dorado	72.5	62.4	82.6	15,000
San Bernardino	72.9	65.9	80.0	112,000
Los Angeles	73.3	70.9	75.7	756,000
Contra Costa	73.4	65.6	81.2	79,000
Tehama/Glenn/Colusa	73.5	64.2	82.9	12,000
California	73.8	72.5	75.1	2,783,000
Humboldt/Del Norte	74.1	65.0	83.1	14,000
Orange	74.2	68.2	80.3	212,000
Santa Cruz	74.4	64.3	84.6	18,000
San Francisco	74.9	67.7	82.1	78,000
Shasta	74.9	66.8	83.0	21,000
Yolo	75.0	65.4	84.6	12,000
Marin	75.1	66.4	83.8	25,000
Monterey/San Benito	75.5	66.1	84.9	34,000
San Luis Obispo	75.6	67.4	83.8	28,000
Madera	75.8	65.4	86.2	12,000
Sonoma	76.0	67.1	84.9	44,000
Solano	76.3	63.2	89.4	33,000
Merced	77.1	68.1	86.2	16,000
Santa Clara	77.4	71.6	83.3	129,000
Sutter/Yuba	77.7	67.9	87.5	13,000
Nevada/Plumas/Sierra	78.1	70.2	85.9	16,000
Alameda	78.2	73.3	83.1	112,000
Ventura	78.8	71.4	86.1	65,000
San Joaquin	79.1	68.8	89.3	45,000
San Mateo	79.6	71.0	88.2	68,000
Sacramento	80.7	74.8	86.6	112,000
Placer*	83.9	77.8	90.1	31,000
HP2010 Objective 14-29a	90.0	--	--	--
¹ Rate is per 100 persons aged 65 and older. *County rate is significantly different from State rate.		Sources: University of California at Los Angeles Center for Health Policy Research and State of California, Department of Health Services. 2001 California Health Interview Survey. Prepared by: Department of Health Services, Center for Health Statistics.		

TABLE 2
12-MONTH INCIDENCE OF FLU VACCINATION IN CALIFORNIA
AMONG HIGH-RISK PERSONS¹ AGED 65 AND OLDER, BY COUNTY OR REGION, 2003

County of Residence	Flu Vaccination Rate ²	95% Confidence Interval		Estimated N
		Lower	Upper	
Siskiyou/Lassen/Trinity/Modoc*	52.3	35.1	69.6	3,000
Kings*	52.9	34.9	71.0	2,000
Tulare	63.1	45.3	80.9	11,000
Mendocino/Lake	64.5	47.9	81.8	6,000
Riverside	69.6	58.1	81.2	63,000
Butte	69.8	56.8	82.8	10,000
Napa	69.9	54.9	84.9	5,000
Tuolumne/Calaveras/Amador/Inyo/Mariposa/Mono/Alpine	70.4	57.1	83.6	11,000
Orange	71.2	60.5	81.9	86,000
Contra Costa	74.6	60.9	88.3	35,000
Kern	75.1	55.2	95.0	25,000
San Bernardino	75.3	65.3	85.2	56,000
Imperial	75.4	60.3	90.4	6,000
Solano	75.6	54.4	96.8	17,000
Alameda	77.5	70.3	84.7	42,000
Los Angeles	77.5	73.9	81.1	329,000
Yolo	77.9	63.7	92.1	6,000
California	78.1	76.2	80.1	1,230,000
Shasta	79.4	67.8	90.9	11,000
Santa Barbara	79.4	66.7	92.1	14,000
Ventura	79.4	67.9	90.9	27,000
Sutter/Yuba	79.5	64.2	94.8	7,000
Monterey/San Benito	80.1	67.4	92.8	20,000
Humboldt/Del Norte	80.7	68.4	93.1	8,000
San Diego	81.0	74.6	87.4	93,000
Tehama/Glenn/Colusa	82.4	70.6	94.2	6,000
San Luis Obispo	82.8	70.8	94.7	13,000
Sonoma	82.8	68.7	97.0	21,000
San Francisco	82.9	73.7	92.2	38,000
Fresno	83.0	71.8	94.2	30,000
Santa Clara	83.2	75.0	91.3	53,000
Santa Cruz	83.4	71.5	95.3	9,000
El Dorado	84.3	68.8	99.7	7,000
Stanislaus	85.5	74.2	96.8	12,000
Marin	86.2	76.0	96.5	12,000
Madera	86.8	77.8	95.9	6,000
Sacramento	87.4	79.2	95.7	56,000
Merced*	88.8	80.4	97.2	8,000
San Joaquin	89.3	79.7	98.9	18,000
HP2010 Objective 14-29a	90.0	--	--	--
Nevada/Plumas/Sierra*	90.1	81.9	98.2	8,000
San Mateo	90.2	78.3	100.0	30,000
Placer*	90.3	82.5	98.1	14,000

¹"High-risk" refers to individuals who have one or more of the following conditions: heart disease, diabetes, asthma.

²Rate is per 100 high-risk persons aged 65 and older.

*County rate is significantly different from State rate.

Sources: University of California at Los Angeles Center for Health Policy Research and State of California, Department of Health Services. 2001 California Health Interview Survey.

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