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This Data Summary is one of a series of Infant Mortality Reports.

Highlights

- The 2002 infant mortality rate in California increased slightly marking the end of a multiple year decline.
California's infant mortality rate of 5.4 was below the U.S. provisional rate of 6.9.
The non-Hispanic Black infant mortality rate remained more than twice as high as the non-Hispanic White and Hispanic rates.

CALIFORNIA'S INFANT MORTALITY RATE, 2002

By Sandy Ficenec

Introduction

The infant mortality rate (deaths among infants under one year old per 1,000 live births) continues to be one of the most widely used indicators of overall health status of a community. In the report Healthy People 2010 Objectives, the United States Department of Health and Human Services set an infant mortality rate of 4.5 as the target national objective rate to be met by the year 2010.

California's Infant Mortality Rate

In 2002, there were a total of 2,875 infant deaths and 529,245 live births among California residents for an infant mortality rate of 5.4. While the 2002 infant mortality rate increased (1.9 percent) from the 2001 rate of 5.3, the rate has dropped 31.6 percent since 1990 and 51.4 percent since 1980 (Table 1). The change from 2001 to 2002 was not statistically significant (p<.05). California's infant mortality rate for 2002 was lower than the provisional rate for the United States (6.9).

California's Infant Mortality Rates By Race/Ethnicity

Table 2 and Figure 1 show the infant mortality rates by race/ethnicity for Hispanic, non-Hispanic Black, and non-Hispanic White. Although the rates for the three race/ethnic groups increased in 2002 the rates have generally declined between 1993 and 2002. The rate for California's non-Hispanic Black population was 12.7 in 2002, an increase of 0.8 percent from the 2001 rate of 12.6, but down 18.1 percent from the 1993 rate of 15.5. The infant mortality rate for California's Hispanic race/ethnic group was 5.2 in 2002, up 4.0 percent from 5.0 in 2001 and down 18.8 percent from the 6.4 rate in 1993. The infant mortality rate for the non-Hispanic White group increased to 5.1 in 2002, up 2.0 percent from 5.0 in 2001 and down 17.7 percent from the 1993 rate of 6.2.

1 U.S. Department of Health and Human Services, Healthy People 2010 Objectives, Volume II, January 2001.
2 Kleinman, J., Infant Mortality. Statistical Notes for Health Planners. No. 2, National Center for Health Statistics, July 1976.
3 National Vital Statistics Reports, Births, Marriages, Divorces, and Deaths: Provisional Data for Oct.-Dec. 2002, DHHS Pub No. (PHS) 2003-1120, June 17, 2003; Vol. 51, No. 10.
4 In 2000, new race collection methods cause a slight discontinuity between White and Black infant mortality rates. See Vital Statistics of California 2000, Chapter 6 for details.

Reports from prior periods are available on this subject.

The changes from 2001 to 2002 among the three race/ethnic groups were not statistically significant ( $p < .05$ ).<sup>2</sup> Comparing the three race/ethnic groups, non-Hispanic Whites and Hispanics continued to have mortality rates that were relatively similar and significantly below the rate for non-Hispanic Blacks. However, the greatest number of infant deaths occurred among Hispanics (1,374 deaths, 47.8 percent) and non-Hispanic Whites (827 deaths, 28.8 percent).

## County Infant Mortality Rates

Infant mortality rates for 38 of California's 58 counties are shown on **Table 3**. Infant mortality rates were not presented for other counties because they have fewer than the 1,000 live births and fewer than five infant deaths needed to calculate reliable mortality rates. Even in some of the medium and large counties, the infant mortality rate can vary substantially from year to year. These 38 counties accounted for 98.7 percent of California's live births and 98.9 percent of the infant deaths in 2002.

For more Vital Statistics data, see the DHS Center for Health Statistics Home Page at:

[www.dhs.ca.gov/hisp/chs/default.htm](http://www.dhs.ca.gov/hisp/chs/default.htm)

In 2002, the county infant mortality rates varied from a high of 8.0 in Yuba County to a low of 3.0 in San Luis Obispo County. Twelve counties had a lower rate in 2002 compared with 2001, and twenty-three had a higher rate. For one county the rate was unchanged from 2001 to 2002. Statistical tests applied to the 2002 and 2001 infant mortality rates in each county revealed Alameda and San Diego Counties had statistically significant decreases and Riverside and Solano Counties had statistically significant increases ( $p < .05$ );<sup>2</sup> all others were not statistically significant.

**Table 3** also shows infant mortality rates for the two of the three city health departments. In 2002, these rates ranged from 4.3 and 4.1 in Long Beach and Pasadena respectively. The rate for Berkeley was not calculated because of too few births and infant deaths in 2002.

## Methodological Approach

Beginning with the 2000 birth and death data, race reporting changed to allow for the reporting of up to three races. In 2002, mothers of multiple race (two or more races) accounted for 9,793 or 1.9 percent of California's resident births and 85, or 3.0 percent of the infant deaths were multiple-race decedents. Because race groups are not strictly comparable to those of prior years, trends by race/ethnicity should be viewed with caution. Rates were not calculated for additional race/ethnic groups due to the unsatisfactory reporting of some races on death certificates, and the unstable rates that result from small numbers of events.

Birth cohort files are the preferred source of race-specific infant mortality rates. Linking a cohort of births with the death certificates of those infants who died creates a data file that permits use of mother's race for both the numerator and denominator of the rates. In addition, other factors such as birthweight, multiple births (twins, etc.) and other health factors can be used to examine factors relevant to infant mortality. County Health Profiles reports, prepared annually, include three year average rates of total and race-specific infant mortality by county prepared from the birth cohort files.

**TABLE 1**  
**NUMBER AND RATE OF INFANT DEATHS**  
**CALIFORNIA, 1950,1960,1970,1980 - 2002**  
**(By Place of Residence)**

YEAR	NUMBER OF INFANT DEATHS	INFANT MORTALITY RATE <sup>1</sup>
2002	2,875	5.4
2001	2,815	5.3
2000	2,884	5.4
1999	2,787	5.4
1998	2,994	5.7
1997	3,091	5.9
1996	3,186	5.9
1995	3,478	6.3
1994	3,948	7.0
1993	3,970	6.8
1992	4,174	6.9
1991	4,596	7.5
1990	4,828	7.9
1989	4,853	8.5
1988	4,559	8.6
1987	4,530	9.0
1986	4,298	8.9
1985	4,475	9.5
1984	4,212	9.4
1983	4,226	9.7
1982	4,218	9.8
1981	4,276	10.2
1980	4,451	11.1
1970	6,243	17.2
1960	8,663	23.3
1950	6,095	24.9

<sup>1</sup> Deaths under one year of age per 1,000 live births.

Source: State of California, Department of Health Services, Birth and Death Records.

**TABLE 2**  
**INFANT MORTALITY RATES BY RACE/ETHNICITY<sup>1</sup>**  
**CALIFORNIA, 1993-2002**  
**(By Place of Residence)**

RACE/ ETHNICITY	INFANT MORTALITY RATES BY RACE/ETHNICITY <sup>1</sup>										INFANT DEATHS 2002 <sup>a</sup>
	1993	1994	1995	1996	1997	1998	1999	2000 <sup>a</sup>	2001 <sup>a</sup>	2002 <sup>a</sup>	
TOTAL <sup>2</sup>	6.8	7.0	6.3	5.9	5.9	5.7	5.4	5.4	5.3	5.4	2,875
HISPANIC	6.4	6.3	5.8	5.4	5.6	5.5	5.2	5.3	5.0	5.2	1,374
NON-HISPANIC BLACK	15.5	15.2	14.1	14.0	13.2	13.7	12.9	12.8	12.6	12.7	378
NON-HISPANIC WHITE	6.2	6.8	6.0	5.6	5.5	5.1	4.8	4.8	5.0	5.1	827

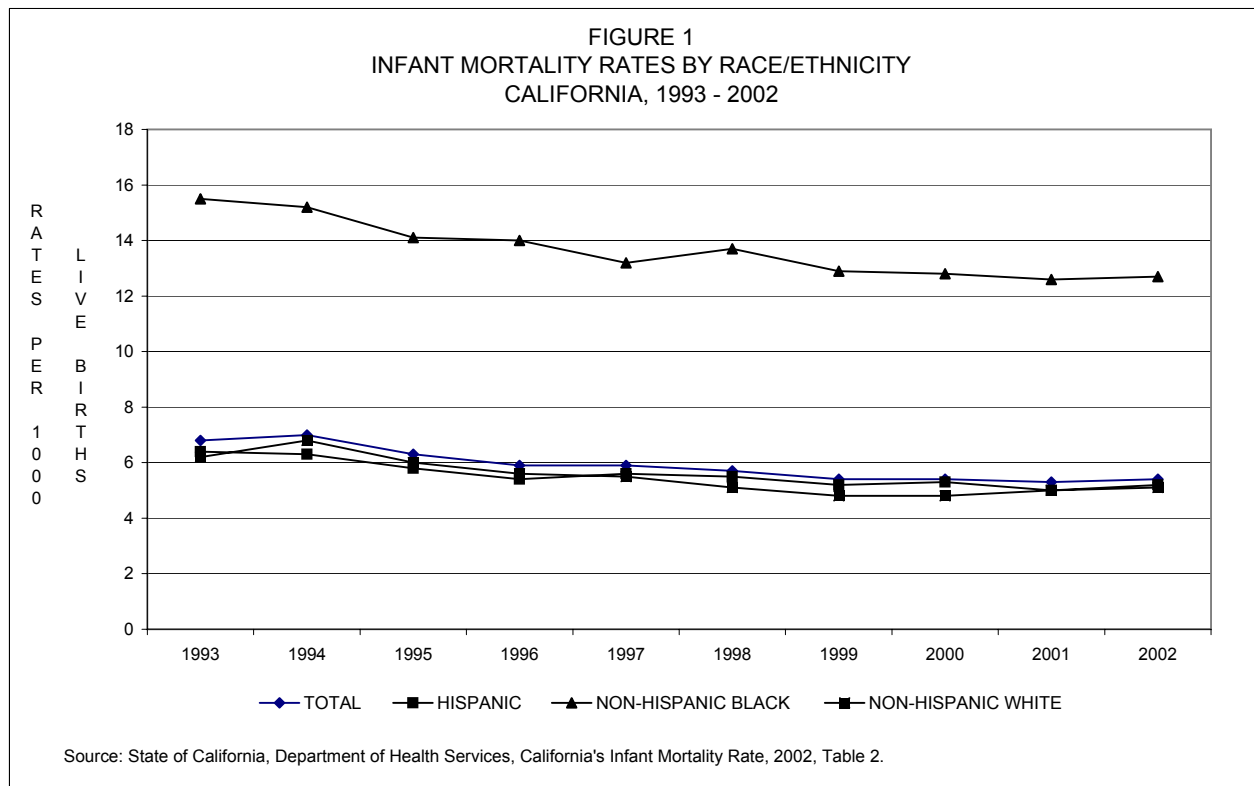
<sup>1</sup> Denominator of rates are by race/ethnicity of mother. All infants and births to mothers of Spanish/Hispanic origin regardless of race are included in the "Hispanic" group.

<sup>a</sup> Beginning with the 2000 birth and death data, race groups changed to allow for the reporting of up to three races. Mothers in the "White" and "Black" groups are non-Hispanic and reported the single race "White" or "Black" only. This change caused a slight discontinuity with data prior to 2000 for Black and White infants.

<sup>2</sup> Total Includes all race groups (White, Black, Hispanic, Asian, Pacific Islander, American Indian, Other, Two or more races, and Unknown race).

Note: Rates are per 1,000 live births.

Source: State of California, Department of Health Services, Birth and Death Records.



**TABLE 3**  
**INFANT MORTALITY RATES BY COUNTY OF RESIDENCE<sup>1</sup>**  
**CALIFORNIA, 1993 - 2002**

COUNTY											INFANT DEATHS 2002
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	
CALIFORNIA	6.8	7.0	6.3	5.9	5.9	5.7	5.4	5.4	5.3	5.4	2,875
ALAMEDA	6.2	6.4	5.4	6.0	6.0	5.1	5.3	4.6	6.0	4.2	91
BUTTE	7.7	6.4	10.3	6.9	6.7	7.9	3.1	6.4	4.3	7.9	18
CONTRA COSTA	5.8	5.7	6.0	5.5	5.1	5.9	5.2	4.8	4.0	4.1	55
EL DORADO	4.5	8.9	3.5	6.0	a	3.6	4.9	a	5.3	6.8	12
FRESNO	7.4	9.3	8.3	7.9	8.4	6.5	6.1	7.2	5.2	6.9	102
HUMBOLDT	11.2	12.5	8.9	4.7	4.1	8.9	4.1	7.3	4.0	6.3	9
IMPERIAL	5.3	6.2	4.9	4.4	2.5	7.2	4.9	4.7	5.4	3.8	10
KERN	10.8	11.2	10.9	9.8	6.7	6.7	6.9	7.4	6.6	6.2	76
KINGS	6.5	9.0	6.1	11.5	5.8	7.9	7.4	6.0	4.2	6.5	15
LOS ANGELES	7.3	6.9	6.7	5.9	5.9	5.9	5.4	4.9	5.4	5.5	825
LONG BEACH <sup>2</sup>	8.2	9.3	8.1	4.9	4.4	7.1	6.1	6.7	4.6	4.3	34
PASADENA <sup>2</sup>	12.6	7.5	7.3	8.5	5.3	6.4	7.1	7.3	4.7	4.1	9
MADERA	8.0	8.2	7.0	6.5	4.0	6.3	5.1	5.7	5.9	6.1	13
MARIN	6.1	5.1	2.7	3.4	4.5	2.3	2.6	3.5	2.8	3.6	10
MENDOCINO	11.8	6.1	8.0	9.8	4.9	5.5	a	8.3	9.4	7.4	8
MERCED	5.9	7.2	8.2	7.2	6.9	6.2	6.6	4.9	5.3	6.9	28
MONTEREY	7.1	5.8	5.7	5.3	5.8	6.2	4.8	5.7	5.4	6.3	45
NAPA	7.0	6.0	5.5	4.6	3.3	3.4	a	4.0	a	3.8	6
ORANGE	5.9	6.0	5.6	4.4	4.4	4.4	4.4	4.9	4.5	4.8	216
PLACER	7.6	4.1	6.3	6.2	1.9	4.1	6.1	7.2	4.8	5.5	19
RIVERSIDE	7.6	8.4	7.1	6.4	6.0	7.5	6.8	6.7	4.5	6.4	170
SACRAMENTO	7.1	7.3	7.0	6.9	7.0	6.1	6.2	5.8	6.2	6.1	118
SAN BERNARDINO	7.9	7.9	7.7	7.1	8.3	7.5	7.6	7.0	7.7	7.6	226
SAN DIEGO	6.2	6.6	4.9	5.4	5.5	5.2	5.2	5.9	5.6	4.5	197
SAN FRANCISCO	5.0	8.2	4.3	4.8	4.5	5.0	3.8	4.0	3.8	4.5	38
SAN JOAQUIN	8.5	7.6	6.4	7.6	7.2	6.0	4.6	6.9	7.2	7.3	74
SAN LUIS OBISPO	7.5	7.1	3.8	4.4	6.0	5.9	3.0	4.5	6.2	3.0	7
SAN MATEO	4.0	3.2	5.1	4.0	5.1	4.3	3.6	5.3	3.8	4.0	40
SANTA BARBARA	6.4	5.0	6.7	3.7	4.5	5.7	4.7	5.6	4.6	4.6	26
SANTA CLARA	5.3	5.8	5.2	5.1	5.6	3.8	4.8	4.5	4.0	3.6	97
SANTA CRUZ	6.2	7.6	3.7	6.1	4.8	5.8	4.9	4.6	3.7	3.9	13
SHASTA	5.2	8.0	6.9	5.9	8.5	4.6	6.0	6.0	6.2	7.6	15
SOLANO	7.1	8.8	5.1	7.1	6.4	6.5	5.6	4.6	4.3	7.9	46
SONOMA	5.7	5.3	4.4	4.2	4.1	5.5	5.9	4.8	3.7	5.1	29
STANISLAUS	5.8	8.4	5.9	6.8	7.1	6.8	7.0	7.0	7.4	7.8	62
SUTTER	10.4	4.9	6.0	7.9	6.6	7.8	a	6.0	a	5.5	7
TULARE	5.8	7.1	5.7	6.1	6.1	6.8	5.0	6.6	6.6	5.7	42
VENTURA	5.5	4.8	5.4	5.0	7.5	5.6	5.0	4.1	5.3	5.0	58
YOLO	6.1	9.7	5.0	9.7	6.2	3.3	3.7	6.2	5.6	4.2	10
YUBA	6.3	8.9	8.4	4.6	8.6	b	7.0	9.5	6.7	8.0	9

<sup>1</sup> Counties with 1,000 or more births and five or more infant deaths in 2002.

<sup>2</sup> Long Beach and Pasadena are city health departments. City events are included in their respective county totals.

<sup>a</sup> Rates are not calculated for fewer than five events.

<sup>b</sup> Rates not calculated for counties reporting fewer than 1,000 live births.