

# Background Indicators

## Introduction

Background indicators provide information with which to interpret the meaning of various environmental indicators presented in this document. They do not represent particular environmental issues in themselves. The background indicators in this section present trends in demographic, economic and other factors that may directly or indirectly impact environmental conditions and resources in California.

## Background Indicators

### **Population Demographics**

- Total California population
- Annual population growth

### **Economy**

- Gross State Product (GSP)

### **Energy Consumption**

- Total energy consumption vs. GSP
- Energy consumption in California by sector (transportation, industrial, residential, and commercial)
- Residential energy consumption per household

### **Transportation**

- Motor gasoline consumption, vehicle miles traveled, and efficiency

### **Human Health**

- Life expectancy at birth for the United States and California; including a status of leading causes of death in California
- Infant death rate
- Self-reported asthma prevalence among adults in California and U.S.
- Estimated U.S. annual average rate of self-reported asthma

### **Water supply**

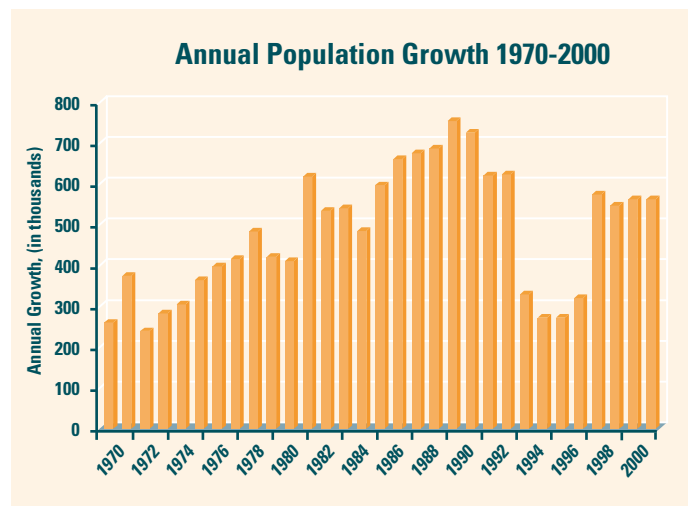
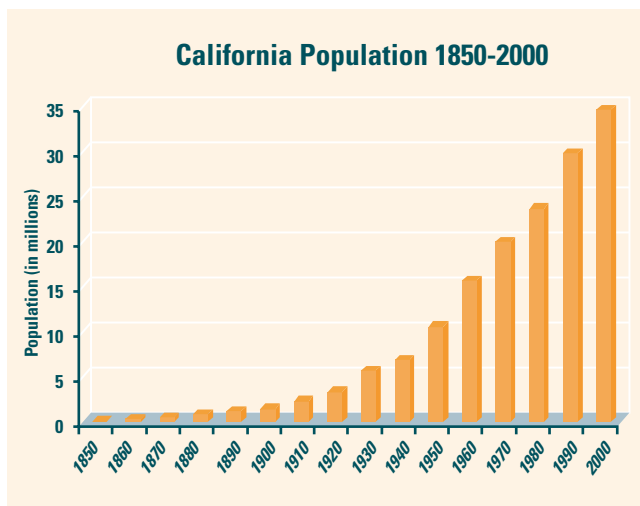
- California's water supplies with existing facilities and programs

### **Land use**

- Progression of development of California's land

## Population Demographics

*As the state's population increases, so does the need for goods, energy, services, housing, and transportation. These demands, in turn, result in increased consumption of natural resources and increased production of wastes and other by-products. However, the impact of California's growth on the environment can be lessened to some extent through increased energy efficiency and conservation efforts, and better land use planning.*



At present, California is home to an estimated 35 million people, making it the most populated state in the U.S. It took about 100 years to reach the 10 million mark, but since then California has been adding 10 million people every 20 years.

For the past four years, the state has been adding about 560,000 people annually – roughly equal to a city the size of Bakersfield or a state the size of Vermont. During this time, about half of the added population can be attributed to “natural increases” (births minus deaths) and half to net immigration (immigration into the state minus emigration out of the state).

By contrast, during the recession of the early 1990's, population growth was primarily due to natural increases; net immigration was low or negative.

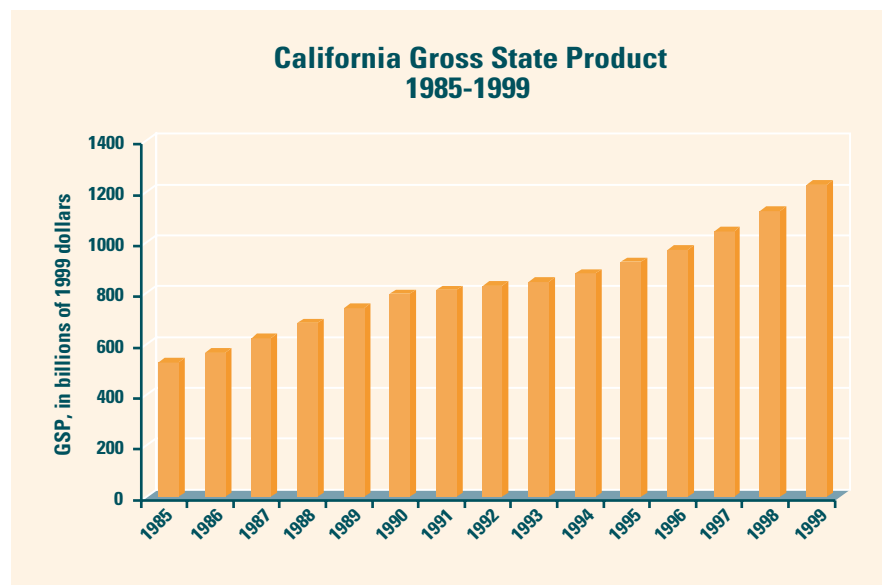
California's population is growing by roughly 1.6 percent per year – well above the nation's annual growth rate of about 1 percent per year.

### Reference:

Legislative Analyst's Office. *Cal Facts: California's Economy and Budget in Perspective*, Sacramento, California, December 2000. Posted at: [www.lao.ca.gov](http://www.lao.ca.gov)

## Economy

*The condition of the state's economy influences changes in the consumption of materials and energy, population growth rates and distributions, and consumer spending.*



California's Gross State Product (GSP) has steadily increased over the last 15 years, but was slowed during the recession of the early 1990's. California lagged behind the nation in the early stages of the subsequent recovery, as declines in aerospace, banking, and certain other key industries in the state held growth down through the middle of the decade. Thereafter, however, the pace of the state's economy accelerated, with job growth exceeding the national rate in each of the past five years.

California's GSP exceeds \$1.2 trillion, making it one of the world's largest economies. The California GSP trails only the U.S. (as a whole), Japan, Germany, and England. The California GSP accounts for 13 percent of the nation's output.

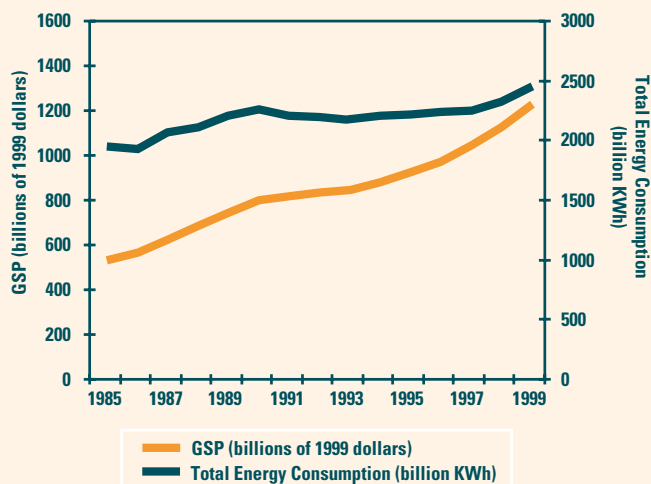
### Reference:

U.S. Department of Commerce, Bureau of Economic Analysis, Gross State Product Data. Posted at: [www.bea.doc.gov/bea/regional/gsp](http://www.bea.doc.gov/bea/regional/gsp)

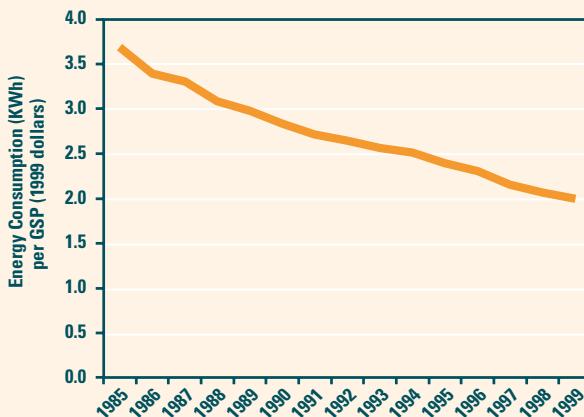
## Energy Consumption

The demand for energy across California influences everything from the price of products, to the quality of the air and water. Viewing energy trends in the context of economic trends provides a picture of the efficiency of the state's economy.

**Total Energy Consumption and Gross State Product  
1985-1999**



**Energy Consumption per GSP  
1985-1999**



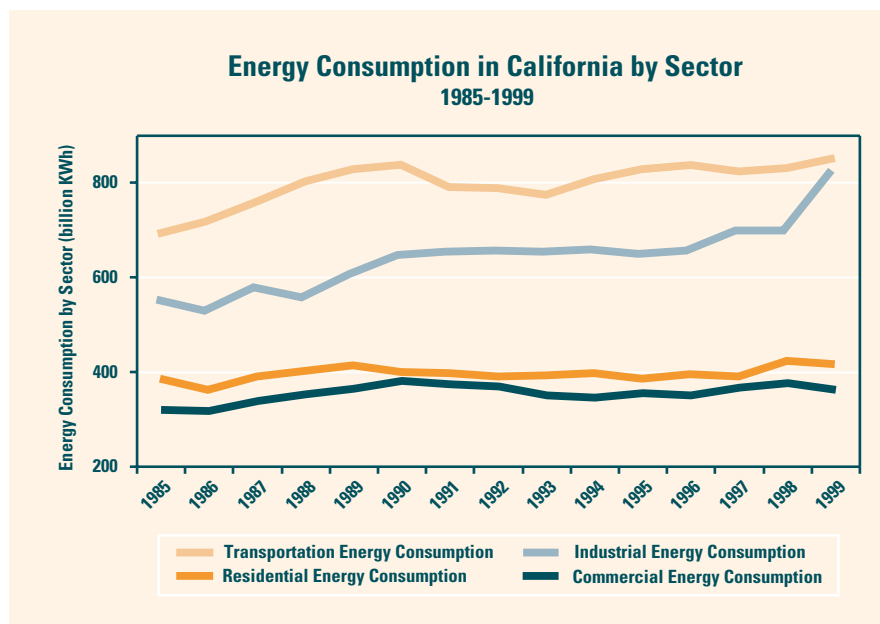
Over a 15-year period beginning in 1985, total energy consumption by the state has increased about 21 percent while the economy, expressed as Gross State Product (GSP), has grown at a greater rate of 57 percent. As a result, the amount of energy used to create one dollar of GSP has steadily followed a downward trend. In other words, California's economy has become more energy efficient.

A major reason for the declining energy trend relative to GSP is that California's economy has shifted over the past two decades from one in which manufacturing industries were dominant to one which is increasingly becoming services-oriented. Services-oriented industries generally consume less energy per GSP than manufacturing industries.

### References:

U.S. Department of Commerce, Bureau of Economic Analysis Gross, State Product Data. Posted at: [www.bea.doc.gov/bea/regional/gsp](http://www.bea.doc.gov/bea/regional/gsp)

Department of Energy, Energy Information Administration. *State Energy Data Report* 1999. Posted at: [www.eia.doe.gov](http://www.eia.doe.gov)



Over the last 15 years, the transportation sector has been the largest consumer of energy. Consumption by this sector includes energy used to power motor vehicles, airplanes and boats.

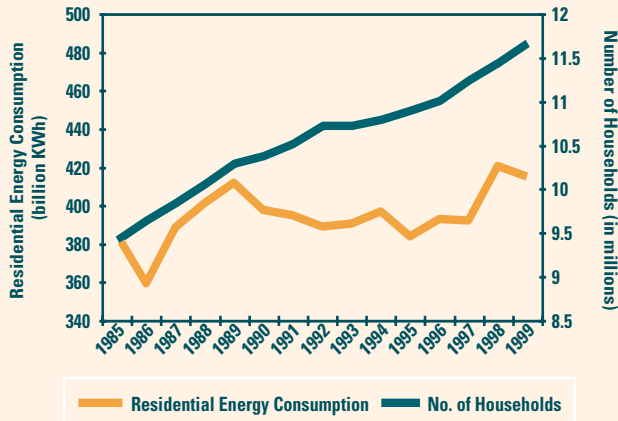
Nearly 60 percent of the transportation energy consumption is the result of combustion of gasoline in cars and light-duty trucks.

The transportation and industrial sectors together were responsible for about 85 percent of the increase in energy consumption from 1985 to 1999.

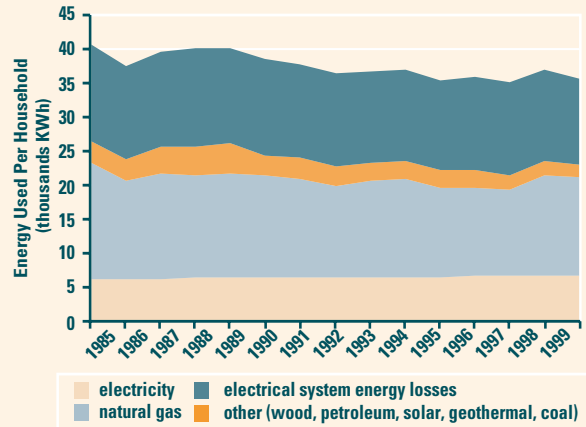
**Reference:**

U.S. Department of Energy, Energy Information Administration. *State Energy Data Report 1999*. Posted at: [www.eia.doe.gov](http://www.eia.doe.gov)

### Residential Energy Consumption and Number of Households 1985-1999



### Residential Energy Used per Household 1985-1999



From 1985 to 1999, residential energy consumption has fluctuated somewhat but increased overall by about 8-9 percent. In the meantime, the number of households has steadily increased by almost 2 million, resulting in an increase of 18 percent. The slower increase in residential energy consumption relative to the increase in the number of households has, in fact, resulted in a slight decrease in the energy used per household during this period. Better home insulation and more energy-efficient appliances are some reasons for the increased energy efficiency.

The fluctuations in yearly residential energy consumption are, to some extent, the result of weather conditions (i.e., below average winter temperatures for a given year could result in increased energy consumption in the form of greater home heating).

There are some large forms of energy loss that are unfamiliar to most Californians, including those associated with the generation, transmission, and distribution of electricity to households (plus plant use and unaccounted-for electrical energy system losses). These electrical energy losses account for roughly 70-75 percent of total household electrical energy use.

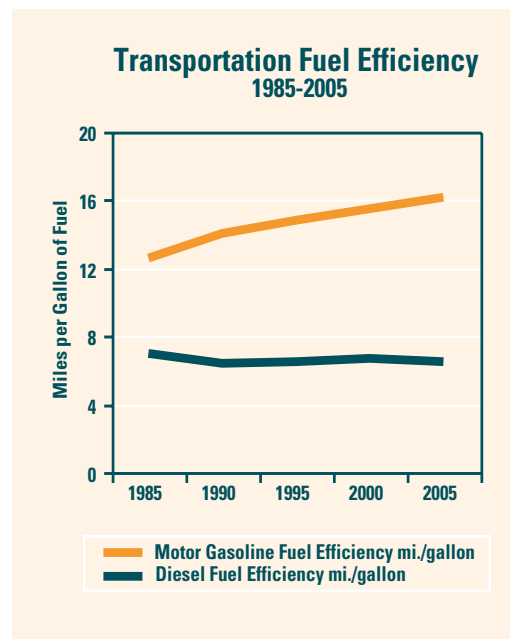
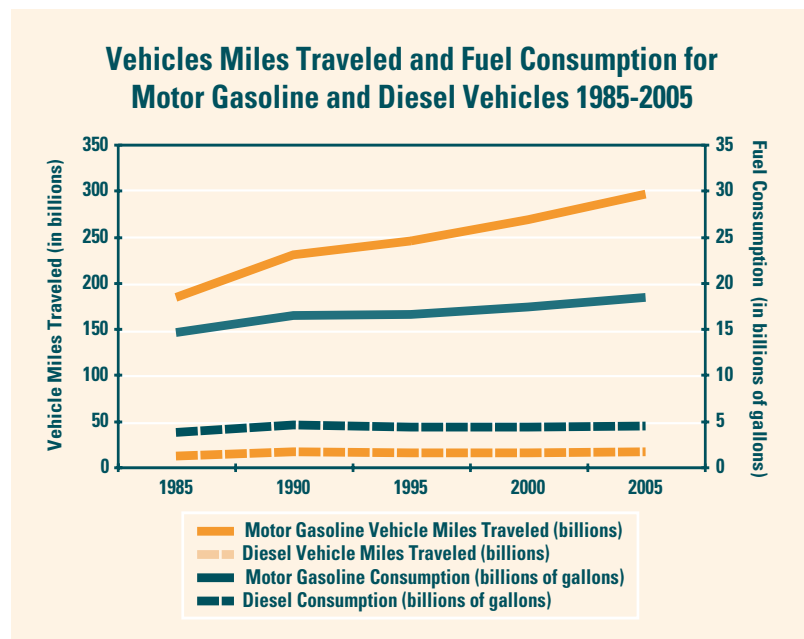
#### References:

U.S. Department of Energy, Energy Information Administration. *State Energy Data Report 1999*. Posted at: [www.eia.doe.gov](http://www.eia.doe.gov)

U.S. Census Bureau. *Intercensal Estimates of Total Households by State*. Population Division, Population Estimates Program. Posted at: [www.census.gov/population/estimates/housing/sthuhh7.txt](http://www.census.gov/population/estimates/housing/sthuhh7.txt)

## Transportation

Transportation has both direct and indirect effects on the resources and environmental conditions of the state. Some of these effects result from vehicle emissions, use and handing of fuels, construction of roads, and energy utilization.



California’s roads see increasingly more traffic per year, as reflected by the trend in vehicle miles traveled (VMT) for gasoline-fueled vehicles. This trend is expected to continue through 2005 and beyond. Motor vehicle gasoline consumption, however, has not increased at the same rate as VMT. Thus, the average transportation fuel efficiency for motor gasoline vehicles has improved from 12.6 miles per gallon in 1985, to 15.5 miles per gallon in 2000.

The steady increase in fuel efficiency is occurring in spite of the increased popularity of sport utility vehicles, minivans, and light-duty trucks through the 1990’s, all of which provide poorer gas mileage relative to smaller passenger vehicles. The increasing fuel efficiency is due primarily to improved emission standards for California vehicles and the continual retirement of older, less fuel-efficient cars from California roads.

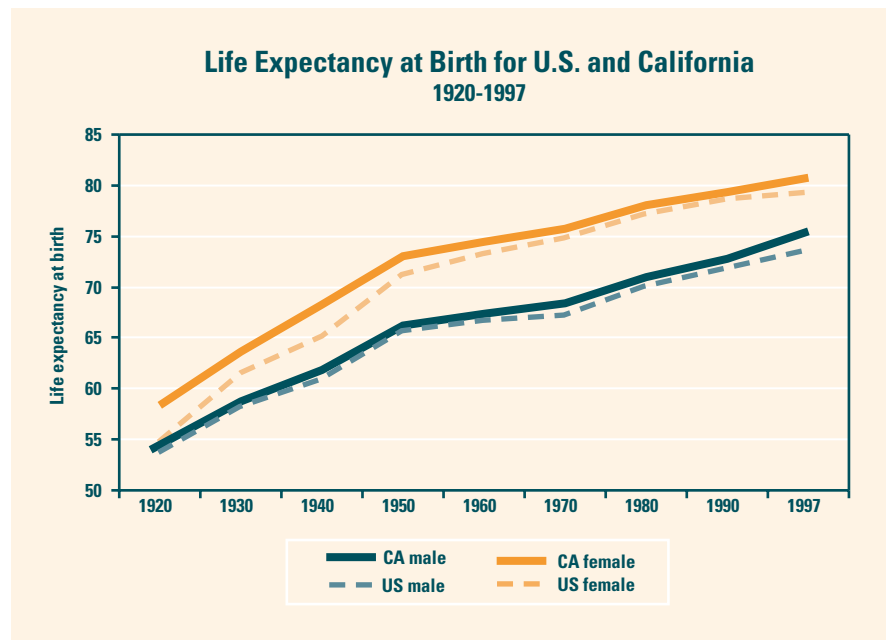
Diesel-fueled vehicles represent about 12 percent of total fuel consumption in 2000. Heavy-duty trucks (large commercial vehicles and big rig trucks) are the primary consumers of diesel fuel, making up roughly 87 percent of all diesel vehicles. The fuel efficiency for diesel vehicles remains relatively unchanged since 1985 and is not expected to change significantly through 2005.

#### Reference:

California Air Resources Board. On Road Motor Vehicle Inventory, EMFAC2000, Version 2.02, January 2001. Sacramento, California.

## Human Health

*Life expectancy and statistics on the leading causes of death in California provide some insight into general human health. Changes in life expectancy are an important indicator of overall health of a population and reflect a society's ability to control and prevent serious diseases or other potentially life-threatening conditions.*



In 1997, life expectancy at birth was 75.5 years for California males and 80.7 years for California females. California males' life expectancy in 1997 was 1.9 years more than that of U.S. males. California females' life expectancy in 1997 was 1.3 years more than that of U.S. females.

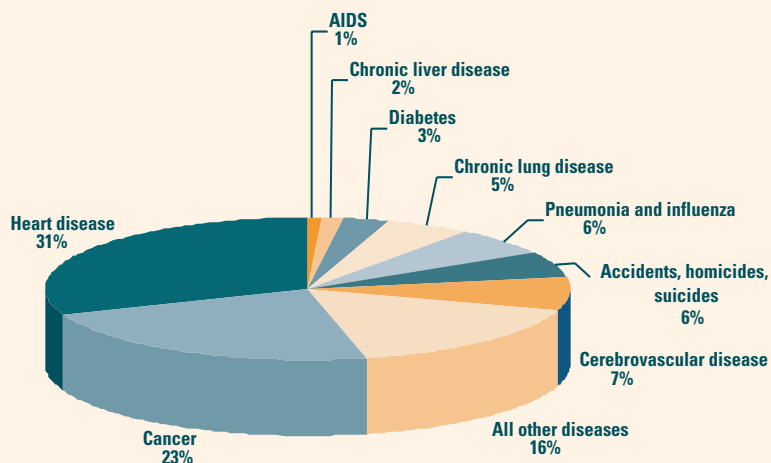
Primarily through improved public health practices and advances in medicine, from 1920 to 1997, life expectancy at birth has increased 21 years for California males and 22.3 years for California females. The same improvement in life expectancy is also evident at the national level.

### References:

Centers for Disease Control and Prevention. *Estimated life expectancy at birth in years, by race and sex: Death-registration states, 1900-28, and United States, 1929-97*. National Vital Statistics Report, 47(28). December 13, 1999. Posted at: [www.cdc.gov/nchs/fastats/pdf/47\\_28t12.pdf](http://www.cdc.gov/nchs/fastats/pdf/47_28t12.pdf)

California Department of Health Services. Life expectancy at birth and average number of years of life remaining at age 65 by selected years and sex, California, 1919-1920, 1929-1931, 1939-1941, 1950, 1960, 1970, 1980, 1990-1999 (preliminary). Reports posted at: [www.dhs.ca.gov/services/dhs-statistics.htm](http://www.dhs.ca.gov/services/dhs-statistics.htm)

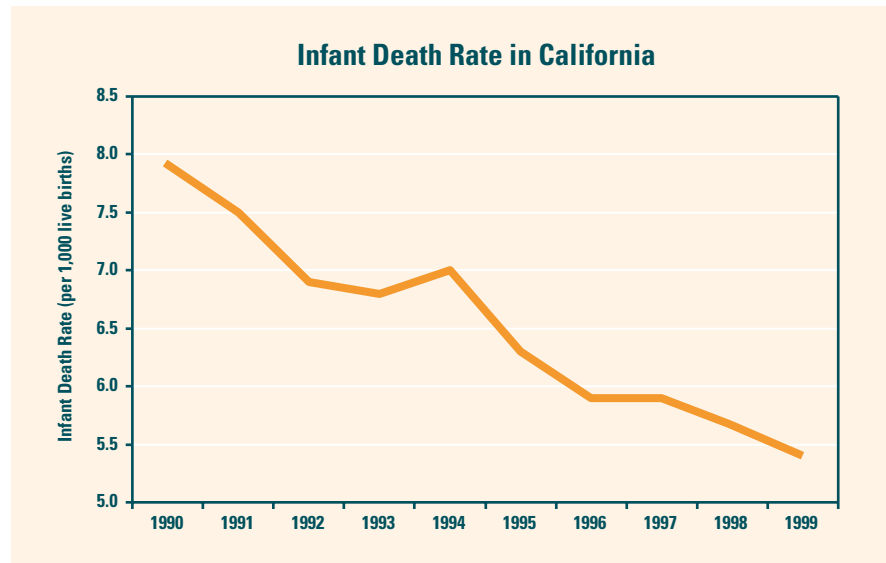
### Leading Causes of Death in California, 1998



Cancer is the second leading cause of death in California (and in the U.S.), causing more than 50,000 deaths each year. Smoking, poor diet, and obesity are primary risk factors for diseases such as cancer, heart disease, cerebrovascular disease, chronic lung disease, and diabetes.

#### References:

California Department of Health Services, Center for Health Statistics. *California Cancer Facts and Figures 2001*, American Cancer Society. Posted at: [www.ccrca.org/PDF%20Files/Min2001.pdf](http://www.ccrca.org/PDF%20Files/Min2001.pdf)



The infant death rate (deaths among infants under one year old per 1,000 live births) continues to be one of the most widely used indicators of the overall health status of a community.

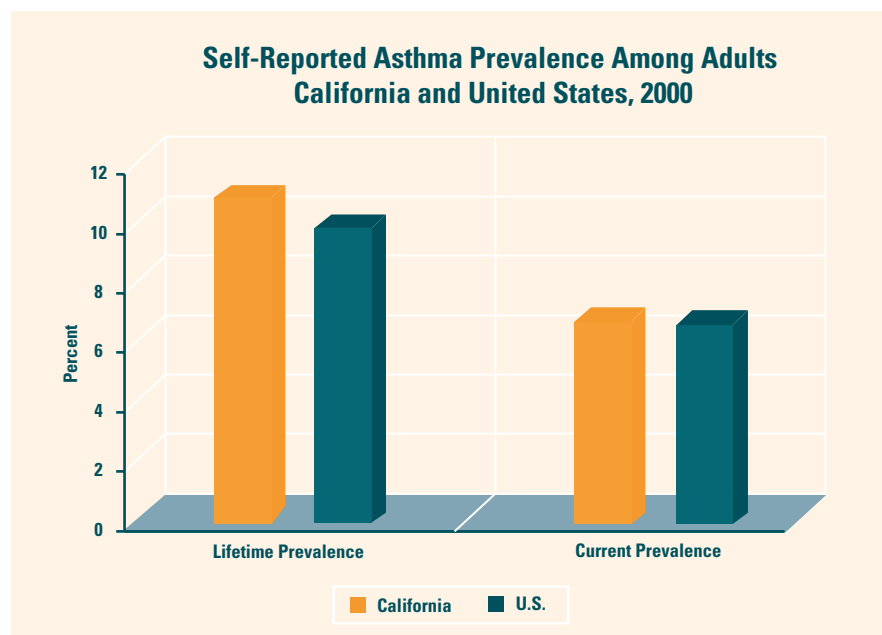
In 1999, California had the lowest infant death rate ever recorded for the state. There were a total of 2,787 infant deaths and 518,073 live births among California residents, for an infant death rate of 5.4 per 1,000 live births. Advances in medicine that increased survival rates among premature infants, and the success in informing parents how to prevent Sudden Infant Death Syndrome (SIDS) are some possible reasons for the lowering infant death rate.

The 1999 infant death rate decreased 31.6 percent from the 1990 rate of 7.9 per 1,000 live births. California's infant death rate for 1999 was lower than the U.S. preliminary estimate for infant death rate of 6.9 per 1,000 live births.

### Reference:

California Department of Health Services, Center for Health Statistics. California's infant death rate 1999: Data summary. Report Register No. DS00-01002 (January 2001).

Asthma is one of the most common chronic diseases in the U.S. Until recently, state-specific data on asthma prevalence were not available. This indicator summarizes California and total U.S. asthma prevalence data collected from the Behavioral Risk Factor Surveillance System survey. The year 2000 was the first year in which state-specific asthma prevalence data became available. Continued use of this survey will allow state health departments to monitor trends in asthma prevalence and to provide data to guide asthma management.



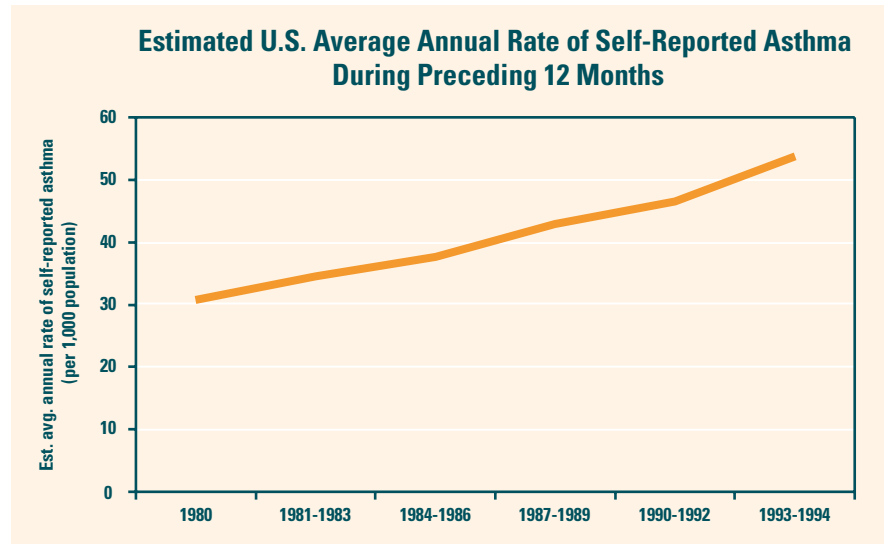
Two asthma case definitions were constructed for this survey. In the survey, lifetime asthma was determined by a “yes” answer to “Have you ever been told by a doctor that you have asthma?” Current asthma was determined by a “yes” answer to the same question, as well as to the question, “Do you still have asthma?”

During 2000, the California and overall U.S. lifetime asthma prevalence was 11.5 and 10.5 percent, respectively. Current asthma prevalence in California and the U.S. was nearly the same at 7.3 and 7.2 percent, respectively. Total number of California respondents for lifetime and current asthma was 3,905 and 3,898, respectively. Total number of U.S. respondents for lifetime and current asthma was 182,293 and 181,914, respectively.

Other overall U.S. asthma prevalence data noted that current asthma was higher among blacks (8.5 percent) than whites (7.1 percent) and persons of other race/ethnicity (5.6 percent). The prevalence of current asthma decreased with increasing family income (from 9.8 percent among persons with family incomes of less than \$15,000 to 5.9 percent among persons with family incomes of \$75,000 or higher). Women had higher rates of current asthma than men both in California (9.0 percent versus 5.6 percent) and overall (9.1 percent versus 5.1 percent).

**Reference:**  
 Centers for Disease Control and Prevention. *Self-reported asthma prevalence among adults—United States, 2000.* MMWR Weekly 50(32);682-6. August 17, 2001. Posted at: [www.cdc.gov/mmwr/preview/mmwrhtml/mm5032a3.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5032a3.htm)

Available surveillance data indicate that the asthma prevalence rates have been increasing both in California and nationally. In response to this alarming trend, California has set-up a comprehensive surveillance system, as shown in the previous indicator, which measures asthma trends at the state level.



A yearly survey conducted by the National Center for Health Statistics among 20,000 U.S. persons shows that asthma prevalence increased by 75 percent from 1980 to 1994. This increasing trend was evident among all races, both sexes, and all age groups. The most substantial increase occurred among children aged 0-4 years (up 160 percent from 22.2 per 1,000 to 57.8 per 1,000), and persons aged 5-14 years (up 74 percent from 42.8 per 1,000 to 74.4 per 1,000).

In California, the limited data available indicated that the occurrence, trends, and impacts of asthma tend to agree with the nationwide trends. In 1984, 7.6 percent of adults reported through the statewide Behavioral Risk Factor Survey that they have had asthma at some point. This figure rose to 12.1 percent in 1996, a 60 percent increase.

### References:

Mannino DM, Homa DM, Pertowski CA, Ashizawa A, Nixon LL, Johnson CA, Ball LB, Jack, E, Kang, and DS. 1998. *Surveillance for asthma – United States, 1960-1995*. MMWR 47(SS-1); 1-28. Posted at: [www.cdc.gov/mmwr/preview/mmwrhtml/00052262.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/00052262.htm)

California Department of Health Services, Environmental Health Investigations Branch. *Asthma in California: Background of site/study*. Posted at: [www.dhs.cahwnet.gov/ps/deodc/ehib/ehib2/topics/asthma.html](http://www.dhs.cahwnet.gov/ps/deodc/ehib/ehib2/topics/asthma.html)

A few evaluations have included consideration of whether the increase in asthma prevalence reflects a true increase in disease occurrence or merely a trend in the willingness of physicians or patients to diagnose/report the disease. The results suggest there is indeed a real increase in asthma cases in both California and the U.S.

Based on a national estimate of asthma prevalence, 1.8 million Californians have asthma, including half a million children. As one of the most common chronic diseases in children, asthma is a leading cause of school absences and hospital admissions for children.

The majority of asthma hospitalizations in California are thought to be preventable. Thus, the \$350 million direct costs associated with these events are likely to be preventable as well.

## Water Supply

This table presents estimated water supplies for 1995 and the projected supplies for 2020 as reported in the California Water Plan Update 1998 (Bulletin 160-98). It does not estimate the entire State's water supply, but rather a portion of the water runoff as well as other water sources delivered to meet for urban, agricultural and environmental uses.

California Water Supplies with Existing Facilities and Programs <sup>a</sup> (taf) <sup>b</sup>				
Supply	1995		2020	
	Average	Drought	Average	Drought
Surface				
Central Valley SProject	7,000	4,820	7,350	4,890
State Water Project	3,130	2,060	3,440	2,390
Other Federal Projects	910	690	910	680
Colorado River	5,180	5,230	4,400	4,400
Local	11,050	8,480	11,070	8,740
Required Environmental Flow	31,370	16,640	31,370	16,640
Reapplied	6,440	5,600	6,450	5,580
Groundwater <sup>c</sup>	12,490	15,780	12,680	16,010
Recycled and Desalted	320	330	420	420
<b>Total (rounded)</b>	<b>77,900</b>	<b>59,640</b>	<b>78,080</b>	<b>59,750</b>

a Bulletin 160-98 presents water supply data as applied water, rather than net water.

See reference below for additional information

b Thousand acre feet, rounded

c Excludes groundwater overdraft

The table shows California's estimated water supply, for average and drought years under 1995 and 2020 levels of development, with existing facilities and programs. Surface water includes developed supplies from federal, state and local projects. Required environmental flows are comprised of undeveloped supplies designated for wild and scenic rivers, supplies used for instream flow requirements, and supplies used for Bay-Delta water quality and outflow requirements. Finally, surface water includes supplies available for reapplication downstream. In an average year, 30 percent of California's urban and agricultural applied water is provided by ground water extraction. In drought years when surface water supplies are reduced, ground water supports an even larger percentage of use. Recycled water plays an important role in lessening the need for new water supplies, although it does not provide a new source of water. Similarly, California's existing desalting plants use brackish groundwater, wastewater and seawater to provide additional water particularly for coastal communities with limited existing water supplies.

### Reference:

Department of Water Resources. The California Water Plan Update, Bulletin 160-98. Posted at: [www.waterplan.water.ca.gov](http://www.waterplan.water.ca.gov)

### Land Use

*The land use impacts of population growth are many. Population growth affects the amount of habitat available for wildlife, introduces stresses on many wildlife species, interrupts many ecological processes such as water cycling, complicates fire protection and forest management activities, and reduces open space aesthetics.*

This indicator provides a context for the Land Cover and Habitat Quality and Quantity indicators within the Ecosystem Health Section, which measure the changing landbase of California's natural ecosystems.

Before 1940, development comprised merely 3 percent (1.5 million acres) of all private lands. By 1990, development had occurred on over 15 percent (8.4 million acres) of all private lands.

Since 1940, development has impacted 7 million acres or 13 percent of the state's undeveloped private land. During this period, agricultural land was the largest recipient of growth, with development of over 26 percent (3.1 million acres) of the 1940 agriculture land base. By 1990, natural ecosystems (forest, shrub, grass, desert, barren) had lost nearly 4 million acres or 7 percent of the undeveloped private land of 1940.

Urbanization is defined as a density of one or more houses per 20 acres. This definition is not a typical urbanization density (usually one or more units per acre), but is used to better represent the associated impacts of urbanization on ecosystems.

Information should be used at a broad scale as each block of urbanization shown represents 9.65 square miles and density is averaged within that block.

### Progression of Development of California's Land, 1940 to 1990



See full color map on page 262

#### Reference:

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