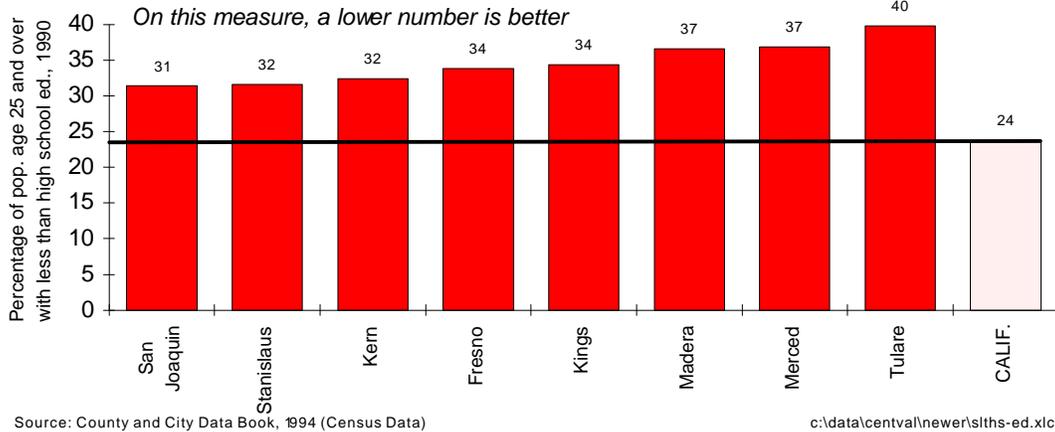


Figure 15

Proportion of population with less than high school education exceeds state average in all San Joaquin Valley counties

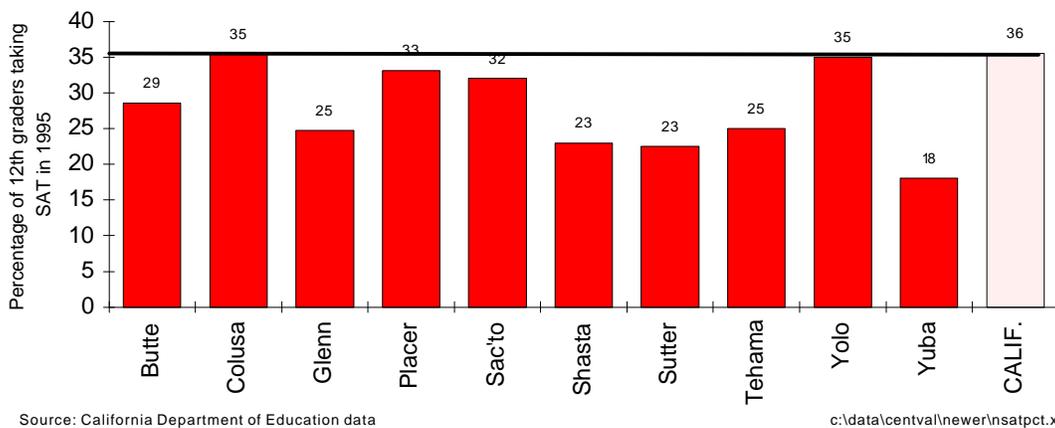


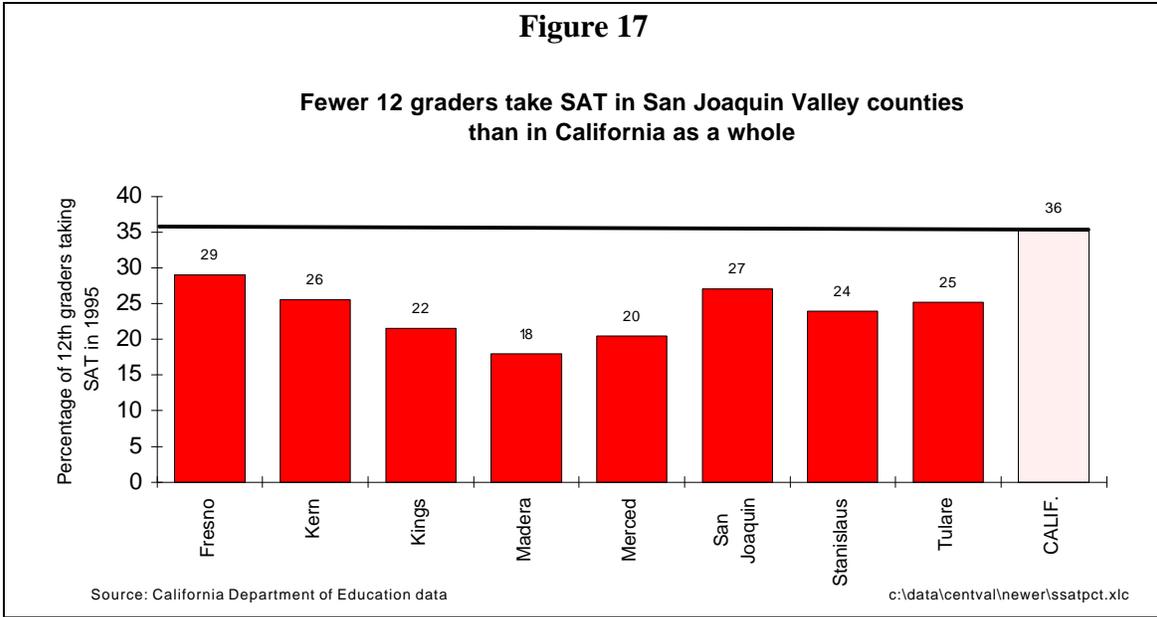
College bound: percentage taking SAT

A higher rate of taking the SAT (Scholastic Achievement Test, formerly known as the Scholastic Aptitude Test) is, in general, related to a higher rate of preparation to attend a four-year college among high school students. Central Valley counties vary widely on this measure, but in all cases fell below the state average for 1995 (though narrowly in some counties).

Figure 16

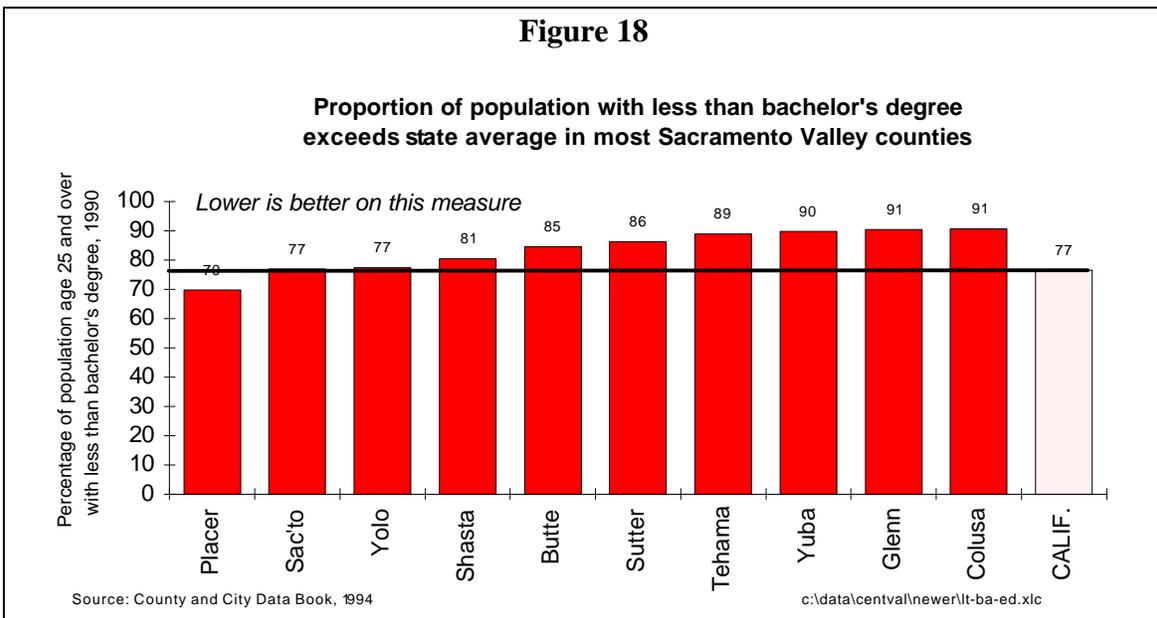
Fewer 12 graders take SAT in Sacramento Valley counties than in California as a whole





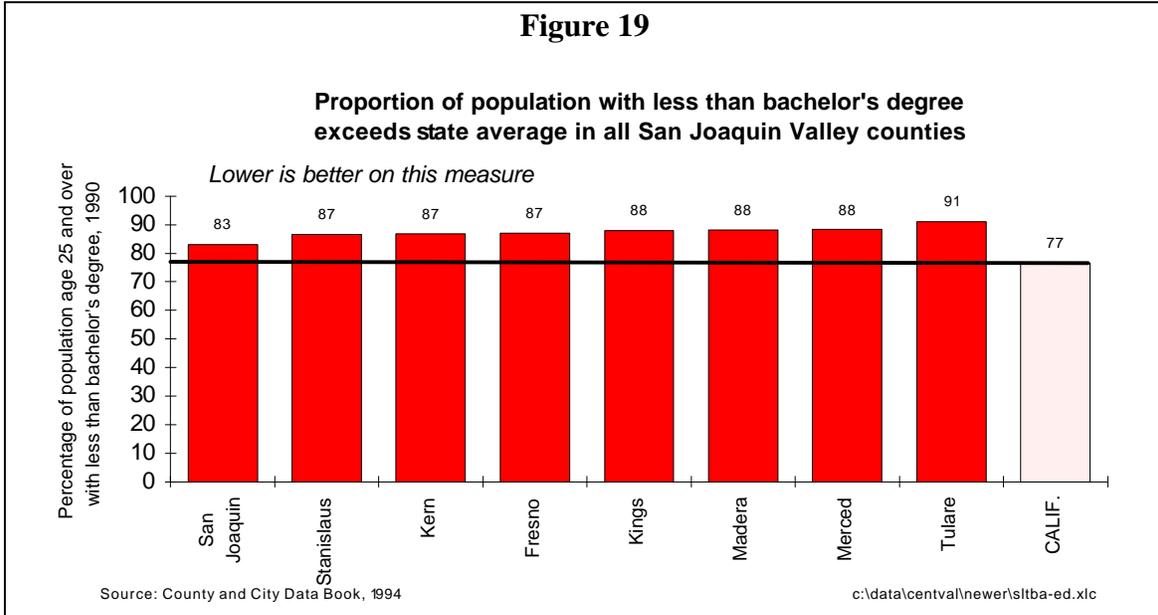
College Education

Only Placer county shows a lower level of population without a bachelor's degree than does the state as a whole (that is, a *higher* level of the population *with* a bachelor's degree), although Sacramento and Yolo are very close to the state average.



Sacramento is home to State government, and Placer is relatively prosperous and becoming a technology center. Yolo County is of course home of the University of

California campus at Davis. These counties rank high on other measures of educational attainment shown above as well.



College enrollment figures have varied from year to year in many counties and in the state as a whole over the last decade. Many counties have seen a decline in the percentage of high school graduates who go on immediately to college, enrolling as freshmen in the fall. Taking 1995 as a snapshot comparison, most Central Valley counties fall below the state average in this measure, although community colleges make up some of the shortfall in UC and CSU enrollment. The figures in the charts below do not consider later transfers from community college to UC and CSU nor enrollment in college after some period following high school graduation.

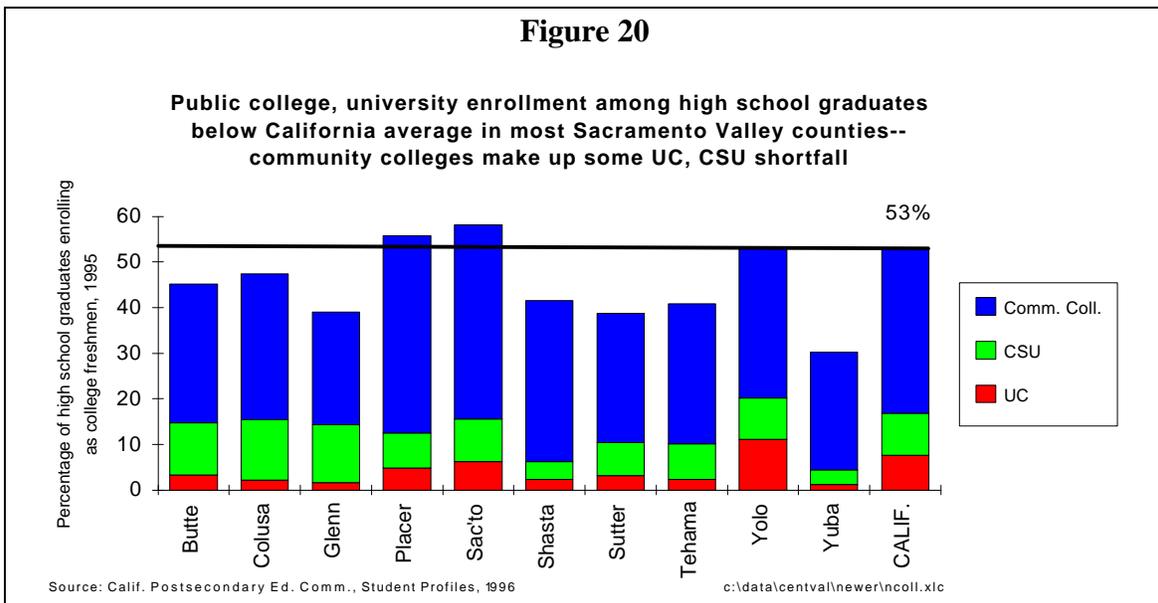
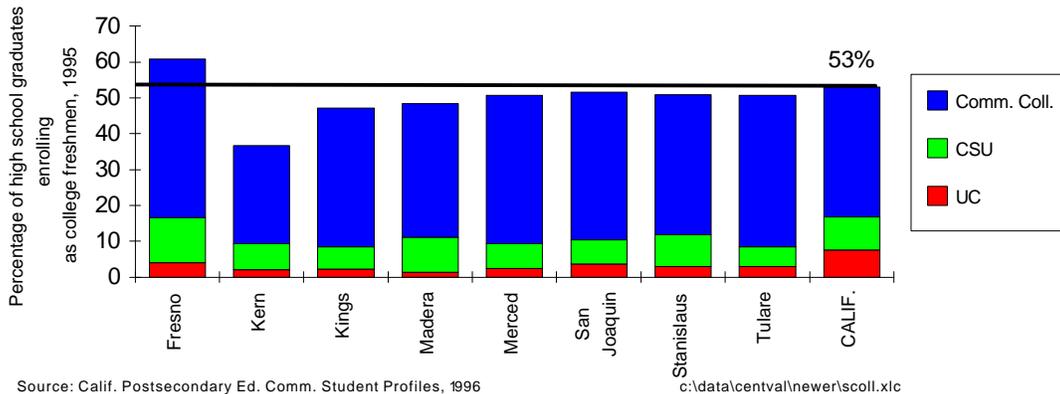


Figure 21

Public college, university enrollment among high school graduates below California average in most San Joaquin Valley counties-- community colleges make up some UC, CSU shortfall



Although Yolo County leads in UC attendance among its high school graduates, Fresno county (followed by Sacramento and Placer) leads in total proportion of high school graduates moving immediately into public higher education. Community colleges are an important part of the higher education picture in *all* of these counties and in the state as a whole.

Health and Medical Indicators

California's Central Valley counties have fewer physicians and hospital beds, in comparison to California averages. The Central Valley also has higher rates of births to adolescent mothers and higher rates of inadequate prenatal care than the state as a whole.

Physicians and hospital beds

Other things being equal, a higher rate of physicians per 100,000 population suggests better access to health care. All but two counties (Yolo and Sacramento) fell below the state average on this measure for 1990. The comparison may not be quite as stark as suggested in *all* cases, though, as it is necessary for specialists to concentrate in urban areas both to have necessary facilities available and to have a sufficient patient load. Further, in some cases, physician or hospital services may be available in an adjacent county. Plainly, however, several valley counties are short of physicians and have relatively few community hospital beds.

Yolo County is home to the UC Davis Medical School, and Sacramento County is the most populous in the Central Valley.

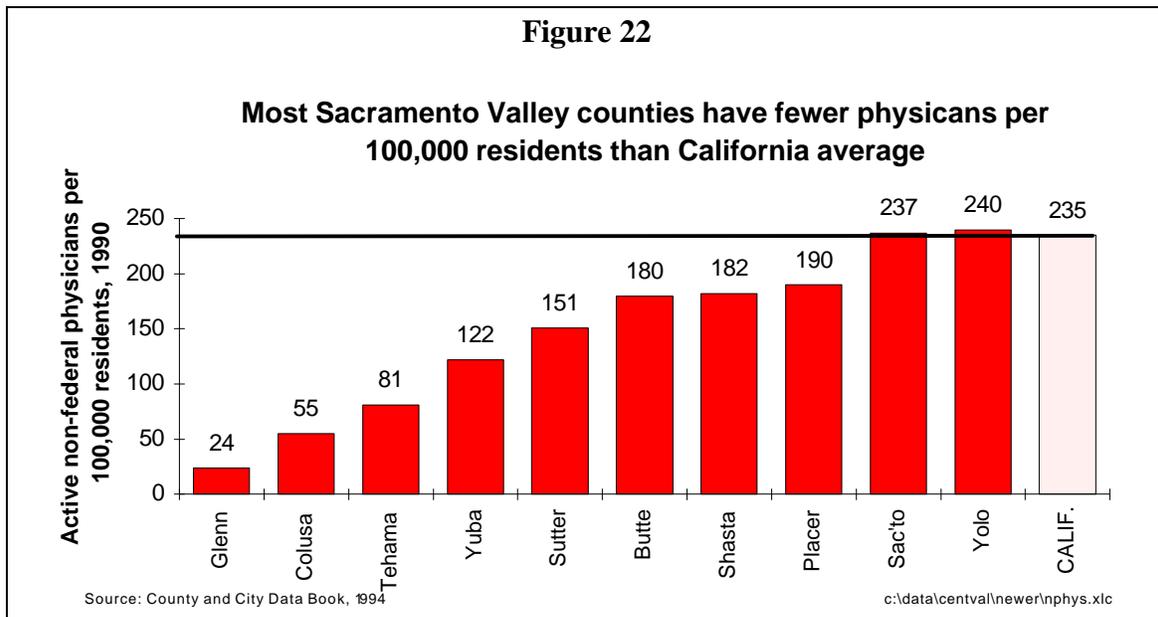
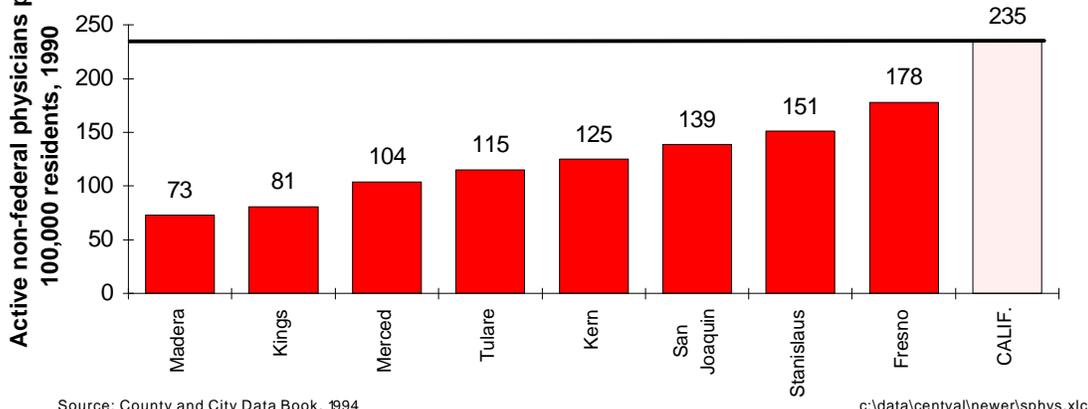


Figure 23

San Joaquin Valley counties have fewer physicians per 100,000 residents than California average



A broadly comparable pattern appears with respect to community hospital beds, although several valley counties rank above the state average on this measure (based on 1991 data).

Figure 24

Most Sacramento Valley counties have fewer hospital beds per 100,000 residents than California average, but patterns vary widely

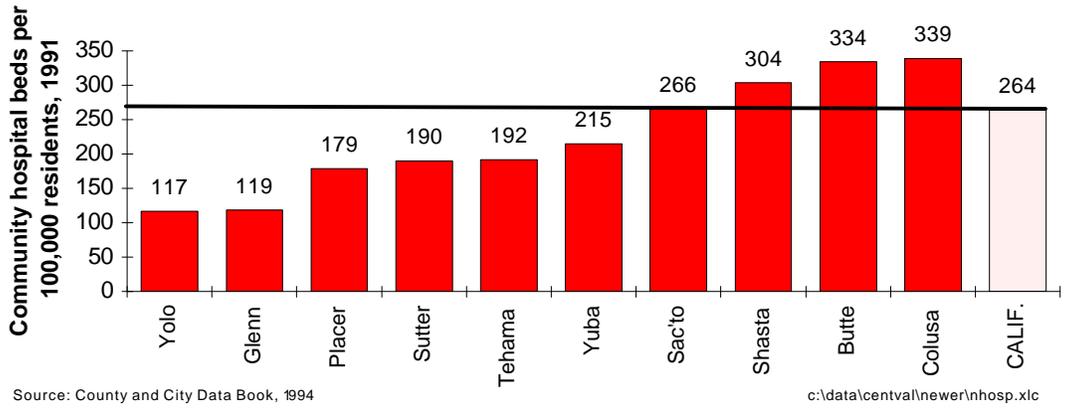
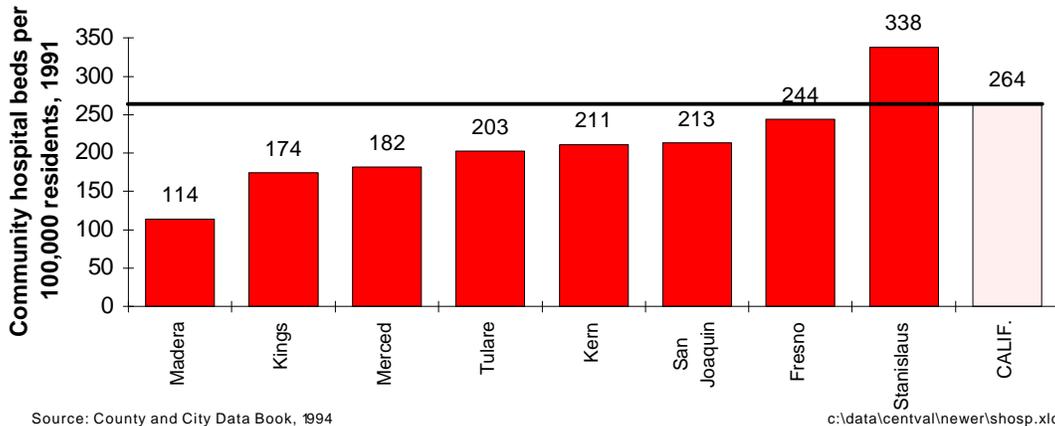


Figure 25

Most San Joaquin Valley counties have fewer hospital beds per 100,000 residents than California average



Births to adolescents, prenatal care

The Central Valley has higher percentages than the state as a whole in two important health-related indicators: births to adolescents and inadequate prenatal care. Rates vary, however, and not all counties have higher percentages than the state as a whole.

Births to adolescents may be associated with higher rates of poverty, single-parent families, and health complications.

Figure 26

Births to adolescent mothers more common in Sacramento Valley counties than California average

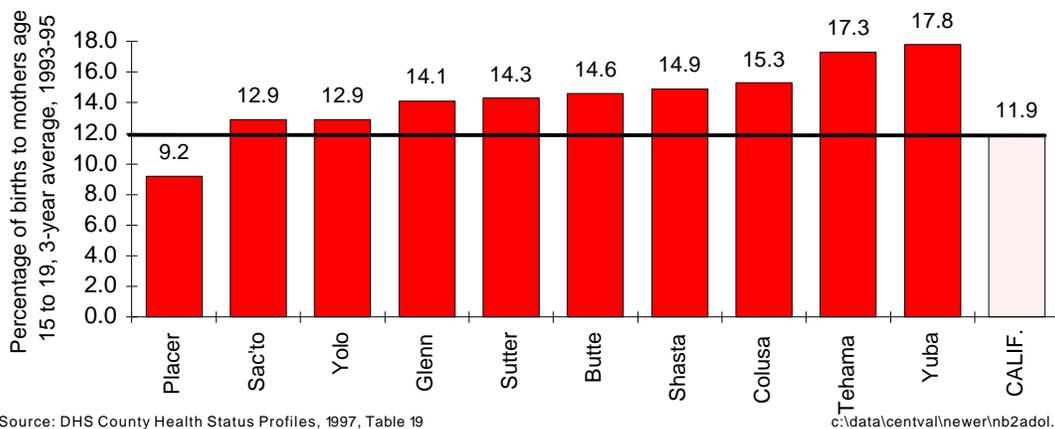
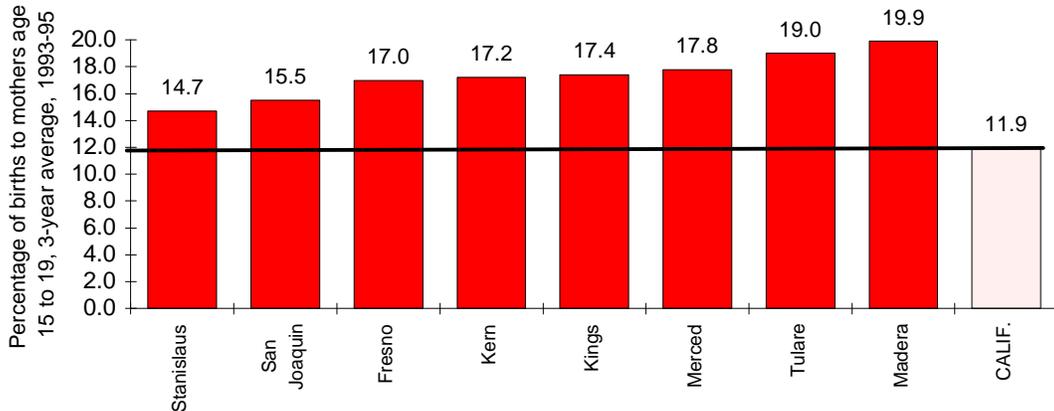


Figure 27

Births to adolescent mothers more common in San Joaquin Valley counties than California average



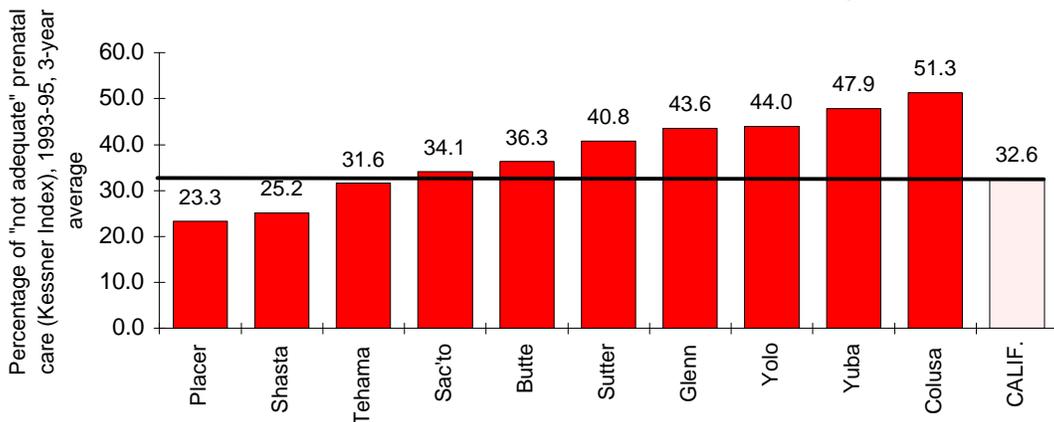
Source: DHS County Health Status Profiles, 1997, Table 19

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Inadequate prenatal care is a harbinger of possible health problems, acute or chronic, in children, and increased risks to mothers.

Figure 28

Inadequate prenatal care is more common in most Sacramento Valley counties than California average

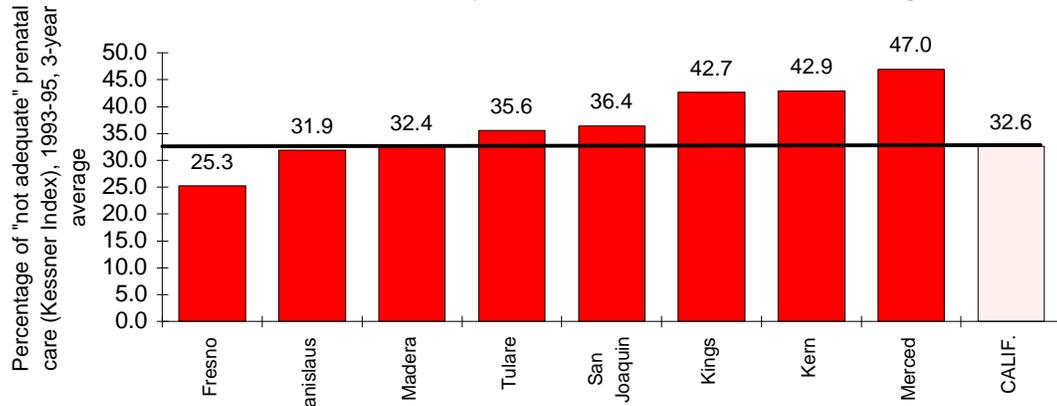


Source: DHS County Health Status Profiles, 1997, Table 20B

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Figure 29

Inadequate prenatal care is more common in most San Joaquin Valley counties than California average



Source: DHS County Health Status Profiles, 1997, Table 20B

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Challenges of Poverty and Unemployment

Most Central Valley counties (north and south) have higher rates of poverty than the California average. Median household income lags behind the state average and unemployment rates are unusually high, as almost all Central Valley counties exceed the state average, some by two or three times (based on selected non-seasonally adjusted figures).

Poverty rates

As with a number of indicators, Placer County is an exception to the pattern of the valley as a whole.

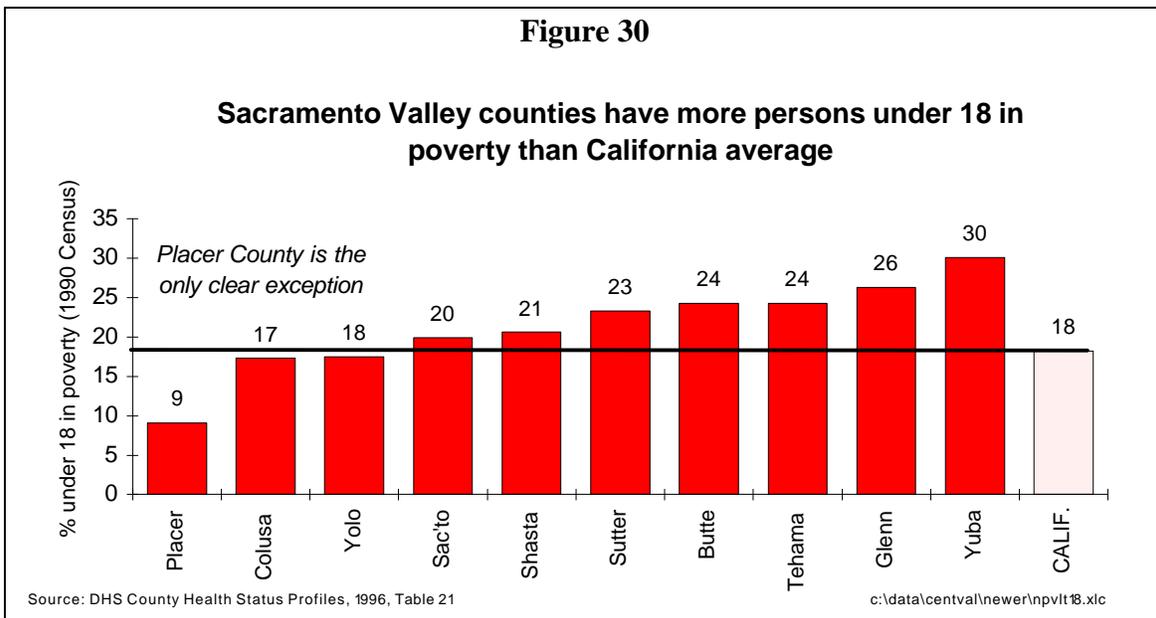
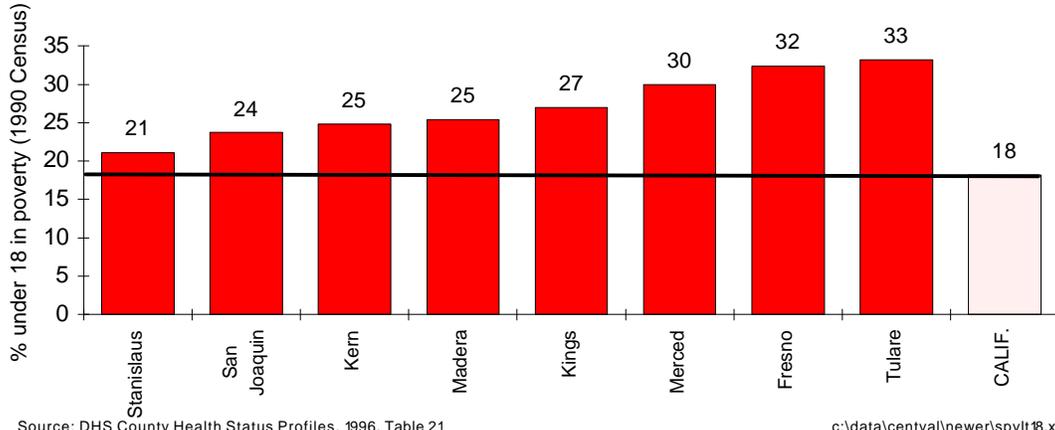


Figure 31

San Joaquin Valley counties have more persons under 18 in poverty than California average



Household incomes

Household income data are drawn from the 1990 Census, and are now of course several years old. The comparative pattern, however, appears likely not to have changed significantly in that time. Here, again, Placer is unusual.

Figure 32

Sacramento Valley counties lag in median household income (1990 Census data)

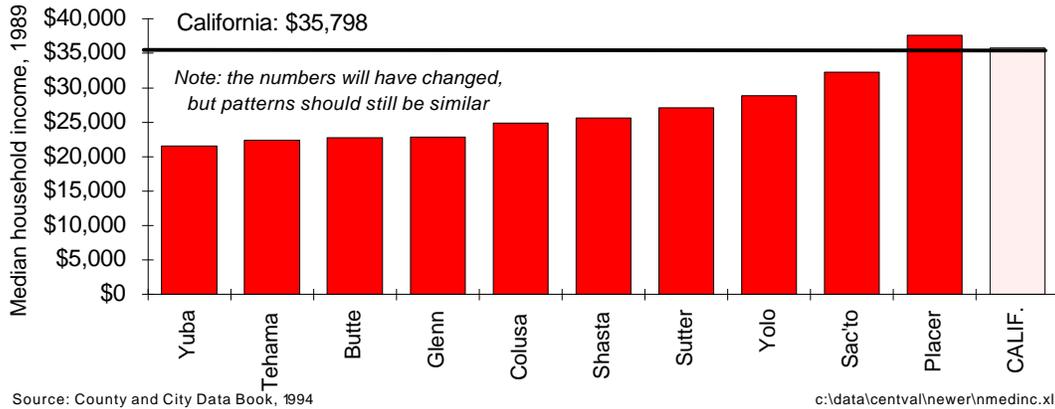
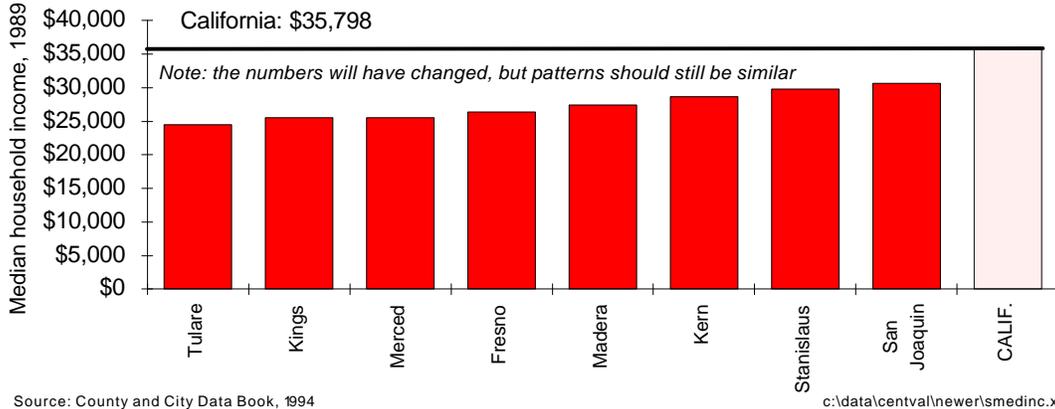


Figure 33

San Joaquin Valley counties below State in median household income (1990 Census data)



Unemployment

Rates of unemployment, like many other indicators, vary among the counties, but are high in many Central Valley counties. The charts below show the 1995 average and a one-month snapshot for December 1996.

Figure 34

Sacramento Valley unemployment varies -- most counties above state figures for 1995 and December 1996

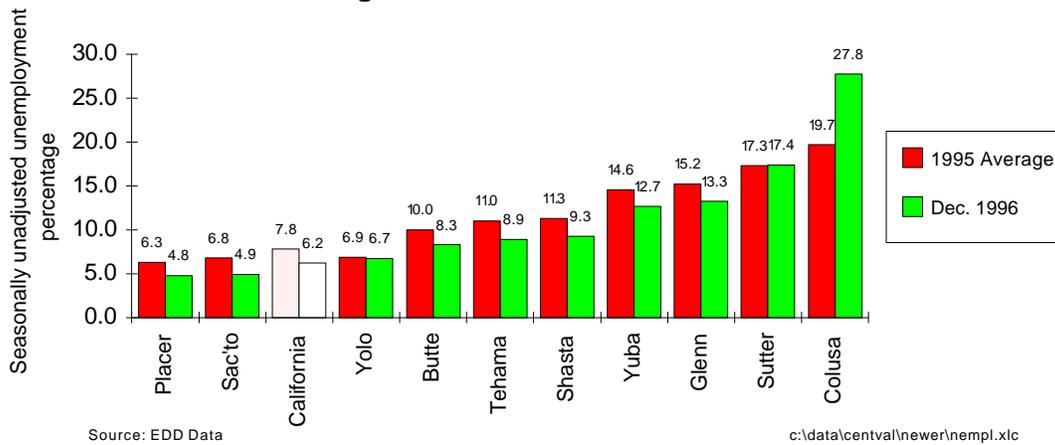
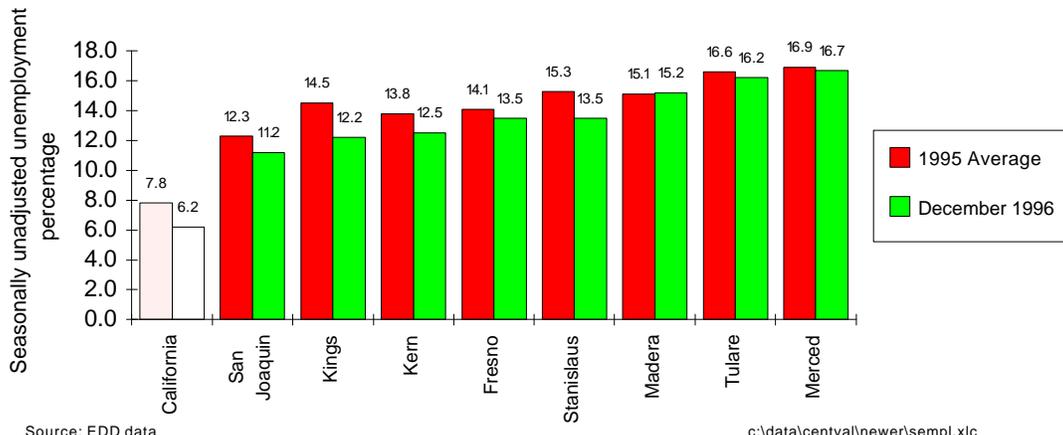


Figure 35

San Joaquin Valley unemployment above state figures for 1995 and December 1996 for all counties



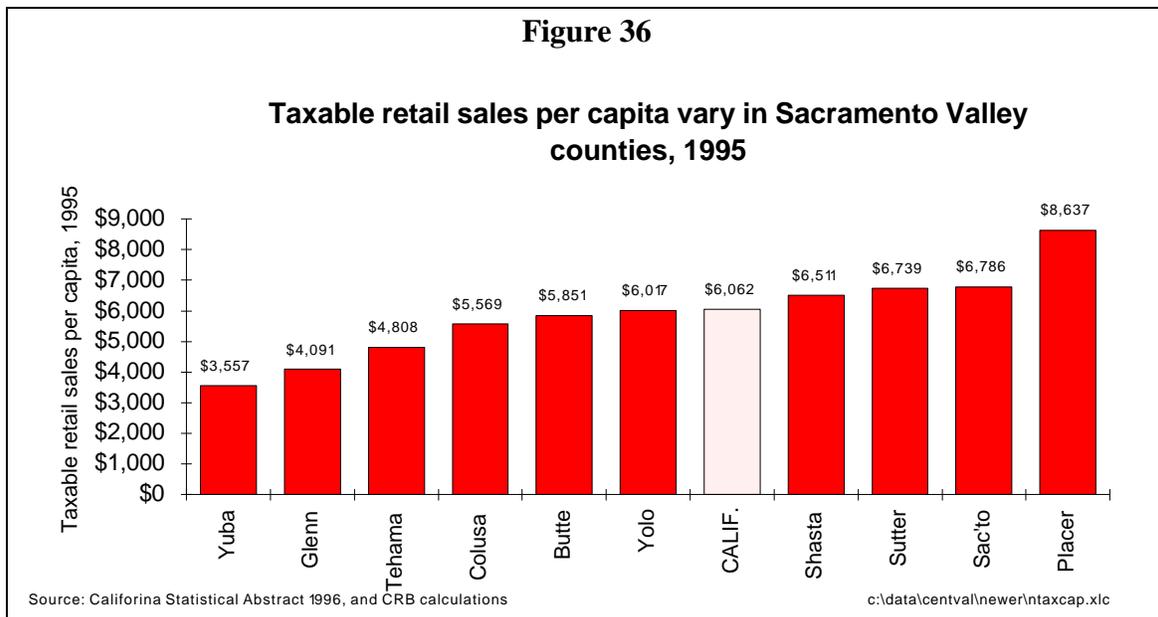
Economy and Infrastructure

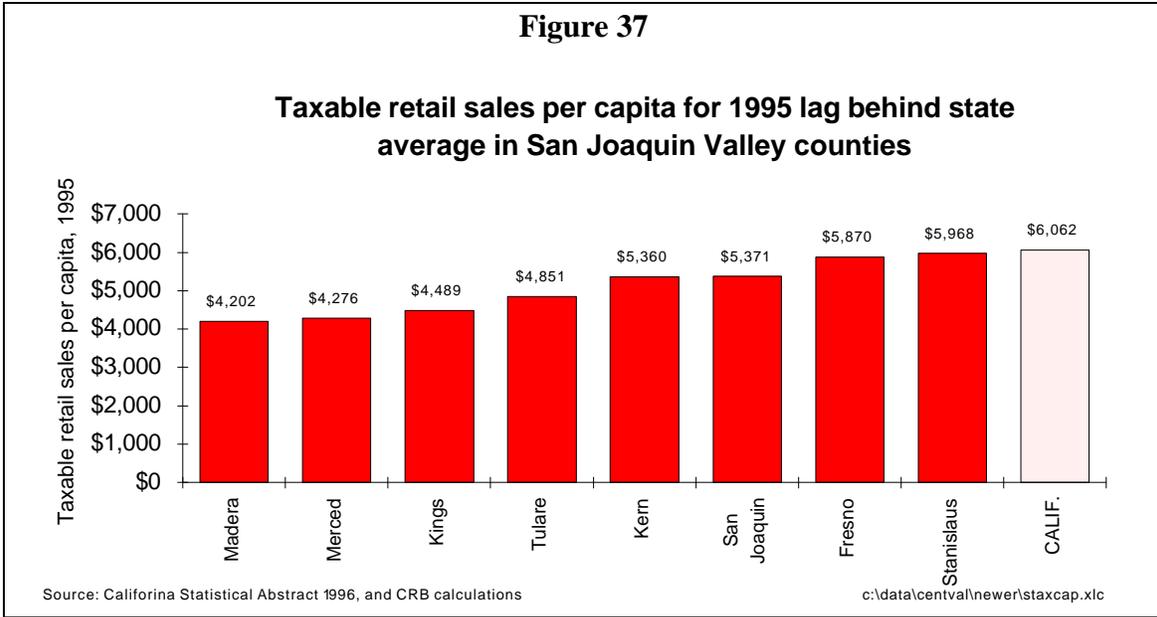
The counties of the Central Valley vary not only in population, growth rates, and education and health indicators, but also in economic and infrastructure measures. Below are a few such measures.

Taxable retail sales

Taxable sales data show Central Valley counties behind the state average. Several counties, especially Yuba, Glenn, and Tehama (in the north) and Kings, Merced, Madera, Tulare (in the south) lag far behind.

Taxable retail sales is only one measure of economic activity, but it does suggest a lower than average level in most Central Valley counties than in the state as a whole. Placer is a clear exception, although Shasta, Sutter, and Sacramento also fall above the state average, and Fresno, Stanislaus, and Yolo are not far below.





Infrastructure is a complex topic, encompassing many of the basic elements of transportation, communications, and public services. The charts below focus on two indicators: (1) commercial aviation facilities and (2) local government receipts per capita. The first illustrates one important element in the areas of transportation and commerce, and the second suggests the comparative capacities of local governments to meet local needs for services and facilities.

Commercial aviation

Although the Central Valley has commercial airports, they handle fewer passengers than those in the major urban centers of the state.

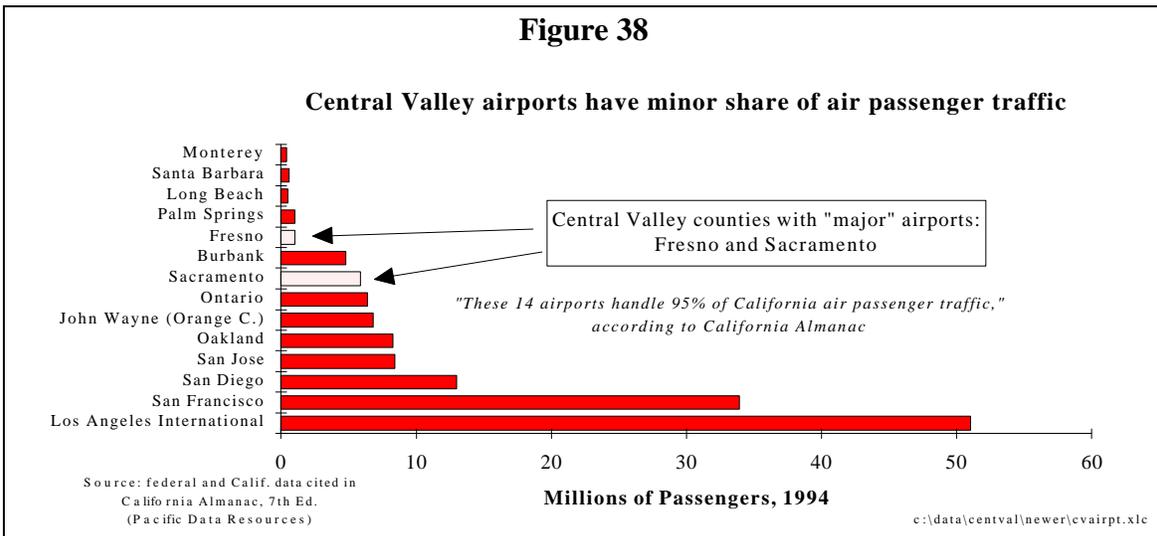
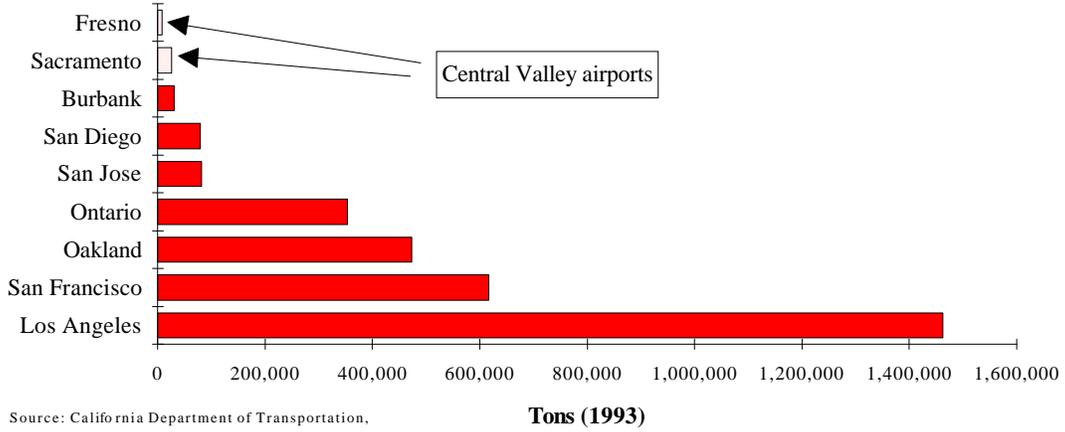


Figure 39

Central Valley airports have small role in the air cargo business



Source: California Department of Transportation,
California Aviation System Plan: Inventory Element, December 1994

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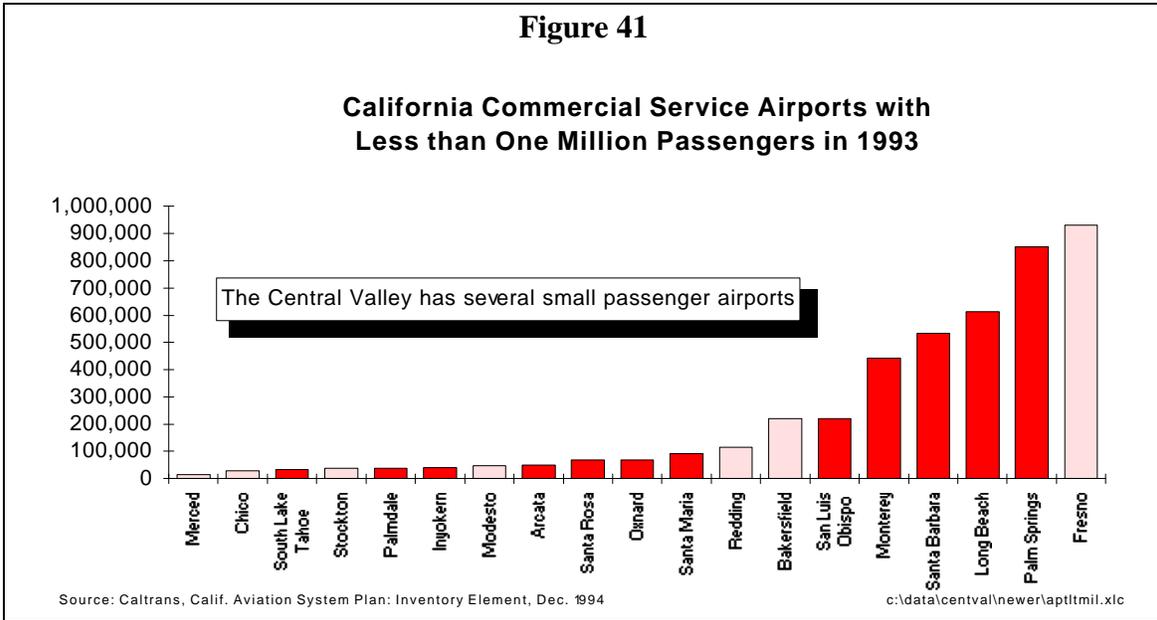
Figure 40

**California Commercial Service Airports with
Over One Million Passengers in 1993**



Source: Caltrans, Calif. Aviation System Plan: Inventory Element, 1994

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Local government receipts

Local government receipts reflect a wide range of factors, including per capita income, property values, and presence or absence of industry. Some Central Valley counties fall well below the state as a whole in local government receipts per capita. However, several counties in both the Sacramento and San Joaquin valleys are comparable to or even somewhat above the statewide average. The charts below show county data for 1993-94 and the state average for comparison.

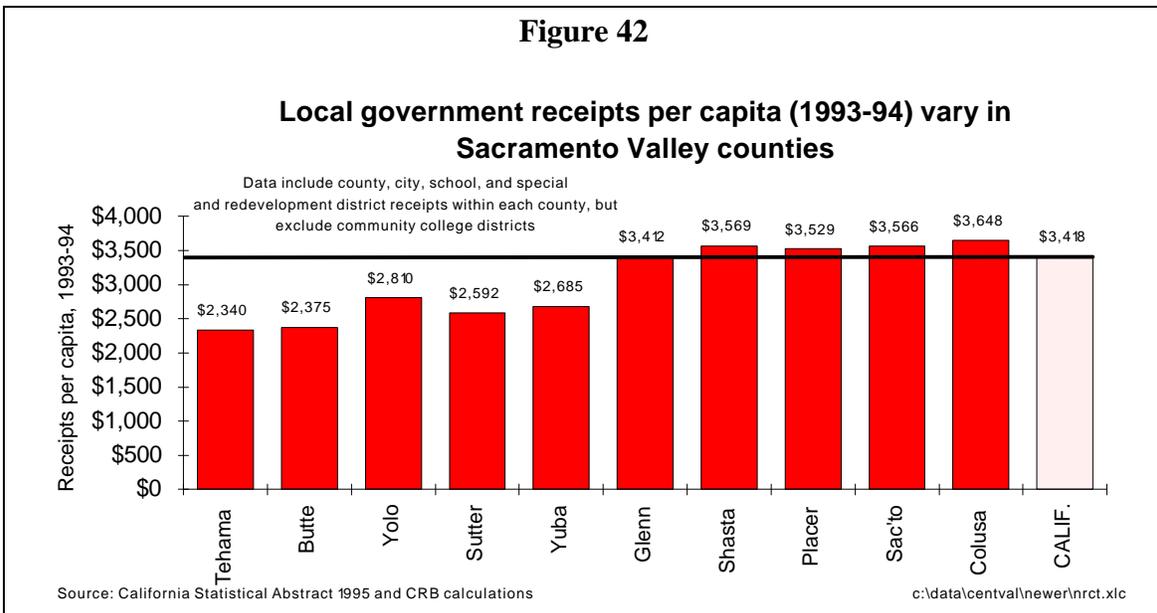
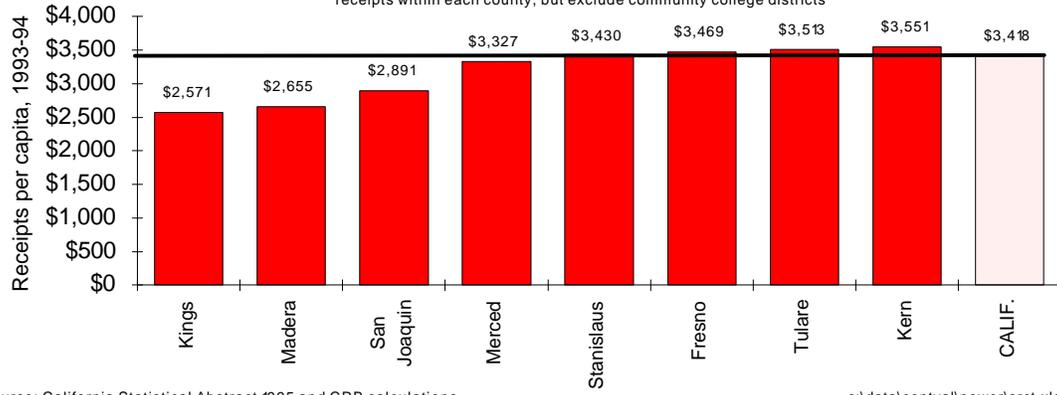


Figure 43

Local government receipts per capita (1993-94) vary in San Joaquin Valley Counties

Data include county, city, school, and special and redevelopment district receipts within each county, but exclude community college districts



Source: California Statistical Abstract 1995 and CRB calculations

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Environmental Issues and Characteristics

The Central Valley faces a broad range of environmental issues, as does the rest of California. Among the important environmental concerns are:

- Water resources
- Air pollution
- Endangered species protection

Each of these issues is highlighted briefly below.

Water

Water is critical to the Central Valley. It is not only important for agriculture and its other beneficial uses. Water is a key part of defining the Central Valley.

The Central Valley encompasses three different hydrologic regions:

- Sacramento River
- San Joaquin River
- Tulare Lake

The Sacramento River hydrologic region contains the entire drainage area of the Sacramento River and its tributaries. It begins upstream of Shasta Lake near the Oregon boarder and extends south to the Sacramento-San Joaquin Delta. The San Joaquin River hydrologic region contains the entire drainage area of the San Joaquin and its tributaries. It extends from the Delta and the Cosumnes River in the north to the southern reaches of the San Joaquin watershed. The Tulare Lake Region includes the Southern San Joaquin Valley. It ranges from the southern limit of the San Joaquin River watershed to the crest of the Tehachapi Mountains.

GROUNDWATER

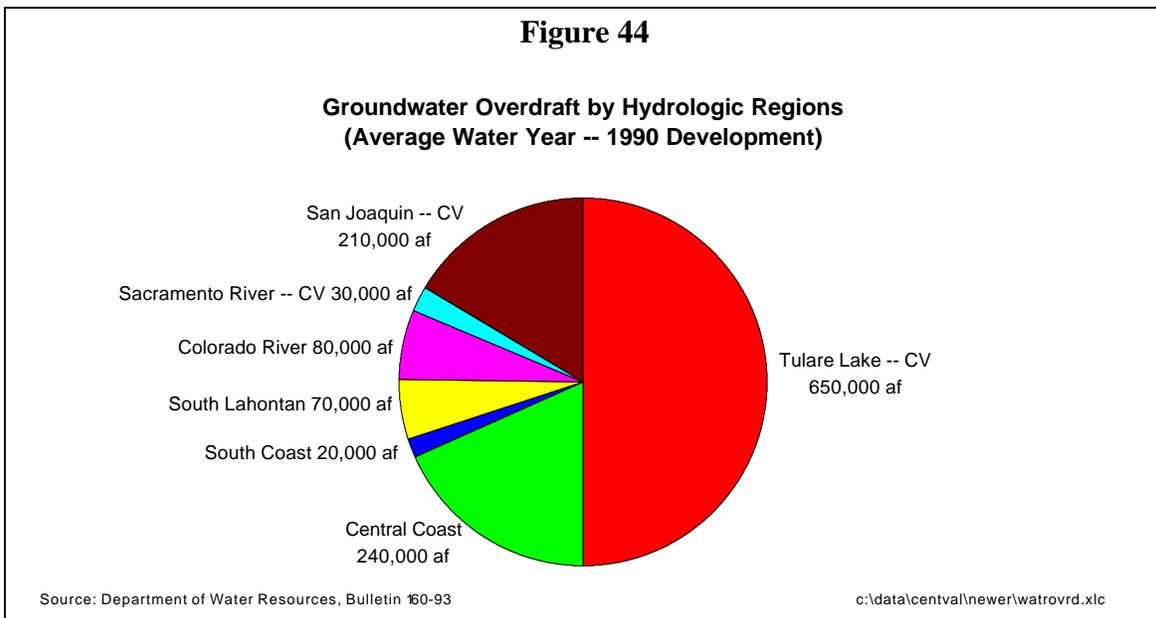
California gets much of its water from groundwater. To get groundwater, one needs only to sink a well above a suitable aquifer and begin pumping. Historically, there have been few controls on the amount of groundwater anyone could pump. This has led, in some areas, to people pumping more water out of the aquifer than is replenished naturally or by artificial recharge. This condition is known as overdraft. When an aquifer has been

severely overdrafted, it physically loses that storage capacity permanently. That is, it will never again be able to hold the pre-overdraft amount of water.

Problems associated with overdraft include:

- Storage capacity drops -- leading to a permanent loss of supply
- Water levels fall -- necessitating deepening and possibly abandonment of wells and higher pumping costs
- Land subsidence -- the surface elevation declines

The Tulare Lake region has experienced the greatest problems with groundwater overdraft.

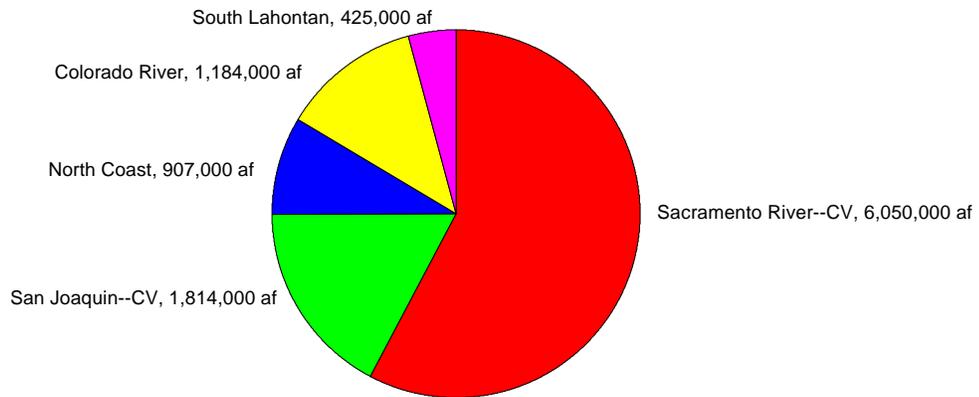


EXPORTS

The northern part of the Central Valley provides much of the State's water. More water is exported from the Sacramento Region than all other regions combined.

Figure 45

**Water Exports by Hydrologic Regions
(Average Water Year -- 1990 Development)**



Source: Department of Water Resources, Bulletin 160-93

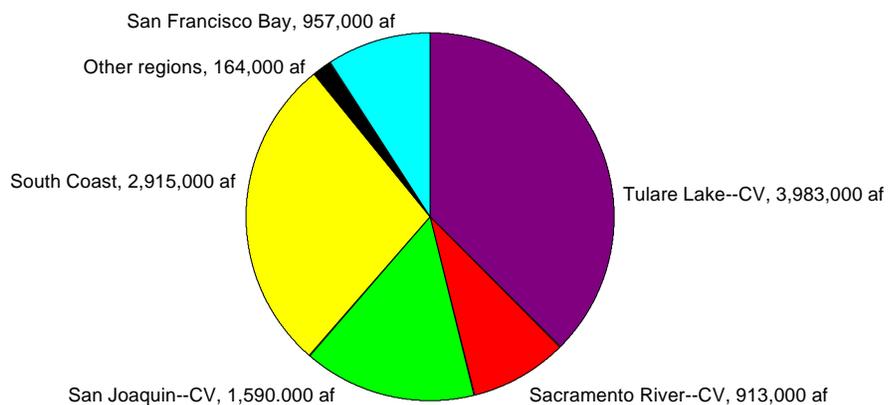
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IMPORTS

The southern part of the Central Valley imports much of the State's water. The Tulare Lake Region imports more water than any other region. Most of the imports to the Sacramento Region are passed on to other regions via the Central Valley Project and the state water project.

Figure 46

**Water Imports by Hydrologic Regions
(Average Water Year -- 1990 Development)**

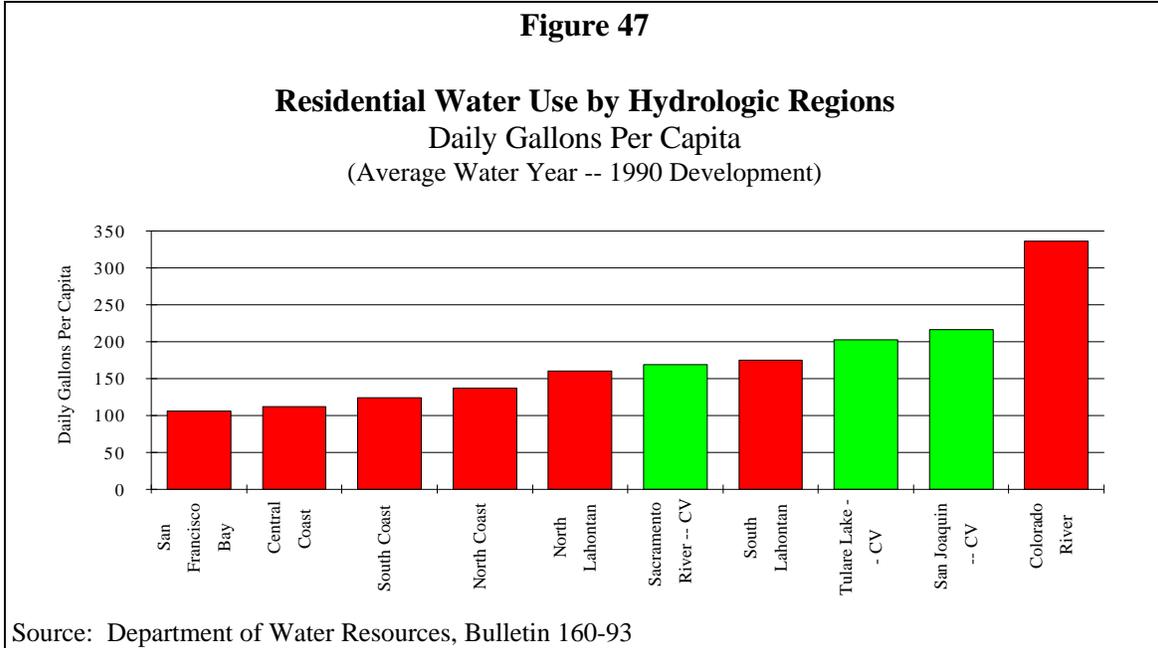


Source: Department of Water Resources, Bulletin 160-93

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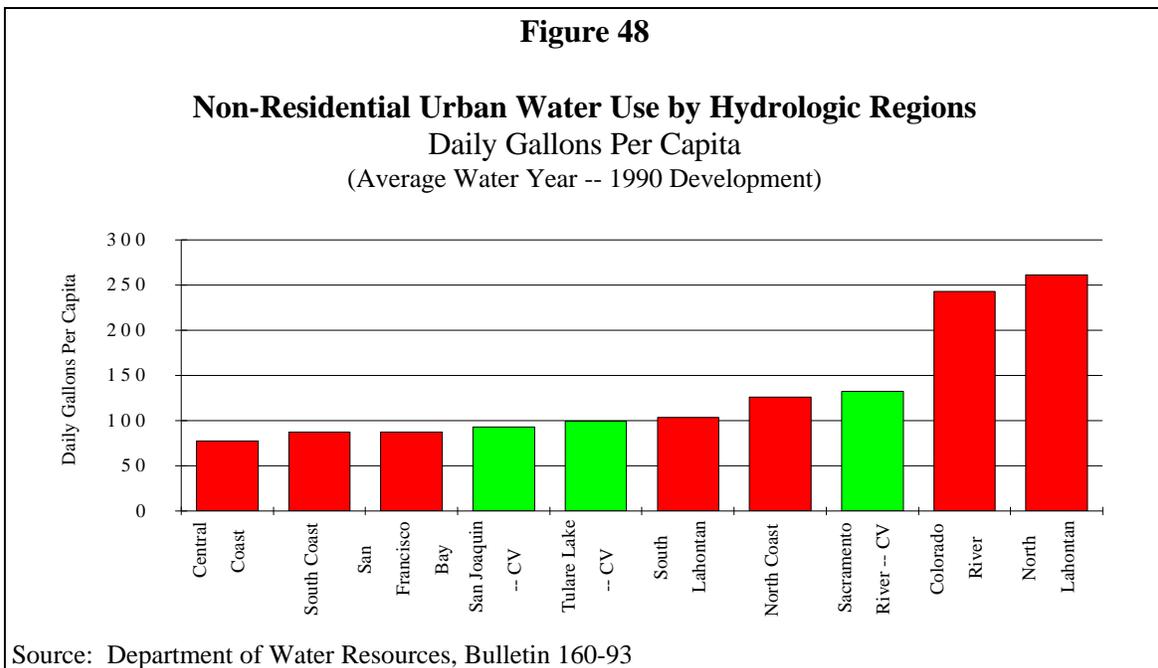
RESIDENTIAL WATER USE

Households in the Central Valley tend to use more water on a per capita basis than all but the southern desert regions of the state.



NON-RESIDENTIAL URBAN USES

Commercial and industrial water use is in line with the rest of the state.

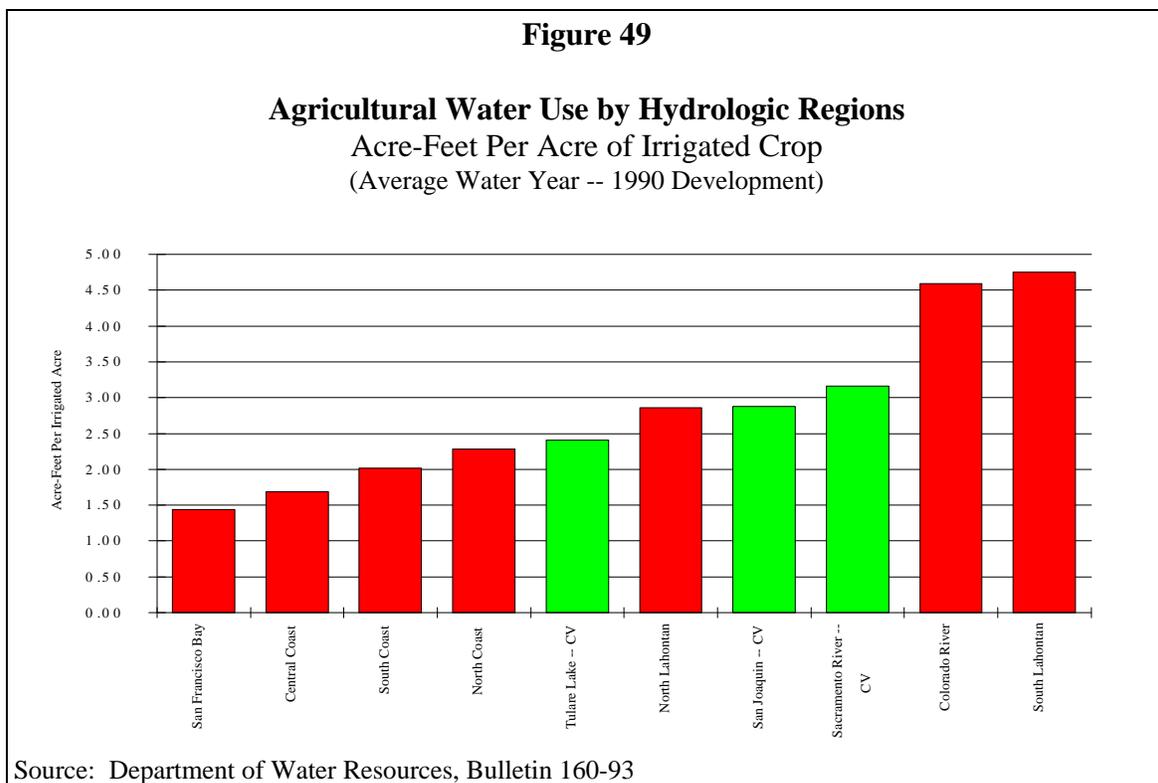


AGRICULTURAL WATER USE

The amount of water used in agriculture depends on many things:

- Weather
- Soil Type
- Crop selection
- Irrigation technology

Nonetheless, using a very broad measure of efficiency, Central Valley farmers use significantly less water per acre of crop than in the Colorado River region (includes Coachella Valley and Imperial Valley) or South Lahontan region (includes Antelope Valley).



Air Quality

The U.S. Environmental Protection Agency (EPA) measures six key air quality components. The four components that are a problem in California are:

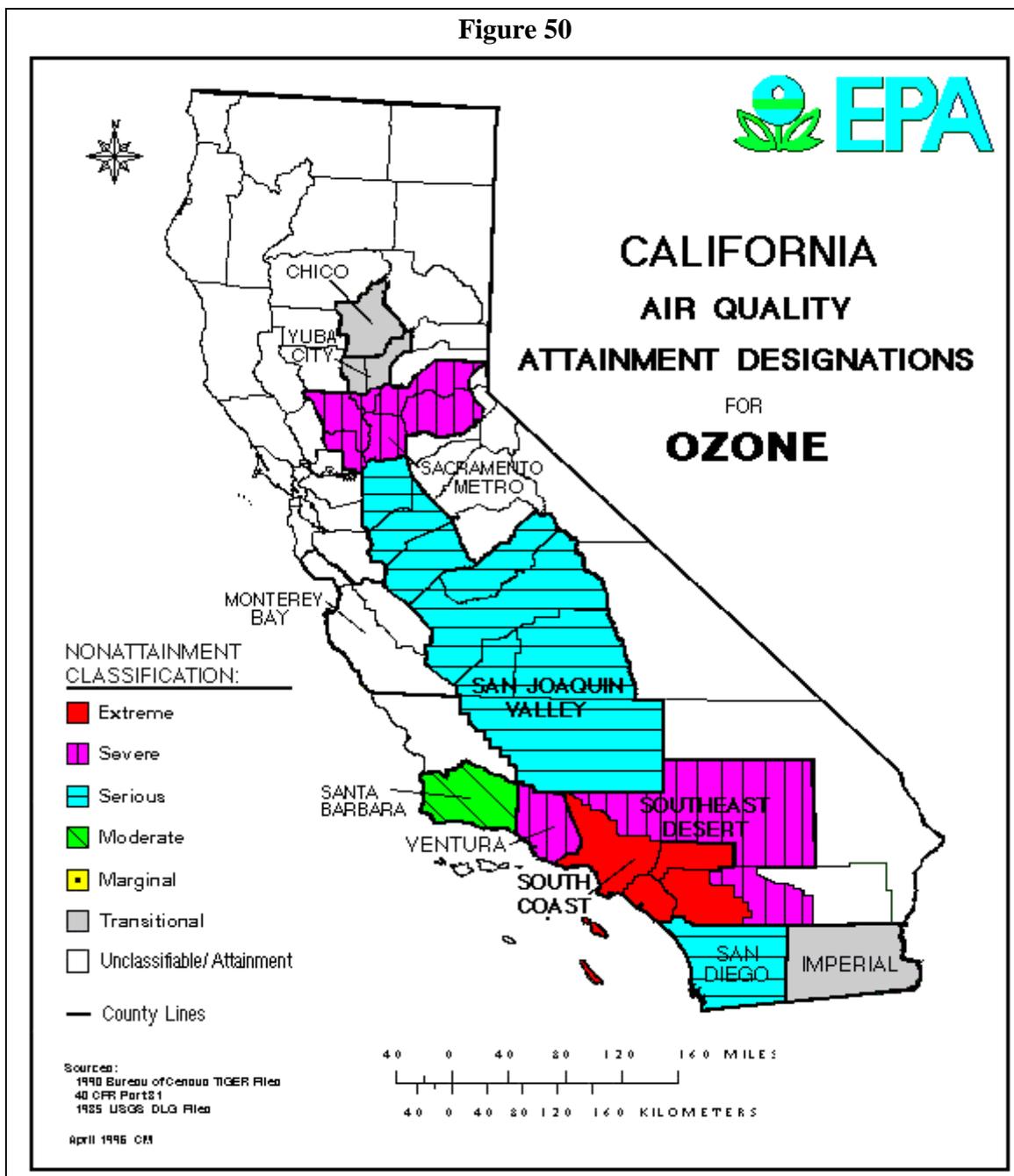
- Ozone (O₃)
- Particulates (PM₁₀)
- Carbon Monoxide (CO)
- Nitrogen Dioxide (NO₂)

Like much of California, the Central Valley has air quality problems. However, the air quality in the Central Valley is improving significantly.

Ground-level ozone (O₃), the major component of smog, is a significant problem in much of California. Ozone is not emitted directly into the air. Rather, it is formed through complex chemical reactions between volatile organic compounds (VOC) and nitrogen oxides (NO_x) in the presence of sunlight. Both VOC and NO_x are emitted by motor vehicles and industrial sources. EPA has designated most of the Central Valley as “nonattainment” areas for ozone. However, ozone concentrations are improving. Between 1986 and 1995, peak ozone concentrations have fallen 13% in the Sacramento Metropolitan Area and 8% in the San Joaquin Valley.⁶

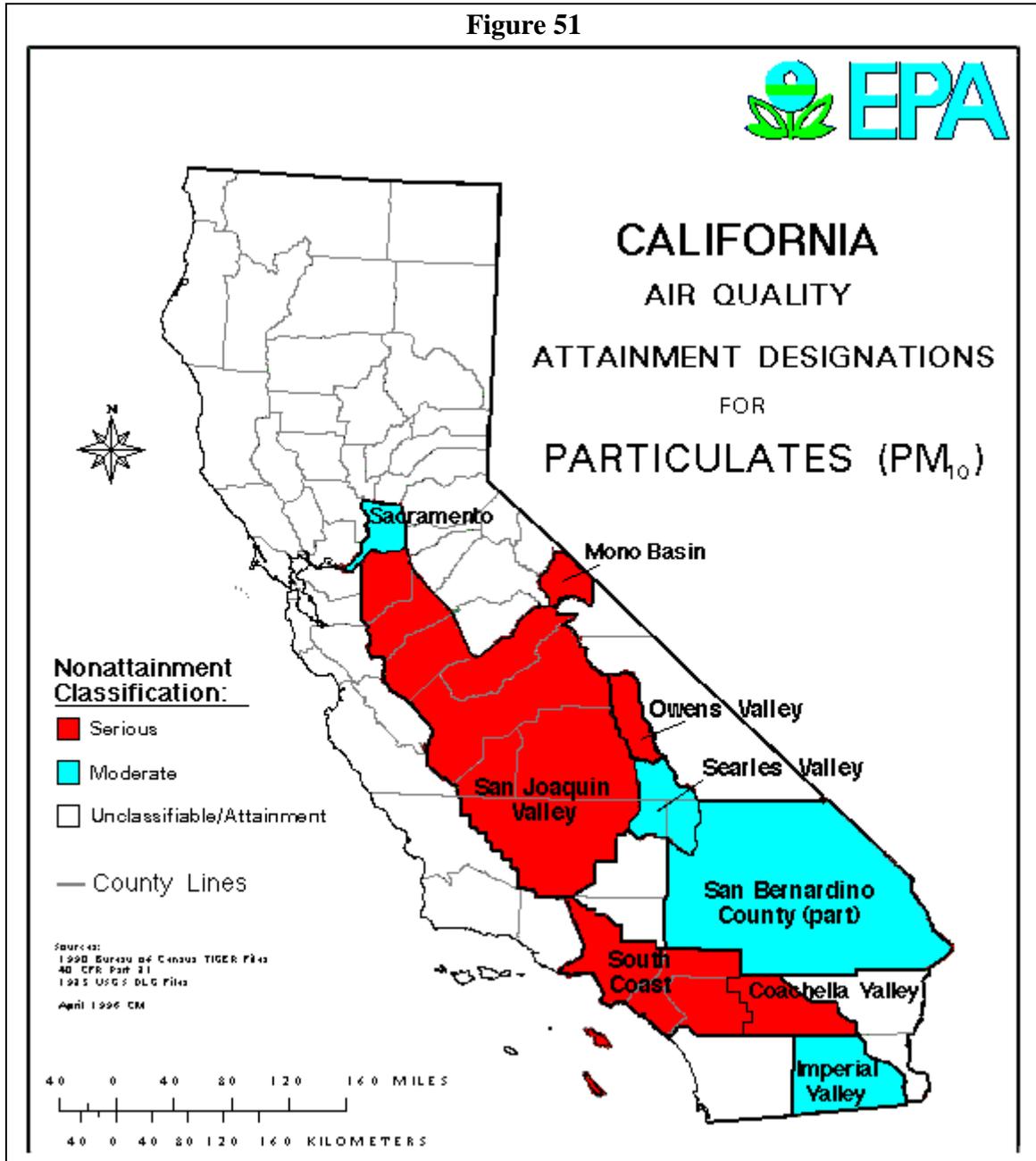
⁶ U.S. EPA, “Breathing Easier: A Report on Air Quality in Region 9,” updated April 21, 1997, posted at <http://www.epa.gov/region09/air/breath96/>.

Figure 50



Particulates are another statewide pollution problem. The particulates that are of particular concern include dust, dirt, soot, smoke, and liquid droplets directly emitted into the air by sources such as factories, power plants, transportation sources, construction activity, fires, and windblown dust. Particulates are also formed in the atmosphere by condensation or transformation of emitted gases such as sulfur dioxide, nitrogen oxides, and volatile organic compounds into tiny droplets. The EPA has designated the San Joaquin Valley and the Sacramento Metropolitan Area as nonattainment areas for particulates. Like ozone, particulate concentrations in the Central Valley are improving.

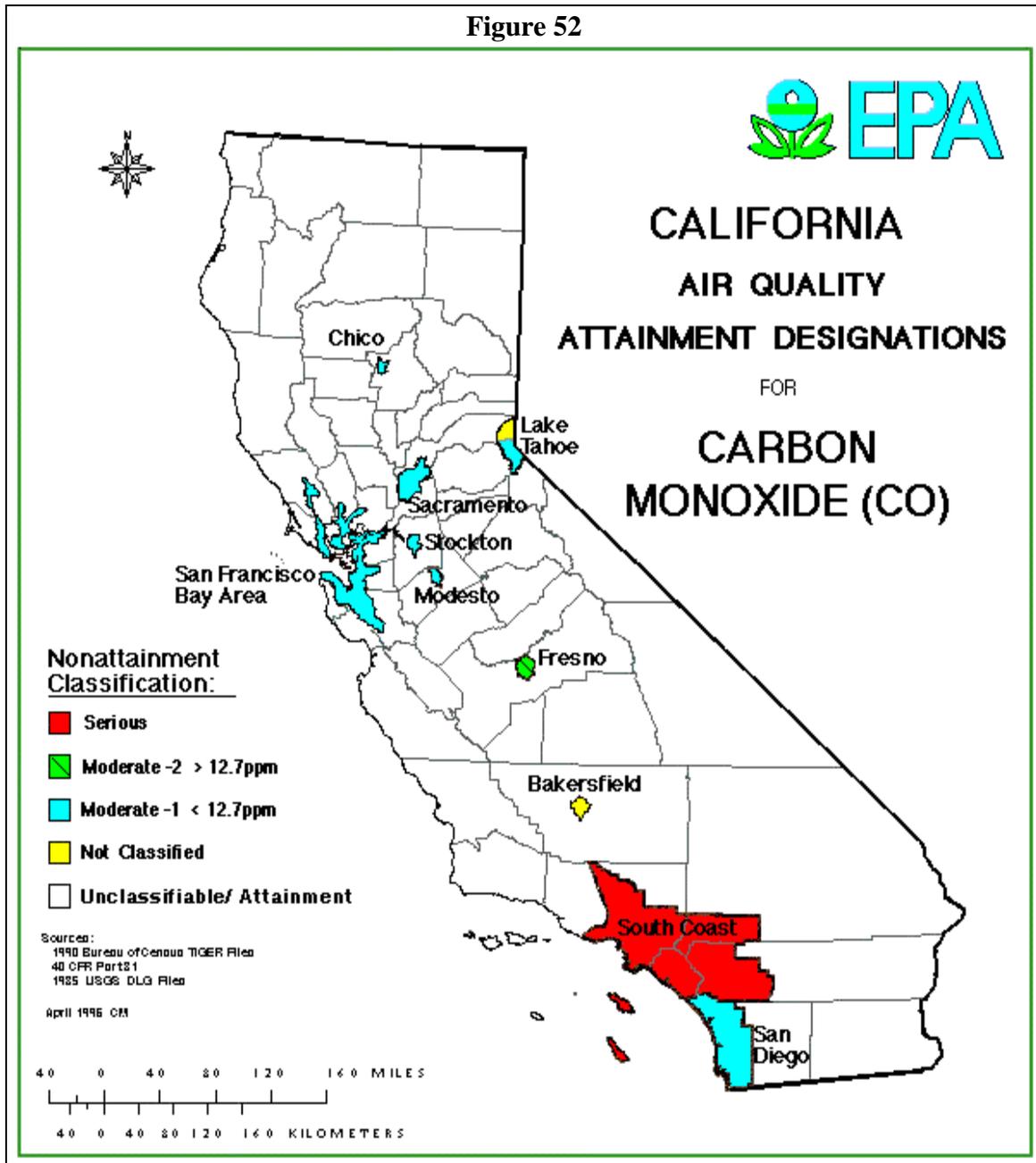
Between 1988 and 1995, annual particulate concentrations have declined 49% in the Sacramento Metropolitan Area and 33% in the San Joaquin Valley.⁷



Carbon monoxide (CO) is a colorless, odorless, and poisonous gas produced by incomplete combustion of carbon in fuels. Two-thirds of the nationwide CO emissions are from transportation sources, with the largest contribution coming from highway motor vehicles. The EPA has designated most of the urbanized areas in the Central Valley as

⁷ U.S. EPA, "Breathing Easier: A Report on Air Quality in Region 9," updated April 21, 1997, posted at <http://www.epa.gov/region09/air/breath96/>.

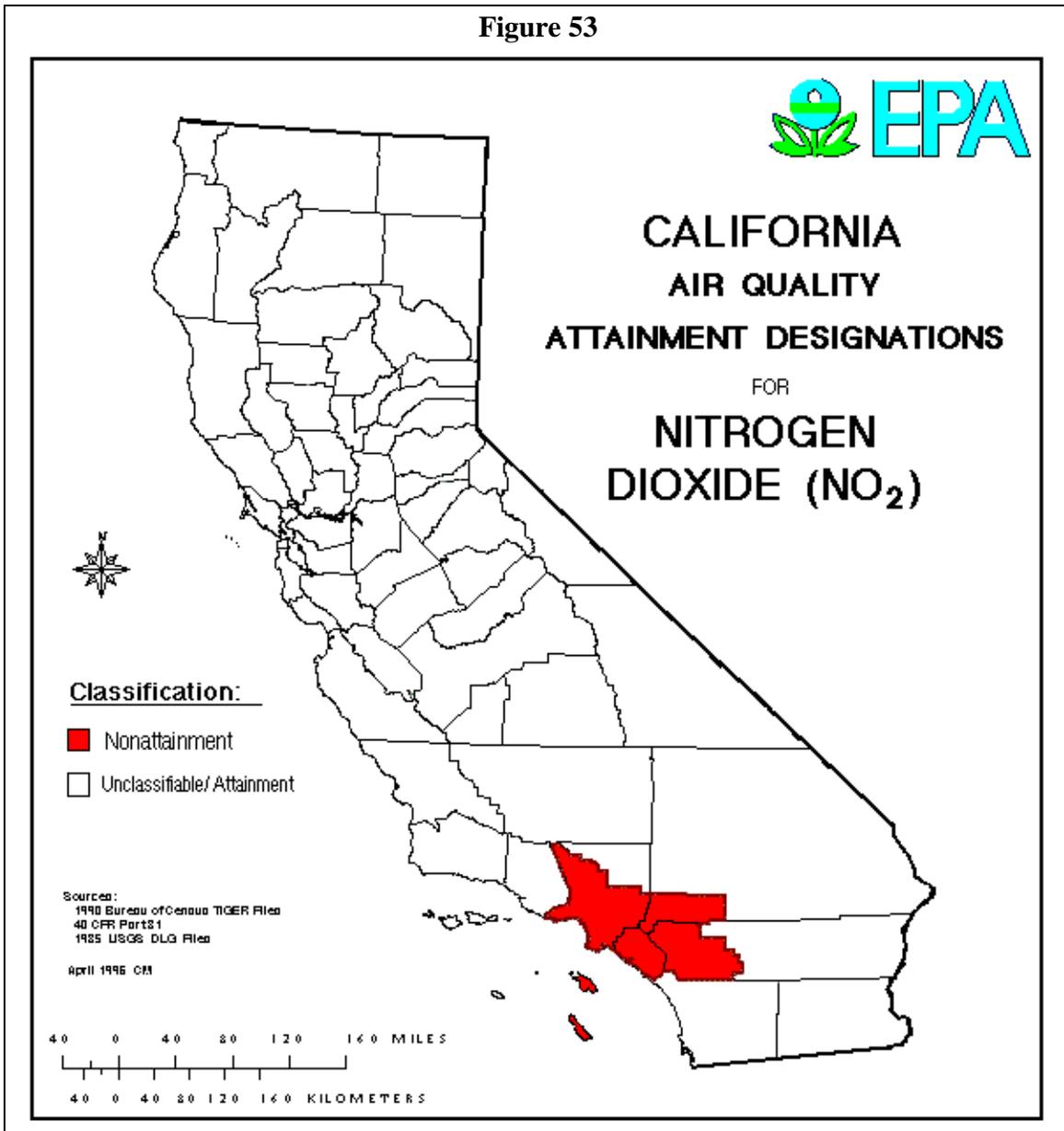
nonattainment areas. Again, CO concentrations in the Central Valley are improving. Between 1986 and 1995, peak CO concentrations have declined 33% in the Sacramento Metropolitan Area.⁸



Nitrogen dioxide (NO₂) is a brownish, highly reactive gas that is present in urban atmospheres. However, EPA has not designated any Central Valley areas as nonattainment areas.

⁸ U.S. EPA, "Breathing Easier: A Report on Air Quality in Region 9," updated April 21, 1997, posted at <http://www.epa.gov/region09/air/breath96/>.

Figure 53

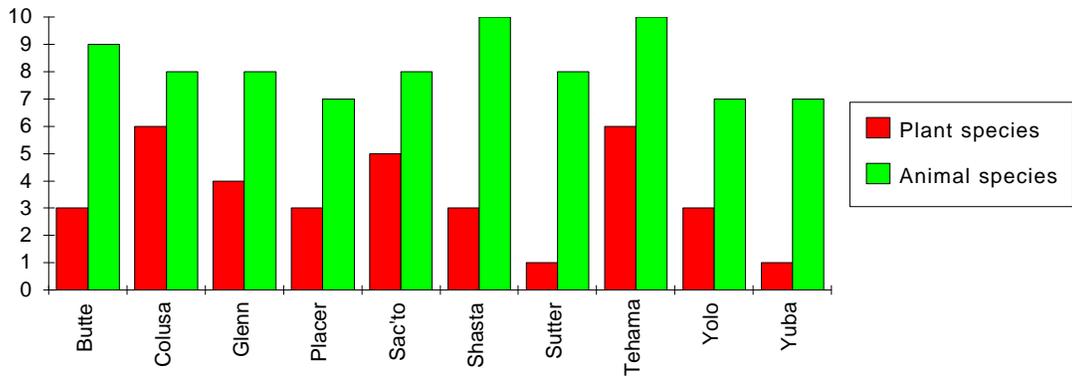


Threatened and Endangered Species

The Central Valley is home to many of the State's threatened and endangered species: 47 animal species and 44 plant species. Some of the species are found throughout the Central Valley -- others are found in only one county. The presence of so many threatened and endangered species reflect the rich diversity of the Central Valley's natural resources.

Figure 54

Number of Listed Species in Sacramento Valley Counties

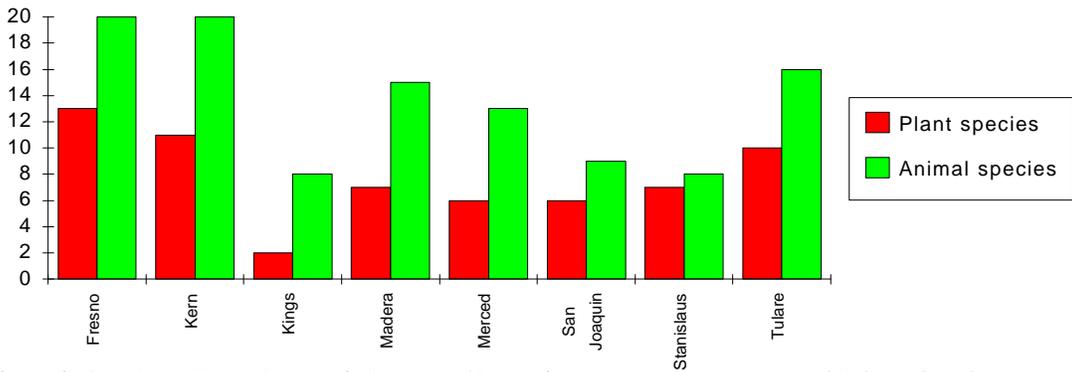


Source: California Natural Heritage Database, CA Department of Fish and Game

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Figure 55

Number of Listed Species in San Joaquin Valley Counties



Source: California Natural Heritage Database, CA Department of Fish and Game

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Table 1
Threatened or Endangered Animal Species In Central Valley Counties

<i>Common Name</i>	<i>Scientific Name</i>	<i>Number of Counties</i>
Aleutian Canada Goose	Branta Canadensis Leucopareia	3
Bald Eagle	Haliaeetus Leucocephalus	7
Bank Swallow	Riparia Riparia	9
Blunt Nosed Leopard Lizard	Gambelia Silus	6
California Bighorn Sheep	Ovis Canadensis Californiana	2
California Black Rail	Laterallus Jamaicensis Coturniculus	1
California Condor	Gymnogyps Californianus	2
California Red-Legged Frog	Rana Aurora Draytonii	5
California Wolverine	Gulo Gulo Luteus	7
Conservancy Fairy Shrimp	Branchinecta Conservatio	3
Desert Tortoise	Xerobates Agassizii	1
Fresno Kangaroo Rat	Dipodomys Nitratoides Exilis	3
Giant Garter Snake	Thamnophis Gigas	10
Giant Kangaroo Rat	Dipodomys Ingens	4
Great Gray Owl	Strix Nebulosa	4
Greater Sandhill Crane	Grus Canadensis Tabida	1
Kern Canyon Slender Salamander	Batrachoseps Simatus	2
Kern Primrose Sphinx Moth	Euproserpinus Euterpe	1
Lahontan Cutthroat Trout	Oncorhynchus Clarki Henshawi	4
Little Kern Golden Trout	Oncorhynchus Mykiss Whitei	1
Longhorn Fairy Shrimp	Branchinecta Longiantenna	1
Mohave Ground Squirrel	Spermophilus Mohavensis	1
Northern Spotted Owl	Strix Occidentalis Caurina	3
Paiute Cutthroat Trout	Oncorhynchus Clarki Seleniris	3
Riparian Brush Rabbit	Sylvilagus Bachmani Riparius	2
Rough Sculpin	Cottus Asperimus	1
Salt Marsh Harvest Mouse	Reithrodontomys Raviventris	1
San Joaquin Antelope Squirrel	Ammospermophilus Nelsoni	4
San Joaquin Kit Fox	Vulpes Macrotis Mutica	8
Shasta Crayfish	Pacifastacus Fortis	1
Shasta Salamander	Hydromantes Shastae	1
Sierra Nevada Red Fox	Vulpes Vulpes Necator	5
Southern Rubber Boa	Charina Bottae Umbratica	1
Swainsons Hawk	Buteo Swainsoni	15
Techachapi Slender Salamander	Batrachoseps Stebbinsi	1
Tipton Kangaroo Rat	Dipodomys Nitratoides Nitratoides	3
Valley Elderberry Longhorn Beetle	Desmocerus Californicus Dimorphus	15
Vernal Pool Fairy Shrimp	Branchinecta Lynchi	10
Vernal Pool Tadpole Shrimp	Lepidurus Packardi	9
Western Snowy Plover	Charadrius Alexandrinus Nivosus	4
Western Yellow Billed Cuckoo	Coccyzus Americanus Occidentalis	12
Willow Flycatcher	Empidonax Traillii	8
Yellow-Blotched Salamander	Ensatina Eschscholtzii Croceator	1

Table 2
Threatened or Endangered Plant Species In Central Valley Counties

<i>Common Name</i>	<i>Scientific Name</i>	<i>Number of Counties</i>
Bakersfield Cactus	Opuntia Basilaris Var Treleasei	1
Bakersfield Smallscale	Atriplex Tularensis	1
Boggs Lake Hedge-Hyssop	Gratiola Heterosepala	6
Butte County Meadowfoam	Limnanthes Floccosa Ssp Californica	1
California Jewelflower	Caulanthus Californicus	4
California Vervain	Verbena Californica	1
Chinese Camp Brodiaea	Brodiaea Pallida	1
Colusa Grass	Neostapfia Colusana	3
Congdon's Lewisia	Lewisia Congdonii	1
Crampton's Tuctoria	Tuctoria Mucronata	1
Delta Button-Celery	Eryngium Racemosum	3
Father Crowley's Lupine	Lupinus Padre-Crowleyi	1
Greene's Tuctoria	Tuctoria Greenei	9
Hairy Orcutt Grass	Orcuttia Pilosa	6
Hartweg's Golden Sunburst	Pseudobahia Bahiifolia	5
Hoover's Eriastrum	Eriastrum Hooveri	2
Indian Valley Brodiaea	Brodiaea Coronaria Ssp Rosea	2
Kaweah Brodiaea	Brodiaea Insignis	1
Kern Mallow	Eremalche Kernensis	1
Large-Flowered Fiddleneck	Amsinckia Grandiflora	1
Layne's Ragwort	Senecio Layneae	1
Mason's Lilaeopsis	Lilaeopsis Masonii	2
Mexican Flannelbush	Fremontodendron Mexicanum	1
Palmate-Bracted Bird's-Beak	Cordylanthus Palmatus	4
Pine Hill Flannelbush	Fremontodendron Decumbens	1
Red Rock Tarplant	Hemizonia Arida	1
Sacramento Orcutt Grass	Orcuttia Viscida	1
San Joaquin Adobe Sunburst	Pseudobahia Peirsonii	3
San Joaquin Valley Orcutt Grass	Orcuttia Inaequalis	5
San Joaquin Woollythreads	Lembertia Congdonii	3
Scadden Flat Checkerbloom	Sidalcea Stipularis	1
Slender Orcutt Grass	Orcuttia Tenuis	3
Soft Bird's-Beak	Cordylanthus Mollis Ssp Mollis	1
Springville Clarkia	Clarkia Springvillensis	1
Stebbins' Morning-Glory	Calystegia Stebbinsii	1
Striped Adobe Lily	Fritillaria Striata	2
Succulent Owl's-Clover	Castilleja Campestris Ssp Succulenta	6
Tompkin's Sedge	Carex Tompkinsii	1
Tracy's Eriastrum	Eriastrum Tracyi (=E. Brandegeae)	2
Tree-Anemone	Carpenteria Californica	1
Truckee Barberry	Mahonia (=Berberis) Sonnei	1
Twisselmann's Buckwheat	Eriogonum Twisselmannii	1
Twisselmann's Nemacladus	Nemacladus Twisselmannii	2
Yosemite Onion	Allium Yosemiteense	1