Memorial Medical Center
A Sutter Health Affiliate
With You. For Life.

Community Health Needs Assessment of Stanislaus County, 2011

Written by

Olivia Tong, MS
Sharon S. Hutchins, PhD., MPH

Stanislaus County Health Services Agency

Public Health
Prevent. Promote. Protect.

Stanislaus County HEALTH SERVICES AGENCY

Memorial Medical Center Community Benefits Report

Table of Contents

Introduction

Under the Patient Protection and Affordable Care Act, nonprofit hospitals are required to conduct a community health needs assessment at least once every three years, publicize the assessment results and adopt an implementation strategy that addresses the identified needs.

For purposes of this report, the community served by Memorial Medical Center is defined as the population of Stanislaus County.

Methodology

Procedure

A series of discussions with key stakeholders (e.g. hospital facilities, health plans, health and human services agencies, non-profit agencies and neighborhood groups) were held to select a priori issues of interest to be included in this report. These included social and economic determinants of health, access to care, births, behavioral and environmental risk factors, disease prevalence, hospitalizations, clinical quality measures and mortality in the County. This list can be found in Appendix A.

In compliance with Internal Revenue Service Code section 501(r)(3), data from multiple sources concerning the health and well-being of Stanislaus County residents were compiled for this report by the Stanislaus Health Services Agency/Public Health (HSA) on behalf of Memorial Medical Center. The most updated data available from each source was used, unless trending was conducted or the sample size was too small for statistical stability. In the latter case, data were aggregated across the minimum number of years needed to create statistical stability. In some cases, if two or more years of data were unavailable or could not be combined for some reason, statistically unstable data were presented and marked as such to alert the reader to be cautious in interpretation.

Once the findings were reviewed, specific priority issues and subpopulations were identified (see **Priority Issues** section in this report) and recommendations for action (see **Recommendations** section) were generated for Memorial Medical Center's Community Benefits Program for 2012-2015.

Data Sources

Primary and secondary data were used to assess the health needs of Stanislaus County.

Primary Data

A telephone survey (in both English and Spanish) was conducted in August 2010 by Applied Survey Research (ASR) for Kaiser Permanente's *Community Benefit Report*, in collaboration with Stanislaus County Health Services Agency/Public Health. Four hundred

randomly selected County residents 18 years or older were asked a series of questions designed to measure their economic well being, general physical and mental health status, health care needs, healthy and unhealthy behaviors and issues of concern in the community. ASR and Kaiser Permanente agreed to allow Memorial Medical Center to access the findings and include them within this report.

Secondary Data

Secondary (or pre-existing) data from various sources were used to characterize the community. These include: *Census 2010* and *American Community Survey* from the US Census Bureau, *California Health Interview Survey* (CHIS) from the University of California, Los Angeles, healthcare statistics from Rand California, *Patient Discharge Data Files* from California Office of Statewide Health Planning and Development (OSPHD), *Birth Statistical Master Files*, *Death Statistical Master Files* and *County Health Status Profiles* from the California Department of Public Health, the national *County Health Rankings* from the University of Wisconsin, the *Healthcare Effectiveness Data and Information Set* (HEDIS) for local Medi-Cal managed care plans from the National Committee for Quality Assurance (NCQA) and *Physical Fitness Test* (PFT) results from the California Department of Education.

Census 2010 and the American Community Survey (ACS)

The US government is mandated by the Constitution to count every resident in the United States every 10 years via a census. Previous decennial census (1940 to 2000) 'long' forms were lengthy, asked 53 questions of each respondent, and collected every 10 years. In 2010, the decennial census was reduced to a single questionnaire with 10 questions given to all US households to be completed for all residents. The response rate for *Census 2010* was 74%. Zip code level data is available for general demographics characteristics and housing characteristics.

Questions previously asked on the long-form decennial census are now asked by the annual *American Community Survey* (ACS). This survey includes questions that are not asked by the census and is administered to a small sample (1%) of residents. Topics include: age, gender, race, family and relationships, income and benefits, health insurance, education, veteran status, disabilities, work location and means of transportation to work, location of residence and percentage of income spent on housing costs. ACS survey data is available at the county level as single year estimates, three-year aggregates or five-year aggregates.

California Health Interview Survey (CHIS)

CHIS is the largest state health survey in the nation. It is conducted by UCLA Center for Health Policy Research, in collaboration with the California Department of Public Health and the Department of Health Care Services. Data from CHIS provide state-wide and county-wide information on the health and healthcare needs of those who live in California.

CHIS is a telephone survey administered every two years to a random and representative sample of households; computers randomly draw telephone numbers from 44 geographic areas which represent 41 individual counties (the most populated). The remaining 17

counties are grouped into three different regions. The survey is conducted in five languages: English, Spanish, Chinese, Korean and Vietnamese. Beginning in 2007, cell phone numbers were included in the random digit dial methodology.

There are limitations to using CHIS data. In 2009, only 534 households (662 individuals and their children) in Stanislaus were surveyed. Prevalence percentages by county were calculated based on California Department of Finance population projections (which are less accurate the longer in time from the decennial census) and may not be truly representative of the health and health care needs of the county. CHIS data is often statistically unreliable due to the small sample size for Stanislaus County, especially for less prevalent conditions (i.e. seizure or epilepsy) and risk factors. County data stratified by race is usually statistically unstable and CHIS strongly recommends against reporting such data. The issue of statistical instability can sometimes be avoided by pooling two years of data together (larger sample size); however there are instances where pooled data are still unstable. Such unstable data was presented in several instances in this report marked as such, and should be interpreted with caution.

Demographics

Demographic data was collected from the US Census Bureau, both *Census 2010* and various years of the *American Community Survey* (ACS). General demographic data (e.g. population by sex, race, ethnicity, age and language) for Stanislaus County was gathered from *Census 2010*. Other data (i.e. socio-economic status, food stamp usage, educational attainment) was compiled from the one-year, three-year, and five-year ACS files as appropriate. Unemployment data was collected from the California Employment Development Department.

Access to Care

Data concerning access to care and healthcare provider numbers were obtained from four sources: the US Census Bureau's *American Community Survey* (ACS), UCLA's *California Health Interview Survey* (CHIS), the University of Wisconsin's national *County Health Rankings* and RAND California.

County Health Rankings, a collaborative project between the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute is used within this report to provide insight into how Stanislaus County ranks in comparison to the rest of the California counties in terms of clinical care. The measure of interest for the purposes of this report is the ratio of the population in Stanislaus County to primary care providers. The *County Health Rankings* is based on a population health model that measures and ranks the influences of factors (health behaviors, clinical care, social and economic, and physical environment) on a county's health outcomes (mortality and morbidity). It is designed to show that where a person lives matters to his or her health.

RAND California is a subscription-based online repository of databases maintained by RAND, a public policy research organization. One of its datasets contains information on all licensed physicians and surgeons in California and Californian counties. RAND data

presented in this report was obtained from *Health in the Heartland: Responding to the Crisis*, 2007, a report published by the Central Valley Health Institute of California State University, Fresno.

Births in Stanislaus County

Births in California are required to be reported via a birth certificate to the Vital Statistics Office of the county in which the birth took place. Birth certificate data that the local vital statistics registrars receive from the hospitals (or directly from parents) are then forwarded to the State for further data cleaning, validation and re-allocation. Mothers who give birth outside their official county of residence need to be re-allocated to their county of residence by the State. The final data files are called the *Birth Statistical Master Files* for a particular year and jurisdiction. County-specific files can then be obtained by each county health department for analysis. However, there is generally a lag of 12 months between the baby's birth and when that data becomes available to county departments for summary and further analysis.

Behavioral and Environmental Risk Factors

The source of data estimating the prevalence of behavioral risk factors in Stanislaus County was UCLA's *California Health Interview Survey* (CHIS; see section above on CHIS).

Information about environmental risk factors was taken from publications of the UCLA Center for Health Policy Research and the American Lung Association's *State of the Air Report* for 2010 and 2011.

Childhood obesity data was obtained from *Physical Fitness Test* (PFT) results, which are available from the California Department of Education website. The *FITNESSGRAM*®, developed by the Cooper Institute, is the assessment tool used to determine school children's aerobic capacity, body composition, abdominal strength, trunk extension strength, upper body strength and flexibility. All public school students in the 5th, 7th and 9th grade are required to take the PFT. Having a percent of body fat outside the Healthy Fitness Zone (HFZ) is used as a proxy for overweight or obese status. HFZs represent minimum levels of fitness that offer protection against chronic diseases that arise from lack of physical activity.

Disease Prevalence

Data estimating the prevalence of diseases in Stanislaus County was drawn from UCLA's *California Health Interview Survey* (CHIS; see section above on CHIS) for various years, depending on the topic area.

Hospitalization

California hospitals are required to report particular data elements concerning inpatient care to the California Office of Statewide Health Planning and Development (OSHPD). Model data sets for Stanislaus County residents (hospitalized anywhere within California between 2000 and 2010) were the basis for the hospitalization data presented in this report. These patient discharge data files were imported and aggregated by HSA, after

which the principal diagnosis, charges, length of stay and certain demographic variables were analyzed.

Privacy protections put into place by OSHPD complicate the calculation of the number of unique residents hospitalized. Due to the difficulty of determining a unique count and the fact that the same person can be hospitalized for different reasons (e.g. childbirth, car accident, cancer surgery), the analyses presented here are based on total patient discharges, not on counts of unique patients.

It should also be noted that variables were analyzed for this report exactly as they were found in the OSHPD *Patient Discharge Data File*. To the extent that different procedures are used by different hospitals to classify or report variables, error may be introduced. The variables for race and ethnicity are particularly likely to have measurement error, based in part on differences in how these are obtained and then classified at each facility.

Typically, hospitalization rates are age-adjusted to make fair comparisons across jurisdictions with different age distributions. Age-adjustment is performed when different groups that one wishes to compare have different age structures that make comparing hospitalization rates across groups difficult. People at different ages tend to be hospitalized for very different causes.

To present a comprehensive view of major causes of hospitalization, the Major Diagnostic Category variable was used. To examine the burden of hospitalization due to specific diseases or conditions of concern (given other information sources), specific International Classification of Diseases Ninth Revision (ICD-9) codes were searched using the primary diagnosis variable. ICD-9 codes corresponding to a list of 15 disease/conditions, selected by a diverse group of stakeholders, were searched (see Appendix A). To make clear that these categories of disease/conditions are precisely defined by ICD-9 codes, these category names are capitalized throughout this section of the report.

To examine the total burden of hospitalizations among different demographic groups, average annual age-adjusted cause-specific rates were examined for the period 2008-2010, using the 2008-2010 *American Community Survey* population estimates, except for analyses involving race. Because subdividing hospitalizations by race resulted in very small numbers, at least for certain diseases, data from a five-year period, 2006-2010 were used to examine racial differences in hospitalizations. Finally, to examine time trends, crude jurisdiction-wide rates were calculated and graphed for 2000, 2005 and 2010.

Clinical Care Measures

PQI: Prevention Quality Indicators (PQIs), one out of four types of Quality Indicators (QI), are hospitalization rate measures developed by the federal Agency for Healthcare Research and Quality (AHRQ) for ambulatory care-sensitive conditions (ACSCs). ACSCs are conditions for which early intervention and good outpatient care outside a hospital setting

could have prevented hospitalizations. These PQIs can be used to assess the accessibility, effectiveness and quality of primary care. Some chronic health conditions (i.e. short-term complications of diabetes, long-term complications of diabetes, congestive heart failure, hypertension, adult asthma, chronic obstructive pulmonary disease and uncontrolled diabetes) are deemed ambulatory care-sensitive conditions. Statewide and countywide data are available from the Office of Statewide Health Planning and Development website.

HEDIS: The *Healthcare Effectiveness Data and Information Set* (HEDIS) is a set of performance measures developed by the National Committee for Quality Assurance (NCQA) as a tool to measure health plans' performance on various dimensions of care and service. The *HEDIS 2010 Aggregate Report for the Medi-Cal Managed Care Program in California* is publically available from the California Department of Health Care Services website. The data in that report for the two Medi-Cal managed care plans in Stanislaus County served as the data for this section.

HEDIS measures quantify effectiveness and quality of care in terms of: adolescent well-care visits, screening for breast and cervical cancer, weight assessment and counseling for nutrition and physical activity for children and adolescents, timeliness of prenatal and postpartum care, care provided to members with chronic diseases such as diabetes, use of imaging studies for low back pain, appropriate treatment for other conditions such as upper respiratory infection (URI) in children and acute bronchitis in adults.

For each performance measure, Minimum Performance Levels (MPLs) and High Performance Levels (HPLs) are established. MPLs are based on the national Medicaid 25th percentile. HPLs are based on national Medicaid 90th percentile.

CHIS Measures: CHIS asks about clinical management of particular chronic conditions and diseases, including diabetes, high blood pressure, heart disease, and asthma. See the CHIS section above for more details.

Mortality in Stanislaus County

Deaths occurring in California are required to be reported to the Vital Statistics Office of the county in which the death occurred by the coroner, the funeral home or the doctor who signed the death certificate The signer of the death certificate must list the underlying cause of death (and may also list other contributing causes). All deaths (along with the information on the death certificate) are then reported by the county registrar to the California Department of Public Health (CDPH). CDPH has agreements with the other forty-nine states so that deaths of California residents occurring in other states are reported to California for review. CDPH then reallocates deaths to the county (or state) of residence of the decedent and creates the *Death Statistical Master Files* for California and for each jurisdiction.

In California, deaths that are from suspicious or violent circumstances must be investigated by the coroner for the jurisdiction in which the death took place. The coroner must then declare the manner of death. Manner of death (also called mode of death) is the

classification of the broad agents of death. There are seven options on the death certificate itself: accident, homicide, suicide, natural death, undetermined, pending investigation or field left blank. For the purposes of this report, blank fields (which are presumed to indicate a natural death not investigated by the coroner) were classified as natural deaths, and deaths pending investigation or undetermined were combined into a single category. Finally, homicide and suicide were grouped together as "intentional injury" and accidents were classified as "unintentional injury." This procedure created four major manners of death: natural (from natural disease processes such as an infection or chronic condition), intentional (caused purposely by a human agent), unintentional (caused by an external force or agent without purpose or malice), and undetermined (not enough information to classify the manner).

Cause of death is the actual mechanism that caused death. The underlying cause of death listed on each death certificates is reviewed and then coded by experts at CDPH using the International Classification of Diseases, Tenth Revision (ICD-10) system from the World Health Organization. The data file extracted by CDPH from death certificates is called the *Death Statistical Master File* for a particular year. The 2005 to 2009 versions of the *Death Statistical Master File* containing only deaths of Stanislaus County residents served as the main source of information for the Mortality section of the report. To ensure consistent grouping of causes of death, the National Center for Health Statistics' lists of 50 rankable causes of death for adults (Heron & Tejada-Vera, 2009) were used to group causes of death in this report.

For statistical and privacy reasons, some numbers in this report are suppressed. To protect the identity of specific decedents, when any analysis produced a subgroup with a frequency of death equal to or less than 10, that value was reported as "≤10" rather than the actual frequency. Correspondingly, total values for the larger category in which this group was a member are then reported as a range e.g. "<50" or "100-150" rather than the actual frequency, again to protect the identity of specific decedents. To better reveal relationships among factors, the deaths are cross-tabbed by several demographic variables. Caution in interpreting the significance of apparent differences is urged, particularly for small groups, as these may well be unstable.

In this report, years of potential life lost (YPLLs) are presented to examine the impact of the age at death associated with particular causes. It is common within the field of public health to calculate how many years of potential life (YPLLs) are lost to particular causes of disease to determine which conditions or events cause death early in life versus those that cause death later in life. The standard method is to subtract the average age at death for those who died of a particular cause from a standard age (typically 65 or 75) to determine the years of potential life lost. In this report, the standard age used was 75. Following standard procedure, if the individual died after age 75, a value of 0 was used. These values were then averaged across individuals for each major cause of death. There is generally a correlation between YPLL and average age at death, such that the larger the YPLL, the earlier people typically die from the cause.

To examine the trends in mortality, this report presents mortality rates (overall and for four specific causes) for Stanislaus County for two periods a decade apart. The California Department of Public Health's *County Status Profiles* (reports from 2000-2011), in which mortality rates for each county and the State are presented for three-year periods, served as the data source for these trends. To put the local trends into perspective, Stanislaus County is compared to California for the same time period. Also presented are the national 10-year targets set in the federal government's Healthy People initiative (US Department of Health and Human Services). The Healthy People targets are benchmarks used to assess the health status of a state and its local jurisdictions. Healthy People 2010 (HP 2010) goals and objectives represent a comprehensive and systematic health promotion and disease prevention agenda that provides health improvement objectives in Focus Areas to be achieved by the year 2010.

The trend sub-section of this report follows the field's standard practice to present mortality rates as the number of deaths due to a particular cause per 100,000 residents. To ensure statistical stability, three-year aggregated and age-adjusted rates are presented, using the 2000 US population as the standard population. Age-adjustment is performed when different groups that one wishes to compare have different age structures because people at different ages tend to die from very different causes (e.g. people who die young are more likely to die from unintentional injuries compared to older individuals who are more likely to die from chronic diseases). Thus, mortality rates are typically age-adjusted to make fair comparisons across jurisdictions with different age distributions.

Limitations and Report Conventions

In addition to data source-specific limitations detailed above, certain practices and conventions were used for this report. For all data sources, race and ethnicity were treated as separate categories, following the current practice of the US Census Bureau and other major data sources. Two ethnic groups were included in this report: Latinos and Non-Latinos. For race, three or four groups were compared across data sources: White, Black Asian and Other Race. Due to smaller numbers, data from Asians, Native Hawaiians and other Pacific Islanders were combined into a larger Asian category. Again, due to small numbers leading to statistical instability, data for Native Americans and Alaskan Natives are included in the "Other Race" category or not reported (depending on statistical significance). Due to wide confidence intervals, data trends observed in CHIS are often not statistically significant and are marked as such.

Findings

County Demographics

Location and Population Size

Stanislaus County is located in the San Joaquin Valley (the heart of California's Central Valley), approximately 90 miles from both Sacramento and San Francisco and nearly 115 miles from Yosemite National Park. Over 1,500 square miles in size, Stanislaus County includes rural agricultural areas, small and medium-sized towns, and the county seat of Modesto. Stanislaus County is included in the Modesto Metropolitan Statistical Area, one of the nation's 100 largest metropolitan areas. Stanislaus County has a population of 514,453 residents (*Census 2010*).

Gender and Age:

In Stanislaus, the percentages of men (49.5%) and women (50.5%) are about the same (*Census 2010*). The average age in Stanislaus has increased from 29.2 years in 1980 to 32.8 years of age in 2010 (US Census Bureau). Stanislaus County residents are younger, overall, than California residents, where the median age is 35.2.

Race and Ethnicity:

The population of Stanislaus is predominantly White (65.6%), while five percent of the residents are Asians (*Census 2010*). African Americans numbered 3,035 in 1980 and increased to 14,721 (or 2.9%) in 2010 (US Census Bureau). Stanislaus County has also become more ethnically diverse: the proportion of Latinos grew from 15% in 1980 to 41.9% in 2010. Stanislaus has a higher percentage of Latinos than the State, of which 37.6% of the population is Latino (*Census 2010*).

Origins and Language:

Twenty-one percent of the county's population is foreign-born (2010 ACS). Stanislaus county residents are also linguistically diverse; 41.3% of residents speak a language other than English at home. Of those who speak another language at home, 31.6% speak Spanish or Spanish Creole, 4.5% speak other Indo-European languages and 2.8% speak Asian or Pacific Island languages.

Socio-Economic Status:

Stanislaus County, like other semi-rural Central Valley counties, has greater socio-economic challenges than California as a whole, including lower income, higher poverty, greater use of public assistance programs and greater unemployment.

The median household income in the County in 2010 was $48,044, a decrease from $50,375 in 2005-2007 (2010 and 2005-2007 ACS). In California, the median household income was $57,708 in 2010, compared to $58,361 in 2005-2007. The decrease in median household income experienced by the County was much steeper (-$2,331) than the state (-$653) during this difficult economic period. The 2010 per capita income was 24% lower in Stanislaus County ($20,719) than California ($27,353). In California, the percentage of

residents who participated in the SNAP (food stamp) program rose from 4.3% in 2006 (2006 ACS) to 7.4% in 2010 (2010 ACS). During this same period of time, participation in Stanislaus County rose from 7.1% to 12.0%.

In 2010, 15.8% of California individuals lived below the Federal Poverty Level (FPL) compared to 19.9% of Stanislaus individuals (2010 ACS). There was a similar difference in poverty among families, with 11.8% of State and 17.2% of County families living under the FPL. Poverty is especially frequent among single female householders, and in Stanislaus this is even more evident than in California generally: 38.5% for the County versus 26.3% for California.

Individuals living in poverty vary by age, race and ethnicity. In Stanislaus, the highest percentage of individuals living in poverty is in the <18 age group; in terms of race, the highest percentage of individuals in poverty are Black (52%; 2010 ACS). As shown in Table 1, 27% of Stanislaus Latinos live in poverty.

Table 1: Percentage of Stanislaus Residents Living in Poverty by Age, Race and Gender

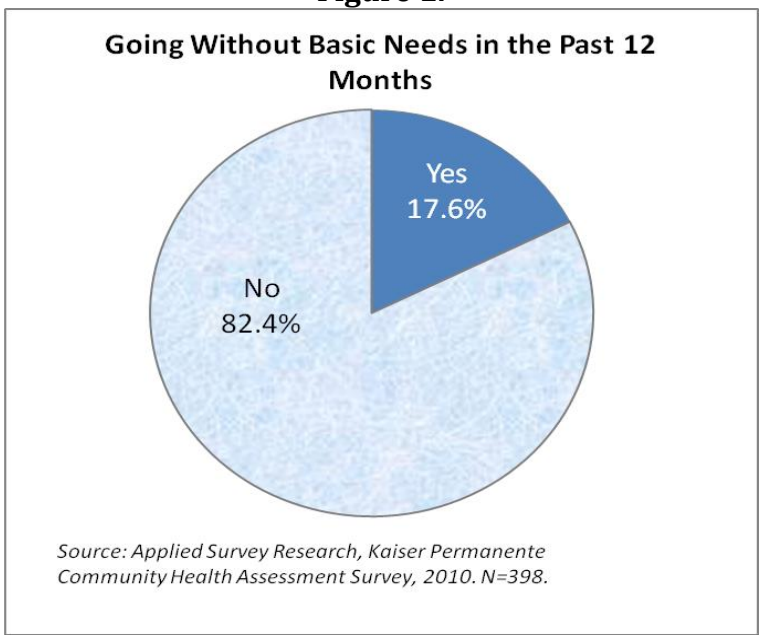
Age	**# in Poverty**	**Total Population**	**% in Poverty**
< 18	42,142	144,750	29.1%
18 to 64	54,261	311,689	17.40
≥ 65	4,932	52,822	9.3%
Total	101,335	509,261*	19.9%
Race (One Race)			
White	74,988	398,003	18.8%
Black	6,975	13,403	52.0%
Asian/ Native Hawaiian/Other Pacific Islander	2,823	24,551	11.5%
American Indian/Alaskan Native	NA	NA	NA
Total	NA	435,957	NA
Ethnicity			
Latino	58,715	214,332	27.4%
Non-Latino	28,926	237,238	12.2%

*Population for whom poverty status is determined
**Note this number is different from that found by the *2010 Census* (514,453).
Data Source: US Census Bureau, *American Community Survey*, 2010.

Foregoing Basic Needs

The telephone survey conducted by ASR in 2010 asked residents if they had had to go without basic needs such food, childcare, healthcare or clothing in the past year; 17.6% answered yes. Of those who had to go without basic needs, 52.2% went without food and 49.3% went without health care (see Figure 1).

Figure 1.



Unemployment

The national recession and deteriorating labor market has had a profound negative impact on Stanislaus. As of December 2011, the County's unemployment rate was 16.1% (California Economic Development Department), compared to 8.5% in 2005 (pre-recession). The median home sale price in Stanislaus decreased from $339,000 in 2007 to $130,000 in 2011 (RealtyTrac, 2011). Stanislaus is also ranked as one of the nation's leaders in foreclosures.

Educational Attainment:

Research has long shown that education is related to health; those with a higher degree of education are generally healthier, are less likely to self-report a past chronic disease diagnosis, and are more likely to survive into old age than those with less education (Cuter & Lleras-Muney, 2007). Stanislaus County's pattern of educational attainment shows a population at risk for poor overall health. In Stanislaus, only 16% of the population 25 years and older have a bachelor's or graduate degree, compared to 30.1% in California (2010 ACS). Almost 60% of Stanislaus residents (compared to 51% Californians) have only a high school diploma, some college credits or an Associate's degree.

Much research has also shown that lower educational attainment is a risk factor for poverty. In 2010, amongst the Stanislaus residents who are 25 years of age or older and live below the poverty level, 24.5% did not graduate from high school, 18.5% were high school graduates, and 10.3% had some college credits (ACS). Only 2.8% of those living in poverty held a Bachelor's degree (compared to 16% of the general population).

Disability:
Almost one in five Americans report having some level of disability according to data from 2005 US Census Bureau's *Survey of Income and Program Participation*; 54 million Americans reported having a disability and 12% of them reported having a severe disability (Brault, 2008). Some experience employment limitations (difficulties in finding a job or remaining employed) due to health-related conditions. Amongst Stanislaus residents 18 to 64 years of age, 10.6% had a disability; 4.2% had a cognitive difficulty and 5.4% had an ambulatory difficulty in 2005 (2010 ACS).

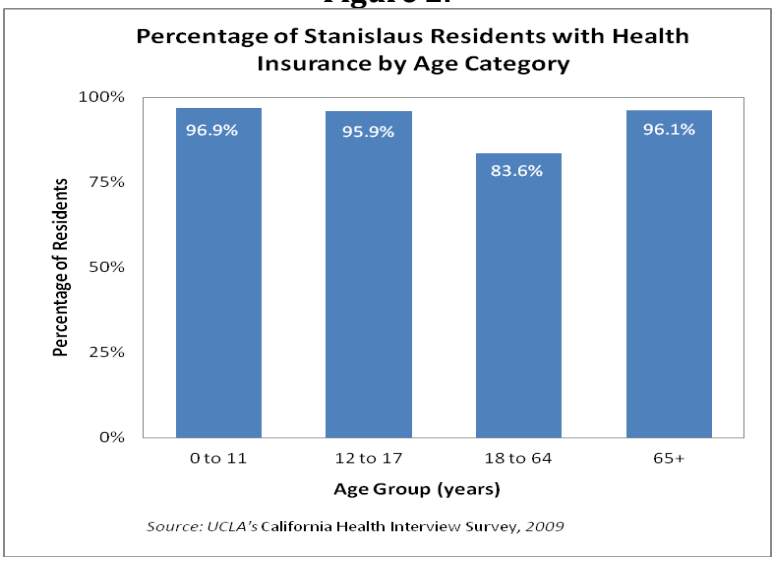
Access to Care

Access to preventive care and treatment is vital to a person's health. A lack of health insurance coverage, having inadequate health insurance and a shortage of medical professionals are frequent barriers to accessing medical care.

Health Insurance Coverage
In 2009, 88.9% of Stanislaus County residents had some type of health insurance coverage, compared with 88.5% for California residents (CHIS). Nationwide, health care coverage varies by age. As shown in Figure 2 below, young children, seniors and adolescents have much higher rates of health insurance coverage than working age adults in the County. This finding reflects the fact that special public insurance programs (e.g. sCHIP, Healthy Families and Medicare) are available for children and seniors, while fewer working age adults are eligible for public programs and thus more rely on employer-provided coverage.

In 2010, 79.1% of employed adults had health insurance in California, similar to the 80.3% figure for Stanislaus County (ACS). However, only 48.7% of unemployed adults in Stanislaus had health insurance coverage, compared to 53.4% in California (2010 ACS).

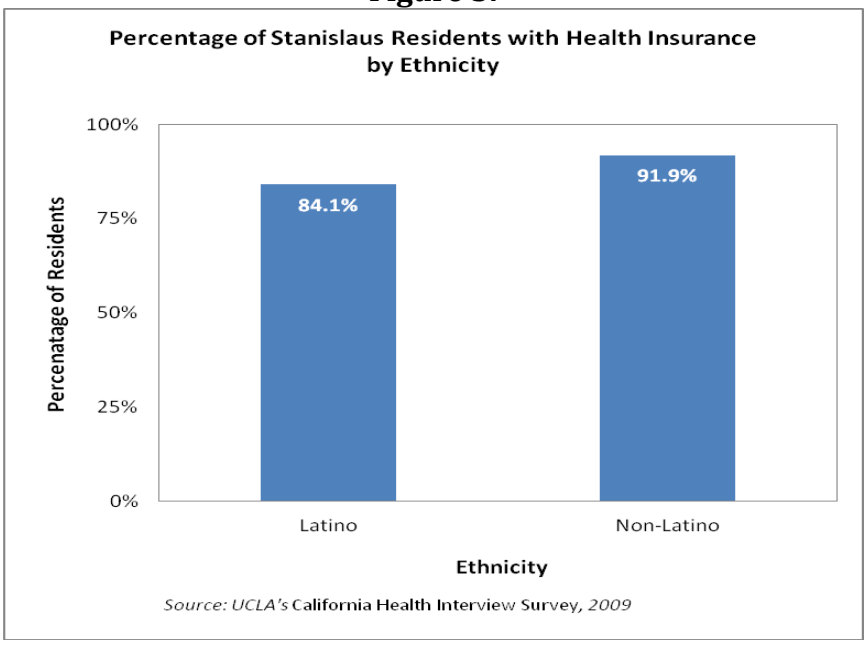
Figure 2.



Lack of insurance coverage is one of the measures used by the University of Wisconsin in the *County Health Rankings* to monitor health care access. Data reported in the 2011 *County Health Rankings* (which originated from the US Census Bureau's *Small Area Health Insurance Estimates*) indicated that in 2007, 20% of working-aged Stanislaus residents ages 18-64 (compared to 24% in California) did not have health insurance.

Health insurance coverage rates and types of insurance in Stanislaus County also vary by ethnicity. While 91.9% of Non-Latinos had insurance coverage in 2009, only 84.1% of Latinos did, a statistically significant difference (2009 CHIS; see Figure 3).

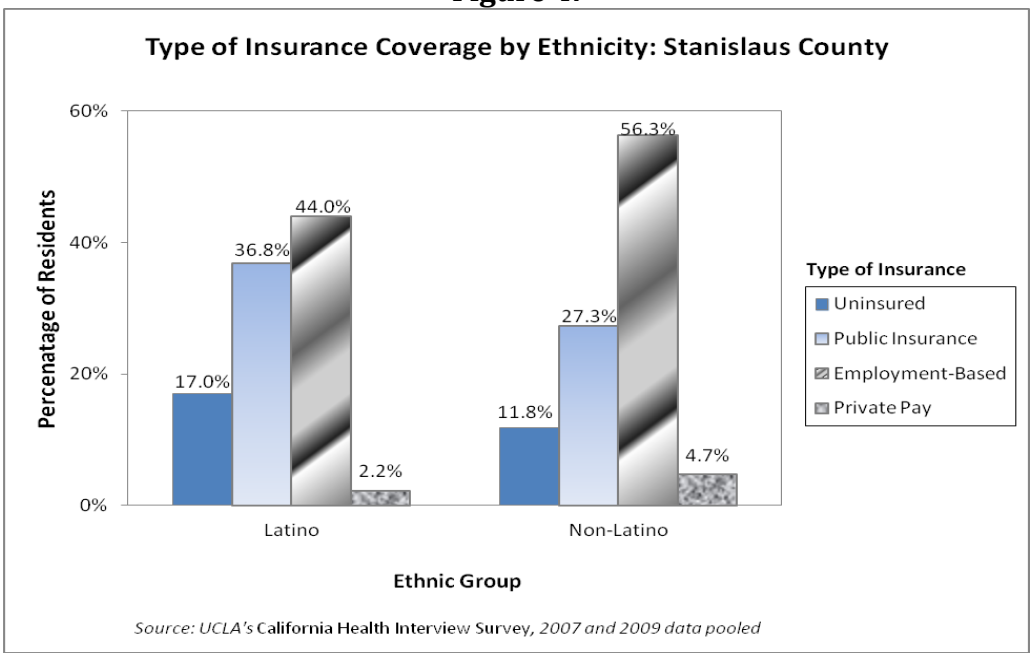
Figure 3.



Health insurance coverage rates seem to differ in the County by race, with Whites having the highest rates of coverage, although the CHIS sample sizes for 2007 and 2009 were too small to make statistically reliable comparisons.

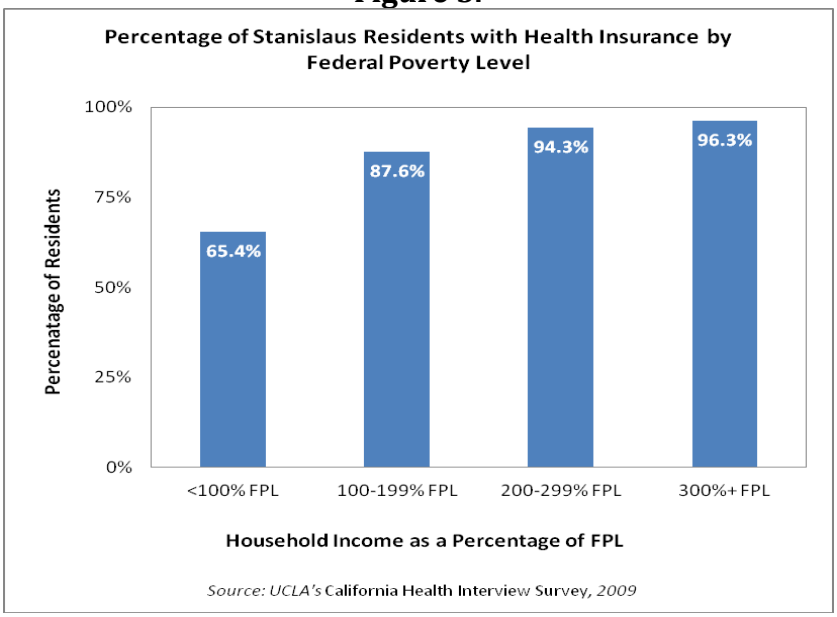
Finally, the type of health insurance coverage differs by ethnicity. As shown in Figure 4, in 2007-2009, a statistically significantly higher percentage of Non-Latinos have employer-based coverage or self-pay insurance, while a marginally significantly higher percentage of Latinos have public insurance coverage (CHIS).

Figure 4.



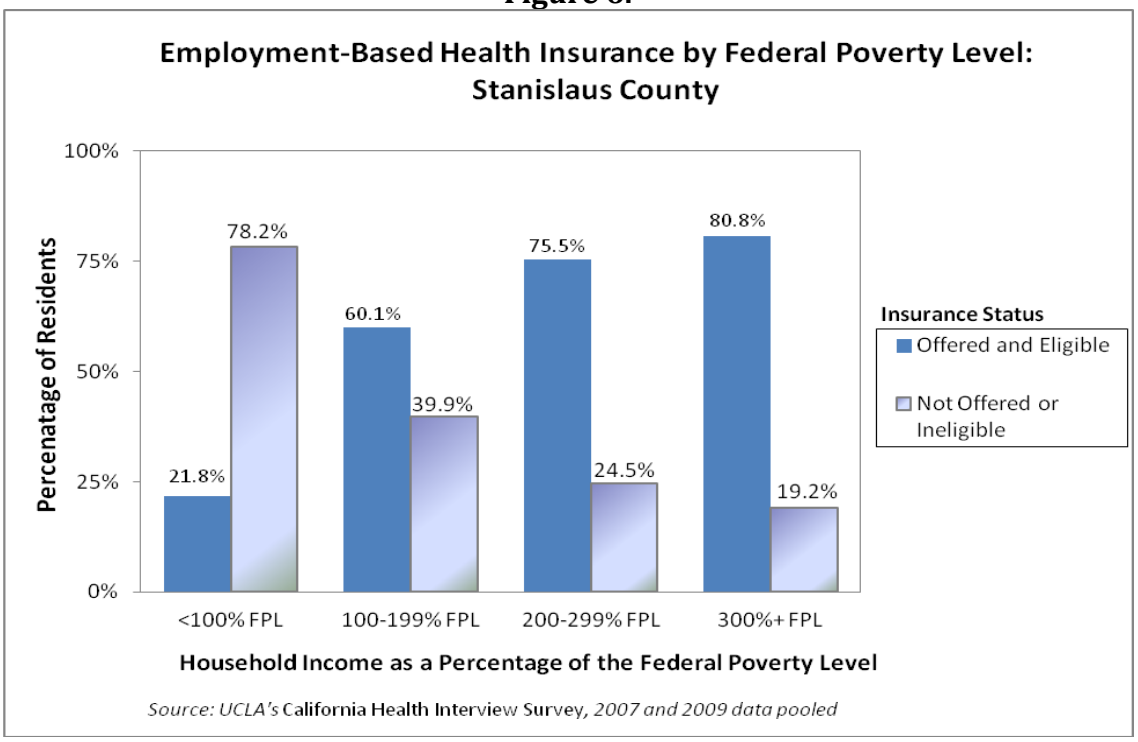
Despite the existence of public health insurance programs designed to cover those with lower incomes, Stanislaus County residents living below the Federal Poverty Level (FPL) have the smallest proportion with health insurance coverage (2009 CHIS; see Figure 5). In fact, insurance coverage increases with FPL status. This finding appears to reflect the magnitude of reliance on employer-provided insurance versus public programs in Stanislaus County (and likely the US as a whole) as well as fact that lower-wage jobs are less likely to come with health insurance coverage (see also Figure 6).

Figure 5.



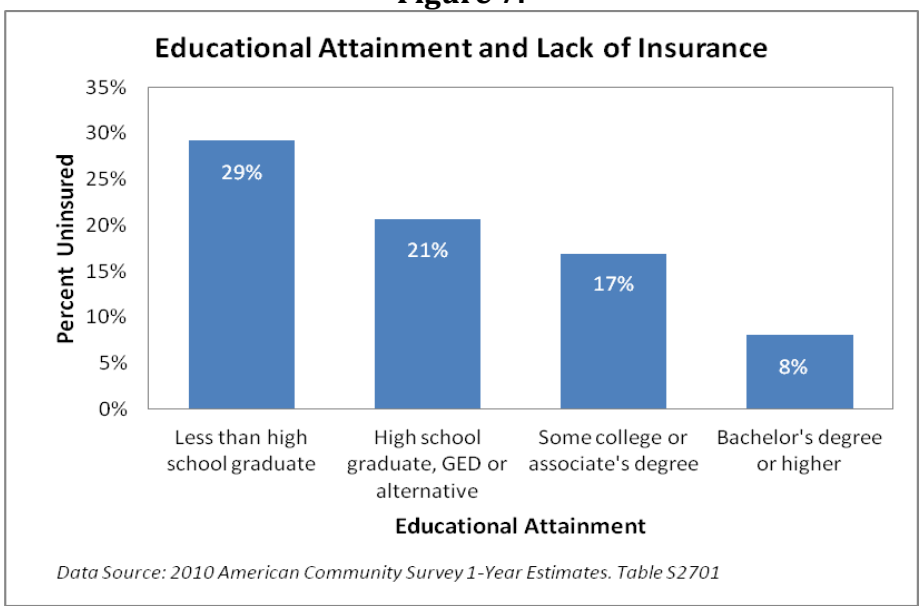
As illustrated in Figure 6, employers offering lower wages are generally less likely to offer health insurance coverage to their employees. These same employees are also unlikely to qualify for public programs due to their employment, a situation which leaves many lower income working adults without an affordable source of health insurance.

Figure 6.



As discussed in the previous subsection (*County Demographics*), low educational attainment is a risk factor for poverty. It is likely that this relationship is mediated by employment opportunities. Those with lower education are more likely to have a lower paying job (which is also less likely to provide health insurance coverage) or to be unemployed. This relationship helps explain the correlation (see Figure 7 on the next page) between educational attainment and health insurance coverage: the more education a person has, the less likely they are to lack health insurance coverage.

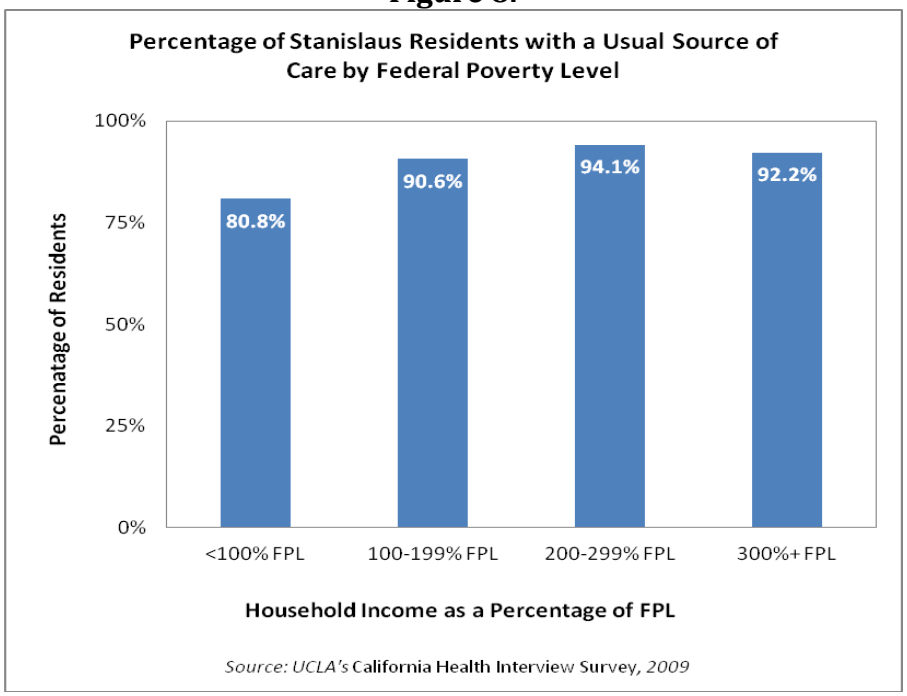
Figure 7.



Usual Source of Care

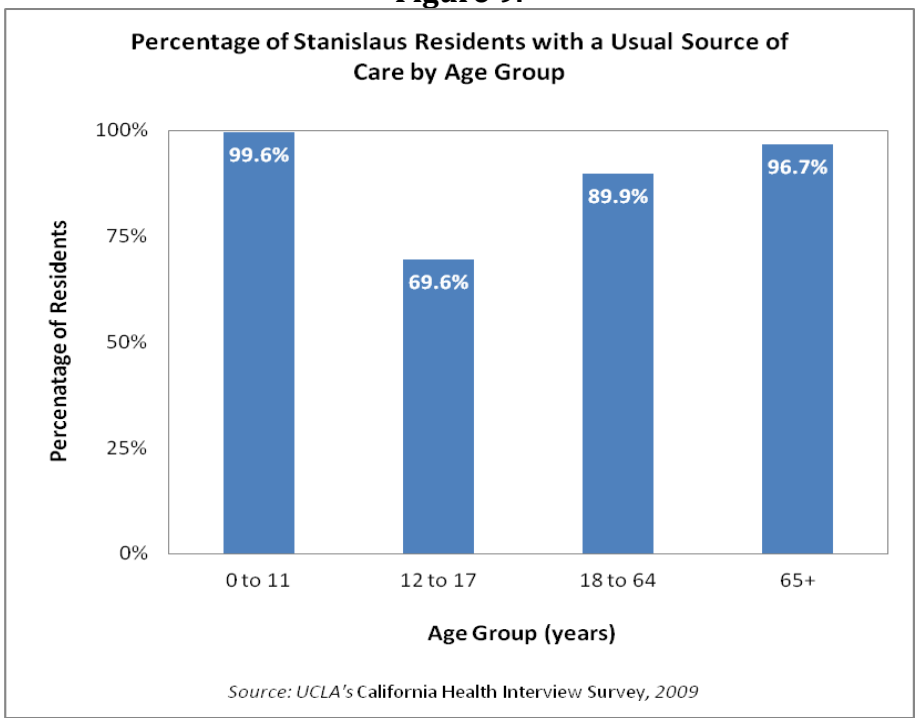
Income, or lack there of, also influences whether a person has a usual source of care. Those living in poverty are less likely to report having a usual source of care. Over 90% of Stanislaus residents at 200% or higher FPL have a usual source of care, compared to 81% of those living at or below the poverty level (2009 CHIS; see Figure 8).

Figure 8.



Age also impacts whether a person has a usual source of care. In 2009, the age group least likely to have a usual source of care in Stanislaus County was those aged 12-17 years, followed by working age adults aged 18-64 years (CHIS; see Figure 9).

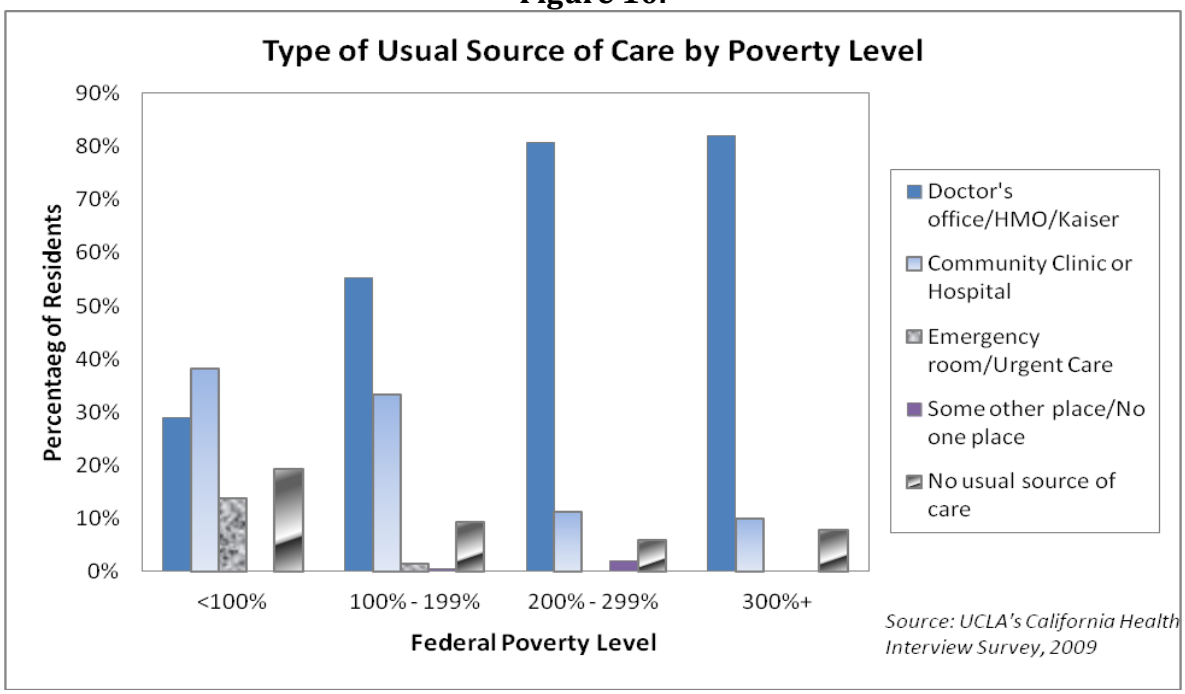
Figure 9.



Type of Usual Source of Care

Income also affects the type of care that a person routinely accesses. The less income a person has, the less likely he or she will be able to use the doctor's office, the more likely he or she will utilize the emergency room (even for non-emergencies) and the more likely he or she will have no usual source of care. As Figure 10 below illustrates, in 2009 using the doctor's office as the usual source of care was most frequently reported by Stanislaus County residents living at or above 200% FPL; emergency room/urgent care was not cited at all by this group as a type of usual source of care (CHIS). By contrast, emergency room usage was highest (13.7%) for County residents living at or below the FPL, compared to 1.5% in residents at 100%-199% FPL.

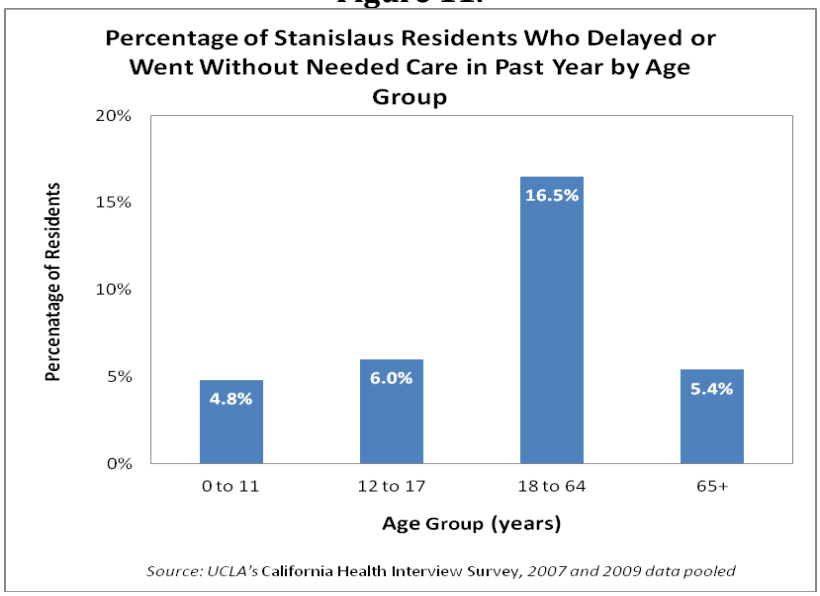
Figure 10.



Delaying or Foregoing Needed Care

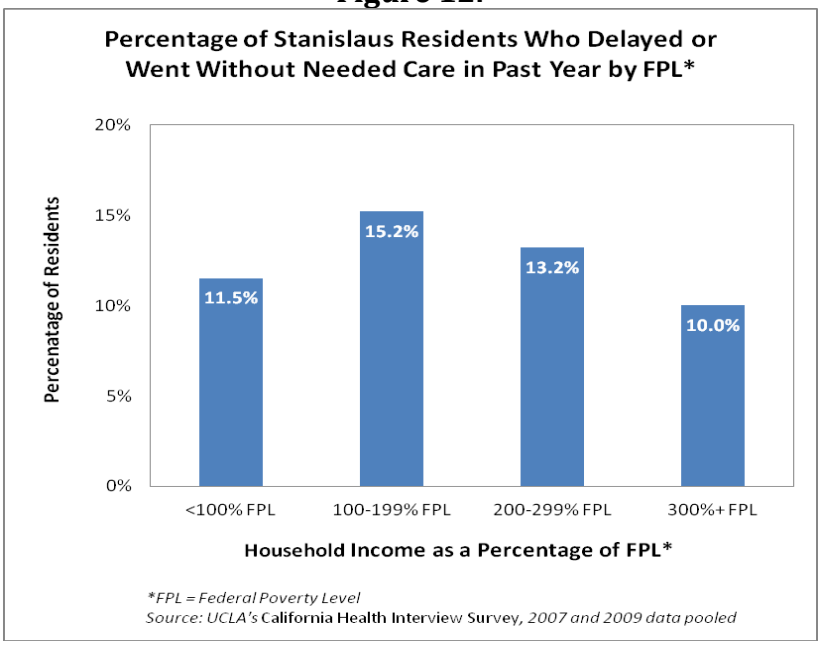
In 2007-2009, the highest percentage of those who delayed or went without needed care (16.5%) was the 18-64 age group (CHIS; see Figure 11). This finding could be due to the facts that it is harder for residents ages 18 to 64 to meet the eligibility requirements of public assistance programs and they have the highest proportion of uninsured individuals.

Figure 11.



Delaying or forgoing care is linked with income. As shown in Figure 12, residents whose household income was between 100% and 199% of FPL were the most likely to go without care, followed by those with 200-299% FPL, then 0-100% FPL, and finally greater than 300% FPL (2007 and 2009 CHIS). This finding could be due to the fact that lower-income working individuals are more likely to lack health insurance, while the very poorest individuals are more likely to qualify for safety net public insurance programs that provide access to care.

Figure 12.



Provider Shortage

In addition to a high number of uninsured individuals, access to care in Stanislaus County is reduced by the relative lack of providers per capita. As shown in Table 2 below, Stanislaus County has fewer providers per capita than California, and this shortage has not improved over time (RAND California data cited by CVHPI, 2007).

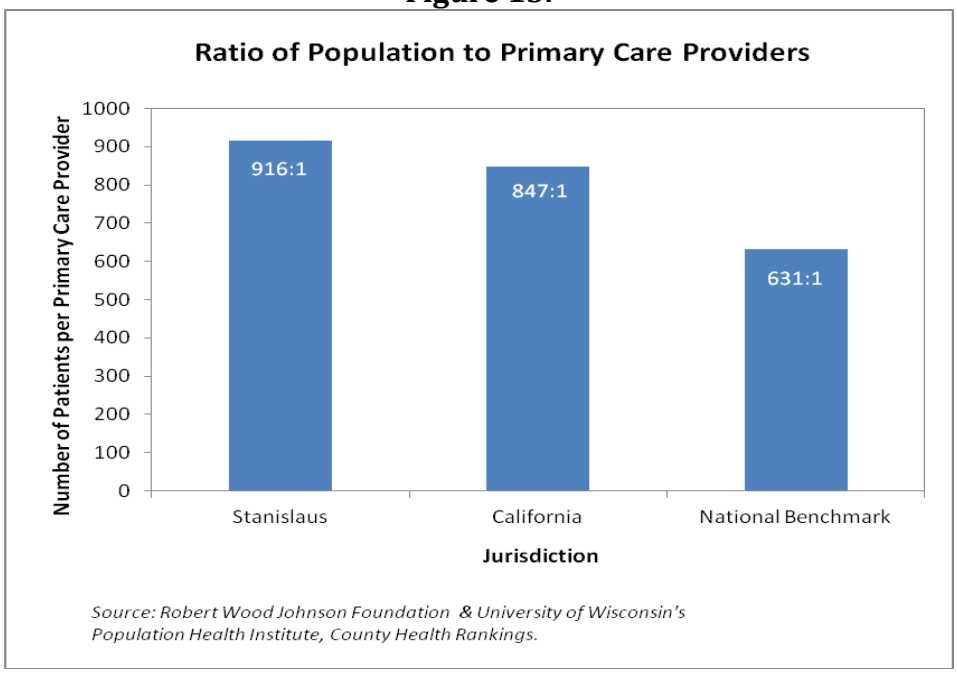
Table 2: Providers per 1,000 Resident by Jurisdiction

Year	Stanislaus	California
2000	1.6	2.5
2005	1.6	2.6

A second measure – the ratio of population in a county to primary care providers in the county – is used by the University of Wisconsin in *County Health Rankings* to characterize access to health care. Data obtained from the Health Resources and Services Administration (HRSA) indicated that in 2008, the ratio in Stanislaus County was 916:1 or

916 people per primary care provider. This is higher than the California ratio of 847:1, and also higher than the national benchmark of 631:1 (see Figure 13).

Figure 13.



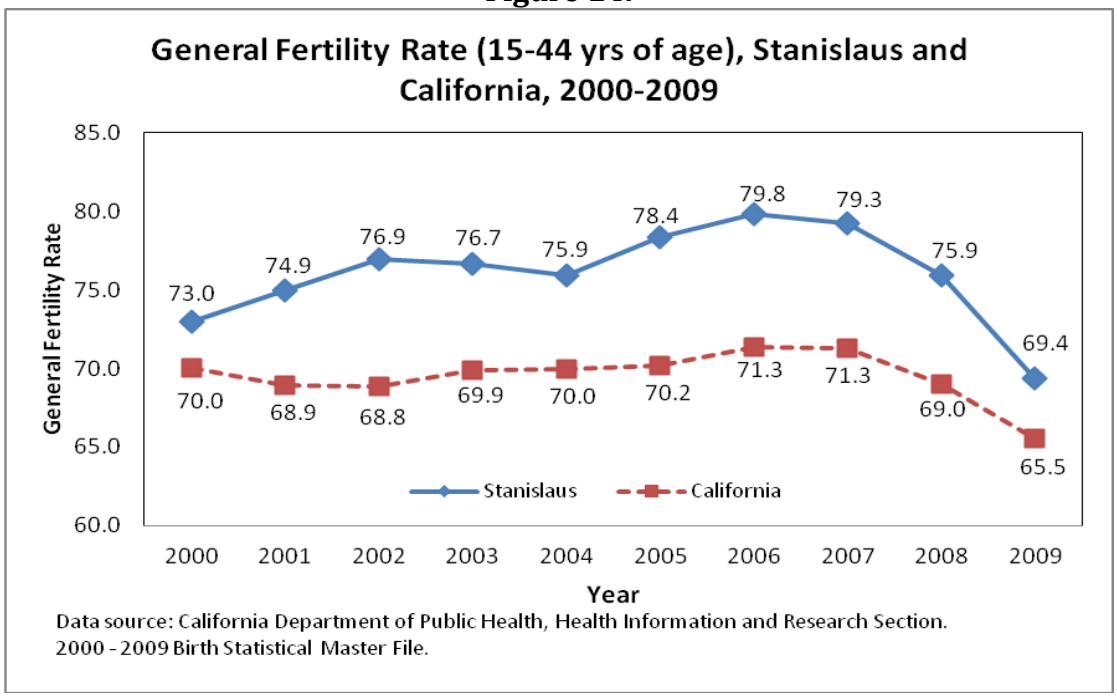
Births in Stanislaus County

Healthy babies generally come from healthy pregnancies and the steps a mother takes even before she is pregnant. Actions such as taking folic acid and maintaining a healthy weight prior to a pregnancy are important, as is entering prenatal care in the first trimester and receiving adequate prenatal care thereafter.

General Fertility

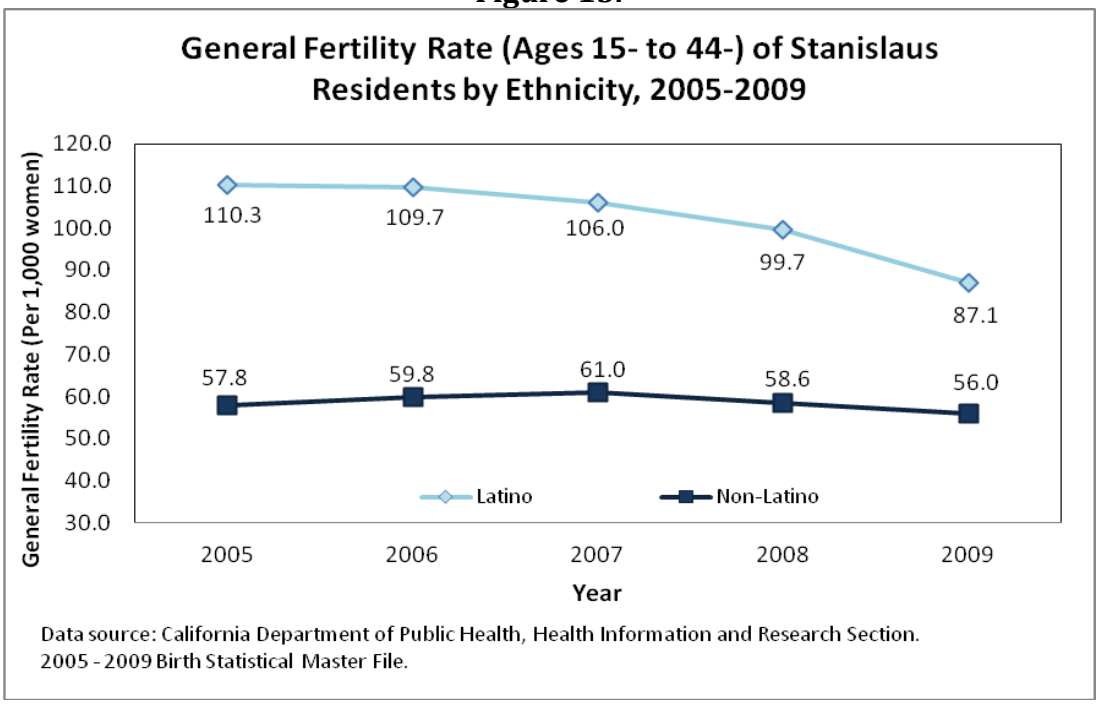
The general fertility rate is the total number of live births per 1,000 women aged 15 to 44 years. It is a key driver of population growth and is an indicator of reproductive behavior. In 2009, 7,941 babies were born to Stanislaus mothers, a general fertility rate of 69.4 per 1,000 women of reproductive age (ages 15 to 44; 2009 *Birth Statistical Master Files*). The annual general fertility rate in Stanislaus has grown slowly over much of the past decade until 2007, when it began to decline. A similar pattern of recent decrease in the fertility rate is seen for California as well (see Figure 14).

Figure 14.



The annual general fertility rate among Latinas in Stanislaus is also consistently higher than non-Latinas between 2005 and 2009 (see Figure 15). This difference is related to the overall younger age distribution for this group.

Figure 15.

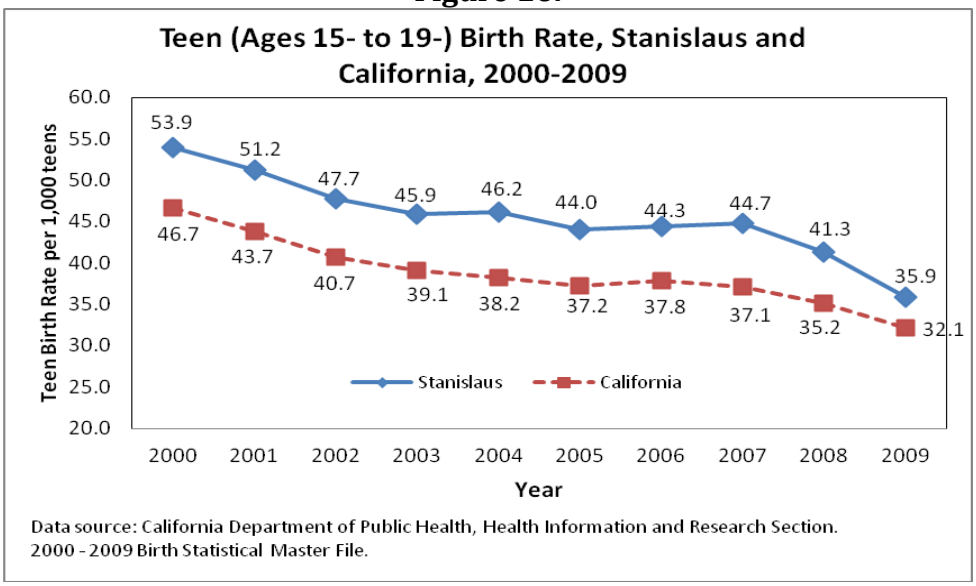


Teen Birth Rate

Teen births are births to any woman aged 15-19. They impose high economic and societal costs to the parents, wider family and society as a whole. Babies born to teen mothers are at higher risk for prematurity, low birth weight and other health problems (March of Dimes, 2011).

Despite a steady decrease in the teen birth rate, Stanislaus continues to have a higher teen birth rate (adolescents ages 15-19) than California at 35.9 vs. 32.1 per 1,000 live births, respectively (California Department of Health, Office of Vital Records 2008). Figure 16 shows the decline in teen births for both jurisdictions as well as the remaining gap between the County and State rates. In Stanislaus, the teen birth rate decreased 19.7% between 2007 and 2009; in California, the teen birth rate decreased 13.4% in the same time period.

Figure 16.

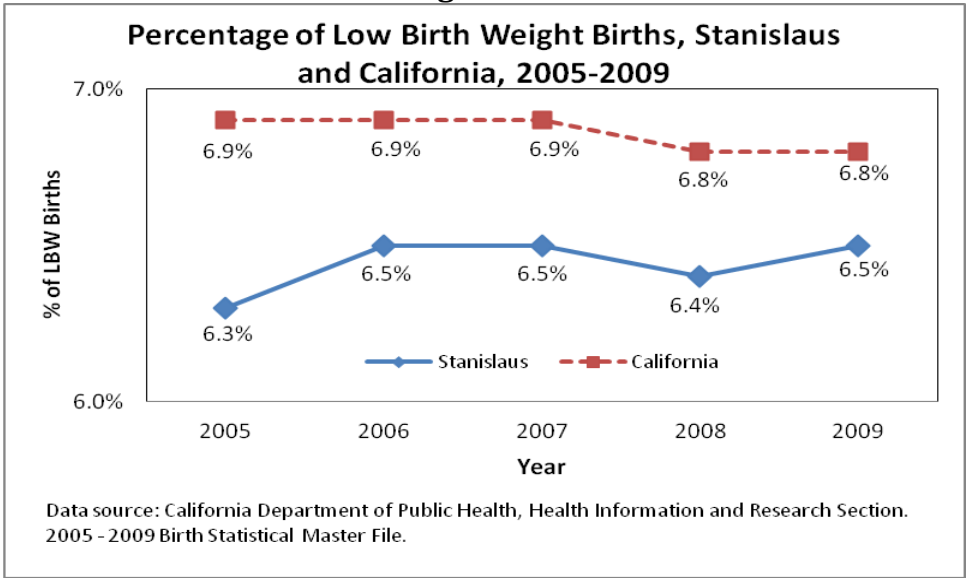


Low Birth Weight

Low birth weight (LWB) babies are born weighing less than 5 pounds 8 ounces (2,500 grams) and are more likely to encounter health problems like respiratory distress syndrome, bleeding in the brain, heart problems, necrotizing enterocolitis and abnormal blood vessel growth in the eyes. LBW is also the primary risk factor for infant mortality (US Department of Health and Human Services, 2011).

As shown in Figure 17, the percentage of LBW babies in Stanislaus has been consistently lower than in the State (*Birth Statistical Master Files*). While it is not possible to eliminate all LBW births, the Healthy People 2010 target for LBW births is 5.0%. Stanislaus County has not yet reached this target.

Figure 17.

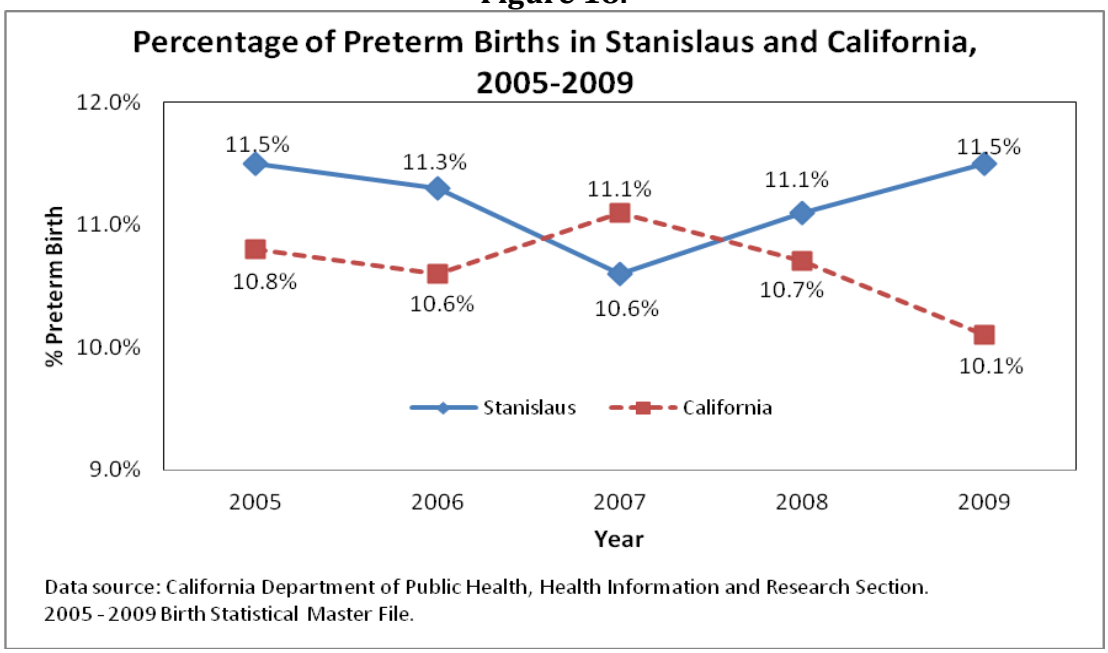


Preterm Birth

Babies born before 37 completed weeks of pregnancy are considered premature and are at greater risk for newborn complications (even death) than those born after that milestone. These babies more often suffer from health problems such as respiratory distress syndrome, apnea and intraventricular hemorrhage. Research has also shown that a baby's brain continues developing after reaching "term" at 37 completed weeks; the brain at the 37th week is only 80% of the weight at the 40th week (California Maternal Quality Care Collaborative, 2011).

As Figure 18 shows, California has experienced a declining percentage of premature births over the past three years, while the County percentage has risen. In 2009, 11.5% of babies in Stanislaus were born preterm, compared to 10.1% Statewide. The Healthy People 2010 target for preterm births is 7.6%, a target neither the County nor the State has achieved.

Figure 18.

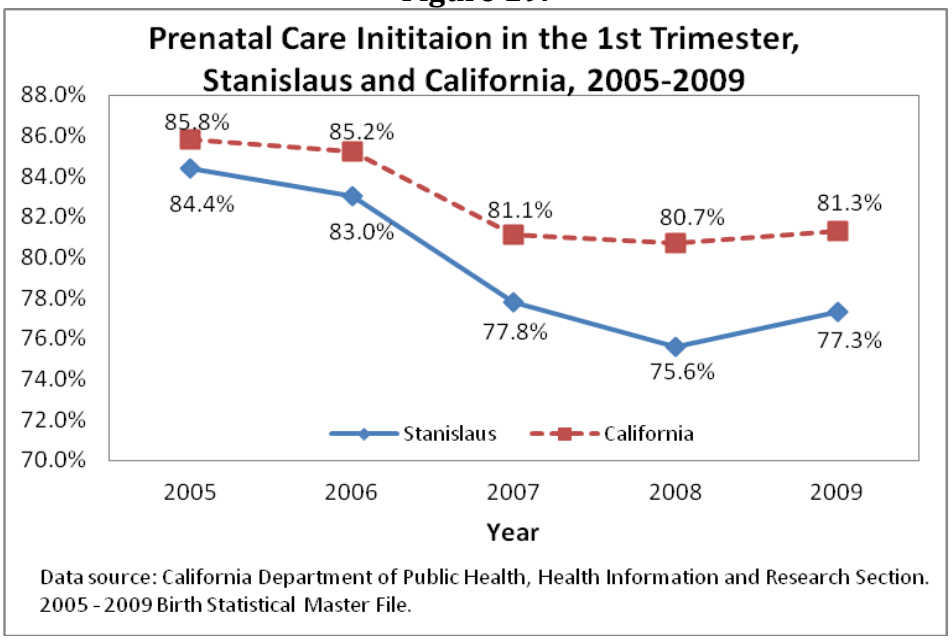


Timeliness of Prenatal Care

Timely and adequate prenatal care is important for the health of both the mother and her infant. Prenatal care is crucial to a healthy pregnancy; having a health care provider monitor the mother's and fetus' health helps ensure that small problems do not progress into big health problems. It is recommended that a woman begin prenatal care in the first trimester of her pregnancy.

The percentage of all Stanislaus County live births receiving first trimester prenatal care has been on a downward trend since 2005, with a slight improvement in 2009 (see Figure 19). In 2005 and 2006, the County met the Healthy People 2020 Objective of at least 77.9% of pregnant women receiving prenatal care in the first trimester, but has not maintained this achievement since.

Figure 19.



Non-Medically Indicated Induced Deliveries <39 Weeks

An elective induction of labor is defined as induced labor without a medical or obstetrical indication *before* the spontaneous onset of labor or rupture of membranes. Recent studies have shown that elective induction prior to 39 weeks may pose an increased risk of health complications to babies (California Maternal Quality Care Collaborative, 2010).

The drug used to induce labor (pitocin), which is an oxytocin, may cause forceful labor contractions thereby lowering the baby's heart rate (March of Dimes, 2012). When an induction fails and the baby cannot be delivered naturally, a cesarean delivery will have to be performed (March of Dimes, 2012). Women who delivered their babies by cesarean section face longer hospital stays and longer recovery periods (March of Dimes, 2008). Babies scheduled for cesarean sections between 37 and 39 weeks gestation are at higher risk of complications (i.e. increased NICU admissions and respiratory distress syndromes) than babies delivered after 39 weeks (California Maternal Quality Care Collaborative, 2010).The brain continues developing after reaching "term" at 37 completed weeks; the brain at 37th week is only 80% of the weight at the 40th week (California Maternal Quality Care Collaborative, 2010).

Risk and Preventive Factors for Disease

Overview

Chronic Diseases are among the leading causes of hospitalization and death nationwide. Underlying risk factors such as tobacco use, physical inactivity, being overweight or obese and poor diet are responsible for much of this trend. An improvement in these modifiable risk factors can result in alleviating the burden of chronic disease (CDC-Chronic Disease and Health Promotion), and therefore much of the total burden of disease. Colditz, Wollin and Gehlert, (2012) found that the lifestyle choices (i.e. tobacco use, diet and exercise) people make play a significant role in causing cancer. Smoking accounted for one third of all cancer cases in the US and excess body weight, obesity accounted for 20% of all cancers.

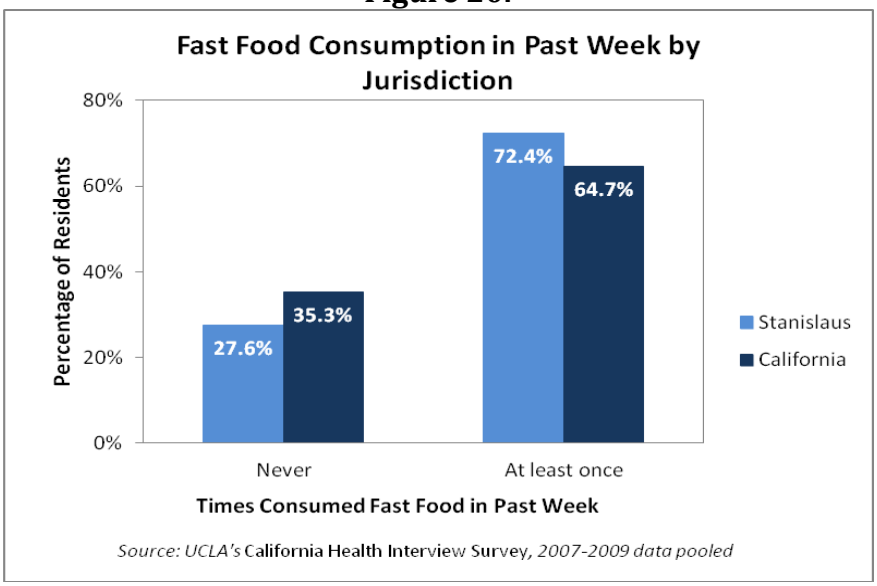
Personal behavior and lifestyle choices such as fast food consumption can affect health, either by increasing the likelihood of disease (risk factors) or decreasing that likelihood (protective factors). In addition, particular health conditions, which do not themselves constitute a disease, may place a person at higher risk for developing a disease. Environmental and societal factors may also put individuals at higher or lower risk of developing disease.

Risk Factors

Fast Food Consumption

Unhealthy diets are one of the many factors that contribute to obesity. Fast food is typically high in empty calories, low in nutritional value, highly processed and containing excess salt and sugar (Center on Hunger and Poverty, no date). Between 2007 and 2009, 72.4% of Stanislaus residents ate fast food at least once in the past week, compared to 64.7% in California (CHIS; see Figure 20).

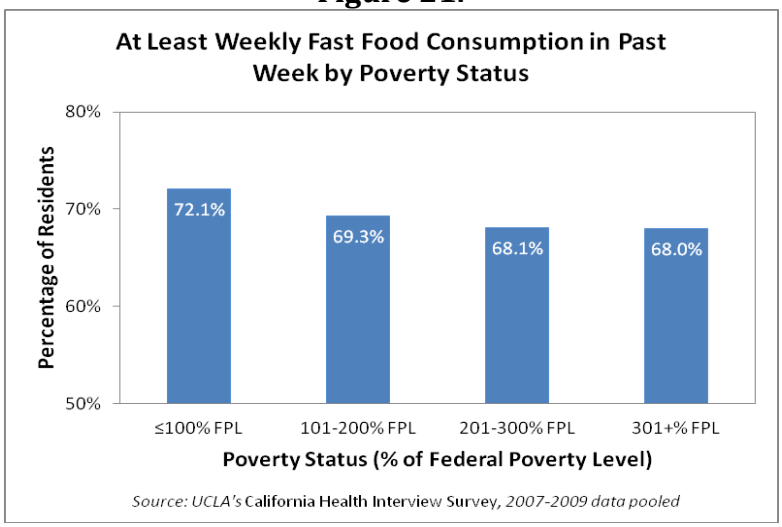
Figure 20.



Disparities in Fast Food Consumption

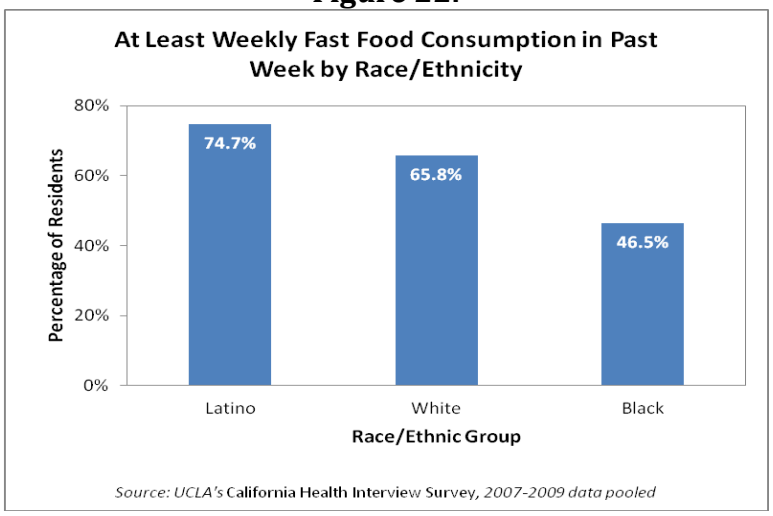
Poverty Status: Fast food consumption is higher in the low-income population. Between 2007 and 2009, 72.1% of Stanislaus residents living below the Federal Poverty Level (FPL) ate fast food one or more times in the past week, compared to 68% who live at or above 301% FPL (CHIS; see Figure 21).

Figure 21.



Race/Ethnicity: Fast food consumption is also higher in the Latino population than in other racial or ethnic groups. As shown in Figure 22, between 2007 and 2009, 74.7% of Stanislaus Latinos reported consuming fast food at least once in the past week, compared to 65.8% of Whites and 46.5% of Blacks (CHIS).

Figure 22.

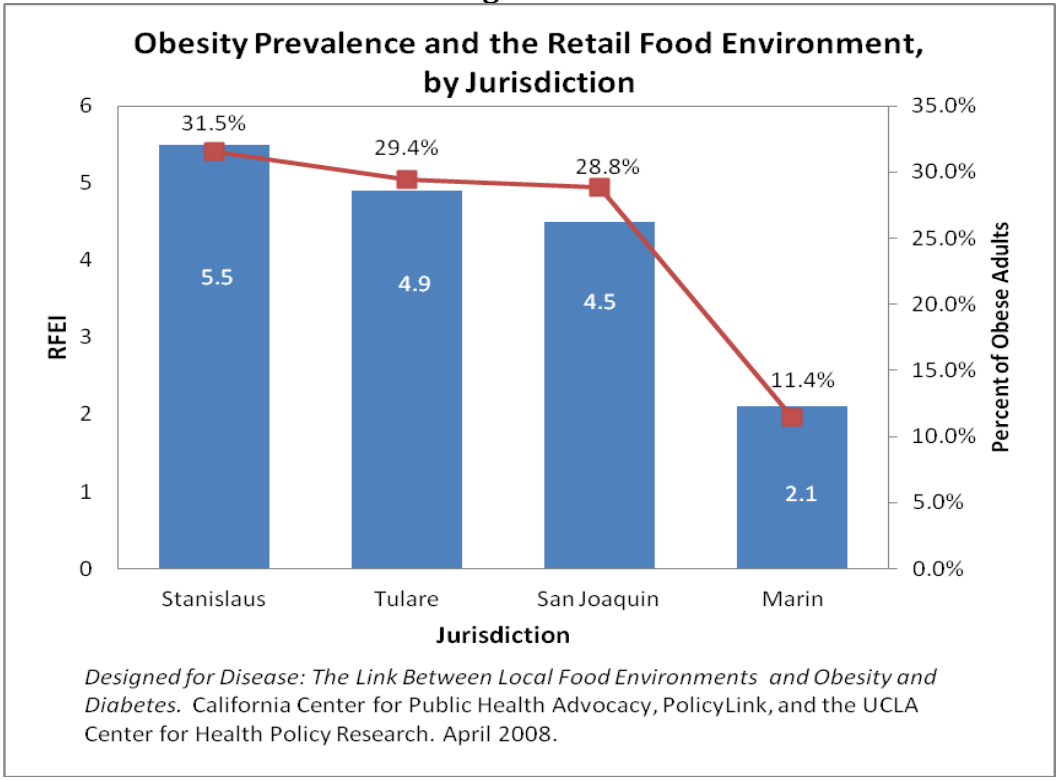


Retail Food Environment

The neighborhood environment affects a person's diet and risk of obesity and chronic disease. UCLA's Center for Health Policy Research (Center for Public Health Advocacy, 2008), found an association between the retail food environment and obesity/diabetes rates. Researchers calculated an index they called the Retail Food Environment Index (RFEI): the ratio of fast-food restaurants and convenience stores to grocery stores and produce vendors. Data for California jurisictions showed that the higher the Retail Food Environment Index (RFEI) in a jurisdiction, the higher its prevalence of obesity and diabetes.

The average RFEI for California is 4.5, which means that for each grocery store or produce vendor around homes, there are more than four fast-food restaurants and convenience stores. Stanislaus has the second highest RFEI in the state (5.48) and the highest obesity prevalence (31.5%). Figure 23 compares Stanislaus to some neighboring and other California counties.

Figure 23.



Designed for Disease: The Link Between Local Food Environments and Obesity and Diabetes. California Center for Public Health Advocacy, PolicyLink, and the UCLA Center for Health Policy Research. April 2008.

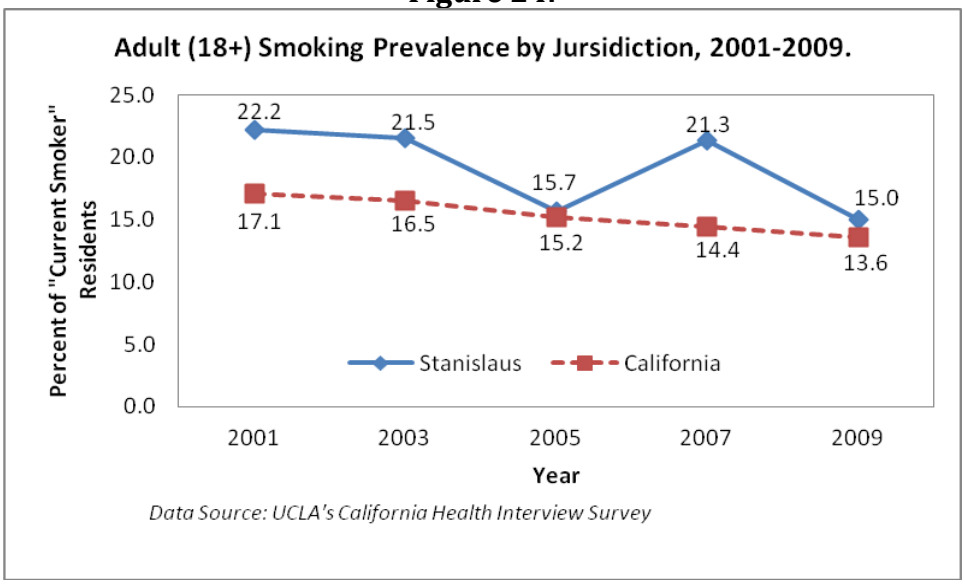
Tobacco Use

Smoking is a known risk factor for several diseases, including cancers (especially lung cancer), heart disease, emphysema and other forms of Chronic Obstructive Pulmonary Disease (CDC, 2011f). For example, recent research found that smoking causes approximately 1/3 of all cancers (Colditz, Wollin & Gehlert, 2012). Despite the decades of

research on the negative impact of smoking on health, starting from the 1964 release of the Surgeon General's Report on Smoking and Health, smoking is still prevalent in the US. In 2010, 19.3% (or 45.3 million people) of all adults in the US were current smokers (CDC, 2011f). In California, 14.0% of the adult population (or 3.8 million individuals) were current smokers (CDC, 2010).

Historically, the prevalence of smoking in Stanislaus residents has been higher than that of California residents. Unlike the trend for California, the prevalence rate in Stanislaus County has not shown a steadily decreasing trend (CHIS, see Figure 24). The percentage of Stanislaus residents who smoke decreased 32.4% in the County over the past decade (between 2001 and 2009) at a rate faster than California as a whole (18.3% decrease). Decreases in smoking prevalence are likely the result of major anti-tobacco efforts, particularly in the policy arena. Stanislaus restaurants and government buildings went smoke-free in 1994 and 2003 respectively; anti-tobacco campaigns have since reduced public acceptance of smoking and increased assistance to those wishing to stop smoking.

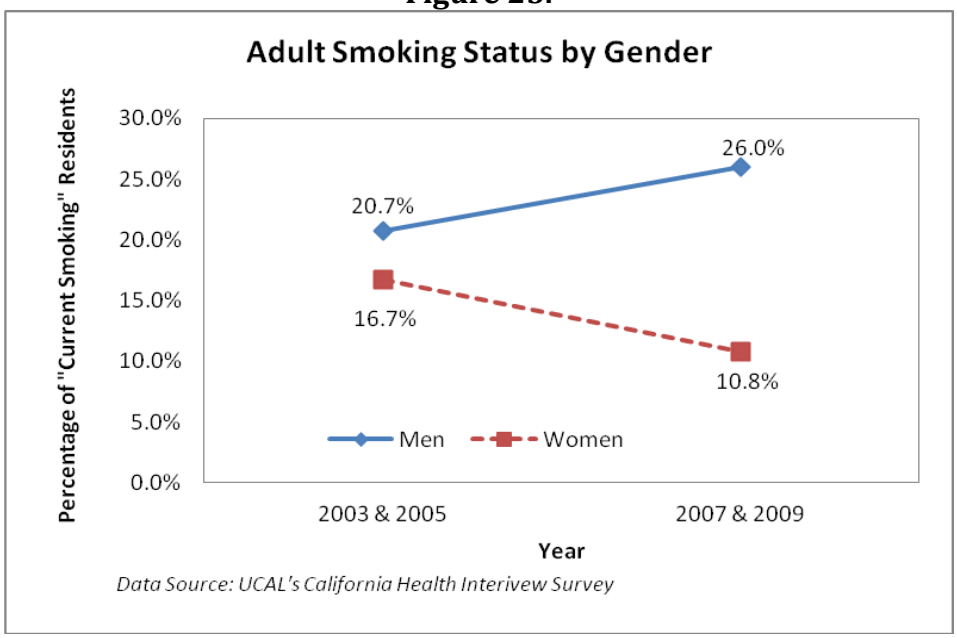
Figure 24.



Disparities in Tobacco Use

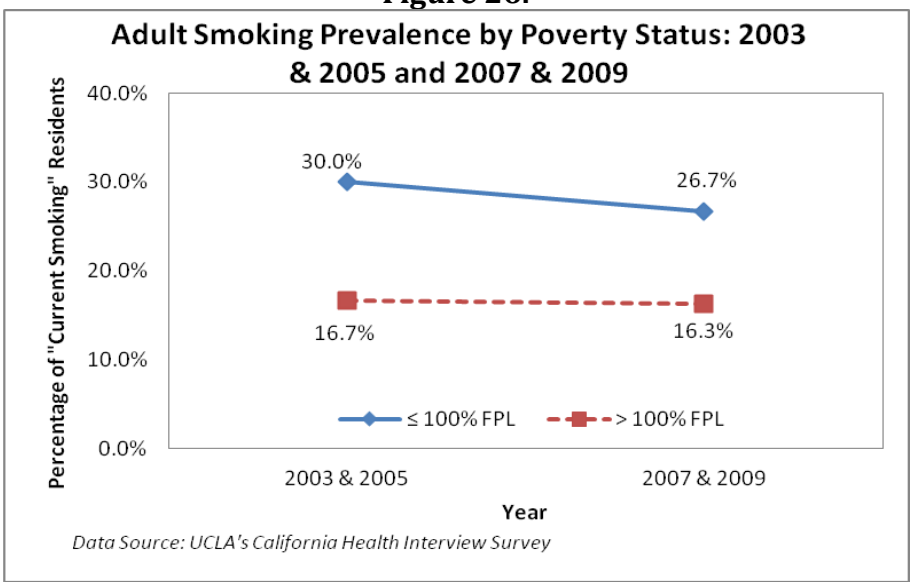
Gender: In 2010, 21.5% of adult current smokers in the USA were men and 17.3% were women (CDC, 2011f). Similar trends can be observed in Stanislaus County for the time periods 2003-2005 and 2007-2009, during which the percentage of adult men who was current smokers is higher than that of women (Figure 25; CHIS).

Figure 25.



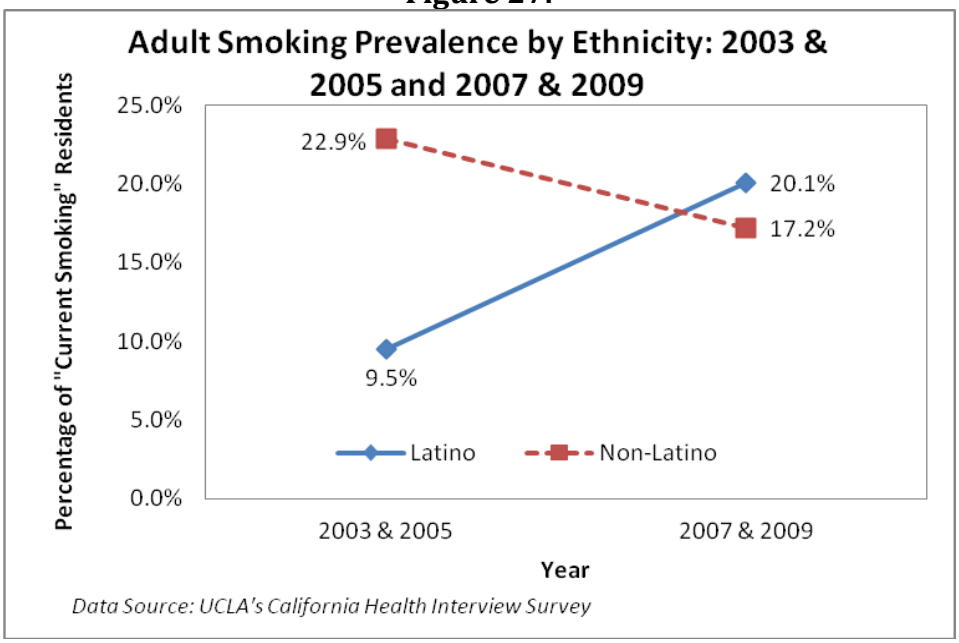
SES: National research has shown that smoking prevalence is higher in individuals whose household incomes are at or below the federal poverty level (CDC, 2011f). Nationally, a higher percentage of adults who live below the Federal Poverty Level (FPL) are smokers (28.9%) compared to those who live at or above the poverty level (18.3%; CDC, 2011f). Stanislaus shows a similar pattern (Figure 26). Smoking prevalence in Stanislaus residents who live below the FPL was higher than those who are not living in poverty in 2003-2005 and 2007-2009 (CHIS).

Figure 26.



Race/Ethnicity: Smoking prevalence in Latinos have also increased from 2003-2005 to 2007-2009, while the smoking prevalence has decreased in non-Latinos (CHIS). (Figure 27). Racial differences in smoking prevalence could not be presented due to small sample sizes and statistical instability from CHIS.

Figure 27.



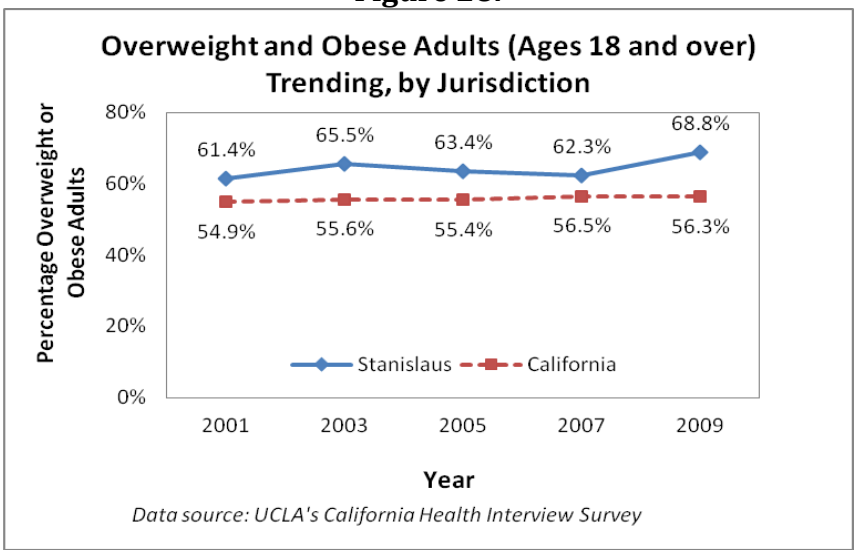
Obesity

Trends among Adults: Adult obesity has now become an epidemic in the United States. Research based on the 2007-2009 National Health and Nutrition Examination Survey (NHANES) found that 68.3% of US adults were obese (33.9%) and overweight (34.4%; CDC 2011g). It is one of the main risk factors to heart disease, stroke and Type II diabetes. Obesity is also costly. In 2008, medical costs associated with obesity were estimated to be $147 billion (CDC, 2011b).

Obesity has been shown to be a risk factor for multiple chronic diseases including cancer, heart disease, stroke and diabetes. In addition, obesity has been linked to depression, an increased risk of Alzheimer's disease and of severe complications of pneumonia and influenza (Fitzpatrick et al, 2009; Kornum, et al, 2010; Luppino et al, 2010).

Similar trends in overweight and obesity are observed at the state and county level. The percentage of overweight or obese adults in Stanislaus has long been higher than California (see Figure 28). Between 2001 and 2009, an average of 64.3% of Stanislaus residents were either overweight or obese (CHIS).

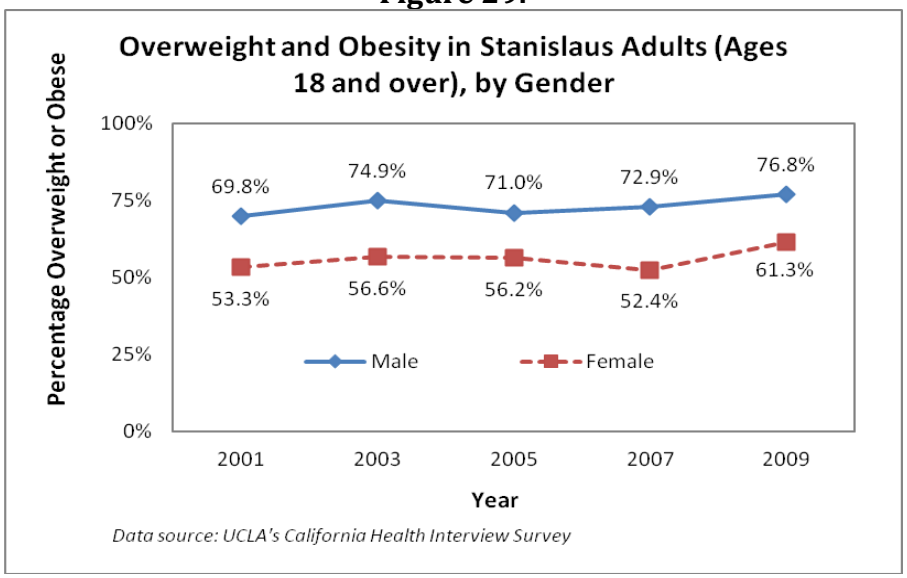
Figure 28.



Disparities in Adult Obesity: Research based on the 2005-2008 National Health and Nutrition Examination Survey showed that obesity prevalence among men is generally similar at all income levels (Ogden et al, 2010b). However, nationally, obesity prevalence is higher among those with higher incomes for Non-Latino black men and Latino men. Amongst women, those with higher income are less likely to be obese and those with college degrees are less likely to be obese compared with women less educated (Ogden et al, 2010b)

The overweight/obesity prevalence was higher in Stanislaus County males than females between 2001 and 2009. During this period, the prevalence of overweight/obesity has increased in both genders (CHIS; see Figure 29).

Figure 29.



As Figure 30 shows, the percentage of overweight and obese Stanislaus adults is highest in African Americans, and Whites between 2003 & 2005 and 2007 & 2009. Between these two pooled-time periods, the percentage of Asian adults who are overweight or obese experienced the largest increase (47.9%) when compared to the other two race groups. The percentage of overweight or obese Latino adults was approximately the same as that of Non-Latino adults (Table 3).

Figure 30.

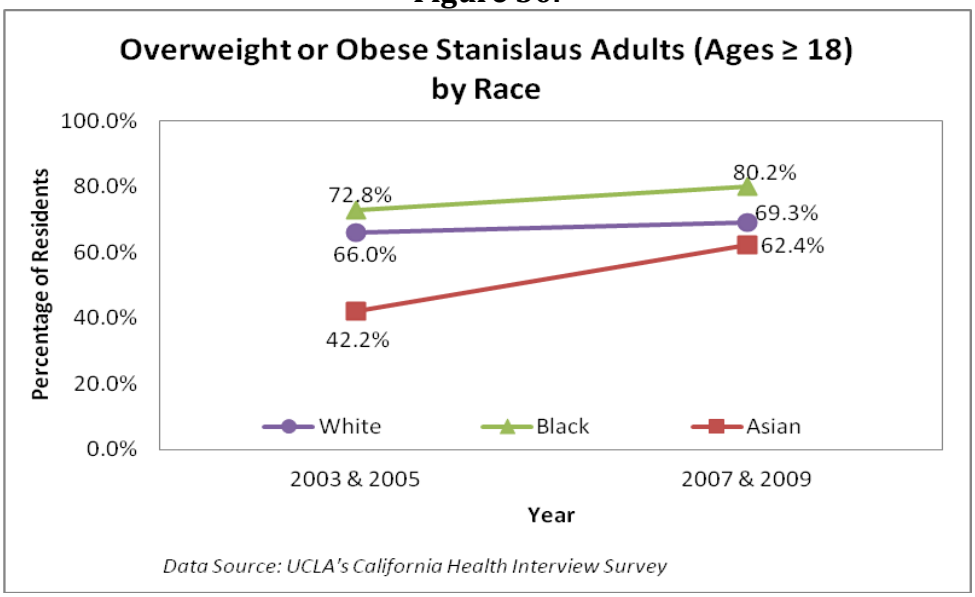


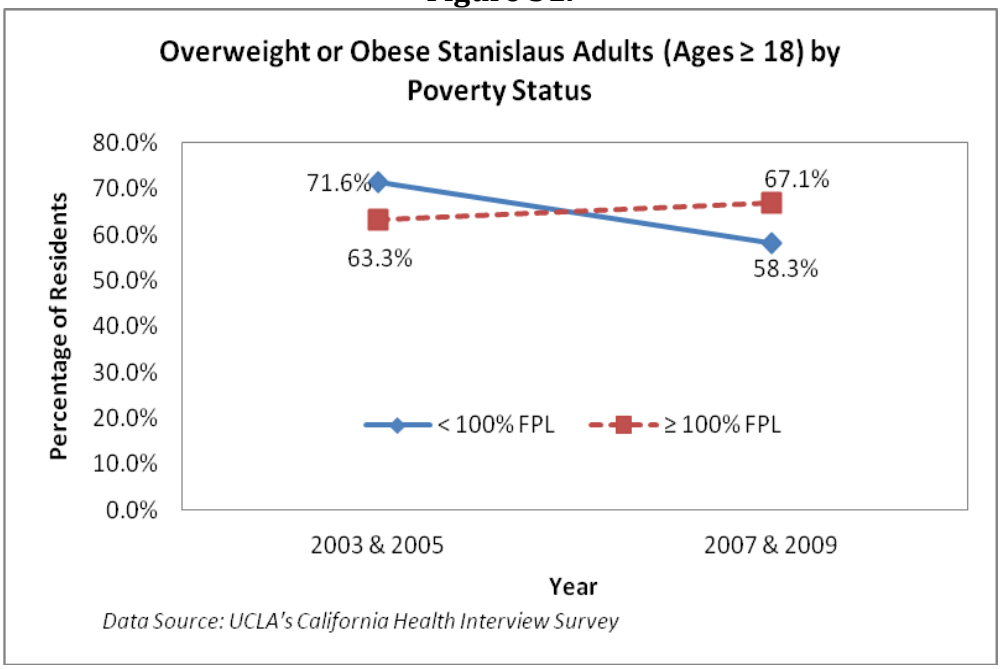
Table 3. Percentage of Overweight and Obese Stanislaus Adults, by Ethnicity

	Latino	Non-Latino
Year	**% (CI)**	**% (CI)**
2003 & 2005	66.3% (59.1 - 73.5)	63.6% (59.3 - 67.9)
2007 & 2009	64.2% (55.5 - 72.9)	66.2% (61.2 - 71.2)

Data source: UCLA's *California Health Interview Survey*

While the percentage of overweight/obese adults not living in poverty decreased from 71.6% in 2003 & 2005 to 58.3% in 2007 & 2009, the percentage increased slightly in adults living in poverty (CHIS; see Figure 31).

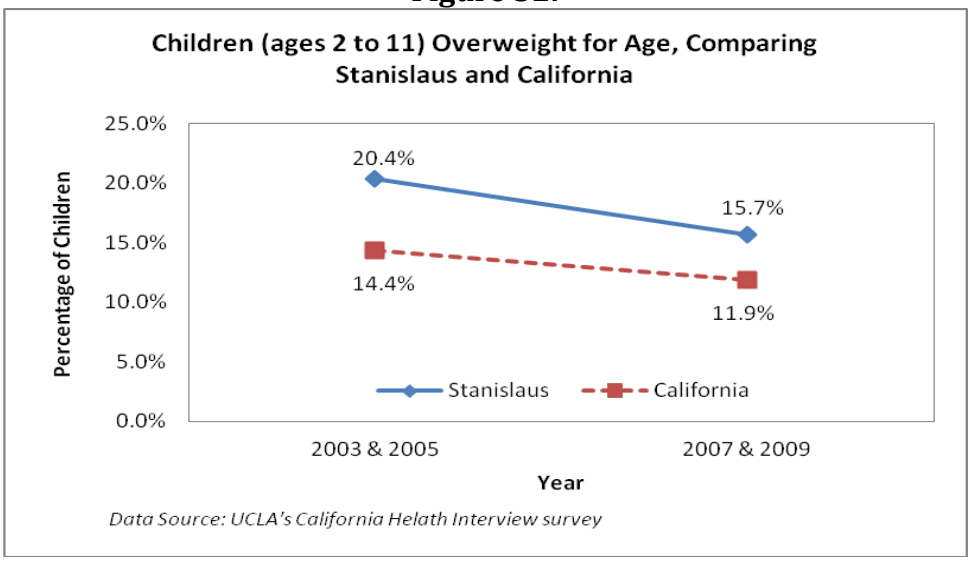
Figure 31.



Trends in Childhood Obesity: Children who are obese are more likely to have high blood pressure, high cholesterol, joint problems, fatty liver disease and are more likely to become obese adults (CDC, 2011c). Childhood obesity has tripled in the past 30 years. Results from the 2007-2008 National Health and Nutrition Examination Survey (NHANES) indicated that approximately 17% of children and adolescents (ages 2 to 19) in the US are considered obese (Ogden & Carroll, 2010a). In comparison, only 5% of children and adolescents were obese in the 1971-1974 NHANES (Ogden & Carroll, 2010a).

A higher percentage of children ages 2 to 11 in Stanislaus are overweight for their age, compared to California as a whole. However, it is encouraging that the percentage of children overweight for their age in both the County and State decreased from 2003-2005 to 2007-2009; Stanislaus children experienced a decrease of 23.0% while Californian children experienced a decrease of 17.4% (CHIS). See Figure 32 below.

Figure 32.



The percentage of Stanislaus teens ages 12 to 17 who are overweight or obese remained relatively the same between 2003 & 2005 (12.6%) and 2007 & 2009 (13.3%). See Table 4.

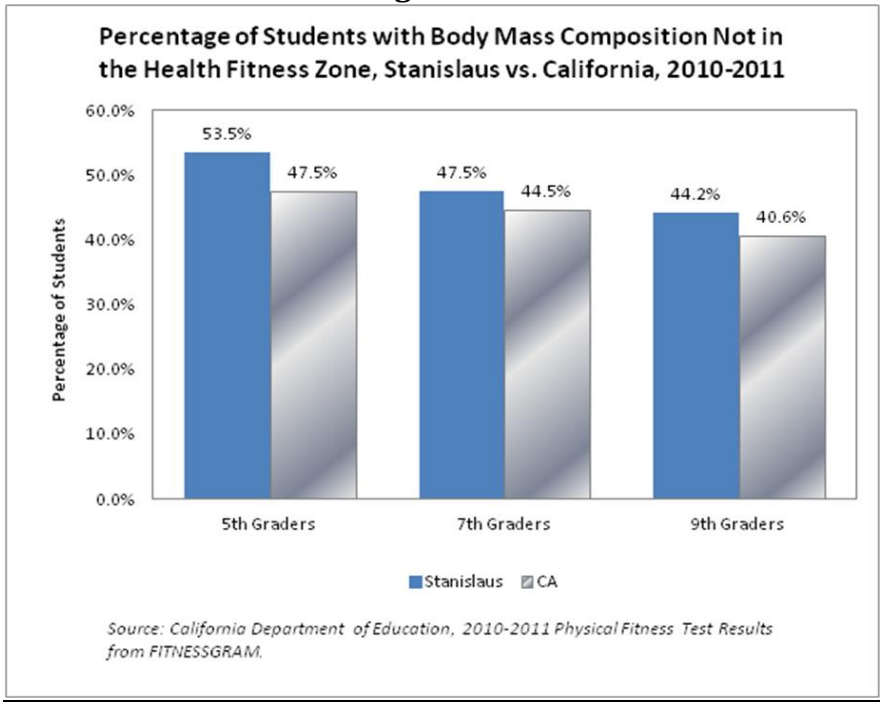
Table 4. Percent of Overweight and Obese Teens (ages 12-17) in Stanislaus and California

	Stanislaus	California
Year	% (CI)	% (CI)
2003 & 2005	12.6% (4.5 - 20.8)	13.3% (12.1 - 14.5)
2007 & 2009	13.1% (7.0 - 19.2)	12.6% (11.3 - 13.8)

Data source: UCLA's *California Health Interview Survey*

Physical Fitness Test results from the 2010-2011 school year indicated that across all three grades (Grades 5, 7 and 9), a higher percentage of school children in Stanislaus had body compositions that were not in the Healthy Fitness zone (HFZ) when compared to California students as a whole (California Department of Education, 2012; see Figure 33).

Figure 33.

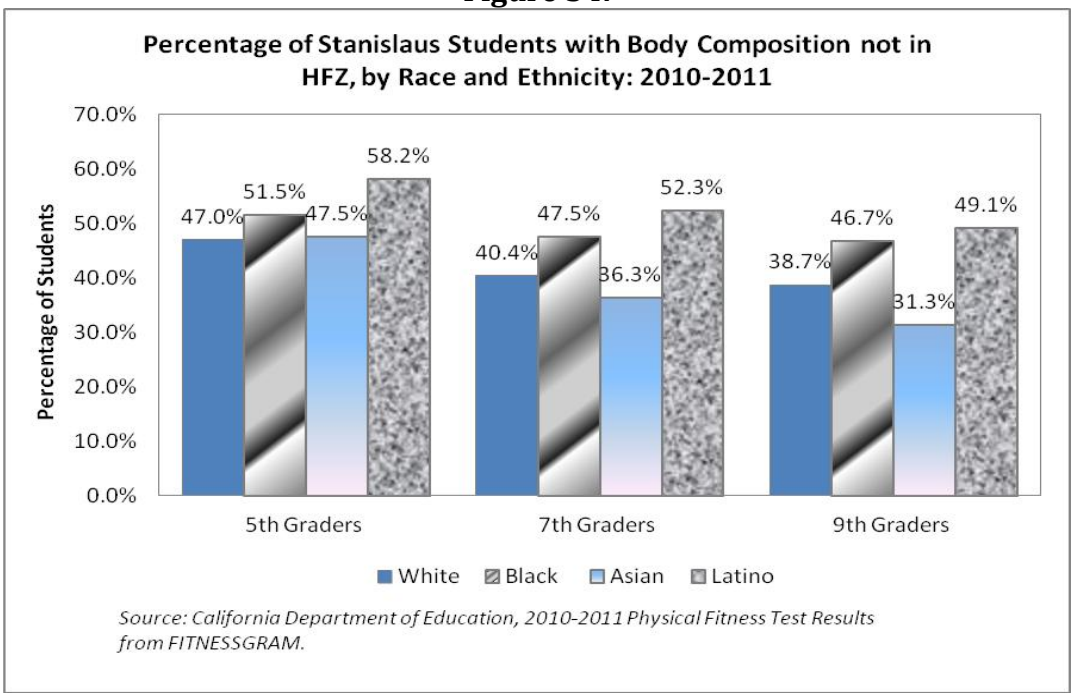


Disparities in Childhood Obesity: Childhood obesity data from CHIS stratified by race, ethnicity and poverty status will not be presented in this section because the data are highly unstable and unreliable. Instead, 'body mass composition not in the Healthy Fitness Zone' from the Physical Fitness Test (California Department of Education, 2012) will be used as a proxy for childhood overweight and obesity.

Research using data from the 2007-2009 National Health and Nutrition Examination Survey (NHANES) showed that racial and ethnic disparities exist in childhood obesity (ages 2-19; Ogden and Carroll, 2010). Mexican-American adolescent boys (26.8%) were significantly more likely to be obese than non-Latino white adolescent boys (16.7%). Among girls, obesity prevalence among non-Latino black adolescents (29.2%) was significantly higher than among non-Latino white adolescents (14.5%).

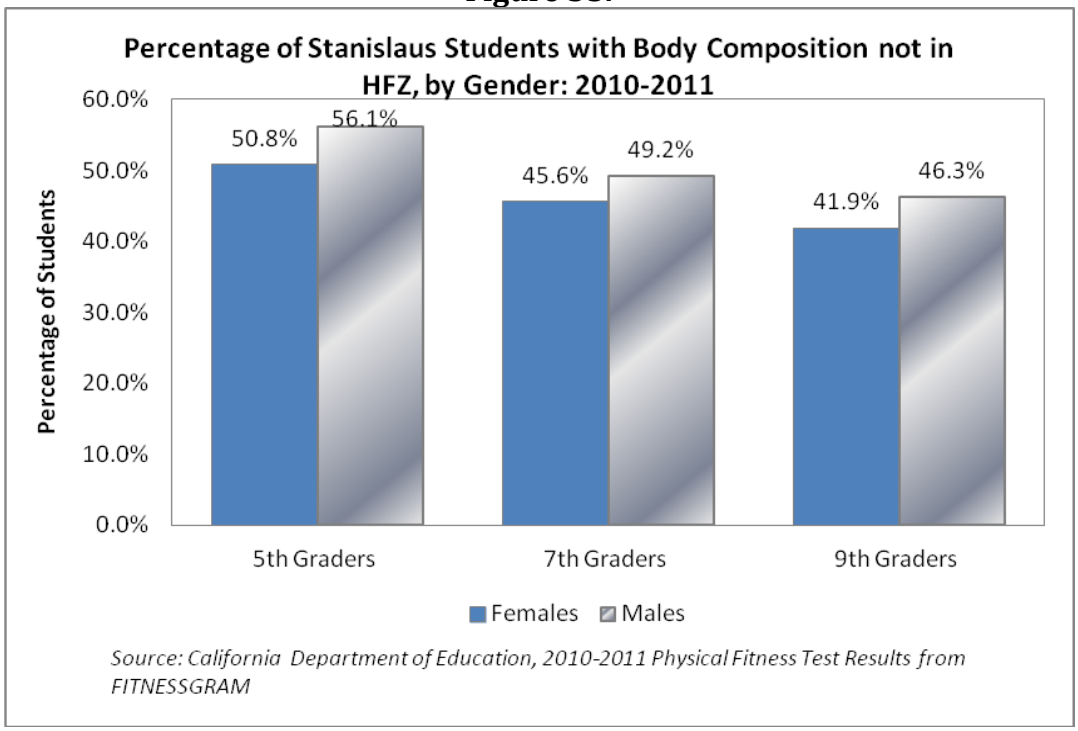
The 2010-2011 Physical Fitness Test data showed that the highest percentage of school children with body mass composition not in the Healthy Fitness Zone (HFZ) was seen in Latinos (across all three grades). Blacks experienced the second highest of percentage of school children with body mass composition not in the HFZ. Asians had the lowest percentage outside the HFZ (see Figure 34).

Figure 34.



In Stanislaus County, across all three grades, a higher percentage of boys than girls had body mass composition outside the HFZ (Figure 35).

Figure 35.

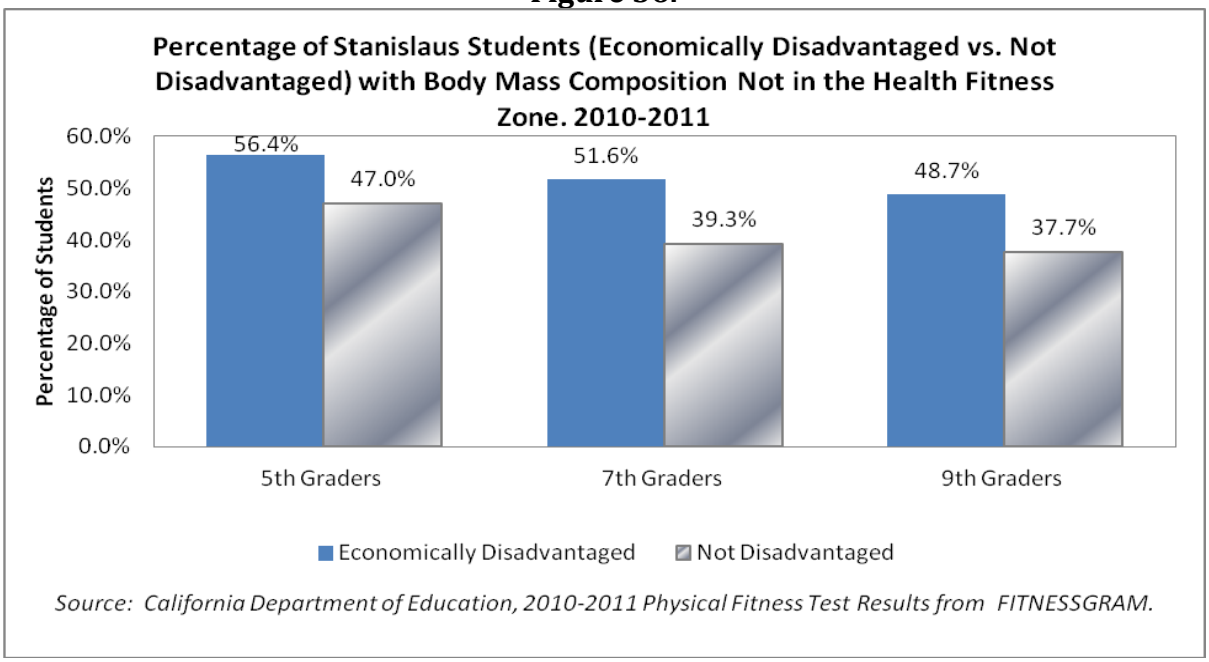


Findings from recent research using recent National Health and Nutrition Examination Survey data indicated that low income children and adolescents are more likely to be obese than their higher income counterparts (Ogden et al, 2010). In households where the head of household has a college degree, children and adolescents are less likely to be obese when compared to children living in households where the head of the household has less education. However these two relationships are not consistent across racial and ethnic groups.

Low income families are more likely to live in neighborhoods that present barriers to physical activity, such as lack of sidewalks, not having parks and recreation centers that are within easy walking distance, or having gang activity that makes it difficult to exercise outdoors. One in seven low income preschool aged children is obese; they also face an increased risk of obesity during their young adulthood (CDC, 2011d). Similar socioeconomic relationship to childhood obesity can be seen in the Physical Fitness Test data conducted in 5th, 7th and 9th grade students across the county. When the body mass composition of students who are economically disadvantaged are compared to students who are not economically disadvantaged, it is found that a higher percentage of students (across 5th, 7th and 9th grade) who are economically disadvantaged have body mass compositions that are not in the Healthy Fitness Zone (see Figure 36).

Socioeconomically disadvantaged is defined as: a student neither of whose parents have received a high school diploma; or, a student who is eligible for the free or reduced-price lunch program, also known as the National School Lunch Program (California Department of Education, 2011).

Figure 36.



Air Quality

Air pollution increases the risks of heart and lung illnesses such as asthma, chronic obstructive pulmonary disease, lung cancer and heart failure (Health Canada, 2006). Within California, the San Joaquin Valley is second only to the Los Angeles basin in poor air quality (Bedford, 2004), and is among the nation's most polluted areas (American Lung Association, 2011). The American Lung Association reported that Stanislaus County earned an F for air quality for 2011, ranking 12th worst among over 3,000 US counties for annual particle pollution (annual $PM_{2.5}$), 14th worst for short-term particle pollution (24-hour $PM_{2.5;}$) and 21st worst for ozone pollution. Also in 2011, Modesto ranked 10th worst among 277 large US Metropolitan Statistical Areas for year-round particle pollution (annual $PM_{2.5}$), 12th worst for short-term particle pollution (24-hour $PM_{2.5;}$) and 14th worst for ozone pollution.

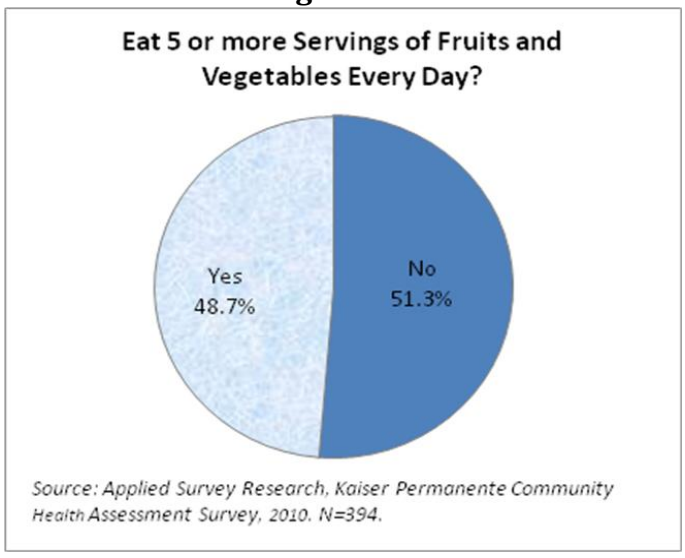
Protective Factors

Protective factors are behaviors and lifestyle factors that decrease the likelihood of disease. They include things such as regular physical activity and a healthy diet that includes the five food groups.

Healthy Eating

A healthy diet supports the body's growth and a strong immune system. Poor diet contributes to overweight/obesity, lowered immunity and vulnerability to certain infectious and chronic diseases. A telephone interview conducted in 2010 by ASR found that of the residents who were interviewed, 51.3% said they did not eat the recommended 5 or more servings of fruits and vegetables every day (see Figure 37).

Figure 37.

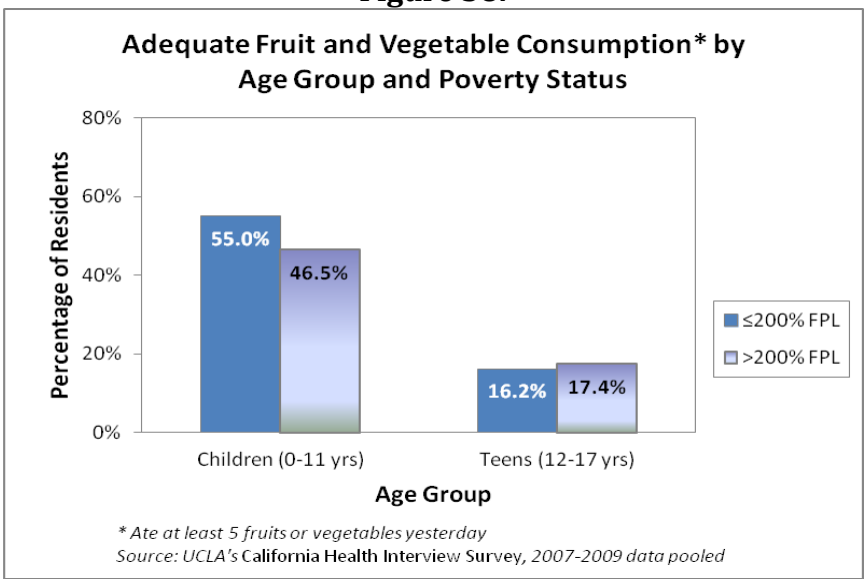


In the telephone survey, when asked the reason for not eating 5 or more servings of fruits and vegetables every day, a little over a quarter of the residents (31.8%) said it was

because that requires too much time to prepare (ASR, 2010). Almost a quarter (23.1%) said fruit and vegetables are too expensive, and 15% said they did not like fruits and vegetables.

CHIS data showed that in Stanislaus County children between the ages of 0 and 11, a higher percentage of children living at or below 200% of the FPL than children living above the 200% FPL level (55.0% compared to 45.6%) consumed adequate amount of fruits and vegetables in 2009. The reason behind this finding is unknown as one would expect the opposite. It is conceivable that children in higher poverty could be getting more subsidized food through the Women Infants and Children (WIC) program, or through participation in the federal food stamps program or school breakfast and lunch programs. Regardless of poverty status, Stanislaus children also consume more fruits and vegetables than teens (see Figure 38).

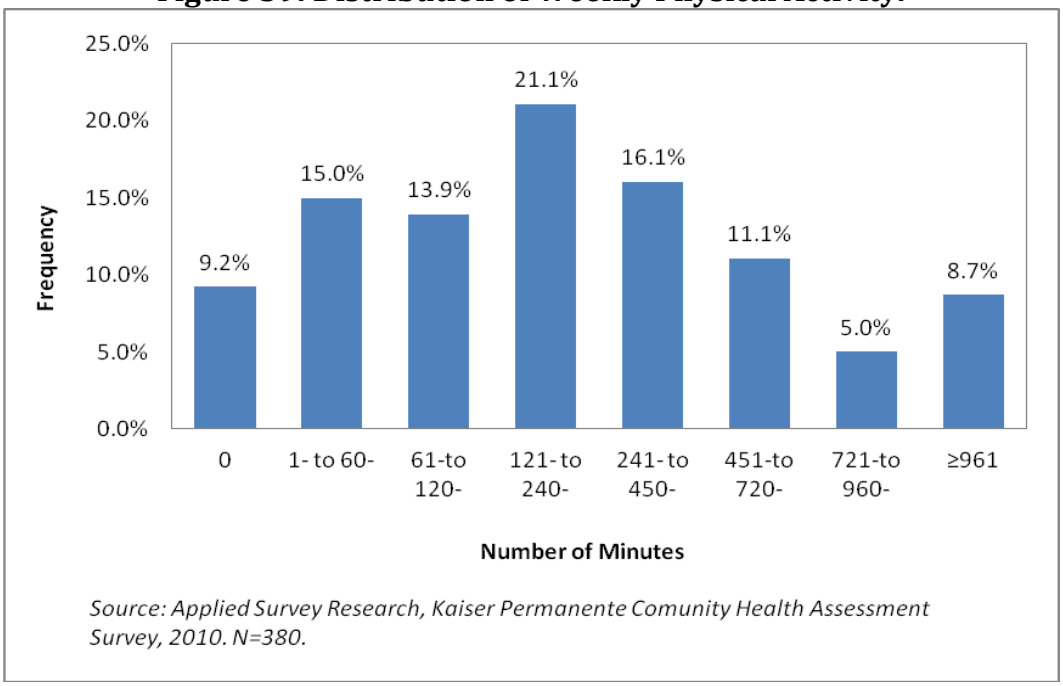
Figure 38.



Physical Activity

Physical activity is important for maintaining a healthy weight, cardiovascular system and mental health. The Centers for Disease Control and Prevention recommends that adults perform at least 150 minutes of moderate intensity aerobic activity every week, or 75 minutes of vigorous intensity aerobic activity and muscle strengthening activities at least twice a week (CDC, 2011e). The local telephone survey conducted in 2010 showed that 38.1% of respondents reported less than 120 minutes of exercise per week, not meeting CDC guidelines, while 21.1% of respondents reported 121 minutes to 240 minutes of physical activity each week (ASR, 2010), which would likely meet CDC guidelines if it were of at least moderate intensity (see Figure 39).

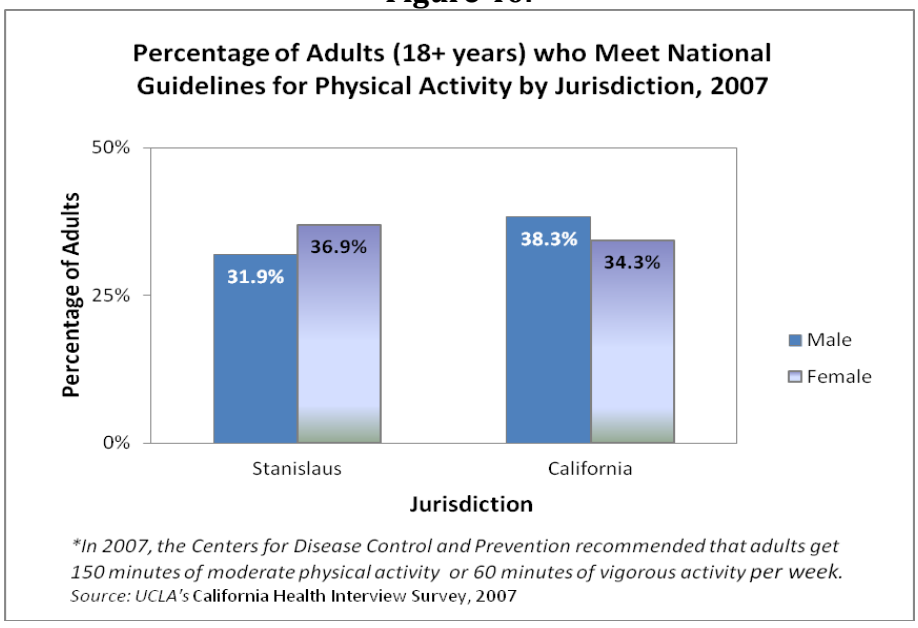
Figure 39: Distribution of Weekly Physical Activity.



Source: Applied Survey Research, Kaiser Permanente Comunity Health Assessment Survey, 2010. N=380.

Gender: Data from 2007 CHIS showed that in Stanislaus, a slightly higher percentage of women than men meet the national guidelines for physical activity (see Figure 40 below).

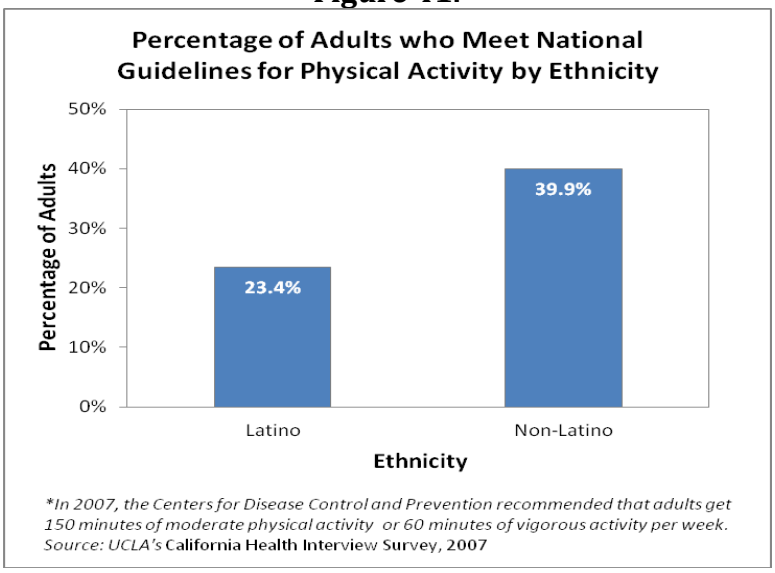
Figure 40.



**In 2007, the Centers for Disease Control and Prevention recommended that adults get 150 minutes of moderate physical activity or 60 minutes of vigorous activity per week.*
Source: UCLA's California Health Interview Survey, 2007

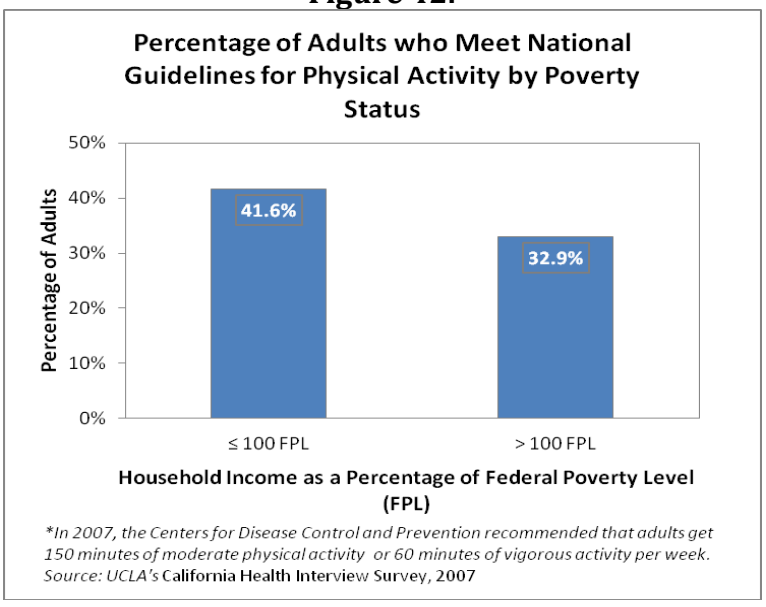
Ethnicity (CHIS): A lower percentage of Latino adults (23.4%) than Non-Latino adults (39.9%) met the national guidelines for physical activity (see Figure 41; CHIS).

Figure 41.



Income/Poverty: A higher percentage of Stanislaus adults living below the FPL (41.6%) meet the national guidelines for physical activity, when compared to adults who live above the FPL (32.9%; CHIS; see Figure 42).

Figure 42.



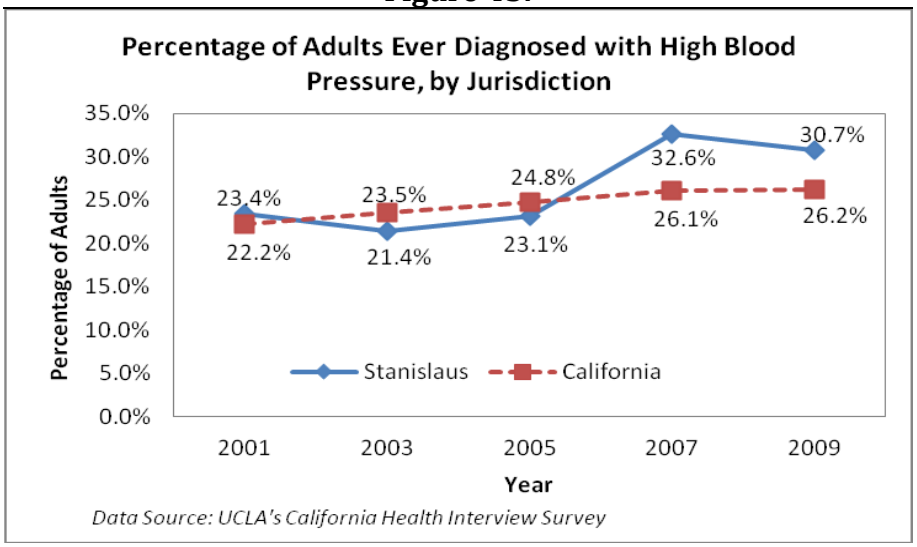
Disease Prevalence

Chronic disease has reached global epidemic proportions (WHO, 2005). The cost of chronic diseases in the United States is enormous. A study released by the Milken Institute (2007) calculated the total economic impact of seven of the most common chronic diseases to be $1.3 trillion annually, with $1.1 trillion accounting for lost productivity and $277 billion being spend on medical treatments.

Hypertension

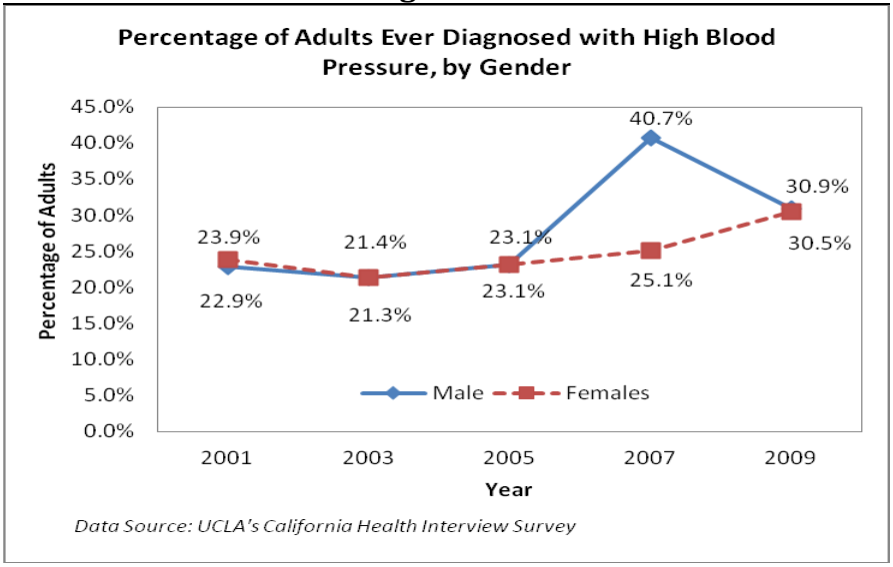
In the United States, one in three adults has hypertension (high blood pressure). It is a major risk factor for heart disease and in 2010 it will cost the US $76.6 billion in treatment costs and lost productivity (CDC HBP facts). Between 2001 and 2009, the percentage of Stanislaus adults ever diagnosed with high blood pressure increased 31.2%, and by 2007, it had surpassed the percentage of California adults ever diagnosed with high blood pressure. See Figure 43 below.

Figure 43.



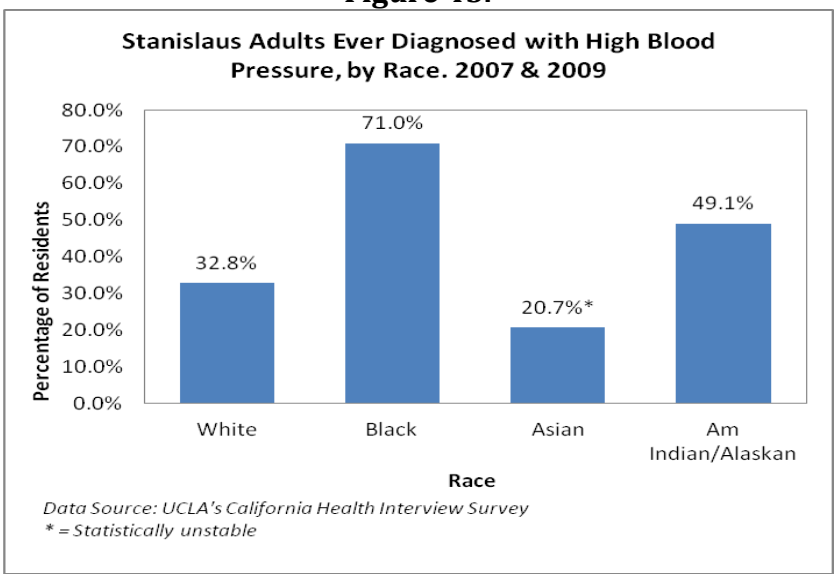
Gender: The prevalence of diagnosed high blood pressure between men and women remained very similar between 2001 and 2009, except for in 2007 when the percentage of men with high blood pressure (40.7%) was higher than that diagnosed in women (25.1%). See Figure 44 on the next page.

Figure 44.



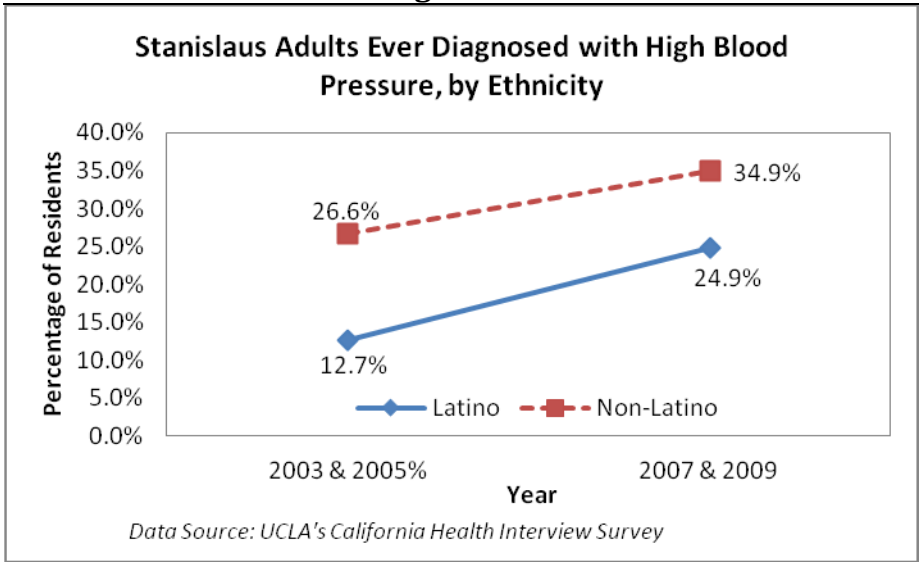
Race: The prevalence of adults with high blood pressure varies by race and ethnicity. Pooled 2007 & 2009 CHIS data showed that African Americans in Stanislaus had the highest percentage of diagnosed high blood pressure. See Figure 45 below. This mirrors national trends.

Figure 45.



Ethnicity: A lower percentage of Latinos in the County were ever diagnosed with high blood pressure compared to non-Latinos. However, the percentage of diagnosed high blood pressure has increased in both population groups between 2003 & 2005 and 2007 & 2009. See Figure 46 on the next page.

Figure 46.



Poverty Status: In 2003 & 2005, CHIS data indicated that the prevalence of diagnosed high blood pressure was higher in Stanislaus adults living below the poverty level; by 2007 & 2009, the percentage of Stanislaus adults with high blood pressure who are not in poverty increased 47.9% and surpassed adults who are living below the poverty level. See Table 5 below.

Table 5. Stanislaus Adults Ever Diagnosed with High Blood Pressure, by Poverty Status.

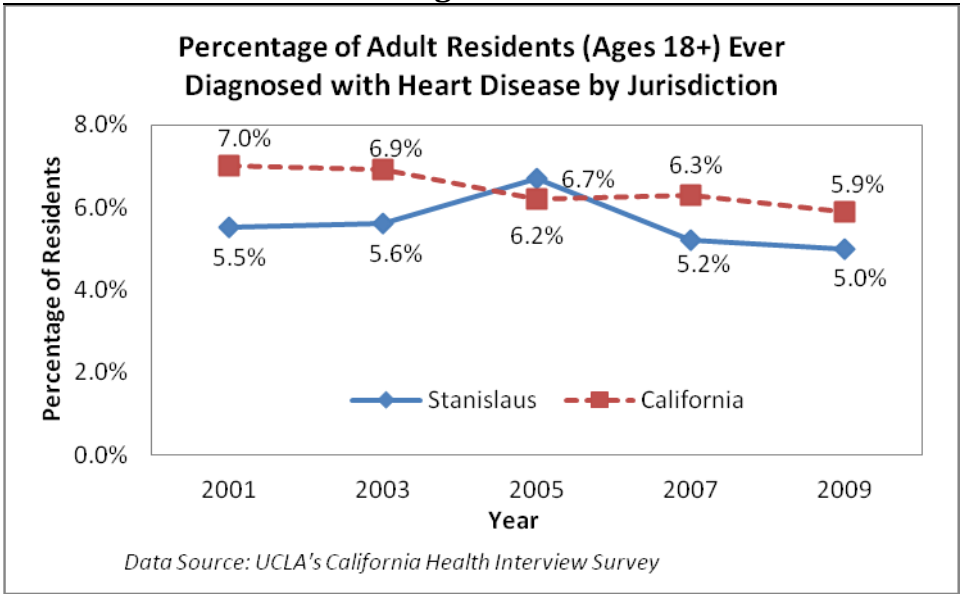
	<100% FPL	≥ 100% FPL
Year	% (CI)	% (CI)
2003 & 2005	25.3% (15.8 - 34.6)	21.7% (18.7 - 24.7)
2007 & 2009	30.9% (22.0 - 39.8)	32.1% (27.7 - 36.5)

Data Source: UCLA's *California Health Interview Survey*

Heart Disease

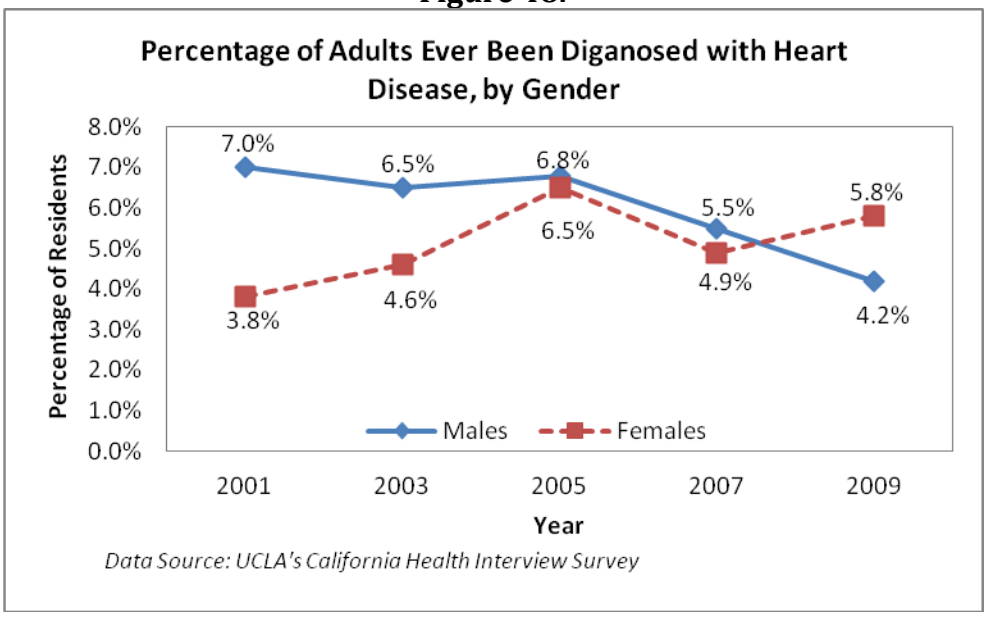
Heart disease is the leading cause of death in the US. Data from the 2010 National Health Interview Survey showed that 12% of adults ages 18 and over had ever been told by a doctor or health professional that they had heart disease (Vital and Health Statistics, 2010). Data from CHIS indicated that between 2001 and 2009, the percentage of Stanislaus residents diagnosed with heart disease hovered between 5.0% and 5.6%, except in 2005, when the percentage increased to 6.7%. In California, the percentage of residents diagnosed with heart disease decreased 15.7% between 2001 and 2009. The percentage of adults in California ever diagnosed with heart disease was consistently higher than the percentage of Stanislaus adults, except in 2005. See Figure 47 below.

Figure 47.



Gender: In 2001, the percentage of adult men who were ever diagnosed with heart disease (7.0%) was higher than that of women (3.8%). However, by 2009, the percentage of adult women ever diagnosed with heart disease surpassed the percentage of adult men. Between 2001 and 2009, the percentage of men diagnosed with heart decreased by 40.0%, while the percentage of women diagnosed with heart disease increased by 52.6%. See Figure 48 below.

Figure 48.



Race/Ethnicity: Data from the 2010 National Health Interview Survey indicated that a higher percentage of Native Hawaiian, American Indian or Alaskan Natives were ever told that they had heart disease, compared with Whites, Blacks and Asians. When results were stratified by ethnicity, a higher percentage of non-Latinos (11.9%) than Latinos (8.3%) had heart disease. Countywide data from CHIS were too unstable to provide reliable racial and ethnic prevalence of diagnosed heart disease.

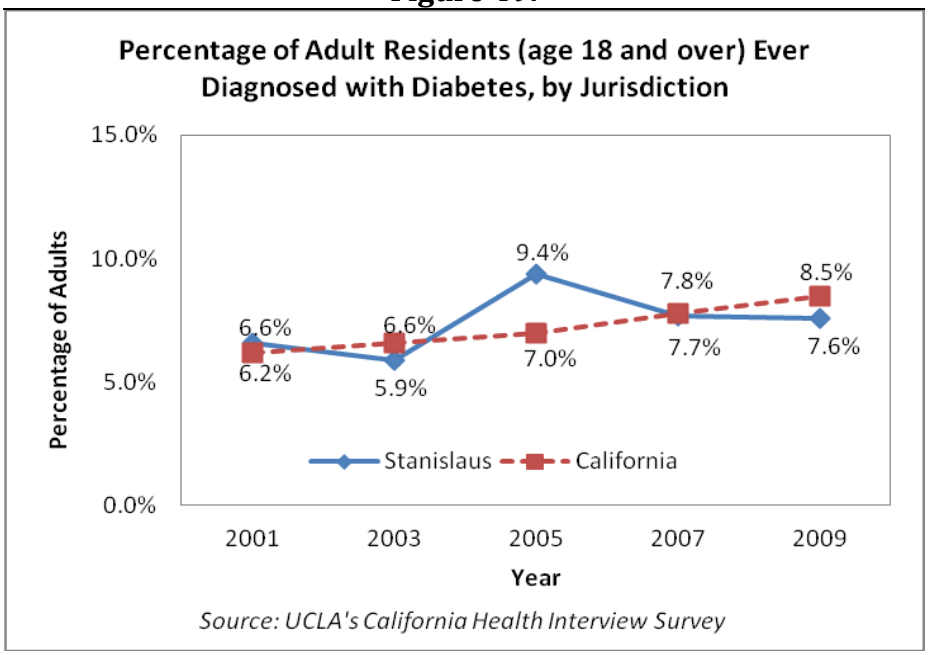
SES: Nationally, education and poverty level were inversely associated with heart disease. As education level increased, the percentage of adults with heart disease decreased. A higher percentage of adults living below the federal poverty level had heart disease, compared to adults who were not poor. Countywide CHIS diagnosed heart disease data stratified by poverty status was too unstable to provide reliable information.

Diabetes

According to the CDC (2011a), diabetes affects 8.3% of the US population, or 25.8 million Americans. It is the seventh leading cause of the death in the US and is a major cause of heart disease and stroke. Other diabetes complications include kidney disease, hypertension, amputations and blindness. In 2010, data from the National Health Interview Survey indicated that 9% of adults aged 18 and over had ever been told by a doctor or other health professional that they had diabetes (US Department of Health and Human Services, 2012).

Data from CHIS show that the percentage of Stanislaus adults that were ever diagnosed with diabetes fluctuated from 6.6% in 2001 to 9.4% in 2005 and 7.6% in 2009 (see Figure 49). The percentage of Californians ever diagnosed with diabetes slowly increased from 6.2% in 2001 to 8.5% in 2009.

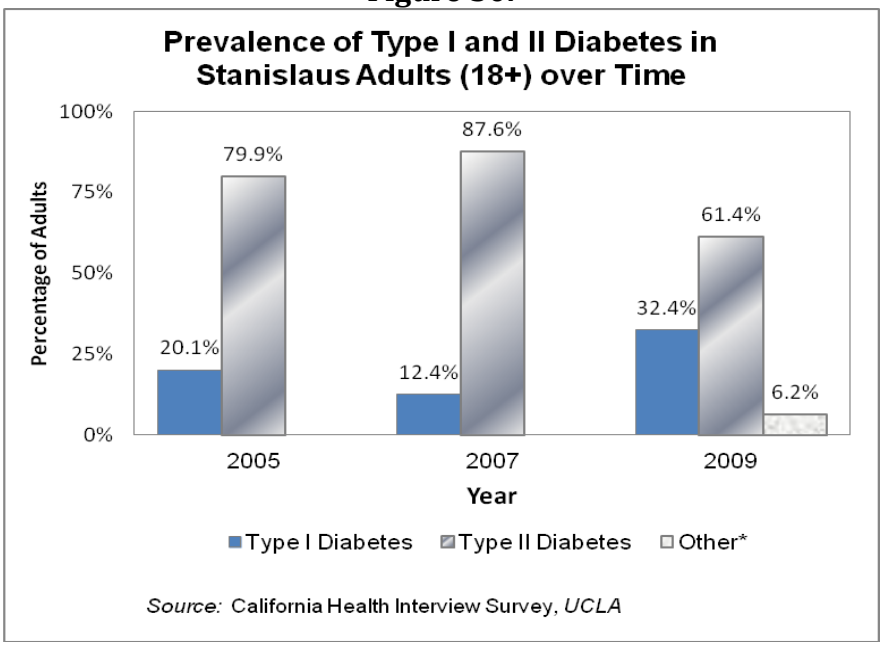
Figure 49.



Type I and Type II Diabetes

Type I diabetes, (what used to be called juvenile-onset diabetes), occurs when the body's immune system destroys pancreatic beta cells which produce insulin. It is not known how Type I diabetes can be prevented. Type II diabetes (formally called adult-onset diabetes), however, is preventable through adopting a healthier lifestyle. Between 2005 and 2009, the percentage of Stanislaus adults with Type I diabetes increased 62.2% while those with Type II diabetes decreased 23.2%. See Figure 50 below. CHIS data for Type I diabetes in Stanislaus teens is too unstable and therefore not presented in this report. However, studies from other countries such as Hungary, Germany and Poland showed an increase in the frequency of Type I diabetes in children and teens in the past few years (Skordis et al, 2012; Gyurus et al, 2012; Jarosz-Chobot, et al, 2011; Ehehalt et al, 2008).

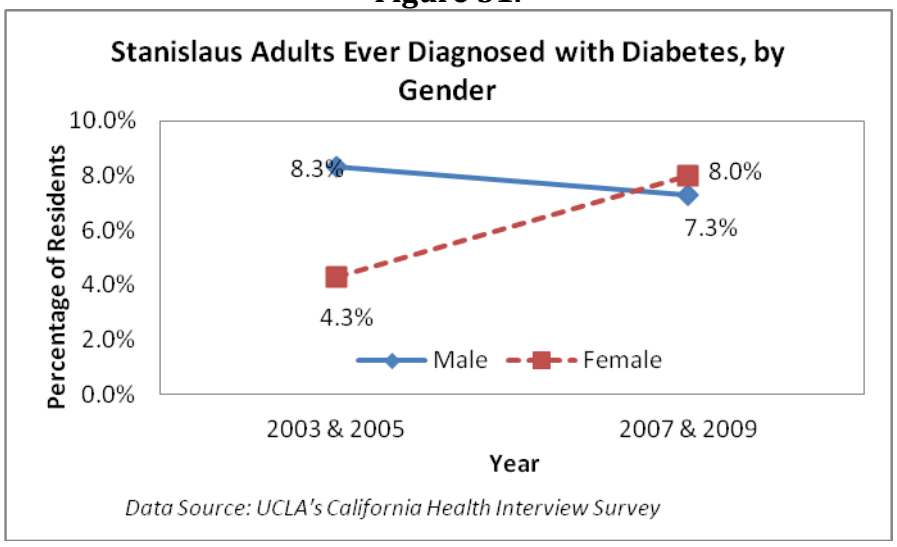
Figure 50.



Disparities in Diabetes Prevalence

Gender: Nationally, the percentage of men diagnosed with diabetes (9.8%) was slightly higher than that in women (8.0%) in 2010 (Vital Statistics 2010). Data from 2003 & 2005 CHIS showed that the percentage of males with diagnosed diabetes was almost twice that of females, but by 2007 & 2009, the percentage of females with diagnosed diabetes had surpassed that of men. See Figure 51.

Figure 51.



Race/Ethnicity: Racial and ethnic differences exist in diagnosed diabetes. Data from the 2007-2009 National Health Interview Survey showed that 7.1% of non-Latino whites, 8.4% of Asian Americans, 11.8% of Latinos and 12.6% of non-Latino blacks had diagnosed diabetes. Local CHIS data on diabetes prevalence stratified by race is statistically unstable and is therefore not presented in this report. As shown in Table 6, the percentage of diabetic Latino adults and diabetic non-Latino was approximately the same in 2003 & 2005 and 2007 & 2009.

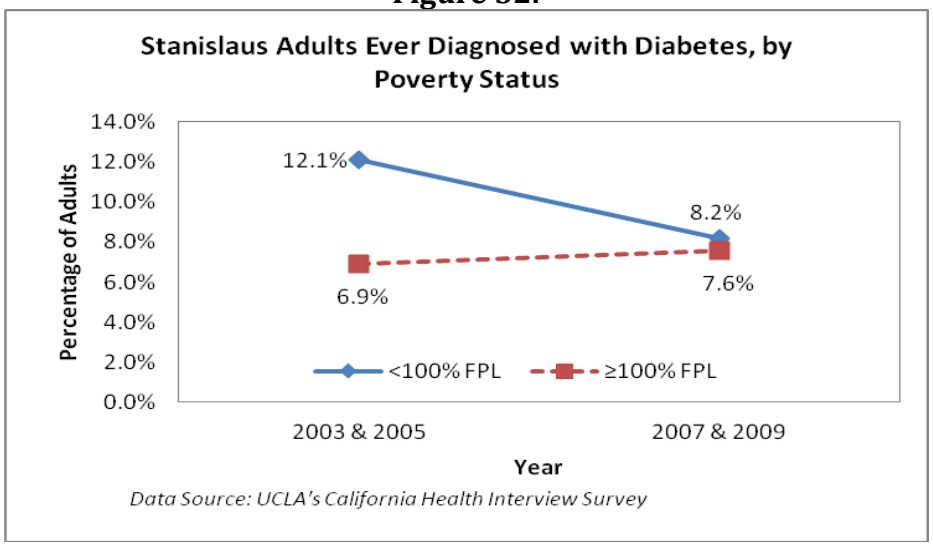
Table 6. Stanislaus Adults Ever Diagnosed with Diabetes, by Ethnicity.

	Stanislaus	California
Year	% (CI)	% (CI)
2003 & 2005	12.6% (4.5 - 20.8)	13.3% (12.1 - 14.5)
2007 & 2009	13.1% (7.0 - 19.2)	12.6% (11.3 - 13.8)

Data source: UCLA's *California Health Interview Survey*

SES: Nationally, a higher percentage of adults living in poverty had diabetes (12.4%) compared to adults who are not in poverty (7.8% diagnosed diabetes; Vital Statistics Report, 2010). Local data from CHIS are based on a small sample, and thus differences reported here are not statistically significant. Data from CHIS indicated that the percentage of Stanislaus adults living in poverty who were diagnosed with diabetes decreased 32.8% between 2003 & 2005 and 2007 & 2009. In 2003 & 2005, the percentage of diabetic adults living in poverty was almost twice that of diabetic adults not living in poverty. By 2007 & 2009, that gap had decreased (see Figure 52).

Figure 52.

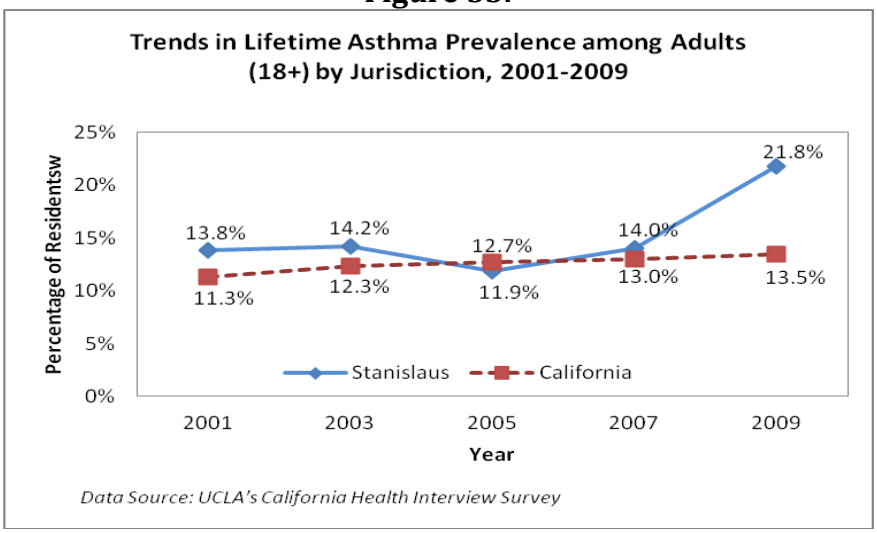


Asthma

Asthma is characterized by the inflammation of the airways and lungs; causes of asthma are currently unknown. Lifetime asthma prevalence (for both children and adults) has been increasing both nationally and in California (EPA). Outdoor air quality plays a role in California's and Stanislaus' asthma burden. Ten California Metropolitan Statistical Areas and 14 California counties are among the 25 worst in the nation for at least one pollutant category. Stanislaus county ranks as the 10th most polluted US county by short-term particle pollution (24-hour $PM_{2.5}$), while Modesto ranks 8th worst among US Metropolitan Statistical Areas (ALA, 2010).

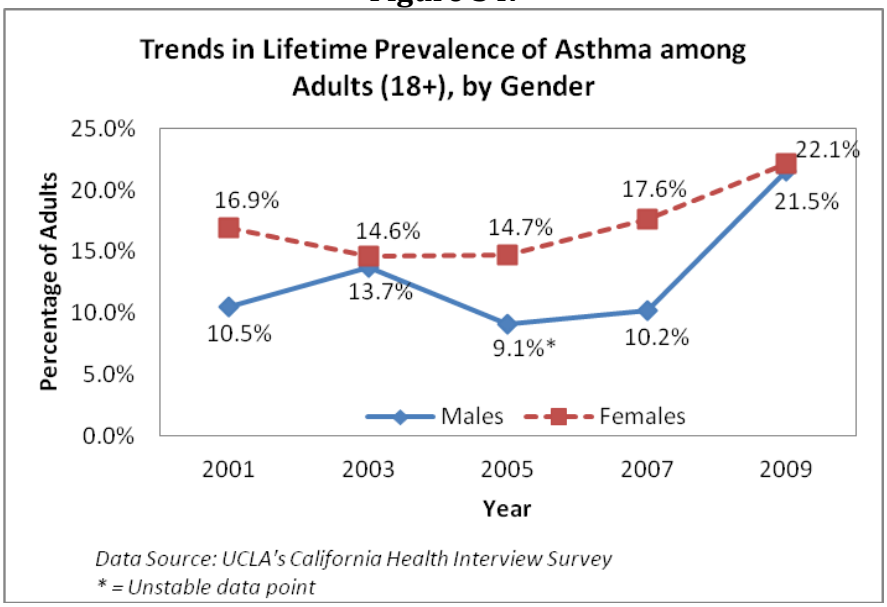
The percentage of adults who report ever being diagnosed with asthma has stayed approximately the same in Stanislaus between 2001 and 2007, with a slight increase in 2009 (see Figure 53). Approximately 11% - 14% of Stanislaus adults report ever being diagnosed with asthma by a medical provider. Not all of these individuals have continued to experience asthma symptoms or exacerbations.

Figure 53.



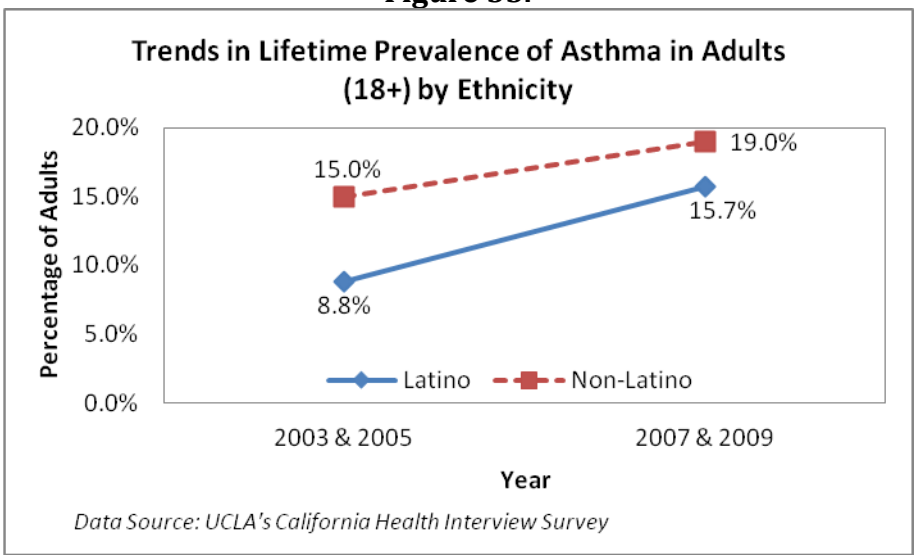
Gender: Data from the 2010 National Health Interview Survey indicated that females suffer from asthma more frequently than males; 14.5% of females compared to 10.8% of males were ever told by a doctor or other health professional that they had asthma (Vital Health Statistics, 2010). A similar pattern can be seen in Stanislaus County (see Figure 54), despite the small sample size available in CHIS.

Figure 54.



Ethnicity: The prevalence of lifetime asthma in Stanislaus adults was higher in non-Latinos than in Latinos for both 2003 & 2005 and 2007 & 2009 (see Figure 55). Both ethnic groups experienced increases in lifetime asthma prevalence between the two time frames: 78.4% increase in Latinos and 26.7% increase in non-Latinos.

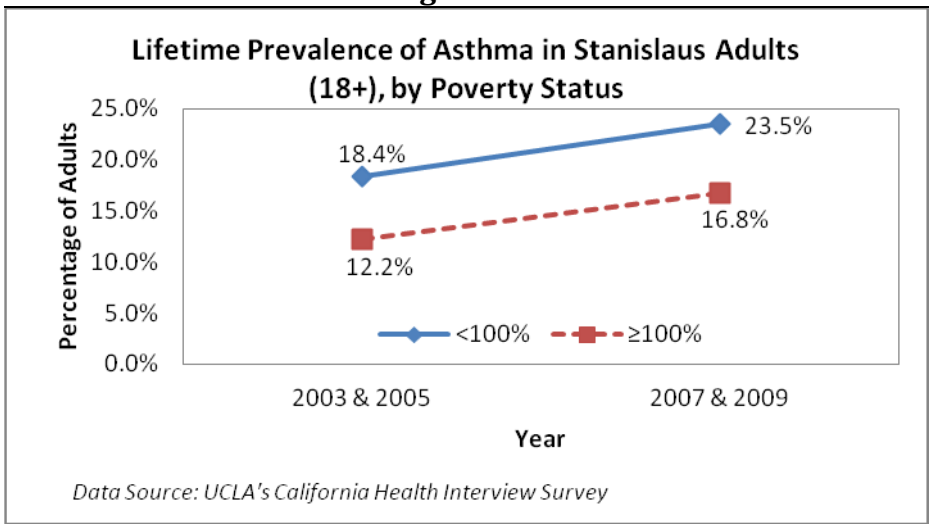
Figure 55.



Poverty Status: The prevalence of lifetime asthma is higher in Stanislaus adults living below the poverty level than adults living above the poverty level for both 2003 & 2005 and 2007 & 2009 (Figure 56). Both groups experienced almost identical increases in lifetime asthma

prevalence between the two time frames: 27.7% increase in adults living below the poverty level and 27.4% increase in adults living above the poverty level.

Figure 56.



Hospitalization

Overview

Between 2008 and 2010, residents of Stanislaus County were hospitalized in California hospitals (some more than once), for a total of 185,822 hospitalizations, or an average of 61,941 hospitalizations per year (see Methodology section for more information). The vast majority of these hospitalizations occurred in Stanislaus County facilities—153,977 (82.9%)—while another 20,348 (11.0%) hospitalizations took place in a neighboring county, and only 11,500 (6.2%) elsewhere in California. During this period, the total charge for hospitalizations of Stanislaus County residents in California hospitals was $1,107,710,026 or an average of $3,923,67,75 per year and $54,610.39 per hospitalization. In 2010, the crude hospitalization rate for Stanislaus County was statistically significantly higher than that for California (11,910.7 vs. 10,659.1 per 100,000).

To present a comprehensive view of major causes of hospitalization in the County, the Major Diagnostic Category (MDC) was examined (see Table 7), with the total number of hospitalizations, the average number of hospitalizations per year, the percentage of all hospitalizations and the age-adjusted cause-specific rate (and 95% Confidence Interval) given for each of the 25 categories. The most frequent category of hospitalizations was for conditions related to Pregnancy, Childbirth and the Puerperium. The four most frequent MDCs accounted for about half of all hospitalizations.

Table 7: Hospitalizations by Major Diagnostic Categories (MDCs), 2008-2010

Rank	Major Diagnostic Category Description*	Total Number	Average Number per Year	Percent of Hospital-izations	Age-Adjusted Rate* (95% CI^)
1	Pregnancy, Childbirth and the Puerperium	26,126	8,709	14.1%	1,710.9 (1690.1-1731.6)
2	Newborns & Neonate Conditions Began in Perinatal Period	25,191	8,397	13.6%	1,419.8 (1202.3-1437.3)
3	Circulatory System	24,247	8.082	13.0%	1,715.4 (1693.8-1737.0)
4	Respiratory System	17,104	5,701	9.2%	1,169.0 (1151.5-1189.6)
5	Digestive System	14,707	4,902	7.9%	1,012.2 (955.8-1028.5)
6	Musculoskeletal System and Connective Tissues	13,351	4,450	7.2%	927.9 (912.1-943.6)
7	Mental Diseases and Disorders	9,596	3,199	5.2%	640.6 (627.7-653.4)
8	Nervous System	9.074	3.025	4.9%	631.0 (618.0-644.0)
9	Kidney and Urinary Tract	6,646	2,215	3.6%	466.2 (455.0-477.4)
10	Endocrine, Nutritional & Metabolic	6,426	2,142	3.5%	438.9 (428.2-449.6)
11	Infectious and Parasitic Diseases	5,485	1,828	3.0%	383.1 (373.0-393.3)
12	Hepatobiliary System & Pancreas	5,390	1,797	2.9%	369.0 (359.1-378.8)
13	Female Reproductive System	4,615	1,538	2.5%	322.7 (313.4-332.0)
14	Skin, Subcutaneous Tissue and Breast	4,458	1,486	2.4%	301.7 (292.8-310.5)
15	Factors on Health Status & Other Contacts with Health Services	3,208	1,069	1.7%	229.7 (221.8-237.7)
16	Injuries, Poisonings and Toxic Effects of Drugs	2,582	861	1.4%	174.0 (167.3-180.7)
17	Ear, Nose, Mouth and Throat	1,670	557	0.9%	107.3 (102.2-112.5
18	Blood, Blood Forming Organs Immunological System	1,533	511	0.8%	105.3 (100.0-110.6)
19	Myeloproliferative Diseases and Poorly Differentiated Neoplasms	1,405	468	0.8%	95.0 (90.100.0)
20	AOD@ Use and AOD@ Induced Organic Mental Diseases	1,247	416	0.7%	84.7 (80.0-89.4)
21	Male Reproductive System	800	267	0.4%	56.0 (52.1-59.9)
22	Multiple Significant Trauma	454	151	0.2%	30.0 (27.3-32.8)
23	Eye	221	74	0.1%	14.6 (12.7-16.5)
24	Human Immunodeficiency Virus Infections	173	58	0.1%	11.3 (10.5-14.2)
25	Burns	113	38	0.1%	7.3 (6.0-8.7)
NA	**TOTAL**	**185,822**	**61,941**	**100%**	**12,089.4 (12368.3-12481.2)**

*From the Patient Discharge Data files data dictionary provided by the Office of Statewide Health and Planning for 2010

*Average annual age-adjusted rate of hospitalizations per 100,000 Stanislaus County residents, using 2008-2010 American Community Survey and the 2000 US Census as the standard population

^95% Confidence Interval

@Alcohol and Other Drug

While the MDC categories provide a comprehensive view of the causes of hospitalization, they are primarily organized around body system. For example, cancer hospitalizations are categorized into the primary site of the cancer (e.g. respiratory, digestive), rather than being in one category. To be able to examine hospitalizations due to specific diseases and conditions, a list of 15 conditions of interest was generated following discussions with stakeholders from health facilities, health plans, health and human services agencies, and non-profit and neighborhood organizations. The primary diagnosis was searched for ICD-9 codes corresponding to these diseases/conditions (see *Appendix A*). To make clear that these categories of disease/conditions are precisely defined by ICD 9 codes, these category names are capitalized in this section. The frequency of hospitalizations due to these causes, as well as other statistics, was calculated for 2008-2010. As shown in Table 8, Injury and Other Accidents was the most common of these selected causes of hospitalization, followed by Childbirth and Ischemic Heart Disease (including myocardial infarction, or heart attack).

Table 8: Selected Causes of Hospitalization in Stanislaus County, 2008-2010

Primary Cause*	Total Number	Average Number per Year	Percentage of all Hospital-izations	Age-Adjusted Rate# (95% CI^)
Injury and Other Accidents	27,659	9,220	14.9%	2,342.4 (2314.8-2370.0)
Childbirth	18.380	6,127	9.9%	573.0 (564.7-581.3)
Ischemic Heart Disease$	6,833	2,278	3.7%	616.7 (601.1-630.3)
Influenza/Pneumonia	6,216	2,072	3.3%	639.8 (623.9-655.7)
Chronic Obstructive Pulmonary Disease (COPD)	4,726	1,575	2.5%	387.8 (276.8-398.9)
Cancer (any type)	4,691	1,564	2.5%	376.5(265.7-387.2)
Cerebrovascular Disease (Stroke)	3,866	1,289	2.1%	452.6 (438.3-466.9)
Depression	3,306	1,102	1.8%	117.3 (113.3-121.3)
Diabetes, Type I or Type II	2,448	816	1.3%	146.0 (140.2-151.7)
Schizophrenia	2,209	736	1.0%	78.0 (74.8-81.3)
Overweight/Obesity	1,494	498	0.8%	54.2 (51.4056.9)
Chronic Liver Disease	930	310	0.5%	50.5 (47.3-53.8)
Hypertension/Hypertensive Disease	806	269	0.4%	73.2 (69.1-78.2)
Asthma@	709	236	0.4%	52.1 (48.3-56.0)
Alcohol or Other Drug Dependence	250	83	0.1%	9.1 (7.9-10.2)
ANY CAUSE	**185,822**	**61,941**	**100%**	12,424.7 (12368.3-12481.2)

*As determined by the primary diagnosis (see Appendix A for ICD-9 codes used) in order of frequency
$Average annual crude rate of hospitalizations per 100,000 population using the US Census Bureau's *2005 American Community Survey* as the midpoint population Figure; note childbirth rate denominator is also all Stanislaus residents, not just females.
#Average annual age-adjusted rate of hospitalizations per 100,000 population using the US Census Bureau's *2005 American Community Survey* as the midpoint population Figure and using the 2000 US Census as the standard population
^95% Confidence Interval around the rate
$Includes myocardial infarction (heart attack)
@Hospitalizations for Asthma are also included in the category for COPD

Disparities in Hospitalization

In order to study the differential burden of hospitalizations for different demographic groups, average annual cause-specific age-adjusted rates were examined for the 15 selected conditions of interest. The period of time for which data was aggregated differed by the demographic factor examined, because group size and patterns in population change differed across these factors. It is important to note that the demographic groups examined differ from each in multiple ways. For example, individuals of different races in Stanislaus County differ in their age-structure, their patterns of residence within the County, their average household income, health insurance coverage and other important variables which are known to influence the likelihood of hospitalization (see Table 9). Other than age, these factors were not controlled in the analyses presented here.

To examine gender differences in the total burden of hospitalizations, the time period 2008-2010 was used. Females were hospitalized 110,793 times during this 3-year period, compared to 75,015 times for males (with 14 hospitalizations for individuals of other or unknown gender). As shown in Table 8, females had a higher overall age-adjusted rate of hospitalization than males. Some (but not all) of this differences is accounted for by the fact that only females are hospitalized for childbirth, which alone accounts for nearly 10% of all hospitalizations. Males had statistically significantly higher age-adjusted hospitalization rates for five of the selected diseases/ conditions: Ischemic Heart Disease, Schizophrenia, Diabetes Type I or II, Chronic Liver Disease and Alcohol and Other Drug Dependence. In addition to childbirth, females had higher age-adjusted hospitalization rates for Injury, Cancer, COPD, Stroke, Depression, and Overweight/Obesity. There were no statistically significant gender differences in age-adjusted hospitalization rates for Influenza/Pneumonia.

Table 9: Frequency of Selected Causes of Hospitalization in Stanislaus County by Gender, 2008-2010

Primary Cause*	Male			Female			Relative Rate[!]
	Rank	Average Number	Age-Adjusted Rate[#] (95% CI[1])	Rank	Average Number	Age-Adjusted Rate[#] (95% CI[1])	
Injury and Other Accidents	1	4,457	1,858.5 1,827.0-1,890.0	2	4,763	1,978.6 1,922.4-2,034.7	**1.1**
Childbirth	NA			1	6,127	2,385.5 2,325.8-2,445.3	NA
Ischemic Heart Disease[$]	2	1,391	584.4 566.7-602.1	4	887	376.7 352.0-401.5	**0.6**
Influenza/Pneumonia	3	1,028	424.3 409.3-439.2	3	1,044	426.9 401.0-452.8	1.0
Cancer (any type)	4	714	302.2 289.4-315.0	6	850	353.3 329.5-377.0	**1.2**
Chronic Obstructive Pulmonary Disease (COPD)	5	692	285.9 273.6-298.2	5	883	363.9 350.1-377.8	**1.3**
Cerebrovascular Disease (Stroke)	6	607	264.2 252.0-276.3	7	682	293.8 281.0-306.5	**1.1**
Depression	7	478	192.7 182.7-202.6	8	624	243.5 224.4-262.7	**1.3**
Schizophrenia	8	435	178.0 168.3-187.6	11	301	120.6 107.0-134.2	**0.7**
Diabetes, Type I or Type II	9	427	176.5 166.8-186.2	10	389	157.8 148.7-166.8	**0.9**
Overweight/Obesity	12	92	38.1 33.6-42.6	9	409	166.1 156.8-175.4	**4.4**
Chronic Liver Disease	10	194	78.1 71.8-84.5	14	116	46.5 38.0-55.0	**0.6**
Hypertension/Hypertensive Disease	11	122	51.1 45.9-56.4	12	147	61.9 57.2-68.6	**1.2**
Asthma[@]	13	81	32.8 28.6-36.9	13	155	62.9 61.1-73.3	**1.9**
Alcohol or Other Drug Dependence	14	53	21.8 18.4-25.2	15	30	12.3 7.9-16.6	**0.6**
ANY CAUSE	**NA**	**25,005**	**9,870.5** 9779.9-9941.1	**NA**	**36,931**	**14278.7** **14194.6-14362.8**	**1.4**

*Determined by the primary diagnosis (see Methodology for ICD-9 codes used) in order of frequency for all residents
#Average annual rate of hospitalizations per 100,000 population per sex using the US Census Bureau's *2005 American Community Survey*
[!]Relative Rate = Rate for Females divided by rate for Males (Blue indicates males had a higher rate; purple females; bolded relative rates indicate statistically significant gender differences.)
[$]Includes myocardial infarction (heart attack)
@Hospitalizations for Asthma are also included in the category for COPD

Many diseases and conditions show great variability in prevalence by age. To examine age differences in the total burden of hospitalizations, the time period 2008-2010. As shown in Table 10, the rate of hospitalization for the selected conditions varied greatly by age. Injury and Other Accidents was the most frequent of these conditions for all age groups except 18-44 (for which it was the second most frequent), though the specific cause of injury differed

by age (e.g. falls being more important for seniors than other groups). Childbirth was the most frequent cause of hospitalization for the 18-44 group and tied for 4th and 5th most frequent for the 0-17 group. Generally, the age-specific hospitalization rates for chronic diseases are higher in older age groups. Influenza/Pneumonia showed a U-shaped distribution, showing greatest impact at the oldest and youngest ages and the hospitalization rate for Depression and Alcohol or Other Drug Dependence was least in the oldest group.

Table 10: Selected Causes of Hospitalization by Age Group with Age-Specific Rates, 2008-2010

Primary Cause*	Age Group							
	0-17		18-44		45-64		65+	
	Rank	Age-Specific Rate (95% CI[1])	Rank	Age-Specific Rate[#] (95% CI^)	Rank	Age-Specific Rate[#] (95% CI^)	Rank	Age-Specific Rate[#] (95% CI^)
Injury and Other Accidents	1	432.8 (413.5-452.2)	2	886.8 (863.7-909.9)	1	2,787.9 (2727.4-2848.4)	1	7374.3 (7241.9-7506.7)
Childbirth	4-5	146.3 (135.0-157.6)	1	2,775.6 (2734.7-2816.5)	15	9.6 (6.0-13.1)	15	0 NA
Ischemic Heart Disease[$]	14-15	0.2 (0-0.7)	11	46.7 (41.4-52.0)	2	951.5 (916.2-986.8)	2	2,318.7 (2244.4-2392.9)
Influenza/Pneumonia	2	299.6 (283.5-315.7)	7	78.7 (71.8-85.6)	5	445.9 (421.7-470.1)	3	1,905.3 (1838.0-1972.6)
Cancer (any type)	7	28.4 (23.4-33.4)	9	78.5 (71.7-85.4)	3	614.9 (586.5-643.3)	5	1400.4 (1342.7-1458.1)
Chronic Obstructive Pulmonary Disease (COPD)	4-5	146.3 (135.0-157.6	10	60.4 (54.3-66.4)	4	508.4 (482.5-534.2)	6	1,363.2 (1306.3-1420.2)
Cerebrovascular Disease (Stroke)	11	2.7 (1.2-4.2)	12	28.1 (24.0-32.2)	6	349.9 (328.5-371.4)	4	1,639.8 (1577.4-1702.3)
Depression	3	148.1 (136.8-159.4)	3	241.6 (229.5-253.7)	7	336.3 (315.3-357.3)	11	76.1 (62.7-89.6)
Schizophrenia	10	3.4 (1.7-5.1)	4	209.9 (198.7-221.2)	9	274.8 (255.8-293.8)	12	30.9 (22.4-39.5)
Diabetes, Type I or Type II	6	42.6 (36.5-48.7)	6	104.9 (96.9-112.8)	8	310.7 (290.5-330.9)	7	420.8 (389.2-452.4)
Overweight/Obesity	14-15	0.5 (0.0-1.1)	8	78.6 (75.5-81.7)	10	214.4 (197.6-231.2)	13	34.7 (25.6-43.7)
Chronic Liver Disease	12-13	2.3 (0.9-3.7)	5	128.1 (119.3-136.9)	11	191.9 (176.0-207.7)	10	124.4 (107.2-141.6)
Hypertension/ Hypertensive Disease	9	3.6 (1.8-5.4)	14	19.0 (15.6-22.4)	12	101.4 (89.9-112.9)	9	230.2 (06.8-253.6)
Asthma[@]	8	23.4 (18.9-28.0)	15	11.0 (8.4-13.5)	13	91.2 (80.2-102.1)	8	165.8 (146.0-185.7)
Alcohol or Other Drug Dependence	12-13	2.3 (0.9-3.7)	13	21.3 (17.7-24.9)	14	31.1 (24.7037.5)	14	8.0 (3.7-12.4)
ANY CAUSE	**NA**	**1,540.1 1503.6-1576.6**	**NA**	**4,723.0 4669.7-4776.3**	**NA**	**7,231.6 7134.2-7329.0**	**NA**	**17,106.9 16905.3-17308.6**

*As determined by the primary diagnosis (see Appendix A for ICD-9 codes used) in order of frequency

#Rate of hospitalizations per 100,000 population using the US Census Bureau's *2005 American Community Survey*

^95% Confidence Interval around the rate

$Includes myocardial infarction (heart attack)

@Hospitalizations for Asthma are also included in the category for COPD

To examine ethnic differences in the total burden of hospitalization for the 15 selected diseases/conditions, hospitalization records were examined from 2008-2010. As shown in Table 11, Non-Latinos individuals were hospitalized at double the rate of those of Latino ethnicity. Latinos had a statistically significantly higher age-adjusted rate of hospitalization for childbirth, while Non-Latinos had statistically significantly higher age-adjusted rates for all other selected conditions.

Table 11: Selected Causes of Hospitalization by Ethnicity with Age-Adjusted Rates, 2008-2010

Primary Cause*	Latino		Non-Latino		Relative Rate (Non-Latino /Latino)[!]
	Rank	Age-Adjusted Rate[#] (95% CI^)	Rank	Age-Adjusted Rate[#] (95% CI^)	
Injury and Other Accidents	2	903.6 879.4-927.7	1	2,737.8 2701.5-2774.1	3.0
Childbirth	1	1,359.6 1,331.2-1,388.0	2	1,038.4 1,017.5-1,059.4	0.8
Ischemic Heart Disease[$]	4	170.5 159.7-181.3	3	736.5 717.5-755.5	4.3
Influenza/Pneumonia	3	232.2 211.5-234.9	4	596.7 579.8-613.7	2.7
Cancer (any type)	5	149.5 139.5-159.4	6	477.6 462.4-492.9	3.2
Chronic Obstructive Pulmonary Disease (COPD)	6	119.5 110.8-128.2	5	493.7 478.3-509.0	4.1
Cerebrovascular Disease (Stroke)	7	112.7 103.2-121.0	7	424.6 409.9-439.3	3.8
Depression	9	86.0 78.8-93.1	8	301.5 290.0-312.9	3.5
Schizophrenia	10	60.4 54.3-66.5	10	204.2 194.7-213.7	3.4
Diabetes, Type I or Type II	8	108.0 99.6-116.4	9	214.1 204.1-224.0	2.0
Overweight/Obesity	11	49.1 48.6-49.6	11	141.2 140.3-142.1	2.9
Chronic Liver Disease	12	46.5 41.0-51.9	13	75.6 69.8-81.5	1.6
Hypertension/Hypertensive Disease	13	33.8 29.1-38.6	12	76.8 70.7-82.9	2.3
Asthma[@]	14	20.9 17.2-24.58	14	69.9 64.2-75.6	3.4
Alcohol or Other Drug Dependence	15	6.3 4.3-8.2	15	24.4 21.1-27.7	3.9
ANY CAUSE	**NA**	**6,754.4 6688.9-6819.9**	**NA**	**13,339.4 13259.3-13419.5**	**2.0**

*Primary diagnosis (see Methodology for ICD-9 codes used) in order of frequency for all residents
#Average annual rate of hospitalizations per 100,000 population per ethnic group using the US Census Bureau's *2006-2010 American Community Survey*
^95% Confidence Interval
[!]Relative Rate = Rate for Non-Latino group divided by rate for Latino group
[$]Includes myocardial infarction (heart attack)

Due to smaller numbers for some racial groups, hospital discharge records for a five-year period (2006-2010) were used to examine racial differences in hospitalization for the 15 selected diseases/conditions, in order to increase statistical stability. As shown in Table 12, White individuals were hospitalized at a statistically significantly higher rate than Black individuals, who were hospitalized at a statistically significantly higher rate than Asian individuals. For 5 conditions, age-adjusted rates were significantly higher for Whites than Blacks and Blacks than Asians: Injury & Other Accidents, Ischemic Heart Disease, Influenza/Pneumonia, Cancer and Stroke. For 5 conditions, rates were significantly higher for Blacks than Whites and Whites than Asians: COPD, Depression, Schizophrenia, Diabetes Type I or II, Asthma. For 3 conditions, rates did not differ significantly between Blacks and Whites, both of whom had higher rates than Asians: Overweight/Obesity, Chronic Liver Disease, and Alcohol or Other Drug Dependence. For childbirth, Whites had significantly higher age-adjusted rate than both Blacks and Asians, though the latter two groups did not significantly differ from one another.

Table 12: Selected Causes of Hospitalization by Race with Age-Adjusted Rates, 2000-2010

Primary Cause*	Race						Significant Difference?
	White		Black		Asian[1]		
	Rank	Age-Adjusted Rate[#] (95% CI^)	Rank	Age-Adjusted Rate[#] (95% CI^)	Rank	Age-Adjusted Rate[#] (95% CI^)	
Injury & Other Accidents	1	2,131.0 (2109.6-2152.4)	1	2,002.0 (1895.6-2108.3)	2	627.4 (586.2-668.7)	Y: W>B>A
Childbirth	2	1,307.6 (1291.5-1323.7)	2	915.5 (845.6-985.5)	1	842.7 (795.7-889.7)	Y: W>(B=A)
Ischemic Heart Disease[$]	3	661.6 (649.5-673.9)	4	441.6 (391.4-491.7)	3	256.9 (230.2-283.5)	Y: W>B>A
Influenza/Pneumonia	4	484.1 (473.9-494.2)	5	387.4 (341.0-433.8)	4	167.6 (146.4-188.7)	Y: W>B>A
Cancer (any type)	5	369.2 (360.3-378.2)	9	259.6 (221.-298.2)	5	143.7 (123.9-163.5)	Y: W>B>A
Chronic Obstructive Pulmonary Disease	6	340.9 (332.3-349.4)	3	465.2 (414.8-515.5)	7	102.3 (85.6-118.9)	Y: B>W>A
Cerebrovascular Disease (Stroke)	7	310.8 (302.5-319.2)	10	243.6 (206.0-281.3)	6	132.5 (113.0-152.0)	Y: W>B>A
Depression	8	207.4 (200.9-213.9)	8	323.5 (281.6-365.4)	9	61.7 (49.3-74.2)	Y: B>W>A
Schizophrenia	10	133.6 (128.4-138.9)	7	327.9 (285.7-370.1)	8	79.3 (64.8-93.8)	Y: B>W>A
Diabetes, Type I or Type II	9	175.7 (169.6-181.8)	6	377.0 (331.3-422.8)	10	54.1 (42.1-66.2)	Y: B>W>A
Overweight/Obesity	11	122.3 (117.2-127.3)	12	134.5 (106.9-162.2)	14	14.8 (8.5-21.2)	Y: (W=B)>A
Chronic Liver Disease	12	64.0 (60.3-67.6)	14	81.0 (59.9-102.0)	12	25.8 (17.7-33.9)	Y: (W=B)>A
Hypertension/ Hypertensive Disease	13	53.5 (50.1-56.9)	11	168.9 (137.9-199.9)	11	41.8 (30.9-52.6)	Y: B>(W=A)
Asthma[@]	14	48.4 (45.2-51.6)	13	82.4 (61.0-103.8)	13	24.5 (16.4-32.6)	Y: B>W>A
Alcohol or Other Drug Dependence	15	19.5 (17.5-21.5)	15	19.9 (9.1-30.7)	15	4.0 (0.8-7.3)	Y: (W=B)>A
ANY CAUSE	**NA**	**12,965.3 12914.6-13016.3**	**NA**	**12,154.3 11904.7-12403.9**	**NA**	**6,697.2 6550.8-6843.6**	Y: W>B >A

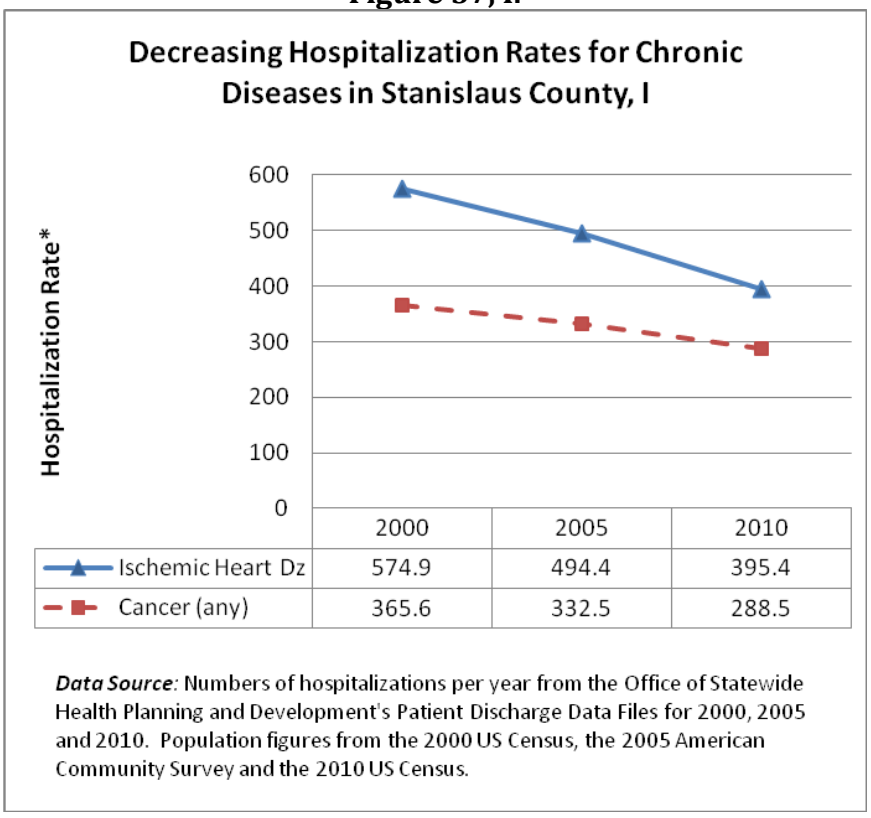
*As determined by the primary diagnosis (see Appendix A for ICD-9 codes used) in order of frequency for whole county
[1]Asian group includes individuals reported as Asian, Native Hawaiian or Pacific Islander
[2]The Relative Rate is calculated by dividing the hospitalization rate for a group by the rate for the Asian group.
[#]Rate of hospitalizations per 100,000 population using the US Census Bureau's *2005 American Community Survey*
^95% Confidence Interval around the rate
[$]Includes myocardial infarction (heart attack)
[@]Hospitalizations for Asthma are also included in the category for COPD

Trends in Age-Adjusted Hospitalization Rates

To examine time trends, crude hospitalization rates for the 15 selected diseases and conditions of interest were compared for 2000, 2005 and 2010. Hospitalization rates for six diseases/conditions showed no significant linear trend over time: Overweight/Obesity, Asthma, COPD, Stroke, Influenza/Pneumonia and Depression. Six of the diseases/

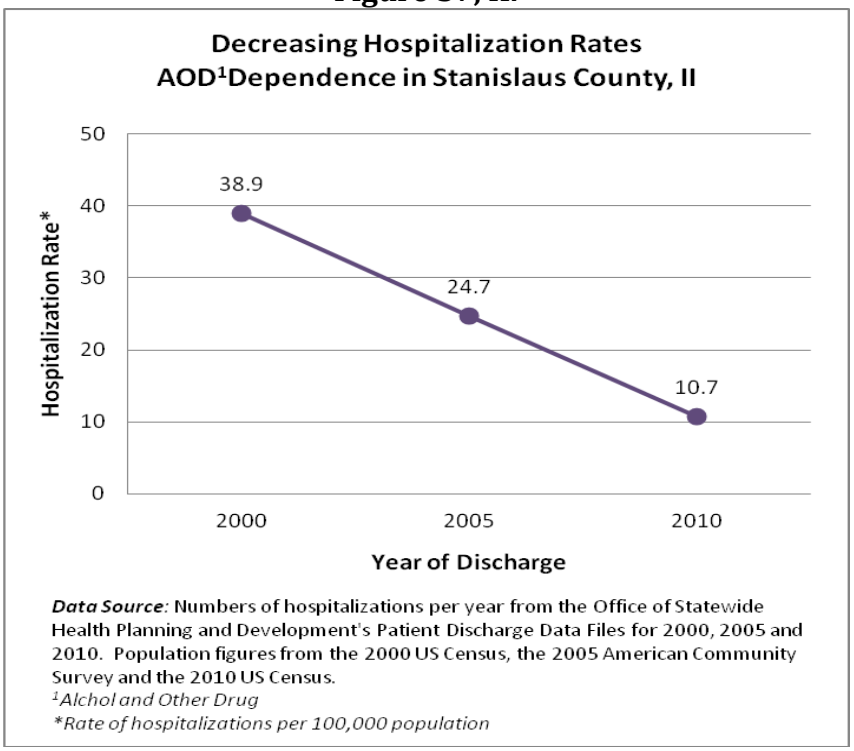
conditions showed a decreasing trend. Three of these were chronic diseases or conditions: Ischemic Heart Disease, Stroke and Cancer (see Figure 57, I); two were Behavioral Health Conditions (See Figure 57, II), and the final condition was Childbirth (see Figure 57, III below).

Figure 57, I.



Data Source: Numbers of hospitalizations per year from the Office of Statewide Health Planning and Development's Patient Discharge Data Files for 2000, 2005 and 2010. Population figures from the 2000 US Census, the 2005 American Community Survey and the 2010 US Census.

Figure 57, II.

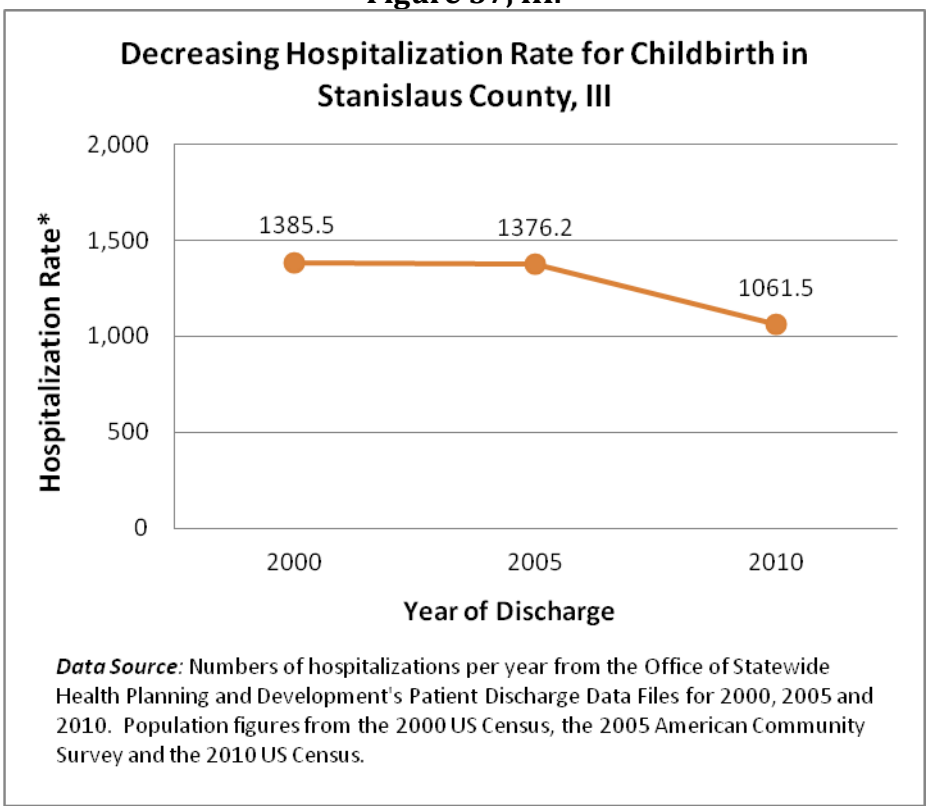


Data Source: Numbers of hospitalizations per year from the Office of Statewide Health Planning and Development's Patient Discharge Data Files for 2000, 2005 and 2010. Population figures from the 2000 US Census, the 2005 American Community Survey and the 2010 US Census.

[1]Alchol and Other Drug

**Rate of hospitalizations per 100,000 population*

Figure 57, III.



Data Source: Numbers of hospitalizations per year from the Office of Statewide Health Planning and Development's Patient Discharge Data Files for 2000, 2005 and 2010. Population figures from the 2000 US Census, the 2005 American Community Survey and the 2010 US Census.

As shown in the following three figures (Figures 58-60), the remaining three of the selected diseases/ conditions showed an increasing linear trend: Diabetes Type I or II, Schizophrenia and Injury.

Figure 58.

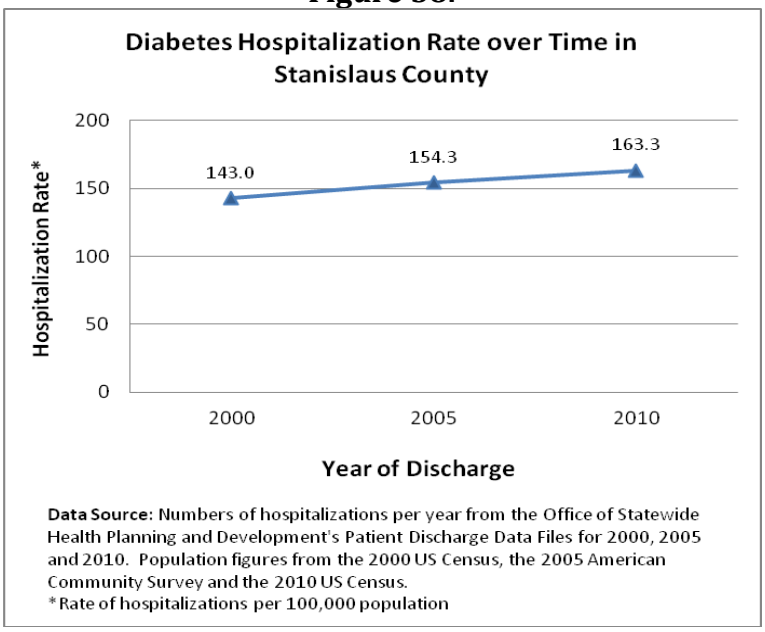


Figure 59.

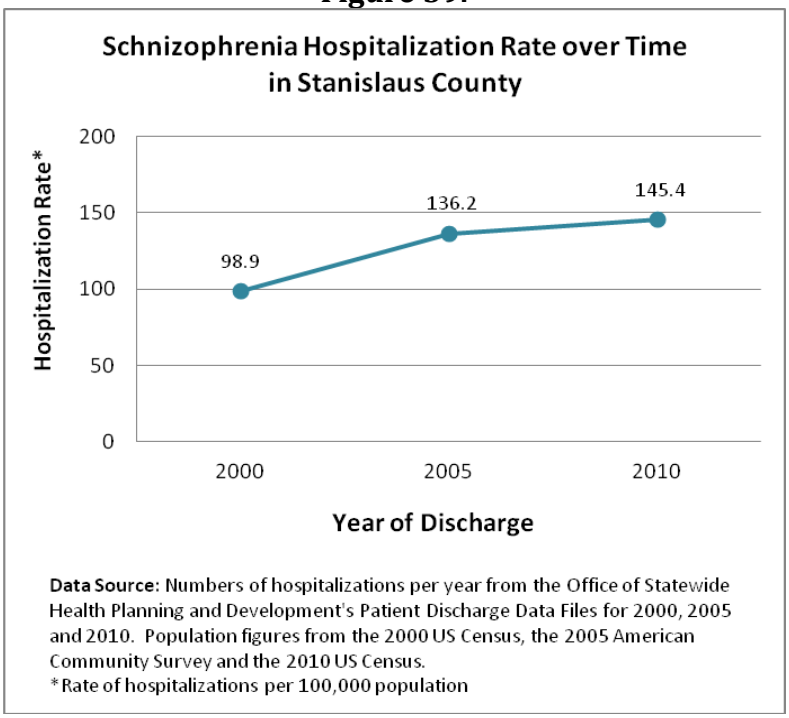
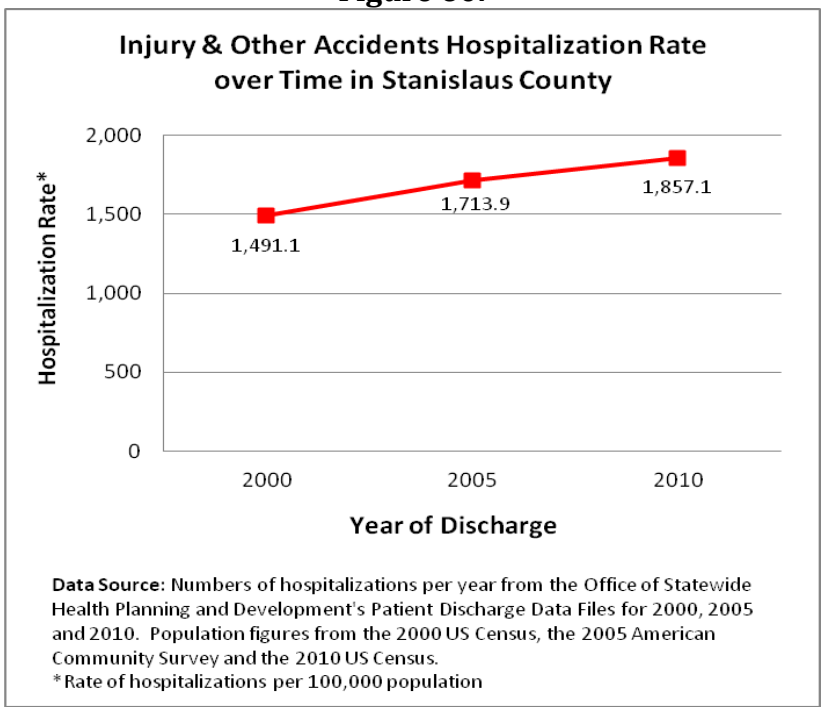


Figure 60.



Clinical Care and Management

Avoidable Hospitalizations - Prevention Quality Indicators (PQIs)

As explained in more detail in the ***Methodology*** section of this report, the Prevention Quality Indicators (PQIs) are measures developed by the federal Agency for Healthcare Research and Quality (AHRQ) to assess the quality of the healthcare system in preventing medical complications. They are a set of measures used to assess the quality of outpatient care for "ambulatory care sensitive conditions" (ACSCs), which are conditions for which early intervention and good outpatient care could have prevented hospitalizations.

As presented in Table 13 below, the top five avoidable hospitalizations in Stanislaus in 2009 were congestive heart failure, bacterial pneumonia, urinary tract infection, chronic obstructive pulmonary disease and diabetes long-term complications. The County's rate was higher than the State's for all thirteen conditions. However, confidence intervals were not available and it is not known whether these differences were significantly different.

Table 13: Hospitalization Rates for Prevention Quality Indicators (PQI) in Stanislaus, 2009

Agency for Healthcare Research and Quality (AHRQ) Prevention Quality Indicators	Stanislaus Hospitalization Rate	California Hospitalization Rate
Bacterial pneumonia	379.3	235.8
Congestive heart failure	368.9	272.4
Chronic obstructive pulmonary disease (COPD)	282.0	134.7
Urinary tract infection	185.9	155.9
Diabetes long term complications[1]	128.5	109.2
Adult asthma	103.8	87.3
Dehydration	65.1	57.7
Diabetes short term complications[2]	63.2	45.4
Angina without procedure	42.3	25.4
Lower-extremity amputation among patients with diabetes	38.7	28.3
Hypertension	36.8	36.0
Perforated appendix	29.6	27.0
Uncontrolled diabetes	12.3	11.9

[1]Diabetes long term complications include Diabetes with renal manifestation, Diabetes with ophthalmic manifestations, Diabetes with neurological manifestations and Diabetes with peripheral circulatory disorders.
[2]Diabetes short term complications include ketoacidosis, hyperosmolarity and coma.

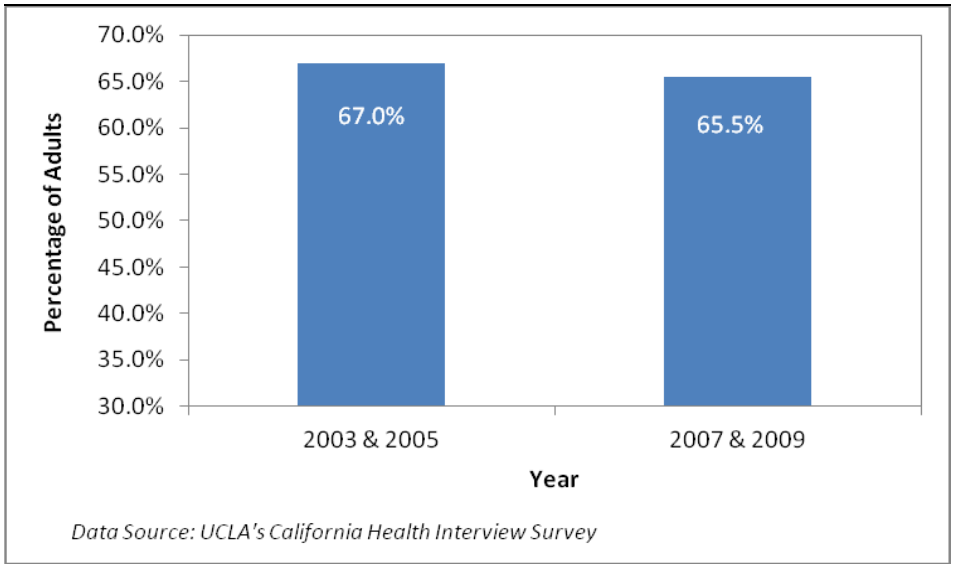
Chronic Disease Management

An important aspect in managing chronic disease such as hypertension, asthma, heart disease and diabetes is having a medical provider work with the patient to develop a plan so that patient knows how to take care of his or her condition. Taking prescribed medication as directed by the medical provider is important as well in managing chronic conditions, along with lifestyle and dietary changes.

Hypertension

Among patients who have high blood pressure, lifestyle changes in addition to taking medication are important in lowering blood pressure levels down to the normal range. In Stanislaus County, 65.5% of patients with high blood pressure take medication to control their condition. See Figure 61.

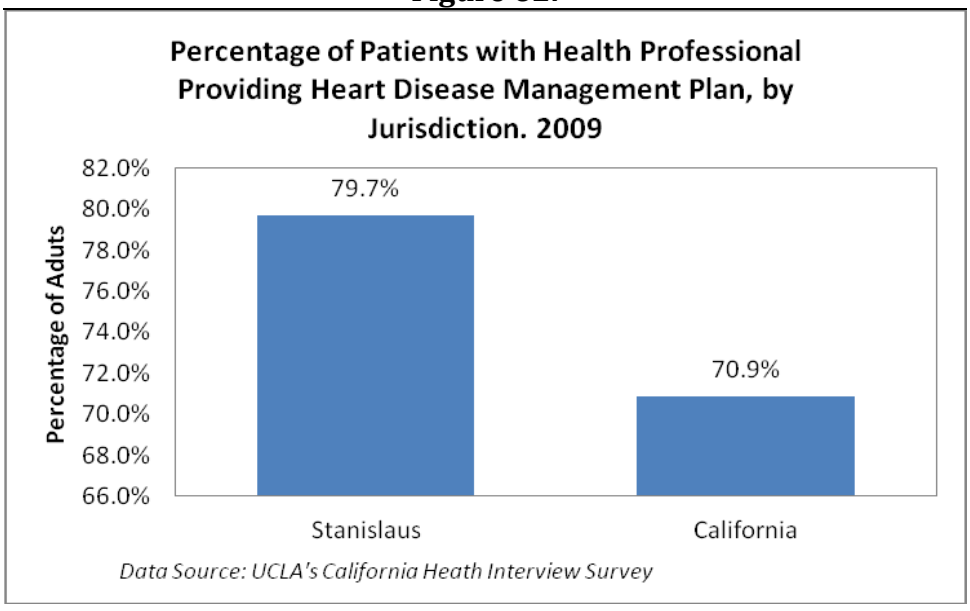
Figure 61: Takes Medication to Control High Blood Pressure: 2003 & 2005 and 2007 & 2009



Heart Disease

A slightly higher percentage of Stanislaus county residents (79.7%) had health professionals who provided them with a heart disease management plan, when compared to California (70.9%) as a whole (see Figure 62).

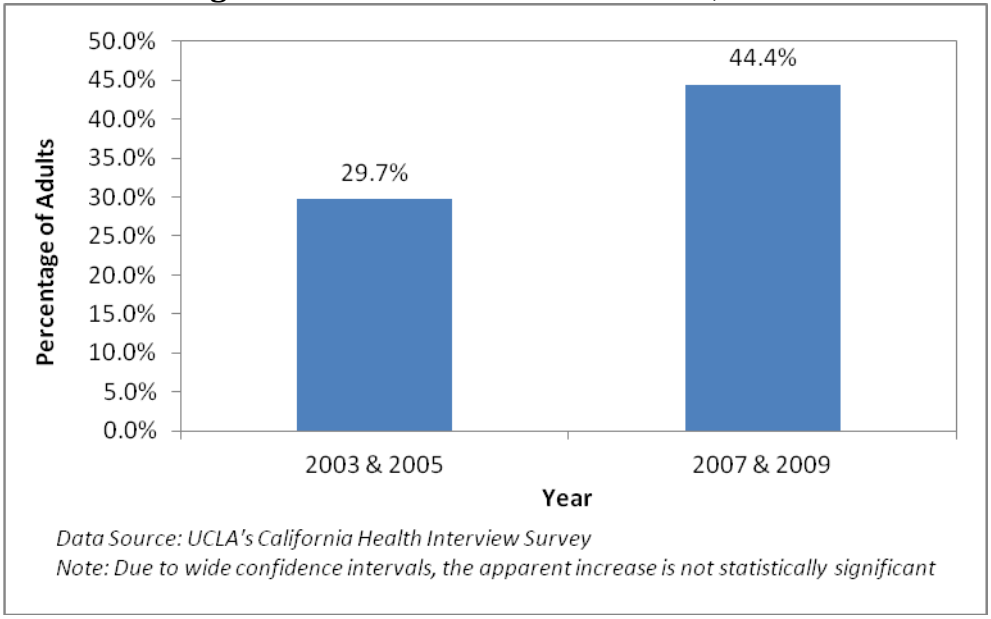
Figure 62.



Asthma

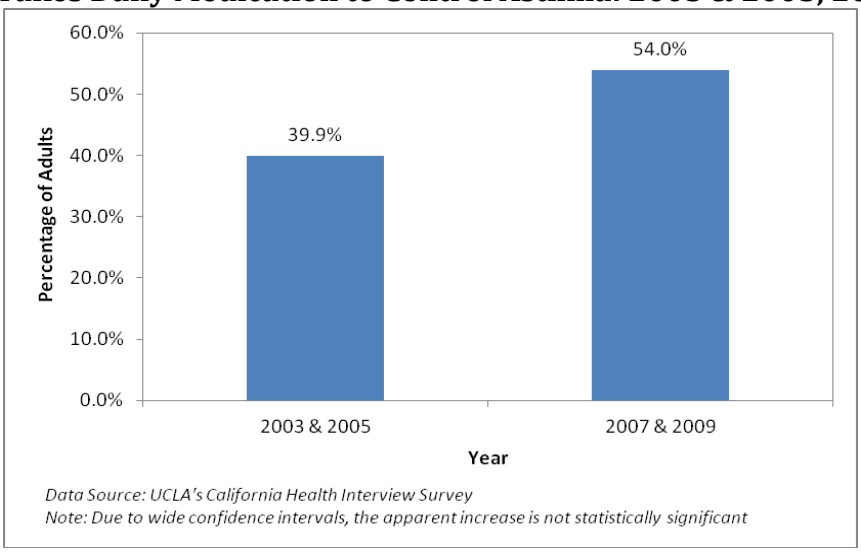
According to the CDC, all asthmatics should have an asthma action plan which describes a patient's daily medication, how to control asthma long term, how to handle asthma attacks, and when to go to the emergency room (CDC, Asthma Action Plan). Pooled 2007 & 2009 CHIS data showed that in Stanislaus, 44.4% of adults with asthma had health professionals who provided them with an asthma management plan, a 49.4% increase from 2003 & 2005.

Figure 63: Health Professionals in Stanislaus Provided Asthma Management Plan for those Diagnosed with Asthma: 2003 & 2005, 2007 & 2009



Asthma can be managed with daily medication (CDC, Asthma management and treatment). Pooled 2007-2009 CHIS data showed that in Stanislaus, 54.0% of adults with asthma took daily medications, a 36.7%% increase from 2003 & 2005.

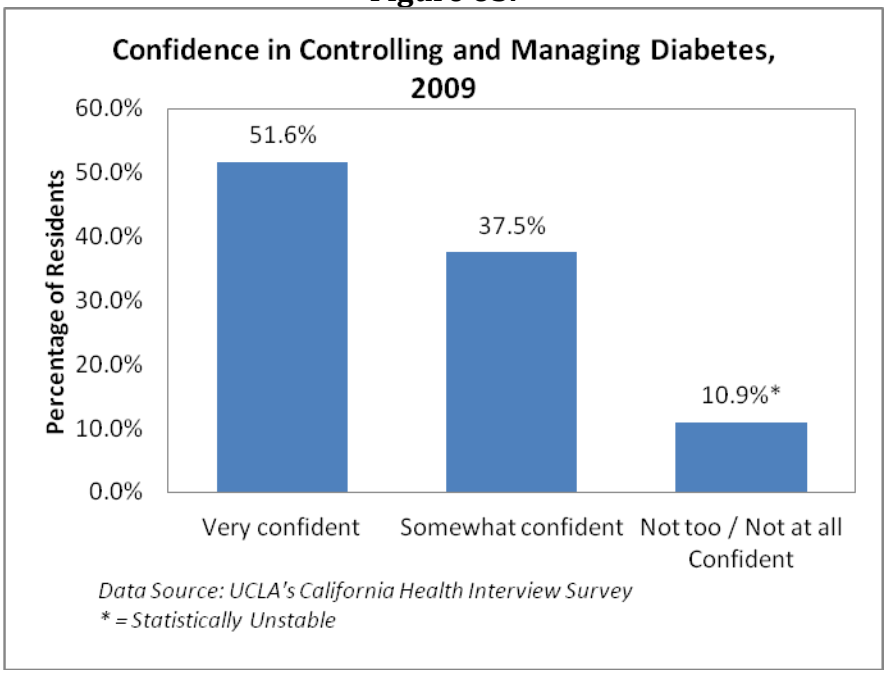
Figure 64: Takes Daily Medication to Control Asthma: 2003 & 2005, 2007 & 2009



Diabetes

Diabetics who engage in glucose control, blood pressure control and blood lipids control have a better chance of preventing diabetes complications. When asked how confident they are in controlling and managing their diabetes, 51.6% of Stanislaus adults said they were very confident and 37.5% said they were somewhat confident. See Figure 65 below.

Figure 65.



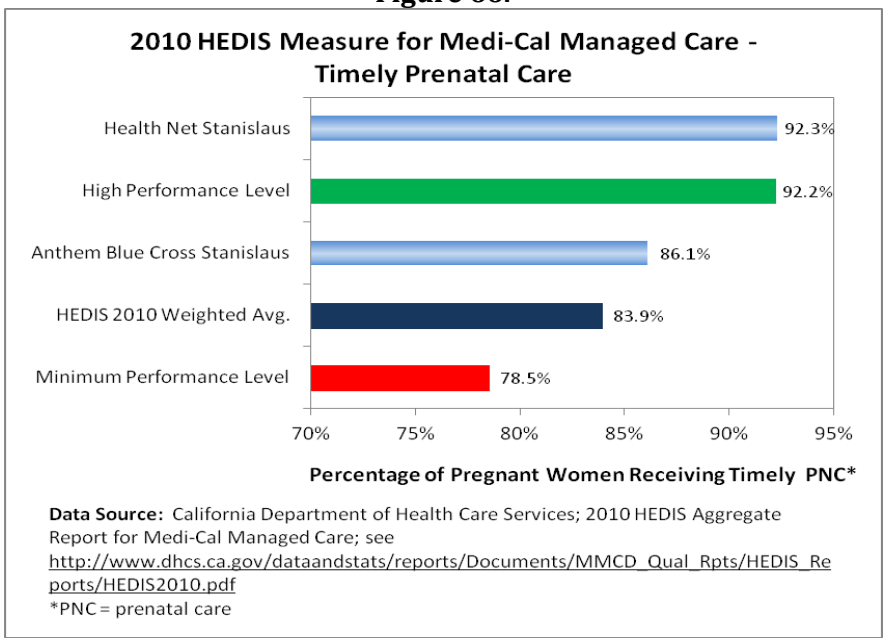
HEDIS Measures

Prenatal and Postpartum Care

Timeliness of Prenatal Care: One indicator in HEDIS performance measures looks at the *timeliness* of prenatal care, which computes the percentage of women (who delivered a live baby) who received prenatal care in the 1st trimester or within 42 days of enrolling into the health plan.

As Figure 66 shows below, Health Net Stanislaus performed above the High Performance Level (the 2009 national Medicaid 90th percentile) in 2010 for this measure, with 92.3% of women receiving timely prenatal care. Eighty-six percent of women in Anthem Blue Cross Stanislaus received timely prenatal care.

Figure 66.

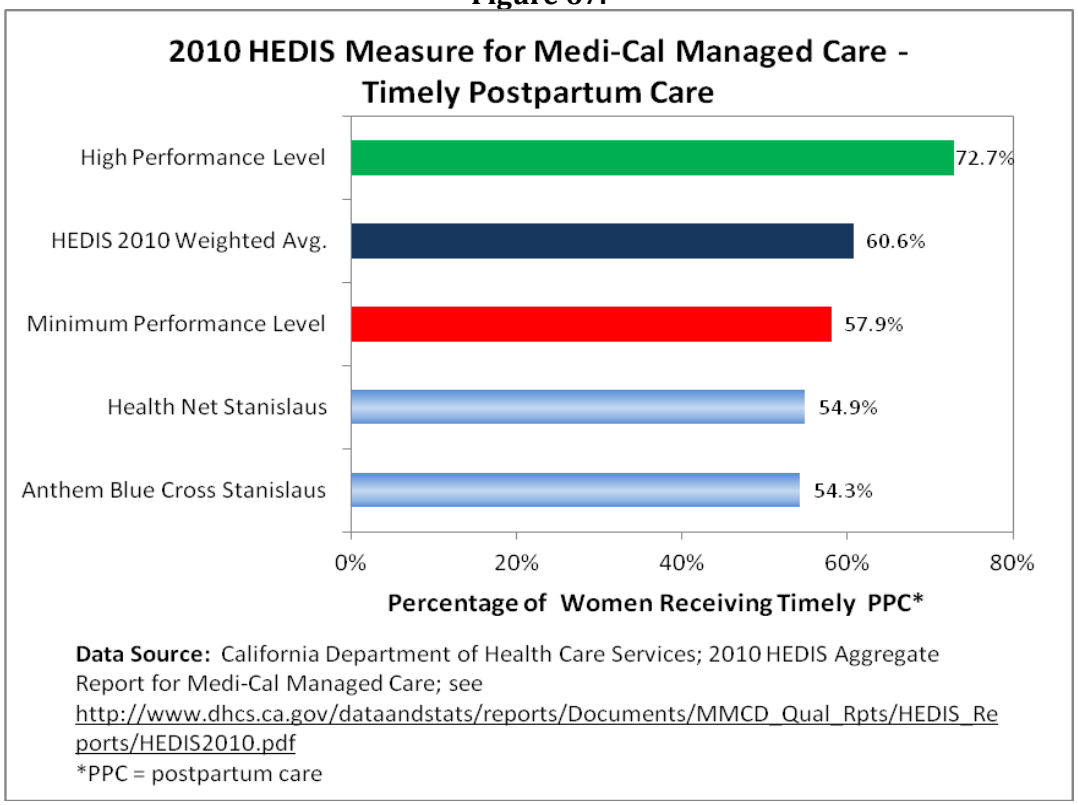


Postpartum Care: Another indicator of interest is postpartum care. The American Academy of Pediatrics (AAP) and the American College of Obstetricians and Gynecologists (ACOG) recommend that women schedule postpartum care visit 4- to 6- weeks after delivery but no later than 68 weeks after delivery. Women who delivered by cesarean section or had a complicated gestation should schedule a visit within 7- to 14- days of delivery (NYSDOH 2010). The postpartum care visit is important as this is when postpartum depression is assessed, family planning/contraceptive needs are discussed, inter-conception counseling is offered, and medical complications associated with the delivery are monitored (NYSDOH 2010).

Although the birth statistical master file does not keep track of whether women received postpartum care within the recommended time period, Medi-Cal managed health plans do

report on it as one of the HEDIS measures. This *postpartum care* measure reports the percentage of women who delivered a live birth who received a postpartum visit on or between 21 days and 56 days after delivery. As Figure 67 shows below, Health Net Stanislaus and Anthem Blue Cross Stanislaus both performed below the Minimum Performance Level (2009 national Medicaid 25th percentile), with 54.9% and 54.3% of women receiving timely postpartum visits.

Figure 67.



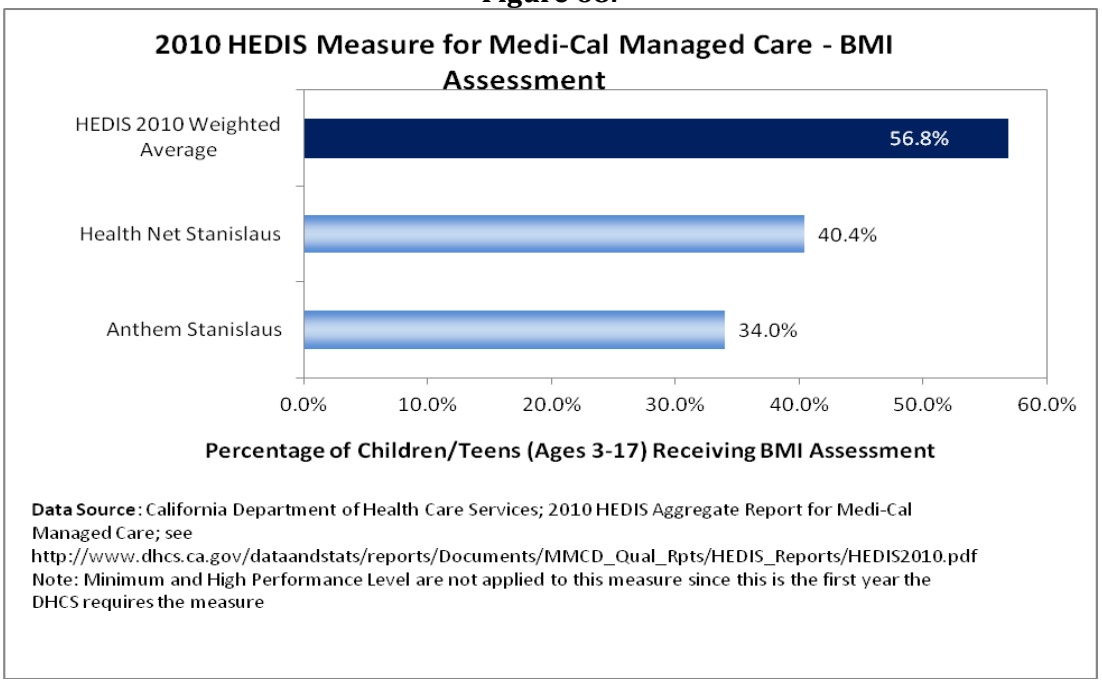
Weight Assessment and Counseling for Nutrition and Physical Activity for Children/Adolescents – HEDIS data for Medi-cal Managed Care Programs

Childhood overweight and obesity is a growing concern for pediatricians. Therefore it is very important that children and adolescents receive adequate weight assessment and counseling for nutrition and physical activity from pediatricians (HEDIS 2010). Beginning in 2010, Medi-Cal managed care plans are required to track and report three new measures for enrolled members between 3 and 17 years of age who had an outpatient visit with a personal care physician or an OB/GYN: 1) BMI Assessment 2) Nutrition Counseling and 3) Physical Activity Counseling.

BMI Assessment: Since 2010 is the first year where Medi-Cal managed care plans are required to report this measure, the Minimum Performance Level and the High Performance Level are not applied. The 2010 Medi-Cal Managed Care Weighted Average

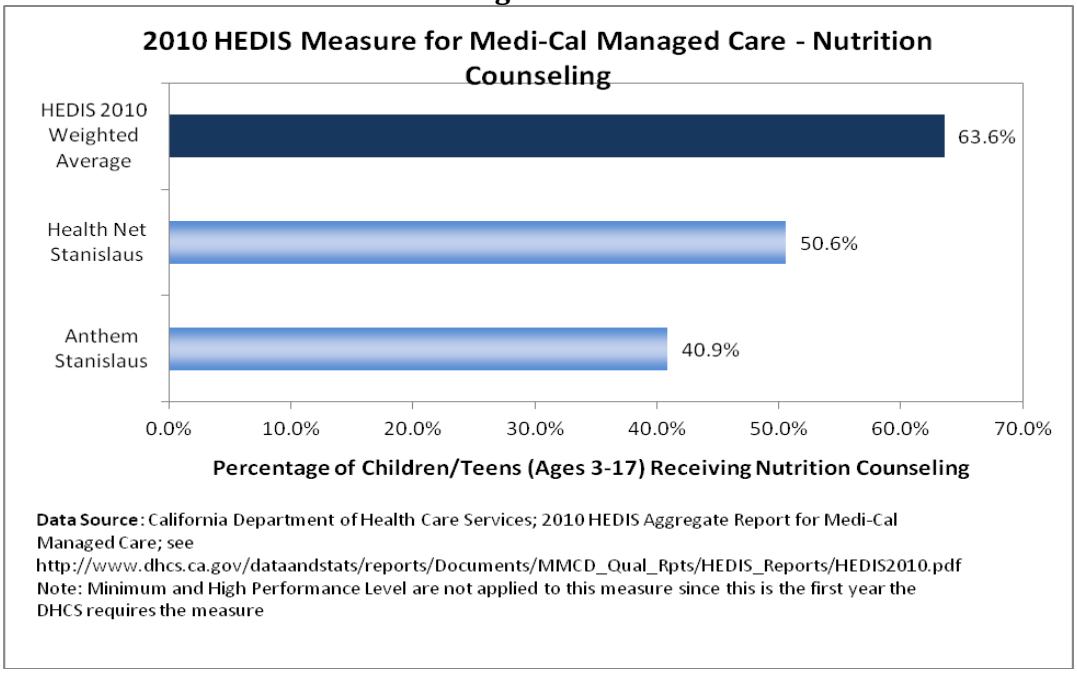
was 56.8%; Health Net and Anthem Blue Cross both performed below the weighted average. See Figure 68 on the next page.

Figure 68:



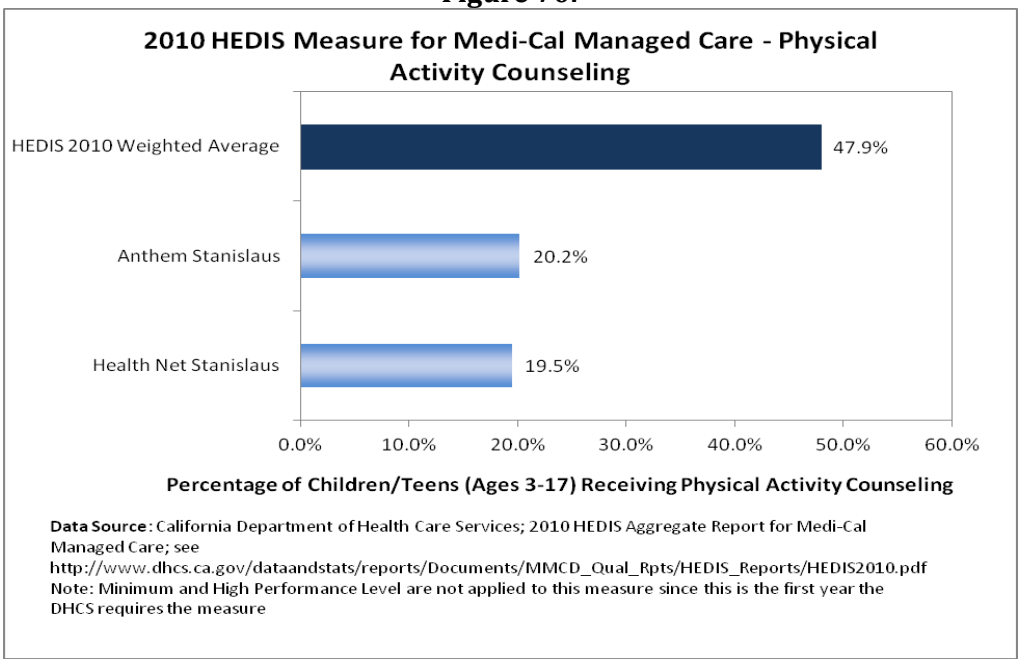
Nutrition Counseling: Since 2010 is the first year where Medi-Cal managed care plans are required to report this measure, the Minimum Performance Level and the High Performance Level are not applied. The 2010 Medi-Cal Managed Care Weighted Average was 63.6%; Health Net and Anthem Blue Cross both performed below the weighted average. See Figure 69 on the next page.

Figure 69:



Physical Activity Counseling: Since 2010 is the first year where Medi-Cal managed care plans are required to report this measure, the Minimum Performance Level and the High Performance Level are not applied. The 2010 Medi-Cal Managed Care Weighted Average was 47.9%; Health Net and Anthem Blue Cross both performed below the weighted average. See Figure 70 below.

Figure 70:



Comprehensive Diabetes Care – HEDIS Data

Eight HEDIS measures monitor the quality of diabetic care for patients with Type I or Type II diabetes, ages 18 to 75, enrolled in Medi-cal Managed Care Programs (Table 14).

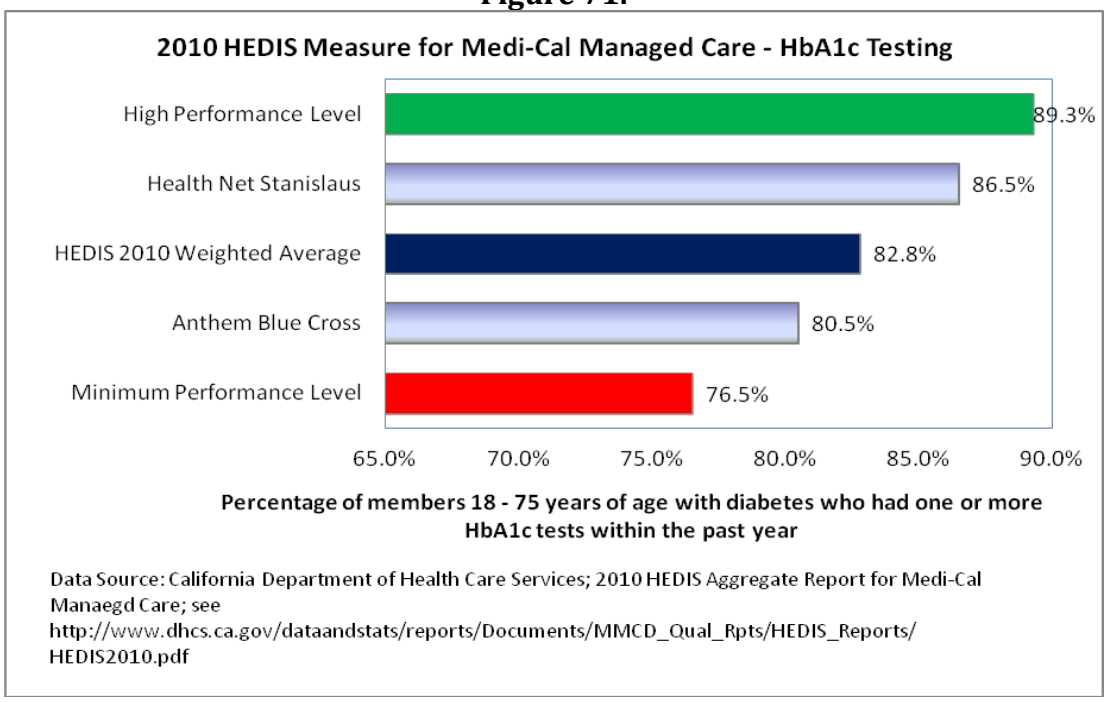
Table 14. HEDIS measures for comprehensive diabetes care.

HbA1c Testing	LDL-C Screening	Medical Attention for Nephropathy
Poor HbA1c Control (>9.0 Percent	LDL-C Control (<100 mg/dL)	Blood Pressure Control (<140/90 mmHg) ±
HbA1c Control (<8.0 Percent)±	Eye Exam (Retinal) Performed	

± New measure in 2010. High Performance Level and Minimum Performance Level are not applied.

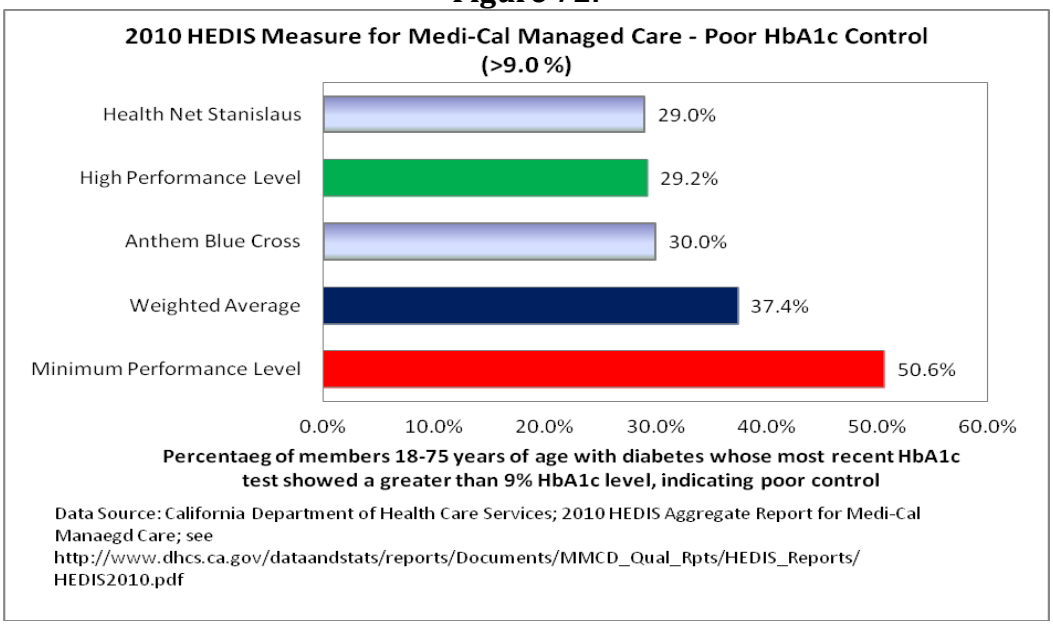
HbA1c Testing: This measure tracks the percentage of diabetic members who had one or more HbA1c tests conducted within the past year. Blood glucose testing is important as it lets the patients and their doctors know whether their blood glucose levels are within the acceptable range (2010 HEDIS Aggregate Report). As Figure 71 shows, Health Net performed slightly lower than the HPL but higher than the weighted average, while Anthem Blue Cross performed slightly below the weighted average. Eighty-seven percent of diabetic adults in Health Net and 80.5% of adults in Anthem had one or more HbA1c tests in the past year.

Figure 71.



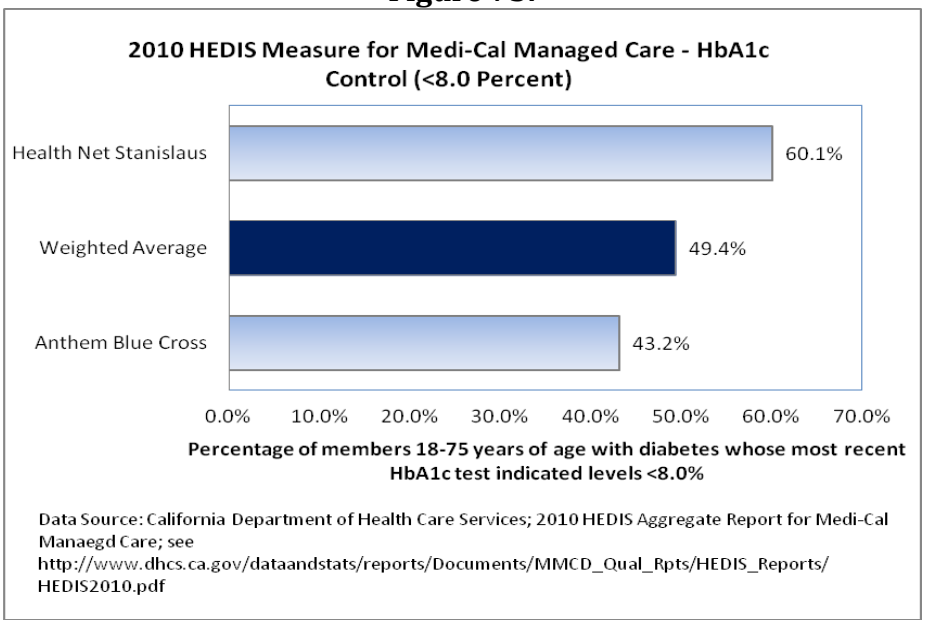
Poor HbA1c Control (>9.0 Percent): This measure tracks the percentage of diabetic members whose most recent HbA1c test showed greater than 9% HbA1c level, which indicates poor blood glucose control. It is important to control blood glucose in diabetics as that significantly reduces the risk of blindness, heart disease, lower extremity amputation and other complications (2010 HEDIS Aggregate Report). As Figure 72 below shows, Health Net Stanislaus performed above the High Performance Level, with 29.0% of diabetic health plan members having poor HbA1c control. Anthem Blue Cross performed better than the 2010 HEIDS weighted average, with 30.0% of diabetic health plans members having poor HbA1c control.

Figure 72.



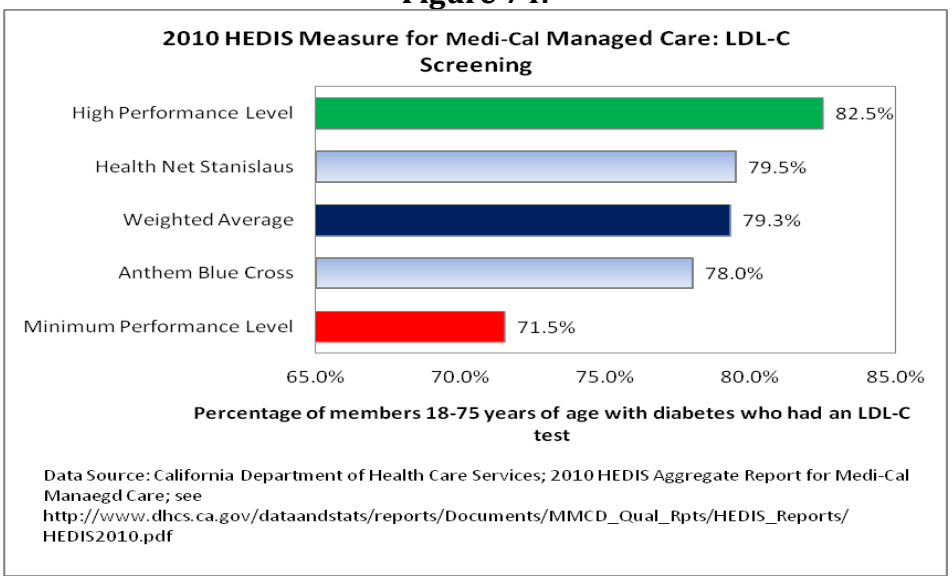
HbA1c Control (<8.0 Percent): This is a new measure in 2010 that tracks the percentage of diabetic members whose most recent HbA1c test during the past year showed an HbA1c level of less than eight percent (2010 HEDIS Aggregate Report). As Figure 73 shows, Health Net performed above the 2010 HEDIS weighted average, while Anthem Blue Cross performed below it. Sixty percent of diabetic adults in Health Net and 43.2% of diabetic adults in Anthem had HbA1c levels of less than 8 percent.

Figure 73.



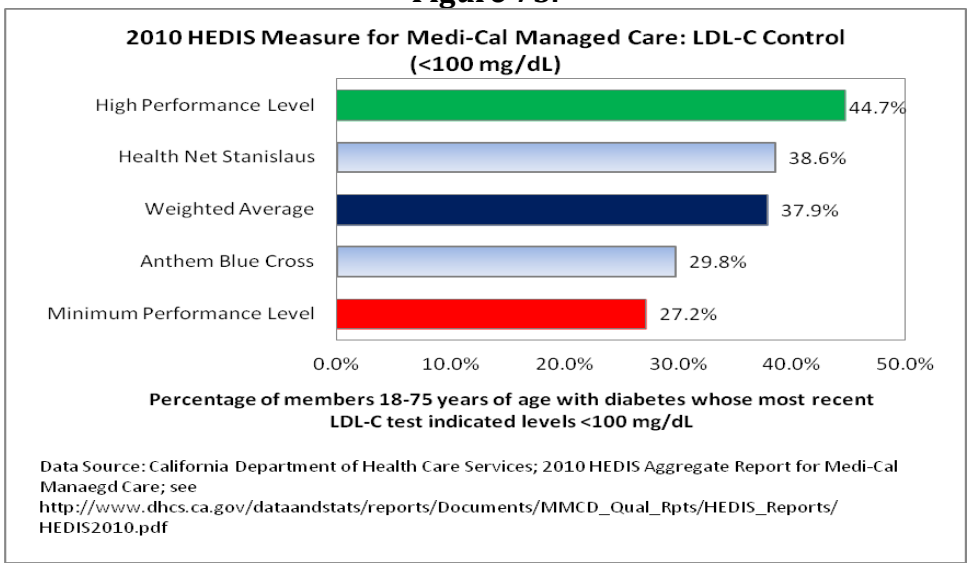
LDL-C Screening: This measure tracks the percentage of diabetic members who had an LDL-C test within the past year. This is important because it monitors the diabetics' cholesterol levels (2010 HEDIS Aggregate Report). As seen in Figure 74 below, Health Net performed above the 2010 HEDIS weight average and Anthem Blue Cross performed below it. Almost eighty percent of diabetic adults in Health Net and 78.0% of diabetic adults in Anthem Blue cross received an LDL-C screening during the past year.

Figure 74.



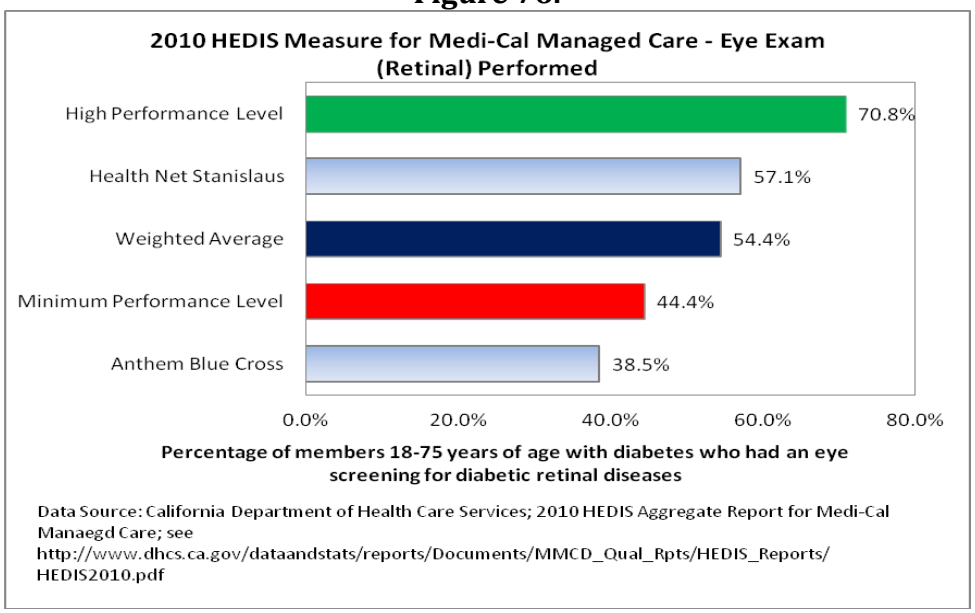
LDL-C Control (<100 mg/dL): This measure tracks the percentage of diabetic members who had LDL-C levels that are less than 100 mg/dL. This is important because improved cholesterol levels can reduce cardiovascular complications (2010 HEDIS Aggregate Report). As seen in Figure 75 below, Health Net performed above the 2010 HEDIS weight average, with 38.6% of diabetic health plan members having LDL-C levels <100 mg/dL). Anthem Blue Cross performed below the 2010 HEDIS weight average, with 29.8% of diabetic health plan members having LDL-C levels that are <100 mg/dL.

Figure 75.



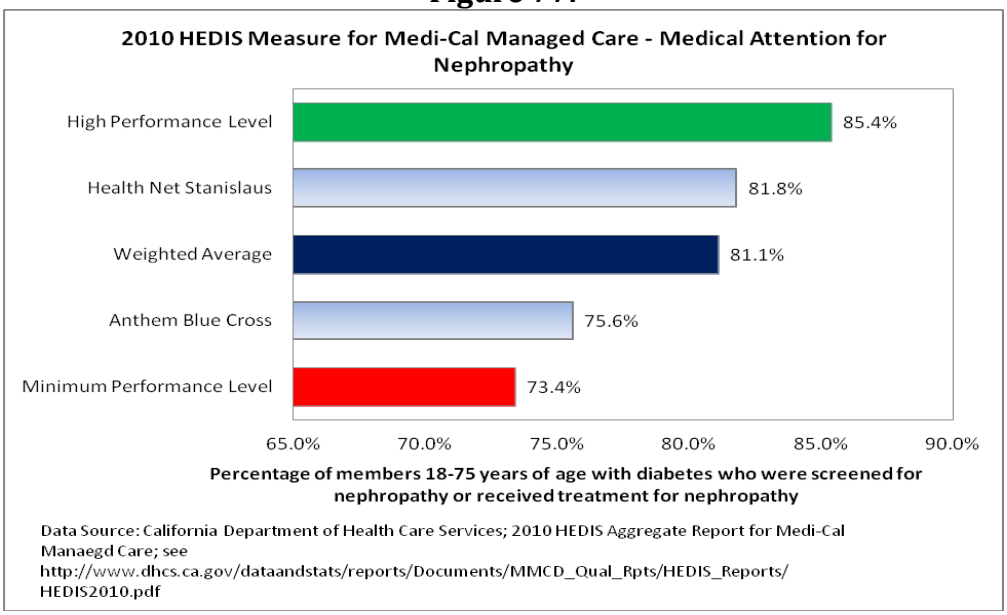
Eye Exam (Retinal) Performed: This measure tracks the percentage of diabetic who had an eye screening for diabetic retinal diseases or a negative retinal exam. This is important because the three most common eye complications are retinopathy, cataracts and glaucoma (2010 HEDIS Aggregate Report). As seen in Figure 76 below, Health Net performed above the 2010 HEDIS weight average and Anthem Blue Cross performed below the Minimum Performance Level. Fifty-seven percent of diabetic adults in Health Net and 38.5% of diabetic adults in Anthem Blue cross had an eye exam.

Figure 76.



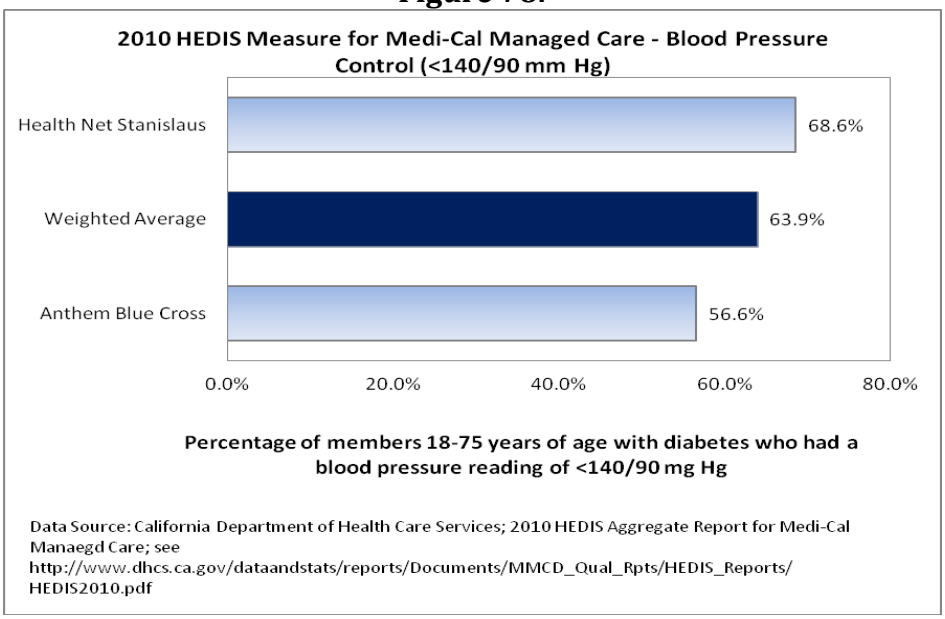
Medical Attention for Nephropathy: This measure tracks whether diabetic patients were screened for or received treatment for nephropathy (kidney disease). This is important because diabetes is the leading cause of kidney failure (2010 HEDIS Aggregate Report). As seen in Figure 77 below, Health Net performed above the 2010 HEDIS weight average, with 81.8% of diabetic health plan members screened for or received treatment for nephropathy. Anthem Blue Cross performed below the 2010 HEDIS weight average, with 75.6% of diabetic health plan members screened for or received treatment for nephropathy.

Figure 77.



Blood Pressure Control (<140/90 mm Hg)*:* This new 2010 measure tracks the percentage of diabetics who had blood pressure reading of <140/90 mmHg. This is important because high blood pressure is a complication and its control reduces the risk of heart disease. Since 2010 is the first year where Medi-Cal managed care plans are required to report this measure, the Minimum Performance Level and the High Performance Level are not applied. The 2010 Medi-Cal Managed Care Weighted Average was 63.8% (Figure 78). Health Net performed above the weighted average, with 68.5% of diabetic members having blood pressure readings that were less than 140/90 mm HG. Anthem Blue Cross performed below the weighted average, with 56.5% of diabetic members having blood pressure readings that were less than 140/90 mm Hg.

Figure 78.



Mortality

This section details the major demographic characteristics of the Stanislaus County residents who died between 2005 and 2009, the manner of their deaths, the major causes of their deaths, and the years of potential life lost (YPLL, see ***Methodology*** section). Disparities in mortality are examined by comparing age-adjusted rates and the average age at death across groups from 2005-2009. In addition, trends in mortality rates for major chronic diseases across the past decade are examined.

Overall Numbers of Deaths

During this five year period, 18,054 Stanislaus County residents died, an average of just over 3,600 individuals per year. Of these deaths, 9,112 (50.5%) were of males and 8,942 (49.5%) were of females, 2,500 (13.8%) were of Latinos, 15,547 (86.1%) of non-Latinos, and 7 (<1%) of individuals of unknown ethnicity. 16,817 (93.1%) of those who died were

White, 514 (2.8%) were Asian/Hawaiian/Pacific Islander, 438 (2.4%) were Black or African American, and 271 (1.5%) were of another race, two or more races, or unknown race. As expected, the number of deaths and the annual mortality rate increased with age (see Table 15).

Table 15: Stanislaus Deaths by Age Group from 2005-2009

Age Range (years)	Number of Deaths	Percentage of All Deaths	Annual Mortality Rate*
0 to 19	488	2.7%	58.8
0 to 9	*342*	*1.9%*	*85.4*
10 to 19	*146*	*0.8%*	*34.0*
20 to 39	759	4.2%	108.4
20 to 29	*314*	*1.7%*	*86.5*
30 to 39	*445*	*2.5%*	*131.9*
40 to 59	3,054	16.9%	477.6
40 to 49	*1,106*	*6.1%*	*313.9*
50 to 59	*1,948*	*10.8%*	*678.4*
60 to 79	6,248	34.6%	2,210.6
60 to 69	*2,507*	*13.9%*	*1,439.9*
70 to 79	*3,741*	*20.7%*	*3,447.0*
80+	7,505	41.6%	10,125.5
80 to 89	*5,104*	*28.3%*	*NA*
90 to 99	*2,277*	*12.6%*	*NA*
100+	*124*	*0.7%*	*NA*
TOTAL	**18,054**	**100.0%**	**714.8**

**Average age-specific annual rate of deaths per 100,000 residents per age group*
Data Source: *California Department of Public Health, Health Information and Research Section, Death Statistical Master Files for Stanislaus County residents, 2005-2009*

Manner of Death

As discussed in more detail in the ***Methodology*** section of this report, manner of death is a classification of the type of agent causing death. Nearly 90% of the Stanislaus County residents who died between 2005 and 2009 died from natural causes, with an additional 7% dying from unintentional injuries, 2.3% from intentional injuries and 0.7% of deaths having an unknown manner. However, there were statistically significant gender, ethnic and racial differences in the manner of death, with higher percentages of males, Latinos, Blacks and those of another or unknown race dying of some type of injury (see Table 16 on the next page).

Table 16: Manner of Death by Sex, Ethnicity and Race in Stanislaus County, 2005-2009

Demographic Group	Natural	Injury		Other/Pending/ Undetermined
		Unintentional	Intentional	
Male	87%	9%	4%	1%
Female	93%	5%	1%	1%
Latino	83%	11%	5%	1%
Non-Latino	91%	6%	2%	1%
White	90%	7%	2%	1%
Black	86%	9%	3%	2%
Asian/Pacific Islander	91%	6%	3%	0%
Other or Unknown Race	81%	13%	5%	2%
TOTAL	**89.9%**	**7.0%**	**2.3%**	**0.7%**

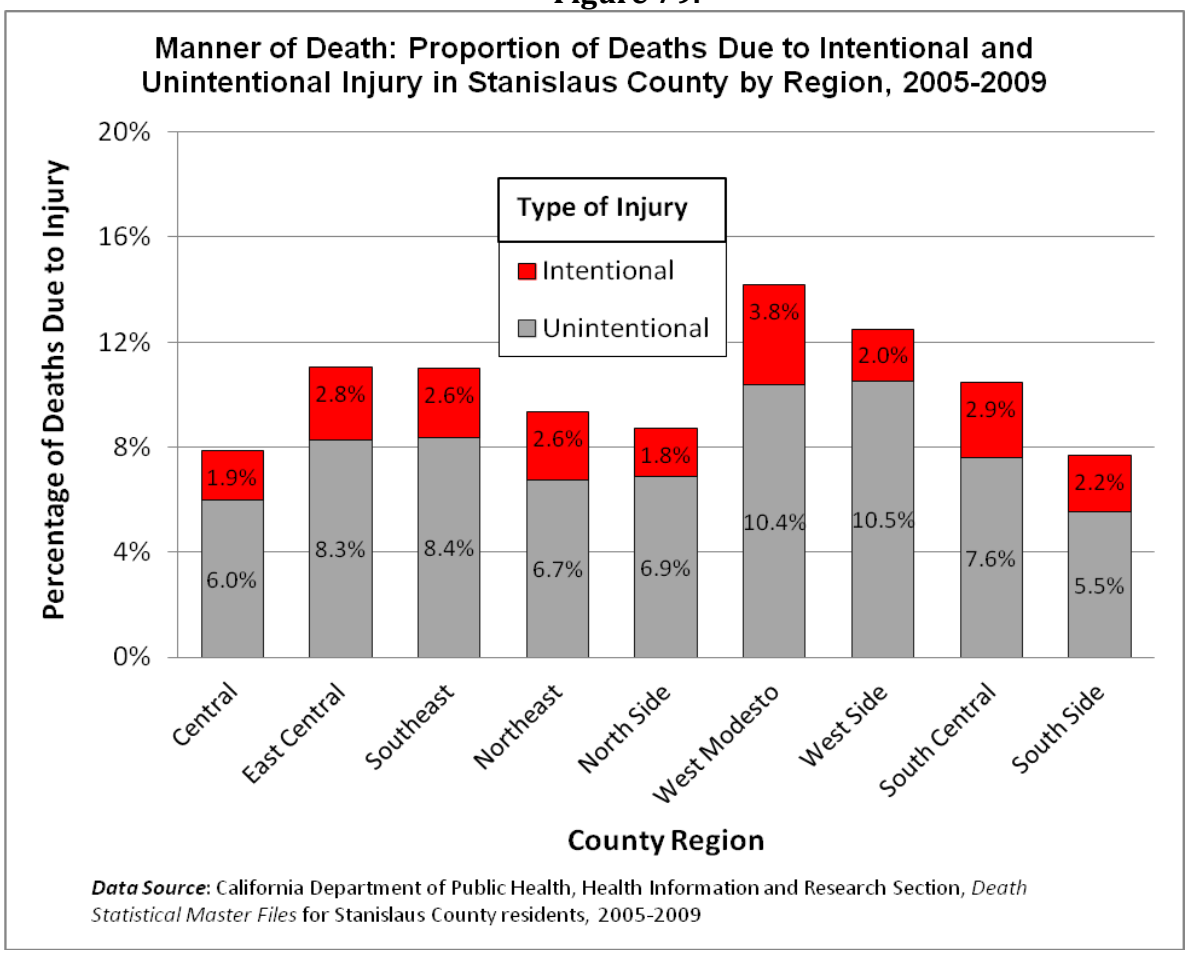
Manner of death varied statistically significantly by age category (see Table 17 below). A much higher proportion of individuals aged between 18 and 44 died of injuries (both unintentional [e.g. fall, motor vehicle crash, poisoning] and intentional [e.g. suicide, homicide]) than individuals of younger and older age groups. A natural manner of death (i.e. caused by a natural disease process) was the least common for the 18-44 age group. The specific type of unintentional injury (e.g. motor vehicle crash vs. fall) differed by age group, with motor vehicle accidents contributed more to deaths in the 18-44 group while falls contributed more to deaths in the 65+ group.

Table 17: Manner of Death by Age Category in Stanislaus County, 2005-2009

Age Group	Natural	Injury		Other/Pending/ Undetermined
		Unintentional	Intentional	
0-17 years	67.9%	21.3%	7.7%	3.0%
18-44 years	44.3%	33.8%	17.6%	4.3%
45-64 years	84.7%	10.4%	3.5%	1.4%
65+ years	96.6%	3.0%	0.3%	0.8%
TOTAL	**89.9%**	**7.0%**	**2.3%**	**0.7%**

Manner of death is also influenced by geography. As shown in Figure 79 below, residents living in West Modesto and the West Side had a higher proportion of deaths due to unintentional injury than most other county regions. Residents living in West Modesto, the South Central (e.g. Ceres, Keyes) region and the East Central (e.g. East Central Modesto and Airport neighborhood) had the highest proportion of deaths from intentional causes. These areas are also those with higher rates of violent crimes.

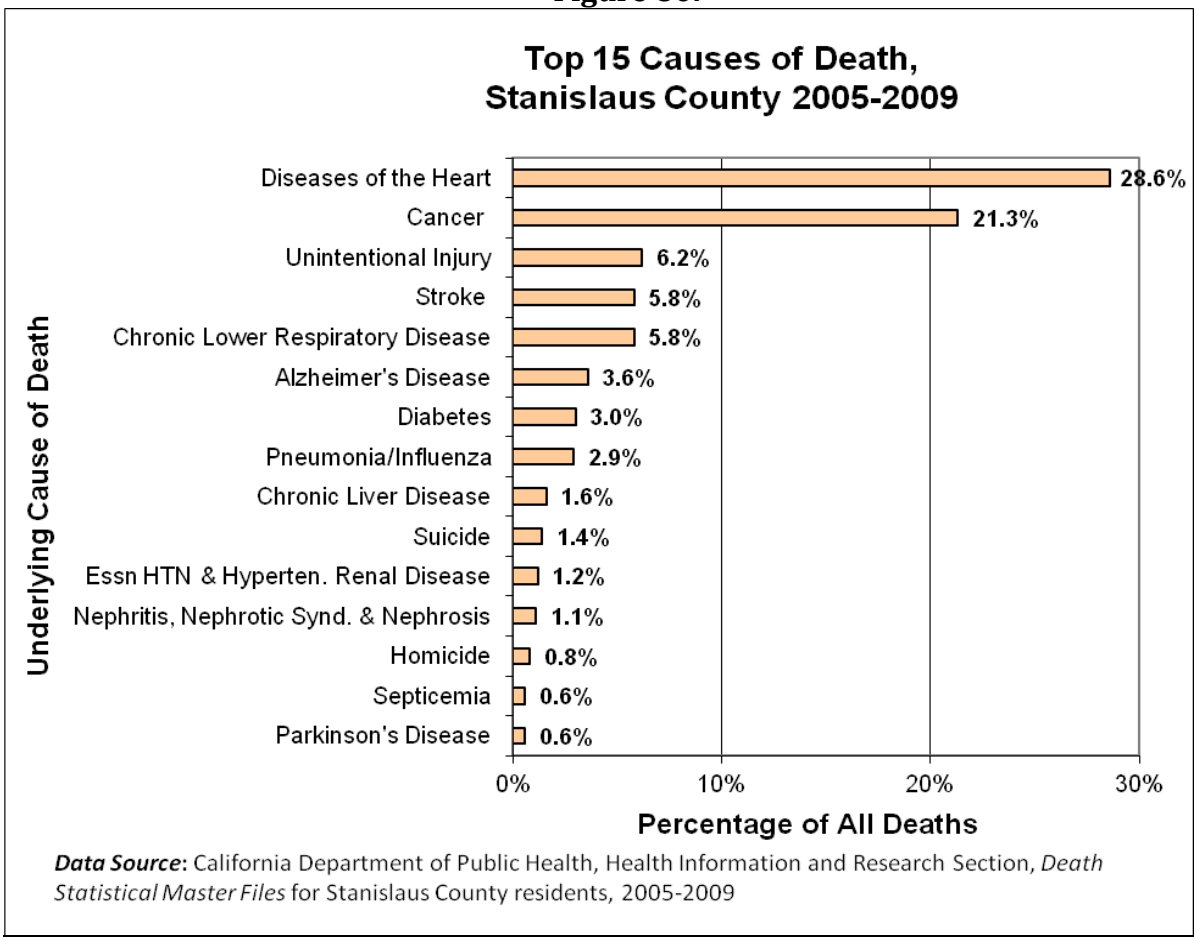
Figure 79.



Cause of Death

As discussed in more detail in the ***Methodology*** section, all deaths are given an underlying cause (or mechanism) of death. The top 15 underlying causes of death account for approximately 85% of all deaths of Stanislaus County residents. As shown in Figure 80 below, between 2005 and 2009, the vast majority of Stanislaus County decedents died of chronic diseases.

Figure 80.

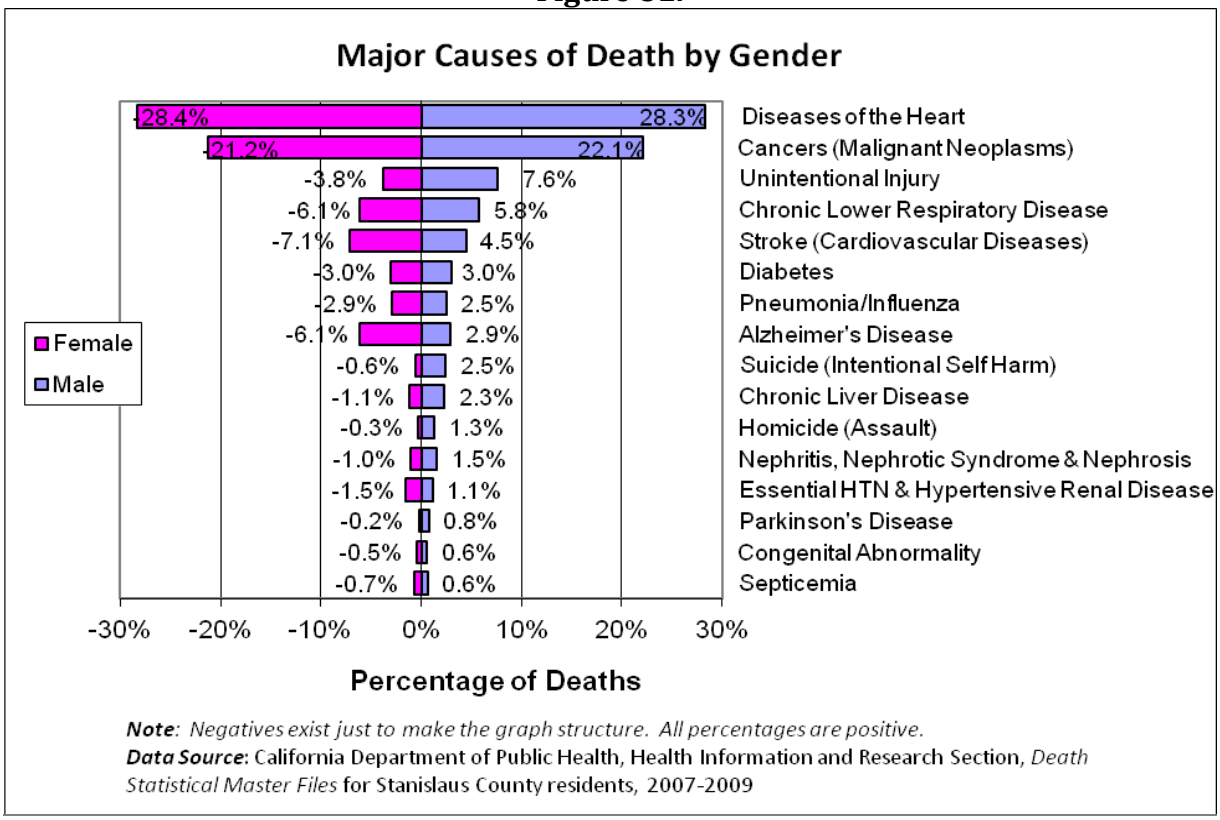


Disparities in Mortality

To examine the differential burden of mortality on different demographic groups, several mortality statistics were examined for the top 16 most frequent causes of death, including age-adjusted average annual mortality rates. For gender and ethnicity, data was aggregated from 2007-2009, while for the smaller groups based on race and geographic region, data was aggregated from 2005-2009.

As shown in Figure 81, a higher percentage of males died from unintentional injury ("accidents"), homicide and suicide than females, while a higher percentage of females died from stroke, pneumonia and influenza and Alzheimer's disease.

Figure 81.



***Note**: Negatives exist just to make the graph structure. All percentages are positive.*
***Data Source**: California Department of Public Health, Health Information and Research Section, Death Statistical Master Files for Stanislaus County residents, 2007-2009*

Age-adjusted average annual mortality rates were calculated for each of the top 16 causes of death. As shown in Table 18, males had a higher overall average annual age-adjusted mortality rate (945.7 per 100,000 male residents) than females (692.3 per 100,000 female residents). However, different specific underlying causes of death showed different patterns of gender effects. Females had significantly higher age-adjusted average annual mortality rates for Stroke and Alzheimer 's disease. Males had significantly higher age-adjusted average annual mortality rates for Unintentional Injury, Chronic Liver Disease, Suicide, Homicide and Parkinson 's disease. There was no significant gender difference in age-adjusted mortality rate for Diseases of the Heart, Cancer, Chronic Lower Respiratory Disease, Diabetes, Essential Hypertension/Hypertensive Renal Disease, Influenza/Pneumonia, Nephritis/Nephrotic Syndrome/Nephrosis, Septicemia or Congenital Abnormality.

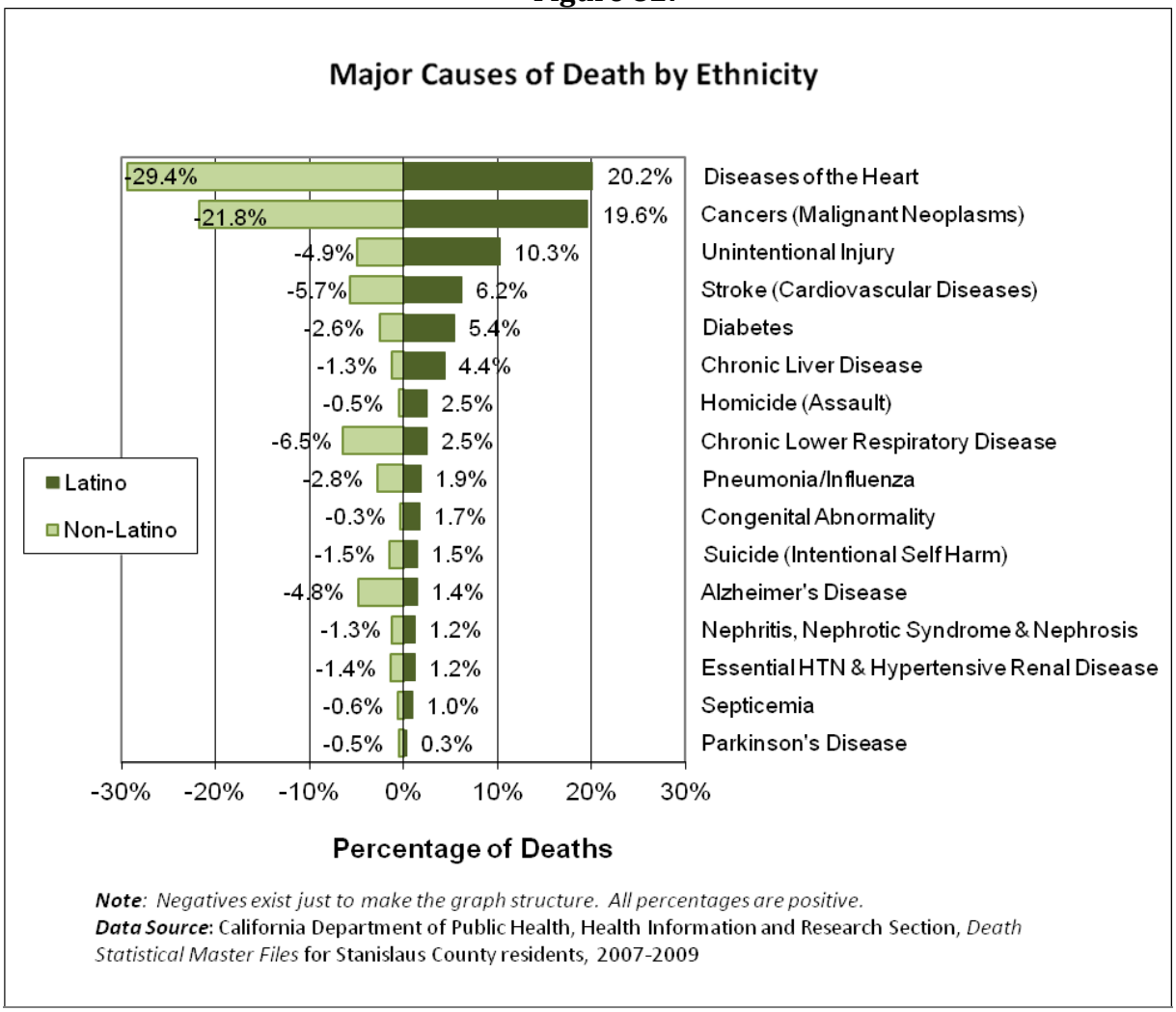
Table 18: Age-Adjusted Mortality Rates for Major Underlying Causes of Death by Gender, Stanislaus County, 2007-2009

Underlying Cause of Death*	Male		Female		Relative Rate (Female /Male)[!]	Significant Difference?
	Rank	Age-Adjusted Rate[#] (95% CI^)	Rank	Age-Adjusted Rate[#] (95% CI^)		
Diseases of the Heart	1	195.0 (185.2-204.9)	1	202.7 (197.2-208.2)	1.0	N
Cancer (any type)	2	156.5 (147.6-165.4)	2	146.5 (138.1-154.9)	0.9	N
Unintentional Injury	3	52.7 (47.6-57.9)	6	26.0 (23.4-28.67)	0.5	Y: M>F
Chronic Lower Respiratory Disease	4	40.6 (36.1-45.2)	4	42.2 (37.5-46.9)	1.0	N
Stroke	5	31.6 (28.5-34.7)	3	58.1 (54.3-61.9)	1.6	Y: F>M
Alzheimer's Disease	9	16.3 (13.5-19.0)	5	37.2 (30.0-44.4)	2.3	Y: F>M
Diabetes	6	25.8 (21.8-29.8)	7	20.4 (17.1-23.7)	0.8	N
Influenza/Pneumonia	8	16.5 (13.7-19.3)	8	17.9 (14.5-21.3)	1.1	N
Chronic Liver Disease	10	15.8 (13.0-18.6)	10	8.2 (6.8-9.6)	0.5	Y: M>F
Suicide	7	17.4 (14.5-20.4)	13	4.2 (3.5-4.9)	0.2	Y: M>F
Essential HTN & Hypertensive Renal Disease	13	7.6 (5.7-9.5)	9	9.5 (6.8-12.2)	1.3	N
Nephritis, Nephrotic Syndrome & Nephrosis	11	10.8 (8.4-13.1)	11	6.7 (5.1-8.2)	0.6	N
Homicide (Assault)	12	9.4 (7.2-11.5)	15	2.0 (1.6-2.5)	0.2	Y: M>F
Parkinson's Disease	14	5.4 (3.8-7.1)	16	1.6 (1.1-2.1)	0.3	Y: M>F
Septicemia	15	4.5 (3.0-6.0)	12	4.8 (3.1-6.5)	1.1	N
Congenital Abnormality	16	3.6 (2.3-4.9)	14	2.8 (1.7-3.9)	0.8	N
ANY CAUSE	**NA**	**945.7 (942.0-949.3)**	**NA**	**692.3 (673.7-710.9)**	**4.0**	**Y: M>F**

*Underlying Cause of Death (see Appendix A for ICD-10 codes used)
#Average age-adjusted mortality rate per 100,000 population per gender using the US Census Bureau's *2007-2009 American Community Survey* adjusted to the 2000 US Census as the standard population
^95% Confidence Interval
[!]Relative Rate = Rate for Females divided by rate for Males

Latino and Non-Latino decedents differed in major underlying causes of death. As shown in Figure 82, a higher percentage of Latino decedents died from unintentional injury diabetes, chronic liver disease, homicide and congenital abnormality than Non-Latinos. A higher percentage of Non-Latino decedents died from diseases of the heart, cancers, chronic lower respiratory disease, influenza/pneumonia and Alzheimer's disease.

Figure 82:



The above differences in percentages of deaths due to specific major causes do not take into consideration the fact that the Stanislaus County Latino population is younger overall than the Non-Latino population. However, a comparison of age-adjusted average annual mortality rate by underlying cause of disease revealed several significant ethnic differences. As shown in Table 19, Non-Latinos had over three times the average annual age-adjusted all cause mortality rate than Latinos (1,680.2 vs. 504.5).

Different specific underlying causes of death showed distinctive patterns of ethnic differences (see Table 19). Three of the top 16 causes of disease showed no statistically significant ethnic difference in age-adjusted mortality rate: Diabetes, Homicide and Congenital Abnormality. Latinos had a statistically significantly higher age-adjusted mortality rate for chronic liver disease. Non-Latinos had significantly higher age-adjusted average annual mortality rates for the other 12 major selected causes of death.

Table 19: Age-Adjusted Mortality Rates for Major Underlying Causes of Death by Ethnicity, Stanislaus County, 2007-2009

Underlying Cause of Death*	Latino		Non-Latino		Relative Rate (Non-Latino /Latino)!	Significant Difference?
	Rank	Age-Adjusted Rate# (95% CI^)	Rank	Age-Adjusted Rate# (95% CI^)		
Diseases of the Heart	1	123.0 (109.3-136.7)	1	556.3 (535.3-577.2)	4.5	Y: NL>L
Cancer (any type)	2	106.7 (94.7-118.8)	2	294.8 (281.9-307.7)	2.8	Y: NL>L
Unintentional Injury	5	28.7 (24.2-33.1)	7	45.9 (41.6-50.1)	1.6	Y: NL>L
Chronic Lower Respiratory Disease	7	16.6 (11.3-21.9)	5	100.6 (92.5-108.7)	6.0	Y: NL>L
Stroke	3	37.3 (29.8-44.7)	4	115.8 (105.8-125.7)	4.0	Y: NL>L
Alzheimer's Disease	9	9.5 (5.6-13.5)	3	122.4 (110.9-133.9)	12.8	Y: NL>L
Diabetes	4	32.4 (25.4-39.4)	8	37.4 (32.6-42.1)	1.2	N
Influenza/Pneumonia	8	11.1 (7.0-15.1)	6	64.1 (56.2-71.9)	5.8	Y: NL>L
Chronic Liver Disease	6	19.8 (15.0-24.5)	14	9.6 (7.9-11.4)	0.5	Y: L>NL
Suicide	14	4.1 (2.4-5.7)	11-13	10.1 (8.5-11.8)	2.5	Y: NL>L
Essential HTN & Hypertensive Renal Disease	11	6.8 (3.7-10.0)	9	30.4 (25.1-35.8)	4.4	Y: NL>L
Nephritis, Nephrotic Syndrome & Nephrosis	10	6.9 (3.7-10.1)	10	22.8 (18.-26.9)	3.3	Y: NL>L
Homicide (Assault)	12	6.2 (4.2-8.2)	15	3.5 (2.5-4.5)	0.6	N
Parkinson's Disease	16	2.2 (0.3-4.1)	11-13	10.1 (7.3-13.0)	4.6	Y: NL>L
Septicemia	13	4.4 (2.2-6.6)	11-13	10.1 (7.5-12.8)	2.3	Y: NL>L
Congenital Abnormality	15	2.7 (1.6-3.7)	16	2.7 (1.7-3.7)	1.3	N
ANY CAUSE	**NA**	**504.5 (479.3-539.7)**	**NA**	**1,680.2 (1645.8-1714.5)**	**3.3**	**Y: NL>L**

*Underlying Cause of Death (see Appendix A for ICD-10 codes used)
#Average age-adjusted mortality rate per 100,000 population per gender using the US Census Bureau's *2007-2009 American Community Survey* adjusted to the 2000 US Census as the standard population
^95% Confidence Interval
!Relative Rate = Rate for Non-Latino group divided by rate for Latino group
$Includes myocardial infarction (heart attack)

The relative magnitude of the major underlying causes of death differed by race. For example, as shown in Table 20, a higher percentage of Asian decedents died from stroke (9.3%) than White (5.7%) or Black (5.3%) decedents. A higher percentage of Black decedents died of Diabetes (5.0%) than White (2.9%) or Asian (3.1%) decedents.

Table 20: Relative Frequency of Major Causes of Death by Race in Stanislaus County, 2005-2009

Underlying Cause of Death*	White		Black		Asian[1]		Other / Unknown	
	%	Rank	%	Rank	%	Rank	%	Rank
Diseases of the Heart	28.8%	1	24.4%	1	27.0%	1	22.5%	1
Cancers (Malignant Neoplasms)	21.5%	2	17.6%	2	20.2%	2	15.9%	2
Unintentional Injury	6.1%	3	7.1%	3	5.4%	4	12.5%	3
Chronic Lower Respiratory Disease	5.9%	4	3.4%	6	4.7%	5	5.9%	4
Stroke (Cardiovascular Diseases)	5.7%	5	5.3%	4	9.3%	3	5.5%	5
Alzheimer's Disease	3.8%	6	2.3%	9	<2%	10.5	<2.7%	8.5
Diabetes	2.9%	7.5	5.0%	5	3.1%	6	<2.7%	6
Pneumonia/Influenza	2.9%	7.5	2.3%	9	2.5%	7	<2.7%	10
Chronic Liver Disease	1.5%	9	<2.3%	11	2.1%	8	<2.7%	8.5
Suicide (Intentional Self Harm)	1.4%	10	<2.3%	13	<2%	10.5	<2.7%	7
Essential Hypertension & Hypertensive Renal Disease	1.2%	11	<2.3%	10	<2%	9	<2.7%	11.5
Nephritis, Nephrotic Syndrome & Nephrosis	1.1%	12	2.7%	7	<2%	13.5	<2.7%	--
Homicide (Assault)	0.8%	13	2.3%	9	<2%	12	<2.7%	11.5
Parkinson's Disease	0.6%	14	<2.3%	--	<2%	--	<2.7%	--
Congenital Abnormality	0.6%	15	<2.3%	15	<2%	--	<2.7%	--
Septicemia	0.6%	16	<2.3%	12	<2%	14	<2.7%	--
TOTAL	**100.0**	**NA**	**100.0**	**NA**	**100.0**	**NA**	**100.0**	**NA**

*Underlying Cause of Death (see Appendix A for ICD-10 codes used)
[1]Includes individuals who are Asian, Native Hawaiian or Pacific Islander

A comparison of age-adjusted average annual mortality rate by underlying cause of disease revealed several significant differences among residents of different races. Overall, Whites and Blacks did not differ statistically significantly in age-adjusted all cause mortality rate, while both groups had statistically significantly higher rates than had a significantly higher average annual age-adjusted mortality rate than Asians. Examination of racial differences for specific diseases is complicated by the fact that few individuals died of some causes, particularly Blacks and Asian individuals, even when aggregating 5 years of data. Table 21 shows that there was no evidence of statistically significant racial differences in age-adjusted mortality rates for unintentional injury, chronic liver disease and essential hypertension & hypertensive renal disease.

Table 21: Age-Adjusted Mortality Rates for Specific Underlying Cause of Death by Race, Stanislaus County, 2005-2009

Underlying Cause of Death*	White		Black		Asian[1]		Significant Difference?
	Rank	Age-Adjusted Rate[#] (95% CI^)	Rank	Age-Adjusted Rate[#] (95% CI^)	Rank	Age-Adjusted Rate[#] (95% CI^)	
Diseases of the Heart	1	586.8 (570.3-603.4)	1	493.5 (400.0-587.0)	1	288.8 (240.8-336.8)	Y: (W=B)>A
Cancer (any type)	2	300.0 (290.3-309.8)	2	249.8 (194.0-305.6)	2	132.0 (106.6-157.3)	Y: (W=B)>A
Unintentional Injury	6	53.5 (50.2-56.8)	8	41.6 (26.9-56.2)	4	38.0 (23.9-52.1)	N
Chronic Lower Respiratory Disease	4	101.6 (95.2-107.9)	5	85.4 (42.4-128.6)	3	66.9 (41.7-92.1)	Y: W>A, B=W
Stroke	7	52.3 (49.0-55.5)	10	20.4 (10.1-30.7)	9	16.5 (9.9-23.1)	Y: W>(B=A)
Alzheimer's Disease	3	104.6 (96.5-112.8)	4	93.2 (35.5-151.0)	7	20.2 (6.2-34.2)	Y: (W=B)>A
Diabetes	8	42.7 (38.9-46.5)	3	102.7 (59.8-145.6)	8	16.9 (8.6-25.1)	Y: B>W>A
Influenza/Pneumonia	5	71.0 (64.7-77.3)	5	82.1 (31.2-132.9)	5	37.4 (17.1-57.7)	Y: W=B, W>A, B=A
Chronic Liver Disease	12	11.6 (10.2-13.0)	11	16.0 (4.9-27.1)	10	11.9 (4.9-18.9)	N
Suicide	14	8.8 (7.6-9.9)	NA	NS*	11	4.3 (1.3-7.3)	Y: W>A
Essential Hypertension & Hypertensive Renal Disease	9	27.7 (23.8-31.5)	6	65.5 (22.7-108.4)	6	30.3 (10.5-50.1)	N
Nephritis, Nephrotic Syndrome & Nephrosis	10	20.5 (17.5-23.5)	7	44.9 (19.5-70.4)	NA	NS*	Y: W=B,
Homicide (Assault)	16	4.1 (3.4-4.8)	12	6.9 (2.6-11.2)	NA	NS*	Y: W=B,
Parkinson's Disease	11	13.2 (10.7-15.7)	NA	NS*	NA	NS*	NA
Septicemia	13	10.2 (8.2-12.3)	9	41.3 (10.7-71.8)	NA	NS*	Y: W=B,
Congenital Abnormality	15	4.4 (3.5-5.3)	NA	NS*	NA	NS*	NA
ANY CAUSE	**NA**	**1,737.7 (1711.5-1764.0)**	**NA**	**1,673.3 (1516.6-1830.0)**	**NA**	**937.5 (856.4-1018.5)**	Y: W>B >A

*Underlying Cause of Death (see Appendix A for ICD-10 codes used)
#Average age-adjusted mortality rate per 100,000 population per gender using the US Census Bureau's *2007-2009 American Community Survey* adjusted to the 2000 US Census as the standard population
^95% Confidence Interval
[1]Includes individuals who are Asian, Native Hawaiian or Pacific Islander
*Fewer than 5 deaths – highly statistically unstable

Years of Potential Life Lost

In this report, years of potential life lost (YPLLs) are presented to examine the impact of the age at death associated with particular causes (see Methodology section for details). In this report, the standard age used was 75. There is generally a correlation between YPLL and

average age at death, such that the larger the YPLL, the earlier people typically die from the cause.

The average YPLL, using 75 years as the standard, was calculated for two 2-year periods (2005-2006 and 2008-2009) for underlying causes of death for which at least 10 deaths occurred per time period. As Table 22 shows, Congenital Abnormality had the greatest average YPLL at both time periods. In both time periods, the average age at death for residents who died from Congenital Abnormality was less than 20 years. Other conditions in the top 5 for both years were Homicide, Suicide, Unintentional Injury and Chronic Liver Disease. At the other end of the spectrum, the conditions with the smallest average YPLL were Alzheimer 's disease, Parkinson 's disease, Essential Hypertension & Hypertensive Renal Disease, Chronic Lower Respiratory Disease and Stroke. At both time periods, the average age at death for residents who died from Alzheimer's disease or Parkinson's disease was over 80 years.

Table 22: Years of Potential Life Lost by Underlying Cause of Death in Stanislaus County, 2005-2006 vs. 2008-2009

Underlying Cause of Death	2005-2006			2008-2009		
	Average YPLL (STD^)	Rank	Average Age at Death	Average YPLL (STD^)	Rank	Average Age at Death
Congenital Abnormality	56.4 (27.3)	1	19.6	61.7 (22.7)	1	13.5
Homicide (Assault)	43.2 (15.6)	2	32.2	28.9 (17.8)	3	36.3
Unintentional Injury	28.0 (19.9)	4	48.8	31.1 (20.8)	2	45.1
Suicide	31.7 (16.8)	3	43.9	28.1 (16.6)	4	47.7
Chronic Liver Disease	18.3 (11.3)	5	57.2	17.0 (11.8)	5	58.8
Septicemia	10.5 (20.8)	6	70.9	9.3 (15.8)	6	71.7
Cancer (any type)	8.4 (11.2)	7	69.8	8.2 (10.5)	7	70.1
Diabetes	8.0 (10.5)	8	70.0	7.6 (10.5)	8	51.3
Nephritis, Nephrotic Syndrome & Nephrosis	5.1 (8.7)	9	69.8	5.5 (9.9)	9	75.7
Diseases of the Heart	4.8 (9.6)	10	70.0	5.3 (9.5)	10	76.9
Influenza/Pneumonia	4.5 (12.2)	11	75.9	4.8 (11.0)	11	79.6
Stroke	4.3 (9.5)	12	77.3	4.5 (11.0)	12	77.5
Chronic Lower Respiratory Disease	3.9 (6.70	13	76.4	3.8 (6.6)	14	76.5
Essential Hypertension & Hypertensive Renal Disease	3.1 (7.2)	14	81.2	4.4 (9.2)	13	79.6
Parkinson's Disease	1.3 (4.5)	15	80.4	1.0 (2.6)	15	81.2
Alzheimer's Disease	0.4 (1.8)	16	86.0	0.5 (1.9)	16	88.5
TOTAL	**9.6 (16.0)**	**NA**	**70.6**	**9.2 (15.3)**	**NA**	**71.3**

^Standard deviation

In order to examine differences by demographic factors in YPLL and average age at death, calculations were made for the entire 5-year time period to ensure statistical stability of the estimates.

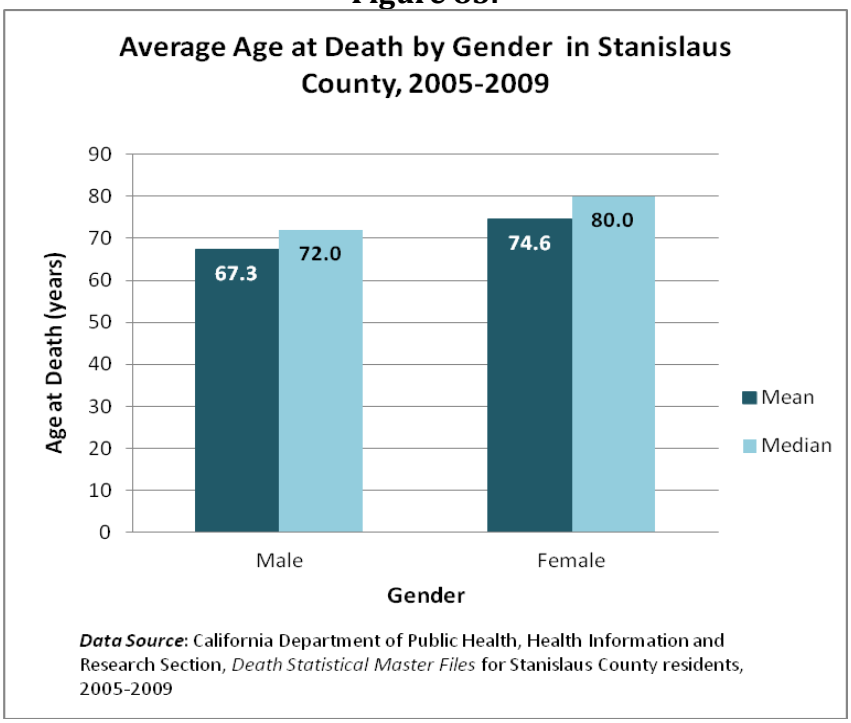
Gender: As Table 23 and Figure 83 show, there were statistically significant gender differences in average YPLL and average age at death, with males dying at a younger average age than females and losing more potential years of life. Gender differences in YPLL are at least partly due to the fact that several causes of death with high average YPLLs, including Unintentional and Intentional (e.g. Suicide, Homicide) Injury and Chronic Liver Disease, are more common causes of death for males than females.

Table 23: Years of Potential Life Lost and Average Age at Death by Demographic Group, Stanislaus County, 2005-2009

	Average YPLL		Average Age at Death	
Group	**Mean (SE^)**	**Significant Difference@?**	**Mean (SE^)**	**Significant Difference@?**
Male	11.7 (0.18)	Yes M > F	67.3 (0.22)	Yes M < F
Female	7.1 (0.14)		74.6 (0.19)	
OVERALL	**9.4 (0.12)**	**NA**	**70.9 (0.15)**	**NA**

*Years of Potential Life Lost
^Standard Error of the Mean
@Significant difference by independent groups t-test; p < .001

Figure 83.



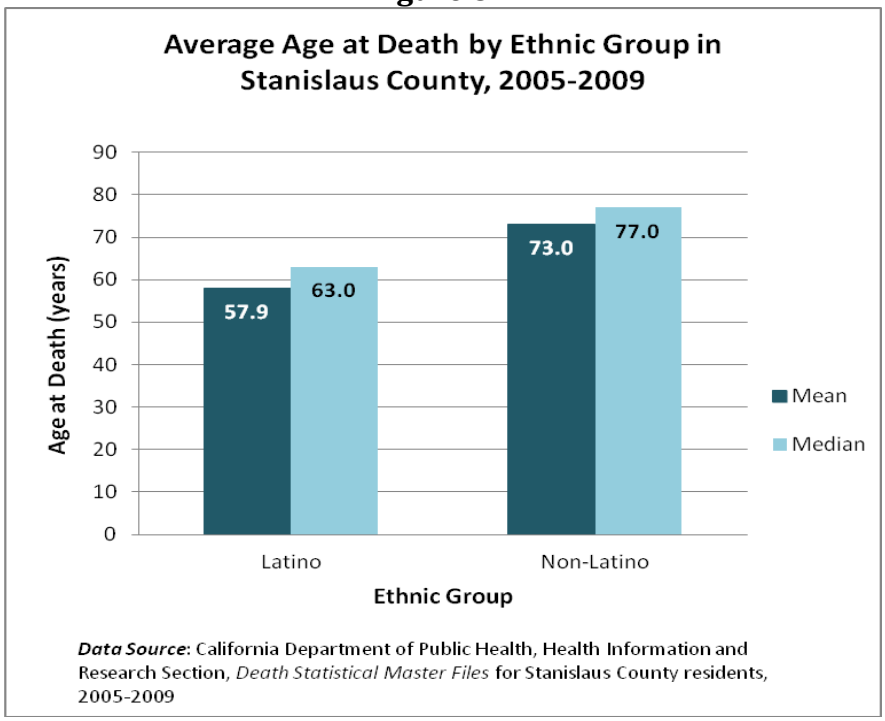
Ethnicity: There were also statistically significant ethnic differences in both YPLL and average age at death, with Latinos dying at a younger age and losing more potential years of life than Non-Latinos (see Table 24 and Figure 84).

Table 24: Years of Potential Life Lost and Average Age at Death by Demographic Group, Stanislaus County, 2005-2009

	Average YPLL*		Average Age at Death	
Group	**Mean (SE^)**	**Significant Difference@?**	**Mean (SE^)**	**Significant Difference@?**
Latino	20.0 (0.46)	Yes L > NL	57.9 (0.52)	Yes L < NL
Non-Latino	7.7 (0.11)		73.6 (0.14)	
OVERALL	**9.4 (0.12)**	**NA**	**70.9 (0.15)**	**NA**

*Years of Potential Life Lost
^Standard Error of the Mean
@Significant difference by independent groups t-test; p < .001

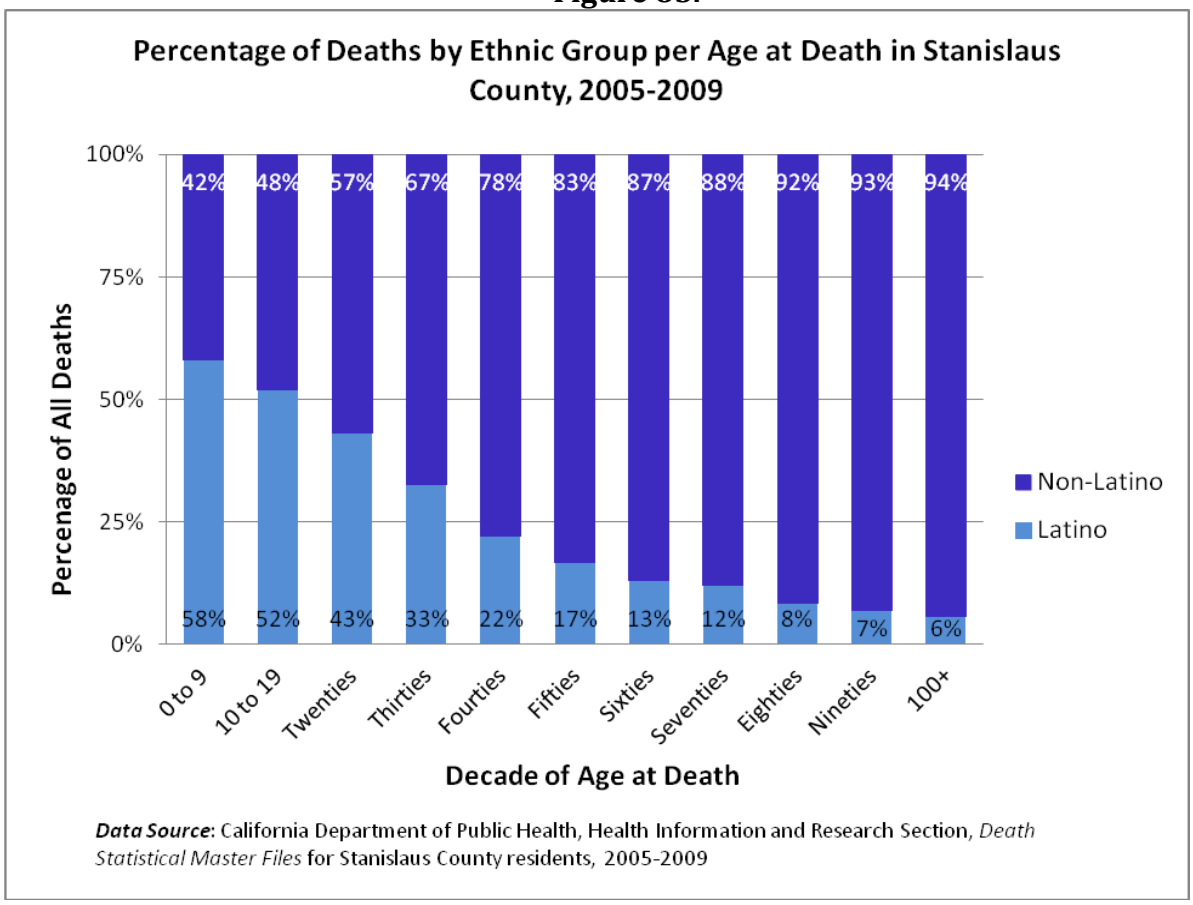
Figure 84.



Similarly as for gender, ethnic differences in YPLL are at least partly due to the fact that Latinos die proportionately more from several causes of death with high average YPLLs, including Unintentional and Intentional (e.g. Suicide, Homicide) Injury, Diabetes and Chronic Liver Disease, than Non-Latinos. Taking a closer look, the proportion of Latino and

Non-Latino residents who died from particular causes varied considerably by age at death (defined by age "decades"), as shown in Figure 85 below. While 39% of the Stanislaus County residents self-reported as Latino during this time period, the percentage of residents who died at a particular age who were Latino varied from a low of 6% (age 100+ years) to 58% (aged 0-9 year). Additional possible reasons for these differences are addressed in the ***Discussion*** section.

Figure 85.



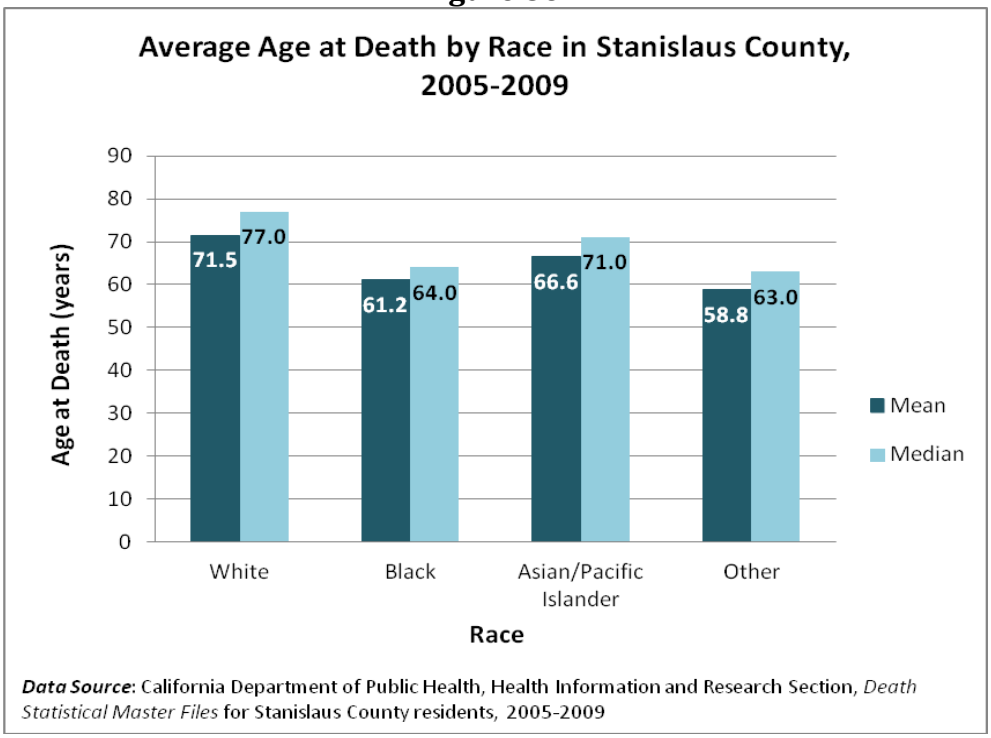
Race: There were significant racial differences in both Years of Potential Life Lost and average age at death. As shown in Table 23 and Figure 86. Blacks died significantly earlier than Asians and Whites and Asians died significantly earlier than Whites. Blacks lost statistically significantly more potential years of life than Asians and Whites, and Asians lost significantly more than Whites (see Table 25). Possible reasons for these differences are addressed in the ***Discussion*** section.

Table 25: Years of Potential Life Lost and Average Age at Death by Race, Stanislaus County, 2005-2009

Group	Average YPLL*		Average Age at Death	
	Mean (SE^)	Significant Difference@?	Mean (SE^)	Significant Difference@?
White	9.0 (0.12)	Yes B > A > W	71.5 (0.15)	Yes B < A < W
Black	16.5 (0.93)		61.2 (1.1)	
Asian[1]	11.8 (0.75)		66.6 (0.88)	
OVERALL	**9.4 (0.12)**	**NA**	**70.9 (0.15)**	**NA**

*Years of Potential Life Lost
^Standard Error of the Mean
@Significant difference by ANOVA using Least Significant Difference tests for differences between the groups; $p < .001$
[1]Includes individuals who are Asian, Native Hawaiian or Pacific Islander

Figure 86.



Mortality Trends Due to Specific Causes

To examine time trends in mortality, this section presents mortality rates (overall and for four specific major causes) for Stanislaus County at two points a decade apart. To put the local trends into perspective, Stanislaus County is compared to California for the same time period and to the national 10-year target set in the federal government's Healthy People initiative. As explained in more detail in the ***Methodology*** section of this report, trends are

shown in three-year aggregated age-adjusted rates to provide a fair and statistically stable comparison of death rates and trends between the County and the State.

Table 26 lists the rates of four major causes of death (all chronic diseases) and the all cause mortality rate in Stanislaus County, as compared to the State's average, at the beginning and the end of the ten year period. Also included is the percent change in each mortality rate over the period, and the national Healthy People (HP) 2010 targets.

Table 26: Trends in Age-Adjusted Mortality Rates for Selected Major Causes of Deaths by Jurisdiction: Comparing 2000-2002 to 2007-2009

Condition	Jurisdiction	2000-2002	2007-2009	Percent Change	HP 2010 Target
Coronary heart disease	Stanislaus County	237.8	172.1	27.6% decrease	162.0
	California	186.0	128.0	31.2% decrease	
Cancer	Stanislaus County	185.4	167.7	9.5% decrease	158.6
	California	172.7	154.0	10.8% decrease	
Stroke	Stanislaus County	60.7	45.1	25.7% decrease^	50.0
	California	58.9	38.4	34.8% decrease	
Diabetes#	Stanislaus County	25.6	23.1	no sig. change	NA
	California	21.0	20.3	no sig. change	
All causes	Stanislaus County	859.9	772.0	10.2% decrease	NA
	California	745.0	647.2	13.1% decrease	

California Department of Public Health, *County Health Status Profiles,* 2004 and 2011.
^There is only a marginally statistically ($.05 \leq p \leq .10$) significant trend over time for this condition.
#There is no statistically significant trend ($p \leq .05$) over time for this condition.

Coronary Heart Disease: The mortality rate from coronary heart disease decreased by 27.6% in Stanislaus County over this period, compared to 31.2% in California as a whole. California has met the HP 2010 target, but Stanislaus County has not. Diseases of the heart, including coronary heart disease, have been the number one cause of death consistently in the County, accounting for between 25% and 30% of deaths per year.

Cancer: Mortality from cancer decreased (marginally statistically significantly) by 9.5% in Stanislaus County compared to 10.8% in California as a whole. California has met the HP 2010 target, while the County has not. Cancer has consistently ranked as the second most frequent cause of death in the County, annually causing between 20% and 22% of all deaths.

Stroke: The past decade saw a 25.7% decline in stroke mortality rate in the County compared to 34.8% for California. Both the County and the State have met the HP 2010 target. Stroke has consistently ranked in the top 5 causes of death in the County, accounting for between 5% and 7% of deaths annually.

Diabetes: Neither California nor Stanislaus County made much progress on reducing mortality from diabetes. No statistically significant change occurred. There was no HP 2010 target set for diabetes mortality. Diabetes has consistently ranked in the top 10 causes of death for Stanislaus County residents, accounting for between 2% and 4% of deaths annually.

All Cause Mortality: The all cause mortality rate declined over the past decade for both Stanislaus County (by 10.2%) and California (by 13.1%). No HP 2010 target was established for all cause mortality.

Discussion

Overall

In the previous section of this report, a wide range of findings related to County demographics, risk and protective factor prevalence, disease prevalence, hospitalization, clinical care, and mortality were reviewed. The purpose of this section is to discuss how these findings are related and produce a comprehensive view of the health status of the residents of Stanislaus County.

Comparisons to Other Jurisdictions

Stanislaus County is similar to other counties of California's San Joaquin Valley in the economic challenges it faces, including lower household income and higher rates of poverty than the state of California as a whole. Unemployment and decline in housing values have hit the Northern San Joaquin Valley especially hard, with Stanislaus County ranking among the worse counties nationally for these factors. Lower educational attainment in the County compared to California as a whole also contributes to County's economic difficulties and health challenges. Stanislaus has become increasingly ethnically diverse over the past decade. A significant minority of County residents are foreign-born and/or do not speak English well. While the County is younger, overall, than California, the age structures of its subpopulations differ by race and ethnicity, with Latino, Black and Asian populations being younger overall than No-Latino and White populations.

Stanislaus County has long had a shortage of healthcare providers, as have other San Joaquin Valley counties. Healthcare insurance coverage rates are similar to the State. Within the County population, healthcare insurance differs greatly by age, race, ethnicity, income and employment status, contributing to differential access to healthcare services.

Stanislaus County has a higher general fertility rate than California as a whole (contributing to its overall younger age distribution), though the rate has decreased recently. The Latino fertility rate is higher than the non-Latino fertility rate, despite Latinos being a smaller percentage of the overall population. Stanislaus County has a higher percentage of teen births and premature infants as well as a higher rate of infant mortality than the State. While the County has met the Healthy People 2010 and 2020 targets for low birthweight babies, it has not reached the target for timeliness and completeness of prenatal care and has poorer outcomes in this area than California. HEDIS Medi-Cal measures for prenatal and postpartum care show room for improvement.

Stanislaus County also differs from California in the prevalence of certain key risk and preventive factors. For example, a higher percentage of Stanislaus County residents consume fast food at least weekly. Overall, less than half of County residents eat 5 or more servings of fruits and vegetables daily. A higher percentage of County adults are overweight or obese than California adults, while a larger proportion of Stanislaus children are overweight for their age than California children.

Stanislaus County's infrastructure and environment also contribute to its risk of disease. Stanislaus County has a Retail Food Environment Index (RFEI) of 5.5, meaning that there are 5.5 times more fast-food and convenience store options than grocery store and farmers' market options for retail food purchase in the County. The Retail Food Environment Index (RFEI) in Stanislaus is the second largest among California counties, while the County has the highest obesity prevalence. UCLA (2007) has shown that RFEI is correlated with obesity and diabetes, with jurisdictions with higher RFEI also having higher rates of these conditions. The County's air quality is also a risk factor for multiple chronic diseases. Stanislaus county ranks as the 10th most polluted US county by short-term particle pollution (24-hour $PM_{2.5}$), while Modesto ranks 8th worst among US Metropolitan Statistical Areas (ALA, 2010).

Stanislaus County has a higher crude hospitalization rate than California, despite having a younger population that would traditionally be at less risk of hospitalization.

Stanislaus County's healthcare provider shortage may impact the quality of clinical care. Hospitalization rates for PQIs are higher across the board in Stanislaus County than California. HEDIS measures show room for improvement by local Medi-Cal managed health plans and providers on prenatal and postpartum care, BMI assessment and counseling re nutrition and physical activity for children/adolescents as well as some diabetes care and management measures.

<u>Overall Trends</u>

- The percentage of women receiving timely prenatal care has decreased (2005-2009).
- While the percentage of women receiving timely prenatal care was satisfactory compared nationally, there is room for improvement for timely postpartum care.
- The prevalence of heart disease has decreased in the County (2001-2009), so have hospitalizations for Ischemic Heart Disease and mortality due to Coronary Heart Disease.
- The prevalence of obesity and diabetes increased in the County (2001-2009); hospitalizations for diabetes also increased (2000-2010) while mortality rates for diabetes remained unchanged (2000-2002 to 2007-2009).
- The schizophrenia hospitalization rate also increased from 2000 to 2010.

<u>Disparities</u>

Poverty

- Lower income individuals and Latino residents are less likely to meet national physical activity guidelines. Low income families are more likely to live in neighborhoods that present barriers to physical activity, such as lack of sidewalks, not having parks and recreation centers that are within easy walking distance, or having gang activity that makes it difficult to exercise outdoors.
- Overall, less than half of County residents eat 5 or more servings of fruits and vegetables daily, with a higher percentage of lower income residents failing to meet

this dietary guideline. Some areas of the County are considered "food desserts" with no healthy food outlets available to residents.

- Economically disadvantaged children are more likely to have a BMI outside the Healthy Fitness Zone.
- Individuals with lower income are more likely to smoke.

Gender Differences

- Even though a higher percentage of men are overweight or obese than women in Stanislaus, women are more likely to be hospitalized for overweight/obesity than men.
- Males are more likely to smoke.
- More males have been diagnosed with high blood pressure and heart disease than females. Males are more likely to be hospitalized for Ischemic Heart Disease. Men are also more likely to be hospitalized for diabetes, chronic liver disease
- Women have a higher prevalence of asthma, and are more likely to be hospitalized for respiratory diseases such as asthma, COPD and pneumonia/influenza.
- Diabetes prevalence is increasing faster among women than men.
- However, men are more likely to be hospitalized for diabetes; men have a slightly, but not statistically significantly higher rate of mortality from diabetes.
- Females are more likely to be hospitalized for stroke, injury, cancer and overweight/obesity than males.
- Males are more likely to be hospitalized for schizophrenia than females, while females are more likely to be hospitalized for depression than males.
- Comparison of crude rates of hospitalization: Females > Males
- Males die at a younger average age than females and lose more potential years of life. Gender differences in YPLL are at least partly due to the fact that several causes of death with high average YPLLs, including Unintentional and Intentional (e.g. Suicide, Homicide) Injury and Chronic Liver Disease, are more common causes of death for males than females.

Ethnic Differences

- Smoking among Latinos is on the rise; the percentage of Latino adults who smoke is now indistinguishable from Non-Latinos.
- The prevalence of diabetes is the same in Latinos and non-Latinos. However, non-Latinos are more likely to be hospitalized for diabetes. There is no ethnic difference in the age-adjusted diabetes mortality rate.
- Non-Latinos have a hospitalization rate for Alcohol and Other Drug Dependence nearly four times that of Latinos, however, Latinos have a statistically significantly higher age-adjusted mortality rate for Chronic Liver Disease. This fact may reflect differences in access to healthcare. Latinos are less likely to have health insurance coverage and a usual source of care than Non-Latinos, so have less opportunity to be diagnosed or hospitalized.
- The prevalence of diagnosed heart disease, high blood pressure and asthma is higher in Non-Latinos than Latinos. Non-Latinos are also more likely to be

hospitalized for Ischemic Heart Disease and respiratory disease such as Asthma, COPD and Pneumonia/Influenza. These two facts may be related to ethnic differences in access to healthcare, as discussed above.

- However, despite facing more obstacles to healthcare access, Latinos have a significantly lower age-adjusted all cause mortality rate than Non-Latinos. Latinos die at a younger average age than Non-Latinos and lose more potential years of life. These facts, taken together, are likely due to the much younger population for Latinos. Other factors may contribute, including different patterns of risk and protective factors, cultural beliefs in the nature of disease, and the willingness to visit doctors or hospitals.
- It is likely that overall lower rates of hospitalization for Latinos do not reflect a higher prevalence of chronic diseases among Non-Latinos, but rather reflect less access to care by Latinos, including lower rates of health insurance coverage.
- Comparison of crude rates of hospitalization: Non-Latinos > Latinos

Racial Differences

- Evidence for racial differences in risk and protective factor prevalence is mostly non-existent, due to small sizes in CHIS. However, data from school children showed that Asians were the least likely to have a body composition outside the Healthy Fitness Zone. In addition, Asians do have lower heart disease prevalence than Blacks or Asians. Taken together, these facts may indicate that, in the County, Asians are at lower risk of chronic disease than Blacks and Whites. Asians have the lowest hospitalization rates overall and for chronic diseases (with the exception of Hypertension/Hypertensive Disease). Asians also have the lowest mortality rates overall and due to chronic diseases. Whites and Blacks do not differ significantly in age-adjusted mortality rate.
- The hospitalization rate for Diabetes is highest in Blacks, as is the age-adjusted mortality rate for Diabetes.
- Blacks are also hospitalized at significantly higher rates for Asthma and COPD as a whole than are Whites or Asians. Whites and Blacks have similar age-adjusted mortality rates from Chronic Lower Respiratory Disease, both of which are statistically significantly higher than Asians.
- The younger age distribution of Latinos, Blacks and Asians compared to Non-Latinos and Whites contribute to lower crude rates of hospitalization. Higher rates of poverty and lower health insurance coverage among these groups also contribute to their lower crude hospitalization rates. Despite these factors, Blacks have significantly higher crude hospitalization rates for diabetes, asthma, COPD, depression and schizophrenia, than Whites and Asians.
- Comparison of crude rates of hospitalization: Whites > Blacks > Asians.
- While Whites have the highest all cause age-adjusted mortality rate, Blacks had the highest average YPLL, followed by Asians, then Whites. This finding corresponded to significantly different average ages at death: 61.2 years for Blacks, 66.6 years for Asians and 71.5 years for Whites. These facts, taken together, are likely due to the fact that a higher percentage of deaths in minority individuals are from diseases

with high average YPLL, such as Unintentional and Intentional Injury, while a higher percentage of Whites die from chronic diseases with small average YPLLs.
- In addition, stress caused by lifelong exposure to racism and prejudice, especially by Blacks in the US, has been shown to have physiological impact, increasing the likelihood of chronic diseases and certain behavioral illnesses, and the likelihood of developing them at earlier ages (Geronimus, 1992; Geronimus et al, 2006).

Temporal Trends

While smoking is on the decline in the County (and state), a number of risk factors for chronic diseases are on the rise in Stanislaus County. Overweight and obesity is increasing among adults, although it has decreased slightly recently among children (2-11 years). Obesity prevalence has been linked to the physical environment, with areas with worse Retail Food Environments having higher prevalence of obesity and diabetes.

The percentage of women receiving timely prenatal care has decreased (2005-2009). HEDIS data indicated that while the percentage of Stanislaus Medi-Cal women receiving timely prenatal care was satisfactory, there is room for improvement for timely postpartum care.

High blood pressure is also increasing. The increase in risk factor prevalence undoubtedly contributes to the increase in prevalence of particular chronic conditions, including diabetes and asthma. Fortunately, mortality rates due to coronary heart disease and cancer have declined significantly in Stanislaus County over the last decade. Mortality from diabetes, however, has not decreased.

Conclusion

- Diabetes as an underlying cause of death ranks 5th in Latinos, and also 5th in African Americans
- Diabetes as an underlying cause of death is not ranked within the top five for any other racial or ethnic groups
- Age adjusted mortality rate from diabetes did not improve for Stanislaus or California between 2000& 2002 and 2007 & 2009
- HEIDS data showed that improvements need to be made in Postpartum care and eye exam for diabetics

Priority Issues

- Access to Care
    - Healthcare provider shortage
    - Healthcare insurance coverage disparities
- Healthy Foundation: Prenatal and perinatal health
    - Clinical care: Prenatal and postpartum care
    - Non-medically indicated elective inductions prior to 39 weeks gestation
- Chronic Diseases on the Rise: Diabetes, heart disease, asthma and depression
    - Behavioral risk factors: Diet, physical activity, overweight/obesity, tobacco
    - Environmental risk factors: Poor air quality, retail food environment
    - Clinical care
- Injury
    - Motor vehicle collisions
    - Suicide

Recommendations

- Support efforts to increase the number of healthcare providers per capita.
- Consider strategies to increase healthcare access, particularly among those with lower incomes, working adults, and racial and ethnic minorities.
- Support efforts to increase the quality of care, particularly concentrating on prenatal care and postpartum care, BMI assessments, management plans, diabetes quality indicators, pre and postpartum care.
- Support initiatives involving policy and infrastructure change (e.g. CTG) to reduce risk factors and increase protective factors for chronic diseases.
- Adopt social marketing campaigns to change group behavioral norms to increase healthy choices and public support for policy and infrastructural improvements that will help make the healthy choice the easy choice.
- Focus on addressing health disparities by addressing inequalities in the broad determinants of health (e.g. support the *Framework for a Thriving Stanislaus*, see http://www.schsa.org/PublicHealth/mainpages/coalitionPartnerships/framework.html.)
- Increase mental and behavioral health preventive and treatment services and support initiatives to increase the prevalence of protective factors than can reduce the need for such services (e.g. promotores and community health workers).
- Help educate individuals about motor vehicle, bicycle and pedestrian safety to reduce injuries from motor vehicle collisions.
- Support initiatives involving policy and infrastructure change to reduce injuries due to motor vehicle collisions, by, for example, reducing reliance on cars, making roadways safer for bicyclists and pedestrians (e.g. Safe Routes to Schools grants, changes to city and county general plans).

References

American Lung Association (2011). *State of the Air 2011.* Washingon DC: American Lung Association. Retrieved from http://www.stateoftheair.org/2011/assets/SOTA2011.pdf.

American Psychological Association. *Disability & Socioeconomic Status*. Retrieved from: http://www.apa.org/pi/ses/resources/publications/factsheet-disability.aspx.

Applied Survey Research (2010). *Kaiser Permanente 2010 Data Report*. Watsonville, CA: Applied Survey Research.

Applied Survey Research (2008). *Stanislaus County Community Health Assessment 2008.* Watsonville, CA: Applied Survey Research. Retrieved from http://www.schsa.org/PublicHealth/pdf/dataPublications/communityHealthAssessment/2008%20CHA%20Full%20Report.pdf.

Bedsworth, Louise W. (2004). *Cleaning the Air in the Central Valley.* Retrieved from: http://www.kirschfoundation.org/care/documents/centralvalleyfinalnewp17.pdf.

Bengiamin, M, Capitman, JA., and Chang, X. (2008). *Healthy People 2010: A 2007 Profile of Health Status in the San Joaquin Valley*. Fresno, CA: Central Valley Health Policy Institute, California State University, Fresno. Retrieved from: http://www.csufresno.edu/ccchhs/documents/CVHPI/_CSUF_HealthyPeople2010_A2007Profile.pdf.

Brault, M. W. (2008). *Americans with Disabilities: 2005. Household Economic Studies*. Retrieved from US Census Bureau: http://www.npc.umich.edu/publications/policy_briefs/brief9/policy_brief9.pdf.

California Center for Public Health Advocacy (CCPHA), the UCLA Center for Health Policy Research, and Policy Link (2008). *Designed for Disease: The Link Between Local Food Environments and Obesity and Diabetes*. Retrieved from the California Center for Public Health Advocacy http://www.publichealthadvocacy.org/designedfordisease.html.

California Department of Education (2011). *2010-11 APR Glossary-Base API*. Retrieved from http://www.cde.ca.gov/ta/ac/ap/glossary11b.asp.

California Department of Education (2012). *FITNESSGRAM: Healthy Fitness Zone Charts*. Retrieved from http://www.cde.ca.gov/ta/tg/pf/healthfitzones.asp.

California Department of Health Care Services (2011). *2010 Aggregate Report for the Medi-Cal Managed Care Program in California.* Retrieved from http://www.dhcs.ca.gov/dataandstats/reports/Documents/MMCD_Qual_Rpts/HEDIS_Reports/HEDIS2010.pdf

California Department of Public Health (2011). *County Health Status Profiles 2011.* Retrieved from http://www.cdph.ca.gov/pubsforms/Pubs/OHIRProfiles2011.pdf.

California Economic Development Department (2012). *Labor Market Information*. http://www.labormarketinfo.edd.ca.gov/ (accessed February, 2012).

California Maternal Quality Care Collaborative (2011) *<39 Weeks Toolkit*. Retrieved March 2011 from http://www.cmqcc.org/_39_week_toolkit.

Centers for Disease Control and Prevention (January 2011). Health Disparities and Inequalities Report – United States 2011. *Morbidity and Mortality Weekly Report, Supplement/Vol.60.* Retrieved from http://www.cdc.gov/mmwr/pdf/other/su6001.pdf.

Centers for Disease Control and Prevention (2011a). *National Diabetes Fact Sheet: National Estimates and General Information on Diabetes and Prediabetes in the United States,* Retrieved from http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2011.pdf.

Centers for Disease Control and Prevention (2011b). *Overweight and Obesity: Economic Consequences*. Retrieved from http://www.cdc.gov/obesity/causes/economics.html.

Centers for Disease Control and Prevention (2011c). *Overweight and Obesity: Basics about Childhood Obesity*. Retrieved from the CDC http://www.cdc.gov/obesity/childhood/basics.html.

Centers for Disease Control and Prevention (2011d). *Obesity among Low-Income Preschool Children*. Retrieved from the CDC http://www.cdc.gov/obesity/downloads/PedNSSFactSheet.pdf.

Centers for Disease Control and Prevention (2011e). *Physical Activity for a Healthy Weight.* Retrieved from http://www.cdc.gov/healthyweight/physical_activity/index.html.

Centers for Disease Control and Prevention (2011f). *Smoking and Tobacco Use Fast Facts*. Retrieved from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/index.htm.

Centers for Disease Control and Prevention (2011g). *Overweight and Obesity, US Obesity Trends*. Retrieved from http://www.cdc.gov/obesity/data/trends.html

Centers for Disease Control and Prevention (2010). *Tobacco control State Highlights 2010*. Retrieved from http://www.cdc.gov/tobacco/data_statistics/state_data/state_highlights/2010/index.htm.

Centers for Disease Control and Prevention (n.d.a) *Asthma Action Plan*. Retrieved from http://www.cdc.gov/asthma/actionplan.html.

Centers for Disease Control and Prevention (n.d.b) Asthma *Management and Treatment*. Retrieved from http://www.cdc.gov/asthma/management.html.

Centers for Disease Control and Prevention (n.d.c) *Children and Diabetes.* Retrieved from http://www.cdc.gov/diabetes/projects/cda2.htm.

Centers for Disease Control and Prevention (n.d.d) *High Blood Pressure Facts*. Retrieved from http://www.cdc.gov/bloodpressure/facts.htm.

Center on Hunger and Poverty, in collaboration with Food Research & Action Center (no date). *The Paradox of Hunger and Obesity in America.* Retrieved from http://www.nufs.sjsu.edu/clariebh/Hunger%20and%20Obesity.pdf.

Colditz, GA., Wolin, KY. & Gehlert, S. (March 2012) Applying what we know to accelerate cancer prevention. *Science Translational Medicine, 4(127):p. 127rv4*. DOI: 10.1126/scitranslmed.3003218.

Cutler, D.M. & Lleras-Muney, A. (2007). *Education and Health*. (Policy Brief #9). Retrieved from National Poverty Center: http://www.npc.umich.edu/publications/policy_briefs/brief9/policy_brief9.pdf.

Ehehalt, S., Blumenstock, G., Willasch, AM., Hub, R., Ranke, MB., & Neu, A. (2008). Continuous rise in incidence of childhood Type 1 diabetes in Germany. *Diabetic Medicine, 25(6):755-7*.

United States Environmental Protection Agency (n.d.) *Report on the Environment – Asthma Prevalence*. Retrieved from http://cfpub.epa.gov/eroe/index.cfm?fuseaction=detail.viewInd&lv=list.listByAlpha&r=235294&subtop=381.

Fitzpatrick, AL., Kuller, LH., Lopez, O., Diehr, P., S. O'Meara, E., Longstreth, WT., Luchsinger, JA., (2009). Midlife and late-life obesity and the risk of dementia. *Archives of Neurology*. 66(3):336-342.

Geronimus, AT. (1992). The weathering hypothesis and the health of African-American women and infants: Evidence and speculations. *Ethnicity and Disease, 2*:207-221.

Geronimus, AT, Hicken, M, Keen, D, & Bound, J. (2006). "Weathering" and age patterns of allostatic load scores among Blacks and Whites in the United States. *American Journal of Public Health, 96*(5):826-833.

Gyurus, EK., Patterson, C., Soltesz, G. (Feb 2012). Twenty-one years of prospective incidence of childhood type 1 diabetes in Hungary –the rising trend continues. *Pediatric Diabetes, 13(1):21-5*.

Health Canada (2006). *Health Effects of Air Pollution*. Retrieved from http://www.hc-sc.gc.ca/ewh-semt/air/out-ext/effe/health_effects-effets_sante-eng.php.

Heron, M. & Tejada-Vera B. (December 23, 2009). *Deaths: Leading Causes for 2005*. National Vital Statistical Reports, 58 (8). Retrieved from http://www.cdc.gov/nchs/data/nvsr/nvsr58/nvsr58_08.pdf.

Jarosz-Chobot, P., Polanska, J., Szadkowska, A., Kretowski, A., Bandurska-Stankiewicz, E., Ciechanowska, M., Deja, G., Mysliwiec, M., Peczynska, J., Rutkowska, J., Sobel-Maruniak, A., Fichna, P., Chobot, A., Rewers, M. (2011). Rapid increase in the incidence of type 1 diabetes in Polish children from 1989 to 2004, and predictions for 2010 to 2025. *Diabetologia, 54(3): 508-15*.

Kornum, JB., Norgaard, M., Dethlefsen, C., Due, KM., Thomesen, RW., Tjonneland, A., Torensen, HT., and Overvad, K. (March 2010). Obesity and risk of subsequent hospitalization with pneumonia. *European Respiratory Journal*, 36(6): 1330-1336. Doi:10.1183/09031936.00184209

Luppino,FS., de Wit,LM., Bouvy, PF., Stijnen, T., Cuijpers, P., Penninx, B., Zitman, FG., (2010). Overweight, Obesity and Depression. *Archives of General Psychiatry*, 67(3):220-229.

March of Dimes (2008). *C-Section*. (Retrieved from: http://www.marchofdimes.com/pregnancy/csection_indepth.html)

March of Dimes (2011). *Teen Pregnancy*. (Retrieved from: http://www.marchofdimes.com/professionals/medicalresources_teenpregnancy.html.

March of Dimes (2012). *Vaginal Birth, Inducing Labor*. (Retrieved from: http://www.marchofdimes.com/pregnancy/vaginalbirth_inducing.html)

Milken Institute (2007). *An Unhealthy America: the Economic Burden of Chronic Diseases. Charting a new course to save lives and increase productivity and economic growth*. Retrieved from http://www.chronicdiseaseimpact.com/.

New York State Department of Health (2010). *Medicaid Update, Prenatal Care Special Edition*. Retrieved from http://www.pnmc-hsr.org/wp-content/uploads/2011/01/NewStandardsArticle0210.pdf.

Office of Disease Prevention and Health Promotion, US Department of Health and Human Services (n.d.) *Healthy People 2010*. Retrieved from http://www.healthypeople.gov/2010/.

Office of Statewide Health Planning and Development (2010). *2009 Prevention Quality Indicators*. Retrieved from http://www.oshpd.ca.gov/HID/Products/PatDischargeData/AHRQ/pqi_overview.html

Ogden, C. and Carroll, M. (2010a). *Prevalence of Obesity Among Children and Adolescents: United States, Trends 1963-1965 Through 2007-2008*. Retrieved from Health E-Stat http://www.cdc.gov/nchs/data/hestat/obesity_child_07_08/obesity_child_07_08.htm.

Ogden, C., Lamb, M., Carroll, M. and Flegal, K. (2010b). Obesity and Socioeconomic Status in Adults: United States, 2005-2008. *NCHS Data Brief, No 50*. Retrieved from the National Center for Health Statistics http://www.cdc.gov/nchs/data/databriefs/db50.pdf.

Ogden, C., Lamb, M., Carroll, M. and Flegal, K. (2010c). Obesity and Socioeconomic Status in Children and Adolescents: United States, 2005-2008. *NCHS Data Brief, No 51*. Retrieved from the National Center for Health Statistics http://www.cdc.gov/nchs/data/databriefs/db51.pdf.

Skordis, N., Efstanthiou, E., Savvidou, A., Savva, sC., Phylactou, LA., Shammas, C., and Neocleous, V. (January, 2012) Epidemiology of Type 1 diabetes mellitus in Cyprus: rising incidence at the dawn of the 21st century. *Hormones (Athens). 11(1): 86-93*.

US Census Bureau (2011). *2010 Census.* Information retrieved from http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml.

US Census Bureau (2011). *2010 American Community Survey Five-Year Estimates.* Information retrieved from http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml.

US Census Bureau (2011). *2010 American Community Survey Three-Year Estimates.* Information retrieved from http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml.

US Census Bureau (2010). *2009 American Community Survey Five-Year Estimates.* Information retrieved from http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml.

US Census Bureau (2010). *2009 American Community Survey Three-Year Estimates.* Information retrieved from http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml.

US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics (January 2012). *Summary Health Statistics for US Adults: National Health Interview Survey 2010. Vital and Health Statistics, Series 10, Number 252.* Retrieved from http://www.cdc.gov/nchs/data/series/sr_10/sr10_252.pdf.

U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau (2011) *Child Health USA 2011.* Rockville, Maryland: U.S. Department of Health and Human Services. Retrieved from http://mchb.hrsa.gov/chusa11/hstat/hsi/pages/201lbw.html.

World Health Organization (2005). Media Centre. *World Health Organization:"Stop the global epidemic of chronic disease".* Retrieved from http://www.who.int/mediacentre/news/releases/2005/pr47/en/index.html.

Appendix A: Diseases/Conditions of Special Interest with Indicators

Disease/Condition	Indicator			
	Prevalence	**Hospitalization**	**Clinical Care[1]**	**Mortality[2]**
Overweight/Obesity	% of population in different BMI categories by different demographic categories	Primary diagnosis ICD9 code 278.0-278.1	HEDIS measures on BMI assessment in children, nutrition and physical activity counseling for children	Underlying cause ICD 10: E66.0-E66.9
Hypertension and Hypertensive Disease	% of adult population ever diagnosed with Hypertension by demographics	Primary diagnosis ICD9 code 401.0-405.90	AHRQ Prevention Quality Indicators for Blood Pressure Control *for diabetics;* CHIS: % of individuals with hypertension who take medication to control it	Underlying cause ICD 10 code I10.0-I10.9 (Essential Hypertension and Renal Disease) and Deaths with underlying cause ICD 10 code N0.0-N7.9, N17.0-N19.9 or N25.0-N27.9 (Nephritis, Nephrotic Syndrome and Nephrosis)
Heart Disease	% of adult population ever diagnosed with Heart Disease by demographics	Primary diagnosis ICD9 code 410.0-414.9 (Ischemic Heart Disease)	AHRQ Prevention Quality Indicators for Hypertension and Congestive Heart Failure	Underlying cause ICD 10 code I00.0-I09.9, I11.0-I11.9, or I20.0-I51.9 (Diseases of the Heart)
Cerebrovascular Disease (Stroke)	% of population ever diagnosed with Stroke	Primary diagnosis ICD9 code 430.0-438.9		Underlying cause ICD 10 code C0.0 – C 7.9
Cancer, any type		Primary diagnosis ICD9 code 140.0-209.9 or 230.0-234.9		Underlying cause ICD 10 code I60.0 – I69.8
Chronic Liver Disease	NA	Primary diagnosis ICD9 code 571.0-572.9		Underlying cause ICD 10 code K70.0-70.9 or 73.0-74.9

Disease/Condition	Indicator			
	Prevalence	**Hospitalization**	**Clinical Care**	**Mortality[2]**
Diabetes, Type I or II	% of population ever diagnosed with Diabetes	Primary diagnosis ICD9 code 250.00- 250.99 or of 648.0	AHRQ Prevention Quality Indicators for Diabetes short term complications, Diabetes long term complications, Lower-extremity amputations among patients with Diabetes and Uncontrolled Diabetes; HEDIS Medi-Cal Managed Care indicators for HbA1c Testing, HbA1c Control, LDL-C Screening among diabetics, LDL-C Control among diabetics, Eye Exam Performed for diabetics, Medical Attention for Nephropathy for diabetics, and Blood Pressure Control for diabetics	Underlying cause ICD 10 code E10.0-E14.9
Chronic Obstructive Pulmonary Disease (COPD)	NA	Primary diagnosis ICD9 code 490.00- 496.9 *(Note: includes Asthma)*	AHRQ Prevention Quality Indicator for Chronic Obstructive Pulmonary Disease	Underlying cause ICD 10 code J40.0-J44.9 *(Note: excludes Asthma)*
Asthma	% of population ever diagnosed with Asthma	Primary diagnosis ICD9 code 493.00-493.9	AHRQ Prevention Quality Indicator for Adult Asthma; % of individuals with asthma whose health professional provided an asthma management plan	Underlying cause ICD 10 code J45.0-J46.9
Alzheimer's Disease	NA	Primary diagnosis ICD9 code 331.0		Underlying cause ICD 10 code G30.0-G30.9

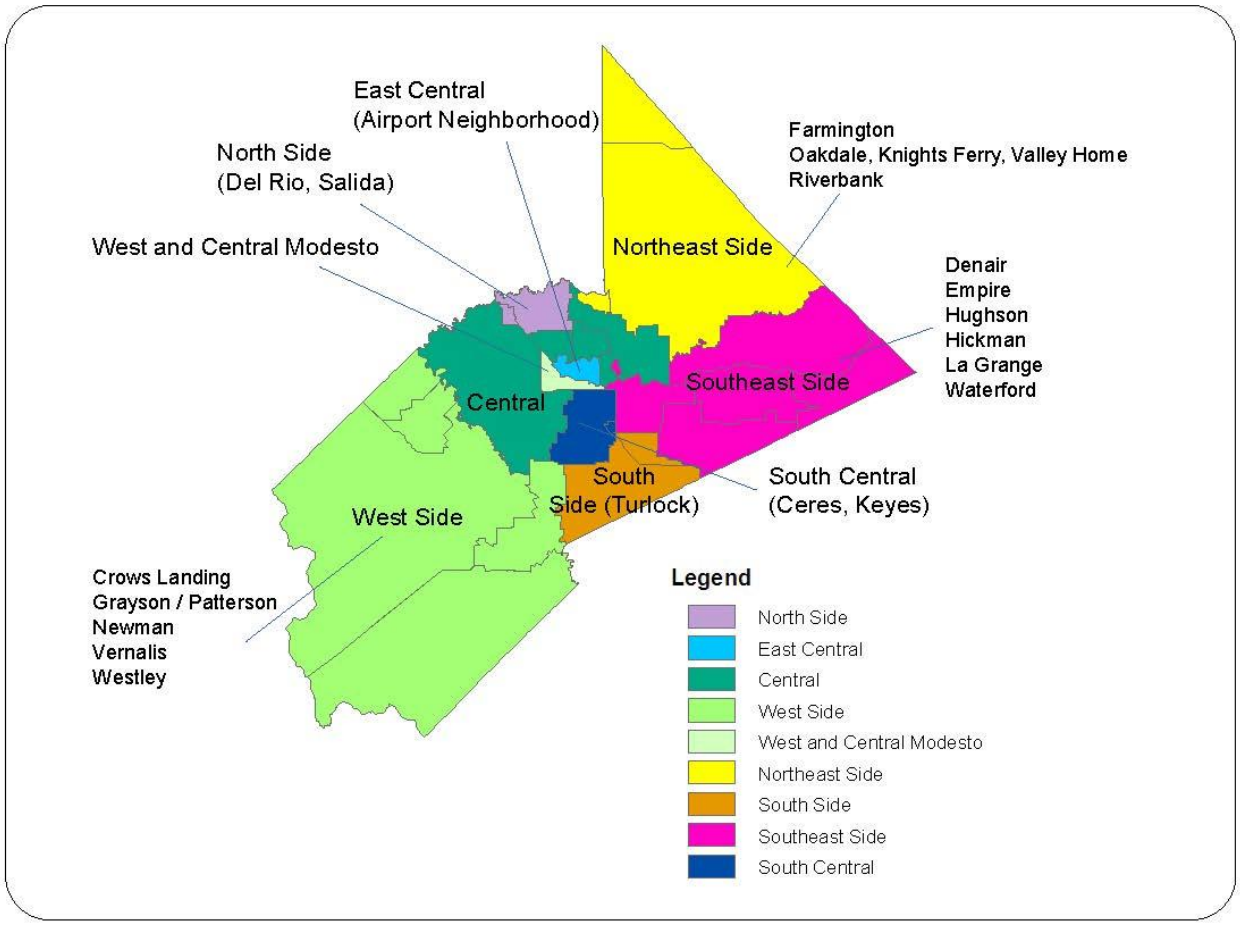
	Indicator			
Disease/Condition	**Prevalence**	**Hospitalization**	**Clinical Care**	**Mortality[2]**
Parkinson's Disease	NA	Primary diagnosis ICD9 code 332.0-332.9		Underlying cause ICD 10 code G20.0-G21.9
Influenza/Pneumonia	NA	Primary diagnosis ICD9 code 480.0-488.9	AHRQ Prevention Quality Indicator for Bacterial Pneumonia	Underlying cause ICD 10 code J11.0-J18.9
Depression		Primary diagnosis ICD9 code 296.20-296.39, 311.00-311.99 or 300.40-300.49		
Anxiety	NA	Primary diagnosis ICD9 code 300.00-300.09, 300.2-300.29 or 313.00-313.99		
Schizophrenia	NA	Primary diagnosis ICD9 code 295.00-295.99		
Alcohol or Other Drug Abuse or Addiction		Primary diagnosis ICD9 code 303.00-304.99		Underlying cause ICD 10 code D42.1-D59.0, D59.2-D61,1, D64,2M E6.4-E16.0, E23.1-E24.2, E27.3-E66.1, F11,0-F11.5, F11.7-F11.9, F12.0,-F12.5, F12.7-F12.9, F13.0-F13.5, F13.7,-F13.9, F14.0-F14.5, F14.7-F14.9, F15.0,-F15.5, F15.7-F15.9, F16.0,-F16.5, F16.7-F16.9, F17.0, F17.3-F17.5, F17.7-F17.9, F18.0-F18.5, F18.7-F18.9, F19.0-F19.5, F19.7-F19.9, G21.1, G24.0, G25.1, G25.4, G25.6, G44.4, G62.0, G72.0, I95.2, J70.2, J70.4, L10.5, L27.0-L27.1. M10.2,

Disease/Condition	Indicator			
	Prevalence	**Hospitalization**	**Clinical Care**	**Mortality[2]**
Alcohol or Other Drug Abuse or Addiction, continued				M32.0, M80.4, M81.4, M83.5, M87.1, R78.1-R78.5, X40.0, X44.9, X60.0, X64.9, or X85.0, X85.9, Y10.0-Y14.9
Injury (Unintentional)		Primary diagnosis ICD9 code of 800.00 through 999.99 or any non-blank primary ecode (ecode_p)		Underlying cause ICD 10 code V01.0-V99.0, W00.0-X59.9. and Y85.0-86.9
Suicide				Underlying cause ICD 10 code U03.0-U03.9 or X60.0-X84.9 or X87.0
Homicide				Underlying cause ICD 10 code U01.0-U02.9, X85.0-X99.9, Y00.0-Y09.9 or Y87.1
Childbirth		Primary diagnosis ICD9 code 650.0-669.99		

[1]Measures from the Agency for Healthcare Quality and Research (AHQR) and the Health Data Information Set (HEDIS).
[2]Follows the National Center for Health Statistics' lists of 50 rankable causes of death for adults (Heron & Tejada-Vera, 2009).

Appendix B: Sub-County Regions by Zip Code and Community

Region	Communities	Zip Codes
Central	Modesto (parts)	95350, 95352, 95355, 95357, 95358
East Central	Airport Neighborhood and Modesto (parts)	95354
West/South Modesto	West Modesto and South Modesto	95351
North Side	Del Rio, Salida and Modesto (parts)	95356, 95368
Northeast Side	Farmington, Knights Ferry, Riverbank, Oakdale, Valley Home	95230, 95361, 95367
Southeast Side	Denair, Empire, Hughson, Hickman, La Grange, Waterford	95316, 95319, 95326, 95323, 95329, 95386
South Central	Ceres, Keyes	95307, 95328
South Side	Turlock	95380, 95381, 95382
West Side	Crows Landing, Grayson, Newman, Patterson, Vernalis, Westley	95313, 9530, 95363, 95385, 95387



Memorial Medical Center

A Sutter Health Affiliate

With You. For Life.

Public Health
Prevent. Promote. Protect.

Stanislaus County HEALTH SERVICES AGENCY