Dignity Health
Mark Twain Medical Center

2019 Community Health Needs Assessment

This CHNA report was adopted by the Mark Twain Medical Center Community Board in September 2019.

Calaveras County, California

2019 Community Health Needs Assessment

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Acknowledgements

This community health needs assessment was prepared by Michael Bilton of Dignity Health and Nicki Stevens of Mark Twain Medical Center.

A significant portion of the secondary data and graphics in the report, and some narrative, was prepared and provided by BroadStreet Health, LLC. Mark Twain Medical Center wishes to thank Tracy L. Flood, MD PhD, Tom Schmitt, PhD and James Walters, MS of BroadStreet for their work.

Several knowledgeable and committed community and organization leaders contributed input into health needs, resources and priorities. They are listed in the Community Input into Health Needs and Priorities section of this report.

Contents

Executive Summary

Mark Twain Medical Center is pleased to present its 2019 community health needs assessment report.

Purpose

The purpose of this community health needs assessment (CHNA) is to identify and prioritize significant health needs of the community served by Dignity Health Mark Twain Medical Center (MTMC). The priorities identified in this report help to guide the hospital's community health improvement programs and community benefit activities, as well as its collaborative efforts with other organizations that share a mission to improve health. This CHNA report meets requirements of the Patient Protection and Affordable Care Act and of California Senate Bill 697 that not-for-profit hospitals conduct a community health needs assessment at least once every three years.

Mission

The hospital's dedication to engagement with the community, assessing priority needs, and helping to address them with community health program activities is in keeping with our mission. Dignity Health is committed to furthering the healing ministry of Jesus. We dedicate our resources to:

- Delivering compassionate, high-quality, affordable health services;
- Serving and advocating for our sisters and brothers who are poor and disenfranchised; and
- Partnering with others in the community to improve the quality of life.

Community Definition

This needs assessment covers Calaveras County, California extending to the east and north of the agricultural and urban San Joaquin Valley, and into the Sierra foothills. Mark Twain Medical Center, located in San Andreas, California, is the sole hospital in the county and the county is its primary service area. Calaveras County is a rural area with a population of 45,171.

Assessment Process and Methods

Community health needs were identified using a collaborative, community-centric, and data-driven process. This was done in two phases: 1) reviewing evidence from both community input and quantitative secondary data; and 2) prioritizing significant health needs.

Reviewing Evidence

The first phase was to collect and review evidence on the health of Calaveras County. We considered various sources of data and consulted with persons and organizations representing the broad interests of the community, including representatives of underserved and low-incomes populations. This included consultation with the governmental public health agency.

Methods included:

- Review of secondary quantitative data;
- Consultation with governmental public health officials;
- Key informant interviews with the hospital's patent advisory committee and with external partner organization leaders, to gather input from those representing the broad interests of the

community and those of underserved, low-income, and minority populations.

Prioritizing Significant Health Needs

The process of identifying and prioritizing significant health needs from among all identified needs included a review of the quantitative secondary data, community stakeholders' input, and a set of criteria to guide decision-making. Criteria used to prioritize identified health needs included:

- Size or scale of problem
- Severity of problem
- Disparity and equity
- Known effective interventions
- Resource feasibility and sustainability
- Community salience

Significant Health Needs

The prioritized significant health needs identified by this assessment are:

- Access to Primary and Specialty Care
- Behavioral Health (Mental Health and Substance Use)
- Cardiovascular Disease
- Older Adult Health
- Unintentional Injuries

Read descriptions of the supporting evidence beginning on page 42 of this report.

Resources Potentially Available to Address Needs

No one organization has the resources and expertise to fully address all community health needs, and collaborative partnerships are essential to protecting and strengthening health among multiple segments of the community. The CHNA identified many resources potentially available to address identified needs, which are listed in this report.

Report Adoption, Availability and Comments

This CHNA report was adopted by the Mark Twain Medical Center community board in September 2019.

This report is widely available to the public on the hospital's web site, and a paper copy is available for inspection upon request at Mark Twain Medical Center, 768 Mountain Ranch Road, San Andreas, CA.

Written comments on this report can be submitted to:

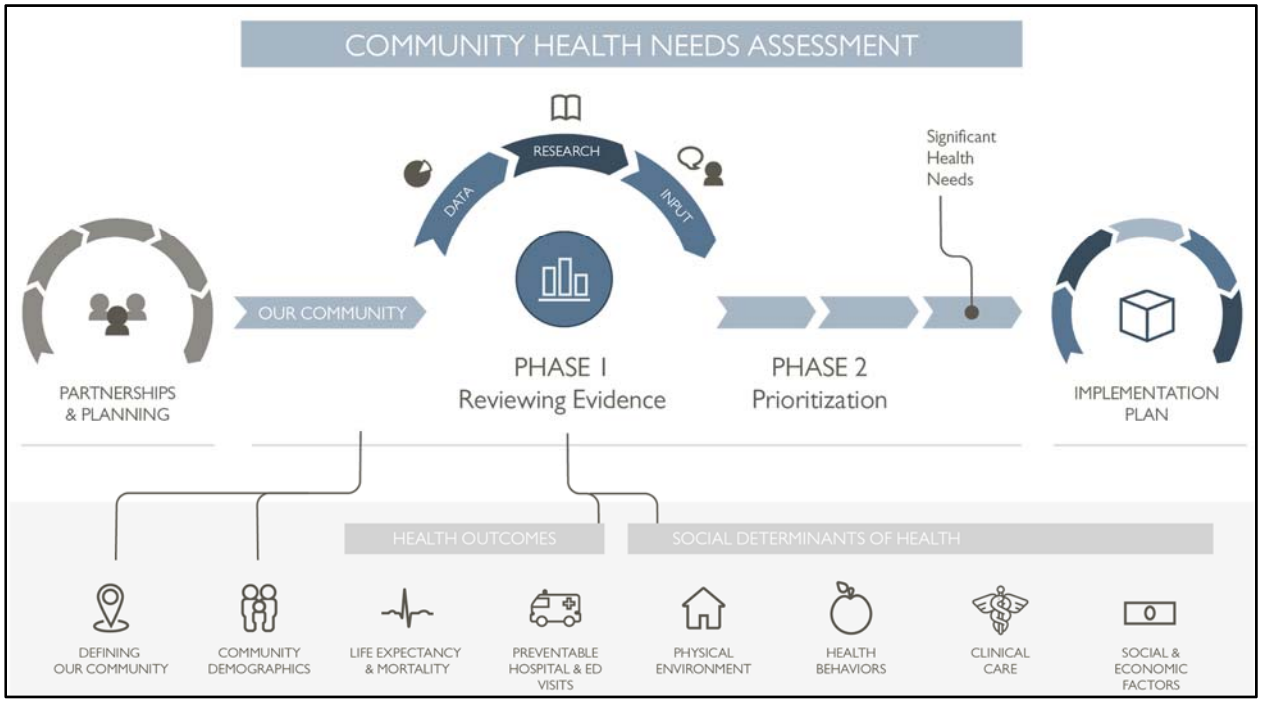
Manager of Marketing and Business Development
Mark Twain Medical Center
768 Mountain Ranch Road
San Andreas, CA 95249

Or by e-mail to:
Nicki.Stevens@DignityHealth.org

Identifying and Prioritizing Significant Health Needs

The process of identifying and prioritizing the significant health needs of Calaveras County is related to a larger ongoing process of working with existing partnerships to plan, coordinate and deliver community services. The hospital is engaged in multiple such partnerships year-round, which affords real-time knowledge of a variety of community needs and resources.

The formal CHNA process and report collects and reviews data on health status and community well-being, obtains targeted input from key stakeholders, and prioritizes significant health needs from among all identified needs. Significant health needs may include health outcomes or the social and environmental factors that contribute to health outcomes (i.e. the physical environment, health behaviors, clinical care, and social & environmental factors).



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- Size or scale of problem
- Severity of problem
- Disparity and equity
- Known effective interventions
- Resource feasibility and sustainability
- Community salience

The hospital will produce a separate implementation strategy to help address selected identified significant health needs. Like this CHNA report, the implementation strategy will be widely available to the public on the hospital's web site.

Defining the Community

Calaveras County, California

This needs assessment covers Calaveras County, California, which extends to the east and north of San Joaquin and Stanislaus Counties in the state's Central Valley, and into the Sierra foothills. Mark Twain Medical Center, located in city of San Andreas, is the sole hospital in the county and the county is its primary service area. This definition was chosen because a majority of emergency room and hospital discharges are from individuals living within the county.

Community Demographics

There are 45,171 people living in Calaveras County. Since 2010, the population has decreased 0.9%.

Urban community members represent about 24.6 percent of the population. Other members of Calaveras County live in less densely populated regions, and 75.4 percent of the population is considered to be rural.

The rural nature of much of the community results in some health challenges, including long transportation times and transportation difficulties for accessing care,

Age. The median age of Calaveras County is 50.7 years. This is significantly older than the U.S. median age of 37.6 years.

Race and Ethnicity. Regarding racial and ethnic diversity, 82.5% of the population is white (non-Hispanic), 0.6% is black (non-Hispanic), 5.8% is Other (non-Hispanic), and 11.1% is Hispanic.

Low Income Status. Health is impacted by socioeconomic status (SES), and populations with low SES tend to face greater health challenges (Marmot & Wilkinson, 2005). An estimated 29.9% of Calaveras County residents are living at or below 200% of the federal poverty line. This is low compared to national rates (34.2%).

Insurance Status. In Calaveras County, an estimated 44% of people have private insurance coverage, 21% people are covered by Medicaid and nine percent are uninsured. Twenty-four percent are on Medicare, and the remainder are dually eligible for Medicare and Medicaid.[1]

Health Care Provider Ratios and Health Professional Shortage Areas.

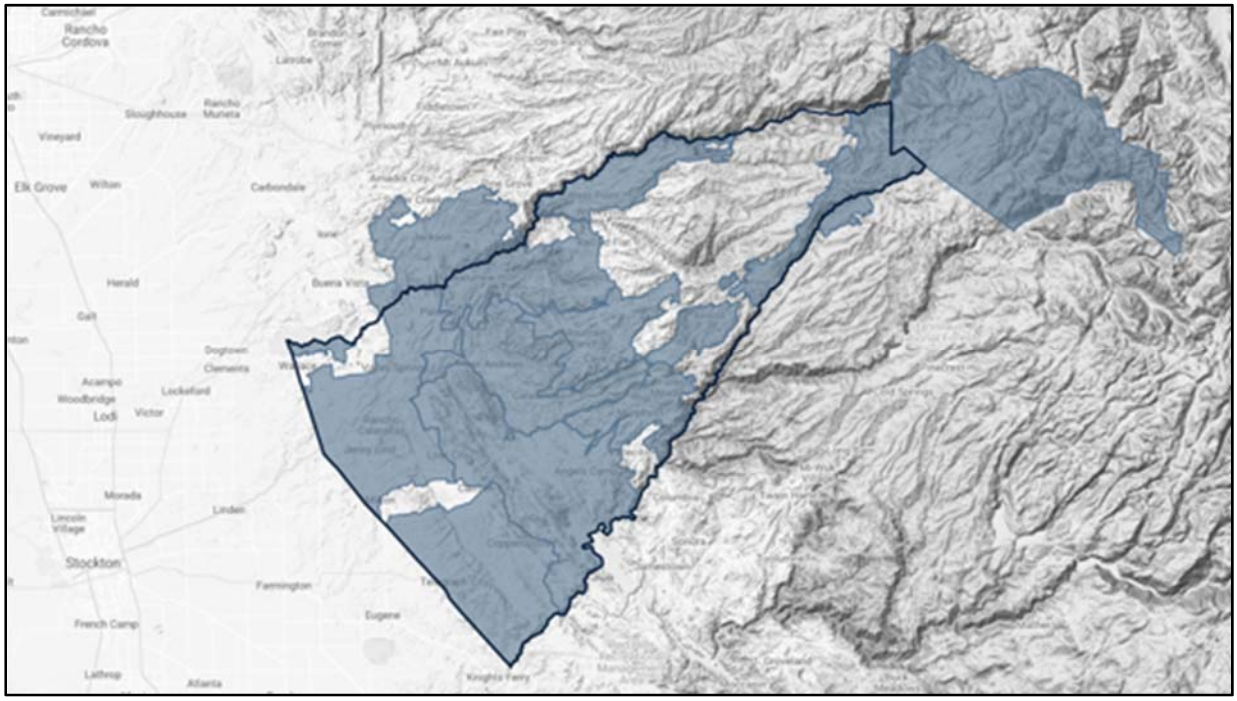
The ratio of the population to the number of primary care physicians is 61 percent higher, and the ratios of population to dentists and mental health providers is twice as high in Calaveras County than in California. That means less access to care, and the county as a whole is designated both a primary care and mental health Professional Shortage Area.

Calaveras County Map

The defined geographic area for this assessment is presented in the map below. The map depicts Calaveras County by ZIP code tabulation area (highlighted areas) and also by county boundaries

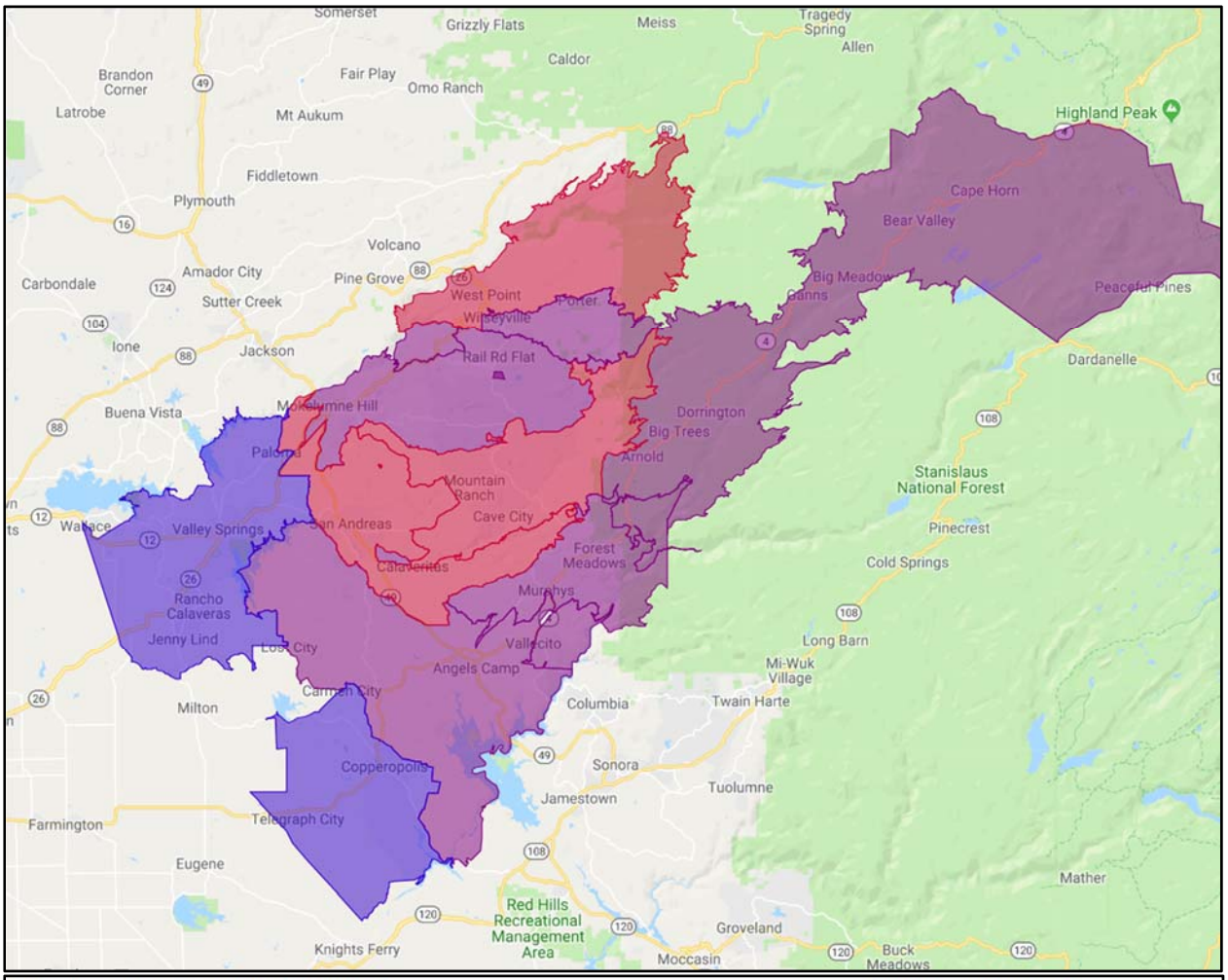
[1] Source: IBM MarketExpert. © 2019 The Claritas Company, © IBM Corporation 2019

(solid outline). Some secondary data are available only at the ZIP or county level. Please see the Methods section for more information on the geographic scope of secondary data sources.



Community Need Index

One tool used to assess health need is the Community Need Index (CNI) created and made publicly available by Dignity Health and IBM Watson Health. The CNI analyzes data at the zip code level on five factors known to contribute or be barriers to health care access: income, culture/language, education, housing status, and insurance coverage. Scores from 1.0 (lowest barriers) to 5.0 (highest barriers) for each factor are averaged to calculate a CNI score for each zip code in the community. Research has shown that communities with the highest CNI scores experience twice the rate of hospital admissions for ambulatory care sensitive conditions as those with the lowest scores.



Mean(zipcode): 3 / Mean(person): 2.8 CNI Score Median: 3

Zip Code	CNI Score	Population	City	County
95222	3	5411	Angels Camp	Calaveras
95223	2.8	5086	Arnold	Calaveras
95228	2.4	4288	Copperopolis	Calaveras
95232	3	320	Glencoe	Calaveras
95245	3.2	2377	Mokelumne Hill	Calaveras
95246	3.4	1748	Mountain Ranch	Calaveras
95247	3	4833	Murphys	Calaveras
95249	3.4	3639	San Andreas	Calaveras
95251	2.8	195	Vallecito	Calaveras
95252	2.4	14927	Valley Springs	Calaveras
95255	3.6	1716	West Point	Calaveras
95257	3.2	447	Wilseyville	Calaveras

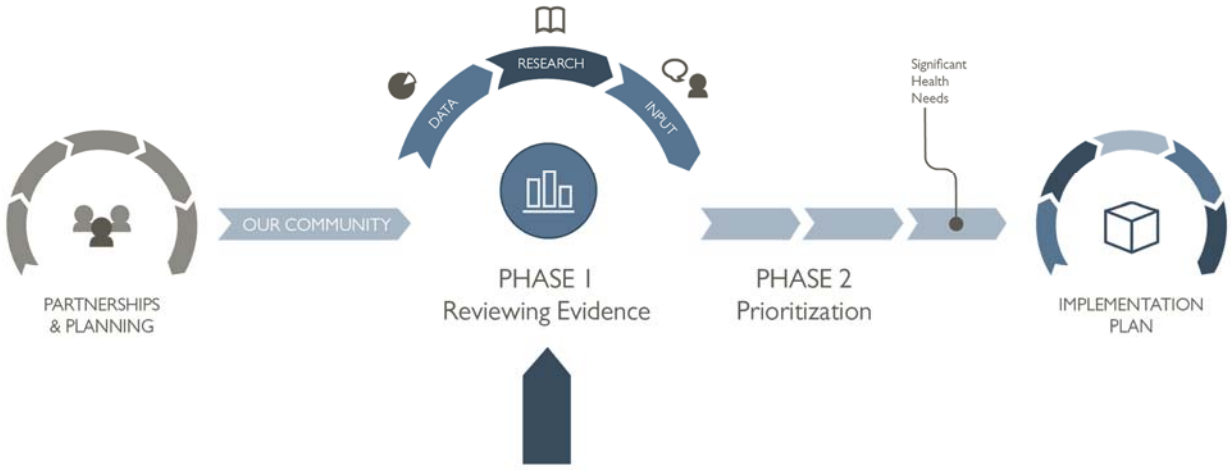
The CNI map for Calaveras County shows that areas to the south and west have lower levels of need likely to contribute to hospital admissions for ambulatory care sensitive conditions. Areas to the north and east have higher CNI scores and thus greater need. Scores by ZIP code and corresponding city and town are in the table above.

Community Demographics

Subgroup	Calaveras County	California	United States
Total Population	**45,057**	38,982,847	321,004,407
Male	**49.5%**	49.7%	49.2%
Females	**50.5%**	50.3%	50.8%
Race and Ethnicity	**-**	-	-
White, Non-Hispanic	**82.0%**	37.9%	61.5%
Black, Non-Hispanic	**0.6%**	5.5%	12.3%
Hispanic	**11.5%**	38.8%	17.6%
Other, Non-Hispanic	**5.9%**	17.8%	8.6%
Median Household Income	**$54,800**	$67,169	$57,652
Health Coverage: Medicaid	**21%**	25%	19%
Health Coverage: Uninsured	**9%**	10.5%	10.5%
Language Spoken at Home	**-**	-	-
English	**92.7%**	56.0%	78.7%
Spanish	**4.8%**	28.7%	13.2%
Other Language	**2.5%**	15.3%	8.1%
Speak English less than very well	**2.1%**	18.4%	8.5%
Select Age Groups	**-**	**-**	**-**
Ages 0 to 5 years	**4.2%**	6.8%	6.2%
Females, ages 15 to 45 years	**26.6%**	41.1%	39.1%
Seniors, 65 years and older	**25.7%**	11.5%	14.9%

Data source: U.S. Census Bureau's American Community Survey 5-year estimates (2013-2017). For Calaveras County Medicaid and Uninsured, source is IBM Market Expert. For California (http://files.kff.org/attachment/fact-sheet-medicaid-state-CA) and United States (http://files.kff.org/attachment/fact-sheet-medicaid-state-US) Medicaid, source is Kaiser Family Foundation.

Reviewing Evidence



The core of the community health needs assessment is the collection and review of evidence on the health needs and resources of Calaveras County residents.

Evidence for Phase 1 was reviewed and is presented in the following sections:

- **Health Outcomes** included measures of life expectancy, mortality by cause, and high cost health care events such as preventable admissions to the hospital.

- **Social Determinants of Health** included risk factors that may contribute to poor or good health. Social determinants of health include the social conditions and surrounding environment where people live, learn, work, and play.

How Data Were Obtained

Data for this needs assessment were collected from numerous sources, and included both quantitative demographics and health statistics and input from individuals representing the borad interests of the community. Whenever possible, data on disparities were collected and information is presented on vulnerable populations.

- Secondary Data. Secondary data is information that already exists and has been published or is otherwise available. Much of the secondary data were assembled and calculated for Calaveras County by BroadStreet Health, LLC. In some cases, Dignity Health obtained updated data for BroadStreet Health's tables. In addition, data were incorporated into this analysis and report on Health Professional Shortage Areas, Healthy Places Index, Community Need Index, California Healthy Kids Survey and Prevention Quality Indicators. Secondary data methods are discussed in the End Notes and Appendices.

- Primary Data. Primary data is information obtained specifically for this report that was not previously available or assembled. The primary data collected for this analysis and report was composed of interviews with individuals representing the broad interests of the community, including those with specialized knowledge of public health and the needs of medically underserved, low-income and minority populations. Interviews were held with nine people, who are listed with their organizational affiliations and their input described in the Community Input into Health Needs and Priorities section.

Health Outcomes

What ails Calaveras County? Are we disproportionately burdened by certain avoidable diseases and health conditions?

Health outcomes include overall life expectancy and mortality from certain health conditions. This includes infant mortality and measures of youth mortality risk. Health outcomes also include preventable high cost health care events such as trips to the emergency department and hospital.

Life Expectancy & Mortality

Life expectancy is the average age for which a child born in a certain year can expect to live. In Calaveras County life expectancy is longer compared to the rest of the nation, but shorter than for California as a whole. Nationally and in Calaveras County, life expectancy has increased over the last 30 years.

While mortality rates for many conditions have been declining, rates for the following conditions have been staying roughly even or rising:

- Diabetes and related disorders
- Chronic respiratory disease
- Mental and substance use disorders

Leading Causes of Death

Life expectancy is impacted by leading causes of death. In many cases, the leading causes of death or Calaveras County are comparable to state and national rates. Several leading causes of death are believed to be preventable. In the cases where mortality rates remain higher than U.S. benchmarks, lives could be saved in Calaveras County by achieving benchmark levels.

In Calaveras County, cardiovascular disease and cancer are the two leading causes of death. Mortality rates from these conditions is higher that the statewide rate, but lower than for the U.S. as a whole.

Calaveras County's mortality rates from the following conditions, while much lower than those for cardiovascular disease and cancer, are significantly higher than for California as a whole:

- Chronic respiratory disease
- Self-harm and interpersonal violence
- Unintentional injuries
- Transport injuries

Cancer Mortality

Cancer is a broad category with many different underlying causes. Some forms of cancer are preventable with changes in behavior and the provision of clinical care and preventive services such as early screening (Colon and Rectal Cancer, Breast Cancer, Lung Cancer, Skin Cancer) and immunizations (Cervical Cancer).

The cancers with the highest mortality rates, in Calaveras County, California and the U.S., are:

- Lung
- Colon and rectum
- Breast

The county's mortality rates for all three are lower than the U.S. rates, but they are higher than the California rates for lung and colon and rectum cancer.

Infant and Child Mortality

Many potential years of life are lost when an infant or a young person passes away. Infant and child mortality can be a signal of the overall health conditions in a community. Over the past 30 years, mortality risk has fallen nationally for infants, children, and youth under age 26 years.

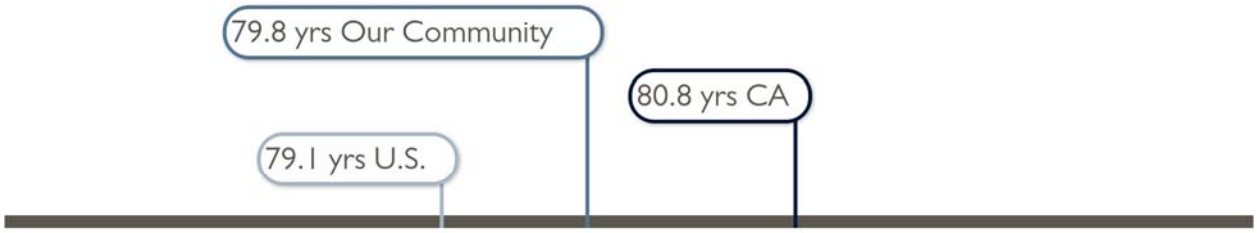
In Calaveras County, mortality risk for those under age 5 is roughly in line with state and national levels, but the mortality risk for those age 5 to 25 years is and has been persistently higher in Calaveras County than in California and nationally.

Healthy Kids Survey Data

Calaveras County schools participate in the biennial California Healthy Kids Survey, which includes measures of safety, health behaviors and mental health among students in different grades. Selected measures from the most recent survey, comparing Calaveras County to the statewide findings, are included in this section.

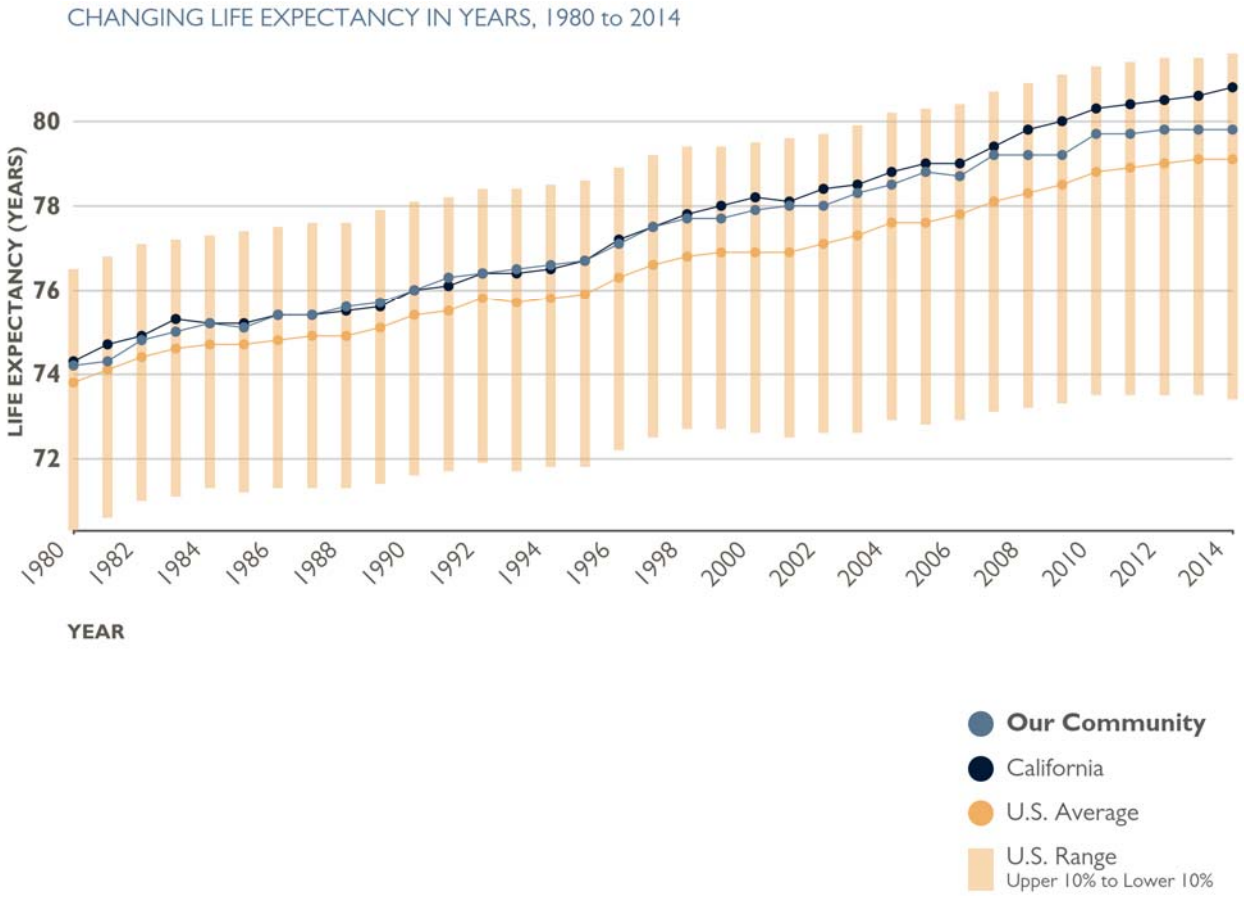
Calaveras County students report significantly higher rates of harassing behavior and bullying and alcohol and drug use than is true for students statewide.

Life Expectancy in Calaveras County



Data Source. Life Expectancy for people born in 2014. Calculation by Institute for Health Metrics and Evaluation (2017). 2014 death records from The National Center for Health Statistics (NCHS) and 2014 population counts from the U.S. Census Bureau.

Life Expectancy Change Over Time



Life Expectancy by Sex

LIFE EXPECTANCY IN YEARS FOR PEOPLE BORN IN 2014

Cause of Death	Calaveras County	California	United States
Life Expectancy (years)	**79.8**	80.8	79.1
Male Life Expectancy (years)	**77.5**	78.6	76.7
Female Life Expectancy (years)	**82.3**	83.0	81.5

Data Source: Institute for Health Metrics and Evaluation (2017). County-level 2014 death records from The National Center for Health Statistics (NCHS). Estimates for Calaveras County are reported as population-weighted rates.

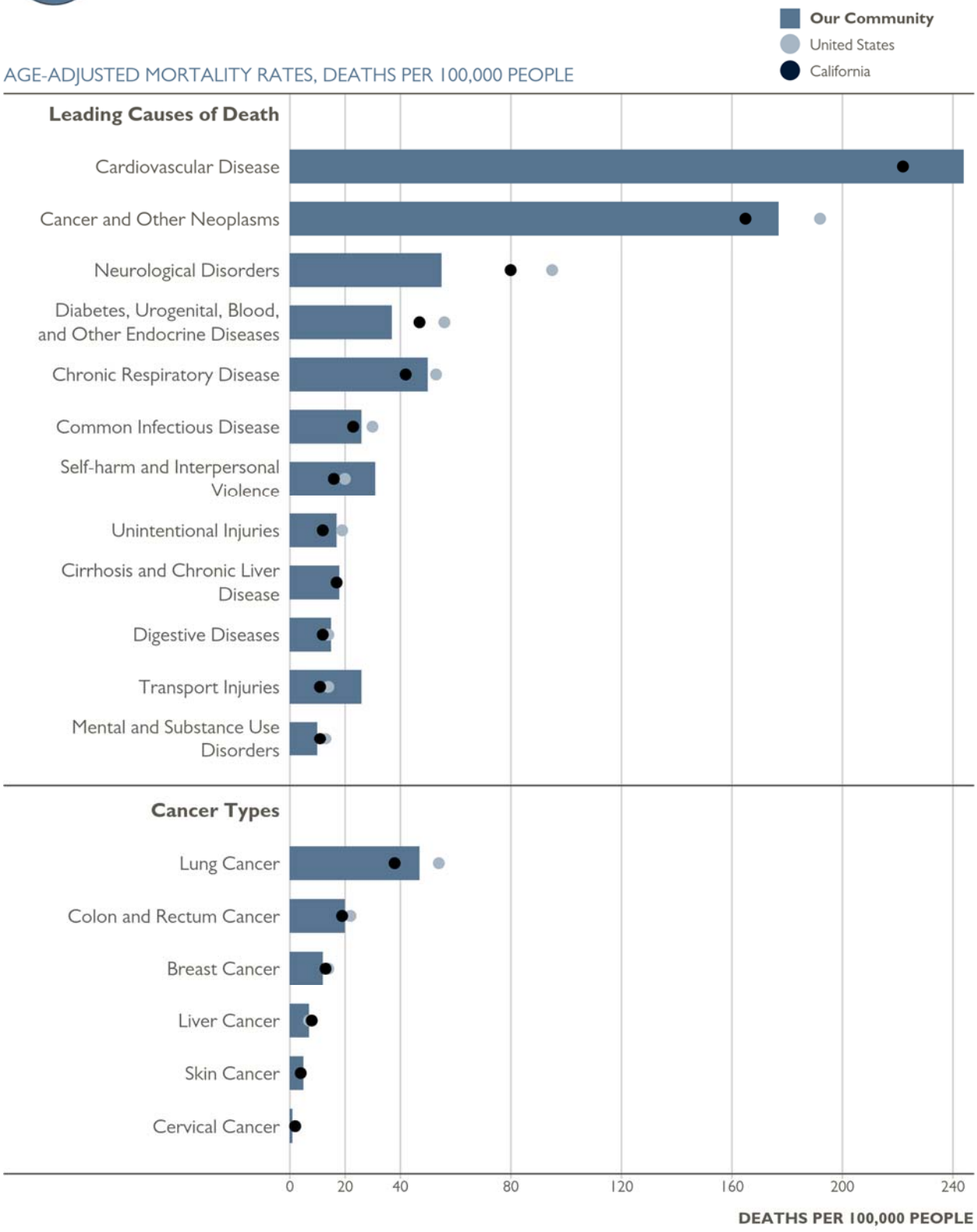
Leading Causes of Death

AGE-ADJUSTED MORTALITY RATES (DEATHS PER 100,000 PEOPLE)

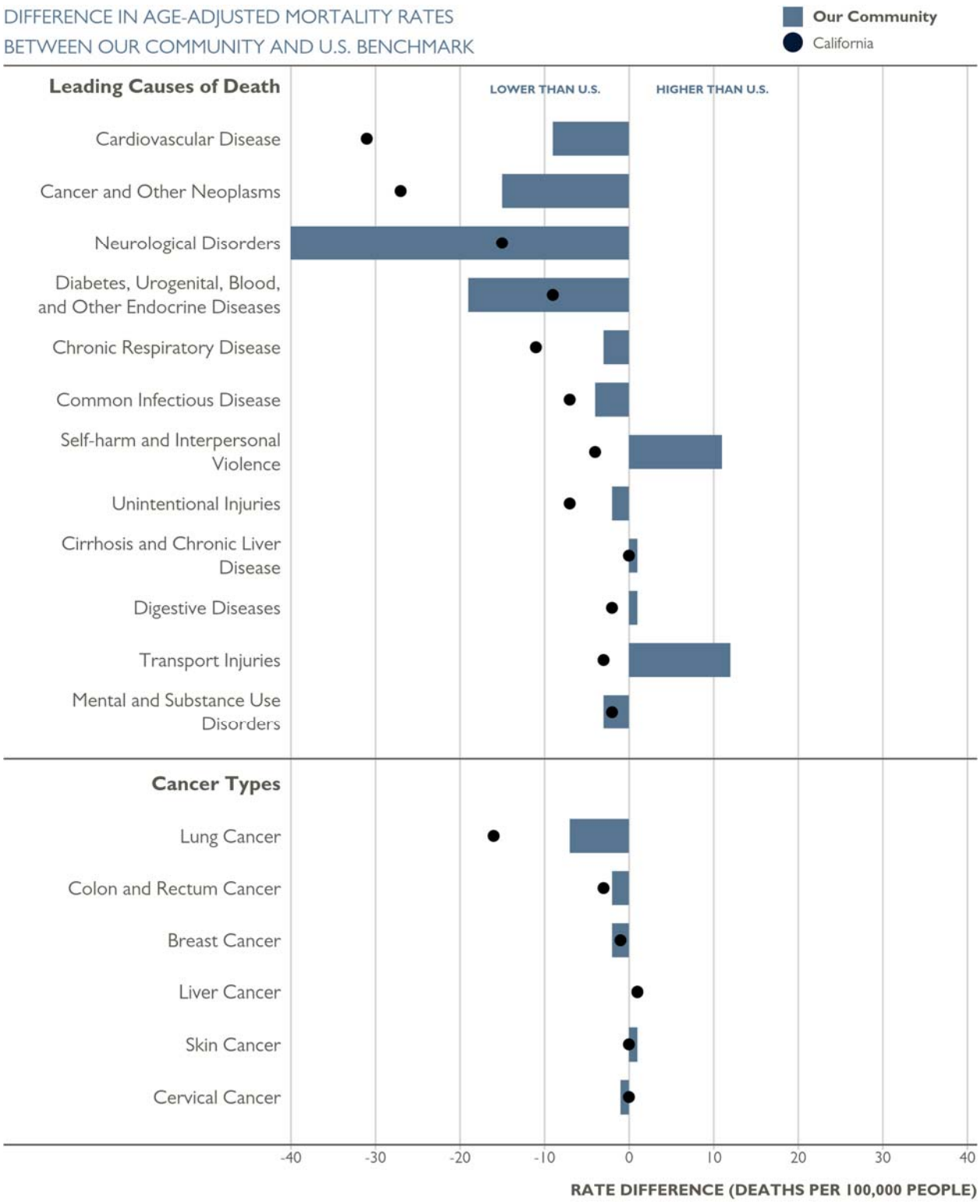
Cause of Death	Calaveras County	California	United States
Cardiovascular disease	**244**	222	253
Cancer and other neoplasms	**177**	165	192
Neurological disorders	**55**	80	95
Diabetes, urogenital, blood, and other endocrine diseases	**37**	47	56
Chronic respiratory disease *(e.g. asthma, emphysema)*	**50**	42	53
Common infectious diseases *(e.g. diarrhea, pneumonia)*	**26**	23	30
Self-harm and interpersonal violence	**31**	16	20
Unintentional injuries	**17**	12	19
Cirrhosis and chronic liver diseases	**18**	17	17
Digestive diseases	**15**	12	14
Transport injuries	**26**	11	14
Mental and substance use disorders	**10**	11	13

Data Source: Institute for Health Metrics and Evaluation (2016). Rates are age-adjusted, county-level mortality rates from 2014. Rates are deaths per 100,000 people. Estimates for Calaveras County are population-weighted.

Causes of Death: Age-Adjusted Mortality Rates



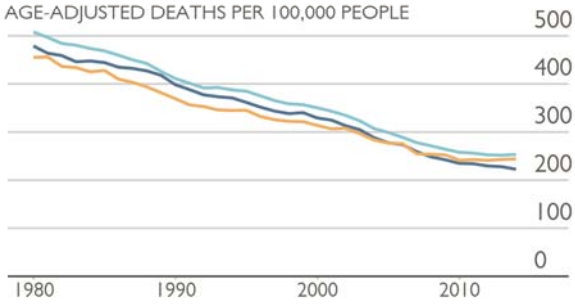
Causes of Death: Differences in Mortality Rates



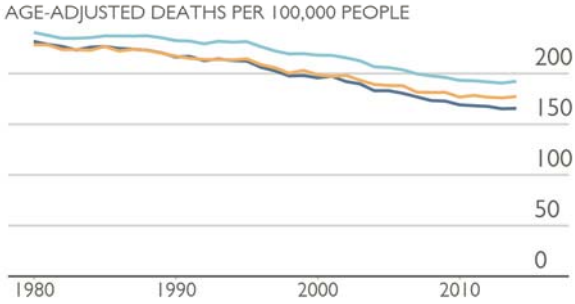
Trends in Mortality by Condition

Our Community
United States
California

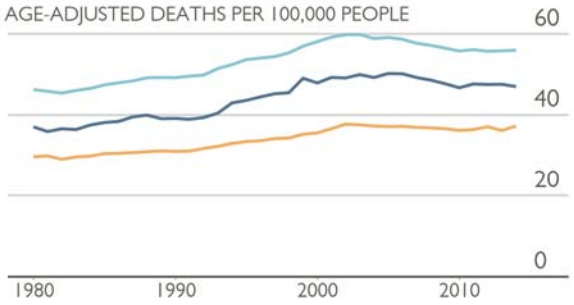
MORTALITY RATE TRENDS FOR CARDIOVASCULAR DISEASE



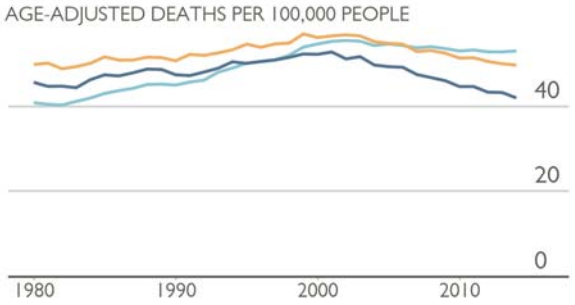
MORTALITY RATE TRENDS FOR CANCER AND OTHER NEOPLASMS



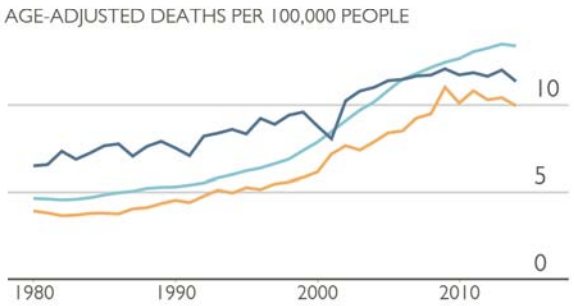
MORTALITY RATE TRENDS FOR DIABETES AND RELATED DISORDERS



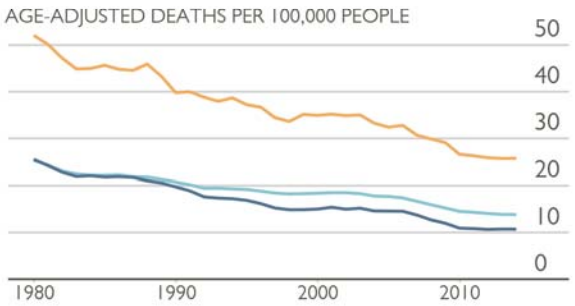
MORTALITY RATE TRENDS FOR CHRONIC RESPIRATORY DISEASE



MORTALITY RATE TRENDS FOR MENTAL AND SUBSTANCE USE DISORDERS



MORTALITY RATE TRENDS FOR TRANSPORT INJURIES



YEAR

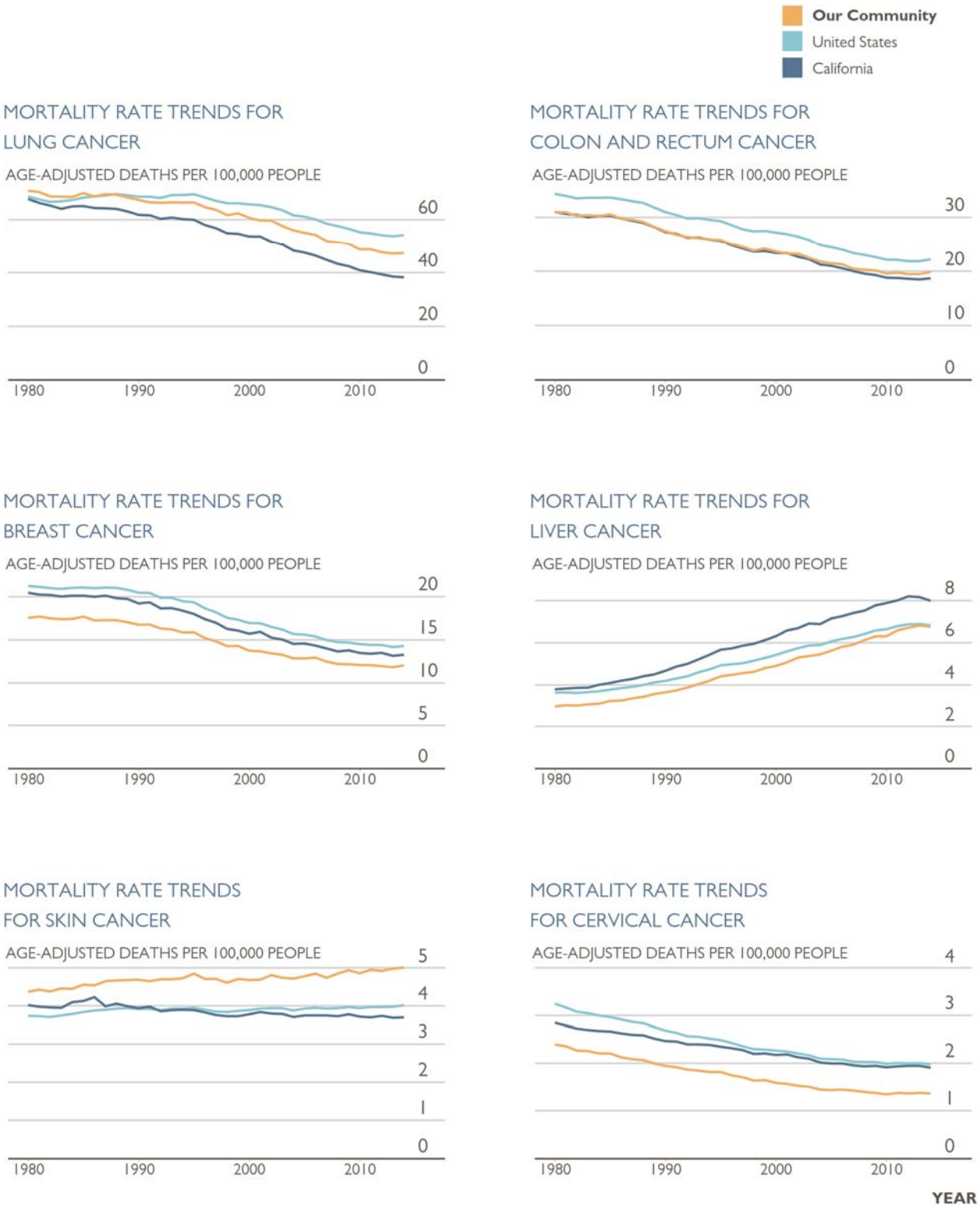
Cancer Mortality

AGE-ADJUSTED MORTALITY RATES (DEATHS PER 100,000 PEOPLE)

Cause of Death	Calaveras County	California	United States
Lung Cancer	**47**	38	54
Colon and Rectum Cancer	**20**	19	22
Breast Cancer	**12**	13	14
Liver Cancer	**7**	8	7
Skin Cancer (Melanoma and Non-melanoma)	**5**	4	4
Cervical Cancer	**1**	2	2

Data Source: Institute for Health Metrics and Evaluation (2017). Rates are age-adjusted, county-level mortality rates from 2014. Rates are deaths per 100,000 people. Estimates for Calaveras County are reported as population-weighted, county-level rates.

Trends in Cancer Mortality

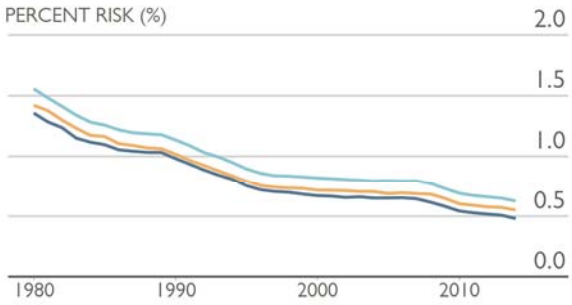


Infant and Child Mortality

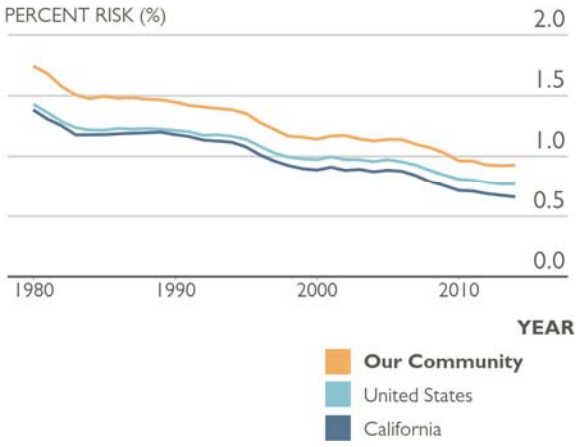
Cause of Death	Calaveras County	California	United States
Infant Mortality Rate per 1,000 births	**NA**	4.76	6.19
Mortality Risk Under 5 years Percent (%)	**0.55%**	0.48%	0.62%
Mortality Risk Ages 5 to 25 years Percent (%)	**0.92%**	0.66%	0.77%

Data Source: (1) Infant Mortality. CDC WONDER query by state and for counties in ***Calaveras County*** for Linked Birth/Infant Death Records, 2007-2015 (United States Department of Health and Human Services *et al.*, 2018). **(2) Mortality Risk.** Institute for Health Metrics and Evaluation (2017). Risk calculated at the county-level using mortality data from 2014. Estimates for Calaveras County are reported as population-weighted, county-level risk.

MORTALITY RISK TRENDS FOR INFANTS AND CHILDREN UNDER AGE 5



MORTALITY RISK TRENDS FOR CHILDREN AND YOUTH AGES 5 to 25 YEARS



Healthy Kids Survey Data

While Calaveras County's population distribution is older than much of the state, understanding the health needs and behaviors of children and youth is an important component of planning to address health needs preventively. Data from the California Healthy Kids Survey illuminate a few points about student health-related behaviors.

Harassment, bullying and rumors/lies. Students in Calaveras County report experiencing harassment, bullying and having rumors and lies spread about them at significantly higher rates than for students in California as a whole.

Alcohol, drugs and smoking. Students in the 11th grade in Calaveras County report having used alcohol or drugs and having smoked cigarettes in the past 30 days at higher rates than is true statewide. The percentage of 11th graders reporting use of electronic cigarettes is somewhat lower than the state rate.

Sadness, hopelessness and suicide ideation. Students in the 11th grade in Calaveras County report experiencing these mental health needs at slightly higher rates than for the state.

Indicators of Student Well Being, 2015-2017

	Grade 7		Grade 11	
	Calaveras County	California	Calaveras County	California
Experienced any harassment or bullying *	42%	34%	33%	28%
Had mean rumors or lies spread about you *	47%	38%	41%	30%
Current alcohol or drug use **	6%	7%	41%	29%
Current cigarette smoking **	0%	1%	9%	4%
Current electronic cigarette use **	1%	3%	8%	10%
Experienced chronic sadness/hopelessness *	24%	24%	37%	32%
Considered suicide *	n.a.	n.a.	18%	16%

* = Past 12 months; ** = Past 30 days; n.a. = Not asked of middle school students.
Source: California Department of Education, California Healthy Kids Survey, 2015-2017

County Health Rankings: Health Outcomes

In the County Health Rankings model of the University of Wisconsin Population Health Institute, policies and programs influence health factors (social determinants of health), which in turn have a role in shaping health outcomes. These health outcomes are measured with four indicators in the table below. The health factors components of the County Health Rankings are examined separately in the social determinants of health section of this report.

Calaveras County is ranked 24th among 58 counties in California on health outcomes. This is a mid-range ranking that is reflected in the indicators in the table below. In particular, the county is close to statewide averages for the quality of life metrics.

Health Outcome (weight %)	Indicator	Calaveras County	California
Length of Life (50%)	**Premature death** Years of potential life lost before age 75 per 100,000 population (age-adjusted)	**7,300**	5,300
Quality of Life (50%)	**Poor of fair health** % of adults reporting fair or poor health (age-adjusted)	**13%**	18%
	Poor physical health days Average number of physically unhealthy days reported in past 30 days (age-adjusted)	**3.4**	3.5
	Poor mental health days Average number of mentally unhealthy days reported in past 30 days (age-adjusted)	**3.7**	3.5
	Low birthweight % of live births with low birthweight (< 2,500 grams)	**6%**	7%

Source: University of Wisconsin Population Health Institute. County Health Rankings 2019. Data from various sources over multiple years, all reported at the county level.

Premature Death

Calaveras County is significantly worse off than the state as a whole on the measure of premature death. Measured as Years of Potential Life Lost, this metric focuses on deaths that could have been prevented.[2]

Calaveras is ranked 41st of the 58 counties in California on this measure, compared to 28th for Amador County and 44th for Tuolumne County.

Furthermore, while Years of Potential Life Lost has declined in California by 11.7 percent from 2008-2008 to 2015-2017, it has increased 14.7 percent in Calaveras County over the same period.[3]

[2] Source: http://www.countyhealthrankings.org/app/california/2019/measure/outcomes/1/description, accessed April 19, 2019.
[3] Source: http://www.countyhealthrankings.org/app/california/2019/measure/outcomes/1/data, accessed April 19, 2019.

Preventable Hospitalizations

Prevention Quality Indicators (PQIs) identify hospital admissions of individuals age 18 and over for "ambulatory care-sensitive conditions." These are health conditions for which hospitalization could be prevented through access to high-quality outpatient or primary care. Therefore, PQIs help measure the quality, access to and utilization of local ambulatory care in preventing potentially-avoidable complications from certain health conditions.

There are 16 specific conditions that compose the PQIs, including measures for diabetes, chronic obstructive pulmonary disease, asthma, hypertension, heart failure, dehydration and infections. These include both acute and chronic ailments. Preventable hospitalizations using PQIs are calculated as a rate of hospitalizations in the population.

In the table below, four composite measures of the 16 PQI conditions demonstrate that the rate of hospitalization for these conditions in Calaveras County is between 29 and 58 percent higher than the rates for California as a whole. This signals potential difficulties or insufficiencies in the ambulatory and primary care capacity or system in the county.

Prevention Quality Indicators for Calaveras County and California, 2017
Figures are rates per 100,000 residents.

PQI Description	Calaveras County	California	% Calaveras County Higher than California
Prevention Quality Overall Composite	1,288.1	989.6	30.2%
Prevention Quality Acute Composite	395.9	299.1	32.4%
Prevention Quality Chronic Composite	892.2	690.5	29.2%
Prevention Quality Diabetes Composite	269.2	169.8	58.5%

Source: https://oshpd.ca.gov/data-and-reports/healthcare-quality/ahrq-quality-indicators/

Social Determinants of Health

What are the social determinants of health? What are the vulnerable populations in Calaveras County?

The social determinants of health (SDOH) are the conditions where people live, work, and play (Heiman & Artiga, 2015). Together, the SDOH impact health by interacting with a person's genetics and biological propensity for disease. This may make the difference between a long, healthy life and a lifetime burdened by poor health.

The report uses three indices to assess and summarize SDOH factors in Calaveras County, in addition to the Community Need Index in the "Map of Calaveras County and Community Need Index" section above:

- Area Deprivation Index
- County Health Rankings
- Healthy Places Index

Social determinants of health include a range of factors that extend beyond the health care delivery system and the personal health characteristics of indivudals and communities. As the Area Deprivation Index, County Health Rankings and Healthy Places Index data on the following pages make clear, these factors include but are not limited to:

- Access to health care
- Education
- Employment
- Enironmental quality
- Health behaviors
- Housing
- Income and poverty
- Neighborhood characteristics
- Safety
- Transportation

Area Deprivation Index

The Area Deprivation Index (ADI) is a 17-indicator, area-based measure of socioeconomic disadvantage. The most vulnerable areas of Calaveras County are those with the highest burden of socioeconomic deprivation. This burden has been measured by combining income, employment, education, and housing conditions into a single indicator, the Area Deprivation Index.

The ADI may reveal regional variation and disparities that may contribute to unique health challenges for those living in the most deprived areas.

Area Deprivation Index data for Calaveras County appear on pages 29-30 of this report.

About the Area Deprivation Index

The ADI has been tested for validity and reliability in small geographic regions (e.g., County, Census Tract, Census Block Group); has been widely studied in publicly-available, peer-reviewed publications; is inexpensive and convenient (i.e., no front-line data collection such as surveys); and has been shown to correlate with multiple health outcomes.

For example, The ADI has been linked to 30-day re-hospitalization rates, cervical cancer incidence, cardiovascular disease death, cancer deaths, and all-cause mortality (Singh, 2003; Singh, et al., 2004; Singh & Siahpush, 2006; Singh et al., 2011; Singh et al., 2012; Kind et al., 2014).

County Health Rankings

Counties in each state are ranked annually on heath factors (e.g., social determinants of health) by the County Health Rankings & Roadmaps program of the University of Wisconsin Population Health Institute.

The overall rank of Calaveras County on health factors within California is 23 of 58 counties, which is a middle ranking. This suggests that conditions could be improved to promote good health. The adjacent rural counties of Amador and Tuolumne are ranked 16 and 19, respectively. (University of Wisconsin Population Health Institute, 2019).

County Health Rankings: Health Factors Rankings (of 58 counties)

Calaveras	Amador	Toulumne
23rd	16th	19th

Detail on Calaveras County's health factors rankings data is on pages 31-33.

Healthy Places Index

The Healthy Places Index (HPI) combines 25 indicators of community characteristics across eight "policy action areas" into a single indexed HPI Score. The policy action areas are: economic, education, transportation, social, neighborhoods, housing, clean environment, and healthcare access.

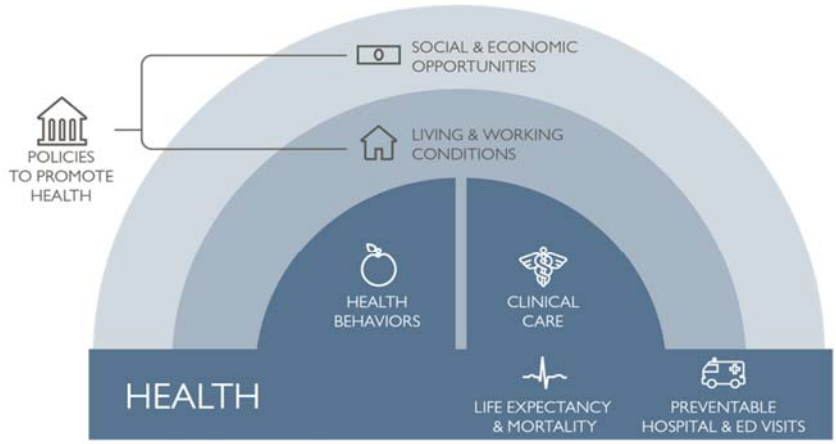
The index was created using statistical techniques evaluating the relationship between the policy action areas and life expectancy at birth. The underlying statistics were selected to maximize the ability of the Index to identify healthy communities and quantify the factors that shape health.

HPI data for Calaveras County is on pages 34 and 35.

About the Healthy Places Index

The California Healthy Places Index (HPI) is a project of the Public Health Alliance of Southern California. HPI used five key criteria to select indicators: evidence-based; statewide, publicly-available data at the Census tract level; continuity with the previous HPI versions; actionable data for pursuing change; and associated with life expectancy at birth. By explicitly linking the Healthy Places Index to life expectancy at birth, improving any of the individual Healthy Places Index indicators is predicted to improve life expectancy overall. See https://healthyplacesindex.org/faq/.

Social Determinants of Health Model

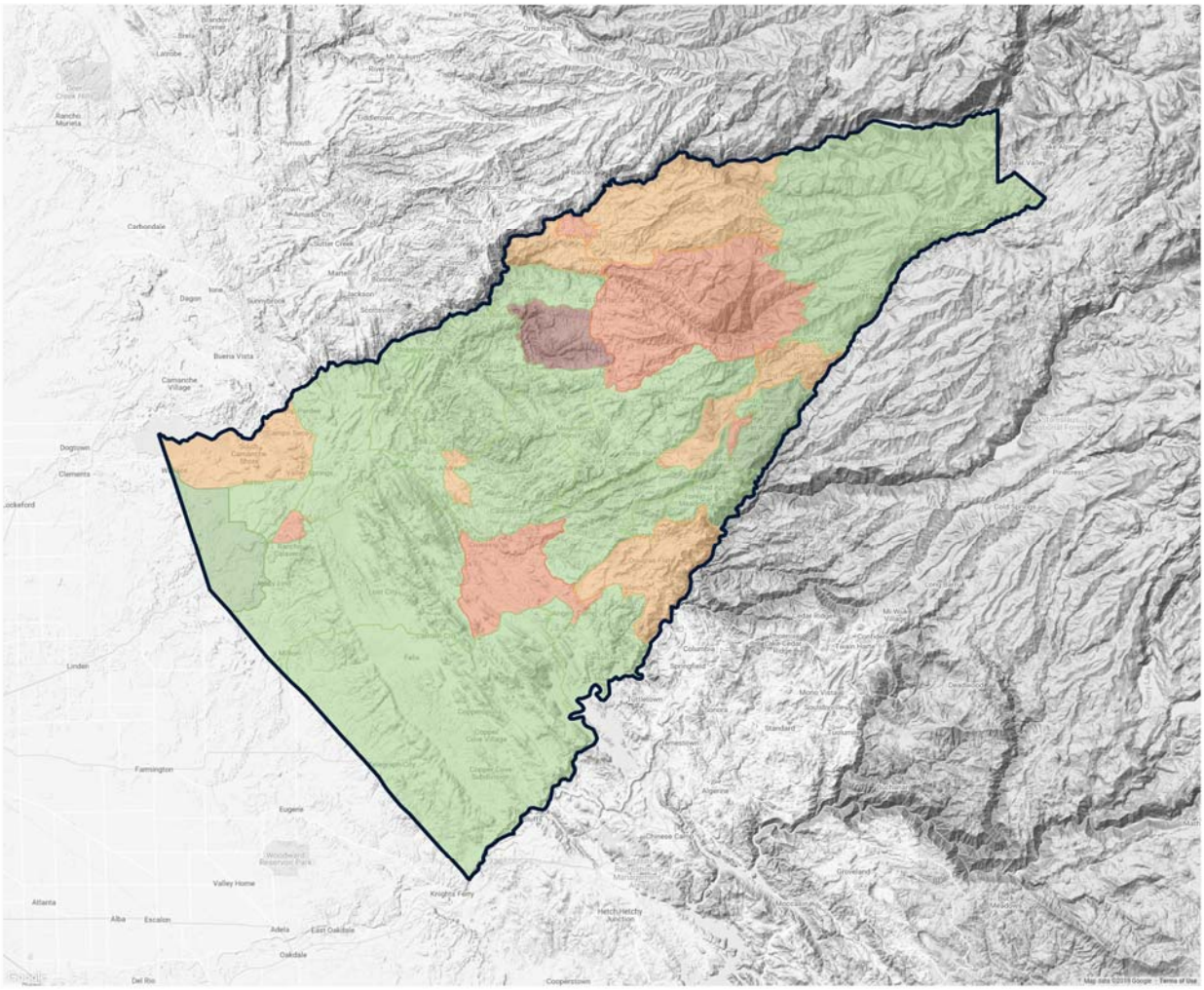


Factors that influence health
Figure by BroadStreet adapted from Bravemen et al. (2011)

Area Deprivation Index: Map

Within Calaveras County, locations higher on the Index (meaning those experiencing greater socioeconomic deprivation) include Rancho Calaveras, the area between Angels Camp and San Andreas, West Point and the region around Rail Road Flat. The individual indicators and data for Calaveras County as a whole that make up the Area Deprivation Index are on the following page.

Area Deprivation Index in Our Community
by Census Block Group



Key

least deprived (lowest 20%)		average (middle 20%)		most deprived (highest 20%)	no data

Data Source. U.S. Census Bureau's American Community Survey 5-year estimates (2012-2016)

Area Deprivation Index: Indicators and Data

Indicator	Calaveras County	United States
Area Deprivation Index	**94**	100
Median family income, $	**67,580**	67,871
Median monthly home cost, $	**1,239**	1,077
Median gross rent, $	**1,001**	949
Median home value, $	**256,159**	184,700
Owner occupied housing units, %	**77**	64
Income disparity	**2**	3
Families below poverty level, %	**8**	11
% population below 150% of poverty threshold, %	**20**	24
Single parent households with children <18 yr, %	**21**	22
Households without a motor vehicle, %	**4**	9
Households without a telephone, %	**1**	3
Housing units without complete plumbing, %	**0.18**	0.39
Households with more than 1 person per room, %	**2**	3
Employed person 16+ in white collar occupations, %	**59**	61
Civilian labor force unemployed (ages 16+), %	**10.6**	7.4
Population with less than 9 years of education (25+), %	**3**	6
Population ages 25+ with high school education, %	**90**	87

Source: BroadStreet (2018) calculations using Census Block Group level data from The U.S. Census Bureau's American Community Survey 5-year estimates (2012-2016).

County Health Rankings: Health Factors

Among the health factors indicators of the County Health Rankings, Calaveras County is either roughly equivalent or advantageous to California as a whole on a number of indicators, including adult smoking, excessive drinking, sexually transmitted infections, preventable hospital stays, unemployment, severe housing problems and others.

However, residents of the county face somewhat to significantly unfavorable conditions when compared to the state on the health factors of:

- Physical inactivity
- Access to exercise opportunities
- Alcohol-impaired driving deaths
- Children in poverty and in single-parent households
- Ratios of primary care physicians, dentists and mental health providers to the population
- Injury deaths
- Long commute driving alone

Health Factor (weight %)	Focus Area (weight %)	Indicator	Calaveras County	California
Health Behaviors (30%)	Tobacco Use (10%)	**Adult smoking** % of adults who are current smokers	**12%**	11%
	Diet and Physical Activity (10%)	**Adult obesity** % of adults with Body Mass Index of 30 or more	**25%**	23%
		Food Environment Index Scale 0-10, 0 is worst, 10 is best	**8.1**	8.9
		Physical inactivity % adults with no leisure-time physical activity	**22%**	17%
		Access to exercise opportunities % with access to locations for physical activity	**54%**	93%
	Alcohol and Drug Use (5%)	**Excessive Drinking** % of adults reporting binge drinking or heavy drinking	**18%**	18%
		Alcohol-impaired driving deaths % of driving deaths with alcohol involvement	**40%**	30%
	Sexual Activity (5%)	**Sexually transmitted infections** Chlamydia rate per 100,000 population	**191.8**	506.2
		Teen births Birth rate per 1,000 female population, ages 15-19 years	**15**	22
Clinical Care (20%)	Access to Care (10%)	**Uninsured** % population under age 65 without health insurance	**6%**	8%

Health Factor (weight %)	Focus Area (weight %)	Indicator	Calaveras County	California
		Primary care physicians Ratio of population to primary care physicians	**2,050:1**	1,270:1
		Dentists Ratio of population to dentists	**2,400:1**	1,200:1
		Mental health providers Ratio of population to mental health providers	**630:1**	310:1
	Quality of Care (10%)	**Preventable Hospital Stays** Rate of hospital stays for ambulatory-care sensitive conditions per 100,000 Medicare enrollees	**2,477**	3,507
		Mammography screening % of female Medicare enrollees ages 65-74 who received an annual mammography screening	**42%**	36%
		Flu vaccinations % of fee-for-service Medicare enrollees that had an annual flu vaccination	**37%**	40%
Social and Economic Factors (40%)	Education (10%)	**High school graduation** % of 9th grade cohort that graduates in 4 years	**90%**	83%
		Some college % of people 25-44 yrs with some post-secondary education	**56%**	64%
	Employment (10%)	**Unemployment** % of people 16 yrs and older unemployed and seeking work	**4.7%**	4.8%
	Income (10%)	**Children in poverty** % of children under age 18 in poverty	**21%**	18%
		Income inequality Ratio of income at the 80th and 20th percentile	**4.9**	5.3
	Family and Social Support (5%)	**Children in single-parent households** % of households headed by a single parent	**36%**	31%
		Social associations # of membership associations per 10,000 population	**8.6**	5.8
	Community Safety (5%)	**Violent crime** # reported violent crimes per 100,000 population	**327**	421
		Injury deaths	**95**	49

Health Factor (weight %)	Focus Area (weight %)	Indicator	Calaveras County	California
		# deaths due to injury per 100,000 population		
Physical Environment (10%)	Air and Water Quality (5%)	**Air pollution – particulate matter** Average daily density[1] of fine particulate matter (PM2.5)	**9.0**	9.5
		Drinking water violations Presence of health-related drinking water violations	**No**	-
	Housing and Transit (5%)	**Severe housing problems** % of households with overcrowding, high housing costs, lack of kitchen, or a lack of plumbing	**21%**	27%
		Driving alone to work % of workforce who drive alone to work	**79%**	74%
		Long commute, driving alone % of workers who drive alone with a long commute	**56%**	40%

Notes and abbreviations
1 – Measured in micrograms per cubic meter**;** yr – year or years; % – percent; # – number
( ) – weights are shown in parentheses

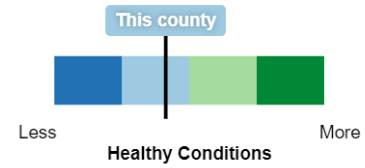
Source. University of Wisconsin Population Health Institute. County Health Rankings 2019. Data from various sources over multiple years, all reported at the county level.

Healthy Places Index

Comparing Calaveras County to its neighboring rural counties of Amador to the north and Tuolumne to the south indicates that the county ranks lower than both on healthy conditions associated with life expectancy. Calaveras County has healthier community conditions than 41 percent of other California counties, which is in the low mid-range.

Calaveras County

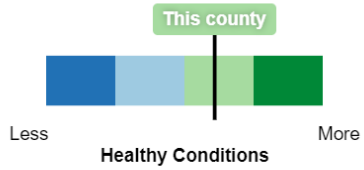
HPI Score: 41.1 Percentile



This county has healthier community conditions than **41.1%** of other California counties.

Amador County

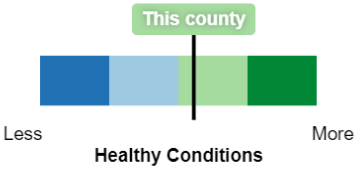
HPI Score: 60.7 Percentile



This county has healthier community conditions than **60.7%** of other California counties.

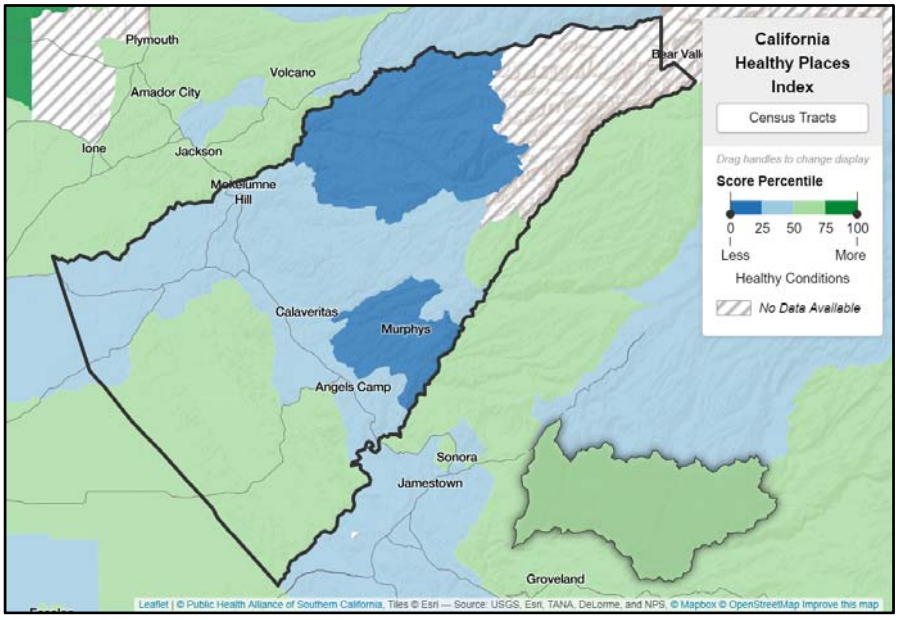
Tuolumne County

HPI Score: 55.4 Percentile



This county has healthier community conditions than **55.4%** of other California counties.

Healthy Places Index: Calaveras County, by Census Tract



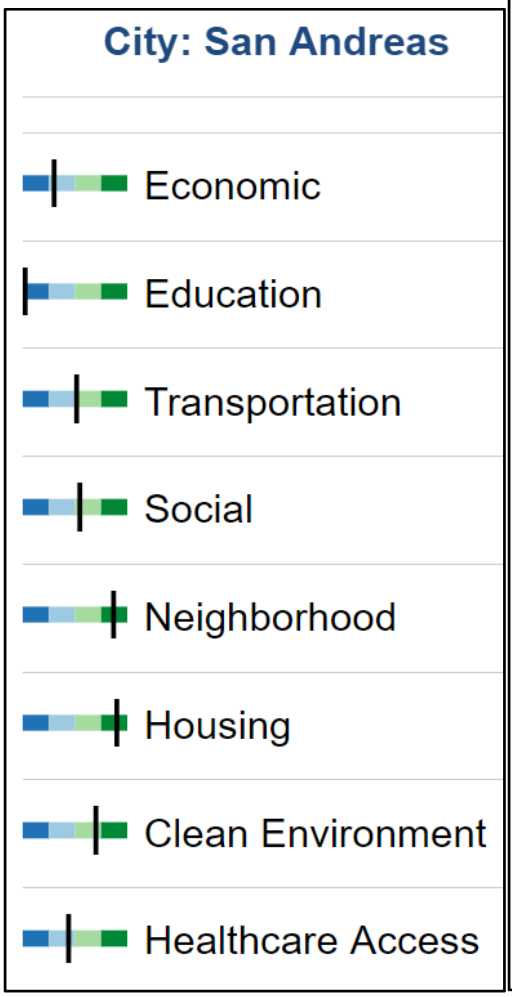
The geographic areas within Calaveras County with healthier conditions are in the south and west.

The areas with less healthy living conditions are to the northeast (Rail Road Flat, West Point) and north of Angels Camp near the county's east border (Murphys).

The next page provides HPI scores for specific cities and communities in the county.

The graphic to the right displays the HPI Scores of Calaveras County's communities, from most to least favorable.

The graphic below displays the component parts of the HPI Score for the city of San Andreas, where Mark Twain Medical Center is located. The "healthcare access" score is based on the percentage of adults with health insurance.



HPI Score Rank

City	Percentile
1) Copperopolis	66.6
2) Rancho Calaveras	55.7
3) Arnold	53.5
4) Wallace	46.5
5) Valley Springs	46.5
6) Angels	43.5
7) San Andreas	29.9
8) Mokelumne Hill	29.7
9) Mountain Ranch	27.5
10) Avery	27
11) Forest Meadows	24.4
12) Vallecito	21.4
13) Murphys	15.9
14) Rail Road Flat	8.8
15) West Point	8.6

Health Professional Shortage Area

Calaveras County contains geographic areas and health care facilities that are designated Health Professional Shortage Areas (HPSA) by the U.S. Health Resources and Services Administration. HPSAs indicate a shortage of health care providers relative to the size of the local population.

All census tracts in the county are designated a primary care HPSA as of July 2017. In addition, the Angels Camp Medical Clinic and Arnold Medical Clinic are both designated primary care HPSAs.

The county as a whole is also designated a mental health care HPSA, as of an October 2017 update.[4]

Community Input into Health Needs and Priorities

The hospital solicited and took into account input from individuals representing the broad interests of the community, both to identify health and health-related needs and to identify priorities among those needs. Three people providing input represented the local public health department, and several represented underserved, low-income and minority populations through their work and in their community roles. These included uninsured and underinsured persons, elderly residents, youth and students, and geographically isolated rural communities.

Meetings and Interviews

Input was obtained in 30- to 60-minute, semi-structured in-person meetings and telephone interviews in February and March 2019. The questions below were shared in advance, and formed the framework for the conversations.

1. What are the most significant health issues or needs in the community, considering both their importance and urgency? If you identify more than three needs, which do you consider most important.
2. What factors or conditions cause or contribute to these health needs?
3. Who or what groups in the community are most affected by these needs?
4. What do you think are effective strategies or actions for addressing these needs?
5. What are some major barriers or challenges to addressing these needs?
6. What resources exist in the community to help address these health needs?

Individuals providing input, with their organizational affiliations, are listed below.

[4] Source: https://bhw.hrsa.gov/shortage-designation/hpsas and https://data.hrsa.gov/tools/shortage-area/hpsa-find, accessed April 19, 2019.

Name	Title or Role	Organization or Affiliation
Dick Brown	Fire department chaplain, hospital chaplain and MTMC Patient Advisory Committee Member	Community representative
Kathryn M. Eustis	Director II, Student Support Services	Calaveras County Office of Education
Stacy Meily	Behavioral Health Program Manager	Calaveras Health and Human Services Agency
Colleen H. Rodriguez, MSW, MPH	Public Health Division Director	Calaveras Health and Human Services Agency
David Sackman, LMFT	Deputy Director, Behavioral Health Services	Calaveras Health and Human Services Agency
Randy Smart, MD	Executive Director	Mark Twain Health Care District
Peggy Stout	Executive Assistant	Mark Twain Health Care District
Ann Walton, RN	Cardiopulmonary Rehabilitation	Mark Twain Medical Center
Melinda Williams	Community resident and MTMC Patient Advisory Committee Member	Community representative

Summary of Community Input into Needs and Priorities

While numerous health and health-related social needs were discussed by interview participants, the following were raised by the greatest number of key informants. They are listed in approximate priority order from highest and lowest, based on the frequency of mention, nature of evidence and examples presented, and informants' prioritization of importance and impact of these problems.

- Access to care (provider supply and insurance coverage)
- Mental health
- Substance use
- Senior citizen/elder health needs
- Access to care (geographic isolation, transportation needs)
- Housing

<u>Access to Care (provider supply and insurance coverage)</u>
The relative lack of providers of care across primary care and of multiple specialties was the most prominently identified need, both in frequency and seriousness, and because it affects several populations in the county. Consistent with the quantitative data on population-to-provider ratios, interview participants uniformly discussed one or more aspects of this need.

Primary care physicians (including general practitioners and pediatricians) are perceived to be in short supply, and many are retiring or leaving the county. Specialty medical care providers, such as oncologists and gastroenterologists, are difficult to recruit to the county. The numbers of physician assistants and nurse practitioners were said to be in lacking, as well. Dentists and both mental health professionals and beds were reported to be limited or non-existent in many parts of the county,

particularly in the eastern ports. Pharmacies have closed within the past year, reducing the number of access points for prescription medications, another critical component of health care access.

Access barriers based on provide supply were seen as compounded for those residents without any insurance coverage, and in some cases those with Medicaid only.

Tele-health was viewed as a currently-limited but growing opportunity to help address provider supply deficits, in addition to arrangements where specialists travel to the county for part-time but regularly scheduled clinics.

Mental Health

The needs of both youth and adults with respect to mental health were prominent in community input. Interviewees provided several examples of a lack of providers specific to mental health care, including adult and child psychiatry, no psychiatric inpatient beds in the county, a shortage of counselors, and few pharmacies to provide access to medication. The County and Mark Twain Medical Center have some tele-psychiatry, but those who require inpatient care must leave the county. People in mental distress frequently end up in the hospital emergency department or involving law enforcement.

The County government's behavioral health services program sees only Medi-Cal patients, and for children has only a specialty mental health program intended for those with moderate to severe conditions. There is recognition that early intervention with youth can have positive, long-term impacts but that there are not the resources to provide it. The rural and geographically-isolated nature of the county can foster social isolation and limited access to care.

Substance Use

All interview participants mentioned substance use as priority community health need.

Marijuana was noted as a significant problem, and there was a broad consensus that it has become worse since legalization. For youth alcohol, tobacco and marijuana use, rates were perceived to be higher than for the state as a whole but possibly not worse than many other rural communities. In general, alcohol, tobacco, marijuana and methamphetamine were reported to be a more significant problem that opioid addiction. There is a local Opioid Task Force.

As with other health issues, there was a perception of insufficient supply of providers locally. Interest was expressed in equipping more primary care providers with the tools to conduct basic substance use (and mental health) evaluations, and education on Medication Assisted Treatment ad motivational interviewing. There is a significant burden on law enforcement to respond to those afflicted with substance use disorder. Geographic and social isolation can be risk factors for and exacerbate substance use. The County is working to become drug Medi-Cal certified, which would increase access to reimbursable services.

Senior Citizen/Elder Health Needs

With a median age in Calaveras County significantly higher than for the U.S. as a whole, it is not surprising that most community informants focused substantially on the needs of the old adult population. Combined with the rural nature of the area, social isolation and transportation-related and personal mobility challenges negatively impact access to care. These same factors also contribute to

concerns about adequate nutrition among older adults. Naturally, chronic health conditions are more prevalent among seniors, and their relative lack of access impacts both health status and quality of life.

There is a general lack of resources to support older residents needing assistance in the county. There are some home health services in the county, but capacity is not sufficient to meet demand. First responders sometimes witness poor conditions in the home environment. Hospice is available to Calaveras County residents, but no agency based in the county provides the service.

Access to care (geographic isolation, transportation needs)

Access to care also was manifest in the interviews on the basis of the physical and demographic characteristics of the county. As a rural and hilly county with low population density and limited public transportation, residents mostly rely on driving or being driven to access services of many types, including health care. This can be a problem particularly for residents with lower incomes or living in poverty, who may not have access to reliable personal transportation, and for some older adults who may drive on a limited basis or not at all. The Rural Health Clinics help with access in this regard, but most health care services remain concentrated in San Andreas and some towns in the more populated western part of the county.

Housing

While not mentioned as frequently as the issues above and not usually at the same priority level, community interviews clearly identified housing and shelter concerns as a health-related social need.

As many as 600 homes in Calaveras County were lost in the Butte Fire of September 2015, causing temporary homelessness and reducing the supply of housing stock. Housing insecurity and homelessness was reported to have risen since 2017, with some families living in vehicles. During 2018, there were slightly greater than 800 Medi-Cal and CalWorks recipients who were homeless in the county at some time.[5] There are limited shelter facilities, other than some emergency shelter capacity, in the county.

Housing is strongly linked to health, as those with unsafe, unstable or no housing are less likely to be able to take care of their health needs.

Other health and social needs shared by community key informants included those below, listed in alphabetical order:

- Dialysis. There is limited local availability of dialysis, and many people leave the county for service.
- Food insecurity. Some people with lower incomes and/or who are geographically isolated or have transportation or mobility difficulties can have difficulty reliably obtaining food.
- Internet and cellular service. A significant proportion of residents does not have broadband internet or cellular phone service.

[5] Calaveras County Strategic Plan to Address Homelessness, January 2019. Accessed at https://hhsa.calaverasgov.us/Portals/HHSA/Documents/Calaveras%20County%20Homelessness%20Plan_Draft_1_23_19.pdf on August 12, 2019.

- Maternal and child health. There is low prenatal care availability locally and a need to deliver babies outside of the county.
- Oral health. The supply of providers is lacking for residents without commercial coverage; there is an availability gap for children and seniors.
- Pharmacy access. There has been a decline in the number of pharmacies in the county, resulting in access difficulties that, like the limited provider supply, reduce access to appropriate care.
- Preventive behaviors and prevention education. Some informants stated that people often tend not to act on health needs until there is an acute problem, although there was some reported success with chronic disease education and self-management classes offered by the County.
- Safety net (health and social services). While there are a number of service agencies and coalitions, most agencies are at capacity and cannot meet the scope of local needs.
- Skilled nursing, home health and hospice. There is a limited amount of locally available services.
- Wound care. One interview participant indicated that having a wound care clinic in the community could help better manage some residents' needs (e.g., injuries, diabetes), and free the limited supply of primary care providers for other care.
- Youth issues. Demographic trends are resulting in declining school enrollment, which has a negative impact on some school funding. The relative lack of white collar jobs in the local economy and the lack of locally-based higher education makes it more difficult to retain youth.

Written Comments on 2017 CHNA Report

Mark Twain Medical Center's 2017 community health needs assessment report has been widely available to the public on the hospital's web site since its adoption in June 2017. The report and the web page on which it is located both invite and provide the means for providing written comment. To date, the hospital has not received written feedback on the 2017 CHNA report.

Prioritizing Significant Health Needs

Phase 2 included prioritizing the health needs of Calaveras County after reviewing the evidence assembled and analyzed. The prioritization process considered the following criteria:

- Size or scale of problem
- Severity of problem
- Disparity and equity
- Known effective interventions
- Resource feasibility and sustainability
- Community salience

Secondary data on health outcomes and social determinants of health were assessed, as was the primary data of input from local public health and other representatives of the broad interests of the community. Community representatives contributed to the determination and ranking of significant needs by sharing in the interviews their top priorities of the most important needs to address. Health needs that were notable issues in both the quantitative data and in the community's input were those most likely to be ranked as significant in the overall assessment.

A few community characteristics prominent in the data interact with and can exacerbate the identified significant needs. These include the rural nature of the community and its effect on individual mobility and access to services, the older age distribution of the population, and the relative deficit of health care providers in the region.

Prioritized Significant Community Health Needs

Access to Primary and Specialty Care

Access to care is the highest priority health need in Calaveras County. This is demonstrated by several quantitative indicators, as well as by the community stakeholder interviews.

- The ratio of the number of community residents to health care providers in Calaveras County is twice as high as in California overall. This means there is much less access to care, and this is true for primary care physicians, dentists and mental health providers. (p. 32)
- The county experiences rates of preventable hospitalization as measured by Prevention Quality Indicators that are approximately 30 percent higher than for California as a whole, for both acute and chronic conditions. Communities with better access to preventive and primary care tend to have fewer preventable hospitalizations. (pp. 26, 32)
- As a consequence, the county has been designated a Health Professional Shortage Area. (p. 36)
- In community interviews, poor access to care related to the lack of providers was the number one issue. It was reported that many primary care physicians are retiring or leaving the county, and that specialists such as oncologists and gastroenterologists are difficult to recruit to the area. Pharmacies have closed in the past couple years. There is a perceived lack of physician assistants and nurse practitioners, and dentists and mental health professionals and facilities are limited or non-existent in many parts of the county. (pp. 37-38)
- Community informants also commented on the access barriers imposed by the rural nature of the county, with geographically-isolated areas requiring up to 45 minutes travel to reach San Andreas or other areas with care providers. (p. 39)
- Community residents who have Medicaid coverage and especially those who are uninsured frequently face access to care barriers. In Calaveras County, 21 percent of people are covered by Medicaid and nine percent are uninsured. (p. 10)

Behavioral Health (Mental Health and Substance Use)

Behavioral health includes both mental health and substance use disorders. According to the CDC, there are social determinants of health that need to be in place to support mental health. Mental health is defined as a state of well-being that includes the ability to cope with stress, work productively, and contribute positively to the community. Evidence suggests that positive mental health results in improved health outcomes. Conversely, poor mental health is related to higher incidence of chronic disease, physical inactivity, smoking, alcohol abuse and poor sleep. Several components of behavioral health need are expressed in the secondary data and community input.

- While mortality rates for many conditions have been declining, those for mental health and substance use disorders are increasing and near record highs. The Calaveras County rate is on par with the state's rate. (pp. 16, 19)

- The county's mortality rate for "self-harm and interpersonal violence" is 50 percent higher than the U.S. and twice the level for California, signaling real impacts from poor mental well-being. (p. 16)
- A greater proportion of Calaveras County's 7th and 11th grade students report higher rates of harassment, bullying, rumors and lies directed at them than in the state as a whole. (p. 23)
- Students in the 11th grade report alcohol or drug use at significantly higher rates, and chronic sadness/hopelessness at a moderately higher rate, than in California overall. (p. 23)
- Forty percent of driving deaths in Calaveras County involve alcohol consumption, compared to 30 percent of such deaths in California. (p. 31)
- Community representatives spoke about mental health among youth and adults in terms of both the lack of local providers and care facilities, and social isolation that can arise from the rural and geographically-isolated nature of the region. Care capacity that is oriented toward early intervention and mild to moderate conditions is lacking. (p. 38)
- The use of alcohol, tobacco, marijuana and methamphetamine was cited by a number of community members in interviews, coupled with the same provider supply constraints and an over-reliance on law enforcement, other first responders and the hospital emergency department. (p. 38)
- One expert stated, "There is no psychiatrist in the county. If they qualify, they can go via the county behavioral health system, but if their case is not severe, or they have private insurance, there are very few options."

Cardiovascular Disease

Even though rates have been dropping locally and nationally, cardiovascular disease remains the leading cause of death in Calaveras County, as it is in California and for the nation as a whole. The mortality rate is 244 deaths per 100,000 people, which is ten percent higher than in California. The county's cardiovascular disease mortality rate is also 38 percent higher than its rate from cancer, the next leading cause of death. (p. 16)

The risks of morbidity and mortality from cardiovascular disease are modifiable to a significant extent, in part through health behaviors. Calaveras County residents exhibit somewhat less healthy behaviors than California as a whole for some behaviors associated with the disease. County residents report rates of smoking and obesity at or slightly above state rates, and physical inactivity at a higher rate (22% in Calaveras; 17% in California).

The community environment also contributes to disease risk, and Calaveras County's healthy food environment and access to exercise opportunities both lag the state overall. (p. 31)

Older Adult Health

The demographics of the local population lead to a priority focus on meeting the needs of older adults.

- The median age in Calaveras County is 50.7 years, significantly older than the U.S. median age of 37.6 years. (p. 7)
- Nearly 26 percent of county residents are age 65 or older, compared to less than 12 percent in California. (p. 10)

- The rural nature of the county, while bringing benefits that attract people to the region, also can contribute to transportation-related and personal mobility challenges that negatively impact access to care, access to healthy food and other resources for older adults. (p. 38)
- Health conditions that are leading causes of death, including cardiovascular disease and cancer, are concentrated in older populations.
- Community health experts agreed that the elevated population of veterans and seniors in Calaveras County contributes to the need to address coordinated care to manage chronic disease, including but not limited to diabetes, heart disease and stroke. This includes screenings, check-ups, monitoring and coordinating treatment and patient education.
- Risks of social isolation in lightly-populated and remote areas can reduce quality of life and adversely impact mental health.
- The capacity of local senior support organizations and resources, including home health care, was viewed by interviewees as insufficient to meet the need. (p. 39)

Unintentional Injuries

Calaveras County exhibits elevated levels of morbidity and mortality due to unintentional injuries that is manifest in a few specific indicators. While the death rates are much lower than for major chronic diseases, there is an impact on younger populations and the injuries should be preventable.

- The mortality rate from unintentional injuries in the county is 42 percent higher than for California as a whole. The death rate due to all injuries is nearly double the statewide rate. (pp. 16, 32)
- The mortality rate from transportation-related injuries is 26 per 100,000 population, which is nearly two and one-half times the rate for California and almost double that for the U.S. (p. 16)
- Forty percent of driving deaths in Calaveras County involve alcohol consumption, compared to 30 percent of such deaths in California. (p. 31)
- The mortality risk for Calaveras County residents aged 5 to 25 years is 40 percent higher than California and 19 percent higher than for the U.S. The risk, while dropping over a few decades, has been remained significantly above the state and nation. (p. 22)
- Community interviews raised significant concerns about substance use, and its impacts on health and well-being. Substance-using individuals are at increased risk of harm to themselves and others. (p. 38)

Resources Potentially Available to Address Needs

There are numerous existing health care facilities and resources within Calaveras County that are available to respond to community health needs. At the same time, as a low population-density rural county, the number of scale of available organizational resources may not be sufficient for all needs.

Community health needs may be addressed by resources both inside and outside of traditional health care settings. Available resources may include programs and initiatives, as well as faith-based, non-profit, academic and/or government organizations. These programs, initiatives and organizations have missions, goals and activities that align with the significant health needs of the community. In some cases, the goal is to address the social determinants of health that contribute to health status.

The hospital's "A Plan 4 Me" workshops provide access to information to help address everyday situations, as well as identifying and preventing health issues. They also create opportunities for MTMC to collaborate with community organizations on a range of priority health needs. The hospital's community grant program provides funding annually to local organizations working to address one or more significant health needs in collaboration with others.

The resources below are grouped loosely according to significant need, but a number of resources assist with more than one need.

Access to Primary and Specialty Care

- Dignity Health patient financial assistance for medically necessary care
- Dignity Health rural health clinics in multiple towns
- Four specialty clinics at the hospital
- Other clinics throughout the county
- Urgent care located in Angels Camp
- Handful of private practices (no Medi-Cal acceptance)
- Community Health Partners in Sonora
- Veterans Administration
- Tele-health services (for some conditions)
- Hospital Emergency Department
- For transportation assistance: Common Grounds, Calaveras Transit, Volunteer Center, "Taxis" (Copper Cab & Murphys)
- San Andreas Community Clinic (FQHC)
- Medication vouchers upon discharge for patients who cannot afford needed medications

Behavioral Health

- Law enforcement
- Crisis Intervention Team
- Calaveras Mental Health Department – Psychiatry & Primary Care
- Opioid Task Force

- Trauma Informed Care – Trauma Consortium
- Tele-psychiatry
- Student Mental Health Crisis Workers
- School Community Mental Health Collaborative
- Foster Youth Services Coordinating Program Executive Advisory Council
- Calaveras Youth Mentoring Program Advisory Committee
- Vocational education program for youth experiencing mental illness (County)
- Peer drop-in center for mentally ill and substance use disorder patients in recovery (County)
- Community health education on substance abuse, with the Calaveras County Health Services Agency and Calaveras County Office of Education
- School District Prevention Coordinators
- Alliance for Substance Abuse Prevention
- MHSA grant – providing no cost counseling
- Mental Health Service Act program in school
- Grassroots "Grief Busters"
- Resource Connection – Crisis Center
- Veteran's Court
- County Homeless Task Force and Continuum of Care

Cardiovascular Disease

- Tobacco programs
- Take it to Heart free comprehensive cholesterol tests for women during February each year, with Soroptimist International of Calaveras County
- Free comprehensive cholesterol tests for men
- Community Gardens
- Collaboration between Public Health Department and the hospital
- Supplemental Nutrition Assistance Program (CalFresh)
- Food bank network
- Fit for the Future Calaveras (Public Health)

Older Adult Health

- Common Grounds (meals on wheels)
- Area Agency on Aging (in Sonora, CA)
- Volunteer center
- The Resource Connection
- Home health

Unintentional Injuries

- Hospital Emergency Department
- California Highway Patrol and first responders

Impact of Actions Taken Since 2017 CHNA

Thanks to both the hospital's efforts and community partnerships, work has been done to help address the health priorities identified in the 2017 Community Health Needs Assessment. The 2017 significant health needs the hospital planned to address were: Mental Health, Access to Primary and Specialty Care, and Chronic Disease Management. The following is a summarized update of actions and impacts.

Overall in addition to the hospital, Mark Twain Medical Center's Rural Health Clinics address these and other needs in an accessible way throughout the county. Our goal is to enhance the integration of quality and safety efforts across the continuum of care, from community prevention, to outpatient, to inpatient and emergency care when necessary. The hospital also engages with the local public health department, the schools and other community organizations on these and other initiatives to collaboratively address health needs.

Mental Health

- ✓ Maintained the hospital's Emergency Room Tele-health Psych services. Results include decreased average length of stay, ordering stabilizing medications, treatment recommendations and suggestions for disposition.
- ✓ Participate actively in the Calaveras County Homeless Task Force and Health Care Continuum of Care network.
- ✓ The hospital provided grant funding for the Calaveras Youth Behavioral Health Project. This program brought mental health services to rural areas, providing workshops for teens and their parents, working in tandem with local agencies for placement and collaboration with all county resources, and providing more mental health screenings and ongoing counseling.
- ✓ Meeting quarterly with Professional Mental Health Countywide task force to develop best practices with known local resources.

Access to Primary and Specialty Care

- ✓ The existing Rural Health Clinic in Angels Camp, serving one of the largest populations in the county, has been replaced with a brand new building and location that is slated to open the end of 2019.
- ✓ The hospital is working in partnership with the Mark Twain Health Care District on the development of their new Rural Health Clinic meeting the health needs in Valley Springs, the largest and fastest growing population in the county.
- ✓ The hospital provided patient financial assistance for medically necessary care in the amount of $267,000 for 285 patient encounters in FY18 and FY19, and incurred $8.9 million in unreimbursed costs for care provided to patients covered by Medicaid over the same period.
- ✓ Provided free adult flu shots to the community, to 367 people in FY18 and 412 in FY19.

- ✓ Participate actively in the Calaveras County Homeless Task Force and Health Care Continuum of Care network.
- ✓ November of 2019 MTMC will provide free lipid panel tests for men, with grant support from the Calaveras Community Foundation.
- ✓ Provided 192 free lipid panels to women in partnership with Soroptimist International.
- ✓ Continue to utilize our grant-funded position to place a Patient Navigator in the E.D. This role is sponsored by California Health and Wellness and is designed to work with patients covered by California Health and Wellness. During times when those patient volumes are lower, the Navigator is able to help other patients as well, with items like making a connection with a primary care provider.

Chronic Disease Management

- ✓ Provided free diabetes self-management education to 338 people in FY18 and FY19.
- ✓ Provided non-billed cardiac and pulmonary health education and service after acute care episodes and recovery to 245 people in FY18 and FY19.
- ✓ Hosted nine “A Plan 4 Me” series of health education events focused on seniors, averaging over 40 community members in attendance and free educational prevention luncheons in conjunction with our community partners serving over 225 people.
- ✓ Provided low cost blood panel screenings to more than 361 people in FY19.
- ✓ Providing free lipid panel tests for men, with grant support from the Calaveras Community Foundation.
- ✓ Provided 192 free lipid panels to women in partnership with Soroptimist International.
- ✓ Participate actively in the Calaveras County Homeless Task Force and Health Care Continuum of Care network.

End Notes and Appendices

Caveats & Limitations of Secondary Data

Secondary data has several advantages: (1) Nationwide data are often available, allowing for community-to-community comparison, and comparison to state or national benchmarks; (2) Secondary data sources have often had the opportunity for peer-review of methodology; and (3) Secondary data sources are often less expensive compared to primary data collection. There are also disadvantages.

As with any sampled population, secondary data relies on estimates that may not be perfectly accurate. Adjustments are often necessary to make the population estimates (i.e., sample means, standard deviations) both accurate and representative. That being said, the secondary data used in this report relies on widely-available datasets that use cutting-edge, peer reviewed, and openly-published sampling methods (e.g. Behavior Risk Factor Surveillance System, American Community Survey). Other caveats include time delays which make prompt evaluation of long-term health outcomes a challenge. Additionally, detailed data of unique subpopulations or certain geographies are not always available.

Variables & Calculations

Total Population & Population Change. Total population and population change were calculated at the county-level using the most recently available data from the U.S. Census Bureau. Population change compared the most recent population estimates with population counts from the 2010.

Community Demographics. Demographic variables (median age, age distribution, race/ethnicity) were calculated using data from the U.S. Census Bureau's American Community Survey 5-year estimates (2013-2017).

Insurance Status. The percent of Calaveras County with no insurance and Medicaid was calculated using the U.S. Census Bureau American Community Survey 5-year estimates (2013-2017), and supplemented by other sources referenced in the document.

Life Expectancy and Life Expectancy Trends. Estimates of life expectancy for people born from 1980 to 2014 were published by The Institute for Health Metrics and Evaluation (2017) at the county-, state-, and national-level. Estimates were calculated using small area estimation and data from the National Center for Health Statistics, U.S. Census Bureau, and the Human Mortality Database (Institute for Health Metrics and Evaluation, 2017). Methods were peer-reviewed and results were published in the May 2017 issue of *JAMA* with the title: "Inequalities in life expectancy among US counties, 1980–2014." In the case where more than one county defined Calaveras County, data for Calaveras County were calculated by population-weighting county-level data.

Mortality Rates and Mortality Rate Trends for Leading Causes of Death. County-level, age-standardized mortality rates were estimated by The Institute for Health Metrics and Evaluation (2016) by applying a novel methodological approach to death registration data from 1980 to 2014. Death registration data was from The National Vital Statistics System (NVSS) (Institute for Health Metrics and Evaluation, 2016). Methods were peer-reviewed and results were published in the December 2016 issue of *JAMA* with the title: "US county-level trends in mortality rates for major causes of death, 1980–2014."

In the case where more than one county defined ***Calaveras County***, data for ***Calaveras County*** were calculated by population-weighting county-level data.

Cancer Mortality Rates and Mortality Rate Trends. Institute for Health Metrics and Evaluation (2016) calculated county-level, age-standardized mortality rates for 29 cancers using small area estimation techniques. Datasets included in the analyses were: De-identified death records from the National Center for Health Statistics (NCHS), population counts from the U.S. Census Bureau, and The Human Mortality Database. Methods were peer-reviewed and results were published in the January 2017 issue of *JAMA* with the title: "trends and patterns of disparities in cancer mortality among US counties, 1980-2014." In the case where more than one county defined Calaveras County, data for Calaveras County were calculated by population-weighting county-level data.

Infant Mortality. Infant mortality rates (death rate per 1,000 births) were extracted via a 2018 CDC WONDER query of the dataset "Linked Birth / Infant Death Records, 2007 – 2015" (United States Department of Health and Human Services *et al.*, 2018). In some cases, counts were too low to report by county. For reported counties within Calaveras County, the total infant mortality rate was calculated by summing county-level births and deaths and entering numbers into the equation: deaths/births x 1000. Where no county data was available, data is labeled as "missing data" Limitations of this approach: Counties where infant mortality is not reported are not included in the overall estimate.

Age-Specific Mortality Risk and Trends in Mortality Risk. The Institute for Health Metrics and Evaluation (2017) estimated mortality risk for ages under 5, and 20-year age groups at the county-level using small area estimation techniques. Data sources included: National Center for Health Statistics, U.S. Census Bureau, and the Human Mortality Database (Institute for Health Metrics and Evaluation, 2017). Methods were peer-reviewed and results were published in the May 2017 issue of *JAMA* with the title: "Inequalities in life expectancy among US counties, 1980–2014."

Area Deprivation Index. The Area Deprivation Index (ADI) is a composite measure of socioeconomic status that includes 17 measures of income, poverty, housing, employment, and education (Singh, 2003). The ADI has been associated with multiple health outcomes including 30-day re-hospitalization rates, cardiovascular disease death, cervical cancer incidence, cancer deaths, and all-cause mortality (Singh, 2003; Singh, et al., 2004; Singh & Siahpush, 2006; Singh et al., 2011; Singh et al., 2012; Kind et al., 2014). The ADI measurement properties have been psychometrically and statistically validated and the index has been shown to have good construct validity and good predictive validity. BroadStreet reweighted the factors and calculated ADI using Census Block Group level data from The American Community Survey 5-year estimates (2012-2016). Census Block Groups were combined to form estimates of larger geographical areas.

County Health Rankings. Every year, the University of Wisconsin Population Health Institute ranks counties within each state based on Health Factors (i.e. social determinants of health) that contribute to overall Health Outcomes (University of Wisconsin Population Health Institute, 2019). More detailed methodology on each of the indicators are available at County Health Rankings & Roadmaps**.** Rankings are provided at the county-level.

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