Community Health Needs Assessment

Alexander Valley Healthcare

2019

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EXECUTIVE SUMMARY

This chapter summarizes the community health needs assessment performed in 2019 for Coppertower Family Health Centers, Inc., dba **Alexander Valley Healthcare (AVH)**, a federally qualified health center (FQHC) based in Cloverdale, California, that serves areas of northern Sonoma County and southern Mendocino County.

It is AVH's policy to conduct a comprehensive community health needs assessment at least once every three years to guide strategic planning efforts. AVH then shares the information gathered in various forums to engage the community in discussions of the health status and needs identified by the assessment.

This community health needs assessment was developed through a series of six steps, outlined on the following pages.

Step 1: Service Area Validation

VERIFYING THE PRIMARY SERVICE AREA

As part of this community needs assessment, patient origin data was examined to verify the primary service area, which is the set of ZIP Codes from which AVH draws more than 75 percent of its patients.

The principal goal of this analysis was to confirm whether the ZIP Codes identified in previous needs assessments continue to accurately reflect AVH's service area. A secondary goal was to identify opportunities to expand AVH's market share, both in the primary service area and in the contiguous areas, in conjunction with AVH's upcoming major facility upgrade.

SERVICE AREA FINDINGS

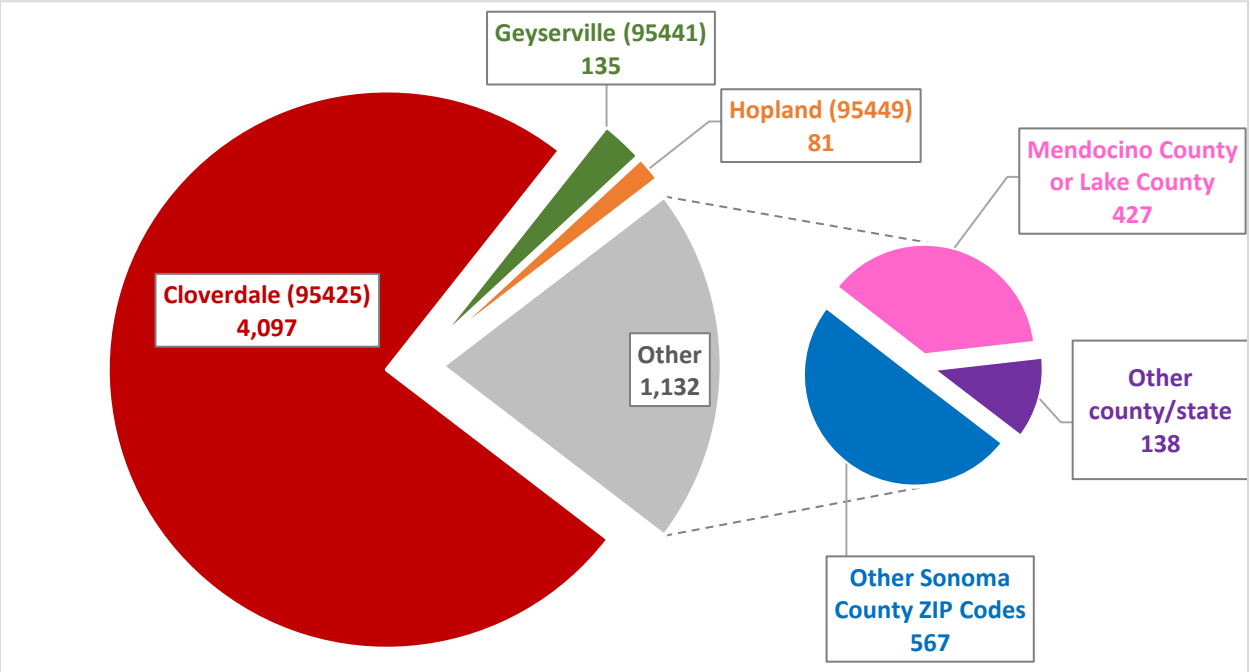
Patient origin data indicates that 79.2 percent of the 5,445 unduplicated patients AVH served in the two-year period Jan. 1, 2017 – Dec. 31, 2018 came from the same three ZIP Codes AVH has historically defined as its primary service area. Of those patients:

- 75.2 percent (4,097 patients) came from **Cloverdale** (ZIP Code 95425).
- 2.5 percent (135 patients) came from **Geyserville** (ZIP Code 95441).
- 1.5 percent (81 patients) came from **Hopland** (ZIP Code 95449).

During the same 2017–2018 period, 20.8 percent of AVH's unduplicated patients came from other ZIP Codes. Of those 1,132 patients:

- 50.1 percent (567 patients) came from other Sonoma County ZIP Codes.
- 37.7 percent (427 patients) came from Mendocino or Lake Counties.
- 12.2 percent (138 patients) came from another county or state.

Figure 1: 2017–2018 Patient Origin by ZIP Code



Between the 2013–2014 period examined in the previous community needs assessment and the current 2017–2018 assessment period, the number of patients coming from outside the primary service area grew faster than the number of patients from within the service area.

POTENTIAL STRATEGIC VALUE

The growth in AVH patients from other ZIP Codes has identified a broad secondary catchment area from which AVH can draw patients as it expands. AVH is already the second or third leading community health center in six ZIP Codes outside its primary service area.

Step 2: Service Population Analysis

Data from the U.S. Census Bureau's American Community Fact Finder was used to construct a demographic profile comparing residents of the AVH service area ZIP Codes with residents of

Sonoma County as a whole. Demographics examined included age, gender, race/ethnicity, native or foreign birth, current citizenship, languages spoken, and linguistic isolation.

Available Census data on the economic status of service area and Sonoma County residents was also analyzed. This data included median and per capita income, poverty status, and health insurance status, supplemented by data on countywide and area employment and unemployment status, housing, and cost of living.

POPULATION SERVED FINDINGS

By Age

In 2017–2018:

- 24.8 percent of AVH patients were under age 18, greater than the 22.0 percent of service area residents and 20.4 percent of all Sonoma County residents under age 18.
- 60.1 percent of AVH patients were aged 18–64, compared to 59.7 percent of service area residents and 62.3 percent of all Sonoma County residents.
- 15.1 percent of AVH patients were 65 and older, less than the 18.3 percent of service area residents and 17.4 percent of all Sonoma County residents aged 65 and older.

By Gender

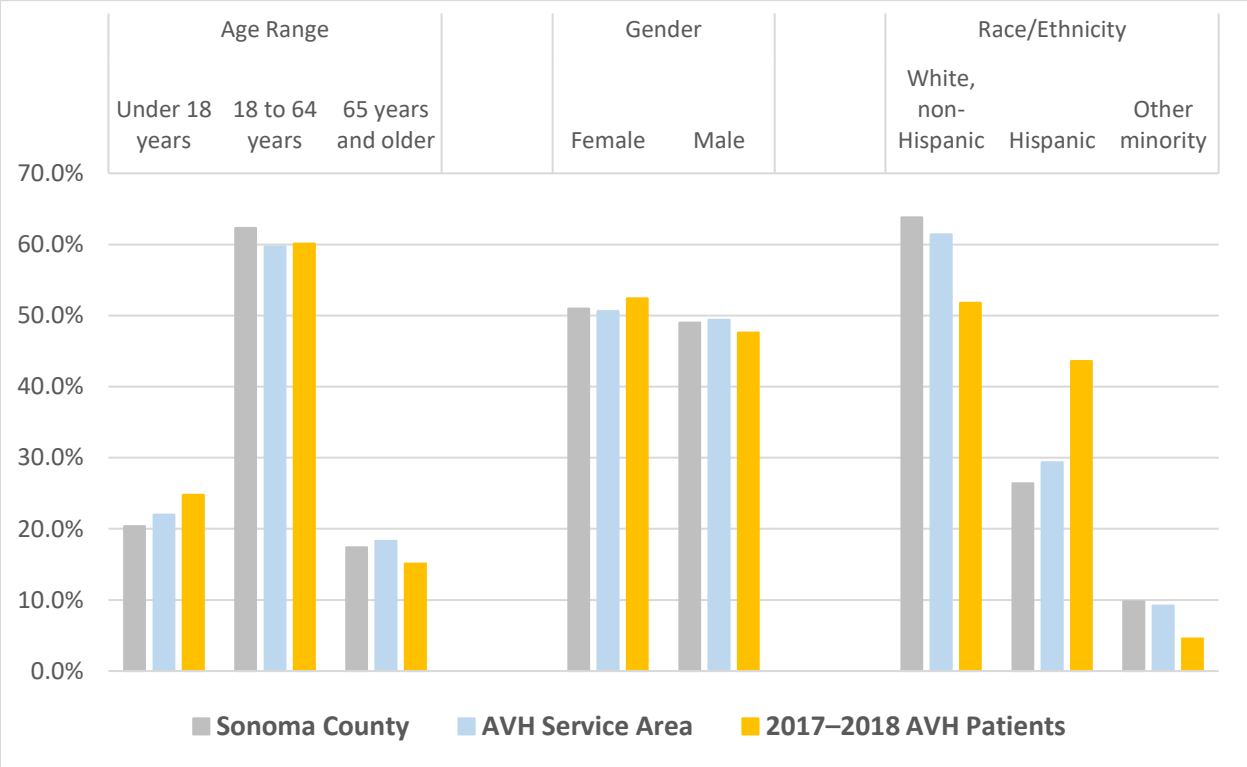
In 2017–2018, 52.4 percent of AVH patients were female, greater than the service area (which is 50.6 percent female) and Sonoma County (which is 51.0 percent female).

By Race/Ethnicity

Although 51.8 percent of all 2017–2018 AVH patients were white non-Hispanic, Hispanics/Latinos made up a substantially greater proportion of AVH's patient population than in the service area or Sonoma County as a whole: 43.6 percent of AVH patients were Hispanic, compared to 29.4 percent of service area residents and 26.4 percent of Sonoma County residents.

These results are summarized in the following table.

Figure 2: Key Demographic Characteristics, Sonoma County, AVH Service Area, and 2017–2018 AVH Patients



By Income

AVH patients were significantly more likely than the service area population or the population of Sonoma County as a whole to be low-income. In 2017–2018:

- 39.8 percent of AVH patients had family incomes below 100 percent of the federal poverty level (FPL), compared to only 10.6 percent of service area residents and 10.7 percent of all Sonoma County residents.
- 88.4 percent of AVH patients had incomes below 200 percent of FPL, compared to only 34.7 percent of service area residents and 26.3 percent of all Sonoma County residents.

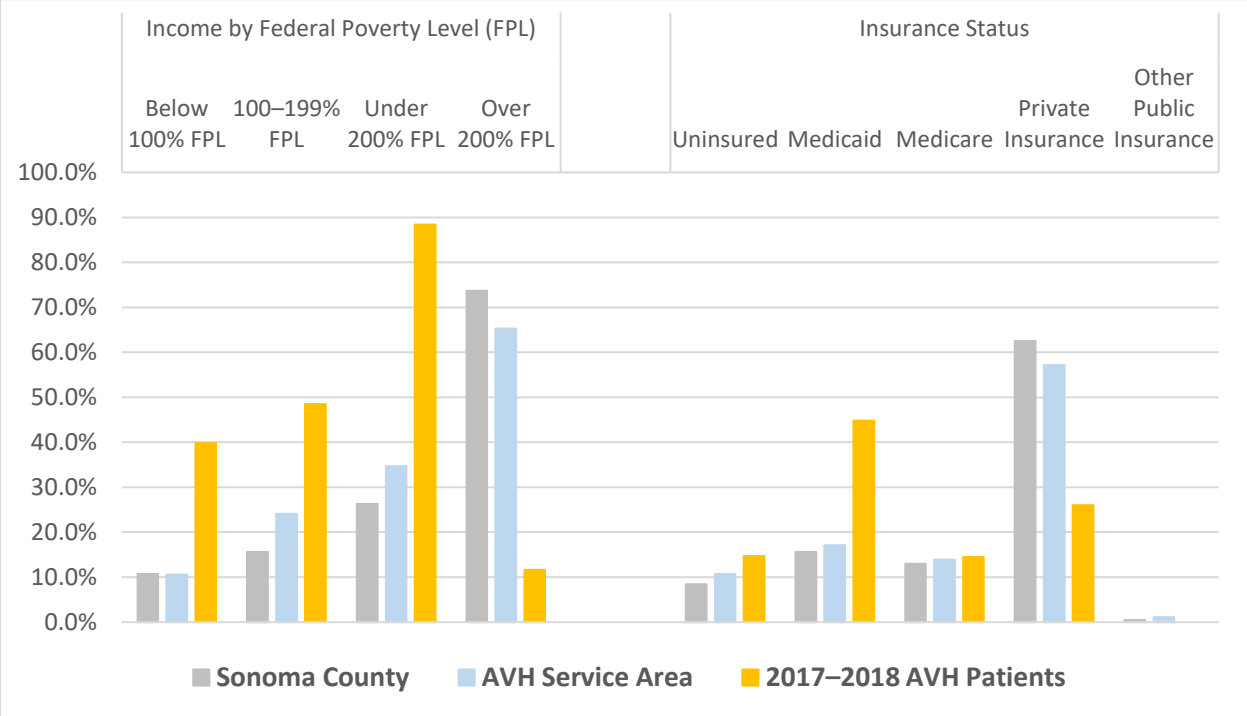
By Payment Source

Similarly, AVH patients are significantly more likely to be uninsured or on Medi-Cal (California's Medicaid program) or Medicare than were residents of the service area or Sonoma County. In 2017–2018:

- 14.7 percent of AVH patients were uninsured, compared to 10.7 percent of service area residents and 8.4 percent of all Sonoma County residents.
- 44.8 percent of AVH patients were on Medicaid, compared to only 17.1 percent of service area residents and 15.6 percent of all Sonoma County residents.
- 14.5 percent of AVH patients were on Medicare, compared to 13.9 percent of service area residents and 13.0 percent of all Sonoma County residents.
- Only 26.1 percent of AVH patients had private insurance, compared to 57.2 percent of service area residents and 62.5 percent of all Sonoma County residents.

These findings are summarized in the following chart.

Figure 3: Income and Insurance Status, Sonoma County, AVH Service Area, and 2017–2018 AVH Patients



Special Populations

During the 2017–2018 period:

- 336 AVH patients were migrant or seasonal agricultural workers.
- 155 patients were known to be homeless.

- 128 patients were known to be military veterans.

POTENTIAL STRATEGIC VALUE

As the only safety-net provider in its area, AVH serves a patient population that continues to include a higher proportion of children, seniors, low-income patients, and minority patients than the U.S. Census projects for the populations of either Sonoma County or the AVH service area ZIP Codes. That remains AVH's strength in seeking funding to support its mission.

Step 3: Service Utilization Patterns

Most funders require health centers to annually report the total number of patients who had one or more face-to-face encounters with a licensed clinical provider in the previous 12 months. However, these single-year reporting totals do not necessarily reflect the actual number of patients the health center regularly serves.

For various reasons, some patients who rely on the health center for care may not have a reportable provider visit during a given 12-month period. For example, a hypothetical patient who had a medical checkup in December 2017, received only enabling services (such as vaccinations) in 2018, and then had another medical checkup in January 2019 would almost certainly consider themselves to be a regular AVH patient, but would not be counted in the health center's 2018 Uniform Data System (UDS) report.

To better estimate the total number of unduplicated patients AVH serves, this assessment examined patient data for two calendar years — the period Jan. 1, 2017 – Dec. 31, 2018 — rather than just one. A more limited three-year analysis was also performed to provide an additional point of reference.

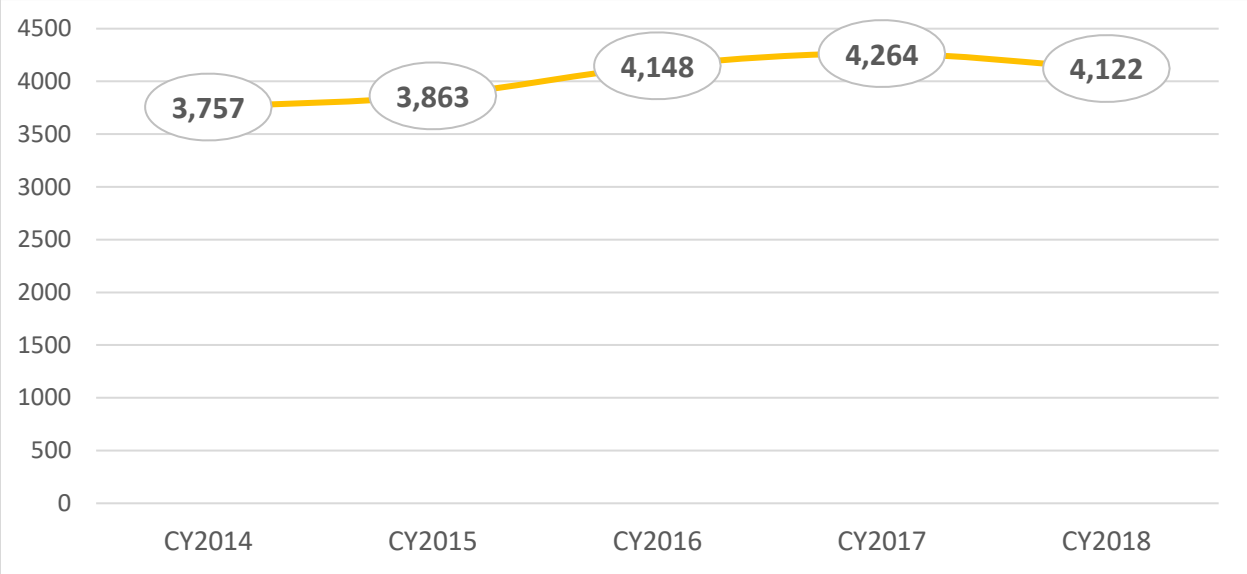
The assessment also looked at trends in the utilization of AVH's three departments (medical, dental, and mental/behavioral health) and the number of patients with existing chronic medical or behavioral diagnoses.

SERVICE UTILIZATION FINDINGS

Unduplicated Users

Following AVH's attainment of FQHC status, the number of unduplicated patients rose from 3,757 in 2014 to 3,863 in 2015 and 4,148 in 2016. Since then, the number of UDS-reportable patients appears to have plateaued at approximately 4,200 (± 100) per calendar year.

Figure 4: UDS-Reported Unduplicated Patients per Calendar Year, 2014–2018



However, examining the numbers of unduplicated patients over two- and three-year periods reveals that AVH's total patient population is considerably greater than these one-year UDS figures indicate. During the 2013–2014 period, AVH served a total of 4,796 unduplicated patients. **By the 2017–2018 period, the total number of unduplicated patients had risen to 5,445, an increase of 13.5 percent.**

The three-year total was even greater. **Over the three-year period Jan. 1, 2016 – Dec. 31, 2018, AVH served a total of 5,738 unduplicated patients**, almost 37 percent more than the single-year figures for any of those years.

It is clear, therefore, that AVH has a substantial number of intermittent users who have provider visits in some years and not others.

Although this analysis does not indicate why these patients do not return every year, there are a variety of likely possibilities, including financial hardship; prioritizing other family members' care (e.g., parents who bring their children in for checkups, but forego their own); and transportation or scheduling problems.

Departmental Utilization

It is also evident that many existing patients are not utilizing the full range of AVH services. In 2017–2018:

- More than 70 percent of all unduplicated patients (3,849 patients) received services from only one department.

- Only 25.1 percent (1,366 patients) were served in two departments.
- Only 4.2 percent (230 patients) were seen in all three departments.
- Almost 88 percent (4,788 patients) had medical visits; 3,199 of those patients had *only* medical visits.
- One-third (1,858 patients) had dental visits; 603 of those patients had *only* dental visits.
- Only 11.4 percent (622 patients) had mental health visits; 44 of those had *only* mental health visits.

Chronic Condition Diagnoses

The number of AVH patients with chronic conditions has risen sharply since the previous assessment. In 2017–2018, 54 percent of all patients had at least one chronic health diagnosis, up from 44.9 percent in 2013–2014.

Of the 5,445 patients AVH served in 2017–2018:

- **2,174 patients** had one or more **chronic medical conditions** such as asthma, chronic bronchitis and emphysema, diabetes, heart disease, hypertension, or overweight/obesity, up from 1,501 patients in 2013–2014.
- **1,860 patients** had one or more **chronic behavioral health conditions** such as substance use disorders, depression, anxiety disorders/PTSD, or attention deficit disorder, up from 1,280 patients in 2013–2014.
- **1,073 patients** had *both* a chronic medical condition *and* at least one mental/behavioral health diagnosis, up from 628 patients in 2013–2014.

POTENTIAL STRATEGIC VALUE

This assessment suggests that there is significant potential for AVH to expand its service volume through outreach aimed at existing intermittent users, including encouraging current patients to take fuller advantage of the range of services AVH offers. **An examination of electronic health record data identified 2,370 such intermittent users, 1,711 of them from within the primary service area.**

However, there are also clear indications that AVH has reached the limits of its current provider capacity, and in turn of the health center's existing physical space. As discussed in greater detail

in the Service Patterns chapter, the productivity of AVH's existing providers is already extremely high; patient loads are so great that the present clinical staff cannot fully accommodate temporary reductions in capacity due to leaves or turnover.

This strongly suggests that additional providers are needed, as does the sharp increase in the number of diagnosed chronic medical and behavioral health conditions. However, AVH does not currently have sufficient space to accommodate additional providers in its existing medical, dental, or mental health departments.

To meet the demonstrated needs of the patient population, AVH will need facilities capable of housing provider capacity far beyond current levels.

Step 4: Health Status

Available health status data for Sonoma County and AVH's service area were compiled and analyzed to identify health needs for future strategic action. Data were gathered for maternal health, child health, adolescent health, and adult health.

HEALTH STATUS FINDINGS

Maternity

Maternity outcomes in Sonoma County, such as infant mortality, low birth weights, births to teen mothers, and breastfeeding rates are now generally better than statewide rates.

However, the county's maternal population remains high-risk and warrants continued attention due to risk factors such as high incidence of overweight or obesity; excessive weight gain during pregnancy; high incidence of diabetes and gestational diabetes; housing and food insecurity during pregnancy; and evidence of inadequate family planning.

Children

Children in Sonoma County show encouraging signs of adopting healthy behaviors. For example:

- Only 30.3 percent of Sonoma County kids drink sugary beverages.
- Sonoma County kids eat fast food less often than kids statewide.

- In Cloverdale, 100 percent of kindergartners and 91 percent Geyserville kindergartners are up to date on immunizations. Locally, 98.8 percent of 7th graders are also up to date on immunizations.

However, children in the county and service area also evidence numerous health issues:

- County screenings show many young children are still in need of dental care.
- Asthma is a common health problem.
- 48.6 percent of Cloverdale 5th graders (56.6 percent of boys, 41.1 percent of girls) are overweight or obese.
- Just 24.1 percent of Cloverdale 5th graders pass all six of the state's standardized 5th grade fitness tests.
- Only 51 percent of Sonoma County children aged 5–11 (and only 32.2 percent of low-income kids in that age range) get three or more hours of exercise a week, compared to 67.5 percent of kids statewide.
- 57.8 percent of Cloverdale Unified School District students and 67.3 percent of Geyserville students have family incomes that qualify them for free or reduced-price lunches. By comparison, only 47 percent of students countywide qualify for this lunch program.

Adolescents

Adolescents in Sonoma County and specifically in the Cloverdale/Geyserville area are a high-risk population who have significant physical health issues; engage in unhealthy behaviors; and experience substantial stress, including bullying and violence.

Physical Health of Adolescents

- 48.6 percent of Cloverdale 7th graders and 24.0 percent of 9th graders are overweight or obese.
- 44.6 percent of 7th graders skip breakfast, as do 46.3 percent of 11th graders.
- 31 percent of Sonoma County teens get five servings of fruits or vegetables a day, but only 19 percent of the county's low-income teens do.

- Sonoma County teens exercise less often than do teens statewide. Low-income teens in Sonoma County exercise even less.

- Only about one in four Sonoma County 7th graders pass all six of the state's standardized fitness tests.

High-Risk Teen Behaviors

- A higher percent of Sonoma County teens have had sex (26.3 percent) than have teens statewide (18.3 percent). However, Sonoma County's teen birth rate has fallen since the last needs assessment: from 10.7 pregnancies per 1,000 girls 15–19 to only 9.3 per 1,000, far less than the statewide average of 15.7 per 1,000.

- Sonoma Count teens have a higher rate of chlamydia, but a lower rate of gonorrhea than do teens statewide.

- Percentage of teens smoking cigarettes is falling, but teens' use of e-cigarettes ("vaping") has dramatically increased, often with little understanding of the risks.

- Adolescent drinking and binge drinking (i.e., drinking four or more alcoholic drinks in a row) are major health concerns. In Cloverdale:

    - In 9th grade:

        - 30.8 percent of girls and 19.8 percent of boys report drinking alcohol in the past month.
        - 11.8 percent of girls and 4.5 percent of boys report binge drinking in the past month.
        - 36.5 percent of girls and 12.2 percent of boys report drinking and driving or riding in a car with a driver who had been drinking.

    - By 11th grade:

        - 35.5 percent of Cloverdale girls and 50.0 percent of Cloverdale boys report drinking alcohol in the past month.
        - 25.8 percent of boys and 38.9 percent of girls report binge drinking in the past month.
        - 33.3 percent of females and 31.5 percent of males report drinking and driving or riding with a driver who had been drinking.

- Marijuana use follows similar patterns. By 11th grade, 21.2 percent of Cloverdale boys and 12.9 percent of Cloverdale girls use marijuana 20 to 30 times a month.

Stress and Violence

- In Cloverdale, 51.8 percent of teens report being bullied in the past year, compared to 32.6 percent of all Sonoma County teens and 39.2 percent of teens statewide. Bullies may focus on their target's gender, race/ethnicity, national origin, religion, sexual orientation, and/or disabilities.

- One in 20 Sonoma County teen girls (5.0 percent) and about one in every 14 Sonoma County teen boys (7.4 percent) have experienced dating violence in the past year.

- Cloverdale 7th and 9th graders have significantly higher rates of depression than do their peers across Sonoma County or statewide.

- Suicidal ideation is also a matter of concern:

    - More than one-third (34.0 percent) of 9th grade girls in Cloverdale report suicidal ideation, much higher than their peers across Sonoma County or the state.

    - Although 9th grade boys in Cloverdale report significantly lower levels of suicidal ideation (only 4.9 percent), 17.6 percent of the district's 11th grade boys report suicidal thoughts, significantly greater than the county average (12.1 percent), albeit still lower than the state average for 11th grade boys (23.1 percent).

Adults

- More than half (52.9 percent) of adults in Sonoma County are overweight or obese. Among Latino adults, the percentage is even higher: 79.7 percent are overweight or obese.

- Sonoma County's low-income adults have rates of chronic diseases such as asthma, diabetes, high blood pressure, and heart disease that significantly exceed statewide averages.

- Excess alcohol consumption remains common: 44 percent of Sonoma County adults (55.6 percent of adult men, 34.4 percent of adult women) binge drink.

- Alcohol impairment is a factor in 37 percent of all Sonoma County auto accident deaths, compared to 30 percent statewide and 27 percent in neighboring Mendocino County.

- Although adult women in Sonoma County are somewhat less likely than adult women statewide to experience intimate partner violence (17.7 percent versus 20.5 percent statewide), adult men in Sonoma County are substantially more likely than men statewide to experience intimate partner violence (17.8 percent versus 9.1 percent statewide).

- Cigarette smoking is down overall, but 21.1 percent of low-income adults in Sonoma County and 23.4 percent in Mendocino County still smoke cigarettes. Use of e-cigarettes and "vaping" is rising rapidly among adults and will likely increase further, given the prevalence of vaping among teenagers.

- 15.7 percent of adult Cloverdale/Geyserville residents have disabilities, greater than the Sonoma County average of 12.7 percent.

- Almost 20 percent of Sonoma and Mendocino county adults sought help for a mental/emotional problem or substance use in the past year. Eighty percent of these individuals report missing work because of those problems during the year.

POTENTIAL STRATEGIC VALUE

The reported health status data illustrates a number of health needs. Substance use is a consistent issue from preteens to adults, as are poor diets and lack of physical exercise.

The data also strongly supports the proposal to focus AVH's new facility as a community wellness center offering not only medical, dental, and mental health services, but also substance abuse cessation programs, exercise/fitness programs, nutrition education, health education, and teen activities.

Step 5: Health Outcomes

Available health outcome data for Sonoma County and AVH service area data was also analyzed to identify urgent community health needs that could be targeted through future community health center programs or initiatives. Three categories of outcome data were examined:

- Life expectancy

- Years of life lost due to premature deaths

- Age-adjusted mortality by cause of death.

HEALTH OUTCOME FINDINGS

The Cloverdale/Geyserville ZIP Codes have poorer health outcomes than does Sonoma County as a whole on several health outcome measures.

Life Expectancy

Life expectancy at birth is a full year lower in Cloverdale/Geyserville than the state average and 1.4 years lower than for Sonoma County as a whole:

- **Cloverdale/Geyserville**: 80.5 years
- **Sonoma County**: 81.9 years
- **California**: 81.5 years.

Premature Death

Total age-adjusted **years of potential life lost to deaths under age 75** per 100,000 population were substantially greater for the Cloverdale/Geyserville area than for Sonoma County or California as a whole:

- **Cloverdale/Geyserville area**: 5,802.3 years per 100,000 population
- **Sonoma County**: 4,410.0 years per 100,000 population
- **California**: 5,082.6 years per 100,000 population.

Cloverdale/Geyserville's **years of potential life lost to deaths under age 75** per 100,000 population were also higher than Sonoma County's for four causes of deaths:

- **All cancers:** 1,195.4 years, versus 1,045.1 for the county
- **Heart disease**: 559.5 years, versus 448.3 for the county
- **Accidents (unintentional injury):** 1,781.8 years, versus 741.2 for the county
- **Suicide:** 497.5 years, versus 353.3 for the county.

Age-Adjusted Mortality by Cause of Death

Sonoma County has lower age-adjusted mortality rates than does the state of California as a whole for several causes of deaths, notably diabetes, coronary heart disease, cerebrovascular disease, influenza/pneumonia, chronic lower respiratory disease, chronic liver disease, homicide, and firearms.

However, the county has higher age-adjusted mortality rates than does the state as a whole for all cancers, colorectal cancer, lung cancer, female breast cancer, prostate cancer, Alzheimer's disease, accidents/unintentional injuries, suicide, and drug overdoses.

A Sonoma County Epidemiology Unit analysis of mortality data for nine sub-county areas found that the Cloverdale/Geyserville area has a higher age-adjusted mortality rate than does Sonoma County as a whole for several causes of death, including all cancers, lung cancer, female breast cancer, heart disease, lower respiratory disease, and unintentional injury (which includes deaths from accidental drug overdoses).

The California Department of Public Health has also identified a higher rate of deaths from opioid overdose in the Cloverdale ZIP Code than countywide.

POTENTIAL STRATEGIC VALUE

As with the Health Status section findings, the Health Outcomes data demonstrates the need to focus on preventing premature deaths from manageable chronic medical conditions as well as preventing adverse effects of chronic mental and behavioral health conditions such as depression, anxiety, and substance use disorders.

The growing AVH patient population with these conditions suggests that AVH has a strategic opportunity to impact these results within its service area.

Step 6: Future Growth Opportunities

This community needs assessment was charged with gathering data that might inform the future growth of Alexander Valley Healthcare, including:

(1) Potential external growth opportunities

(2) Internal growth opportunities, and

(3) New service programs that may be needed.

A specific focus was AVH's plan to replace its existing clinic sites with one 30,000 square foot community wellness center. This planned facility would house AVH's current and future programs as well as allocating 5,000 square feet for other providers to co-locate with AVH.

FUTURE GROWTH FINDINGS

External Growth

Alexander Valley Healthcare's market penetration in its service area is still increasing. AVH currently serves 40.1 percent of Cloverdale residents, 30.0 percent of Geyserville residents, and 34.1 percent of Hopland residents, and has the potential to add new patients from this area.

The potential for external growth is also indicated by the recent growth in the number of AVH patients coming from a secondary catchment area outside the primary service area. An expanded facility and larger staff could serve (and potentially attract) additional patients from this region.

The 13 ZIP Codes encompassing AVH's three current service area ZIP Codes and 10 contiguous ZIP Codes have a combined population of 145,670 residents, 52,937 of whom have family incomes below 200 percent of the federal poverty level.

According to the UDS Mapper (a HRSA-supported program of the Robert Graham Center of the American Academy of Family Physicians), an estimated 13,217 of these low-income residents are not receiving care from any CHC in a given year.

Furthermore, 15 percent of this area's population (an estimated 21,851 people) report having no regular source of care; 10 percent (14,567 people) report postponing care in the past year because of cost; and 34 percent (an estimated 49,538 people) report that they have no dental care because of cost or unavailability.

Internal Growth

There is also substantial potential for internal growth though more intense outreach and follow-up with the 2,370 intermittent users already identified, particularly the 1,711 intermittent users from within the service area.

In addition to the number of patients in the community reporting lack of access to dental services, more than 1,500 additional medical users could potentially become AVH dental users if AVH had sufficient dental provider capacity and accepted a wider range of dental insurance.

In 2018, the AVH mental health department was able to provide 2,360 visits for 351 unduplicated users, a fraction of the demonstrated total need. AVH has already identified 1,860 current patients with diagnosed mental or behavioral health conditions. That total continues to rise with use of the Screening, Brief Intervention and Referral for Treatment (SBIRT) screening protocol begun in 2019.

This need could easily justify tripling or quadrupling AVH's existing mental health service capacity. Growing substance abuse counseling and support group capacity is a particularly urgent need, as illustrated by the data in the Health Status section of this needs assessment.

The mental health department is also stymied by the lack of physical space, which limits the availability of certain services. For example, AVH currently lacks spaces large enough for group counseling other than the waiting room after-hours.

Possible New Service Programs

This needs assessment also identified a number of possible new service programs, including:

- Chronic pain services, such as alternative pain relief therapies and safe movement programs to restore movement while preventing reinjury
- Physical therapy
- Wholistic alternative care modalities
- Life transitions and trauma recovery support group programs
- Caregiver support programs for the 20.7 percent of Sonoma County and 22.7 percent of Mendocino County adults who act as family caregivers
- Fall prevention programs for seniors
- Smoking cessation support groups (which should include vaping as well as other types of tobacco use)
- Nutrition education and counseling programs
- Tai chi or other movement programs designed to help older adults maintain joint health and retain mobility and flexibility
- Exercise/physical activity programs for children and adults, particularly those who cannot afford health club memberships

- Community health and wellness education programs.

Within the community health center model, these programs could be offered either as services provided directly by AVH staff, through contractors, or through co-located providers.

Future Facility Needs

This community needs assessment can inform the discussion of AVH's new facility in several significant ways.

First, the data on area residents without a regular source of care for medical or dental care reaffirms that there are enough additional potential patients in the region to financially support a larger health center. The identification of several thousand existing intermittent patents who could become more regular users of services adds to that evidence.

Second, this assessment illustrates the extent to which AVH's limited current facilities act as barriers to growth and to AVH's ability to effectively meet the identified needs of its existing patient base (as well as prospective future patients).

AVH's existing two small clinics are both already at their full capacity in terms of the number of exam rooms, dental operatories, and staffing they can house. Furthermore, AVH's existing facilities are also blocking the provision of additional behavioral health services. In particular, current facilities lack rooms large enough for group counseling, essentially blocking use of a cost-effective mode of service appropriate to many chronic behavioral health conditions.

Third, many of the health problems identified in Health Status and Health Outcomes of this report clearly suggest the need for additional wellness and prevention efforts in the community. This data offers support to AVH's plans to organize the new facility as a community heath and wellness center.

Again, these objectives would simply not be possible within AVH's existing clinics, which lack any spaces large enough to be used as classrooms or meeting rooms for nutrition or health education, support groups, physical therapy, or movement classes.

The existing clinics also lack space that could be leased to other providers. The new facility is being designed to include such space, in addition to the additional exam rooms, dental operatories, and individual and group counseling rooms that are needed.

In short, without the new facility, none of these future expansions is feasible. With the proposed community health and wellness center, all of these expansions are possible.

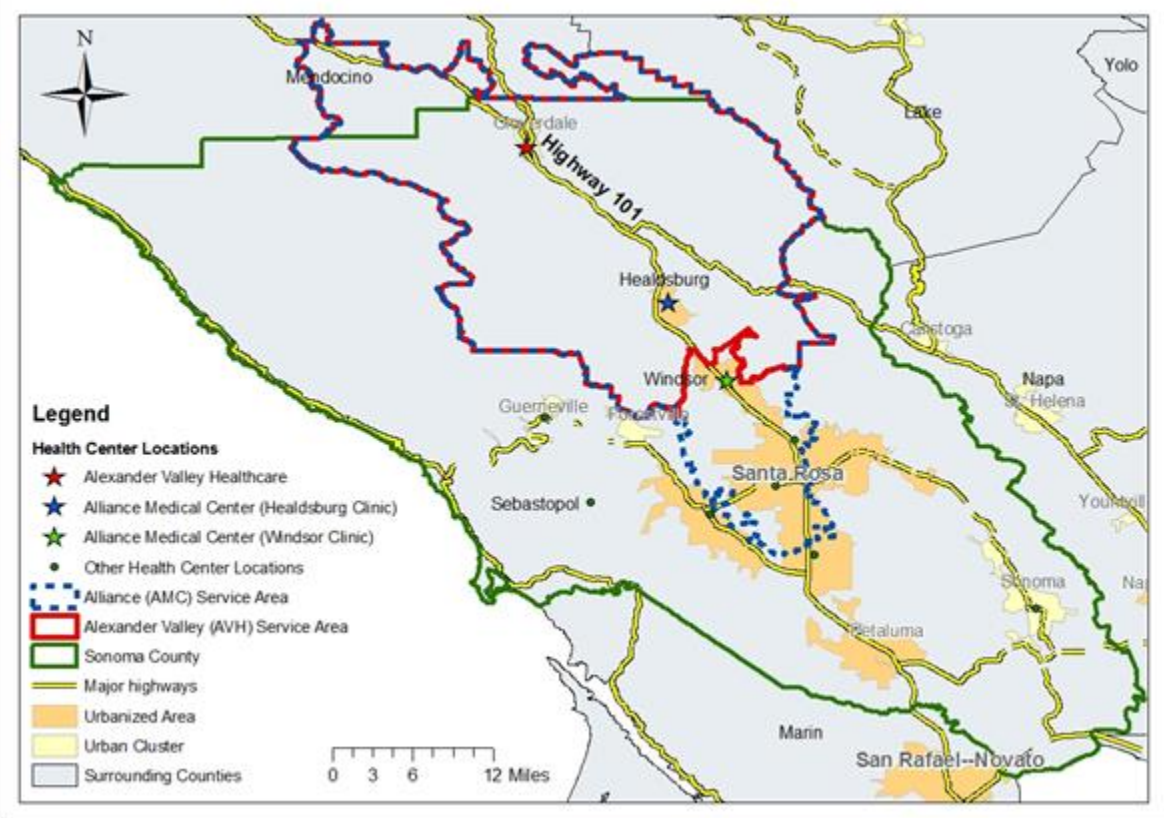
INTRODUCTION TO SONOMA COUNTY

Sonoma County is located along California's western coast, north of San Francisco. Sonoma County is bordered on the south by Marin County and on the north by Mendocino County. Sonoma County's eastern edge is formed by Lake and Napa Counties while the western border is the Pacific Ocean. Alexander Valley Healthcare (AVH) is based in the City of Cloverdale (pop. 9,149), which is the northernmost incorporated city in Sonoma County.

Sonoma County ranks 17th among California's 58 counties in population and 29th in land area, with a total area of 1,768 square miles. For comparison, the county has 145 percent of the total area of the entire state of Rhode Island (1,212 square miles).

The southernmost border of Sonoma County is approximately 45–50 minutes north of the Golden Gate Bridge along U.S. Highway 101, the region's principal north-south transportation corridor. The county spans approximately 67 miles north to south, with a travel time of 75 to 100 minutes, depending on time of day and traffic congestion.

Figure 5: Map of Sonoma County, Indicating Major Highways and the Service Areas of Alexander Valley Healthcare and Alliance Medical Center



Most of Sonoma County's urban areas are clustered along Highway 101. Residents of those areas comprise two-thirds (67.1 percent) of the county's total population.

Santa Rosa (pop. 177,684) is Sonoma County's largest city and the seat of county government. It is located in the approximate midsection of the county, along the Highway 101 corridor. Santa Rosa is also the center of the healthcare delivery in the county, housing the region's three largest hospitals. The cities south of Santa Rosa include Petaluma, Cotati, and Rohnert Park. To the north along Highway 101 are Windsor, Healdsburg, and Cloverdale.

Despite the increasing growth of housing and commercial businesses along the Highway 101 corridor, Sonoma County has committed to remaining a mixed land-use county and officially views much of the county's land area as "working landscapes," comprising lands under agricultural cultivation; "rangelands"; and recreational open spaces that form the basis of a valuable tourism industry. An important benefit of leaving large tracts of undeveloped land is to facilitate "recharging" of groundwater, a high priority during California's recurring multiyear droughts.[1]

Sonoma County preserves a significant amount of land for a number of purposes, including public recreation, the protection of natural ecosystems, the maintenance of water supplies, the preservation of historical sites, and the protection of the coastal landscapes that are a key aspect of the local tourist industry. As of 2013, Sonoma County had protected 218,267 acres.

Geography & Geology of Sonoma County

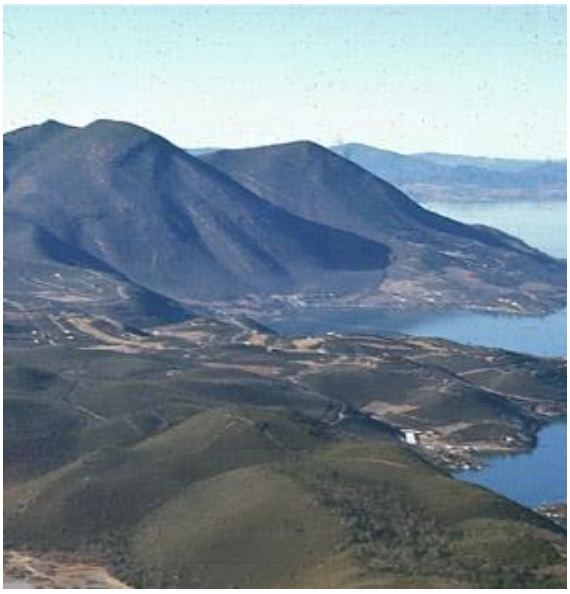
The geography and geology of Sonoma County have played a major role in its history.

Some distance north of Cloverdale lie the Clear Lake Volcanic Field and Mount Konocti, a 3,200-foot volcano that last erupted approximately 11,000 years ago, depositing volcanic magma, ash, and rock across the entire North Bay region. Portions of the ocean coast are protected by the northwest coastal mountain range, which create microclimates based on the duration and timing of coastal fog and marine layer moisture.

The Russian River passes south from Mendocino County past Cloverdale, roughly paralleling Highway 101, while the Petaluma River to the south connects with the San Pablo Bay and from there to the San Francisco Bay.

[1] Sonoma County Dept. of Agriculture/Weights & Measures, *Sonoma County Crop Report 2013* (Santa Rosa, Calif.: Sonoma County Dept. of Agriculture/Weights & Measures, June 2014).

Figure 6: Mount Konocti



This geography has given the county many distinct soil types, including volcanic deposits and rich river silts, which provide a fertile basis for diverse agriculture. The region also offers opportunities for fishing and crabbing as well as important harbors and navigable waterways.

Several native tribes have long inhabited this region, including the Coastal Miwok; the Pomo; and the Mishewal Wappo. These tribes continue to live in the area, although their numbers and territory have shrunk considerably since pre-colonial times.

In 1812, a small group of Russians and Aleuts established settlements in the Santa Rosa Valley and at Fort Ross, along what is now the border between Sonoma and Mendocino Counties. (It is from these settlers that the Russian River, which the Pomo called Ashokawna, takes its present name.) Although the Russian settlers sold their holdings in 1841 to John Sutter of Sacramento and departed the area, they established its viability for several agricultural industries.

The Russian River and its tributaries remain key water sources for crops, livestock, and people, and an important route for shipping agricultural products along the Pacific Coast. Today, it is also one of the county's principal tourist areas.

In pre-colonial times, the Petaluma River provided a route for local tribes to trade with tribes in the San Francisco Bay Area. It was also the path for the Spanish missionaries who arrived in 1823, establishing the Mission San Francisco Solano in what is now the City of Sonoma in 1823. The area around this mission became the center of the winemaking industry during the County's Spanish period. Sonoma is still home to the largest winery in the county: Buena Vista.

Under Spanish and later U.S. rule, the Petaluma River also became a major shipping route, carrying products such as milk, butter, cheese, fruits, and vegetables from southern Sonoma County to San Francisco and its neighboring cities. While the area's highway grid has replaced the river as a shipping route, the river remains important to recreational and tourist activity.

No industry is as strongly associated with Sonoma County as the wine industry. According to the Sonoma County Winegrape Commission, four attributes have made the county an excellent location for winemaking: a long and nearly ideal growing season for grapes; the cooling

influence of the marine layer; the wide array of soil types; and varying elevations. As a result, Sonoma County produces a remarkable variety of wine styles and grapes. The county has 18 unique American Viticulture Areas, each yielding wines of distinctive characteristics.

Figure 7: Map of Sonoma County's 18 American Viticulture Areas

Source: Sonoma County Winegrape Commission. Used with permission.

NATURAL DISASTERS

Sonoma County is vulnerable to a number of potential natural disasters.

Fires

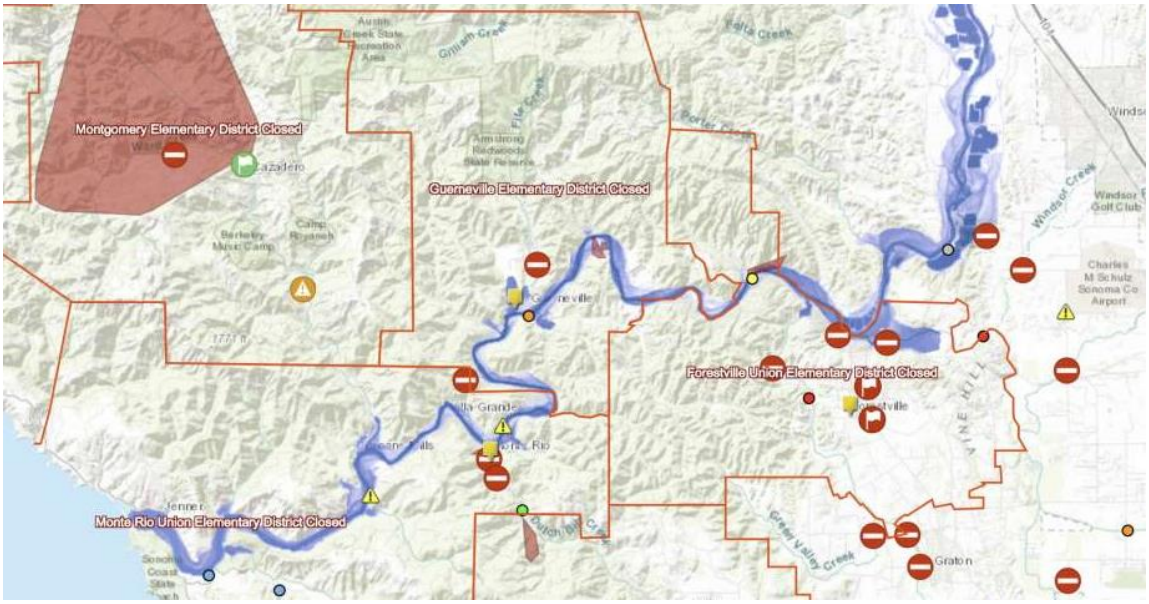
The various forested areas of Sonoma County and their proximity to human habitation make the county vulnerable to wildfires, some of which have intruded into urban areas. One devastating recent example occurred on Oct. 8, 2017, when high winds created a three-headed firestorm, known as the Tubbs Fire, the Nuns Fire, and the Pocket Fire.

Traveling at speeds in excess of 40 mph, the Tubbs Fire swept across rural fields, over a mountain range, and into the heart of Santa Rosa. During the three weeks it took to contain the blaze, the Tubbs Fire and its offshoots charred 137 square miles, killing 22 people, and seriously injuring one firefighter. Together, they became the costliest fire in county history, destroying more than 5,643 structures, including 5,297 housing units, and damaging thousands more.[2]

Flooding

The Russian River and its tributaries — Laguna de Santa Rosa, Santa Rosa Creek, Brush Creek, Dry Creek, Mark West Creek, Matanas Creek, Spring Creek, and Piner Creek — have been sources of frequent or annual flooding. In February 2019, the river crested at 14 feet above flood stage, creating a period of particularly widespread flooding illustrated on the map below.[3]

Figure 8: Points of Flooding Along Russian River and Its Tributaries, Feb. 27, 2019



Source: Sonoma County

Earthquakes

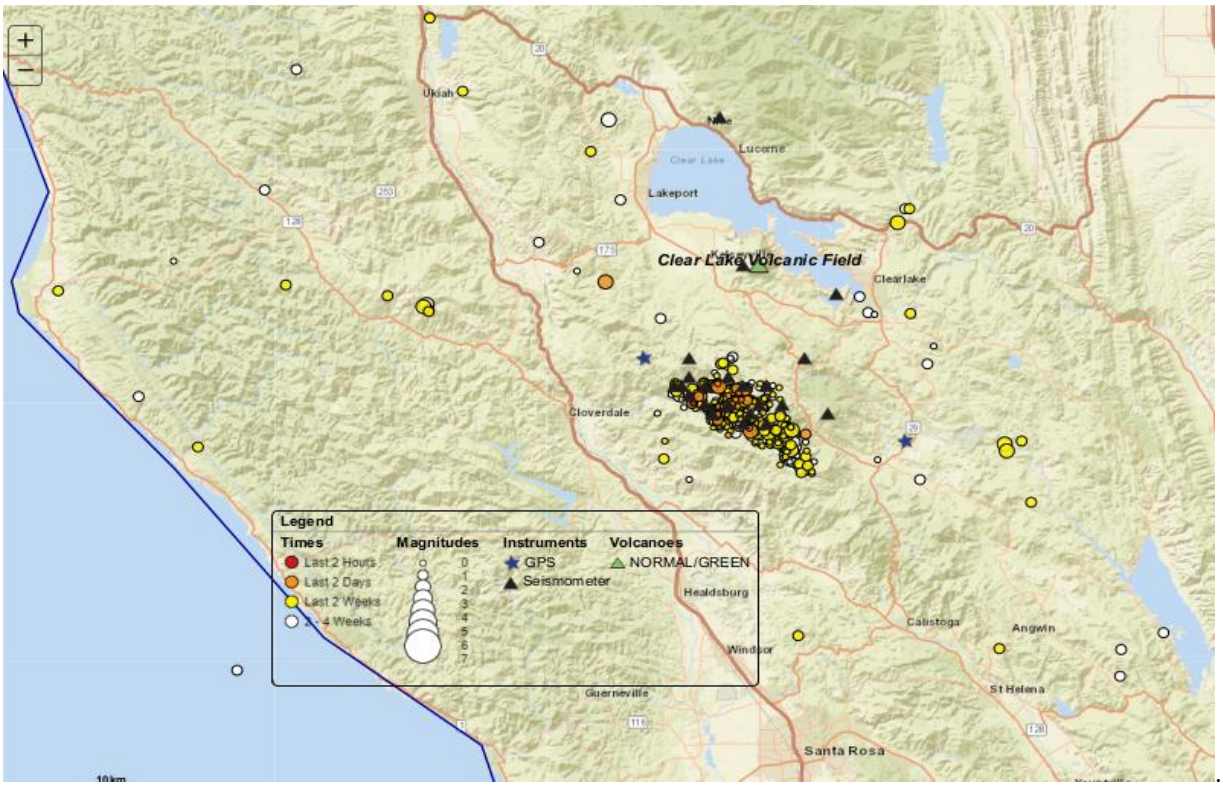
Sonoma County was affected by the 1906 San Francisco Earthquake, which shifted portions of the Pacific and North American tectonic plates 15 feet in opposite directions.

[2] Various reports, *The Press Democrat* [Santa Rosa], October–November 2017.

[3] Graff, Amy, "Interactive flood map of Russian River identifies river levels, road closures, more," *SFGate*, Feb. 29, 2019, https://www.sfgate.com/weather/article/flood-map-Russian-River-Sonoma-County-Guerneville-13647584.php.

A number of geological fault lines run through the county, which periodically produce smaller tremors and/or quakes (measuring between 2.5 and 5.0 on the Richter Scale).[4] This seismic activity is related to the volcanic system around Clear Lake and Mount Konocti in nearby Lake County, which produces heat and pressure that feed the hot springs and geysers of Sonoma and Napa Counties.

Figure 9: Map of Recent Seismic Activity in Sonoma County



Source: U.S. Geological Survey, U.S. Department of the Interior

POPULATION

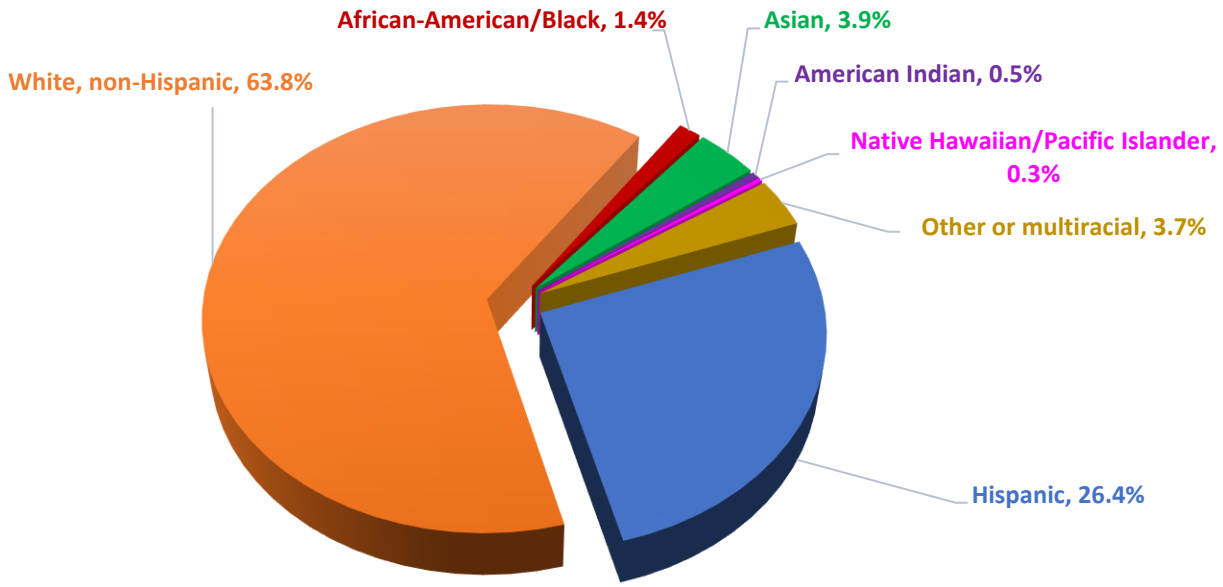
The most recent available estimates from the U.S. Census Bureau put Sonoma County's total population at 500,943 as of 2017.

The majority of those residents, 63.8 percent, are white/non-Hispanic. Hispanic/Latino residents comprise 26.4 percent of the county's overall population, but a significantly greater percentage of some sub-county areas, including the Alexander Valley Healthcare service area.

[4] Earthquake Track, "Recent Earthquakes Near Santa Rosa, California, United States," *https://earthquaketrack.com/us-ca-santa-rosa/recent*.

A more detailed discussion of the demographics of the county and of the Alexander Valley Healthcare service areas appears in the Service Area and Population Served chapters.

Figure 10: Sonoma County Population by Known Race/Ethnicity



Economics

According to data compiled by the U.S. Bureau of Economic Analysis (BEA), Sonoma County's 2016 gross domestic product (GDP) — the most recent available figure — was $27.3 billion.[5]

The county benefits from a diverse employment base. The top six categories of employment are education and health care; retail trade; professional, scientific, and administration occupations; leisure and hospitality (associated with the county's tourism business); manufacturing; and construction.

The AVH service area also has a diverse economic base, including a mixture of education and health care; light manufacturing; professional/scientific; retail trade; and tourism, notably including a casino in Geyserville. Most businesses fall into the small employer category, and many jobs are seasonal.

[5] Cited in Sonoma County Economic Development Board and Sonoma County Workforce Investment Board, *2018 Sonoma County Indicators, Unabridged Edition* (Santa Rosa, Calif.: Sonoma EDB, Nov. 2018), retrieved from http://sonomaedb.org/Data-Center/Indicators/.

Table 1: Employment by Occupational Category, Sonoma County, AVH Service Area, Cloverdale, and Geyserville, 2012–2016

	Employment					
	Sonoma County		AVH Service Area		Cloverdale	Geyserville
Occupational Category	#	%	#	%	#	#
Management, business science, arts occupations	88,717	35.4%	1,270	27.1%	1,111	159
Service occupations	49,750	20.4%	1,004	21.4%	884	110
Sales & office occupations	56,338	23.1%	1,161	24.7%	1,099	62
Natural resources and maintenance occupations	25,486	10.4%	613	13.1%	548	85
Production, transportation, and material moving	23,644	9.7%	643	13.7%	590	53
Total civilian employment	**243,985**	**100.0%**	**4,701**	**100.0%**	**4,232**	**469**

Civilian employment totals are for persons aged 16 and older. No breakout was available for Hopland. Source: U.S. Census Bureau, 2012–2016 American Community Survey 5-Year Estimates.

Table 2: Employment by Industry, Sonoma County, AVH Service Area, Cloverdale, and Geyserville, 2012–2016

	Employment					
	Sonoma County		AVH Service Area		Cloverdale	Geyserville
Industry	#	%	#	%	#	#
Agriculture, forestry, fishing, and mining	7,704	3.2%	514	10.9%	382	132
Construction	18,788	7.7%	187	4.0%	159	28
Manufacturing	24,475	10.0%	704	15.0%	662	42
Wholesale trade	7,055	2.9%	130	2.8%	125	5
Retail trade	28,686	11.8%	379	8.1%	339	40
Transportation, warehousing, and utility	8,172	3.3%	184	3.9%	179	5
Information	4,720	1.9%	71	1.5%	66	5
Finance, insurance, real estate, rentals, and leasing	15,195	6.2%	192	4.1%	184	8
Professional, scientific, management and administration, and waste management	28,249	11.6%	409	8.7%	358	51
Education, health care, and social assistance	51,185	21.0%	1,003	21.3%	929	74
Arts, entertainment, recreation, food, and accommodations	26,721	11.0%	511	10.9%	451	60
Other services, except public administration	13,391	5.5%	190	4.1%	188	2
Public administration	9,646	4.0%	227	4.8%	210	17

No breakout was available for Hopland. Source: U.S. Census Bureau, 2012–2016 American Community Survey 5-Year Estimates.

The distribution of employment by industry in AVH's service area differs from Sonoma County as a whole in several key ways:

- In the AVH service area, agriculture (including wine grapes), forestry/lumbering, and fisheries account for 10.9 percent of employment, compared to only 3.2 percent of all employment in the county. That is not surprising, since a substantial portion of Sonoma County agriculture is located in the Healdsburg-Geyserville-Cloverdale area. This area also has a major fish hatchery.

- Manufacturing accounts for 15 percent of jobs in the AVH service area, compared to about 10 percent countywide. However, construction account for only 4 percent of service area jobs and 7.7 percent of all jobs countywide.

- Professional and scientific occupations account for only 8.7 percent of service area employment, compared to 11.6 percent of countywide employment.

- Retails sales jobs are far more prevalent in central Sonoma County, reflecting that area's greater population density. Retail accounts for 11.8 percent of all county employment, but only 8.1 percent of jobs in the more sparsely populated AVH service area.

Table 3: Leading Private Employers, Sonoma County, 2018

Company	No. of Employees
Kaiser Permanente	3,671
Graton Resort & Casino	2,000 (est.)
St. Joseph Health System	1,740
Keysight Technologies	1,500
Jackson Family Wines, Kendall-Jackson Wine	1,071
Sutter Medical Center of Santa Rosa	1,045
Amy's Kitchen	1,022
Oliver's Market	783
Hansel Auto Group	656
AT&T	600 (est.)
Redwood Credit Union	521
Exchange Bank	406
River Rock Casino	350
Wells Fargo Bank	320
Ghilotti Construction Company	300
Korbel Wineries	290
La Tortilla Factory	265
Clover Sonoma Dairy	250
Sonoma Media Investments	224

Source: North Bay Business Journal, "2018 Book of Lists Online," *http://lists.northbaybusinessjournal.com/?djoPage=view_html&djoPid=10166*

As indicated in the preceding table, healthcare organizations such as Kaiser Permanente and the two tertiary care hospitals in the Santa Rosa area are among the county's 10 largest private employers. Other large employers include tourism businesses such as casinos; a number of wineries; financial institutions; grocery chains; a construction firm, food producers, AT&T; and a well-known dairy.

One of the leading manufacturing employers in Sonoma County is Amy's Foods, an organic frozen foods producer and leader in a growing organic food movement within the county. Another is La Tortilla Factory, a maker of whole grain, low-carbohydrate, non-GMO tortillas, pasta, and noodle products.

Although Hispanic residents remain a minority of the county's population, their role in local business has grown substantially. A 2017 report by the Sonoma County Economic Development Board noted that the number of Hispanic-owned businesses in the county grew 24 percent between 2007 and 2015, from 4,056 businesses to 5,024. By that time, more than one in five new businesses in the county were Hispanic-owned.[6]

Small businesses comprise a substantial portion of Sonoma County's economy. According to the Economic Development Board, the county had a total of 19,840 business establishments in 2016, of which more than half (54.5 percent) had fewer than five employees.[7]

The prevalence of small businesses may be one reason for Sonoma County's relatively low average wages, which are significantly below both the state and national averages.[8]

In 2016, Sonoma County also had 45,132 self-employed individuals.[9] While some of these "nonemployer establishment" businesses are undoubtedly entrepreneurial ventures, there is growing concern statewide over the emergence of the so-called "gig economy" and the trend of businesses classifying workers (often inappropriately and sometimes illegally) as independent contractors rather than employees. The Economic Development Board says the number of self-employed individuals in Sonoma County grew 8.9 percent between 2011 and 2016.

As independent contractors, workers must bear a significantly greater proportion of payroll and other taxes, are not eligible for employer-subsidized health insurance, and often have

[6] Sonoma County Economic Development Board, *2017 Hispanic Demographic Trends: Demographics Report* (Santa Rosa, Calif.: Sonoma EDB, April 2017), retrieved from *http://sonomaedb.org/Data-Center/Demographics/*.

[7] 2018 Sonoma County Indicators.

[8] Ibid, based on U.S. Census data for Q4 2017.

[9] 2018 Sonoma County Indicators.

substantially less stable incomes than do hourly or salaried employees, all of which can have a significant negative effect on their ability to afford housing, child care, and health care.

UNEMPLOYMENT

Sonoma County's unemployment rate has improved markedly since the recession. There has been significant job growth in all sectors over the past 10 years. Data from the U.S. Bureau of Labor Statistics indicates that countywide unemployment peaked at 11.1 percent in January 2011.[10] According to the California Economic Development Department (EDD), Sonoma County unemployment has since fallen to only 3.0 percent as of July 2019, below both the national unemployment rate of 3.7 percent and the statewide rate of 4.1 percent. Unemployment in Cloverdale is only 1.9 percent.[11]

AGRICULTURE

Agriculture remains a major sector of the Sonoma County economy, with an economic impact far exceeding the number of persons directly employed in the industry. Agriculture has been an ongoing source of both initial and ongoing employment for many of the county's lowest-income residents, particularly Hispanic immigrants. The raising of livestock and the processing of related products such as milk, butter, cheese, and eggs tend to generate more year-round employment, while the seasonal harvesting of apples, vegetables, and other crops draw large numbers of migrant and seasonal agricultural workers to Sonoma County.

The economic value of Sonoma County's agricultural output has grown 86 percent since 2010 and in 2018 topped the $1 billion mark for the first time, with a reported total value of $1,106,662,100. This total, an increase of 23.8 percent from 2017, does not include other products or economic activities based on these crops (e.g., winemaking, tourism, or packaged frozen foods).[12]

Much of the growth was due to a 34.4 percent increase in the value of wine grapes. With a 2018 value of $777.6 million, wine grapes now account for 70.2 percent of the total dollar value

[10] 2018 Sonoma County Indicators.

[11] California Economic Development Department (EDD) preliminary data (not seasonally adjusted) for July 2019, retrieved from *https://www.labormarketinfo.edd.ca.gov/data/labor-force-and-unemployment-for-cities-and-census-areas.html*.

[12] Sonoma County Dept. of Agriculture/Weights & Measures, *2018 Sonoma County Crop Report* (Santa Rosa, Calif.: Sonoma County Dept. of Agriculture/Weights & Measures, Aug. 2019).

of the county's agricultural products, exceeding the combined annual value of *all* Sonoma County agricultural output just a decade ago.

Table 4: Crops or Livestock Products with Annual Value Over $1 Million, Sonoma County, 2017–2018

Crop or Product	2017 Sales	2018 Sales
Wine grapes	$578.3 million	$777.7 million
Milk	$137.2 million	$141.2 million
Miscellaneous poultry	$47.4 million	$41.0 million
Misc. livestock and poultry products	$39.7 million	$38.9 million
Cattle and calves	$20.4 million	$20.7 million
Sheep and lambs	$9.6 million	$11.3 million
Nursery – ornamentals	$11.7 million	$20.4 million
Nursery – miscellaneous	$14.2 million	$18.1 million
Nursery – cut flowers	$4.2 million	$6.1 million
Nursery – bedding plants	$5.1 million	$5.6 million
Vegetables	$8.4 million	$8.4 million
Apples – late varieties	$2.2 million	$2.4 million
Apples – Gravenstein	$1.1 million	$1.2 million
Silage rye and oats	$3.0 million	$1.5 million
Rye and oat hay	$1.0 million	$1.2 million
Total (including other categories not shown)	**$894.2 million**	**$1,106.7 million**

Source: Sonoma County Dept. of Agriculture/Weights & Measures, Sonoma County Crop Reports, 2017 and 2018

The preeminence of wine growing and harvesting has changed the nature of agricultural employment for many workers. The authors of *A Portrait of Sonoma County*, a report prepared in 2014 for Sonoma County Department of Health Services, explain the significance as follows:

> Vineyard workers are more highly skilled than other agricultural workers because producing grapes for premium wines involves a series of specialized tasks … which must be done by hand and require expertise and experience. Thus, vineyard workers in Sonoma County and neighboring Napa County tend to earn more than farmworker elsewhere in the state, though their wages are still on the low end of the wage distribution. In addition, unlike farms growing crops that require tending by many workers at harvest time and almost none the rest of the year, vineyards have work to be done nine or ten months of the year.[13]

Since the last recognized county-level enumeration of migrant and seasonal agricultural workers is now nearly 19 years old, the impact of this change on the number of migrant workers and families in Sonoma County is difficult to quantify, although agriculture continues to employ more than 7,700 workers countywide.

Sonoma County's six federally funded community health centers in Sonoma County reported serving 1,517 known migrant and seasonal farmworkers in 2018, which is likely an undercount,

[13] Burd-Sharps, Sarah, et al, *A Portrait of Sonoma County: Sonoma County Human Development Report 2014* (Brooklyn, N.C.: Measure of America (A project of the Social Science Research Council), May 2014), p. 65.

since even patients who identify themselves as farmworkers may not indicate whether they are migrant or seasonal workers.

What is clear is that there is a shortage of farmworkers both for vineyards and other agricultural businesses, aggravated by current political hostility to immigration and the emergence of other employment opportunities, such as in the construction industry, during the current economic expansion.[14]

The growing and harvesting of wine grapes is only one aspect of the wine industry's impact on Sonoma County's economy. The county's wineries produce an estimated $7.6 billion dollars (U.S. retail value) of wine each year. They also contribute to destination tourism, a major sector of Sonoma County's economy, discussed below.

TOURISM

The combination of Sonoma County's Pacific Coast location, the county's wine industry, and the presence of several large casinos[15] has made tourism a growing source of revenue and employment in Sonoma County. According to official county reports, destination spending by travelers totaled $2.18 billion in 2018, generating an estimated 22,330 jobs.[16]

Roughly 90 percent of Sonoma County's visitors are domestic U.S. travelers. Ten percent (10 percent) are international visitors, principally from Canada, Western Europe, Mexico, Australia, New Zealand, Japan, and Korea.[17]

Tourism also contributed an estimates $194.8 million dollars in tax revenue to Sonoma County, including transient occupancy taxes (TOT), airport taxes on 500,000 flights a year, and sales taxes.[18] The wide distribution of Sonoma County TOT revenue collection reflects how important tourism is to most areas of the county.

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[14] Morris, Chris, "California Vineyards Struggle Amid Farmworker Shortage," *Fortune*, Sep. 4, 2018, https://fortune.com/2018/09/04/immigration-worker-shortage-california-vineyards/, and Swindell, Bill, "North Coast grape growers depend on foreign workers and machines for annual harvest," *The Press Democrat* [Santa Rosa], Aug. 31, 2018, https://www.pressdemocrat.com/business/8669341-181/north-coast-grape-growers-depend.

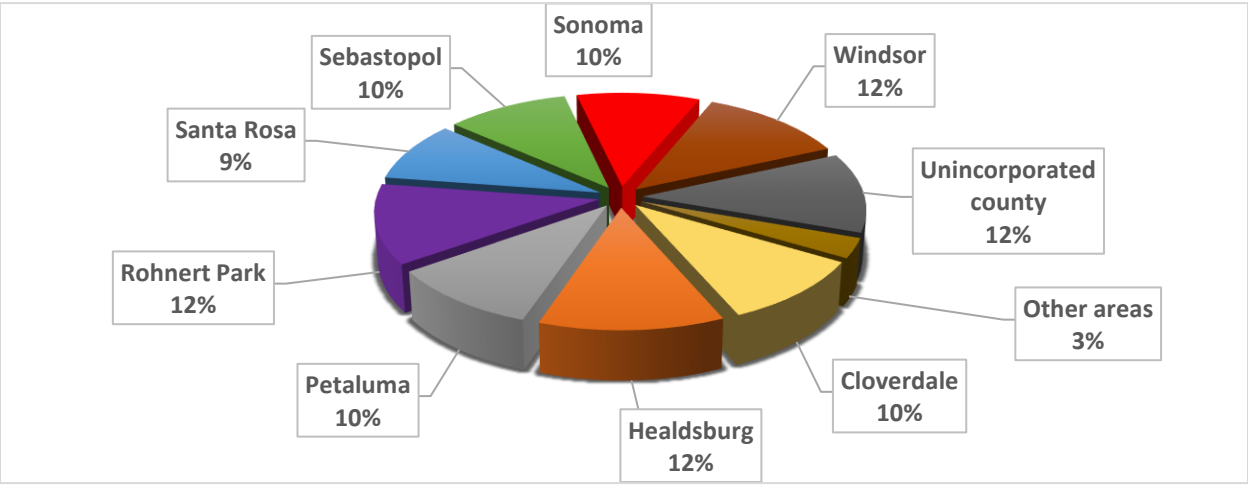
[15] According to TripAdvisor, the county's three largest casinos are Graton Resort and Casino in Rohnert Park, Parkwest Casino in Sonoma, and River Rock Casino in Geyserville; see https://www.tripadvisor.com/Attractions-g1109451-Activities-c53-Sonoma_County_California.html.

[16] Sonoma County Tourism, "Research & Reports: Tourism in Sonoma County," https://www.sonomacounty.com/articles/partners/statistics.

[17] Ibid.

[18] Ibid.

Figure 11: Transient Occupancy Tax Revenues by Area, Sonoma County, 2018



INCOMES

With its higher percentage of professional and scientific employees, diverse employer base, and low unemployment rate, Sonoma County has a higher median household income than does the state as a whole. However, the county's per capita income is still below the statewide average. Neighboring Mendocino County has a lower median income and lower per capita income than do either Sonoma County or the state.

Of the three ZIP Code Tabulation Areas (ZCTAs) that make up AVH's primary service area, Cloverdale has a lower median income than do the county or the state, but per capita income is only slightly below the state average and higher than the county average. Geyserville, with its smaller population, has higher median and per capita income levels. Hopland has the lowest incomes of the three ZCTAs, with a per capita income 20 percent below the state average.

Table 5: Median and Per Capita Incomes, California, Mendocino and Sonoma Counties, Cloverdale, Geyserville, and Hopland, 2017

	Region					
Income Type	California	Mendocino County	Sonoma County	Cloverdale (95425)	Geyserville (95441)	Hopland (95449)
Median	$67,169	$46,528	$71,769	$64,199	$74,688	$50,000
Per capita	$33,128	$37,767	$27,093	$33,076	$38,518	$26,465

Source: U. S. Census Bureau, 2013–2017 American Community Survey 5-Year Estimates

COST OF LIVING

Sonoma County has had a consistently high cost of living. In 2015, Santa Rosa's cost of living was indexed at 134 percent of the U.S. average, led by housing costs that were 187 percent of the U.S. average.[19] By 2019, the same source estimated that the county's overall cost of living had grown to 167.9 percent of the U.S average, while housing costs had soared to 313 percent of the U.S average for owner-occupied, single-family homes.

Housing Costs

Like much of California, Sonoma County has high housing costs that have risen sharply over the past decade. The magnitude of the increases is reflected in HUD's Fair Market Rents (FMR)[20] for the county, which rose by about 50 percent between September 2013 and September 2018.

Table 6: HUD Fair Market Rents, Sonoma County, 2013–2018

Home Type	Sep. 2013	Sep. 2014	Sep. 2015	Sep. 2016	Sep. 2017	Sep. 2018	% Increase, 2013–2018
Studio/efficiency	$820	$898	$934	$1,047	$1,224	$1,254	52.9%
One bedroom	$856	$1,047	$1,090	$1,213	$1,420	$1,447	69.0%
Two bedrooms	$1,251	$1,370	$1,414	$1,572	$1,843	$1,887	50.8%
Three bedrooms	$1,843	$2,019	$2,061	$2,288	$2,681	$2,728	48.0%
Four bedrooms	$2,160	$2,367	$2,489	$2,770	$3,246	$3,298	52.7%

The dramatic increase in rent prices has contributed to a growing housing crisis for low-income Sonoma County residents. In September 2014, HUD Fair Market Rent for a two-bedroom apartment in Sonoma County was $1,370 per month, which was 67.8 percent of the monthly income of a family of four living at the 2015 federal poverty level (FPL). By September 2018, FMR for two-bedroom apartments had grown to $1,887 — 87.9 percent of the monthly income of a family of four living at the 2019 federal poverty level and 44.1 percent of the monthly income of a family of four living at 200 percent of FPL.

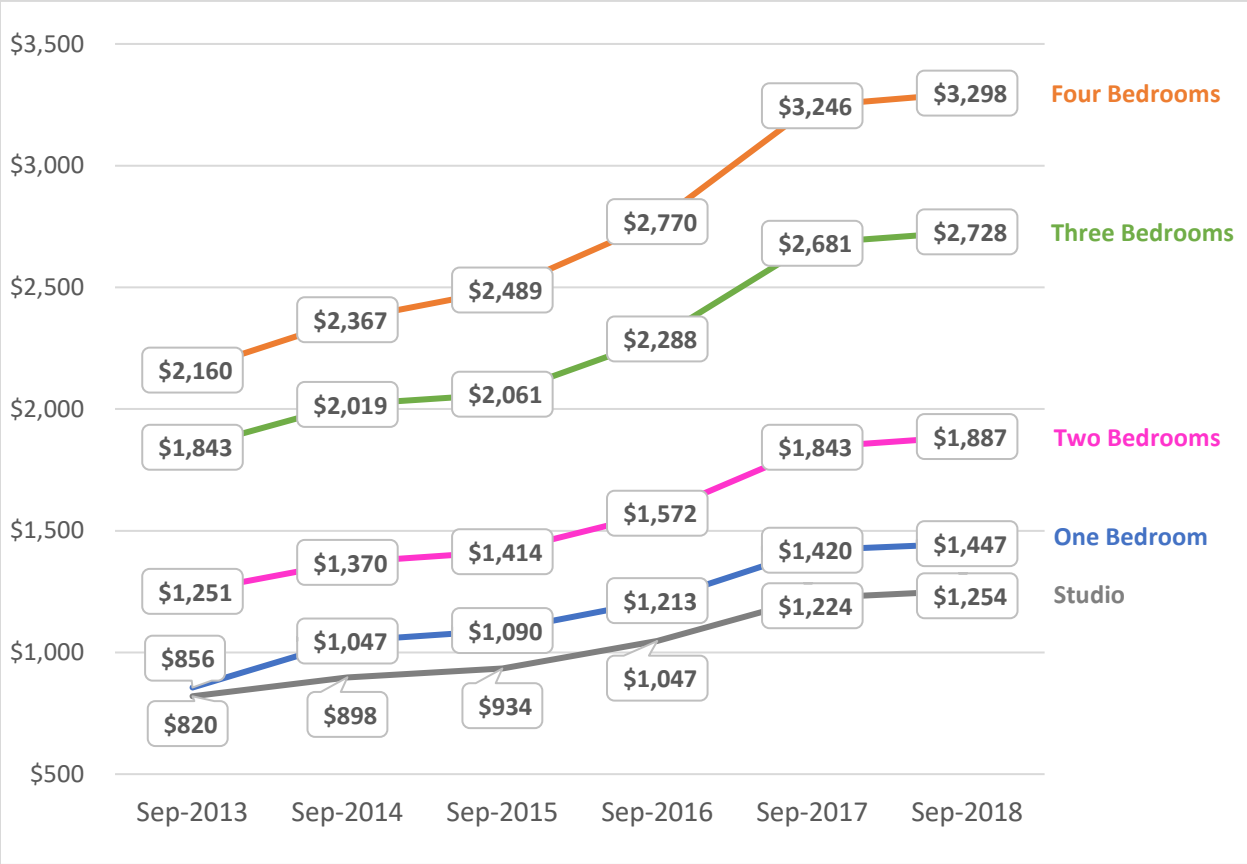
The housing cost situation for a single person or childless couple is no less dire. In mid-2014, FMR for a one-bedroom apartment was $856 per month, 87.3 percent of the monthly income for a single person living at FPL and 32.2 percent of the income of a childless couple living at 200 percent of poverty. By September 2018, fair market rent for a one-bedroom apartment had climbed by 69 percent, to $1,447 per month — 139 percent of the monthly income of a single

[19] Data from Sperling's Best Places, an online real estate guide, *https://www.bestplaces.net/*.

[20] HUD Fair Market Rents are 40th percentile estimates, meaning that 40 percent of rents are below and 60 percent of rents are above this dollar value. This measure is used by HUD for setting Section 8 housing assistance payments and as a measure of comparison between regions.

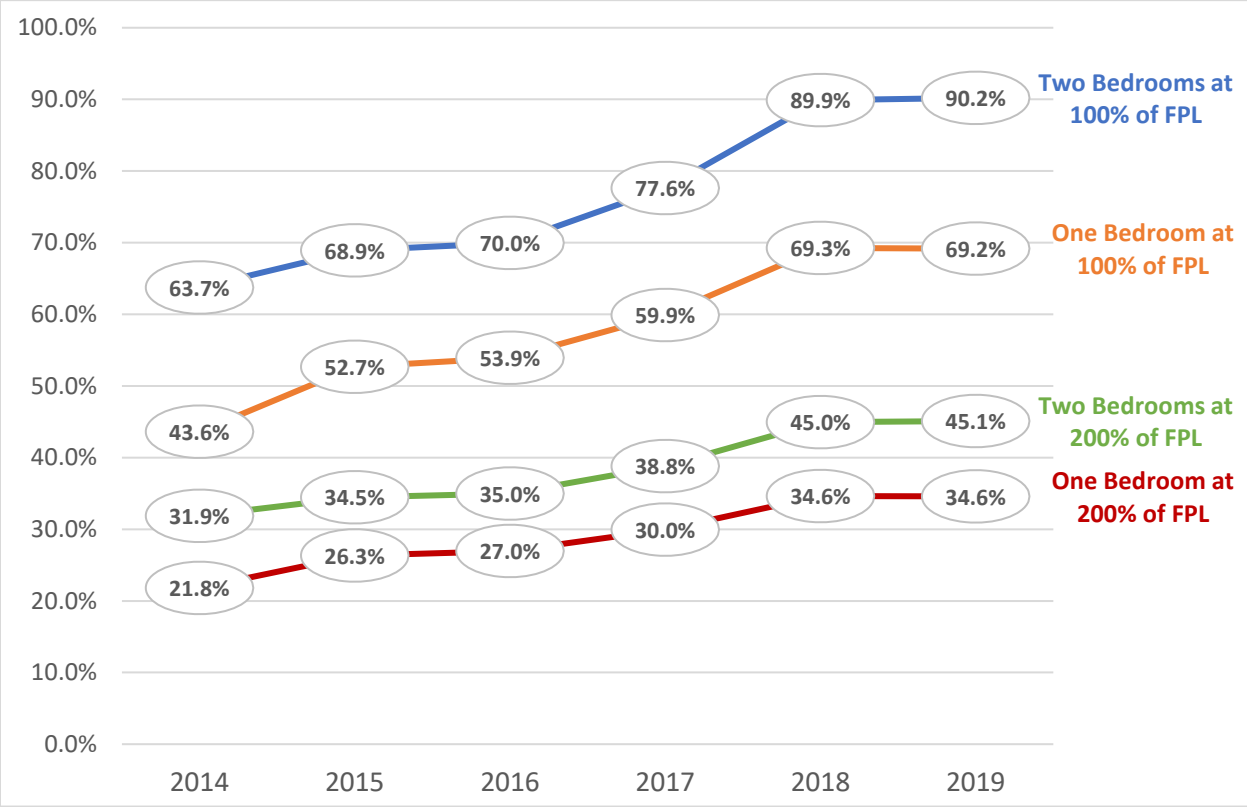
person living at the 2019 federal poverty level and more than half (51.3 percent) of the monthly income of a childless couple living at 200 percent of FPL.

Figure 12: HUD Fair Market Rent by Home Type, Sonoma County, 2013–2018



The impact of the rise in rent prices on low-income families is significant. For example, for a Sonoma County family of four living at 200 percent of the federal poverty level, the cost of renting a two-bedroom apartment grew from 31.9 percent of household income in early 2014 to 45.1 percent of income at the beginning of 2019.

Figure 13: Fair Market Rent as Percentage of Household Income for a Family of Four, Sonoma County, 2014–2019



Located at the north end of Sonoma County, the Cloverdale area has traditionally had slightly lower housing costs than the county average. However, the influx of former residents of areas like Santa Rosa, who are moving ever farther out in search of affordable housing, has brought rents in line with county averages, an increase of 60 percent or more from 2013–2014.

Table 7: HUD Fair Market Rents, Cloverdale, 2013–2018

Home Type	Sep. 2013	Sep. 2014	Sep. 2015	Sep. 2016	Sep. 2017	Sep. 2018	% Increase, 2013–2018
Studio/efficiency	$760	$830	$960	$990	$1,120	$1,254	65.0%
One bedroom	$890	$970	$1,100	$1,140	$1,290	$1,447	62.6%
Two bedrooms	$1,160	$1,270	$1,420	$1,480	$1,680	$1,887	62.7%
Three bedrooms	$1,170	$1,870	$2,070	$2,150	$2,440	$2,728	59.5%
Four bedrooms	$2,000	$2,190	$2,480	$2,610	$2,960	$3,298	64.9%

IMPACT OF 2017–2018 FIRES

HUD's 2018 Fair Market Rents were issued in September 2017, about a month before the Tubbs Fire destroyed 5,297 housing units and damaged thousands more. Housing losses occurred in both middle-class neighborhoods and trailer parks of low-income elderly residents.

A 2018 Sonoma County survey also estimated that 21,482 individuals in Sonoma County were "precariously housed" after the fire, either in temporary housing or doubled up with other families. While about half of those individuals (an estimated 10,694 people) were doubled up due to circumstances that preceded the wildfires, 39 percent had lost homes in the fire while 11 percent lost housing due to the economic impact of the fires (including landlords raising rents sharply). Approximately 7 percent of Sonoma County households reported housing someone on a temporary basis.[21]

In the summer of 2018, two other interrelated wildfires hit the area north of Cloverdale. The Mendocino Complex Fires in Lake and Mendocino Counties to the north (comprised of fires known individually as the River Fire and the Ranch Fire) grew to become the largest fire by area in California history, burning 459,123 acres before being fully contained in late September 2018. One firefighter died and four others were injured fighting these fires. Although the area affected by the fire was mainly open land, 280 structures burned, including 157 residences.

Housing lost due to these fires had an immediate impact on housing costs. Emergency housing vouchers are now $1,900 (HUD Section 8 rate) for a one-bedroom unit. According to the website RentData.org, fair market rents for the Santa Rosa area are now above 99 percent of all the FMRs in the entire country.[22]

The implications of these housing losses for an already tight market are clear: Housing costs will continue to rise and take an ever-greater portion of the incomes of low-income residents. Doubling up in overcrowded homes and homelessness will remain major health concerns.

As of July 2019, Sonoma County had issued 1,181 permits for rebuilding lost housing and 25 permits to replace bridges lost in the fire.[23] Of that total:

- 1,048 permits were for single-family homes.
- 115 permits were for accessory dwelling units (i.e., second units on the same property).
- Only 18 were for multi-family housing.

[21] Jaross, Marissa, and Jenna Gallant, *Sonoma County Homeless Census and Survey: Comprehensive Report 2018* (San Jose, Calif.: Applied Survey Research (ASR), June 2018), retrieved from *https://sonomacounty.ca.gov/CDC/Homeless-Services/Homeless-Count/*.

[22] Data from RentData.org, "Fair Market Rent by ZIP Code," *https://www.rentdata.org/lookup*.

[23] Permit Sonoma, "Sonoma County Rebuilding Permits Data," July 11, 2019, *https://sonomacounty.ca.gov/PRMD/Performance-Data/Rebuilding-Permits-Data/#permits-status*.

Of those permits, the county reports that, as of July 2019:

- 820 housing units were under construction.
- 202 housing units were pending construction.
- 156 housing units had been completed.
- 95 housing units were still in the permit review process.

According to Sonoma County's 2019 homeless census and survey report, an estimated 3,300 residents have moved out of the county since the fires.[24]

Homeless Population

HOMELESS CENSUS AND SURVEY

Sonoma County conducts an annual "point in time" census of homeless populations, in accordance with federal Department of Housing and Urban Development (HUD) requirements. The two most recent counts were conducted in February 2018 (the first homeless census following the Tubbs Fire) and January 2019.

According to these censuses, the number of homeless individuals in Sonoma County grew from 2,835 in 2017 to 2,996 individuals in 2018. This was the first recorded rise in the homeless count since the count peaked in 2011, during the last recession. The 2019 census recorded a slight decrease from the 2018 count, to 2,951 individuals.

A number of local service agencies and advocates consider these figures to be undercounts, for several reasons.

First, the point-in-time methodology depends to some extent on homeless shelters, and many areas of the county (especially rural areas) lack any shelters. Second, some homeless individuals may stay in places that are difficult for census-takers to reach or identify (and some individuals may be reluctant to be counted, fearing harassment by law enforcement). Third, the official counts imply that the large numbers of people temporarily housed after the Tubbs Fire found stable housing in just over a year, which seems improbably optimistic. (The 2019 census report

[24] U.S. Census Bureau, "Annual Estimates of the Resident Population, April 1, 2010, to July 1, 2018,"American Fact Finder, *https://factfinder.census.gov*, cited in Jaross, Marissa, Yoonyoung Kwak, and Jenna Gallant, *Sonoma County Homeless Census & Survey: Comprehensive Report 2019* (San Jose, Calif.: Applied Survey Research (ASR), June 2019), retrieved from *https://sonomacounty.ca.gov/CDC/Homeless-Services/Homeless-Count/*.

estimates that more than 11,000 county residents are still temporarily housed because they lost housing due to the fires or their economic aftereffects.)

Furthermore, the county's official homeless counts are not much greater than the 2,735 homeless patients reported in 2018 by the five local health centers that submit UDS reports. It is highly unlikely that 90 percent or more of a county's homeless population would receive care from community health centers in a single year. (Adding the number of homeless individuals served in 2018 by organizations that do not submit UDS reports, such as the Sonoma Indian Health Project and Sonoma County Health Department clinics, would probably make the total equal to or greater than the county homeless census totals.)

Acknowledging these limitations, the authors of the county's census report also calculate an annualized estimate of total "unique homelessness experiences." (An "experience" is defined as a period of continuous homelessness for a single individual.) The annualized estimate for 2018 was 6,001 unique homelessness experiences, declining to 5,483 unique experiences in 2019. Although these figures reflect experiences rather than unique individuals, the annualized estimates may be closer to the true number of homeless individuals in the county.[25]

Despite their limitations, these point-in-time counts (and their accompanying surveys, discussed later in this section), remain the most detailed available enumerations of the county's homeless population and its characteristics.

HOMELESS DEMOGRAPHICS

Sheltered vs. Unsheltered

Fewer than two out of five of the homeless individuals counted in 2018 and 2019 were in shelters: 1,067 (35.6 percent) in 2018 and 994 individuals (33.7 percent) in 2019. The rest were unsheltered (which included individuals living in vans, cars, or RVs; in encampments; or in abandoned buildings, as well as those sleeping rough on the street).

The homeless population most likely to be sheltered is homeless families with children. However, while the total number of homeless families with children has declined since 2016, the number of families going without shelter has actually increased. In 2016, the point-in-time count recorded 389 homeless families with children; 20 of those families were unsheltered. In 2018, the total number of homeless families had declined to 339, but 32 of those families were

[25] *Sonoma County Homeless Census and Survey: Comprehensive Report 2018*, and *Sonoma County Homeless Census & Survey: Comprehensive Report 2019*.

unsheltered. This year, the count recorded 279 homeless families, 26 of which were unsheltered.

Table 8: Sonoma County Homeless Population, Sheltered and Unsheltered, Point-in-Time Counts, 2018–2019

	Point-in-Time Counts					
	2018			2019		
Category	In Shelter	Not in Shelter	Total	In Shelter	Not in Shelter	Total
All homeless	1,067	1,929	2,996	994	1,957	2,951
Families with children	307	32	339	253	26	279
Unaccompanied children (under 18)	10	24	34	4	113	117
Transition-age youth (18–24)	58	423	481	38	502	540
Chronically homeless	115	632	747	138	537	675
Veterans	63	144	207	68	142	210
Older adults (55+)	143	266	409	171	284	455

Table 9: Sonoma County Homeless Population, Sheltered and Unsheltered, Percentages, 2018–2019

	Percentages			
	2018		2019	
Category	In Shelter	Not in Shelter	In Shelter	Unsheltered
All homeless	36%	64%	34%	66%
Families with children	91%	9%	91%	9%
Unaccompanied children (under 18)	29%	71%	3%	97%
Transition-age youth (18–24)	12%	88%	7%	93%
Chronically homeless	15%	85%	20%	80%
Veterans	30%	70%	32%	68%
Older adults (55+)	35%	65%	38%	62%

Source: 2018 and 2019 Sonoma County Homeless Census data

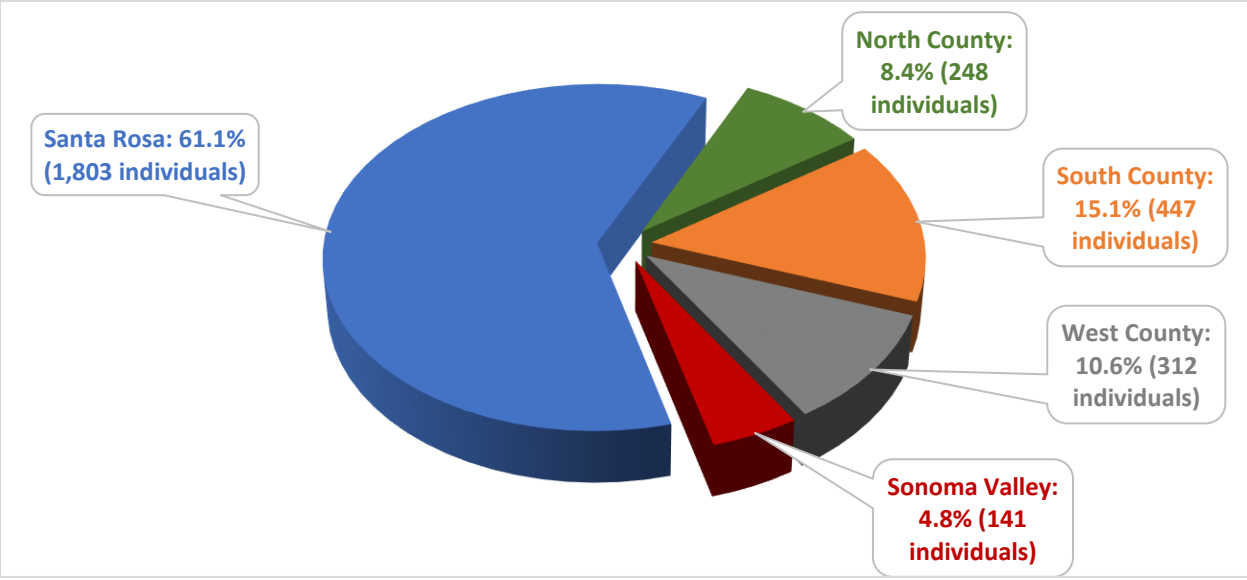
As the tables above indicate, the number of unaccompanied homeless children and young adults 18–24 increased from 515 individuals in 2018 to 657 individuals in 2019. These are extremely vulnerable populations, yet they are the most likely Sonoma County homeless populations to be unsheltered.

Geographic Distribution

More than three-fifths (61.1 percent) of the homeless individuals counted in 2019 were in the Santa Rosa area (which includes the City of Santa Rosa and the surrounding unincorporated areas). Of the remainder, 8.4 percent were in the North County area (which includes Cloverdale, Healdsburg, and Windsor); 15.1 percent were in the South County area (which includes Cotati, Petaluma, and Rohnert Park); 10.6 percent were in the West County area

(which includes the City of Sebastopol); and the remaining 4.8 percent were in the Sonoma Valley area (which includes the City of Sonoma).

Figure 14: Point-in-Time Count of Homeless Individuals by Region, Sonoma County, 2019



HOMELESS DEMOGRAPHICS

Along with the point-in-time counts, Sonoma County conducts in-person representative surveys to assess the demographics and other characteristics of the homeless population. The 2018 survey had 519 homeless respondents; the 2019 survey had 520.

The large majority of respondents in the two most recent surveys have been men (58 percent in 2018 and 64 percent in 2019).

Since 2016, the county has attempted to identify transgender respondents in these surveys, also adding a gender nonconforming/nonbinary/genderqueer category in 2018. Eleven 2018 respondents (about 2 percent) and eight 2019 respondents (about 1.5 percent) identified as transgender. Fewer than 1 percent of respondents in both years identified themselves as gender nonconforming.

The reliability of these figures is questionable for several reasons. First, the survey's authors have elected to classify transgender individuals as neither men nor women, something many transgender people would consider dehumanizing and transphobic. Second, transgender individuals experiencing homelessness are a uniquely vulnerable population, who may be harassed, assaulted, or denied access to shelters or services for being transgender. For these

reasons, some transgender or gender nonconforming respondents may choose not to identify themselves as such, limiting the broader applicability of these results.

Approximately two-thirds of all respondents (69 percent in 2018, 66 percent in 2019) were aged 50 or younger. About one-fifth (just under 20 percent in 2018, 22 percent in 2019) were under 25.

In general, the race/ethnicity of respondents is broadly consistent with Sonoma County's overall demographics. Sixty-two percent of the individuals counted in the 2018 point-in-time census and 65 percent of those counted in 2019 were white. Twenty-eight percent of respondents to both the 2018 and 2019 surveys identified as Hispanic/Latino.

However, the homeless survey questionnaires consider Hispanic/Latino ethnicity separately from race (that is, Hispanic/Latino respondents can also identify themselves as white, multiracial, etc.), so the census report's race/ethnicity projections are not directly comparable to U.S. Census population projections or other demographic data.

Almost one-fifth (19.2 percent) of 2018 respondents and 18 percent of 2019 respondents described their sexual orientation as lesbian, gay, bisexual, queer, or other. This is significantly greater than recent national estimates of the overall LGBT population (which Gallup puts at 4.5 percent in 2017[26]), reflecting the disproportionate economic vulnerability of LGBTQ Americans.

OTHER SURVEY RESULTS

The vast majority of recent homeless survey respondents (84 percent in 2018, 87 percent in 2019) were residents of Sonoma County prior to coming homeless, roughly two-thirds of those (65 percent in 2018, 70 percent in 2019) for more than 10 years.

About one-third of respondents (35 percent in 2018, 30 percent in 2019) reported that they were experiencing homelessness for the first time. Of those individuals who reported being homeless for the first time in early 2019:

- 17 percent were under age 18.
- 33 percent were aged 18–24.
- 36 percent were ages 25–49.

[26] Newport, Frank, "In U.S., Estimate of LGBT Population Rises to 4.5%," Gallup, May 22, 2018, *https://news.gallup.com/poll/234863/estimate-lgbt-population-rises.aspx*.

- 14 percent were age 50 and older.

Forty-four percent of first-time homeless and 57 percent of all respondents in 2019 said they had been homeless for a year or more.

While the majority of survey respondents were unemployed, 22 percent of respondents in both 2018 and 2019 reported being employed. Significant percentages of employed respondents (55 percent in 2018, 37 percent in 2019) reported monthly incomes above the federal poverty level for a single person.

About half of all 2019 respondents said they had first experienced homelessness before they turned 25. Eighteen percent of 2019 respondents (and 21 percent of those under age 25) reported having been in foster care prior to becoming homeless.

Sixteen percent of all 2019 survey respondents said they had at some point traded sex for money or shelter while 7 percent had been victims of sex trafficking (i.e., forced to participate in commercial sex). The figures for respondents under 25 were considerably higher: 23 percent had traded sex for money or shelter and 13 percent had been trafficked.

Thirty-four percent of 2018 and 2019 respondents had previously experienced domestic violence. Those figures may be undercounts, since significant numbers of respondents (13 percent in 2018 and 11 percent in 2019) replied “decline to state” to this question.

REASONS FOR HOMELESSNESS

2018 and 2019 survey respondents cite a variety of reasons for their becoming homeless. About one-fifth (22 percent in 2018, 19 percent in 2019) said the primary reason they became homeless was the loss of a job. Alcohol or drug abuse was another common reason, cited by 17 percent of respondents in 2018, 16 percent in 2019, as was being evicted, cited by 12 percent of respondents in both 2018 and 2019.

More than one-third of respondents (35 percent in 2018, 39 percent in 2019) had lived with friends or relatives prior to becoming homeless, and about one in six (15 percent in 2018, 18 percent in 2019) said an argument with those friends or family members precipitated their current experience of homelessness. One in 10 respondents (11 percent in 2018, 10 percent in 2019) became homeless following a divorce, separation, or breakup.

Health conditions also contributed to the homelessness of many survey respondents:

- 44 percent of 2018 respondents and 42 percent of 2019 respondents reported having some form of disabling condition as defined by HUD.[27]
- 33 percent of 2018 respondents and 38 percent of 2019 respondents reported that they had drug or alcohol problems.
- 35 percent of respondents in both 2018 and 2019 reported psychiatric or emotional conditions.
- 27 percent of 2018 respondents and 25 percent of 2019 respondents had a physical disability.
- 28 percent of 2018 respondents and 25 percent of 2019 respondents had post-traumatic stress disorder.
- 14 percent of 2018 respondents and 9 percent of 2019 respondents had a traumatic brain injury.
- 3 percent had HIV/AIDS.

The incidence of these conditions is even higher among chronically homeless individuals, who by definition are extremely vulnerable.[28] Forty-six percent of chronically homeless respondents in 2019 had one or more chronic health problems, 44 percent reported suffering PTSD, and 61 percent had physical or emotional problems. Almost half (48 percent) had used an emergency room in the past three months.

This suggests strongly that the lack of appropriate housing is also an issue for many homeless individuals.

CHILDCARE COST AND AVAILABILITY

Like housing, the cost and availability of child care present ongoing challenges for Sonoma County families, especially low-income families.

[27] The executive summary of the 2019 homeless census report explains by HUD definitions, a disabling condition is "a development disability, HIV/AIDS, or a long-term physical or mental impairment that impacts a person's ability to live independently but could be improved with stable housing."

[28] The surveys use the HUD definition of "chronically homeless," which is an individual or head of household who has a disabling condition preventing them from maintaining housing or employment and who has been homeless for more than a year (or in at least four episodes totaling 12 or more of the past 36 months).

Data from the most recent biennial California Child Care Portfolio compiled by the California Child Care Resource & Referral Network (which tracks childcare supply and demand issues at the state and local levels to inform policymaking and community discussions)[29] makes clear that California faces a continuing shortage of affordable childcare slots. Statewide, just 23 percent of children of working parents were able to find childcare slots for children under 12 in 2017. In Sonoma County, only 25 percent of working parents found needed child care; the figure for Mendocino County was 24 percent.

This shortage of child care contributes to high prices, which has prompted California to offer state subsidies to offset those costs. In 2016, the state provided subsidies to 315,000 children, but estimated that as many as 1.5 million more needed subsidies they did not receive.[30]

The cost of care varies significantly from region to region. For example, the cost of infant care at a licensed child care center in Alpine County averages $11,700 per year while similar care in San Francisco costs an average of $21,300 per year.

Childcare costs in Sonoma and Mendocino Counties are lower than the state average, but still very high in absolute terms. In 2017, a year of fulltime care for one preschool child at a Sonoma County licensed child care center cost over 50 percent of the gross income of a family of four living at 200 percent of the federal poverty level.

Table 10: Average Annual Cost of Child Care by Type of Licensed Provider, California, Mendocino County, and Sonoma County, 2017

	Annual Cost by Region		
Type of Care	**California**	**Mendocino County**	**Sonoma County**
Licensed Child Care Centers			
Fulltime infant care	$16,452	$12,508	$12,653
Fulltime preschooler care	$11,282	$8,483	$10,056
Licensed Family Child Care Home			
Fulltime infant care	$10,609	$8,540	$10,032
Fulltime preschooler care	$9,984	$8,043	$9,364

Source: California Child Care Resource & Referral Network, *California Child Care Portfolio 2017*

Licensed family child care homes are generally less expensive than licensed child care centers, both statewide and in Sonoma and Mendocino Counties. Unfortunately, the number of licensed family child care centers has been declining. Statewide, the number fell from a peak of 39,300 in 2008 to 27,529 in 2018, while the number of licensed child care centers has remained fairly

[29] California Child Care Resource & Referral Network, *California Child Care Portfolio 2017,* retrieved from https://rrnetwork.org/research/child-care-portfolio.

[30] Ibid.

constant. The number of licensed family child care providers in Sonoma County has declined by 22 percent since 2012, exacerbated by the loss of hundreds of childcare slots due to the fires.[31]

The drop in the number of family childcare homes is especially troubling because they are a primary source of infant and toddler care. Only 6 percent of child care center slots are dedicated to children under age 2, although infants and toddlers account for 36 percent of all requests for child care statewide, 35 percent of requests in Sonoma County, and 26 percent of childcare requests in Mendocino County.

Licensed family child care homes are also the principal source of evening, weekend, and overnight care. Statewide, 41 percent of family child care homes offer such coverage, but only 3 percent of licensed childcare centers do. No child care centers in Sonoma or Mendocino Counties and only 27 percent of licensed family child care homes offer evening, weekend, or overnight child care.

Healthcare Delivery System

Sonoma County's healthcare delivery system is a diverse one, but historically, it has suffered several major issues:

- Limited to available health resources for low-income people.
- Unequal distribution of health providers.
- Imbalance of primary care to sub-specialty care providers.

HEALTH CENTERS

In the early 1990s, local area studies demonstrated that parts of this region had an inadequate number of providers accepting Medicaid or uninsured patients. This led to the federal designation in 1994–1995 of one Medically Underserved Area (MUA) and six Medically Underserved Populations (MUPs).

Each of those areas is now served by one or more federally qualified health centers:

- **Alliance Medical Center**, with clinics in Healdsburg and Windsor

[31] Rumble, Peter, and Lynda Hopkins, "Close to Home: The high cost of county's child care crisis," *The Press Democrat* [Santa Rosa], April 7, 2019, *https://www.pressdemocrat.com/opinion/9464681-181/close-to-home-the-high*.

- **Alexander Valley Healthcare**, based in Cloverdale
- **Petaluma Health Center**, with clinics in Petaluma and Rohnert Park
- **Santa Rosa Community Health Centers**, based in Santa Rosa
- **Sonoma Valley Community Health Center**, based in the City of Sonoma
- **West County Health Centers**, with clinics in Forestville, Guerneville, Occidental, and Sebastopol.

In 2018, these six health center organizations served a total of 108,619 users.[32] More than 85 percent of those patients whose incomes were known had family incomes below 200 percent of the federal poverty level. Almost 60 percent (64,404) were Medi-Cal/CHIP enrollees; 20,903 were uninsured; 13,070 had private insurance (including subsidized plans obtained through the state health insurance exchange), and 10,182 were Medicare beneficiaries.

Eighty-eight percent (95,961) of these 2018 CHC patients received medical services, including 2,489 patients who received prenatal care and 1,240 who delivered in 2018 (representing 25.9 percent of the 4,795 total live births in Sonoma County for that year). Almost 30 percent (32,383 patients) received dental care at a health center. Ten percent (10,638 patients) received mental health services and 1,61 received substance abuse services.

A seventh federally funded health center in Sonoma County is the Sonoma County Indian Health Project (SCIHP), based in Santa Rosa with a satellite clinic in Manchester/Arena Point. Funded by the Indian Health Service (IHS), SCHIP is a nonprofit consortium of tribes formed in 1971. Consortium tribes include Cloverdale Rancheria of Pomo Indians of California; Dry Creek Rancheria Band of Pomo Indians; Federated Indians of Graton Rancheria; Lytton Rancheria of California; Manchester Band of Pomo Indians of the Manchester Rancheria; and the Kashia Band of Pomo Indians of the Stewarts Point Rancheria, which have designated SCIHP as a Tribal Organization under the Indian Self-Determination and Education Assistance Act of 1975 (Public Law 93-638). The Mishewal Wappo Tribe also supports SCHIP. SCHIP is a member of the California Rural Indian Health Board, as well as a member of the Redwood Community Health Coalition.

Five additional federally funded health centers are located in Mendocino County, north of Sonoma County:

[32] Data from 2018 Uniform Data System (UDS) report summaries, retrieved from *https://bphc.hrsa.gov/uds/datacenter.aspx?q=d&year=2018&state=CA#qlist*.

- **Anderson Valley Health Center**, based in Boonville
- **Long Valley Health Center**, based in Laytonville
- **Mendocino Coast Clinics**, based in Fort Bragg
- **Mendocino Community Health Clinic**, with facilities in Ukiah, Lakeport, and Willits
- **Redwood Coast Medical Services**, based in Gualala.

According to UDS reports, these five health centers served 51,443 users in calendar 2018, approximately 58.7 percent of Mendocino County's total population.

Mendocino County's community health centers draw most (61.6 percent) of their patients from the central and northern parts of the county, near Ukiah, the county's largest city and its major hospital resource. Another 27.9 percent of CHC patients are from the coastal area around Fort Bragg and Gualala. Patients from the southern part of Mendocino County, the area nearest Cloverdale, represent only 5.1 percent of the patient population of the county's community health centers.

HOSPITALS

The bulk of Sonoma County's healthcare provider resources are located in and around the City of Santa Rosa, in part because of that city's larger population and in part because of the presence of the county's three largest hospitals and all of the county's tertiary care facilities.

In Sonoma County, those three hospitals account for:

- 70.3 percent of licensed hospitals beds
- 85.3 percent of total discharges
- 82.6 percent of acute care patient days
- 69.0 percent of hospital outpatient visits, and
- 100 percent of reported neonatal intensive care.

Table 11: Sonoma County Hospital Data, 2017

Hospital	Beds	Control Type	Patient Days	Total Discharges	Outpatient Visits	Annual Charity Care
Santa Rosa Memorial Hospital	298	Church	70,991	12,201	249,969	$8,568,810
Sutter Santa Rosa Regional Hospital	84	Private nonprofit	25,523	6,783	39,502	$16,153,075
Kaiser Foundation Hospital – Santa Rosa	173	Private nonprofit	30,667	9,186	134,740	n/a*
Petaluma Valley Hospital	80	Private nonprofit	6,131	2,499	78,165	$1,595,991
Sonoma Queen of the Valley Hospital	75	District	10,126	1,487	46,494	$264,702
Healdsburg District Hospital	42	District	8,400	732	61,702	n/a
Sonoma Specialty Hospital	37	District	2,160	144	3,917	n/a
Total	**789**		**153,998**	**33,032**	**614,489**	**$26,582,578**

* Kaiser Hospitals are not required to report this data to the state. Source: California Office of Statewide Planning and Development (OSHPD), Hospital Summary Data 2017.

The table above does not include two limited service facilities licensed as hospitals: Aurora Behavioral Healthcare in Santa Rosa and Sonoma Development Center, a facility for the mentally ill and developmentally disabled based in Eldridge.

Healdsburg District Hospital is the only hospital in northern Sonoma County. Although the hospital is small, it still provides about 8,400 acute care bed days and a substantial number of outpatient visits per year.

The future of Sonoma Specialty Hospital in Sebastopol (formerly Sonoma West Medical Center and before that Palm Drive Hospital), is currently uncertain. A succession of contracted management firms have operated this district hospital, which continues to struggle financially. In March 2019, district voters approved a plan to offer the hospital for sale or lease to a Modesto-based firm, American Advanced Medical Group, that plans to convert it into a long-term care facility.[33]

IMPACT OF THE AFFORDABLE CARE ACT

Statewide, implementation of the Affordable Care Act has substantially reduced hospital spending on charity care (free or discounted care for low-income patients).

A recent report in *California Healthline*, drawing on California OSHPD data, documents that total hospital free or reduce care costs were more than halved over a four-year period, falling

[33] Fixler, Kevin, "West Sonoma County Hospital Deal For New Owner, User OK'd By Voters" North Bay Business Journal, March 6, 2019, *https://www.northbaybusinessjournal.com/northbay/sonomacounty/9358671-181/sonoma-sebastopol-health-care-real-estate*.

from approximately 2 percent of operating expenses in 2013, before ACA implementation, to only 0.91 percent in 2017. That analysis, based on data from 177 nonprofit hospitals, 80 for-profit hospitals and 54 public hospitals,[34] found similar cost reductions across all three hospital categories (private nonprofit, private for-profit, and public).

This data is further supported by a recent California Health Care Foundation analysis,[35] which found that total charity care spending fell from $3.05 billion in 2013 to $1.33 billion in 2017.

However, examining OSHPD data for Sonoma County hospitals found no such decline in charity care costs. In fact, all reporting hospitals in the county had higher charity care costs in 2017 than they did in 2012. The only exceptions were the smaller Healdsburg District Hospital and Sonoma Specialist Hospitals, which did not supply this data on their last reports, and Kaiser Foundation Hospital, which is not required to report charity care spending to the state.

IMPACT OF WILDFIRES

The Tubbs Fire in 2017 also affected the local health care community.

Kaiser Permanente Medical Center in Santa Rosa was in the line of the fire and was evacuated after smoke from the burning of the Journey's End Mobile Home Park next door began to filter into the medical center. Although the hospital was not burned, it suffered smoke damage and several out-buildings were damaged. It took 17 days to reopen, during which time inpatients were transferred to Kaiser facilities in San Rafael, San Francisco, and Oakland.

Sutter Santa Rosa Regional Hospital also closed due to the fire. The hospital reopened sooner that the Kaiser facility did, but was still not completely operational at the time of its reopening.

Santa Rosa Memorial Hospital's trauma center was able stay open and sustained no structural damage. Memorial, Petaluma Valley Hospital, and Queen of the Valley Hospital all continued to take in people suffering from injuries and smoke inhalation.

A number of nursing homes and Senior Living Facilities were evacuated, as was the Sonoma Developmental Center.

[34] Rowan, Harriet Blair, "Charity Care Spending by Hospitals Plunges," California Healthline, Aug. 12, 2019, *https://californiahealthline.org/multimedia/charity-care-spending-by-hospitals-plunges/*.

[35] California Health Care Foundation, "Uncompensated Hospital Care Costs in California, 2013 to 2017" [data file], April 9, 2019, retrieved from *https://www.chcf.org/publication/uncompensated-hospital-care-costs-california-2013-2017/*.

The Vista Community Health Center, the largest Santa Rosa Community Health Centers (SRCHC) site, was severely damaged during the fire. Although the building survived, its contents were an almost total loss, which has forced the center to close for more than a year and a half. It finally reopened and began seeing patients again on Aug. 19, 2019, around the time of this writing. In the interim, patients were transferred to other SRCHC sites, temporary clinics, and the recently opened new clinic site on Dutton Avenue.

PHYSICIAN SUPPLY

Like Sonoma County hospitals, the county's physician supply tends to be concentrated in urban areas, in particular the City of Santa Rosa. This was one of several important findings from a study conducted in 2010 for the Sonoma County Department of Health Services and Sonoma County Medical Society. (Although now nine years old, that report, entitled *Primary Care Capacity in Sonoma County*,[36] remains the most detailed available study of primary care physicians in Sonoma County, underpinned by an extremely high physician participation rate.)

At the time of that study, 64 percent of the county's primary care physicians were located in Santa Rosa, although the city has only about 35 percent of the county's total population. This skewed distribution has contributed to much lower ratios of primary care physicians to population in the county's smaller towns and cities.

Another important finding of that study was that a disproportionate number of Sonoma County's physicians have specialty practices. At the time of the survey, there were 1,071 physicians (MDs and DOs) in Sonoma County.[37] Of those, only about 46 percent (488) had a primary care specialty and only 81 percent of those (395) were actually working in primary care: 67 percent in family medicine, 17 percent in general internal medicine, 17 percent in general pediatrics, and 15 percent in geriatrics.

The study's authors noted that while Sonoma County's overall population-to-physician ratio is better than the state norm, the county's physician-to-population ratio for active primary care physicians, estimated at 61 per 100,000 population in 2010, was at the low end of the provider supply benchmarks established by the Commission on Graduate Medical Education (COGME), which call for 60 to 80 physicians per 100,000 population. Sonoma County's ratio was also

[36] Maddux-González, Mary, and Jenny Mercado, *Primary Care Capacity in Sonoma County*, prepared for Sonoma County Department of Health Services, Health Action, and Sonoma County Medical Association, Dec. 2010.

[37] According to the Medical Board of California, Sonoma County had 1,557 licensed MDs in 2017–2018; see *http://www.mbc.ca.gov/About_Us/Statistics/Licenses_by_County.aspx*. The Osteopathic Medical Board of California does not publish a count of licensees by county, but OSHPD reported that as of 2012, there were 67 doctors of osteopathy in Sonoma County. See Healthcare Workforce Clearinghouse, "Fact Sheet: Osteopathic Physicians and Surgeons (DO)," Sep. 2012, retrieved via *https://oshpd.ca.gov/workforce-capacity/workforce-data/*.

below the somewhat higher requirements defined by HRSA's Physician Requirements Model (PRM), which also reflects population-specific primary care utilization factors.

Since 2010, the imbalance between primary care and specialty physicians appears to have become even more severe. A 2015 study by the California Health Care Foundation (CHCF) found that Sonoma County had a total of 311 primary care physicians, or 61.9 per 100,000 population, along with 523 sub-specialty physicians, or 104.2 sub-specialists per 100,000 population. A subsequent repetition of the CHCF study, conducted in 2017, found the same ratio of primary care physicians to population as in 2015.[38]

The most recent available OSHPD data confirms that northern Sonoma County's overall provider supply is considerably less rich than is Santa Rosa's. Combining OSHPD physician data for the Medical Service Study Areas (MSSA) corresponding to Cloverdale (MSSA 206), Geyserville-Healdsburg (MSSA 205.1), and Windsor (MSSA 205.2) reveals that the primary care physician supply in those areas is one primary care physician per 1,984 civilian residents. By comparison, the Santa Rosa area has approximately one primary care physician for every 901 residents.

In 2010, almost all (99 percent) of Sonoma County's primary care physicians reported that they were accepting new patients. However, while 83 percent were accepting new Medicare patients, only 28 percent were open to new Medi-Cal patients. Most (97 percent) of the primary care physicians said they would accept uninsured patients, but most of Sonoma County's uninsured patients are likely to remain dependent on health centers and other providers that offer sliding scale discounts.

The 2015 CHCF report found that acceptance Medi-Cal among the county's primary care physicians remains lower than acceptance of Medicare or private insurance, but somewhat better than acceptance of uninsured patients.

The county's physician supply issues have been further exacerbated by the recent wildfires. More than 200 physicians — fully one-sixth of all physicians in Sonoma County — lost their homes in the Tubbs Fire. Including nurses, medical technicians, case managers, and facility engineers, more than 400 healthcare professionals lost homes or were otherwise displaced due to the fire.[39] It is still too early to quantify the long-term impact of these losses on Sonoma

[38] California Health Care Foundation, "Number of Active Patient Care Physicians (MDs), by County and Specialty, California, 2015" [data file], Aug. 18, 2017, retrieved from *https://www.chcf.org/publication/california-maps-primary-care-specialist-physicians-county/*.

[39] Espinoza, Martin, "Hundreds of Sonoma County doctors, medical professionals displace by fires," *The Press Democrat* [Santa Rosa, Oct. 24, 2017, *https://www.pressdemocrat.com/news/7546178-181/hundreds-of-sonoma-county-doctors*.

County's provider supply, but it seems likely that the fires will exacerbate existing shortages and possibly create new ones in specific specialty areas.

Alexander Valley Healthcare remains the only medical practice in the Cloverdale MSSA.

DENTISTS

According to the Dental Board of California, Sonoma County had 400 active licensed dentists as of Oct. 31, 2018, for a dentist-to-population ratio of approximately one dentist for every 1,258 residents — very similar to the statewide average of approximately one dentist for every 1,243 residents.[40] The Robert Wood Johnson Foundation's 2019 County Health Rankings reported a ratio of one dentist per 1,140 county residents.

A 2011 report by the Sonoma County Oral Health Task Force revealed that the supply of dentists for the county's low-income population was considerably smaller. That report noted that according to 2010 OSHPD data, only 15 dentists in the entire county accepted Medi-Cal, putting the ratio of Medi-Cal enrollees to participating dentists at 7,266 to one.[41]

As of this writing, the Denti-Cal Provider Directory currently shows only 16 general practice dentists in Sonoma County, all but one of them located in Santa Rosa.[42] (This list does not include community health centers that offer dental services to Medi-Cal patients.)

Since the 2011 report, all six of the county's federally qualified health centers have expanded their dental services, more than doubling their capacity. In their 2018 UDS reports, the six FQHCs reported a total of 32,383 dental users. However, medical users continued to outnumber dental users by about three to one, suggesting that dental provider supply still lags well behind overall demand.

Alexander Valley Healthcare was one of the CHCs that expanded dental capacity and is the only dental practice in its service area accepting Medi-Cal or offering sliding scale discounts.

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[40] Fisher, Laura, "Memorandum: DAC Agenda Item 5: Update on Dental Assisting Licensing Statistics," Dental Board of California, Dental Assisting Council, Oct. 31, 2018, *https://www.dbc.ca.gov/about_us/meetings/materials/20181129mm.pdf*. The population data the board uses is from the California Dept. of Finance Demographic Research Unit and differs somewhat from the U.S. Census estimates cited elsewhere in this report; the board cites 2018 Sonoma County population as 503,332 and state population as 39,809,693.

[41] Pacific Health Consulting Group, *Final Report*: *The Sonoma County Task Force on Oral Health*, June 1, 2011. The June 2015 Medi-Cal Managed Care Enrollment Report lists Sonoma County Medi-Cal enrollment as 108,692, about the same as the earlier report's estimate of 109,000 low-income patients.

[42] Retrieved from *https://www.denti-cal.ca.gov/find-a-dentist/*.

HEALTH INSURANCE COVERAGE

California fully embraced the Affordable Care Act, implementing both ACA Medicaid expansion and a state-run, federally subsidized insurance marketplace, Covered California®. The state also integrated a number of county-run indigent programs into the expanded Medi-Cal, including the County Medical Services Program (CMSP) in which Sonoma County participated.

In the first few years after ACA implementation, the number of residents covered by the state's indigent programs (including Medi-Cal and CMSP) rose dramatically, from 11 percent of the county population to 15.6 percent, close to the 16 percent projected by early estimates.[43]

The same projections suggested that the percentage of Sonoma County residents with private insurance would rise from 60 percent to 65 percent. However, 2017 Census estimates indicate that despite the improvements in the job market and the availability of subsidized plans through Covered California, only 62.5 percent of Sonoma County residents now have private insurance. This may reflect the high cost of Covered California plans even with subsidies.

Perhaps for similar reasons, the percentage of Sonoma County residents who remain uninsured, which was projected to drop from 14 percent to 4 percent, remains at 8.4 percent. Nevertheless, these gains over five short years are still significant.

Table 12: Health Insurance Coverage in Sonoma County, 2017

Insurance Type	Residents	Percentage
Uninsured	41,950	8.4%
Private health insurance	310,507	62.5%
Medicare	64,568	13.0%
Medicaid (Medi-Cal)	77,329	15.6%
Other public insurance*	2,336	0.5%
Total population for whom health insurance status was determined	496,690	100.0%

*Includes military (TRICARE)/Veterans Administration coverage and other state or county programs. Source: U.S. Census Bureau, 2017 American Community Survey.

MANAGED CARE

Managed care insurance plans have been a prominent feature of Sonoma County's healthcare system for more than three decades. For a time, there were two dominant managed care plans in the area: Health Plan of the Redwoods (HPR) and Kaiser Permanente, both of which

[43] BK Consult, *Sonoma County Community Health Assessment: Sonoma County 2013–2016* (Santa Rosa, Calif.: BK Consult, 2016), retrieved from https://www.sutterhealth.org/pdf/for-patients/chna-archive/santa-rosa-2013-chna.pdf. The Sonoma County Health Needs Assessment 2013–2016 was a joint community needs assessment conducted by the major hospitals and Sonoma County.

competed with traditional health insurance providers such as Anthem Blue Cross and Blue Shield in Sonoma County's employer-funded health insurance market.

The bankruptcy of Health Plan of the Redwoods in the late 1990s had a significant impact on Sonoma County providers that is still felt to some extent today. Unlike Kaiser, which is a staff model HMO, HPR — which grew to almost 100,000 members before its financial collapse — worked through contracts with individual practice associations (IPAs). In many cases, those IPAs covered as many as 60–80 percent of the patients of the county's private practices. When HPR collapsed, most of those IPAs closed, encouraging physician retirements and discouraging new physicians from entering the local market.

This created a vacuum that allowed Kaiser to increase its share of both the employer-supplied health insurance market and Sonoma County's Medicare Advantage patients. The same vacuum also helped to drive the expansion of the county's then relatively new community health centers.

In recent years, California has shifted its Medicaid program, Medi-Cal, to managed care models throughout most of California. In Sonoma County, as in most of the counties of Northern California, Medi-Cal patients are covered under contract by Partnership HealthPlan of California (PHP), a County Organized Health System (COHS) model HMO that now has over 530,000 California members. The COHS model does not use IPAs, but rather connects directly to the 230 practices in its network.

Sonoma County community health centers have a unique relationship with PHP, in which the various health centers contract with Partnership as a group. (The exception is Sonoma County Indian Health Project, which has a unique rate.)

In many ways, this model is functionally similar to staff model HMOs, establishing common policies, care protocols, formulary, and data gathering and sharing standards with input from the contracting providers. Providers receive financial incentives for meeting preventive health targets and are paid bonuses during financially successful periods, as well as additional pay-for-performance bonuses through a quality improvement program (QIP).

ORGANIZED CARE SYSTEMS

Even prior to passage of the ACA, with its emphasis on "value-based" care, Sonoma County's healthcare system was undergoing a paradigm shift away from treating patients' presenting problems toward the systemic management of patient population health. The goals of this new paradigm include providing timely care to prevent illness; avoiding costly emergency room or

hospital services; coordinating care to prevent readmissions; and tracking system performance in terms of quality, cost, and outcomes.

This shift has entailed a move toward organized systems of care such as HMOs, emphasizing strategies such as:

- Adoption of patient-centered medical home practices within provider organizations
- Increasing continuity of care and continuity of providers through dedicated patient panels
- Use of dedicated teams of support staff, working with the same providers over time to improve team coordination and ability to assist patients
- Designing schedules to insure same-day services are available for patients who need them while still effectively managing clinical workflows to prevent provider burn-out
- Use of electronic health records and other tools to:
    - Track patients and recall them as needed for follow-up
    - Foster communication and manage information flow between team members
    - Expand communication between the care team and patient
    - Manage information sharing between primary care providers and referral specialists, hospitals, skilled nursing homes, and home health agencies
    - Manage all of a patient's prescription and ordering medications through e-prescribing systems
    - Order lab tests and receive and communicate lab results
    - Track outcomes and performance measures in order to measure quality of care
    - Gather input from patients on the quality of the care they receive.

Alexander Valley Healthcare has been part of this shift, both as an individual health center and through its participation in the Redwood Community Health Coalition, a four-county coalition of community health centers, headquartered in Petaluma. Using funding from HRSA, Kaiser's Community Benefit Program, the California Primary Care Association, several private

foundations, and pooled PHP bonus dollars, this health center-controlled network (HCCN) has embraced the new care model and worked jointly to speed the process of transformation.

AVH is a National Committee for Quality Assurance (NCQA) recognized Patient-Centered Medical Home (as are all of Sonoma County's community health centers, which worked jointly to attain that recognition). These FQHCs have adopted variations on the care team model, employ patient panel management similar to Kaiser's, and use EHRs to track patients and manage care delivery.

Sonoma County FQHCs have performed well on HRSA's quality improvement measures and on the measures assessed by Partnership HealthPlan's quality improvement program (QIP). Most health centers in the county are scoring among the top 20 out of the 230 practices contracting with PHP. AVH regularly receives bonus payments based on QIP results as well as HRSA Quality Improvement Awards.

By 2018, an estimated 70 percent of Sonoma County's 500,000 residents (approximately 348,800 people) were being served in organized care systems, including:

- 190,000 residents with private health insurance, including 177,000 Kaiser Permanente members[44] and approximately 13,000 patients served by FQHCs in 2018.
- 24,000 people enrolled in non-Kaiser Medicare Advantage plans.[45]
- 10,200 Medicare beneficiaries served by FQHCs in 2018.
- 103,700 residents enrolled in Medi-Cal through Partnership HealthPlan of California, 64,404 of whom were served by FQHCs in 2018.
- 20,900 uninsured residents served by FQHCs.

RANKING SONOMA COUNTY HEALTH CARE

The impact of this transformation is apparent in the biennial Scorecard of Local Health Systems issued by The Commonwealth Fund. In the 2012 scorecard, the Santa Rosa hospital referral region (HRR), which includes about 95 percent of Sonoma County, ranked 63rd nationally. By 2016, the Santa Rosa HHR ranked 23rd out of 305 regions nationwide, having improved in 17 of the 32 indicators considered and declined in only one.

[44] Cited in *Sonoma County Community Health Assessment: Sonoma County 2013–2016*.

[45] Ibid.

Santa Rosa HRR is now ranked in the top quintile in three out of four overarching topic areas:

- Prevention and Treatment
- Avoidable Hospital Use and Cost
- Healthy Lives.

However, there were measures on which the Santa Rosa HHR scored in lower quartiles. In particular, the Santa Rosa region had fourth quintile scores on two Access & Affordability measures:

- Seventeen percent of at-risk adults were without a routine medical visit in the past two years, compared to 6 percent in the best areas.
- Seventeen percent of at-risk adults were without a dental visit in the past year, compared to only 7 percent in the best region.

As The Commonwealth Fund notes, even high-performing healthcare still have opportunities for improving outcomes, lowering costs, or both.

SERVICE AREA

Defining the Primary Service Area

Under federal law, the area served by a federally funded community health center (CHC) is known as the **catchment area**. HRSA also describes the catchment area as a **service area**. HRSA's Bureau of Primary Health Care (BPHC) defines a CHC's service area as the set of ZIP Codes in which **at least 75 percent of the health center's patients reside**.

BPHC requires that each CHC annually review its service area boundaries to determine whether that service area continues to accurately reflect the origin of the health center's patients and assess whether there are other geographic areas in the region whose residents may need healthcare services.

Historically, the principal service area of Alexander Valley Healthcare (AVH) has included three ZIP Codes: two in northern Sonoma County and one continuous ZIP Code in Mendocino County:

- **Cloverdale**: ZIP Code 95425
- **Geyserville**: ZIP Code 95441
- **Hopland**: ZIP Code 95449.

In its community needs assessments, AVH examines patient and patient origin data in two ways:

(1) By looking at the ZIP Code of residence of its unduplicated users in a single calendar year, and

(2) By profiling all unduplicated users over the two previous calendar years.

Examining two years of unduplicated patient data has proven a more accurate means of identifying all of the patients who look to AVH as their **principal source of care**, including those who do not have a face-to face encounter with a licensed provider in every year, but may use other services during that period.

This multi-year assessment process is also a valuable method for identifying patients with active health problems who may be underutilizing services.

Based on both of these approaches, the three ZIP Codes of the historical service area continue to be home to over 75 percent of AVH's patients in both profiles.

- In the most recent one-year profile, the 2018 calendar year, AVH served 4,122 unduplicated patients, of whom 3,374 (81.9 percent) were residents of these three ZIP Codes.

- In the most recent two-year profile period (Jan. 1, 2017 – Dec. 31, 2018), AVH served 5,445 unduplicated patients, of whom 4,313 (79.2 percent) were residents of these three ZIP Codes.

Ninety-five (95.0) percent of the patients who reside in AVH's service area — and 75.2 percent of all AVH patients — live in the City of Cloverdale, ZIP Code 95425.

Table 13: AVH Patients by ZIP Code/ZIP Code Tabulation Area (ZCTA), 2017–2018

ZIP Code	Post Office Name	Number of Patients	Percentage of Patients in Service Area	Percentage of All Patients
95425	Cloverdale	4,097	95.0%	75.2%
95441	Geyserville	135	3.1%	2.5%
95449	Hopland	81	1.9%	1.5%
	TOTALS	**4,313**	**100.0%**	**79.2%**

However, the number of patients coming from outside the service area continues to grow at a faster rate than the number of patients residing in the service area. From the 2013–2014 period to the 2017–2018 period, the total number of patients from all areas increased by 13.5 percent, but the total number of patients from outside the service area grew by 59 percent.

Table 14: Total AVH Patient Population, 2017–2018

	AVH Unduplicated Patients		
	2017	**2018**	**Both Years**
Total unduplicated, all areas	4,264	4,122	5,445
From service area ZIP Codes	3,419	3,374	4.313
% service area residents	80.1%	81.9%	79.6%

CHC Market Penetration

Alexander Valley Healthcare remains the only medical provider located in the Cloverdale ZIP Code. There are no medical providers located in the neighboring Geyserville or Hopland ZIP Codes.

Although there are private dental practices in the area, AVH is the only dental practice that accepts Medicaid patients or offers sliding fee scale discounts to uninsured or underinsured patients.

According to data from the UDS Mapper tool maintained by the American Academy of Family Physicians (AAFP), more than one-third of all residents of the three service area ZIP Codes received care in 2017 from one or more federally funded community health centers, including**:**

- 40.9 percent of all Cloverdale residents
- 30.0 percent of all Geyserville residents
- 34.1 percent of all Hopland residents.

(For reference, the U.S. Census estimates the 2017 population of the service area at 14,263.)

Other CHCs in this region include **Alliance Medical Center**, headquartered in Healdsburg; **Mendocino Community Clinic**, located in Ukiah; **Santa Rosa Community Health Centers**, headquartered in Santa Rosa; **West County Health Centers**, headquartered in Guerneville; **Anderson Valley Health Center**, headquartered in Boonville; **Mendocino Coast Clinics**, headquartered in Fort Bragg; **Petaluma Health Center**, headquartered in Petaluma; and **Sonoma Valley Community Health Center**, headquartered in the City of Sonoma.

Within the Alexander Valley Healthcare service area, 2017 CHC market share was as follows:

- **In the Cloverdale ZIP Code (95425):** Alexander Valley Healthcare was the predominant health center provider, serving 75.4 percent of all patients served by health centers in 2017. Alliance Medical Center served the second-largest share of Cloverdale patients seen by any health center, 17.2 percent.
- **In the Geyserville ZIP Code (95441):** Alliance Medical Center had the largest share (72.2 percent) of health center served patients. Alexander Valley Healthcare had the second-largest market share.
- **In the Hopland ZIP Code (95449):** Mendocino Community Clinic was the predominant health center provider, serving 91.3 percent of patients who were served by a CHC in 2017. Again, Alexander Valley Healthcare had the second-largest market share.

Alexander Valley Healthcare also had the second-highest CHC market share in several other ZIP Codes, including Ukiah, Lakeport, and Yorkville, and is third in CHC market share in Kelseyville, Boonville, and Healdsburg.

Table 15: AVH Patient Origin by ZIP Code, 2017–2018

ZIP Code	Post Office Name	AVH Patients 2017–2018
95425	Cloverdale	4,097
95482	Ukiah	183
95448	Healdsburg	163
95441	Geyserville	135
95492	Windsor	86
95449	Hopland	81
95401	Santa Rosa	46
95407	Santa Rosa	46
95403	Santa Rosa	45
95404	Santa Rosa	38
95453	Lakeport	34
95490	Willits	28
95470	Redwood Valley	26
95451	Kelseyville	21
95494	Yorkville	21
95472	Sebastopol	19
95405	Santa Rosa	18
95409	Santa Rosa	17
95415	Boonville	15
94928	Rohnert Park	13
95422	Clearlake	13
95423	Clearlake Oaks	10
95437	Fort Bragg	10
Other**		280
	Total Patients	**5,445**

Figure 15: Service Area ZIP Codes

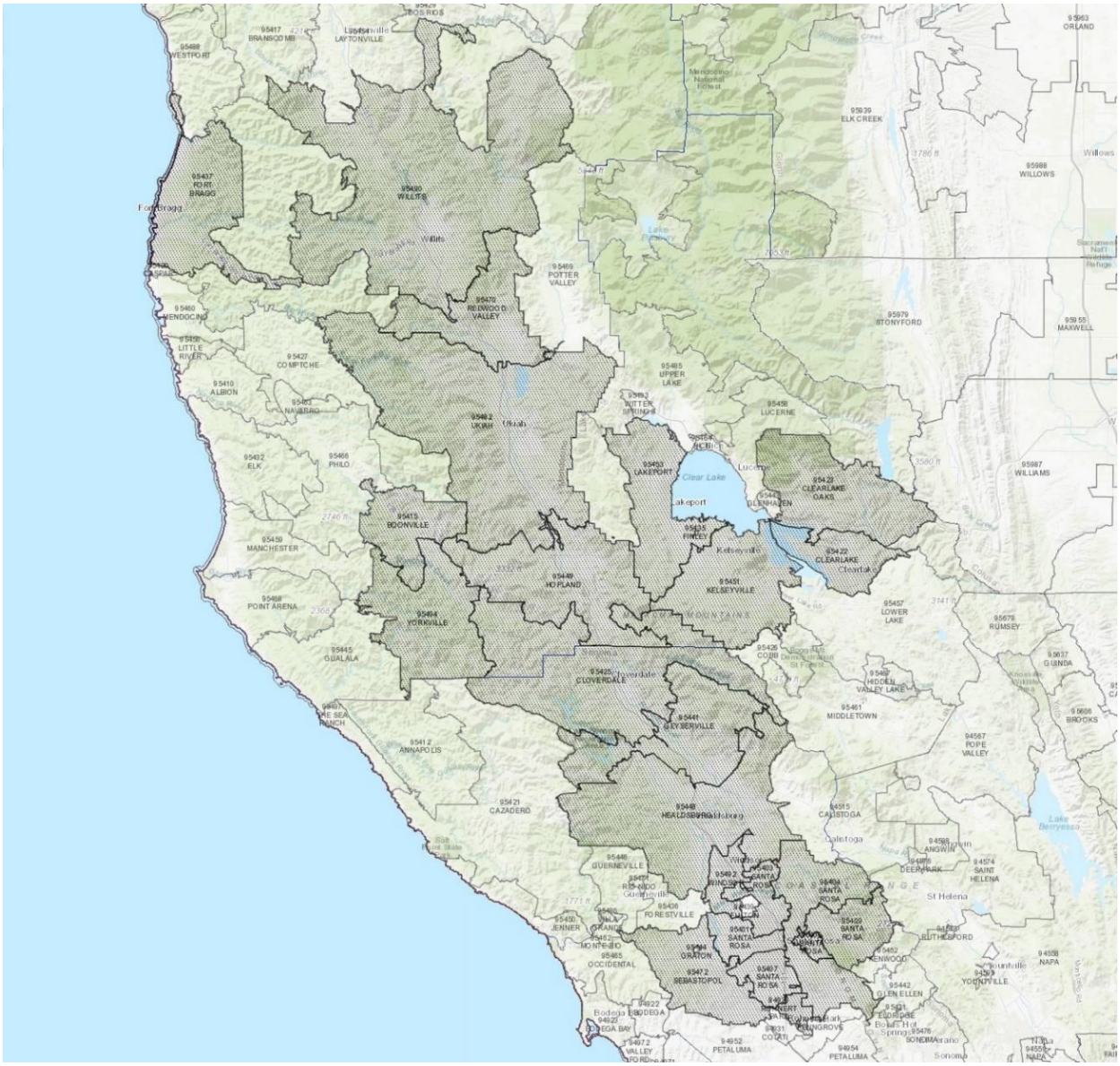


Table 16: CHC Market Share (UDS Patients by ZIP Code/ZCTA), 2017

ZIP Code	Post Office Name	AVH Patients	Locations	Total Patients, All CHCs	Dominant Health Center (2017)	Dominant CHC's Share of Patients	AVH Rank in ZIP Code	AVH Share in ZIP Code
95425	Cloverdale	3,310	AVH Service Area	4,388	ALEXANDER VALLEY HEALTHCARE	75.4%	1	75.4%
95482	Ukiah	137	Mendocino/ Lake Cty.	14,389	MENDOCINO COMMUNITY H.C.	97.1%	2	1.0%
95448	Healdsburg	114	Other Sonoma Cty.	3,636	ALLIANCE MEDICAL CENTER	84.4%	3	3.1%
95441	Geyserville	105	AVH Service Area	562	ALLIANCE MEDICAL CENTER	71.9%	2	18.7%
95492	Windsor	65	Other Sonoma Cty.	4,628	ALLIANCE MEDICAL CENTER	67.6%	5	1.4%
95449	Hopland	50	AVH Service Area	576	MENDOCINO COMMUNITY H.C.	91.3%	2	8.7%
95401	Santa Rosa	34	Other Sonoma Cty.	9,550	SANTA ROSA COMMUNITY H.C.s	76.7%	5	0.4%
95407	Santa Rosa	32	Other Sonoma Cty.	15,497	SANTA ROSA COMMUNITY H.C.s	77.3%	—	—
95403	Santa Rosa	34	Other Sonoma Cty.	9,253	SANTA ROSA COMMUNITY H.C.s	74.4%	5	0.4%
95404	Santa Rosa	30	Other Sonoma Cty.	7,429	SANTA ROSA COMMUNITY H.C.s	74.6%	—	—
95453	Lakeport	31	Mendocino/ Lake Cty.	2,010	MENDOCINO COMMUNITY H.C.	97.6%	2	1.5%
95490	Willits	18	Mendocino/ Lake Cty.	5,644	MENDOCINO COMMUNITY H.C.	92.6%	4	0.3%
95470	Redwood Valley	16	Mendocino/ Lake Cty.	1,888	MENDOCINO COMMUNITY H.C.	98.1%	3	0.8%
95451	Kelseyville	13	Mendocino/ Lake Cty.	1,749	MENDOCINO COMMUNITY H.C.	97.9%	3	0.7%
95494	Yorkville	16	Mendocino/ Lake Cty.	111	ANDERSON VALLEY H.C.	73.0%	2	14.4%
95472	Sebastopol	14	Other Sonoma Cty.	5,897	WEST COUNTY HEALTH CENTERS	74.7%	5	0.2%
95405	Santa Rosa	11	Other Sonoma Cty.	2,686	SANTA ROSA COMMUNITY H.C.s	75.3%	—	—
95409	Santa Rosa	*	Other Sonoma Cty.	2,640	SANTA ROSA COMMUNITY H.C.s	74.5%	—	—
95415	Boonville	12	Mendocino/ Lake Cty.	1,362	ANDERSON VALLEY H.C.	81.6%	3	0.9%
94928	Rohnert Park	11	Other Sonoma Cty.	9,235	PETALUMA HEALTH CENTER	75.2%	—	—
95422	Clearlake	*	Mendocino/ Lake Cty.	1,164	MENDOCINO COMMUNITY H.C.	79.9%	—	—
95423	Clearlake Oaks	*	Mendocino/ Lake Cty.	302	MENDOCINO COMMUNITY H.C.	100.0%	—	—
95437	Fort Bragg	*	Mendocino/ Lake Cty.	7,682	MENDOCINO COAST CLINICS	95.9%	—	—
Other	—	211	—	—	—	—	—	—

* AVH had patients from some of these ZIP Codes in 2018, but not 2017. Source: 2017 data from the AAFP UDS Mapper, *https://www.udsmapper.org/*.

Patients from Outside the Service Area

During the 2013–2014 period, AVH had 712 patients from outside the primary service area, 14.8 percent of all unduplicated 2013–2014 patients. In 2017–2018, there were 1,132 patients from outside the service area, 20.8 percent of all unduplicated 2017–2018 patients.

Patients may seek healthcare services outside their area of residence for a number of reasons:

- They may work outside of their area and find it easier to seek health care near where they work.
- Their health insurance may only cover care from specific providers or provider networks that are not available in the patient's area of residence.
- Patients may have previously lived in another area and have ongoing provider relationships there.
- Patients may be following physicians who left independent practice in the patient's area, such as physicians who have moved to Kaiser Permanente Santa Rosa.

Of the 1,132 patients from outside the primary service area in 2017–2018:

- Approximately half (50.1 percent) came from another Sonoma County ZIP Code.
- Most of the rest (37.7 percent) came from Mendocino or Lake Counties (to the north).
- Only 12.2 percent came from another county or state.

The patients who come to AVH from outside the service area typically access the center via Highway 101, which is the major interstate highway route running through Marin, Sonoma, and Mendocino Counties.

Table 17: Total Unduplicated AVH Patients by ZIP Code, 2017–2018

ZIP Code Origin	Unduplicated Patients	Percentage
From service area	4,313	79.2%
From other Sonoma County ZIP Codes	567	10.4%
From Mendocino/Lake Counties	427	7.8%
From another county or state	138	2.5%
TOTAL	**5,445**	**100.0%**

POPULATION SERVED

Overall Patient Population

During the two-year period Jan. 1, 2017 – Dec. 31, 2018, Alexander Valley Healthcare served a total of **5,445 unduplicated patients**.

This represents an increase of 13.5 percent from the 4,796 unduplicated patients AVH served during the two-year period Jan. 1, 2013 – Dec. 31, 2014.

Age

During the 2017–2018 period, 24.8 percent of AVH patients were under age 18. This is lower than during the 2013–2014 period, when 26.0 percent of AVH patients were under 18, but, according to 2017 U.S. Census estimates, is still greater than the percentage of individuals under 18 in the service area (22.0 percentage) or Sonoma County as a whole (20.4 percent).

The percentage of nonelderly adult patients aged 18–64 in 2017–2018, 60.1 percent, is similar to the percentage in the service area population (59.7 percent) and somewhat less than in Sonoma County as a whole (62.3 percent).

The proportion of 2017–2018 AVHs patients over age 65 (15.1 percent) is lower than either the service area (18.5 percent) or county (17.4 percent). However, it is an increase from 2013–2014, when only 12.8 percent of AVH patients were over age 65.

Table 18: Age Groups, Population

By Age Group	U.S. Census Est. Population, 2017 AVH Service Area	U.S. Census Est. Population, 2017 Sonoma County	Alexander Valley Patients 2017–2018
Under 18 years	3,140	101,946	1,349
18 to 64 years	8,512	311,858	3,273
65 years and older	2,602	87,139	823
Totals	**14,254**	**500,943**	**5,445**

Table 19: Age Groups, Percentages

By Age Group	U.S. Census Est. Population, 2017 AVH Service Area	U.S. Census Est. Population, 2017 Sonoma County	Alexander Valley Patients 2017–2018
Under 18 years	22.0%	20.4%	24.8%
18 to 64 years	59.7%	62.3%	60.1%
65 years and older	18.3%	17.4%	15.1%

Gender

AVH has more female patients than male patients, but the male patient population has grown more rapidly than has the number of female patients:

- The number of unduplicated female patients rose from 2,580 in the 2013–2014 period to 2,851 in 2017–2018, a gain of 271 patients, or 10.5 percent.
- The number of unduplicated male patients grew from 2,216 in the 2013–2014 period to 2,584 in the 2017–2018 period, a gain of 368 patients, or 16.6 percent.

AVH's female patient population in 2017–2018 was somewhat older than in 2013–2014. In 2013–2014, 23.4 percent of AVH's female patients were under age 18 and 14.0 percent were 65 or older. In 2017–2018, 22.7 percent of female patients were under 18 while the percentage of female patients over age 65 had increased to 15.9 percent.

Table 20: Female Age Groups, Population

By Gender and Age Group	U.S. Census Est. Population, 2017 AVH Service Area	U.S. Census Est. Population, 2017 Sonoma County	Alexander Valley Patients 2017–2018
Female, under 18 years	1,695	49,749	648
Female, 18 to 64 years	4,135	157,135	1,749
Female, 65 years and older	1,389	48,678	454
Totals	**7,219**	**255,562**	**2,851**

Table 21: Female Age Groups, Percentages

By Gender and Age Group	U.S. Census Est. Population, 2017 AVH Service Area	U.S. Census Est. Population, 2017 Sonoma County	Alexander Valley Patients 2017–2018
Female, under 18 years	23.5%	19.5%	22.7%
Female, 18 to 64 years	57.3%	61.5%	61.3%
Female, 65 years and older	19.2%	19.0%	15.9%
Female, All	**50.6%**	**51.0%**	**52.4%**

AVH's total number of male patients rose from 2,216 in 2013–2014 to 2,594 in 2017–2018. This increase of 378 patients was distributed roughly equally across age groups.

As in the 2013–2014 period, a greater percentage of AVH's 2017–2018 patients under age 18 were male (27.0 percent) than were female (22.7 percent).

The percentage of male patients over age 65 increased from 10.7 percent in 2013–2014 to 14.2 percent in 2017–2018.

Table 22: Male Age Groups, Population

By Gender and Age Group	U.S. Census Est. Population, 2017 AVH Service Area	U.S. Census Est. Population, 2017 Sonoma County	Alexander Valley Patients 2017–2018
Male, under 18 years	1,445	52,197	701
Male, 18 to 64 years	4,377	154,723	1,524
Male, 65 years and older	1,213	38,461	369
Totals	**7,035**	**245,381**	**2,594**

Table 23: Male Age Groups, Percentages

By Gender and Age Group	U.S. Census Est. Population, 2017 AVH Service Area	U.S. Census Est. Population, 2017 Sonoma County	Alexander Valley Patients 2017–2018
Male, under 18 years	20.5%	21.3%	27.0%
Male, 18 to 64 years	62.2%	63.1%	58.8%
Male, 65 years and older	17.2%	15.7%	14.2%
Male, All	**49.4%**	**49.0%**	**47.6%**

Several special population groups were also reviewed. In 2017–2018, Alexander Valley Healthcare served:

- 169 infants (i.e., under age 2)
- 1,038 school-age children (i.e., aged 5–17)
- 774 female patients of childbearing age (i.e., aged 15–44).

Table 24: Special Populations, Totals

Population and Age Group	U.S. Census Est. Population, 2017 Service Area	U.S. Census Est. Population, 2017 Sonoma County	Alexander Valley Patients 2017–2018
Infants (birth to 2 years)	496	14,936	169
School-age (5 to 17 years)	2,318	75,761	1,038
Female, 15 to 44 years	1,620	62,512	774

Table 25: Special Populations, Percentages

Population and Age Group	U.S. Census Est. Population, 2017 Service Area	U.S. Census Est. Population, 2017 Sonoma County	Alexander Valley Patients 2017–2018
Infants (birth to 2 years)	3.5%	3.0%	3.1%
School-age (5 to 17 years)	16.3%	15.1%	19.1%
Female, 15 to 44 years	11.4%	12.5%	14.2%

Race and Ethnicity

According to 2017 U.S. Census projections, 26.4 percent of Sonoma County's estimated 500,943 2017 residents self-identify as Hispanic: approximately 132,0118 individuals. In AVH's service area, 29.4 percent of residents identify as Hispanic: 4,186 individuals out of the total service area population of 14,254. Of AVH's 5,445 unduplicated 2017–2018 patients, 43.6 percent self-reported as Hispanic.

Overall, 36.2 percent of Sonoma County's population is part of at least one nonwhite minority group, up from 34.3 percent in 2011. By comparison, 48.2 percent of AVH's patients self-report as a member of a nonwhite minority group, similar to the 2013–2014 figure of 48.4 percent.

Table 26: Race and Ethnicity, Population

Race/Ethnicity Group	U.S. Census Est. Population, 2017 Service Area	U.S. Census Est. Population, 2017 Sonoma County	Alexander Valley Patients 2017–2018
Hispanic	4,186	132,018	2,254
White, non-Hispanic	8,748	319,805	2,676
Black, non-Hispanic	115	6,972	63
Asian, non-Hispanic	398	19,321	91
American Indian, non-Hispanic	554	2,602	46
Native Hawaiian and other Pacific Islanders, non-Hispanic	0	1,453	40
Other or 2 or more, non-Hispanic	253	18,772	1
Unknown or refused to report			274
Total population	**14,254**	**500,943**	**5,445**
Any minority	**5,506**	**181,138**	**2,495**

Table 27: Race and Ethnicity, Percentages

Race/Ethnicity Group	U.S. Census Est. Population, 2017 Service Area	U.S. Census Est. Population, 2017 Sonoma County	Alexander Valley Patients 2017–2018
Hispanic	29.4%	26.4%	43.6%
White, non-Hispanic	61.4%	63.8%	51.8%
Black, non-Hispanic	0.8%	1.4%	1.2%
Asian, non-Hispanic	2.8%	3.9%	1.8%
American Indian, non-Hispanic	3.9%	0.5%	0.9%
Native Hawaiian and Other Pacific Islanders, non-Hispanic	0.0%	0.3%	0.8%
Other or 2 or more, non-Hispanic	1.8%	3.7%	0.0%
Any minority	**38.6%**	**36.2%**	**48.2%**

Based on 2017 Census projections, the proportion of AVH service area residents who are foreign-born, 16.8 percent, is approximately the same as Sonoma County as a whole. This figure is lower than the 18.6 percent projected by the American Community Survey 5-year estimates used in AVH's 2015 Joint Community Needs Assessment for Northern Sonoma County.

The proportion of foreign-born residents of Sonoma County remains essentially unchanged from the Census Bureau's 2009–2013 estimates.

Table 28: Foreign-Born Population, Totals

Population Group	U.S. Census Est. Population, 2017 Service Area	Sonoma County
Foreign-born	2,397	83,207
Not a U.S. citizen	1,542	47,282

Table 29: Foreign-Born Population, Percentages

Population Group	U.S. Census Est. Population, 2017 Service Area	Sonoma County
Foreign-born (of total population)	16.8%	16.6%
Not a U.S. citizen (of total population)	10.8%	9.4%
Not a U.S. citizen (of foreign-born)	64.3%	56.8%

NOTE: This data is not available in AVH's electronic health records.

Language

For patients who are not native English speakers, language can be a barrier to seeking health care or being understood in a healthcare setting. The 2015 Joint Community Needs Assessment for Northern Sonoma County identified linguistic isolation (i.e., speaking English less than "very well") as an issue in the northern part of Sonoma County.

According to 2017 Census data, residents of AVH's service area are more likely than residents of the county as a whole to primarily speak a language other than English. In AVH's service area, an estimated 12.3 percent do not speak English well, compared to 10.8 percent of all Sonoma County residents.

According to data from Alexander Valley Healthcare's electronic health record, approximately one-quarter (25.6 percent) of AVH's 2017–2018 patients needed an interpreter.

2017 Census projections indicate that 25.6 percent of Sonoma County residents do not speak English well. In AVH's service area, 27.1 percent do not speak English well.

However, the percentage of AVH's patients who need an interpreter has dropped from 25.6 percent in 2013–2014 to 22.9 percent in 2017–2018. This may reflect the greater assimilation of service area residents as well as increased numbers of young Hispanic patients whose English capacity has grown through school attendance.

Table 30: Language Spoken, Population

Characteristic	U.S. Census Est. Population, 2017 Service Area	U.S. Census Est. Population, 2017 Sonoma County	Alexander Valley Patients 2017–2018
Population age 5 years and older	13,432	474,758	5,183
Speaks only English, or not reported	9,781	353,435	3,840
Does NOT speak only English	3,651	121,323	1,343
Speaks Spanish	3,141	93,718	1,327
Speaks other language	510	27,605	16
Linguistically isolated (speaks English less than “very well”)	1,817	52,405	—
Linguistically isolated, Spanish speaker	1,520	43,396	—
Needs interpreter	—	—	1,185

Table 31: Language Spoken, Percentages

Characteristic	U.S. Census Est. Population, 2017 Service Area	U.S. Census Est. Population, 2017 Sonoma County	Alexander Valley Patients 2017–2018
Speaks only English, or not reported	72.8%	74.4%	25.6%
Does NOT speak only English	27.2%	25.6%	25.9%
Speaks Spanish	23.4%	19.7%	25.6%
Speaks other language	3.8%	5.8%	0.3%
Linguistically isolated (speaks English less than “very well")	13.5%	11.0%	—
Linguistically isolated, Spanish speaker	83.7%	82.8%	—
Needs interpreter	—	—	22.9%

The percentage of English learners in public schools in Sonoma and Mendocino Counties is similar to that of California as a whole: 22.8 percent in Sonoma County, 21.1 percent in Mendocino County, and 22.1 percent statewide. However, Cloverdale and Geyserville schools have substantially higher percentages of English learners than do their respective counties as a whole. As a result, these local schools have focused their efforts on helping these students strengthen their English to be better able to learn all other subjects.

Table 32: English Learners by School District, Percentages

Characteristic	*California*	*Sonoma County*	*Mendocino County*	*Cloverdale Unified School District*	*Geyserville Unified School District*
English learners	*22.1%*	*22.8%*	*21.1%*	*35.5%*	*35.1%*

Source: 2016 data from kidsdata.org, a program of Lucile Packard Foundation for Children’s Health

Spanish is the first language of 93.3 percent of the 15,419 Sonoma County public school students who were counted as English learners for the 2014–2015 academic year, although the county also has students whose first languages include Vietnamese, Punjabi, Filipino, Arabic, Cantonese, Mandarin, Russian, Hmong, and Korean.[46]

In general, English learners are at a disadvantage in school due to the language gap, particularly when taking standardized tests. That remains an issue for local schools.

- Students in California take annual standardized grade-level English reading proficiency tests. Only 44 percent of all Sonoma County and 36 percent of all Mendocino County students pass these English tests, compared to 48 percent of California students overall. **Only 35.5 percent of Cloverdale Unified students and 35.1 percent of Geyserville Unified students pass these English proficiency tests.**

- Similarly, 36 percent of Sonoma County public school students pass the annual grade-level math proficiency tests, comparable to the 37 percent of California students who pass. **Only 29 percent of Cloverdale Unified District students pass these math tests.**[47]

Such differences in education attainment in youth are likely to translate into permanent disparities in educational attainment, with a significant impact on future incomes.

Education

In the human development index used for *A Portrait of Sonoma County*, education makes up one of the three weighted indices used to assess the county's overall health. As the report's authors note:

> Education is not only key to human development more broadly, it is also … **a fundamental social determinant of health** [emphasis in original]. For adults ages 35 and up, every additional year of education is associated with 1.7 additional years of life expectancy.[48] Why? Because well-educated people have greater access to and understanding of health-related information. They tend to practice fewer health risk behaviors like smoking and are more likely to exercise regularly and eat a healthy diet. They are better able to understand and comply with medical instructions and make well-informed decisions about their health. In addition, educated people tend to have … a greater range of healthy coping behaviors which can mitigate health-eroding stress. And because more education typically leads to better jobs and

[46] School district data from 2016, as cited on *kidsdata.org*.

[47] Ibid.

[48] Lleras-Muney, Adriana, "The Relationship Between Education and Adult Mortality in the United States," *Review of Economic Studies* Vol. 72, No. 1 (Jan. 2005): 189–221.

> higher wages, better educated people are more likely to have health insurance and more money and time to take care of themselves.[49]

Data analysis supplied in that report revealed pronounced differences in education attainment in the 12 neighborhood areas that comprise most of northern Sonoma County:

- The percentage of **adults who had not completed high school** ranged from a low of 8.3 percent (in the Old Healdsburg neighborhood) to a high of 30.12 percent (in East Cloverdale), a more than three-fold difference.

- The percent of **adults who had completed at least a bachelor's degree** ranged from a high of 41.9 percent (in North Healdsburg) to a low of 12.4 percent (in East Cloverdale), another more than three-fold difference.

- The percent of **adults with graduate or professional degrees** ranged from 18.4 percent (in North Healdsburg) to a low of only 2.9 percent (in East Cloverdale), a six-fold difference.

Sonoma County high schools do as well as other schools throughout California in graduating students in four years. The four-year graduation rate in most Sonoma County school districts is typically around 79 percent. One exception is Cloverdale Unified, where only 71 percent of students graduate on time.

More alarming in terms of future income potential are the reported numbers of school-age northern Sonoma County residents who are not enrolled in any school. In East Cloverdale, only 63.5 percent of persons under 18 were enrolled in any school, the lowest proportion in the county.

There are also disparities in Sonoma County's graduation rates by gender and ethnicity. Girls are more likely than boys to graduate high school in four years; 83.7 percent of girls do so, compared to 75.0 percent of boys. County-wide, Asian-American students are the most likely to graduate on time (87.7 percent), followed by whites (84.7 percent), Latinos (72.8 percent), and African-Americans (66.1 percent).

According to data from the *Portrait* report, the Healdsburg Unified, Sonoma Valley Unified, and West Sonoma County Union High school districts have among the higher Latino graduation rates in northern Sonoma County, ranging from 87.3 percent to 89.7 percent. Cloverdale

[49] Burd-Sharps, et al, *A Portrait of Sonoma County: Sonoma County Human Development Report 2014*, p. 47.

Unified is the only school district in the county where the on-time graduation rate for whites (69.8 percent) is lower than for Latinos (74.1 percent) in the same school district.[50]

Among the standardized tests California students must complete is an Algebra 1 proficiency test, which 38 percent of Sonoma County's 7th through 11th graders pass. Only 23 percent of Cloverdale students pass that test. Furthermore, by the end of high school, only 26.9 percent of Cloverdale graduates have completed courses required for college entrance.

Such differences in education attainment in youth are likely to translate into permanently deficits in educational attainment, with a strong impact on future incomes.

Census projections for 2017 suggest some improvement. Those estimates show that the AVH service area has a higher percentage of adults who have completed high school graduates or higher levels of education (84.6 percent) than in 2011 (when the figure was only 83.4 percent). In Sonoma County as a whole, the estimated percentage of adults who have completed high school or higher levels of education has also grown, from 86.7 percent to 87.7 percent.

However, AVH's service area also continues to have a lower proportion of college graduates (with a bachelor's degree or higher): 24.9 percent, versus 33.8 percent for the county.

Table 33: Educational Attainment, Population

	U.S. Census Est. Population, 2017	
Population Group	**Service Area**	**Sonoma County**
Adults, 25 years and older	9,935	355,303
High school graduate or higher	8,403	311,545
Bachelor's degree or higher	2,478	120,262

Table 34: Educational Attainment, Percentages

	U.S. Census Est. Population, 2017	
Population Group	**Service Area**	**Sonoma County**
High school graduate or higher	84.6%	87.7%
Bachelor's degree or higher	24.9%	33.8%

Poverty Levels

According to 2017 Census data, AVH's service area has nearly the same percentage of residents below 100 percent of the federal poverty level (FPL) as Sonoma County as a whole: 10.8 percent for the service area, 10.7 percent for the county.

[50] Ibid, p. 61.

However, the service area has a significantly higher proportion of residents between 100 percent and 200 percent of FPL. Overall, 34.7 percent of service area residents are below 200 percent of poverty, compared to 26.3 percent of county residents.

In the 2017–2018 period, 39.8 percent of AVH patients had incomes below 100 percent of poverty and 88.4 percent were below 200 percent of the poverty level.

Table 35: Income by Federal Poverty Level (FPL), Population

Income	U.S. Census Est. Population, 2017 Service Area	U.S. Census Est. Population, 2017 Sonoma County	Alexander Valley Patients 2017–2018
Below 100% FPL	1,495	52,707	1,504
100–199% FPL	3,400	77,347	1,834
200% FPL and above	9,223	364,312	440
Unknown or not reported			1,667
Population for whom poverty was determined	14,118	494,366	3,778
Under 200% FPL	**4,895**	**130,054**	**3,338**

Table 36: Income by Federal Poverty Level (FPL), Percentages

Income	U.S. Census Estimates, 2017 Service Area	U.S. Census Estimates, 2017 Sonoma County	Alexander Valley Patients 2017–2018
Below 100% FPL	10.6%	10.7%	39.8%
100–199% FPL	24.1%	15.6%	48.5%
200% FPL and above	65.3%	73.7%	11.6%
Unknown or not reported	—	—	30.6%
Under 200% FPL	**34.7%**	**26.3%**	**88.4%**

Across most demographic groupings, a higher proportion of AVH patients are below 100 percent of the federal poverty level than residents of either Sonoma County or the service area.

Table 37: Poverty Status (Under 100% FPL) by Major Demographic Group, Percentages*

Demographic Group	U.S. Census Estimates, 2017 Service Area	U.S. Census Estimates, 2017 Sonoma County	Alexander Valley Patients 2017–2018
Total population	10.7%	15.1%	39.8%
Under 18 years, all genders	13.1%	20.8%	49.7%
18 to 64 years, all genders	11.0%	14.0%	38.3%
65 years and older, all genders	6.7%	10.2%	30.4%
Male, all ages	10.0%	14.0%	39.2%
Female, all ages	11.3%	16.2%	40.3%
Hispanic, all ages and genders	15.1%	20.6%	44.2%
White, non-Hispanic, all ages and genders	8.6%	9.9%	34.5%

* Percentages of those for whom poverty status was determined

Insurance Coverage

A profile of uninsured service area residents was constructed based on current U.S. Census projections. That profile was compared to the characteristics of AVH's uninsured patients, using data from AVH's electronic health record.

The percentage of AVH's patients who are uninsured (14.7 percent) is greater than the Census estimates for either Sonoma County or the service area as a whole. So too is AVH's percentage of Medicare patients: 14.5 percent, compared to 13.0 percent for the county and 13.9 percent for the service area.

Table 38: Health Insurance Status, Population

Insurance Group	U.S. Census Estimates, 2017 Service Area	U.S. Census Estimates, 2017 Sonoma County	Alexander Valley Patients 2017–2018
Population for whom health insurance status was determined	14,193	496,690	5,445
Uninsured	1,521	41,950	803
Private health insurance	8,120	310,507	1,413
Medicare	1,976	64,568	787
Medicaid (Medi-Cal)	2,424	77,329	2,442
Other public insurance*	152	2,336	0

* Includes military (TRICARE)/Veterans Administration coverage and other state or county programs

Table 39: Health Insurance Status, Percentages

Insurance Group	U.S. Census Estimates, 2017 Service Area	U.S. Census Estimates, 2017 Sonoma County	Alexander Valley Patients 2017–2018
Uninsured	10.7%	8.4%	14.7%
Private health insurance	57.2%	62.5%	26.0%
Medicare	13.9%	13.0%	14.5%
Medicaid (Medi-Cal)	17.1%	15.6%	44.8%
Other public insurance*	1.1%	0.5%	0.0%

* Includes military (TRICARE)/Veterans Administration coverage and other state or county programs

The impact of California's implementation of the Affordable Care Act (ACA) Medicaid expansion and the introduction of the state's ACA health insurance exchange, Covered California, was one of the focuses of the 2015 Joint Community Needs Assessment for Northern Sonoma County. That assessment reported on the shift of patients from uninsured status to these sources of coverage and included projections of additional numbers of patients who could potentially still enroll.

Enrollment in Medi-Cal and exchange health plans has continued to increase in the years since that analysis, resulting in a decrease in the percentage of uninsured AVH patients from 18.2 percent in 2013–2014 to 14.7 percent in 2017–2018.

Most of that change appears to reflect the impact of the Medicaid expansion. The percentage of patients with private health insurance did not rise, but the percentage of patients enrolled in Medi-Cal rose from 36.2 percent to 44.8 percent.

Table 40: Change in AVH Patient Insurance Status, 2013–2014 to 2018–2018

	2013–2014		2017–2018	
Insurance Status	**# Patients**	**% Patients**	**# Patients**	**% Patients**
Uninsured	874	18.2%	803	14.7%
Private health insurance	1,498	31.2%	1,413	26.0%
Medicare	650	13.6%	787	14.3%
Medicaid (Medi-Cal)	1,738	36.2%	2,442	44.8%
Other public insurance	36	0.8%	0	0.0%

* Includes military (TRICARE)/Veterans Administration coverage and other state or county programs

AVH patients under age 19 were less likely to be uninsured than were all Sonoma County or service area residents under 19. However, the percentage of uninsured nonelderly adult patients aged 19–64 (19.1 percent) was significantly greater than in Sonoma County (12.3 percent) or the service area as a whole (13.0 percent). The percentage of uninsured AVH senior patients aged 65 or older (9.0 percent) was also substantially greater than both the county (0.6 percent) and the service area (0.4 percent).

Table 41: Uninsured Status by Major Demographic Group, Percentages

	U.S. Census Estimates, 2017		Alexander Valley
Demographic Group	**Service Area**	**Sonoma County**	**Patients 2017–2018**
Total population for whom uninsured status was determined	10.7%	8.4%	14.7%
Under 18 years, all genders	12.0%	3.9%	8.4%
18 to 64 years, all genders	13.4%	12.3%	19.1%
65 years and older, all genders	0.4%	0.6%	9.0%
Male, all ages	11.0%	9.6%	15.7%
Female, all ages	10.4%	7.3%	13.9%
Hispanic, all ages and genders	16.9%	15.6%	20.5%
White, non-Hispanic, all ages and genders	5.3%	5.4%	10.6%
U.S.-born*	7.5%	6.0%	
Foreign-born, non-citizen*	38.4%	30.1%	
Income under 138% FPL	17.5%	15.5%	14.1%
Income 138%–199% FPL	15.3%	11.1%	25.1%
Income 200% FPL and over	2.4%	3.7%	13.4%

* AVH's electronic health record system does not capture patients' country of birth

Other Population Groups

AVH patients in the 2017–2018 period also included the following:

- 336 patients self-identified as migrant and seasonal agricultural workers
- 155 patients self-identified as homeless individuals
- 128 military veterans.

SERVICE PATTERNS

Patient and Visit Summary

During the two-year period Jan. 1, 2017 – Dec. 31, 2018, Alexander Valley Healthcare (AVH) served 5,445 unduplicated patients in 44,306 provider visits.

For the purposes of this assessment, a "visit" is a face-to-face encounter between a patient and a licensed clinical provider. It should be noted that during any given assessment period, patients may use other AVH services that do not fit the UDS definition of a provider visit. Such utilization is not reflected in the figures presented in this chapter or in AVH's UDS reporting.

The 2017–2018 utilization figures are significant increases from the 2013–2014 period described in the 2015 Joint Community Needs Assessment for Northern Sonoma County, during which AVH served 4,796 unduplicated patients in 35,746 visits.

Table 42: Total AVH Patients and Visits, 2013–2014 and 2017–2018

Patients/Visits	2013–2014	2017–2018	# Change	% Change
Unduplicated patients	4,796	5,445	+649	+13.5%
Patient visits, all departments	35,746	44,306	+8,560	+23.9%

Utilization by Department

Of the 5,445 patients AVH served in 2017–2018:

- **Almost 88 percent (4,788) had medical visits.** Of those, two-thirds (3,199) had *only* medical visits.
- **More than one-third (1,858) had dental visits.** Of those, almost one-third (603) had *only* dental visits.
- **Only 11.4 percent (622) had mental health visits** and only a fraction of those (44) had *only* mental health visits.
- **Almost 30 percent (1,596) were seen in multiple departments.** Of those, most (1,248) had medical and dental visits, while about one-third (530) had both medical and mental health visits. A handful (7) had dental and mental health visits, but no medical visits.
- **About one-quarter (1,366) visited two departments.** Only 4.2 percent (230) were seen in all three departments.

Table 43: Patients by Department, 2017–2018

Departments Visited	Unduplicated Patients	% of All Patients
Medical only	3,199	58.8%
Medical and dental	1,018	18.7%
Medical and mental health	341	6.3%
Medical, dental, and mental health	230	4.2%
Medical total	**4,788**	**87.9%**
Dental only	603	11.1%
Dental and medical	1,018	18.7%
Dental and mental health	7	0.1%
Dental, medical, and mental health	230	4.2%
Dental total	**1,858**	**34.1%**
Mental health only	44	0.8%
Mental health and medical	341	6.3%
Mental health and dental	7	0.1%
Mental health, medical, and dental	230	4.2%
Mental health total	**622**	**11.4%**
Seen in any department	5,445	100.0%
Seen in only one department	3,846	70.6%
Seen in two departments	1,366	25.1%
Seen in all three departments	230	4.2%
Seen in more than one department	1,596	29.3%

Visits by Provider Category

The 23.9 percent increase in total provider visits between 2013–2014 and 2017–2018 was due to increases in dental and mental health visits. Medical visits actually decreased during 2018 compared to both 2017 and the 2013–2014 assessment period.

Table 44: Visits by Provider Category, 2013–2014

Provider Category	2013	2014	Both Years
Medical	14,229	14,600	35,746
Dental	218	2,313	2,531
Mental Health	1,842	2,544	4,386
Total	**16,289**	**19,457**	**35,746**

Table 45: Visits by Provider Category, 2017–2018

Provider Category	2017	2018	Both Years
Medical	14,690	13,331	28,021
Dental	5,728	6,022	11,300
Mental Health	2,425	2,560	4,985
Total	**22,393**	**21,913**	**44,306**

During the 2017–2018 assessment period, AVH patients averaged 8.1 visits per patient across all three departments. By comparison, the average during the 2013–2014 assessment period was only 5.8 visits per patient.

This overall visit-per-patient average reflects the following visit trends in each department:

- **Average medical visits** declined from 6.2 visits per patient in the 2013–2014 period to 5.9 visits/patient in 2017–2018, reflecting short-term drops in medical capacity.
- **Average dental visits** rose sharply, from 3.00 visits per dental patient in 2013–2014 to 6.1 visits/patient in 2017–2018, helped by California's restoration in mid-2014 of broader dental coverage for adult recipients of Medi-Cal, California's Medicaid program.
- **Average mental health visits** rose from 7.8 visits per mental health patient in 2013–2014 to 8.0 visits/patient in 2017–2018. Annual averages remained relatively constant between 2016 and 2017, at 5.7 to 5.8 visits per patient, and then rose to 7.0 visits per patient in 2018.

Table 46: Average Visits per Patient by Service Type, 2013–2014

Service Type	2013	2014	Both Years
Medical	4.3	4.1	6.2
Dental	1.0	3.3	3.0
Mental Health	5.3	7.0	7.8
All patients, all visits	**4.0**	**3.9**	**5.8**

Table 47: Average Visits per Patient by Service Type, 2017–2018

Service Type	2017	2018	Both Years
Medical	3.9	3.7	5.9
Dental	4.1	4.5	6.1
Mental Health	5.8	7.0	8.0
All patients, all visits	5.3	5.3	8.1

These trends are discussed in greater detail in the following pages.

MEDICAL SERVICES

There are several likely causes for the recent drop in the average number of medical visits.

First, AVH revised its approach to prenatal care and deliveries, contracting with the larger Santa Rosa Community Health Centers to the south for some pregnancy-related services.

Second, AVH experienced a temporary shortage of provider time for a portion of the assessment period due to provider turnover and leaves. During the 2017–2018 assessment

period, one AVH nurse practitioner and one physician assistant left the organization. AVH medical providers also took two 12-week maternal leaves in 2017, with two more in 2018.

Alexander Valley Healthcare has experienced significant difficulty in accommodating these absences and post-turnover transitions, even with the use of *locum tenens* providers. AVH's other medical providers did extra shifts during these periods, but those providers were already at full capacity with their own patient panels.

(In 2018, AVH physicians averaged 3,689 visits per FTE per year and AVH family nurse practitioners averaged 3,310 visits per FTE per year. By comparison, the 2017 national averages for community health center providers were 2,958 visits per FTE per year for physicians and 2,527 visits/FTE-year for nurse practitioners.)

As a result, turnover and absences resulted in some shortfalls in total clinical hours. The decline in medical visits generally corresponds with these drops in provider full-time equivalents (FTEs), as illustrated in the following figures.

Figure 16: Visits by Department, 2014–2018

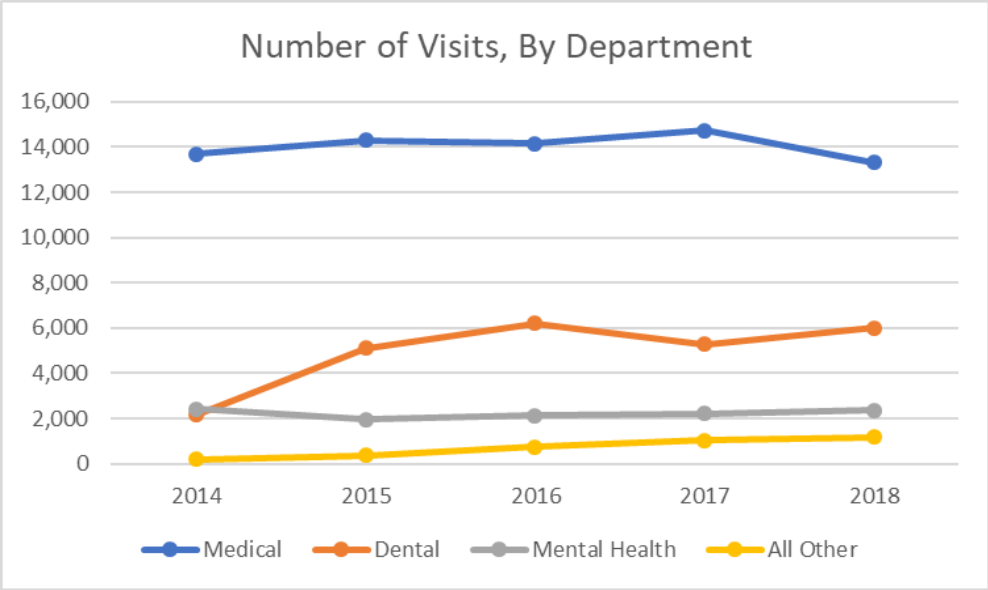
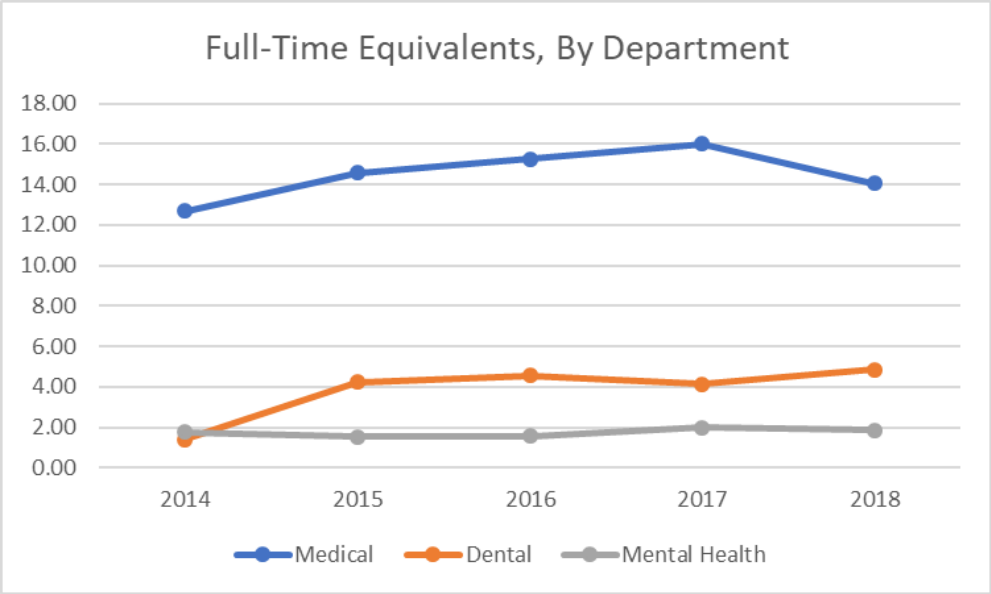


Figure 17: Full-Time Equivalents by Department, 2014–2018



This shortfall in medical provider time also likely contributed to a decline of 143 total users between the two-year period Jan. 1, 2016 – Dec. 31, 2017 and the two-year period Jan. 1, 2017 – Dec. 31, 2018.

DENTAL SERVICES

The AVH dental clinic opened at the end of 2013 and reached its current capacity in the years following the 2015 Joint Community Needs Assessment.

Initially, the dental clinic was focused on children, and in particular children enrolled in Medi-Cal, who have no other dental provider in the service area. At the time of the opening, the State of California was still imposing major limitations on non-emergency dental services for adult Medi-Cal recipients as an emergency budget measure.

In May 2014, the California Legislature restored Medi-Cal coverage for most adult dental services. As reported in the 2015 Joint Community Needs Assessment for Northern Sonoma County, AVH subsequently received large numbers of adult dental visits (an average of 3.5 per user over a six-month period), suggested that adult patients were presenting with a backlog of oral health problems because there had previously been no dental practices in the Cloverdale area that accepted Medi-Cal or uninsured patients.

Such backlog has likely been resolved because current dental utilization, while substantial, is now relatively consistent across patient age ranges.

Table 48: Dental Visits and Average Procedure Codes/Visit by Patient Age, 2017–2018

Age at Time of Visit	Total Visits	Average Procedure Codes per Visit
6 years or under	1,189	1.7
7 to 17 years	2,668	1.6
18 to 64 years	5,892	1.3
65 years and older	1,551	1.2
Total	**11,300**	**1.4**

In addition to its increased volume, AVH's dental department offered a more comprehensive range of dental services/procedures in 2017–2018 than in the prior assessment period, although oral exams, prophylaxis, sealants, and fluoride treatments continued to account for substantial percentages of the work performed.

Table 49: Dental Services Volume by Dental Procedure Groupings, 2017–2018

Service Type	Total Visits	Total Patients
Emergency Services	6	6
Oral Exams	3,050	1,688
Prophylaxis, Adult or Child	1,623	1,044
Sealants	372	182
Fluoride Treatment, Adult or Child	750	408
Restorative Services	3,321	1,019
Oral Surgery	662	428
Rehabilitative Services	1,398	437

Based on submitted UDS data. The UDS groups are based on ADA codes.

MENTAL HEALTH SERVICES

Alexander Valley Healthcare expanded its mental health services after becoming federally funded in 2013. Mental health visits increased from 1,842 in 2013 to 2,544 in 2014.

Since then, total mental health visits per year have remained in the 2,500-visit range: 2,425 in 2017 and 2,560 in 2018. Although the two-year total of 4,985 visits for 2017–2018 is 13.6 percent higher than the 2013–2014 two-year total of 4,386, most of that difference reflects the one-year ramp-up during 2014.

The average number of visits for male patients has risen a bit faster than for female patients, going from 6.9 visits/patient for the 2013–2014 period to 7.5 visits/patient for 2017–2018. This reflects a significant upturn in utilization among nonelderly adult men. The average number of visits per mental health patient actually declined for male patients under 18 or over 65.

AVH's number of mental health visits has remained low compared to total patient volume, particularly in light of the high number of patients with already-diagnosed behavioral health conditions, an issue discussed in further detail later in this chapter.

As with medical visits, the growth of mental health visits has been limited by provider capacity and a shortage of physical space. AVH's mental health department does not have sufficient office space to add more providers within the health center's existing building, which also lacks rooms big enough to house group counseling sessions.

Like the medical department, AVH's mental health department has had difficulty maintaining its current provider capacity. Recruiting appropriate providers to account for staff turnover or fill in for long-term absences such as medical leaves has been challenging, with the recruitment process sometimes taking many months and creating shortfalls of mental health provider FTEs.

Other Utilization Patterns

Average number of visits per patient varied by patient age and gender. Seniors had the highest average: 9.5 visits/patient for the 2017–2018 period. Nonelderly adults (aged 18–64) averaged 8.1 visits/patient while the average for children under 18 was 7.5 visits/patient.

These averages reflect several factors:

- Fewer children than adults have chronic medical conditions.
- Fewer children than adults use mental health services.
- Medicare's lack of dental coverage and substantial co-payments may discourage seniors with limited incomes from accessing mental health services.

During the current 2017–2018 assessment period, female patients averaged more visits per person than male patients across all age groups and all provider types. That was generally true in 2013–2014 as well, although during that period, female patients averaged slightly fewer dental visits than did male patients across all age groups.

Table 50: Average Visits per Patient by Age, Gender, and Provider Category, 2013–2014

Provider Category		Under 18	18–64 Years	65+ Years	All Ages
Medical					
	Female	5.3	6.9	9.4	6.9
	Male	5.0	4.9	9.3	5.4
Dental					
	Female	2.4	3.4	3.4	3.0
	Male	2.5	3.6	3.6	3.0
Mental Health					
	Female	8.5	8.4	8.0	8.4
	Male	7.3	6.4	8.2	6.9
	Overall Average	**4.8**	**5.9**	**8.9**	**5.9**

Table 51: Average Visits per Patient by Age, Gender, and Provider Category, 2017–2018

Provider Category		Under 18	18–64 Years	65+ Years	All Ages
Medical					
	Female	4.5	6.8	8.0	6.6
	Male	4.3	4.8	7.0	5.1
Dental					
	Female	6.0	6.1	7.6	6.3
	Male	5.2	5.9	6.5	5.8
Mental Health					
	Female	8.3	8.3	8.4	8.3
	Male	6.7	8.4	4.0	7.5
	Overall Average	**7.5**	**8.1**	**9.5**	**8.1**

Visits by Insurance Status

With the rise in Medi-Cal enrollment due to California's implementation of the ACA Medicaid expansion, AVH's percentage of Medi-Cal visits rose from 45.2 percent in 2013–2014 to 52.5 in 2017–2018.

Another ACA offshoot, Covered California, the state's subsidized health insurance exchange, has likely contributed to an increase in the percentage of AVH patients with private insurance, which rose from 15.6 percent in 2013–2014 to 17.7 percent in 2017–2018.

Table 52: Visits by Insurance Status, 2013–2014

	2013		2014		Both Years	
Insurance Category	**Visits**	**%**	**Visits**	**%**	**Visits**	**%**
Uninsured	2,713	16.7%	2,913	15.0%	5,626	15.7%
Medi-Cal (Medicaid)	6,412	39.4%	9,749	50.1%	16,161	45.2%
Medicare	3,679	22.6%	3,783	19.4%	7,462	20.9%
Other public insurance	909	5.6%	9	0.0%	918	2.6%
Private insurance	2,576	15.8%	3,003	15.4%	5,579	15.6%
Total	**16,289**	**100.0%**	**19,457**	**100.0%**	**35,746**	**100.0%**

Table 53: Visits by Insurance Status, 2017–2018

	2017		2018		Both Years	
Insurance Category	**Visits**	**%**	**Visits**	**%**	**Visits**	**%**
Uninsured	1,610	7.2%	1,638	7.5%	3,248	7.3%
Medi-Cal (Medicaid)	11,803	52.7%	11,459	52.3%	23,262	52.5%
Medicare	5,068	22.6%	4,888	22.3%	9,956	22.5%
Other public insurance	0	0.0%	0	0.0%	0	0.0%
Private insurance	3,912	17.5%	3,928	17.9%	7,840	17.7%
Total	**22,393**	**100.0%**	**21,913**	**100.0%**	**44,306**	**100.0%**

Meanwhile, the percent of Medicare visits rose from 20.9 percent in the previous assessment period to 22.5 percent in the 2017–2018 period.

These changes have contributed to a dramatic reduction in the number of uninsured patients. Despite the substantial increase in total visits, the percentage of uninsured visits in 2017–2018 was only 7.3 percent, less than half the 2013–2014 figure. The average number of uninsured visits per year is also well below the average number of visits from patients with insurance coverage.

Table 54: Average Visits per Patient by Insurance Status, 2017–2018

Insurance Category	2017	2018	Both Years
Uninsured	3.0	3.2	4.0
Medicaid (Medi-Cal)	6.0	6.0	9.5
Medicare	7.4	7.4	12.7
Private insurance	3.7	3.8	5.5

While these trends appear generally positive, there are several potential counterpoints that should be taken into account:

- Medicare and Medi-Cal recipients tend to average more visits per patient due to age and/or poor health status.
- As reported in the Population Served chapter of this needs assessment, the largest proportion of AVH's uninsured patients are adults of working age (18–64), who tend to average fewer visits per year than do either patients under 18 or seniors.
- At least some of the decrease in visits by uninsured patients may be a side effect of the high cost of living (and in particular the high cost of housing) in Sonoma County, which may leave uninsured patients unable to afford AVH's fees even with a sliding scale discount.

To help address the latter issue, in mid-2018, AVH's board approved changes in how income is computed for the AVH sliding scale discount program, effectively discounting the gross income of patients whose housing costs are greater than 34 percent of income.

This change likely explains at least in part why the average number of visits per uninsured patient began to rise by the end of 2018 and was greater than in 2017.

Chronic Medical and Mental Health Conditions

As previously reported in the 2015 Joint Community Needs Assessment for Northern Sonoma County, the numbers of unduplicated AVH patients who have specific chronic conditions were analyzed in two broad groups.[51]

Group A includes the following chronic medical conditions:

- Asthma
- Chronic bronchitis and emphysema
- Chronic pain
- Diabetes mellitus
- Health disease (selected)
- Hypertension
- Overweight and obesity.

Group B includes the following chronic mental health or behavioral health conditions:

- Alcohol-related disorders
- Tobacco use disorder
- Other substance-related disorders
- Depression and other mood disorders

[51] The definitions of these diagnosis coding groups were taken from the UDS report criteria, except chronic pain, for which diagnosis codes are not part of UDS Table 6A. The codes used were 338.21, 338.28, 338.29, 338.3, 338.4, G89.21, G89.22, G89.28, G89.29, G89.3, or G89.4.

- Anxiety disorders, including PTSD
- Attention deficit and disruptive behavior disorders
- Other mental disorders, excluding drugs or alcohol.

The number of 2017–2018 patients who had either a diagnosed chronic medical or a behavioral health condition increased substantially from the 2013–2014 period:

- **Chronic medical conditions**: In the current assessment period, a total of 2,174 unduplicated patients had at least one chronic medical condition diagnosis listed under Group A, representing 39.9 percent of all 2017–2018 patients. This is an increase of 673 patients (44.6 percent) from the 2013–2014 period, during which only 1,501 patients had a Group A diagnosis.
- **Behavioral health conditions**: In the current assessment period, a total of 1,860 unduplicated patients had at least one mental health or behavioral health diagnoses listed under Group B, representing 34.2 percent of all 2017–2018 patients. This is an increase of 580 patients (45.3 percent) from the 2013–2014 period, during which only 1,280 patients had a Group B diagnosis.
- **Both medical AND behavioral health conditions:** A total of 1,073 patients (19.7 percent of all unduplicated 2017–2018 patients) had at least one diagnosis from BOTH Groups A and B. In 2013–2014, 628 patients (13.1 percent of all 2013–2014) had both Group A and Group B diagnoses.

The percentage of AVH patients who had at least one chronic condition from either Group A or Group B rose from 44.9 percent of all patients in 2013–2014 to 54.4 percent of all patients in the 2017–2018 period.

The five most common chronic medical diagnoses in 2017–2018 were hypertension (874 patients); overweight and obesity (663 patients); chronic pain (595 patients); asthma (437 patients); and diabetes mellitus (431 patients).

The most common mental health diagnoses were anxiety disorders, including PTSD (803 patients); depression and other mood disorders (777 patients); other mental health disorders (732 patients); and tobacco use disorder (486 patients).

It should be noted that the figures for alcohol and other substance abuse are likely undercounts. Behavioral health diagnoses are often based on screening protocols. While AVH incorporated depression screening for all patients (and particularly for chronic disease patients)

into its clinical protocols nearly a decade ago, drug abuse screening was added just two years ago, while alcohol abuse screening using the SAMSHA Screening, Brief Intervention, and Referral for Treatment (SBIRT) model only became fully integrated into clinical protocols at the start of 2019. As a result, the number of diagnoses is likely to increase as providers use these substance abuse screening tools to identify more patients with these issues.

Table 55: Patients with Selected Chronic Conditions, 2013–2014 and 2017–2018

Diagnosis	2013–2014 Patients	2013–2014 % of All	2017–2018 Patients	2017–2018 % of All	Change
Group A					
Asthma	259	5.4%	437	8.0%	+69%
Chronic bronchitis and emphysema	270	5.6%	293	5.4%	+9%
Chronic pain	360	7.5%	595	10.9%	+65%
Diabetes mellitus	328	6.8%	431	7.9%	+31%
Heart disease (selected)	183	3.8%	281	5.2%	+54%
Hypertension	571	11.9%	874	16.1%	+53%
Overweight and obesity	211	4.4%	663	12.2%	+214%
Any Group A diagnosis	**1,501**	**31.3%**	**2,174**	**39.9%**	**+45%**
Group B					
Alcohol-related disorder	68	1.4%	94	1.7%	+38%
Tobacco use disorder	208	4.3%	486	8.9%	+134%
Other substance-related disorders	114	2.4%	203	3.7%	+78%
Depression and other mood disorders	609	12.7%	777	14.3%	+28%
Anxiety disorders, including PTSD	520	10.8%	803	14.7%	+54%
Attention deficit and disruptive behavior disorders	63	1.3%	87	1.6%	+38%
Other mental disorders, excluding drugs or alcohol	484	10.1%	732	13.4%	+51%
Any Group B diagnosis	**1,280**	**26.7%**	**1,860**	**8.0%**	**+45%**
Any diagnosis from Group A **or** Group B	2,153	44.9%	2,961	54.3%	+38%
Any Group A **and** any Group B diagnosis	628	13.1%	1,073	19.7%	+71%
Total patients	**4,796**		**5,445**		**+13.5%**

Source: EHR data for AVH patients seen, Jan. 1, 2013 – Dec. 31, 2014, and January 1,2017 – Dec. 31, 2018

A substantial percentage of patients with at least one Group A or Group B diagnosis had multiple chronic conditions. In 2017–2018, a total of 1,717 patients had two or more chronic conditions, whether medical, behavioral, or both. This is 58 percent of all patient with one or more chronic conditions and 31.5 percent of all unduplicated 2017–2018 patients.

Table 56: Patients with Multiple Chronic Conditions, 2017–2018

Number of Diagnoses from Group A	Number of Diagnoses from Group B							
	0	**1**	**2**	**3**	**4**	**5**	**6**	**Total**
0		500	189	71	18	6	3	**787**
1	744	270	164	61	24	7	1	**1,271**
2	263	149	84	43	23	7	0	**569**
3	67	56	49	30	9	5	0	**216**
4	18	31	17	9	3	1	0	**79**
5	8	10	4	8	1	1	1	**33**
6	1	1	4	0	0	0	0	**6**
Total	**1,101**	**1,017**	**511**	**222**	**78**	**27**	**5**	**2,961**

Analyzing patients with chronic conditions by age group yields several notable observations:

- Patients under 18 generally have lower rates of chronic illness, with the exception of asthma, which affects a greater percentage of children than of any other age range.
- Almost one-fifth of patients under 18 (18.1 percent) have one or more chronic behavioral health conditions.
- Older nonelderly adult patients (aged 51 to 64) have large numbers of chronic conditions; 70.9 percent of these patients have been diagnosed with either a chronic condition or a mental health condition and more than one-third (34.3 percent) have both one or more chronic medical conditions AND one or more behavioral health conditions.
- Patients between the ages of 51 and 64 years also have the highest percentage of chronic mental or behavioral health conditions (45.0 percent). More than one-fifth (21.4 percent) of patients in this age range have been diagnosed with depression and one in five (20.1 percent) has been diagnosed with an anxiety disorder (including PTSD).
- Nearly three-fourths of patients aged 65 and older have at least one Group A or Group B diagnosis. Over two-thirds (68.5 percent) of elderly patients have been diagnosed with at least one of the selected chronic medical conditions, the highest proportion among the age groups.
- Almost one-third (32.8 percent) of patients over 65 have at least one chronic medical disease and one or more mental health conditions.

Table 57: Chronic Conditions by Patient Age Group, 2017–2018

Diagnosis	All Ages #	All Ages %	Under 18 #	Under 18 %	19–50 years #	19–50 years %	51–64 years #	51–64 years %	65+ years #	65+ years %
Group A										
Asthma	437	8.0%	124	9.2%	168	7.3%	81	8.3%	64	7.8%
Chronic bronchitis and emphysema	293	5.4%	26	1.9%	66	2.9%	94	9.6%	107	13.0%
Chronic pain	595	10.9%	6	0.4%	215	9.4%	217	22.1%	157	19.1%
Diabetes mellitus	431	7.9%	5	0.4%	97	4.2%	159	16.2%	170	20.7%
Heart disease (selected)	281	5.2%	4	0.3%	31	1.4%	95	9.7%	151	18.3%
Hypertension	874	16.1%	2	0.1%	162	7.1%	320	32.6%	390	47.4%
Overweight and obesity	663	12.2%	137	10.2%	326	14.2%	137	14.0%	63	7.7%
Any Group A diagnosis	**2,174**	**39.9%**	**260**	**19.3%**	**759**	**33.1%**	**591**	**60.2%**	**564**	**68.5%**
Group B										
Alcohol-related disorder	94	1.7%	0	0.0%	46	2.0%	34	3.5%	14	1.7%
Tobacco use disorder	486	8.9%	1	0.1%	239	10.4%	175	17.8%	71	8.6%
Other substance-related disorders	203	3.7%	3	0.2%	144	6.3%	46	4.7%	10	1.2%
Depression and other mood disorders	777	14.3%	43	3.2%	379	16.5%	210	21.4%	145	17.6%
Anxiety disorders, including PTSD	803	14.7%	73	5.4%	411	17.9%	197	20.1%	122	14.8%
Attention deficit and disruptive behavior disorders	87	1.6%	44	3.3%	32	1.4%	6	0.6%	5	0.6%
Other mental disorders, excluding drug or alcohol	732	13.4%	159	11.8%	293	12.8%	146	14.9%	134	16.3%
Any Group B diagnosis	**1,860**	**34.2%**	**244**	**18.1%**	**858**	**37.4%**	**441**	**45.0%**	**317**	**38.5%**
Any diagnosis from Group A **or** Group B	2,961	54.4%	433	32.1%	1,221	53.3%	696	70.9%	611	74.2%
Any Group A **and** any Group B diagnosis	1,073	19.7%	71	5.3%	396	17.3%	336	34.3%	270	32.8%

As these numbers suggest, patients with chronic medical and/or mental health conditions have become a large part of AVH's clinical workload, averaging greater numbers of visits per person than patients with only acute medical problems. For example, during the 2017–2018 period:

- Patients with one or more chronic medical conditions averaged 8.5 medical visits and 11.6 visits to all departments. By contrast, patients without a chronic medical condition averaged 3.3 medical visits and just 4.8 visits to all departments during the same period.

- Patients with at least one Group B chronic behavioral health condition averaged 13.1 visits to all departments.

- Patients with both a chronic medical condition diagnosis AND one or more diagnosed behavioral health conditions averaged 16.0 visits to all departments.

Table 58: Average Visits/Patient by Department and Diagnosis Group, 2017–2018

Diagnosis Group	Medical		Mental Health		Both Depts.	
	# of Patients	Avg. Visits	# of Patients	Avg. Visits	# of Patients	Avg. Visits
Any Group A diagnosis	2,131	8.5	345	8.4	2,135	9.8
Any Group B diagnosis	1,770	8.8	621	8.0	1,821	11.3
Any Group A or B diagnosis	2,850	7.6	621	8.0	2,901	9.2
Any Group A **and** any Group B diagnosis	1,051	11.3	345	8.4	1,055	14.0
No Group A **or** B diagnosis	1,938	3.3	1	1.0	1,938	3.3
All patients	**4,788**	**5.9**	**622**	**8.0**	**4,839**	**6.8**

Table 59: All-Department Average UDS Visits/Patient by Diagnosis Group, 2017–2018

Diagnosis Group	UDS Visits*	
	# of Patients	Avg. Visits
Any Group A diagnosis	2,174	11.6
Any Group B diagnosis	1,860	13.1
Any Group A or B diagnosis	2,961	10.9
Any Group A **and** any Group B diagnosis	1,073	16.0
No Group A **or** B diagnosis	2,484	4.8
All patients	**5,445**	**8.1**

* Includes medical, mental health, and dental visits.

The increase in the number of patients diagnosed with chronic medical and behavioral health conditions between 2013–2014 and 2017–2018 likely reflects both new patients with chronic conditions entering the practice and AVH providers identifying existing patients with these conditions through the application of clinical screening and diagnosis protocols. (One of the central purposes of assigning patients to a specific provider panel is to better enable the provider to assess the patient's health condition over time.)

The percentages of patients with chronic conditions are generally similar for both patients who live within the AVH service area and those who live outside the primary service area.

Table 60: Patients with Selected Chronic Conditions by Patient Origin, 2017–2018

Diagnosis	All Patients #	All Patients %	In Service Area #	In Service Area %	Out of Area #	Out of Area %
Group A						
Asthma	437	8.0%	365	8.5%	72	6.4%
Chronic bronchitis and emphysema	293	5.4%	243	5.6%	50	4.4%
Chronic pain	595	10.9%	432	10.0%	163	14.4%
Diabetes mellitus	431	7.9%	359	8.3%	72	6.4%
Heart disease (selected)	281	5.2%	229	5.3%	52	4.6%
Hypertension	874	16.1%	675	15.7%	199	17.6%
Overweight and obesity	663	12.2%	546	12.7%	117	10.3%
Any Group A diagnosis	**2,174**	**39.9%**	**1,738**	**40.3%**	**436**	**38.5%**
Group B						
Alcohol-related disorder	94	1.7%	75	1.7%	19	1.7%
Tobacco use disorder	486	8.9%	358	8.3%	128	11.3%
Other substance-related disorders	203	3.7%	132	3.1%	71	6.3%
Depression and other mood disorders	777	14.3%	599	13.9%	178	15.7%
Anxiety disorders, including PTSD	803	14.7%	621	14.4%	182	16.1%
Attention deficit and disruptive behavior disorders	87	1.6%	69	1.6%	18	1.6%
Other mental disorders, excluding drugs or alcohol	732	13.4%	606	14.1%	126	11.1%
Any Group B diagnosis	**1,860**	**34.2%**	**1,453**	**33.7%**	**407**	**36.0%**
Any diagnosis from Group A **or** Group B	2,961	54.4%	2,365	54.8%	596	52.7%
Any Group A **and** any Group B diagnosis	1,073	19.7%	826	19.2%	247	21.8%
Total patients	**5,445**		**4,313**		**1,132**	

Three-Year Service Patterns

The benefit of examining health center patient data over a multi-year period, rather than using only single-year reporting data, is that a longer assessment period makes it possible to more accurately determine how many patients use the health center as their primary care source. The number of unduplicated patients in a given two-year period will typically be about 25 percent greater than in either individual year.

While two-year data better captures the number of patients who use the health center irregularly, that data does not necessarily suggest how best to serve those patients or explain why they have reportable visits in some years and not others.

To learn more about intermittent users, AVH medical patient data was also analyzed over a longer, three-year period: Jan. 1, 2016, through December 31, 2018. That three-year analysis uncovered some more complex usage patterns than did the two-year data.

During the three-year period Jan. 1, 2016 – Dec. 31, 2018, AVH's medical department served 5,738 unduplicated patients. Of those:

- 1,908 patients (33.3 percent) had medical visits in all three years.
- 1,400 patients (24.4 percent) had medical visits in any two of the three years.
- 2,430 patients (42.3 percent) had medical visits in only one of the three years.

Almost two-thirds of patients seen any one year would be also seen in the next year. For example:

- Of the 3,668 medical patients seen in 2016, 63.9 percent had visits in all three years.
- Of the 3,710 medical patients seen in 2017, 64.8 percent had visits in both 2017 and 2018.

However, some patients who were seen in 2016 or 2017 had not yet been seen again by the end of 2018.

Such gaps in care are not unique to AVH or to health centers in general, and have also been observed in private practices.

There are many possible reasons an adult patients does not have a visit in a given year. For example:

- They may be or consider themselves to be healthy.
- Even if they do not consider themselves healthy, they may conclude that they are "not sick enough to go to a doctor."
- They may not be able to afford the out-of-pocket cost of even a reduced copayment, and/or are afraid of the unknown potential costs of the visit and any lab work or prescriptions.
- They may have other priorities for limited funds.
- They may deem the health needs of other family members to be a greater priority than their own. For example, parents may forego their own care to ensure that their children receive required care.

- They may not be able to afford to take time off of work to seek care during the health center's operating hours, or may fear that taking time off for that purpose will in some way jeopardize their position at work.

Many of these potential reasons suggest possible barriers to care. AVH has taken a number of steps to address these barriers, including:

- Extending clinic hours from 7 a.m. to 7 p.m. to make it easier for patients to schedule appointments without loss of work.

- Converting sliding scale copayments into flat fees to reduce patients' out-of-pocket costs and to make those costs more predictable.

- Negotiating reduced lab fees for low-income patients and participating in the federal 340B drug pricing program to reduce out-of-pocket costs for prescription medications.

- Adopting a policy of adjusting income for patients whose housing costs exceed one-third of their gross income.

In these ways, AVH has attempted to make accessing care more affordable for patients with high fixed living costs and limited disposable income to pay for health care.

It is possible that AVH's provider capacity shortfalls may have had some impact on utilization patterns. For example, patients with sensitive medical issues may have been more reluctant to schedule an appointment if their trusted provider was unavailable. Reduced clinical hours may also have made it harder for some patients to find suitable appointment times. However, short of canvassing patients, it is impossible to quantify that impact.

Given the numbers of AVH users who have chronic health conditions, the percentage of patients who are NOT seen every year is concerning. It is likely that these intermittent users include some patients with chronic health problem whose overall health would benefit from more frequent visits.

HEALTH STATUS

Health Rankings

By many measures of health, Sonoma County is considered well above average in both the State of California and nationally. For example, in 2019, the Robert Wood Johnson Foundation's County Health Rankings & Roadmaps projects ranked Sonoma County eighth healthiest of California's 58 counties in health outcomes and 11th healthiest in health factors such as diet, exercise, use of alcohol and other substances, access to care, and social factors impacting health.[52]

However, such summary assessments tend to obscure the fact that Sonoma County, like all counties, is made up of a mixture of populations, some distinctly healthier than others and some with significant underlying health problems. Furthermore, the presence of an effective healthcare system that achieves positive health outcomes (such as lower mortality rates) does not necessarily change the fact that certain populations remain high-risk.

Maternal Health

Overall, Sonoma County has excellent birth outcomes. Currently:

- The county's most recent three-year average infant mortality rate is only 3.1 deaths per 1,000 live births, compared to 4.6/1000 for California as a whole. Both meet the national Health People 2020 goal of fewer than 6.0 deaths per 1,000 births.
- Only 5.8 percent of Sonoma County births are low birth weight (under 2,500 grams), compared to 6.8 percent of births statewide. Both meet the national Health People 2020 goal of fewer than 7.8 percent low-birthweight infants.
- Pre-term deliveries (by gestational age) comprised fewer than 7.4 percent of all Sonoma County deliveries, compared to 8.8 percent statewide.
- Sonoma County's age-specific birth rate for mothers aged 15–19 was 9.3 per 1,000 female population aged 15–19 in 2015–2017, down from 16.0/1,000 in 2011–2013. The

[52] "Health Outcomes, Overall Rank: California: Sonoma," 2019 County Health Rankings & Roadmaps, a collaboration between the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute, retrieved from *https://www.countyhealthrankings.org*.

state rate was 15.7/1,000 in 2015–2017, down from 22.2/1,000 in 2011–2013. For comparison, Mendocino County's age-specific teen birth rate in 2015–2017 was 21.6/1000.[53]

However, data from the state's Maternal and Infant Health Assessment (MIHA) Surveys[54] demonstrates that Sonoma County's maternal population remains at high risk. In the most recent available survey period for which data is available (2013–2015):

- 10.7 percent of the county's pregnant residents had a diagnosis of asthma before pregnancy, compared to 8.4 percent of all pregnant Californians during the same period.
- 3.5 percent had a pre-pregnancy diagnosis of hypertension, compared to a statewide average of only 2.5 percent.
- 21.1 percent were aged 35 or older at the time of delivery, compared to 20.2 percent statewide.
- 7.0 percent had a previous low birth weight baby or preterm delivery.
- 12.0 percent had had a previous C-section delivery.

MATERNAL OBESITY

Obesity is a suspected risk factor in the incidence of diabetes and gestational diabetes. The frequency of gestational diabetes has doubled among pregnant women in Sonoma County over the past decade, rising from 4.6 percent to 9.7 percent of pregnancies.[55] The comparable national average in 2016 was only 6.0 percent.[56]

The 2013–2015 MIHA found:

[53] Ibid.

[54] California Dept. of Public Health, MIHA Snapshot, Sonoma County, 2012, and MIHA Snapshot, Sonoma County, 2013–2015, retrieved from *https://www.cdph.ca.gov/Programs/CFH/DMCAH/MIHA/Pages/Data-and-Reports.aspx*.

[55] California Dept. of Public Health, "Sonoma County Maternal Child and Adolescent Health Community Profile 2017–2018," retrieved from *https://www.cdph.ca.gov/Programs/CFH/DMCAH/LocalMCAH/Pages/County-Profiles.aspx*.

[56] Deputy, Nicholas P.; Shin Y. Kim; Elizabeth J. Conrey; and Kai McKeever Bullard, "Prevalence and Changes in Preexisting Diabetes and Gestational Diabetes Among Women Who Had a Live Birth — United States, 2012–2016," *Morbidity and Mortality Weekly Report* Vol. 67, No. 43 (Nov. 2, 2018): 1201–7, doi:10.15585/mmwr.mm6743a2.

- 45.7 percent of Sonoma County mothers were overweight or obese (by BMI) prior to pregnancy.

- 48.5 percent gained excessive weight during pregnancy.

Inadequate pregnancy weight gain can also contribute to maternal or infant health problems. In the 2013–2015 period, 14.5 percent of Sonoma County pregnancies had inadequate intra-partum weight gain.

MATERNAL SMOKING AND ALCOHOL USE

MIHA data reveals that Sonoma County residents are more likely than pregnant Californians overall to smoke before, during, and after pregnancy:

- 13.7 percent of pregnant county residents reported smoking during the three months before becoming pregnant, compared to 11.6 percent statewide.

- 3.6 percent continued to smoke into their third trimesters, compared to 2.6 percent statewide.

- 5.3 percent continued smoking postpartum.

Pregnant Sonoma County residents also have higher levels of alcohol use than the state average. During the 2013–2015 MIHA survey period:

- 18.4 percent of pregnant county residents reported **binge drinking** during the three months before their pregnancies, compared to 15.1 percent statewide.

- 10.0 percent continued alcohol use during the first and third trimesters of their pregnancies, compared to 7.6 percent statewide.

ECONOMIC AND FAMILY INSTABILITY

A large portion of Sonoma County's maternal population is at economic risk. In the 2013–2015 MIHA study period:

- 27.2 percent of pregnant Sonoma County residents had incomes below the federal poverty level (FPL) and 52.2 percent were below 200 percent of FPL.

- 13.0 percent of pregnant Sonoma County residents or their partners lost jobs during the pregnancy.

- 14.4 percent had hours or pay cut during the pregnancy.
- 14.9 percent had not completed high school or a GED.
- Almost half (47.1 percent) qualified for Medi-Cal during pregnancy, but 24.4 percent were uninsured before becoming pregnant and 15.1 percent reported that they would be uninsured postpartum.

There is also evidence of inadequate family planning. Of the county's new mothers in 2013–2015:

- 33.2 percent were unmarried.
- 26.1 percent described their current pregnancy as "mistimed or unwanted."
- 11.0 percent reported being "unsure of their pregnancy intentions."[57]

MATERNAL DENTAL CARE

It is well known that adequate dental care during pregnancy can help prevent transmission of dental disease from mother to newborn. However, a 2011 Sonoma County oral health study found that 79 percent of California women enrolled in Medi-Cal did not receive any dental care during pregnancy, although such care is a covered Medi-Cal benefit.[58]

For individuals who are uninsured before and after pregnancy, the inter-partum period is a very brief interval in which to address what may be a backlog of dental problems. Also, some current beneficiaries may be unaware that Medi-Cal again covers adult dental care. Between 2009 and 2014 (a period overlapping the most recent available MIHA study periods), the Legislature suspended most non-emergency adult dental coverage as a cost-cutting measure.

Furthermore, a limited number of dental practices accept Medi-Cal. When Alexander Valley Healthcare opened its current dental site in late 2013, it was the only dental practice in its service area that accepted Medi-Cal patients or offered sliding fee discounts to uninsured patients. It is still the only dental provider in the service area that does.

[57] Ibid.

[58] Sonoma County Dept. of Health Services, *Oral Health Snapshot*, 2011. Its major conclusions are summarized in this report: http://www.pachealth.org/docs/Sonoma_Oral_Health_Final_Report.pdf.

Child Health

CHILDREN'S HEALTH AND WELLNESS

Immunizations

In the 2018–19 school year, 91.3 percent of Sonoma County kindergartners had all required immunizations,[59] up from 90.9 percent the year before. School district data for February 2016 shows that 100 percent of kindergartners in the Cloverdale Unified School District and 90.9 percent in Geyserville Unified had complete immunizations.[60] (More recent school district data is not yet available.)

Under California law, parents must present proof of immunization for all new student admissions at the kindergarten through 12th grade levels. Students who are unable to receive vaccinations for medical reasons may obtain temporary or permanent exemptions, but California no longer permits religious or "personal belief" exemptions from student vaccination requirements.

Nutrition

Responses to the California Health Interview Survey (CHIS) suggest that nutrition for Sonoma County children under age 12 is a mixed bag:

- On the plus side, only 30.3 percent drank sugar-sweetened beverages in the previous day, compared to 40.4 percent of kids under 12 statewide.[61]
- Children in Sonoma County are also significantly less likely than peers statewide to have eaten fast food in the past week (18.0 percent versus 38.2 percent).
- However, only 23.5 percent of Sonoma County children under 12 report eating five or more servings of fresh fruits and vegetables on a given day, versus 35.4 percent statewide).

[59] California Dept. of Public Health, Immunization Branch, *2018–2019 Kindergarten Immunization Assessment – Executive Summary*, 2019, retrieved from *https://www.shotsforschool.org/k-12/reporting-data/*.

[60] California Dept. of Public Health, Immunization Branch, as reported by kidsdata.org, a project of the Lucille Packard Foundation, retrieved from *https://www.kidsdata.org/topic/53/immunizations/summary*.

[61] California Health Interview Survey (CHIS), UCLA Institute of Health Policy Research, 2015–2016.

Physical Activity

Only 51.0 percent Sonoma County children aged 5–11 get an hour of physical activity at least three days a week, compared to 67.5 percent of kids in the same age range statewide.[62]

The percentages are even lower for children in families earning less than 200 percent of the federal poverty level. Of Sonoma County's low-income children aged 5–11, only 32.2 percent exercise for an hour three or more days a week, compared to 62.6 percent of low-income children 5–11 statewide. This suggests that low-income children in Sonoma County have little opportunity to exercise or engage in active play outside of physical education classes at school.

Fitness

Only 27.6 percent of Sonoma County 5th graders pass all six of the fitness criteria in the state's standardized physical fitness testing program.[63] This is similar to the 26.6 percent of 5th graders statewide who pass all six criteria, though both results are poor.

In the Cloverdale Unified School District, only 24.1 percent of 5th graders pass all six standardized fitness tests.

HEALTH ISSUES

Children's Oral Health

California has not been a leader is providing dental services to low-income children. A national study of the rising use of dental services by children enrolled in Medicaid between 2000 and 2010 reported that of children enrolled in Medi-Cal, California's Medicaid program:

- Only 41.8 percent received any dental treatment in 2010, compared to an average of 46.4 percent of Medicaid-enrolled children nationally.
- Only 34.2 percent received preventive dental services, compared to a national average of 40.8 percent for Medicaid-enrolled children.
- Only 22.0 percent received any dental treatment, below the already-poor national average of 23.0 percent.

[62] California Health Interview Survey (CHIS), UCLA Institute of Health Policy Research, 2014–2016.

[63] FitnessGram® is a registered trademark of The Cooper Institute, which developed the program. The program includes specific standards for: (1) aerobic capacity, (2) abdominal strength and endurance, (3) upper strength and endurance, (4) body composition, (5) trunk extensor strength and flexibility, and (6) flexibility.

- Only 10.2 percent reported receiving any dental sealants, compared to 15.7 percent of Medicaid-enrolled children nationally.[64]

As with maternal dental care, a likely reason Medi-Cal's pediatric dental utilization rates are so low is that the number of dental practices accepting Medi-Cal is very small.[65] The paucity of Medi-Cal dental providers is due in part to Medi-Cal's low reimbursement rates for dental providers, which are lower than the Medicaid dental reimbursement rates in many other states[66] and have been an ongoing problem in recruiting dental providers to the program. Nationally, Medicaid programs typically under-pay for dental services, but, according to the American Dental Association, California is one of only six states whose Medicaid program reimburses dentists **less than 30 percent of retail dental fees** for adult dental care.[67]

Although Medi-Cal coverage of pediatric dental services was not directly affected by the 2009–2014 suspension of non-emergency adult dental care, the suspension likely had significant indirect effects. First, family members generally seek care from the same dental providers (and there is evidence that timely dental care and education for parents and caregivers is often the best way to ensure that children receive regular dental care and practice good oral hygiene[68]), so the loss of adult coverage may have reduced the likelihood of children continuing to receive care. Second, the coverage suspension may have led more dental providers to withdraw from the Medi-Cal program.

Linguistic issues are another limiting factor in accessing dental care. Research conducted by UCLA Center for Health Policy Research on behalf of the California Health Care Foundation reveals that the problem of finding a suitable dental provider is compounded for Hispanic patients by a shortage of Spanish-speaking dentists. Linguistically isolated parents (who in

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[64] Ku, Leighton; Jessica Sharac; Brian Bruen; et al, "Increased Use of Dental Services by Children Covered by Medicaid: 2000–2010," *Medicare & Medicaid Research Review* Vol. 3, No. 3 (2013): E1–E13, doi:10.5600/mmrr.003.03.b01.

[65] Pourat, Naderah, *Snapshot: Haves and Have-Nots: A Look at Children's Use of Dental Care in California* (Oakland, Calif.: California Health Care Foundation, Feb. 2008), retrieved from *https://www.chcf.org/publication/haves-and-have-nots-a-look-at-childrens-use-of-dental-care-in-california/*.

[66] Simonson Maiuro, Lisa, *California Health Care Almanac: Denti-Cal Facts and Figures* (Oakland, Calif.: California Health Care Foundation, May 2010), retrieved from *https://www.chcf.org/wp-content/uploads/2017/12/PDF-DentiCalFactsAndFigures2010.pdf*.

[67] Vestal, Christine, "Adult Dental Coverage Expanding Slowly in Medicaid," *Stateline*, The Pew Charitable Trusts, June 10, 2015, *https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2015/6/10/adult-dental-coverage-expanding-slowly-in-medicaid*.

[68] Isang, Inyang A.; Katharine E. Zuckerman; Sowmya R. Rao; et al, "Association Between Parents' and Children's Use of Oral Health Services," *Pediatrics* Vol. 125, No. 3 (March 2010): 502–8, doi:10.1542/peds.2009-1417.

Sonoma County are predominantly Spanish speakers) are less likely than English-fluent parents to take their children for regular dental visits.

For the past decade, many counties and community health centers have attempted to improve dental access in their service areas. In Sonoma County, seven CHC organizations, including Alexander Valley Healthcare, have expanded their number of dental operatories, often with financial assistance of Sonoma County' First Five Commission.

In 2009 and 2014, Sonoma County's Department of Health Services conducted Smile Survey screening programs to assess oral health problems. The 2014 program included oral health screenings of 1,582 kindergartners and 3rd graders, conducted at 15 randomly selected grade schools. That program revealed that dental neglect is still a major problem in Sonoma County:

- 51 percent of children screened in 2014 had a history of tooth decay: 46 percent of kindergartners and 56 percent of 3rd graders.
- 18 percent had untreated tooth decay: 19.5 percent of kindergartners and 15.5 percent of 3rd graders.
- More than 4 percent of children screened were judged to be **in need of urgent dental care**, indicated by the presence of abscesses, inflammation, and pain.
- More than half (56 percent) of the children screened in 2014 had never received any kind of dental sealants.

The county screenings also documented serious health disparities by race and income. Hispanic children in Sonoma County were significantly more likely than white non-Hispanic children to:

- Have experienced tooth decay (64 percent versus 34 percent).
- Have untreated tooth decay (21.5 percent versus 11.0 percent).
- Likely need urgent dental care (6.2 percent versus 2.5 percent).

Schools with higher percentages of children enrolled in the federal Free and Reduced Price Lunch Program (FRLP) were more likely to evidence tooth decay and/or untreated decay, as illustrated by the following table.

Table 61: Percentages of Sonoma County Schoolchildren with Tooth Decay History or Untreated Decay by School's Level of Free or Reduced-Price Lunch Program (FRLP) Enrollment, 2014

Percentage of Students Enrolled in FRLP	% of Students with History of Tooth Decay	% of Students with Untreated Tooth Decay
Less than 25%	32.8%	10.5%
25–49%	39.4%	11.4%
50–74%	54.5%	22.3%
Over 75%	68.1%	22.8%

Source: Sonoma County Dept. of Health Services, Sonoma County 2014 Smile Survey, Nov. 14, 2014

The placement of sealants on molar surfaces and professional application of topical fluoride (usually at six-month intervals) are evidenced-based practice[69] [70] and are among the most effective procedures available to prevent tooth decay in children. The Smile Survey results indicate that the percentage of students who had received such sealants increased from 17 percent in 2009 to 44 percent in 2014. While that is good news, these results may overstate the actual gains, since the study counted any child who had had sealant on at least one molar tooth as having received recent sealants.

As a result of these studies, Sonoma County is now engaged in a broader oral health screening program using more community providers.[71] AVH is participating in this broader screening, as are other Sonoma County FQHCs that offer dental services.

Weight and Obesity

According to the 2016 California Health Interview Survey, 40.7 percent of Sonoma County 5th graders are overweight for their age, the same percentage as 5th graders statewide.

Male students are more likely to be overweight or obese (45.8 percent) than are female students (37.5 percent.

In Cloverdale Unified School District, 48.6 percent of all 5th graders are overweight or obese, including 56.6 percent of 5th grade boys and 41.1 percent of 5th grade girls.

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[69] American Dental Association Council on Scientific Affairs, "Professionally applied topical fluoride: evidenced-based clinical recommendations," *Journal of the American Dental Association* Vol. 137, No. 8 (May 2006): 1151–9, doi:10.14219/jada.archive.2006.0356.

[70] Ahovuo-Saloranta, Anneli; Helena Forss; Anne Hiiri; et al, "Pit and fissure sealants versus fluoride varnishes for preventing dental decay in children and adolescents," *Cochrane Database of Systematic Reviews* Issue 3 (March 2010), Article No. CD003067, doi:10.1002/14651858.CD003067.pub4.

[71] Sonoma County Dental Health Network, *Strategic Plan 2017–2020*, November 2016, retrieved from *https://sonomacounty.ca.gov/Health/Dental-Health/*.

Iron Deficiency Anemia

Historically, low-income children in Sonoma County are more likely than low-income children statewide or nationally to suffer iron deficiency anemia, a symptom of poor nutrition. This is true for both young children under age 5 and for 5-to-20-year-olds.

Table 62: Percentages of Low-Income Children with Iron Deficiency Anemia by Age Group, California, Sonoma County, and U.S., 2008–2010

	Iron Deficiency Anemia		
Age Range	**California**	**Sonoma County**	**National**
0–5 years	13.9%	16.9%	14.6%
5–20 years	12.2%	14.9%	N/A

Data is for low-income children (i.e., with household incomes below 200 percent of the federal poverty level). No newer figures were available at the time of writing. Source: CDC Pediatric Nutrition Surveillance System, 2008–2010.

Blood Lead Testing

Children with iron deficiency anemia are often considered at greater risk of "pica": the compulsion to chew on surfaces, a common cause of exposure to lead paint.

Unfortunately, 94.1 percent of children under age 6 in Sonoma County have not had their blood lead tested,[72] which is even worse than the 84.1 percent of children in this age range nationally who have not been tested.

Childhood Chronic Conditions

A 2010 California Health Care Foundation report[73] comparing the prevalence and severity of chronic conditions across California counties found almost one-fifth (19.3 percent) of Sonoma County children aged 1–17 had one or more chronic conditions, significantly more than the state average of 16.0 percent.

Approximately 35.9 percent of Sonoma County children with chronic conditions required "frequent use" of healthcare services.

Of those Sonoma County children, 40.1 percent experienced known barriers to healthcare use such as lack of a regular physician or lack of insurance. The percent of Sonoma County families

[72] Centers for Disease Control and Prevention, "Childhood Lead Poisoning Data, Statistics, and Surveillance," last updated Sep. 1, 2016, retrieved from *https://www.cdc.gov/nceh/lead/data/index.htm*.

[73] Lui, Camillia, and Steven P. Wallace, *Chronic Conditions of Californians: 2007 California Health Interview Survey* (Oakland, Calif.: California Health Care Foundation, March 2010), retrieved from *https://www.chcf.org/publication/2010-edition-chronic-conditions-californians-2007-chis/*.

that reported experiencing barriers to care was the highest of any county in the state. (The comparable statewide figure was 22.7 percent.)

Childhood Asthma

According to California Health Interview Survey data, 9.4 percent of Sonoma County children under age 12 have been diagnosed with asthma, compared to 12.8 percent statewide.[74] However, 23.2 percent of Sonoma County's low-income children under 12 have had an asthma diagnosis, an alarming figure much greater than the state average (which is 12.8 percent for low-income children).

One upside is that the county's healthcare system appears to be doing a better-than-average job of managing pediatric asthma. Sonoma County's risk-adjusted hospitalization rate for pediatric asthma among children aged 2–17 is much better than the statewide rate: 40.2 per 100,000 versus 88.5/100,000.[75]

Adolescent Health

ADOLESCENTS' HEALTH AND WELLNESS

Immunization

In addition to the vaccination requirements for younger children, California schools are required to check immunization records for all students advancing to 7th grade before entry.

Students entering 7th grade need to demonstrate that they have received one dose of tetanus, diphtheria, pertussis (Tdap) vaccine and two doses of varicella (chickenpox) vaccine. As with other required school vaccinations, medical exemptions are permitted, but religious/personal belief exemptions were eliminated in 2016.

In Sonoma County, 98.8 percent of students entering 7th grade meet these requirements.[76] Local school district data is not yet available.

[74] California Health Interview Survey (CHIS), UCLA Center for Healthcare Policy Research, 2014–2017.

[75] California Office of Statewide Planning and Development, *AHRQ Pediatric Quality Indicators (PDIs)*, 2013, retrieved from *https://oshpd.ca.gov/data-and-reports/healthcare-quality/ahrq-quality-indicators/#pediatric-quality-indicators-pdi-for-california-statewide-county*.

[76] California Dept. of Public Health, Immunization Branch, *2017-2018 7th Grade Immunization Assessment – Executive Summary*, 2018, retrieved via *http://eziz.org/assets/docs/shotsforschool/2017-18CA7thGradeAssessmentSummary.pdf.*

Nutrition

Many Sonoma County teens go without breakfast. Furthermore, the percentage who do so climbs as teens get older:

- 26.6 percent of Sonoma County 7th graders skip breakfast (compared to 33.0 percent of 7th graders statewide).
- 36.3 percent of Sonoma County 9th graders skip breakfast (compared to 38.3 percent of 9th graders statewide).
- 39.3 percent of 11th graders skip breakfast (compared to 38.4 percent of 11th graders statewide).

In the Cloverdale Unified School District, the percentages of 7th and 11th grade students skipping breakfast are greater than the county and state averages:

- 44.6 percent of 7th graders
- 29.7 percent of 9th graders
- 46.3 percent of 11th graders.

Overall, Sonoma County teens aged 13–18, even from low-income families (i.e., with incomes less than 200 percent of the federal poverty level), eat better than do peers statewide. Thirty-one percent of all Sonoma County teens and 43.9 percent of low-income ones report eating five servings or more of fruits and vegetables a day (compared to 24.3 percent of all teens and 19.6 percent of low-income teens statewide). About half (50.9 percent) report eating fast food in the past week (compared to 79.9 of teens 13–18 statewide) and 66.6 percent had not drunk soda or other sugar-sweetened drinks in the previous day (compared to 61.2 percent statewide).[77]

Physical Activity

Sonoma County adolescents are less active than are their statewide peers.[78] Only 37.8 percent of Sonoma County teens get an hour or more of physical activity four or more days a week, compared to 45 percent of teens statewide.

[77] California Health Interview Survey (CHIS), UCLA Center for Health Policy Research, 2014–2017 pooled data.

[78] Ibid.

For adolescents whose family income is below 200 percent of the federal poverty level, the gap is larger. Only 34.8 percent of low-income Sonoma County teens are active four or more days a week, compared to 57.8 percent of low-income teens statewide.

Fitness

In the 2016–2017 school year, only 25.9 percent of Sonoma County 7th graders passed all six of California's standardized physical fitness tests, down from 29.1 percent in the 2013–2014 school year. Only 33.3 percent of county 9th graders passed all six tests, down from 37.4 percent in the 2013–2014 school year.

Statewide, California also saw a small drop in the percentages of students passing all six tests. The pass rate for 7th graders fell from 33.0 percent to 31.4, while the pass rate for 9th graders fell from 38.1 percent to 34.8 percent.

In the same period, Cloverdale Unified School District saw an increase in the number of 7th graders passing all six tests, from 23.8 percent to 25.4 percent, but a major drop in 9th graders' pass rate: from 46.3 percent to 25.3 percent.

Table 63: Pass Rates for California's Standardized Physical Fitness Tests (All Six Tests), 7th and 9th Graders, 2016–2017

	Percentage of Students Passing Physical Fitness Tests		
Grade Level	**California**	**Sonoma County**	**Cloverdale Unified**
7th grade	31.4%	25.9%	23.4%
9th grade	34.5%	33.5%	25.3%

Source: California Dept. of Education, DataQuest, Physical Fitness Testing for 2016–2017 School Year, as cited on kidsdata.org

Weight and Obesity

In 2017, nearly four in ten (38.7 percent) California 7th graders were either overweight or obese, as were 37.2 percent of California 9th graders. The same percentages of Sonoma County's 7th and 9th graders were also overweight or obese.[79]

In the Cloverdale Unified School District, 48.6 percent of 7th graders and 24.0 percent of 9th graders were reported as overweight or obese in 2017.

[79] 2017 data from kidsdata.org.

STRESS AND VIOLENCE

Bullying and Harassment

Bullying and harassment are common occurrences for adolescents in the state and county. In the California Healthy Kids Surveys for 2013–2015:

- One in four teens (39.2 percent) statewide reported being bullied or harassed in the past year. One in five students statewide were also cyberbullied.
- In Sonoma County, 32.6 percent of high school students reported being bullied or harassed in the past year.
- In the Cloverdale Unified School District, 51.8 percent of students reported being bullied or harassed in the past year.

Survey respondents report that gender, race/ethnicity or national origin, religion, disability, and sexual orientation are all common bases for harassment in schools.

More female students in each grade level are bullied than male students in Cloverdale Unified, Sonoma County, and statewide.

Table 64: Percentages of Students Experiencing Bullying and Harassment by Gender and Grade Level, California, Sonoma County, and Cloverfield Unified School District, 2013–2015

	Percentage of Students Who Have Been Bullied/Harassed					
	California		Sonoma County		Cloverdale Unified	
Grade Level	F ♀	M ♂	F ♀	M ♂	F ♀	M ♂
7th grade	41.9%	36.4%	34.3%	31.0%	41.2%	23.8%
9th grade	40.9%	33.0%	35.2%	27.8%	40.8%	14.6%
11th grade	32.2%	27.5%	20.8%	22.5%	22.6%	17.1%

Source: California Dept. of Education, California Healthy Kids Survey, and California Student Survey (WestEd), 2013–2015, Grades 7, 9, and 11, as cited on *kidsdata.org*

Physical Fights at School

Physical fights at school are also a problem for adolescents in Sonoma County. Typically, the number of fights declines as students mature; fewer 11th graders report physical fights than do 7th graders.

Both male and female students report being in fights in all grades. However, more male students have physical fights than do female students at all grade levels.

Table 65: Percentages of Teens Who Have Been in One or More Physical Fights at School in the Past Year by Gender and Grade Level, California, Sonoma County, and Cloverfield Unified School District, 2013–2015

	Percentage of Students Who Have Been in a Physical Fight in the Past Year					
	California		Sonoma County		Cloverdale Unified	
Grade Level	F ♀	M ♂	F ♀	M ♂	F ♀	M ♂
7th grade	10.6%	22.7%	8.8%	19.8%	6.2%	35.0%
9th grade	9.4%	16.6%	10.3%	15.9%	6.1%	20.0%
11th grade	6.9%	12.3%	7.5%	12.2%	3.2%	12.1%

Source: California Dept. of Education, California Healthy Kids Survey, and California Student Survey (WestEd), 2013–2015, Grades 7, 9, and 11, as cited on *kidsdata.org*

In the 2013–2015 period, the most recent period for which data was available, Cloverdale Unified School District's 7th and 9th grade boys were significantly more likely to have been in at least one physical fight at school than were their male peers countywide or statewide.

By 11th grade, the percentage of Cloverdale Unified male students who had been in fights at school had dropped slightly below the county and state averages.

Across all grade levels, female students of Cloverdale Unified were significantly less likely than their female peers countywide or statewide to have been in a fight at school.

At the state and county levels, the percentages of students who reported having been in fights at school in the 2013–2015 period were substantially lower than the previous 2011–2013 report across grade levels and genders. (Cloverdale Unified data was not available for the 2011–2013 period.)

Table 66: Percentages of Teens Who Have Been in One or More Physical Fights at School in the Past Year by Gender and Grade Level, California, Sonoma County, and Cloverfield Unified School District, 2011–2013

	Percentage of Students Who Have Been in a Physical Fight in the Past Year					
	California		Sonoma County		Cloverdale Unified	
Grade Level	F ♀	M ♂	F ♀	M ♂	F ♀	M ♂
7th grade	14.9%	22.7%	12.2%	26.7%	N/A	N/A
9th grade	13.5%	16.6%	13.5%	23.1%	N/A	N/A
11th grade	8.1%	12.3%	8.8%	17.9%	N/A	N/A

Source: California Dept. of Education, California Healthy Kids Survey, and California Student Survey (WestEd), 2011–2013, Grades 7, 9, and 11, as cited on *kidsdata.org*

Dating Violence

Teens as well as adults experience violence in dating relationships or intimate partnerships. In California, approximately one teen in 20 experiences physical abuse in dating relationships.

Unfortunately, there are no figures on how many children and adolescents have witnessed domestic violence.

In Sonoma County, 5.0 percent of 11th grade girls report having experienced dating violence in the past year, the same as female teens statewide. During the same period, 7.4 percent of Sonoma County's 11th grader boys reported having experience dating violence, compared to 6.9 percent of male teens statewide.[80]

Teen Births

Compared to a decade ago, teen births in Sonoma County had already fallen 29 percent[81] by the time of the 2015 Joint Community Needs Assessment. Since then, the county's teen birth rate has fallen further, from 10.7 births per 1,000 girls aged 15–19 to 9.3/1,000.[82]

This is substantially lower than the state rate of 15.7/1,000. The state rate also represents an improvement from the previous needs assessment, when the California rate was 17.6/1,000.

As suggested by the National Center for Health Statistics (NHSC), the decline in teen pregnancies does not indicate less sexual activity among adolescents, but rather the fact that four out of five teens now use a contraceptive method when they have sex. According to the 2016 California Health Interview Survey:

- Statewide, 18.3 percent of adolescents aged 15–19 have had sex.
- In Sonoma County, approximately 26.3 percent of 15–19-year-olds have had sex.

Sexually Transmitted Diseases Among Adolescents

With sexual activity, many adolescents are also exposed to sexually transmitted diseases. The two most common sexually transmitted infections (STIs) are chlamydia and gonorrhea.[83]

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[80] Data sources: California Dept. of Education, California Healthy Kids Survey, and California Student Survey (WestEd), 2011–2013. Reported by *kidsdata.org*.

[81] Sonoma County Dept. of Public Health, "Maternal Child Adolescent Fact Sheet: Teen Birth," Nov. 2013, based on a comparison of teen births in 2000–2002 and 2009–2011.

[82] *California County Health Status Profiles 2019*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2019, retrieved from https://www.cdph.ca.gov/Programs/CHSI/CDPH%20Document%20Library/CountyProfiles_2019.pdf.

[83] Data source: California Dept. of Public Health, Sexually Transmitted Diseases Data; California Dept. of Finance, *Race/Ethnic Population with Age and Sex Detail, 2000–2010, 2010–2060*; Centers for Disease Control and Prevention, *Sexually Transmitted Diseases Data & Statistics*; and U.S. Census Bureau, *Population Estimates*

Table 67: Sexually Transmitted Infections Among Teens 15–19, California and Sonoma and Mendocino Counties, 2015

	Total Reported Sexually Transmitted Infections Among Teens 15–19					
	California		Sonoma County		Mendocino County	
Infection	Female ♀	Male ♂	Female ♀	Male ♂	Female ♀	Male ♂
Chlamydia	28,792	7,838	353	19	88	16
Gonorrhea	3,741	2,519	84	10	6	9

Table 68: Sexually Transmitted Infection Rates Among Teens 15–19, California and Sonoma and Mendocino Counties, 2015

	Sexually Transmitted Infection Rates per 100,000 Residents Aged 15–19					
	California		Sonoma County		Mendocino County	
Infection	Female ♀	Male ♂	Female ♀	Male ♂	Female ♀	Male ♂
Chlamydia	1,139.1	296.2	1,196.3	64.4	1,311.2	301.7
Gonorrhea	148.0	15.2	271.2	32.3	115.7	166.7

Adolescents tend to have higher rates of sexually transmitted infection than do older adults. While both chlamydia and gonorrhea are generally treatable after detection, antibiotic-resistant strains have appeared, and having an STI can sometimes increase susceptibility to future infection or other illnesses.[84]

The lower infection rates among male adolescents may reflect lower rates of testing rather than fewer cases. Various studies have consistently found that adolescent girls are significantly more likely than adolescent boys to be tested for STIs.

Depression

A substantial percentage of teens in Sonoma County and statewide report experiencing feelings of depression at all grade levels. Female students in every grade level report higher rates of depression-related feelings than do their male peers, both statewide and in Sonoma County.

Fewer Sonoma County students at all grade levels report feelings of depression than do students the same age statewide; that is true for both male and female students.

In the Cloverdale Unified School District, depression-related feelings among 7th graders are substantially more common than either the county or state averages for both boys and girls. By

Program, Estimates of the Resident Population by Sex & Age for the United States, 2000–2010, 2010–2015 (Sept. 2016). Reported by kidsdata.org.

[84] Committee on Adolescence and Society for Adolescent Health and Medicine, "Screening for Nonviral Sexually Transmitted Infections in Adolescents and Young Adults," *Pediatrics* Vol. 134, No. 1 (July 2014): e302–11, doi:10.1542/peds.2014-1024.

9th grade, the percentage of students reporting feelings of depression has fallen below the county average for boys, but remains significantly above the county average for girls (albeit still somewhat below the statewide average). By 11th grade, the percentage of girls reporting feelings of depression has fallen below both the state and county and the percentage of boys reporting depression has dropped to less than one-third of either the county or statewide average.

Table 69: Percentages of Students Who Report Depression-Related Feelings by Gender and Grade Level, California, Sonoma County, and Cloverdale Unified School District, 2013–2015

	Percentage of Students Who Report Feelings of Depression					
	California		Sonoma County		Cloverdale Unified	
Grade Level	Female ♀	Male ♂	Female ♀	Male ♂	Female ♀	Male ♂
7th grade	32.2%	18.2%	21.0%	17.9%	45.5%	35.0%
9th grade	42.2%	20.1%	26.4%	18.2%	39.6%	17.1%
11th grade	41.4%	24.7%	40.0%	21.5%	35.5%	6.1%

Source: California Dept. of Education, California Healthy Kids Survey, and California Student Survey (WestEd), 2013–2015, Grades 7, 9, and 11, as cited on *kidsdata.org*

Suicide and Self-Inflicted Injury

Adolescents of high school age are at risk of suicide for a variety of reasons, including depression, family problems, and having been victims of abuse. The California Healthy Kids Survey asks generalized questions about whether students have considered the idea of committing suicide. (The survey does not ask whether students have actually attempted suicide.)

In general, the percentages of Sonoma County students in 9th and 11th grade who report suicidal ideas were near or slightly lower than the statewide averages for both genders. The main exception was that 11th grade boys in Sonoma County are significantly less likely than male peers statewide to report suicidal ideation.

Table 70: Percentages of Students Who Report Suicidal Ideation by Gender and Grade Level, California, Sonoma County, and Cloverdale Unified School District, 2013–2015

	Percentage of Students Who Report Suicidal Ideation					
	California		Sonoma County		Cloverdale Unified	
Grade Level	Female ♀	Male ♂	Female ♀	Male ♂	Female ♀	Male ♂
9th grade	28.5%	11.0%	27.0%	10.7%	34.0%	4.9%
11th grade	22.4%	23.2%	24.2%	12.1%	12.9%	17.6%

Source: California Dept. of Education, California Healthy Kids Survey, and California Student Survey (WestEd), 2013–2015, Grades 7, 9, and 11, as cited on *kidsdata.org*

Within the Cloverdale Unified School District, suicidal ideation among 9th grade girls is substantially more common than the county or state averages for 9th grade girls. By contrast, the percentage of Cloverdale Unified 9th grade boys who report suicidal ideation is less than half the county or state averages.

By the 11th grade level, this situation has reversed. Cloverfield Unified's 11th grade girls are substantially *less* likely than female peers countywide or statewide to report suicidal ideation.

However, the percentage of boys reporting suicidal ideation has increased significantly: to 17.6 percent, compared to 12.1 percent for 11th grade boys countywide. This is still lower than the state average, but remains a cause for concern.

A related metric is the rate of **hospitalizations for self-inflicted nonfatal injuries**. These include both suicide attempts and injuries that were not intended to result in death, such as self-mutilation, self-cutting, or self-hitting. Both categories of self-injury are serious psychological problems and public health concerns.

While Sonoma County teens have a higher incidence of hospitalization for unintentional injury than do teens statewide (213.7 per 100,000 population versus 204.7/100,000),[85] the county's hospitalization rate for teens with intentional self-inflicted injuries is lower than the state's (32.2/100,000 versus 40.1/100,000). Both rates have declined over the past decade.[86]

ADOLESCENT SUBSTANCE USE

Smoking

Data from the 2013–2015 California Healthy Kids Survey indicates that the incidence of teen tobacco smoking declined from the 2011–2013 period, both statewide and in Sonoma County.

Historically, Sonoma County smoking rates have been much higher than statewide averages across all ethnic groups. For example, in 2011–2013, 16.7 percent of Sonoma County's Hispanic teens smoked, compared to only 9.0 percent of Hispanic teens statewide.

In the 2013–2015 period, the proportion of Sonoma County adolescents continued to be higher than statewide averages for each race/ethnicity, but the gaps have narrowed. For example,

[85] *Sonoma County Community Health Assessment: Sonoma County 2013–2016*.

[86] Data source: California Office of Statewide Health Planning and Development (OSHPD), Patient Discharge Data, 2012. Reported by kidsdata.org.

only 5.2 percent of Hispanic teens in Sonoma County reported smoking cigarettes in the past month, compared to 4.6 percent of Hispanic teens statewide during the same period.

Table 71: Percentages of Teens Who Smoked Cigarettes in the Past Month by Race/Ethnicity, California, Sonoma County, and Cloverdale Unified School District, 2011–2013 and 2013–2015

	Percentage of Teens Who Smoked Cigarettes in the Past Month			
	California		Sonoma County	
Race/Ethnicity	2011–2013	2013–2015	2011–2013	2013–2015
African-American	8.8%	3.6%	17.5%	5.8%
American Indian/Alaskan Native	9.5%	4.1%	31.8%	9.8%
Asian	4.1%	1.5%	7.5%	1.5%
Hispanic/Latino	9.0%	4.6%	16.7%	5.2%
Native Hawaiian/Pacific Islander	9.7%	4.1%	16.3%	10.4%
White, Non-Hispanic	8.1%	5.5%	13.1%	5.6%
Multiracial	7.8%	4.5%	12.6%	4.5%

Source: California Dept. of Education, California Healthy Kids Survey, and California Student Survey (WestEd), 2011–2013 and 2013–2015, Grades 7, 9, and 11, as cited on *kidsdata.org*

E-Cigarettes/Vaping

Unfortunately, current indications are that many teens have shifted to the use of e-cigarettes, known as "vaping." Although most state laws barring the sale of tobacco products to minors (and, in California, to adults under 21) also apply to vaping and e-cigarette paraphernalia, 2018 data from the National Youth Tobacco Survey indicates that 4.9 percent of middle school students and 20.8 percent of high school students nationwide now use e-cigarettes.[87]

California Health Interview Survey data indicates that e-cigarette use among California teens is substantially greater than the national average. In the 2017 CHIS, 48.0 percent of respondents under age 19 (40.5 percent of boys and an alarming 58.9 percent of girls) reported having smoked an e-cigarette in the past month. This is substantially greater than the number of teens who report being current cigarette smokers.[88]

Detailed data for Sonoma County teens remains scarce, but even in 2013–2015, Sonoma County middle-schoolers were significantly more likely than middle-schoolers statewide to use

[87] Cullen, Karen A.; Bridget K. Ambrose; Andrea S. Gentzke, et al., "Notes from the Field: Use of Electronic Cigarettes and Any Tobacco Product Among Middle and High School Students – United States, 2011–2018." *Morbidity and Mortality Weekly Report* Vol 67, No. 45 (Nov. 16, 2018): 1276–7, doi:10.15585/mmwr.mm6745a5.

[88] California Health Interview Survey (CHIS), UCLA Center for Health Policy Research, 2017.

e-cigarettes. Those numbers have likely increased, in keeping with broader national and regional trends.

Table 72: Students Who Used E-Cigarettes/Vaped in the Past Month by Gender and Grade Level, California, Sonoma County, and Cloverdale Unified School District, 2013–2015

	Percentage of Students Who Used E-Cigarettes in the Past Month					
	California		Sonoma County		Cloverdale Unified	
Grade Level	Female ♀	Male ♂	Female ♀	Male ♂	Female ♀	Male ♂
7th grade	7.6%	7.2%	9.5%	17.6%	N/A	N/A
9th grade	11.2%	13.7%	N/A	N/A	N/A	N/A
11th grade	12.0%	15.4%	N/A	N/A	N/A	N/A

Source: California Dept. of Education, California Healthy Kids Survey, and California Student Survey (WestEd), 2013–2015, Grades 7, 9, and 11, as cited on *kidsdata.org*. Lines marked "N/A" indicate that data is unavailable.

E-cigarettes are battery-operated devices that heat and vaporize liquid containing nicotine, flavorants, and other chemicals. Early e-cigarettes were typically shaped like a conventional cigarette, but now encompass a variety of other forms, including vape pens and devices that resemble USB flash drives.

Although e-cigarettes are considered smokeless because there is no combustion involved,[89] nicotine is highly addictive and poses a number of health risks however it is ingested. Also, many current e-liquids contain very high levels of nicotine. For example, JUUL, which controls the largest share of the e-cigarette market, now sells e-liquids with 5.9 percent nicotine by volume, much greater than the 1 to 3 percent liquids other brands had previously marketed as "super high" strength.[90]

There are a number of likely reasons for the shift to e-cigarettes among adolescents. One may simply be novelty; vaping is newer and trendier than cigarettes. Another factor is that vaping is more discreet than combustible tobacco use. Not only are the devices themselves much easier to conceal from teachers, parents, or caregivers, vaping minimizes the telltale smell, smoker's breath, and nicotine stains associated with cigarette or cigar use. Teens also find e-cigarettes easy to obtain,[91] which may be less true of traditional tobacco products.

[89] O'Connor, Richard J., "Non-cigarette tobacco products: What have we learnt and where are we headed?" *Tobacco Control* Vol. 21, No. 2 (March 2012): 181–90, doi:10.1136/tobaccocontrol-2011-050281.

[90] Jackler, Robert K., and Divya Ramamurthi, "Nicotine arms race: JUUL and the high-nicotine market," *Tobacco Control*, Online First, Feb. 6, 2019, doi:10.1136/tobaccocontrol-2018-054796.

[91] Miech, Richard A.; Lloyd D. Johnston; Patrick M. O'Malley, et al, *Monitoring the Future 2017: Vol. 1: Secondary School Students* (Ann Arbor: Institute for Social Research, the University of Michigan, 2018), as reported by the National Institute on Drug Abuse, June 1, 2018, *https://www.drugabuse.gov/news-events/news-releases/2018/06/full-survey-annual-teen-drug-use-now-available-additional-data*.

Also significant is the availability of different flavors, including candy and fruit flavors not traditionally associated with tobacco. The large numbers of high school age e-cigarette users who use flavored e-liquids — 60.9 percent in 2017, rising to 67.8 percent in 2018[92] — suggest that the proliferation of flavors is helping to attract young people to these products.

Some users may also believe that vaping is safer than smoking cigarettes. While vaping may avoid some of the health hazards associated with combustible tobacco products, the FDA has warned since 2009 that e-cigarette vapor contains "detectable levels of known carcinogens and toxic chemicals to which users could be exposed." In some cases, this includes toxicants such as formaldehyde and/or benzene,[93] which created from the heating of chemicals in the e-liquid.

A 2016 report from the Office of the Surgeon General notes that the full health impact of e-cigarette use is still poorly understood, but warns that health risks related to nicotine exposure may be similar to traditional cigarettes, including the danger of second-hand nicotine exposure for individuals near the vapor plume.[94]

Some health practitioners regard e-cigarettes as a potential tool for smokers to use in tapering off nicotine addiction. Unfortunately, there are as yet no large, high-quality studies examining whether e-cigarettes can be effectively used to cut down or quit smoking long-term. A four-country study published in 2013 found that e-cigarette users were no more likely to quit than regular smokers, even though 85 percent of them said they were using e-cigarettes to quit.[95]

Alcohol Use and Binge Drinking

California high school students start drinking early; 11.6 percent of 7th grade girls and 9.1 percent of 7th grade boys are already drinking alcohol. By 9th grade, 25.5 percent of girls and 20.7 percent of boys statewide are drinking. By the 11th grade, 34.4 percent of female students and 32.2 percent of male students report drinking alcohol.

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[92] Cullen et al 2018.

[93] France de Bravo, Brandel; Laura Gottschalk; John-Anthony Fraga; and Jared Hirschfield, "Is Vaping Safer Than Smoking Cigarettes," National Center for Health Research, *http://www.center4research.org/vaping-safer-smoking-cigarettes-2/.*

[94] U.S. Dept. of Health and Human Services, Public Health Service, Office of the Surgeon General, *E-Cigarette Use Among Youth and Young Adults: A Report of the Surgeon General* (Atlanta: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2016), retrieved from *https://e-cigarettes.surgeongeneral.gov/documents/2016_SGR_Full_Report_non-508.pdf*.

[95] Adkison, Sarah E.; Richard J. O'Connor; Maansi Bansal-Travers; et al, "Electronic Nicotine Delivery Systems: International Tobacco Control Four-Country Survey," *American Journal of Preventive Medicine* Vol. 44, No. 3 (March 2013): 207–15, doi:10.1016/j.amepre.2012.10.018.

This is troubling from a public health perspective because individuals who start drinking before age 15 are four times more likely to develop alcohol problems later in life than are people who start drinking after age 21.[96]

California Healthy Kids Survey data indicates that the percentage of Sonoma County 7th graders who drink alcohol is somewhat lower than the average for 7th graders statewide: only 5.0 percent of girls and 5.5 percent of boys. However, by 11th grade, Sonoma County teens are matching or nearly matching their peers statewide:

- 35.2 percent of Sonoma County's 11th grade girls report drinking alcohol in the past month, compared to 34.4 percent of 11th grade girls statewide.
- 31.1 percent of Sonoma County's 11th grade boys report drinking in the past month, compared to 32.2 percent of 11th grade boys statewide.
- In the Cloverdale Unified School District, 25.8 percent of female 11th graders and 38.9 percent of male 11th graders report drinking alcohol in the past month.

The percentage of teenagers who **binge drink** — defined as in the California Healthy Kids Survey as four or more drinks in a row — also rises between 7th and 11th grade. By 11th grade, 21.8 percent of female students and 21.9 percent of male students in Sonoma County report binge drinking at least once in the past month, compared to 15.5 percent of 11th grade girls and 16.2 percent of 11th grade boys statewide.

Binge drinking is significantly more common in the Cloverdale Unified School District than countywide or statewide for both boys and girls at all grade levels. In contrast to the county and the state, Cloverdale girls are more likely to binge drink than boys of the same grade level, although the boys tend to binge drink more frequently than do girls.

By the 11th grade, more than one in four female Cloverdale students (25.8 percent) and almost two in five male students (38.9 percent) binge drink at least once a month. Moreover, 16.1 percent of the district's 11th grade girls and 19.5 percent of the district's 11th grade boys binge drink three or more days a month.

[96] Community Prevention Initiative and the Maternal, Child & Adolescent Health Advisory Board in collaboration with Sonoma County Dept. of Health Services, "Underage Drinking in Sonoma County 2013," based on data from multiple sources, including, *inter alia*, the Entertainment Industries Council, Inc., and the National Institute on Alcohol Abuse and Alcoholism, "Spotlight on…Underage Drinking," *Newsbrief* No. 22, 2004; and Spear, Linda Patia, "The adolescent brain and age-related behavioral manifestations," *Neuroscience & Biobehavioral Reviews* Vol. 24, No. 4 (June 2000): 417–93, doi:10.1111/1467-8721.00072.

These high rates of binge drinking likely contribute to the high rates of adult binge drinking, discussed later in this chapter.

Table 73: Percentages of Students Who Report Binge Drinking in the Past Month by Gender and Grade Level, California, Sonoma County, and Cloverdale Unified School District, 2013–2015

	Percentage of Students Who Report Binge Drinking in the Past Month					
	California		Sonoma County		Cloverdale Unified	
Grade Level	Female ♀	Male ♂	Female ♀	Male ♂	Female ♀	Male ♂
7th grade	2.8%	2.4%	1.0%	1.6%	11.8%	4.5%
9th grade	8.7%	8.3%	9.5%	8.0%	24.0%	17.1%
11th grade	15.5%	16.2%	21.8%	21.9%	25.8%	38.9%

Source: California Dept. of Education, California Healthy Kids Survey, and California Student Survey (WestEd), 2013–2015, Grades 7, 9, and 11, as cited on *kidsdata.org*

A related concern is the proportion of students who combine drinking with driving, or ride with a driver who has been drinking. The percentage of Sonoma County teens who combine drinking and driving is fairly close to their peers statewide. However, female students in the Cloverdale Unified School District are likely than female peers countywide or statewide to combine drinking and driving, as are Cloverdale Unified 11th grade boys.

Table 74: Percentages of Students Who Report Drinking and Driving or Riding with a Driver Who Had Been Drinking in the Past Month by Gender and Grade Level, California, Sonoma County, and Cloverdale Unified School District, 2013–2015

	Percentage of Students Who Drove After Drinking/Rode with a Driver Who Had Been Drinking in the Past Month					
	California		Sonoma County		Cloverdale Unified	
Grade Level	Female ♀	Male ♂	Female ♀	Male ♂	Female ♀	Male ♂
9th grade	15.0%	12.5%	14.3%	13.7%	36.5%	12.2%
11th grade	19.0%	17.0%	20.1%	20.4%	33.3%	31.4%

Source: California Dept. of Education, California Healthy Kids Survey, and California Student Survey (WestEd), 2013–2015, Grades 7, 9, and 11, as cited on *kidsdata.org*

Marijuana or Other Drugs

California law was recently amended (effective Jan. 1, 2018) to allow adults 21 or older to use, carry, grow, or process up to 38.5 grams (1 ounce) of cannabis/marijuana for recreational consumption on private property. Persons over 18 may also purchase and use marijuana for medical purposes with a written physician's recommendation and a county-issued medical marijuana identification card.

Although it remains illegal for individuals under 18 to buy, possess, or consume cannabis products, whether recreationally or for medical purposes, marijuana use is common among

California teenagers. By 9th grade, almost one in four of California girls (24.5 percent) and almost as many boys (23.8 percent) use marijuana. By 11th grade, those figures have risen to one in three girls (33.4 percent) and almost four in ten (38.9 percent) boys.

As with alcohol use, the prevalence of adolescent marijuana use in Sonoma County is significantly greater than the statewide averages:

- In 9th grade, 28.6 percent of Sonoma County's female students and 27.4 percent of the county's male students report using marijuana.
- By 11th grade, those figures have increased to 43.1 percent of girls and 45.9 percent of boys.

Frequency of marijuana use also rises among older students. Sonoma County 11th graders of both genders are more likely than peers statewide to use marijuana almost daily. In 2013–2015, 4.9 percent of Sonoma County's 11th grade girls and 11.9 percent of the county's 11th grade boys reported using marijuana 20 to 30 days a month, compared to 3.5 percent and 8.9 percent respectively statewide.

The figures are even higher among boys in Cloverdale Unified School District, where 21.2 percent of 11th grade boys reported using marijuana 20 to 30 days a month. None of Cloverdale's female 11th graders reported using marijuana more than 20 days per month. However, 12.9 percent of female 11th graders used marijuana 10 to 19 days a month, compared to only 2.1 percent of all Sonoma County 11th grade girls.

Clearly, marijuana use is both more common and more frequent among Cloverdale teens than countywide.

Despite the legalization of recreational marijuana use for adults, the California Department of Public Health has undertaken an ongoing public education campaign to emphasize that marijuana remains a health risk for youth. Key points of that campaign include the following:

- Like cigarettes, smoking cannabis is harmful to the lungs.[97] [98]

[97] Moir, David; William S. Rickert; Genevieve Levasseur; et al, "A Comparison of Mainstream and Sidestream Marijuana and Tobacco Cigarette Smoke Produced Under Two Machine Smoking Conditions," *Chemical Research in Toxicology* Vol. 21, No. 2 (Feb. 2008): 494–502, doi:10.1021/tx700275p.

[98] Taskin, Donald P., "Effects of Marijuana Smoking on the Lung," *Annals of the American Thoracic Society* Vol. 10, No. 3 (June 2013): 239–47, doi:10.1513/AnnalsATS.201212-127FR.

- The THC levels in marijuana have risen over the past two decades.[99]
- Eating high levels of THC in cookies or other "edibles" can lead to overdose or poisoning.[100] [101]
- Regular cannabis use has been linked to increased anxiety, depression, and suicide, especially for teens with a family history of mental illness.[102] [103] [104]

Prescription Drug Abuse

Recreational use of prescription medications is another widespread public health concern. In California in 2011–2013, more than 12 percent of all 9th graders self-reported recreational use of prescriptions medications (12.4 percent of female students and 12.6 percent of male students). By 11th grade, 17.0 percent of female and 19.9 percent of male students reported prescription drug abuse.

Among Sonoma County 9th graders, girls were somewhat more likely than boys to abuse prescription drugs: 4.7 percent of female students self-reported recreational prescription drug use, compared to 12.9 percent of male students. The gap between Sonoma County and the state as whole grows by 11th grade for both genders: In 2011–2013, **19.9 percent of Sonoma County female 11th graders and 24.5 percent of the county's male 11th graders admitted recreational use of prescription drugs**.

[99] ElSohly, Mahmoud A.; Zlatko Mehmedic; Susan Foster; et al, "Changes in Cannabis Potency Over the Last 2 Decades (1995–2014): Analysis of Current Data in the United States," *Biological Psychiatry* Vol. 79, No. 7 (April 2016):613–9, doi:10.1016/j.biopsych.2016.01.004.

[100] Mehmedic, Zlatko; Suman Chandra; Desmond Slade; et al, "Potency Trends of Δ^9-THC and Other Cannabinoids in Confiscated Cannabis Preparations from 1993 to 2008," *Journal of Forensic Science* Vol. 55, No. 5 (Sep. 2010):1209–17, doi:10.1111/j.1556-4029.2010.01441.x.

[101] Wang, George S.; Genie Roosevelt; Marie-Claire Le Lait; et al, "Association of Unintentional Pediatric Exposures with Decriminalization of Marijuana in the United States," *Annals of Emergency Medicine* Vol. 63, No. 6 (June 2014):684–9, doi:10.1016/j.annemergmed.2014.01.017.

[102] Kedzior, Karina K., and Lisa Tabata Laeber, "A positive association between anxiety disorders and cannabis use or cannabis use disorders in the general population--a meta-analysis of 31 studies," *BMC Psychiatry* Vol. 14 (May 10, 2014):136. doi:10.1186/1471-244x-14-136.

[103] Lev-Ran, Shaul; Bernard Le Foll; Kwame McKenzie; et al, "Bipolar disorder and co-occurring cannabis use disorders: Characteristics, co-morbidities and clinical correlates," *Psychiatry Research* Vol. 209, No. 3 (Oct. 2013): 459–65, doi:10.1016/j.psychres.2012.12.014.

[104] Borges, Guilherme; Courtney L. Bagge; and Ricardo Orozco, "A literature review and meta-analyses of cannabis use and suicidality," *Journal of Affective Disorders* Vol. 195 (May 2016): 63–74, doi:10.1016/j.jad.2016.02.007.

Among Cloverdale Unified students, the prevalence of prescription drug abuse among 9th graders of both genders were greater than students countywide or statewide, and increased significantly by 11th grade. Cloverdale's 11th students were nearly as likely to abuse prescription medication as they were to drink alcohol, suggesting widespread substance abuse problems.

Unfortunately, questions regarding prescription drug abuse were omitted from the 2013–2015 surveys, making it more difficult to track these worrying trends.

Table 75: Percentages of Students Who Have Reported Recreational Use of Prescription Drugs by Gender and Grade Level, California, Sonoma County, and Cloverdale Unified School District, 2011–2013

	Percentage of Students Who Recreationally Use Rx Medications					
	California		Sonoma County		Cloverdale Unified	
Grade Level	Female ♀	Male ♂	Female ♀	Male ♂	Female ♀	Male ♂
9th grade	12.4%	12.6%	14.7%	12.9%	25.0%	19.6%
11th grade	17.0%	21.0%	19.9%	24.6%	31.0%	39.4%
All grade levels	15.9%	18.8%	23.0%	26.5%	28.5%	28.7%

Source: California Dept. of Education, California Healthy Kids Survey, and California Student Survey (WestEd), 2011–2013, Grades 7, 9, and 11, as cited on *kidsdata.org*. More recent data was not available.

Connectedness as a Mitigating Factor

The California Healthy Kids Survey identifies students' sense of "connectedness" with school or community as an important mitigating factor for mental and behavioral health issues, including feelings of depression, suicide ideation, abuse of alcohol or other drugs, and other unhealthy behaviors.

The survey asks about connectedness in multiple ways. For example, students are asked whether there are adults who care for them, if adults have high expectations of them, and whether their school has resources to help students with problems. Students are also asked to rate their own level of connection to their school on a scale of "Low," "Medium," or "High." Those self-reported connectedness levels are then cross-tabulated with a host of other responses from the same students.

The results reveal a strong correlation between high levels of connectedness and lower incidence of depression, suicidal thoughts, and alcohol or other drug abuse.

Generally, Sonoma County students rate their connections to their school more highly than do students statewide in the same grade, but Cloverdale Unified students rate their sense connection lower than do students countywide or statewide. However, there is significant

fluctuation from one year to the next in the results, making it more difficult to identify specific trends.

Table 76: Student-Reported Levels of Connectedness by Grade Level, California, Sonoma County, and Cloverdale Unified School District, 2013–2015

	Student-Reported Levels of Connectedness								
	California			Sonoma County			Cloverdale Unified		
Grade Level	Low	Med.	High	Low	Med.	High	Low	Med.	High
7th grade	51.5%	39.6%	8.9%	70.1%	26.3%	3.1%	41.1%	42.9%	16.1%
9th grade	44.5%	44.9%	20.5%	57.0%	36.6%	6.3%	48.4%	46.2%	5.4%
11th grade	43.3%	45.2%	11.5%	51.2%	38.1%	10.6%	34.8%	49.3%	15.9%

Source: California Dept. of Education, California Healthy Kids Survey, and California Student Survey (WestEd), 2013–2015, Grades 7, 9, and 11, as cited on *kidsdata.org*

Connectedness varies by gender and grade level. For example, in the Cloverdale Unified School District, 7th and 9th grade girls report significantly lower levels of connectedness than do their female peers countywide. Cloverdale's 7th grade boys also have lower levels of connectedness than do male peers countywide, although connectedness at the 9th grade level is higher than for the county as a whole.

Generally, students who identify as LGBTQ or who describe themselves as "not sure" rate their connected to their school lower than do students who self-describe as straight and cisgender. (Most data for LGBTQ students in the small Cloverdale Unified School District is suppressed for confidentiality reasons and is not available for analysis.)

Connectedness also varies significantly by race/ethnicity. White students in Sonoma County generally rate their school connectedness higher than do other groups, although the percentage of Asian students who rank their coaction as "High" is close to that of white students.

In the Cloverdale Unified School District, the two largest ethnic groups, Hispanics/Latinos and white non-Hispanics, are close in self-reported connectedness.

Table 77: Student-Reported Levels of Connectedness by Race/Ethnicity, California, Sonoma County, and Cloverdale Unified School District, 2013–2015

	Student-Reported Levels of Connectedness								
	California			Sonoma County			Cloverdale Unified		
Race/Ethnicity	Low	Med.	High	Low	Med.	High	Low	Med.	High
African-American	36.6%	48.2%	15.2%	57.5%	33.5%	9.1%	N/A	N/A	N/A
American Indian/ Alaskan Native	44.1%	41.5%	14.4%	57.5%	33.5%	8.7%	S	S	S
Asian	49.1%	43.0%	7.9%	59.7%	32.1%	8.2%	S	S	S
Hispanic/Latino	43.6%	45.4%	11.0%	57.9%	35.9%	6.2%	42.1%	46.3%	11.8%
Native Hawaiian/ Pacific Islander	43.7%	46.5%	9.8%	53.2%	31.2%	15.6%	N/A	N/A	N/A
White, Non-Hispanic	53.8%	38.0%	8.2%	65.4%	29.6%	5.0%	45.8%	45.8%	9.3%
Multiracial	42.7%	44.3%	13.0%	58.2%	35.7%	10.8%	26.7%	60.0%	13.3%

Source: California Dept. of Education, California Healthy Kids Survey, and California Student Survey (WestEd), 2013–2015, Grades 7, 9, and 11, as cited on *kidsdata.org*. "S" indicates data was suppressed for privacy reasons.

In the Cloverdale Unified School District, self-reported school connected has a fairly clear correlation with health status and prevalence of emotional distress and high-risk behaviors.

Table 78: Students' Levels of Connectedness by Health Status/Risk Behavior, Cloverdale Unified School District, 2013–2015

	Student-Reported Levels of Connectedness		
	Cloverdale Unified		
Reported Behavior	Low	Medium	High
Experiencing bullying/harassment	40.9%	35.8%	27.3%
Being in physical fight(s) at school	17.3%	12.9%	7.9%
Gang membership	11.5%	5.2%	2.8%
Experiencing dating violence in the past year	17.3%	4.6%	3.9%
Having feelings of depression	42.9%	35.1%	21.1%
Suicidal ideation	41.7%	25.7%	6.1%
Smoking tobacco cigarettes in the past month	29.8%	13.3%	7.6%
Using e-cigarettes in the past month	N/A	22.1%	2.1%
Using marijuana in the past month	27.3%	25.0%	7.7%
Drinking alcohol in past month	50.0%	26.5%	26.4%
Binge drinking in the past month	41.7%	21.6%	16.3%
Driving after drinking/riding with a driver who had been drinking	39.8%	27.6%	27.9%

Source: California Dept. of Education, California Healthy Kids Survey, and California Student Survey (WestEd), 2013–2015, Grades 7, 9, and 11, as cited on *kidsdata.org*. Lines marked "N/A" indicate that data is unavailable.

Adult Health

HEALTH AND WELLNESS

Nutrition

According to California Health Interview Survey data, adults in Sonoma County are less likely than adults statewide to have eaten fast food in the past week (52.0 percent versus 64.9 percent).

Physical Activity

About 38.8 percent of Sonoma County adults 18–59 report walking regularly for transportation, fun, or exercise, compared to 26.7 percent of California adults 18–59. Approximately 38.8 percent of Sonoma County's low-income adults (with household incomes under 200 percent of the federal poverty level) walk regularly, compared to 34.5 percent of low-income adults 18–59 statewide.

The level of physical activity reported by adults 60 and older is actually higher, perhaps reflecting adults having more time to exercise and/or less disposable income for other forms of transportation. Approximately one-third (33.1 percent) of Sonoma County adults over 60 report walking regularly, the same as the statewide average for that age group. For low-income residents, the percentages are higher: 40.3 percent walk regularly, both in Sonoma County and statewide.

Only 15 percent Sonoma County or Mendocino County adults over age 20 report being physically inactive, compared to 17 percent of adults over 20 statewide.[105]

Weight and Obesity

More than half (52.9 percent) of Sonoma County adults are overweight or obese, which is below the state average of 62.7 percent.

However, the county's Hispanic/Latino residents have a significantly higher rate of overweight or obesity than do Latinos statewide. According to 2016 California Health Interview Survey data, 79.7 percent of the county's adult Latino residents — and 84.4 percent of Sonoma County's low-income adult Latino residents — are overweight or obese. The comparable state averages are 73.9 percent of all Latino adults and 67.8 percent of low-income Latino adults.

[105] RWJ County Health Rankings, 2019 (based on 2015 data), *https://www.countyhealthrankings.org/*.

Table 79: Adult Weight Ranges, California and Sonoma County, 2016

	Percentage of Adults Aged 18 and Over			
	California		Sonoma County	
Weight Range by BMI	All Adults	Latino Adults	All Adults	Latino Adults
Underweight (BMI ≤ 18.49%)	1.9%	1.1%	1.7%	0.0%
Normal weight (BMI = 18.50–24.99%)	35.4%	25.0%	45.5%	20.1%
Overweight (BMI = 25–29.99%)	34.8%	35.0%	31.9%	27.6%
Overweight/obese (BMI ≥ 30%)	27.9%	38.9%	21.0%	52.1%
Total overweight/obese	62.7%	73.9%	52.9%	79.7%

Source: California Health Interview Survey (CHIS), UCLA Center for Health Policy Research, 2016

Disabilities

In 2013–2015, an estimated 12 percent of Sonoma County residents were living with a disability. By comparison, 10.4 percent of all California residents were living with a disability during the same period.[106]

Among the nine sub-county areas studied by the county for the *Summary Measures of Health* report, the Russian River area had the highest percentage of disabled residents (16.6 percent) while Cloverdale/Geyserville had the second highest percentage (15.7 percent).

The percentage of white, non-Hispanic residents with a disability (13.5 percent) was significantly greater than the percentage of disabled Hispanic/Latino residents (7.4 percent) or other, non-Hispanic ethnicity. Some of this difference might disappear if adjusted for age; the median age for white Sonoma County residents is 49.6 years, compared to a median age of 27.5 for Hispanic/Latino residents.

Approximately 50 percent of Sonoma County residents over age 75 have one or more disabilities.[107]

Among all Sonoma County residents:

- 6.0 percent had ambulatory disabilities (i.e., disabilities that cause difficulty walking or climbing stairs).
- 5.0 percent had disabilities affecting their ability to live independently.

[106] Mercado, Jenny, *Sonoma County Summary Measures of Health: A review of life expectancy, disability status, leading causes of death and premature death with trends 2005–2015* (Santa Rosa, Calif.: Sonoma County Department of Health Services, Assessment & Epidemiology Unit, Jan. 2018), citing U.S. Census Bureau 2011–2015 American Community Survey 5-Year Data, Tables S1810, B18101, B81011.

[107] Ibid.

- 5.0 percent had cognitive impairments.
- 3.8 percent had a hearing impairment.
- 2.5 percent had disabilities impairing their ability to self-care.
- 1.9 percent had other types of disabilities.

(Some residents had multiple disabilities, so the above percentages do not add up to the 12.0 percent overall figure.)

Of the estimated 52,000 residents with disabilities, roughly 26,000 live in Santa Rosa, where there are more specialized services, more transportation options, and specialized housing resources available.

According to 2017 data from the California Health Interview Survey, 31.5 percent of all Sonoma County adults (36.4 percent of adult women and 25.3 percent of adult men) have some form of physical, mental, or emotional disability. This is significantly higher than the same survey's statewide averages; 2017 CHIS results indicate that 28.7 percent of all adult California residents (31.9 percent of women and 28.0 percent of men) have some form of disability.

There are several possible reasons why the CHIS figures are dramatically higher than the county's own estimates. One is that the CHIS figures are self-reported. Another is that the CHIS definition of disability includes "emotional causes," which in other CHIS questions is used as an indicator of mental health and substance use issues. Such issues are not reflected in the *Summary Measures of Health* estimates, which likely accounts for at least a portion of the substantial differences between these figures.

CHRONIC CONDITIONS

Sonoma County adults with incomes below 200 percent of the federal poverty level (FPL) are significantly more likely to have a number of chronic health problems than are adults with higher incomes.

Diabetes

Overall, 9.9 percent of adult Sonoma County residents in 2017 had diabetes mellitus, just below the California rate of 10.7 percent.[108] However, 19.9 percent of low-income Sonoma County adults had diabetes, compared to only 15.1 percent of low-income residents statewide.

Because diabetes is influenced by individual behavior and environmental factors, the impact and outcomes of the disease can be appropriately managed at the primary care level. Risk factors for diabetes include obesity, high cholesterol, high blood pressure, smoking, alcohol consumption, and physical inactivity.[109]

Sonoma County's age-adjusted diabetes mortality rate is below the state rate, as discussed in the Health Outcomes chapter of this report.

Hypertension/High Blood Pressure

In 2017, 29.0 percent of all California adults had been diagnosed with high blood pressure, including 30.5 percent of male adults and 27.6 percent of female adults. Thirty-two percent of low-income adults statewide have high blood pressure, including 31.3 percent of low-income men and 32.5 percent of low-income women.

In Sonoma County in 2017:

- 34.8 percent of all residents had been diagnosed with high blood pressure, higher than the state average, but down from 2013, when 37.5 percent of Sonoma County residents had been diagnosed with high blood pressure.
- 37.2 percent of all low-income residents have been diagnosed with high blood pressure, down only slightly from 2013, when 37.5 percent of low-income adult residents had high blood pressure.

The incidence of high blood pressure among Sonoma County's low-income women is a cause for particular concern. In 2017, 46.8 percent of adult women in Sonoma County with household incomes below 200 percent of the federal poverty level had been diagnosed with hypertension.

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[108] California Health Interview Survey, UCLA Health Policy Institute, 2017, *https://healthpolicy.ucla.edu/Pages/home.aspx*.

[109] Centers for Disease Control and Prevention, "Age-Adjusted Percentage of Adults Aged 18 Years or Older with Diagnosed Diabetes Who Have Risk Factors for Complications, United States, 2010," Diabetes Public Health Resource. Data from CDC Behavioral Risk Factor Surveillance System, 2009, and CDC National Diabetes Statistical Report, 2017, retrieved from *http://www.diabetes.org/assets/pdfs/basics/cdc-statistics-report-2017.pdf*.

(Only 26.5 percent of the county's low-income adult male residents have been diagnosed with hypertension, below the state average.)

In Mendocino County, only 17.0 percent of low-income adults had been diagnosed with hypertension in 2017 (16.8 percent of low-income adult men and 17.1 percent of low-income adult women), down dramatically from 44.8 percent in 2013.

Heart Disease

In 2017, 6.6 percent of all California adults and 7.2 percent of low-income adults had been diagnosed with heart disease.

In Sonoma County in 2017, 11.0 percent of all adults and 23.2 percent of low-income adults had been diagnosed with heart disease, much higher than the state averages.

Similarly, in 2017, 9.2 percent of all Mendocino County adults and 13.1 percent of the county's low-income adult residents had been diagnosed with heart disease.

Sonoma County also had significantly higher rates of congestive heart failure. In 2017, 3.9 percent of all adult Sonoma County residents and 4.1 percent of low-income adult residents had been so diagnosed, compared to 2.0 percent of adults and 2.8 percent of low-income adults statewide.

Mendocino County's rates of congestive heart failure (1.4 percent of all adult residents, 1.5 percent of low-income adult residents) were lower than the statewide averages for the same period.

Strokes

Statewide, 2.1 percent of all adults, and 2.5 percent of low-income adults, report ever having had a stroke. The figures for both Sonoma County and Mendocino County are significantly higher. In 2017:

- 2.6 percent of all Sonoma County adults and 3.5 percent of low-income Sonoma County adults had had a stroke.
- 2.6 percent of all Mendocino County adults and 5.2 percent of low-income Mendocino County adults had had a stroke.

Asthma

Statewide, 57.7 percent of all adults and 62.8 percent of low-income adults have been diagnosed with asthma. Sonoma County's figures are significantly higher. In 2017:

- 62.8 percent of all Sonoma County adult residents had been diagnosed with asthma.
- 71.8 percent of the county's low-incomes adult residents had been diagnosed with asthma.

CONTINUITY OF CARE

Although not a chronic health issue in and of itself, having a regular source of care is an important factor in effectively managing chronic conditions.

According to the 2017 California Health Interview Survey, 89.9 percent of Sonoma County adults have a regular source of care. However, less than half (47.2 percent) of the county's uninsured residents reported having a regular source of care.

This remains a significant public health concern. As noted in the Population Served chapter of this report, U.S. Census data estimates that 8.4 percent of Sonoma County residents (approximately 41,950 people) were still uninsured in 2017. This would mean that more than 22,000 county residents — some of whom likely have one or more chronic conditions — have no regular source of healthcare.

BEHAVIORAL HEALTH

Mental Health and Substance Abuse

In the 2017 California Health Interview Survey, 19.2 percent of Sonoma County adults reported needing help in the past year for emotional/mental health problems or for alcohol/other drug use issues, as did 19.6 percent of Mendocino County adults. The statewide average was 19.1 percent.

Both in Sonoma and Mendocino Counties and statewide, the percentages of adult women who reported needing help were much greater than the number of men who said they needed help.

Table 80: Percentages of Adults Who Sought Help for Mental/Emotional or Alcohol/Drug Use Problems in the Past Year by Area and Gender, California and Sonoma and Mendocino Counties, 2017

Area	% of Adults Who Sought Help for Behavioral Health Issue in the Past Year			
	Female ♀	Male ♂	All	♀–♂ Difference
California	22.2%	15.1%	19.1%	7.1%
Mendocino County	23.5%	14.6%	19.2%	8.9%
Sonoma County	24.1%	14.8%	19.6%	9.3%

Source: California Health Interview Survey (CHIS), UCLA Center for Health Policy Research, 2017

Both statewide and in Sonoma and Mendocino Counties, adult women 18–65 who reported needing help for mental/emotional or alcohol/drug use problems were significantly more likely than adult men 18–65 to have received that help. Among adults 65 and older, men were somewhat more likely than women to have received the help they sought, although county data for older adults is incomplete, probably to preserve respondent confidentiality.

Table 81: Percentages of Adults Who Sought Help for Mental/Emotional or Alcohol/Drug Use Problems in the Past Year by Age Group and Gender, California and Sonoma County, 2017

Age and Treatment Status	Percentage of Adults Who Sought Help in the Past Year					
	California			Sonoma County		
	F ♀	M ♂	All	F ♀	M ♂	All
18 to 39 years						
Did NOT receive treatment	38.5%	50.8%	43.5%	1.6%*	56.6%	25.0%
Did receive treatment	61.5%	49.2%	56.6%	98.4%	43.2%	75.0%
40 to 64 years						
Did NOT receive treatment	33.2%	35.0%	33.9%	11.5%	18.0%*	13.6%
Did receive treatment	66.8%	65.0%	66.1%	88.5%	82.0%	86.4%
65 years and older						
Did NOT receive treatment	39.2%	38.0%	38.7%	31.6%	N/A	27.9%
Did receive treatment	60.8%	62.0%	61.2%	68.4%	N/A	72.1%

Source: California Health Interview Survey (CHIS), UCLA Center for Health Policy Research, 2017. Lines marked "N/A" indicate that data is unavailable. Numbers marked with * are extrapolations.

Table 82: Percentages of Adults Who Sought Help for Mental/Emotional or Alcohol/Drug Use Problems in the Past Year by Age Group, California and Mendocino County, 2017

	Percentage of Adults Who Sought Help in the Past Year					
	California			Mendocino County		
Age and Treatment Status	F ♀	M ♂	All	F ♀	M ♂	All
18 to 39 years						
Did NOT receive treatment	38.5%	50.8%	43.5%	19.5%	15.4%*	18.6%
Did receive treatment	61.5%	49.2%	56.6%	80.7%	84.6%	81.4%
40 to 64 years						
Did NOT receive treatment	33.2%	35.0%	33.9%	41.5%	53.3%	48.5%
Did receive treatment	66.8%	65.0%	66.1%	58.5%	46.7%	11.5%
65 years and older						
Did NOT receive treatment	39.2%	38.0%	38.7%	N/A	N/A	15.1%*
Did receive treatment	60.8%	62.0%	61.2%	N/A	N/A	84.9%

Source: California Health Interview Survey (CHIS), UCLA Center for Health Policy Research, 2017. Lines marked "N/A" indicate that data is unavailable. Numbers marked with * are extrapolations.

More Sonoma and Mendocino County adults who needed help with emotional/mental health or substance abuse problems missed work because of the problem (80.0 percent in Sonoma County and 81.4 percent in Mendocino County) than did adults reporting those problems statewide (71.2 percent). Sonoma and Mendocino County residents who missed work due to such problems were also more likely than all California residents to miss more than three months of work.

Table 83: Days Missed from Work in the Past Year Due to Mental Health or Alcohol/Drug Problems, Adults of All Age Groups Who Report Needing Help for Those Problems in the Past Year, California and Sonoma and Mendocino Counties, 2017

	Percentage of Adults Who Sought Help in the Past Year		
Work Days Missed	California	Sonoma County	Mendocino County
None	28.2%	20.0%	18.6%
1 to 7 days	18.0%	4.9%	37.1%
8 to 31 days	27.7$	42.5%	17.2%
31 days to 3 months	11.2%	7.9%	0.0%
More than 3 months	17.0%	24.7%	20.0%

Source: California Health Interview Survey (CHIS), UCLA Center for Health Policy Research, 2017

Intimate Partner Violence

Among the emotional strains facing adults is physical and sexual violence in an intimate or dating relationship, a serious concern both in Sonoma County and statewide. According to 2017 California Health Interview Survey data, 17.7 percent of adult Sonoma County residents have experienced intimate partner violence since they turned 18, compared to 14.8 percent of adults statewide.

As with other mental/emotional health problems, the number of Sonoma County adults experiencing intimate partner violence is more evenly split between men and women than it is statewide. Within Sonoma County, 17.7 percent of adult women and 17.8 percent of adult men report experiencing domestic partner violence. Statewide, the figures are 20.5 percent of adult women and 9.1 percent of adult men.

Smoking

Smoking is a significant health risk factor, particularly for respiratory and cardiovascular disease. Historically, Sonoma County has had a higher prevalence of smoking than has California as a whole, although there are signs that the county levels are now falling rapidly.

According to the 2017 California Health Interview Survey, only 7.0 percent of Sonoma County adults are active cigarette smokers, down from 14.4 percent in the 2011–2012 CHIS. The percentage of adults statewide who are active smokers also dropped from 11.9 percent in the 2011–2012 CHIS to 10.2 percent in 2017. This drop is not evident in Mendocino County, where 2017 CHIS data reveals that 17.1 percent of adults are current smokers.

Smoking remains more prevalent among low-income adults. Statewide, 13.7 percent of adults with household incomes below 200 percent of the federal poverty level are smokers. In Sonoma County, 21.1 percent of low-income adults are current smokers, as are 23.4 percent of low-income Mendocino County adults.

In general, adult residents have not embraced vaping to the same extent as adolescents. The 2017 National Health Interview Survey found that only 2.8 percent of all adults in the western Census region that includes California are e-cigarette users.[110]

However, the prevalence of e-cigarette use among young people suggests that vaping's popularity may eventually reverse the recent reductions in the prevalence of tobacco use. Over the next decade, Sonoma County, like the rest of California, may face a burgeoning population of younger adults who have become addicted to nicotine through vaping, even if they have rarely or never smoked traditional cigarettes.

[110] Wang, Teresa W.; Kat Asman; Andrea S. Gentzke; Karen A. Cullen; Enver Holder-Hayes; Carolyn Reyes-Guzman; Ahmed Jamal; Linda Neff; and Brian A King, "Tobacco Product User Among Adults — United States, 2017," *Morbidity and Mortality Weekly Report* Vol. 67, No. 44 (Nov. 9, 2018): 1225–32, doi:10.15585/mmwr.mm6744a2.

Alcohol Use and Binge Drinking

Another health risk for area residents has been alcohol consumption and in particular binge drinking.

The percentages of both male and female adults in Sonoma and Mendocino Counties who binge drink remains significantly higher than in California as a whole. According to the 2017 California Health Interview Survey:

- Statewide, 34.7 percent of adults (42.3 percent of men and 27.5 percent of women) reported binge drinking in the past year.
- In Sonoma County, 44.0 percent of adult residents — 55.6 percent of adult men and 34.4 percent of adult women — reported binge drinking in the past year.
- In Mendocino County. 38.9 percent of adults — 44.8 percent of adult men and 32.7 percent of adult women — reported binge drinking in the past year.[111]

According to the Robert Wood Johnson Foundation's 2019 County Health Rankings, alcohol impairment is a factor in 37 percent of all Sonoma County auto accident deaths, compared to 30 percent of traffic accident deaths statewide and 27 percent of auto fatalities in Mendocino County.[112]

[111] California Health Interview Survey (CHIS), UCLA Center for Health Policy Research, 2017.

[112] Based on a seven-year average motor vehicle accident mortality rate (deaths per 100,000 population) for the period 2011–2017. See *https://www.countyhealthrankings.org/explore-health-rankings/measures-data-sources/county-health-rankings-model/health-factors/health-behaviors/alcohol-drug-use/motor-vehicle-crash-deaths* for an explanation of the methodology.

HEALTH OUTCOMES

In California, as in most of the U.S., mortality data is generally reported on a per-county basis. It therefore presents a county-wide picture of health that does not always reflect the significant disparities that can exist within a single county.

The Social Science Research Council (SSRC) has sought to address this informational disparity with its Measure of America project, which analyzes the physical and economic well-being of a region using the American Human Development Index, based on a tool originally developed for the United Nations by World Bank economist Mahbub ul Haq, PhD, FPAS, and Harvard professor and Nobel laureate Amartya Sen, PhD.

The American Human Development Index (which SSRC abbreviates as "HD Index") combines three core sets of data — life expectancy at birth, education, and median earnings — into a 10-point scale **intended to allow comparisons of the health and wellbeing of different populations, with particular attention to social determinants of health**.

PORTRAITS OF SONOMA COUNTY

Several years ago, the Sonoma County Department of Health Services commissioned Measure of America to use these tools to analyze the county's economic and health disparities. The result was the publication in May 2014 of the first Sonoma County Human Development Report, ***A Portrait of Sonoma County***.[113] This report examined differences in long-term health and wellbeing for various Sonoma County census tract areas.

Overall, Sonoma County **scored a 5.42 on this index**, slightly better than **California's 5.39** and similar to other California counties in the region. (For reference, **the United States as a whole scored a 5.07**.) However, *Portrait of Sonoma County* highlighted significant variations within the county, whose 99 census tracts had scores ranging from a high of 6.15 (in Northeast Windsor) to a low of 3.78 (in East Cloverdale, which is part of the Alexander Valley Healthcare service area).

In 2018, the Sonoma County Department of Health Services followed up the original *Portrait* with a new study by the department's own Assessment & Epidemiology Unit,[114] examining mortality rates at the subcounty level. This report, *Sonoma County Summary Measures of Health*, presented 2013–2015 age-adjusted mortality data by cause of death, average life

[113] Burd-Sharps, et al, *A Portrait of Sonoma County: Sonoma County Human Development Report 2014*.

[114] Mercado, *Sonoma County Summary Measures of Health*.

expectancy, and years of potential life lost due to premature death for **nine subcounty areas**: Santa Rosa; Petaluma; Sonoma Valley; Rohnert Park; Sebastopol – West County; Windsor; Healdsburg; Russian River; and Cloverdale and Geyserville.

The *Summary Measures of Health* report found that these nine areas had substantial differences in age-adjusted mortality rates, life expectancy, and years of potential life lost, as well as incidence of disability by gender, ethnic, and geography. These results follow similar lines as the earlier *Portrait of Sonoma County* report.

As explained in the Service Area chapter of this needs assessment, Alexander Valley Healthcare's primary service area includes three ZIP Codes: 95425 (Cloverdale), 95441 (Geyserville), and 95449 (Hopland). The Cloverdale and Geyserville area described in *Summary Measures of Health* includes two of those three service area ZIP Codes: 95425 and 95441.

(The third service area ZIP Code, 95449, is in neighboring Mendocino County and therefore is outside the scope of the Sonoma County reports.)

Life Expectancy

The *Summary Measures* report found that overall, Sonoma County has a slightly higher life expectancy at birth (81.9 years) than does California as a whole (81.5 years). Both life expectancy figures are higher than the U.S. average, 78.8 years.

Life expectancy at birth was 4.1 years higher for female Sonoma County residents (83.8 years) than for male residents (79.7). However, this gap in life expectancy narrows past age 65. Average life expectancy at 65 is 22.2 years for women and 19.9 years for men, a difference of 2.4 years.

Life expectancy also varied by race/ethnicity. Asians/Pacific Islanders had the highest life expectancy in Sonoma County, at 88.3 years, followed by Hispanics/Latinos, at 87.7 years. White non-Hispanic residents had the lowest life expectancy, at 81.3 years, followed very closely by American Indians/Alaska Natives (81.4 years) and African-American/Black residents (81.7 years).

Table 84: Life Expectancy by Selected Regions and Demographic Groups, 2013–2015

Region	Life Expectancy, Years
United States	78.8
California	81.5
Sonoma County, all areas and demographics	81.9
By gender:	
Male	79.7
Female	83.8
By race/ethnic group:	
White, non-Hispanic	81.3
Hispanic/Latino	87.7
African-American/Black	81.7
Asian/Pacific Islander	88.3
American Indian/Alaska Native	81.4
By subcounty area:	
Santa Rosa	80.9
Petaluma	81.8
Sonoma Valley	82.2
Rohnert Park	80.2
Sebastopol – West County	83.3
Windsor	83.1
Healdsburg	84.9
Russian River	78.8
Cloverdale and Geyserville	80.5

Source: *Sonoma County Summary Measures of Health: A review of life expectancy, disability status, leading causes of death and premature death with trends 2005–2015*, Sonoma County Dept. of Health Services, Jan. 2018

Life expectancy also varied by subcounty area, with a difference of up to 6.6 years between the highest and lowest areas. The computed life expectancy for the Cloverdale and Geyserville area was 80.5 years, 1.4 years below the county average and one year below the state average, although still above the national average. This was the second lowest of the nine subcounty areas and 4.4 years below the neighboring Healdsburg area, which had the highest life expectancy of the nine areas: 84.9 years.

Premature Mortality

YEARS OF POTENTIAL LIFE LOST (YPLL)

Another way to measure the health of a given population is **premature mortality rates**, measured in **years of potential life lost due to death before a particular age.** This metric quantifies the impact of premature death due to illness or injury. For example, if a cancer patient dies at age 43, their years of potential life lost due to death before age 75 (abbreviated

YPLL-75) would be 32. YPLL can be calculated for specific causes of death or for all-causes mortality[115] and is typically measured in terms of years lost per 100,000 population.

SONOMA COUNTY'S PREMATURE MORTALITY RATES

In the 2013–2015 period examined by the *Summary Measures of Health* report, **Sonoma County's age-adjusted premature mortality rate was 4,410.0 years of potential life lost before age 75 per 100,000 population**. That was lower than California (5,082.6 years per 100,000 population) and the United States (6,481.1 years per 100,000 population) for the same period.

Overall (all-causes) YPLL figures for a particular region are strongly affected by maternal and child health outcomes; for obvious reasons, infant mortality results in more years of life lost than does any other premature death. Generally, Sonoma County has good maternal, newborn, and child health outcomes, which contributes to its lower overall years of potential life lost. However, Sonoma County's rates of death from cancer (including childhood cancers), accidental/unintentional deaths, drug overdose deaths, and suicides are higher than the state as a whole, which results in more years of potential life lost.

Furthermore, there were significant variations in age-adjusted years of potential life lost by gender, ethnicity, and subcounty area.

- Male Sonoma County had substantially more average years of potential life lost than did female residents: 5,535.1 years per 100,000 population versus 3,290.7/100,000, a difference of 68.2 percent.

- Asians/Pacific Islanders had the lowest average years of potential life lost of any ethnic group (2,495.7 years per 100,000 population) while American Indians had the highest (6,091.5 years per 100,000 population), a 244.1 percent difference.

- Cloverdale and Geyserville, the subcounty area that includes much of Alexander Valley Healthcare's service area, had the second-highest years of potential life lost of any of the nine subcounty areas: 5,802 years lost per 100,000 population. The neighboring Russian River area was the highest of the nine areas, at 6,248.8 years lost per 100,000 population. Both areas' YPLL-75 rates are substantially greater than both the Sonoma County and California rates.

[115] For a discussion of the history of this methodology and some issues involved in its application, see the Centers for Disease Control and Prevention, "Premature Mortality in the United States: Public Health Issues in the Use of Years of Potential Life Lost," *Morbidity and Mortality Weekly Report Supplement* Vol. 35, No. 2 (Dec. 19, 1986): 1–11, retrieved from *https://www.cdc.gov/mmwr/preview/mmwrhtml/00001773.htm*.

Table 85: Age-Adjusted Years of Potential Life Lost Under Age 75 (YPLL-75) by Selected Regions and Demographic Groups, 2013–2015

Region	YPLL-75 per 100,000 Population
United States	6,581.1
California	5,052.6
Sonoma County, all areas and demographics	4,410.0
By gender:	
Male	5,535.1
Female	3,290.7
By race/ethnic group:	
White, non-Hispanic	4,329.6
Hispanic/Latino	6,091.5
African-American/Black	2,495.7
Asian/Pacific Islander	2,951.5
American Indian/Alaska Native	4,787.5
By subcounty area:	
Santa Rosa	4,533.3
Petaluma	3,775.5
Sonoma Valley	3,748.0
Rohnert Park	5,214.4
Sebastopol – West County	4,098.4
Windsor	4,036.8
Healdsburg	3,367.2
Russian River	6,248.8
Cloverdale and Geyserville	5,802.3

Source: *Sonoma County Summary Measures of Health: A review of life expectancy, disability status, leading causes of death and premature death with trends 2005–2015*, Sonoma County Dept. of Health Services, Jan. 2018

YEARS OF POTENTIAL LIFE LOST BY CAUSE OF DEATH

The *Summary Measures of Health* report found that in 2013–2015, premature mortality rates for the **Cloverdale and Geyserville** subcounty area exceeded the Sonoma County rates for four leading causes of premature deaths: all cancers, accident (unintentional injury), heart disease, and suicide.

Table 86: Age-Adjusted Years of Potential Life Lost Under Age 75 by Selected Causes of Death, 2013–2015

	YPLL-75 per 100,000 Population by Cause of Death			
Region	All Cancers	Heart Disease	Accident	Suicide
United States	1,252.6	915.8	1,090.7	410.8
California	1,090.9	676.6	779.4	269.9
Sonoma County, all areas	1,045.1	448.3	741.2	323.3
Santa Rosa	1,137.7	477.6	694.8	296.3
Petaluma	1,083.6	347.9	495.4	319.8
Sonoma Valley	826.4	441.7	728.7	275.2
Rohnert Park	1,174.1	571.1	924.4	244.2
Sebastopol – West County	1,028.3	305.7	633.1	338.5

Region	YPLL-75 per 100,000 Population by Cause of Death			
	All Cancers	Heart Disease	Accident	Suicide
Windsor	795.4	387.3	694.5	464.3
Healdsburg	862.9	385.8	909.4	368.0
Russian River	1,170.9	945.9	1,097.4	576.8
Cloverdale/Geyserville	1,195.4	539.6	1,781.8	497.5

Source: *Sonoma County Summary Measures of Health: A review of life expectancy, disability status, leading causes of death and premature death with trends 2005–2015*, Sonoma County Dept. of Health Services, Jan. 2018

Mortality Rates by Cause of Death

CANCER

Overall cancer mortality rates have fallen in the United State and in the state California,[116] but cancer remains the leading cause of death in the state and the leading cause of death for all major age groups in Sonoma County.

What has changed is the percentage of deaths due to cancer, which has fallen from 25.3 percent to 23.8 percent of all deaths.[117]

Sonoma County's crude and age-adjusted mortality rates for all cancers have remained higher than those of California as a whole.

The county's crude mortality rates are above the state rates for four specific types of cancer: colorectal cancer, lung cancer, female breast cancer, and prostate cancer. Sonoma County's age-adjusted mortality rates are also higher than the state's for three of these four types of cancer.

Since the 2015 Joint Community Needs Assessment for Northern Sonoma County, the county's age-adjusted mortality rate for colorectal cancer has actually declined faster than the state rate. The county's age-adjusted mortality is now 12.2 deaths per 100,000 population, just below the state's age-adjusted rate of 12.5 deaths per 100,000 population.

[116] National Cancer Institute and CDC, "Quick Profiles: California," State Cancer Profile, July 2019. Retrieved from *https://statecancerprofiles.cancer.gov/quick-profiles/index.php?statename=california.*

[117] Mercado, *Sonoma County Summary Measures of Health*.

Table 87: Cancer Mortality, California and Sonoma County, 2015–2017

	Cancer Deaths per 100,000 Population			
	California		Sonoma County	
Cancer Type	Crude	Age-Adjusted	Crude	Age-Adjusted
All cancers	151.2	137.4	194.4	140.2
Colorectal cancer	13.8	12.5	16.7	12.2
Lung cancer	30.2	27.5	40.6	29.3
Female breast cancer	22.5	18.9	29.2	19.7
Prostate cancer	17.7	17.3	21.4	18.2

Source: California Dept. of Public Health, *California Comprehensive Master Death Files, 2015–2017*, compiled Aug. 2018, and California Dept. of Finance, Demographic Research Unit, *State and county population projections 2010–2060*, Jan. 2018, as reported in *California County Health Status Profiles 2019*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2019

Among the nine subcounty areas described in the *Summary Measures of Health* report, the highest age-adjusted all-cancers mortality rate in the 2013–2015 period was Rohnert Park, at 187.4 deaths per 100,000 population. The Cloverdale/Geyserville area had the second highest age-adjusted all-cancers mortality rate of the nine subcounty areas: 180.6/100,000. Both areas' rates were significantly above the countywide age-adjusted rate of 147.5/100,000.[118]

Rohnert Park also had the highest age-adjusted mortality rate for lung cancer: 46.0 deaths per 100,000 population. Cloverdale and Geyserville had the second highest age-adjusted mortality rate for lung cancer: 42.9/100,000, compared to the countywide rate of 21.7/100,000 during the same period.

Cloverdale and Geyserville also had the highest age-adjusted mortality rate for female breast cancer: 35.3 deaths per 100,000 population, compared to a county-wide rate of 19.0/100,000 for the same period.

CARDIOVASCULAR & CEREBROVASCULAR DISEASE (STROKE)

Sonoma County's crude mortality rate due to both cardiovascular and cerebrovascular disease is well above the state's, reflecting the higher median age of county residents. When adjusted for age, this difference disappears.

At 72.9 deaths per 100,000 population, Sonoma County's age-adjusted coronary heart disease mortality rate is below California's age-adjusted rate of 87.4/100,000.

[118] Mercado, *Sonoma County Summary Measures of Health*.

Table 88: Coronary Heart Disease Mortality, California and Sonoma County, 2011–2013 and 2015–2017

	Coronary Heart Disease Deaths per 100,000 Population			
	California		Sonoma County	
Time Period	Crude	Age-Adjusted	Crude	Age-Adjusted
2011–2013*	104.3	103.8	113.0	88.7
2015–2017**	97.1	87.4	102.8	72.9

*Source: California Dept. of Public Health, *2011–2013 Death Statistical Master Files*, and California Dept. of Finance, Demographic Research Unit, *State and County Population Projections by Race/Ethnicity, Detailed Age, and Gender, 2010–2060*, Jan. 2013, as reported in *California County Health Status Profiles 2015*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2015. **Source: California Dept. of Public Health, *California Comprehensive Master Death Files, 2015–2017*, compiled Aug. 2018, and California Dept. of Finance, Demographic Research Unit, *State and county population projections 2010–2060*, Jan. 2018, as reported in *California County Health Status Profiles 2019*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2019.

The *Sonoma County Summary Measures of Health* report found that the Cloverdale-Geyserville area's age-adjusted heart disease mortality rate was significantly higher — by approximately 4.8 deaths per 100,000 populations — than the county age-adjusted rate for the same period.

The county's age-adjusted cerebrovascular mortality rate, formerly above the statewide rate, declined to 33.8 death per 100,000 population in 2015–2017 and is now below the state rate of 36.3/100,000.

There has been a steady reduction in stroke fatalities over time. For example, Sonoma County's age-adjusted stroke mortality rate was 47.5 deaths per 100,000 population back in 2008–2010.

Table 89: Cerebrovascular Disease Mortality, California and Sonoma County, 2011–2013 and 2015–2017

	Cerebrovascular Disease Deaths per 100,000 Population			
	California		Sonoma County	
Time Period	Crude	Age-Adjusted	Crude	Age-Adjusted
2011–2013*	35.7	35.9	45.9	36.2
2015–2017**	39.9	36.3	46.4	33.4

*Source: California Dept. of Public Health, *2011–2013 Death Statistical Master Files*, and California Dept. of Finance, Demographic Research Unit, *State and County Population Projections by Race/Ethnicity, Detailed Age, and Gender, 2010–2060*, Jan. 2013, as reported in *California County Health Status Profiles 2015*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2015. **Source: California Dept. of Public Health, *California Comprehensive Master Death Files, 2015–2017*, compiled Aug. 2018, and California Dept. of Finance, Demographic Research Unit, *State and county population projections 2010–2060*, Jan. 2018, as reported in *California County Health Status Profiles 2019*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2019.

DIABETES

Sonoma County's crude diabetes-related mortality rate has been rising: from 21.9 deaths per 100,000 population in 2011–2013 to 24.4/100,000 in 2015–2018. This is also true for California as a whole; the state's crude diabetes mortality rate rose from 20.7/100,000 in the 2011–2013 period to 23.2/100,000 in 2015–2017.

However, the age-adjusted mortality rates for the state and county have trended in opposite directions. California's age-adjusted rate rose from 20.9 to 21.2 deaths per 100,000 population, while Sonoma County's age-adjusted rate declined from 18.2/100,000 to 17.9/100,000 over the same time period.[119]

Table 90: Diabetes Mortality, California and Sonoma County, 2011–2013 and 2015–2017

	Diabetes Deaths per 100,000 Population			
	California		Sonoma County	
Time Period	Crude	Age-Adjusted	Crude	Age-Adjusted
2011–2013*	20.7	20.9	21.9	18.2
2015–2017**	23.3	21.2	24.4	17.9

*Source: California Dept. of Public Health, *2011–2013 Death Statistical Master Files*, and California Dept. of Finance, Demographic Research Unit, *State and County Population Projections by Race/Ethnicity, Detailed Age, and Gender, 2010–2060*, Jan. 2013, as reported in *California County Health Status Profiles 2015*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2015. **Source: California Dept. of Public Health, *California Comprehensive Master Death Files, 2015–2017*, compiled Aug. 2018, and California Dept. of Finance, Demographic Research Unit, *State and county population projections 2010–2060*, Jan. 2018, as reported in *California County Health Status Profiles 2019*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2019.

CHRONIC LOWER RESPIRATORY DISEASE

The earlier 2015 Joint Community Needs Assessment for Northern Sonoma County reported that Sonoma County had a higher chronic lower respiratory disease mortality rate than did California as a whole. At that time, the county's crude mortality rate for these diseases was 46.1 deaths per 100,000 population, compared to the state's rate of 35.0/100,000.

This picture has changed dramatically. Although the most recent available data shows that Sonoma County's crude mortality rate remains higher than the state's, at 41.4 deaths per

[119] The county's Assessment & Epidemiology Unit has not computed a separate age-adjusted all-causes mortality rate for the Cloverdale and Geyserville area, probably because of the small number of events.

100,000 population, the age-adjusted rate has fallen to 28.7/100,000, significantly lower than the statewide age-adjusted rate of 32.0 deaths/100,000 population.

In the 2013–2015 period, Cloverdale and Geyserville had the second highest age-adjusted chronic lower respiratory disease mortality rates of the nine subcounty areas described in the *Summary Measures of Health* report: 41.2 deaths per 100,000 population. Within Sonoma County, only the neighboring Russian River area had a higher rate: 56.5 deaths per 100,000 population.

Table 91: Chronic Lower Respiratory Disease Mortality, California and Sonoma County, 2011–2013 and 2015–2017

	Chronic Lower Respiratory Disease Deaths per 100,000 Population			
	California		Sonoma County	
Time Period	Crude	Age-Adjusted	Crude	Age-Adjusted
2011–2013*	35.0	35.4	46.1	38.2
2015–2017**	34.4	32.0	41.4	28.7

*Source: California Dept. of Public Health, *2011–2013 Death Statistical Master Files*, and California Dept. of Finance, Demographic Research Unit, *State and County Population Projections by Race/Ethnicity, Detailed Age, and Gender, 2010–2060*, Jan. 2013, as reported in *California County Health Status Profiles 2015*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2015. **Source: California Dept. of Public Health, *California Comprehensive Master Death Files, 2015–2017*, compiled Aug. 2018, and California Dept. of Finance, Demographic Research Unit, *State and county population projections 2010–2060*, Jan. 2018, as reported in *California County Health Status Profiles 2019*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2019.

ALZHEIMER'S DISEASE

With the higher median age of county residents, Sonoma County's Alzheimer's disease mortality rates have remained higher than California's. The county's crude mortality rate has risen from 53.1 deaths per 100,000 population in 2011–2013 to 56.6/100,000 in 2015–2017. By comparison, the statewide rate was only 30.9/100,000 in 2011–2013, rising to 39.7/100,000 in 2015–2017.

Surprisingly, Sonoma County's age-adjusted Alzheimer's mortality rates have remained stable, dropping fractionally from 40.2/100,000 to 40.0/100,000. However, this rate remains higher than the age-adjusted statewide rate, 35.7 deaths per 100,000 population, or the age-adjusted national rate, 23.5/100,000.

At least part of the increases in Alzheimer's mortality is probably a reflection of the "graying" of the population. However, assessing these trends is complicated by inconsistent and sometimes unreliable reporting data. For example, not all physicians have consistently distinguished between Alzheimer's disease and other forms of dementia on death certificates.

There is still little scientific consensus on the causal factors of Alzheimer's disease, although some researchers have suggested that individual behaviors such as diet, exercise, and how well a patient manages stress may be contributing factors. Without a clearer correlation, it will remain difficult to accurately associate mortality trends with specific health determinants.

Table 92: Alzheimer's Disease Mortality, California and Sonoma County, 2011–2013 and 2015–2017

	Alzheimer's Disease Deaths per 100,000 Population			
	California		Sonoma County	
Time Period	Crude	Age-Adjusted	Crude	Age-Adjusted
2011–2013*	30.9	30.8	53.1	40.2
2015–2017**	39.7	35.7	56.6	40.0

*Source: California Dept. of Public Health, *2011–2013 Death Statistical Master Files*, and California Dept. of Finance, Demographic Research Unit, *State and County Population Projections by Race/Ethnicity, Detailed Age, and Gender, 2010–2060*, Jan. 2013, as reported in *California County Health Status Profiles 2015*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2015. **Source: California Dept. of Public Health, *California Comprehensive Master Death Files, 2015–2017*, compiled Aug. 2018, and California Dept. of Finance, Demographic Research Unit, *State and county population projections 2010–2060*, Jan. 2018, as reported in *California County Health Status Profiles 2019*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2019.

Cloverdale and Geyserville had an age-adjusted Alzheimer's disease mortality rate of 38.5 deaths per 100,000 population in 2013–2015, below the county's rate of 41,6/100,000.

LIVER DISEASE

Sonoma County's age-adjusted mortality rate from chronic liver disease and cirrhosis has fallen to 9.8 deaths per100,000 population. This is well below the statewide rate of 12.2/100,000.

Furthermore, Sonoma County's liver disease mortality rate has been dropping while the state rate has been rising. Sonoma County's age-adjusted mortality rate in the period 2011–2013 was 11.9/100,000, very close to the state's rate of 11.7/100,000 during that period.

Table 93: Chronic Liver Disease and Cirrhosis Mortality, California and Sonoma County, 2011–2013 and 2015–2017

	Chronic Liver Disease/Cirrhosis Deaths per 100,000 Population			
	California		Sonoma County	
Time Period	Crude	Age-Adjusted	Crude	Age-Adjusted
2011–2013*	12.3	11.7	14.3	11.9
2015–2017**	13.6	12.2	12.5	9.8

*Source: California Dept. of Public Health, *2011–2013 Death Statistical Master Files*, and California Dept. of Finance, Demographic Research Unit, *State and County Population Projections by Race/Ethnicity, Detailed Age, and Gender, 2010–2060*, Jan. 2013, as reported in *California County Health Status Profiles 2015*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2015. **Source: California Dept. of

Public Health, *California Comprehensive Master Death Files, 2015–2017*, compiled Aug. 2018, and California Dept. of Finance, Demographic Research Unit, *State and county population projections 2010–2060*, Jan. 2018, as reported in *California County Health Status Profiles 2019*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2019.

However, this does not indicate that Sonoma County residents are at low risk for liver disease/cirrhosis. Self-reported adult data from the California Health Interview Survey, along with adolescent data from the California Healthy Kids Survey, makes clear that alcohol and other substance abuse continues to be a major health risk in Sonoma County.

The fact that Sonoma County's liver disease mortality rate is lower than the state and national rates probably reflects greater effectiveness of the local healthcare system in preventing deaths from that cause rather than substantial reductions in underlying risk behaviors.

ACCIDENTAL/UNINTENTIONAL INJURY DEATHS

Crude and age-adjusted mortality rates for accidents/unintentional injuries have risen significantly both in Sonoma County and statewide since 2010.

California's age-adjusted accidental death rate rose from 27.9 per 100,000 population in 2011–2013 to 32.2/100,000 in 2015–2017, a 15 percent increase. Sonoma County's age-adjusted accident mortality rate rose from 24.7/100,000 to 34.9/100,000 over the same period, a 41.3 percent increase.

Table 94: Unintentional Injury (Accident) Mortality, California and Sonoma County, 2011–2013 and 2015–2017

	Unintentional Injury Deaths per 100,000 Population			
	California		Sonoma County	
Time Period	Crude	Age-Adjusted	Crude	Age-Adjusted
2011–2013*	28.4	27.9	27.4	24.7
2015–2017**	33.7	32.2	39.9	34.9

*Source: California Dept. of Public Health, *2011–2013 Death Statistical Master Files*, and California Dept. of Finance, Demographic Research Unit, *State and County Population Projections by Race/Ethnicity, Detailed Age, and Gender, 2010–2060*, Jan. 2013, as reported in *California County Health Status Profiles 2015*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2015. **Source: California Dept. of Public Health, *California Comprehensive Master Death Files, 2015–2017*, compiled Aug. 2018, and California Dept. of Finance, Demographic Research Unit, *State and county population projections 2010–2060*, Jan. 2018, as reported in *California County Health Status Profiles 2019*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2019.

Cloverdale/Geyserville had the highest age-adjusted unintentional death rate of the nine subcounty areas described in the *Summary Measures of Health* report: 49.5 deaths per 100,000 population during the 2013–2015 period, compared to 30.2/100,000 for the county as a whole.

MOTOR VEHICLE TRAFFIC ACCIDENT DEATHS

Deaths from motor vehicle traffic crashes rose both statewide and in Sonoma County between 2011–2013 and 2015–2017.

Statewide, the age-adjusted mortality rate for traffic deaths rose from 7.7 deaths per 100,000 population in 2011–2013 to 9.5/100,000 in 2015–2017 period, a 23.4 percent increase. Over the same period, the Sonoma County age-adjusted motor vehicle traffic accident mortality rate rose from 4.7 deaths per 100,000 population to 8.3/100,000. Although the latter is still below the statewide rate for the same period, it represents a 76.6 percent increase from 2011–2013.

Table 95: Motor Vehicle Traffic Accident Mortality, California and Sonoma County, 2011–2013 and 2015–2017

	Motor Vehicle Traffic Accident Deaths per 100,000 Population			
	California		Sonoma County	
Time Period	Crude	Age-Adjusted	Crude	Age-Adjusted
2011–2013*	7.8	7.7	5.2	4.7
2015–2017**	9.8	9.5	8.6	8.3

*Source: California Dept. of Public Health, *2011–2013 Death Statistical Master Files*, and California Dept. of Finance, Demographic Research Unit, *State and County Population Projections by Race/Ethnicity, Detailed Age, and Gender, 2010–2060*, Jan. 2013, as reported in *California County Health Status Profiles 2015*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2015. **Source: California Dept. of Public Health, *California Comprehensive Master Death Files, 2015–2017*, compiled Aug. 2018, and California Dept. of Finance, Demographic Research Unit, *State and county population projections 2010–2060*, Jan. 2018, as reported in *California County Health Status Profiles 2019*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2019.

SUICIDE DEATHS

The age-adjusted suicide rate for Sonoma County adults is higher than the statewide average: 12.4 suicide deaths per 100,000 population countywide, compared to 10,4/100,000 statewide.

This was also true in the previous community needs assessment. However, the County suicide rate has risen more than the state's rates during the same period.

Table 96: Suicide Mortality, California and Sonoma County, 2011–2013 and 2015–2017

	Suicide Deaths per 100,000 Population			
	California		Sonoma County	
Time Period	Crude	Age-Adjusted	Crude	Age-Adjusted
2011–2013*	10.4	10.2	12.8	11.2
2015–2017**	10.8	10.4	13.7	12.4

*Source: California Dept. of Public Health, *2011–2013 Death Statistical Master Files*, and California Dept. of Finance, Demographic Research Unit, *State and County Population Projections by Race/Ethnicity, Detailed Age, and Gender, 2010–2060*, Jan. 2013, as reported in *California County Health Status Profiles 2015*, published by California

Dept. of Public Health and California Conference on Local Health Officers, April 2015. **Source: California Dept. of Public Health, *California Comprehensive Master Death Files, 2015–2017*, compiled Aug. 2018, and California Dept. of Finance, Demographic Research Unit, *State and county population projections 2010–2060*, Jan. 2018, as reported in *California County Health Status Profiles 2019*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2019.

According to data from the Sonoma County Health Needs Assessment 2013–2016,[120] county residents over age 60 have an even higher suicide rate: 20.8 deaths per 100,000 population, compared to 15.9/100,000 for adults in the same age range statewide.

Sonoma County residents over age 60 also have a greater incidence of hospitalization due to **nonfatal intentional self-harm injuries** than do adults over 60 statewide: 24.2 hospitalizations per 100,000 population, versus 23.2/100,000 for all California adults over 60.[121]

HOMICIDE DEATHS

California's homicide rate overall has remained relatively stable over the past decade. The crude homicide mortality rate for the 2015–2017 period was unchanged from 2011–2013. The age-adjusted rate shifted upward only fractionally, to 5.2 deaths per 100,000 population.

Sonoma County continues to have a lower age-adjusted homicide mortality rate than does California overall: 2.8 homicide deaths per 100,000 population.

Table 97: Homicide Mortality, California and Sonoma County, 2011–2013 and 2015–2017

	Homicide Deaths per 100,000 Population			
	California		Sonoma County	
Time Period	Crude	Age-Adjusted	Crude	Age-Adjusted
2011–2013*	5.2	5.1	2.2	2.3
2015–2017**	5.2	5.2	2.8	2.8

*Source: California Dept. of Public Health, *2011–2013 Death Statistical Master Files*, and California Dept. of Finance, Demographic Research Unit, *State and County Population Projections by Race/Ethnicity, Detailed Age, and Gender, 2010–2060*, Jan. 2013, as reported in *California County Health Status Profiles 2015*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2015. **Source: California Dept. of Public Health, *California Comprehensive Master Death Files, 2015–2017*, compiled Aug. 2018, and California Dept. of Finance, Demographic Research Unit, *State and county population projections 2010–2060*, Jan. 2018, as reported in *California County Health Status Profiles 2019*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2019.

[120] Data from California Dept. of Public Health, *County Health Status Profiles 2012*, cited in *Sonoma County Community Health Assessment: Sonoma County 2013–2016*.

[121] California Dept. of Public Health, EPICenter: California Injury Data Online, cited in *Sonoma County Community Health Assessment: Sonoma County 2013–2016*.

FIREARM DEATHS

Sonoma County also continues to have a lower rate of firearm-related deaths than does the state as a whole. Sonoma County's age-adjusted firearm-related mortality rate for 2015–2017 was 5.0 deaths per 100,000/population, down from 5.9/100,000 in 2011–2013.

The statewide age-adjusted rate of firearm-related deaths was 7.9 deaths per 100,000 population in the period 2015–2017, nearly the same as the previous 2011–2013 period, when the age-adjusted rate was 7.8/100,000.

Table 98: Firearm-Related Mortality, California and Sonoma County, 2011–2013 and 2015–2017

	Firearm-Related Deaths per 100,000 Population			
	California		Sonoma County	
Time Period	Crude	Age-Adjusted	Crude	Age-Adjusted
2011–2013*	7.9	7.8	6.5	5.9
2015–2017**	8.0	7.9	5.7	5.0

*Source: California Dept. of Public Health, *2011–2013 Death Statistical Master Files*, and California Dept. of Finance, Demographic Research Unit, *State and County Population Projections by Race/Ethnicity, Detailed Age, and Gender, 2010–2060*, Jan. 2013, as reported in *California County Health Status Profiles 2015*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2015. **Source: California Dept. of Public Health, *California Comprehensive Master Death Files, 2015–2017*, compiled Aug. 2018, and California Dept. of Finance, Demographic Research Unit, *State and county population projections 2010–2060*, Jan. 2018, as reported in *California County Health Status Profiles 2019*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2019.

DRUG OVERDOSE DEATHS

The rate of drug overdose deaths has risen both in Sonoma County and statewide since 2015. **The county rate is now higher than the California rate.**

In the 2015–2017 period, Sonoma County's age-adjusted drug overdose mortality rate was 14.4 deaths per 100,000 population, compared to 12.7/100,000 for California as a whole.

The Sonoma County rate represents a 50 percent increase in overdose mortality; the age-adjusted mortality rate back in 2011–2013 was only 9.4/100,000. Sonoma County's age-adjusted overdose mortality also grew at a substantially faster rate than did California's; the statewide rate grew from 11.1/100,000 to 12.7/100,000 in the same period, an increase of 14.4 percent.

Table 99: Drug Overdose Mortality, California and Sonoma County, 2011–2013 and 2015–2017

	Drug Overdose Deaths per 100,000 Population			
	California		Sonoma County	
Time Period	Crude	Age-Adjusted	Crude	Age-Adjusted
2011–2013*	11.5	11.1	10.3	9.6
2015–2017**	13.3	12.7	15.5	14.4

*Source: California Dept. of Public Health, *2011–2013 Death Statistical Master Files*, and California Dept. of Finance, Demographic Research Unit, *State and County Population Projections by Race/Ethnicity, Detailed Age, and Gender, 2010–2060*, Jan. 2013, as reported in *California County Health Status Profiles 2015*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2015. **Source: California Dept. of Public Health, *California Comprehensive Master Death Files, 2015–2017*, compiled Aug. 2018, and California Dept. of Finance, Demographic Research Unit, *State and county population projections 2010–2060*, Jan. 2018, as reported in *California County Health Status Profiles 2019*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2019.

A key driver of this trend has been the widespread use of opioids and thus the prevalence of opioid overdose deaths. California overall has an age-adjusted opioid overdose mortality rate of 5.23 deaths per 100,000 population; Sonoma County's is 5.99/100,000. Two counties to the north of Sonoma, Lake County and Mendocino County, have substantially higher rates: 17.02/100,000 and 19.34/100,000 respectively.

Table 100: Opioid Overdose Deaths, Emergency Department Visits, and Hospitalizations for California and Selected Counties, 2017

	Number of Events and Age-Adjusted Rates per 100,000 Population							
	California, All Counties		Lake County		Mendocino County		Sonoma County	
Event	Count	Rate	Count	Rate	Count	Rate	Count	Rate
Opioid overdose deaths	2,194	5.22	13	17.02	17	19.34	30	5.99
Opioid overdose ED visits	8,368	20.16	33	48.80	33	37.02	161	31.27
Opioid overdose hospitalizations	3,918	9.00	15	18.00	14	12.88	57	9.27

Source: California Opioid Overdose Dashboard, https://discovery.cdph.ca.gov/CDIC/ODdash/

Between 2011 and 2017, statewide heroin-related overdose mortality rates increased by 89 percent, from 0.9 deaths per 100,000 population in 2011–2013 to 1.70/100,000 in 2015–2017. Over the same period, the state's fentanyl-related[122] overdose mortality rate increased by 320 percent, from 0.25/100,000 in 2011–2013 to 1.05/100,000 in 2015–2017. However, heroin and

[122] Fentanyl is a powerful synthetic opioid that can be up to 50 times as potent as heroin. Because it is easily synthesized, illicit drug manufacturers and distributors sometimes use fentanyl to "cut" or replace other, less-powerful opioids, increasing users' risk of accidental overdose and death.

fentanyl still account for a much lower percentage of all opioid overdose deaths than do prescription opioids such as oxycodone.[123]

On a statewide basis:

- Older age groups have higher rates of prescription opioid overdose deaths than do younger people. The highest prescription opioid mortality rate is among persons aged 55–59 years, at 8.27 deaths per 100,000 population.

- Younger age groups have higher rates of heroin and fentanyl overdose deaths, with the highest mortality rates among persons age 25 to 29 years: for heroin, 4.54 deaths per 100,000 population; for fentanyl, 2.78 deaths per 100,000 population.[124]

In 2017, California had 2,194 opioid deaths, over 70 percent of which involved prescription medications. Although the number of opioid prescriptions in the state declined 16 percent between 2015 and 2017, California's total number of opioid prescriptions filled in 2017 (excluding buprenorphine, used in medically assisted treatment (MAT) for opioid abuse) was still 21,787,042, an annual prescribing rate of 517.3 prescriptions per 1,000 residents.

The opioid prescribing rates in Sonoma, Mendocino, and Lake Counties in 2017 were substantially higher than the state rate: 642.9 per 1,000 residents in Sonoma County, 806.4 prescriptions per 1,000 in Mendocino County, and 949.5 prescriptions per 1,000 residents in Lake County.

Table 101: Opioid Prescriptions in California and Selected Counties, 2017

Area	Opioid Prescriptions Filled	Rx per 1,000 Population
California	21,787,042	517.3
Lake County	77,437	949.5
Mendocino County	88,033	806.4
Sonoma County	399,240	642.9

Source: California Opioid Overdose Dashboard, *https://discovery.cdph.ca.gov/CDIC/ODdash/*

The California Opioid Overdose Dashboard has flagged Cloverdale's ZIP Code 95425 (shown in red on the map below) as having the highest age-adjusted opioid mortality rate in the county for 2017: 21.57 deaths per 100,000 population. Cloverdale was followed by Cotati (to the south, ZIP Code 94931), at 18.82/100,000, and Healdsburg (ZIP Code 95448), at 17.1/100,000. These

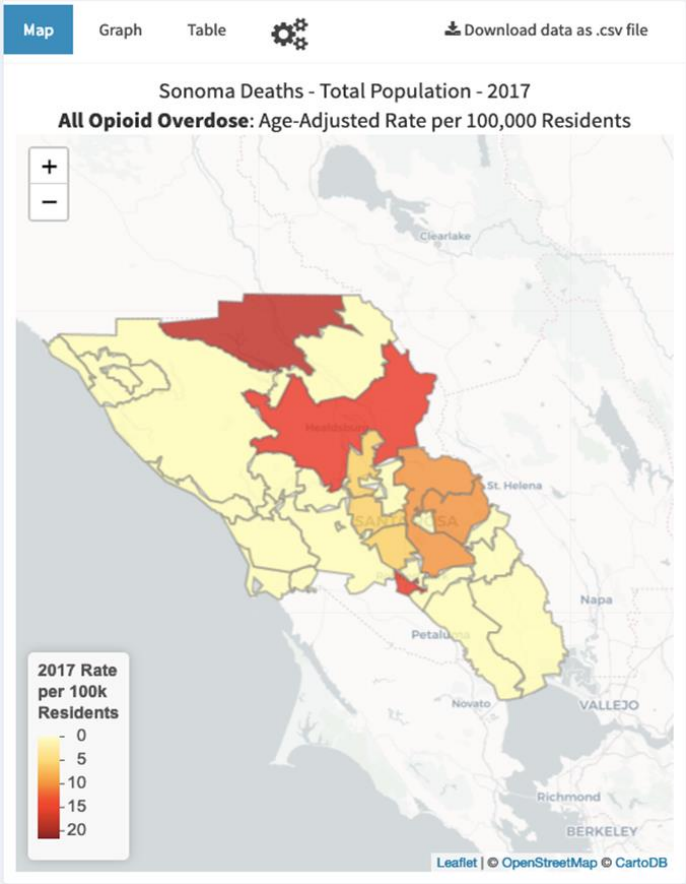
[123] California Department of Public Health, Prescription Drug Overdose Prevention Initiative, California Opioid Overdose Dashboard, *https://discovery.cdph.ca.gov/CDIC/ODdash/.*

[124] Ibid.

subcounty rates are closer to the higher mortality rates of Lake and Mendocino Counties to the north than to Sonoma County as a whole.

Research recently published in the *American Journal of Preventive Medicine*[125] found that binge drinkers are nearly twice as likely to misuse prescription opioids as are nondrinkers. Sonoma, Lake and Mendocino Counties all have a high percentages of binge drinkers: 17 percent of adults in each of the three counties.[126]

Figure 18: Sonoma County Opioid Overdose Death Rates per 100,000 Population, 2017



Source: California Opioid Overdose Dashboard, *https://discovery.cdph.ca.gov/CDIC/ODdash/*[127]

[125] Esser, Marissa B.; Gary P. Guy, Jr.; Kun Zhange; and Robert D. Brewer, "Binge Drinking and Opioid Misuse in the U.S., 2012–2014," *American Journal of Preventive Medicine*, June 11, 2019. doi:*10.1016/j.amepre.2019.02.025*.

[126] American Academy of Family Physicians, UDS Mapper, *https://www.udsmapper.org/*.

[127] California Opioid Overdose Dashboard interactive maps are generated using the Leaflet JavaScript library (see *https://leafletjs.com/*). Map data © OpenStreetMap contributors (see *https://www.openstreetmap.org/copyright*), available under the Open Data Commons Open Database License (*https://opendatacommons.org/licenses/odbl/*), with map tiles licensed under the Creative Commons Attribution-ShareAlike 2.0 Generic license (*https://creativecommons.org/licenses/by-sa/2.0/*), and © CARTO (see *https://carto.com/attribution/*).

INFANT MORTALITY

Over the past decade, Sonoma County's infant mortality rates have been broadly similar to California's. This has meant that white non-Hispanic and Asian/Pacific Islander residents have the lowest infant mortality rates and Hispanic/Latino residents' rate is similar to the state average. Both statewide and in Sonoma County, Black/African-American residents have had disproportionately high infant mortality: approximately twice the death rate of infants of all races/ethnicities.

It is difficult to assess recent trends in the county's infant mortality rates due to a lack of current data. As a privacy measure, the California Department of Public Health routinely withholds county-specific data when the number of events falls below certain thresholds, so 2014–2016 infant mortality data by race/ethnicity is not available for Sonoma County.

Table 102: Infant Mortality by Race/Ethnicity, California and Sonoma County, 2010–2012 and 2014–2016

	Infant Deaths per 1,000 Live Births			
	California		Sonoma County	
Race/Ethnicity	2010–2012	2014–2016	2010–2012	2014–2016
All races/ethnicities	4.8	4.4	4.7	3.0
White, non-Hispanic	3.9	3.6	3.8	N/A
Hispanic	4.7	4.4	4.8	N/A
Black/African-American	9.8	9.8	10.2	N/A
Asian/Pacific Islander	3.9	3.6	5.8	N/A

*Source: California Dept. of Public Health, 2010–2012 Birth Cohort-Perinatal Outcome Files, as reported in *California County Health Status Profiles 2015*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2015. **Source: California Dept. of Public Health, 2014–2016 Birth Cohort-Perinatal Outcome Files, as reported in *California County Health Status Profiles 2019*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2019. "N/A" indicates that data was withheld pursuant to the department's Data De-Identification Guidelines.

County and Subcounty Mortality

The table on the following page summarizes 2011–2013 and 2015–2017 mortality data for Sonoma County and California as a whole.

Table 103: Mortality Rates by Selected Cause of Death, California and Sonoma County, 2011–2013 and 2015–2017

Cause of Death	Deaths per 100,000 Population, Crude and Age-Adjusted							
	California				Sonoma County			
	2011–2013*		2015–2017**		2011–2013*		2015–2017**	
	Crude	AA	Crude	AA	Crude	AA	Crude	AA
All causes	642.9	641.1	668.1	610.3	795.8	643.8	824.9	605.1
All cancers	105.9	151.0	151.2	137.4	193.3	159.1	194.4	140.2
Colorectal cancer	14.0	13.9	13.8	12.5	17.7	14.5	16.7	12.2
Lung cancer	37.1	33.6	30.2	27.5	42.8	36.4	40.6	29.3
Female breast cancer	22.9	20.7	22.5	18.9	30.5	23.4	28.2	19.7
Prostate cancer	16.2	20.2	17.7	19.4	18.4	18.5	21.4	18.2
Diabetes	20.7	20.9	23.3	21.2	21.9	18.2	24.4	17.9
Alzheimer's disease	30.9	30.8	39.7	35.7	53.1	40.2	56.6	40.0
Coronary heart disease	104.3	103.8	97.1	87.4	113.0	88.7	102.8	72.9
Cerebrovascular disease (stroke)	35.7	35.9	39.9	36.3	45.9	36.2	46.4	33.4
Influenza/pneumonia	16.3	16.3	15.7	14.2	11.4	8.6	14.1	9.9
Chronic lwr. respiratory disease	35.0	35.9	34.9	32.0	46.1	38.2	41.4	28.7
Chronic liver disease/cirrhosis	12.3	11.7	3.6	12.2	14.5	11.9	12.5	9.8
Accident/unintentional injury	28.4	27.9	33.7	32.2	27.4	24.7	39.9	34.9
Motor vehicle traffic accident	7.8	7.8	9.8	9.5	5.2	4.7	8.6	8.3
Suicide	10.4	10.2	10.8	10.4	12.8	11.2	13.7	12.4
Homicide	5.2	5.1	5.2	5.2	2.2	2.3	2.8	2.8
Firearm-related	7.9	7.8	8.0	7.9	6.5	5.9	5.7	3.0
Drug overdose	11.5	11.1	13.3	12.7	10.3	9.6	15.5	14.4

*Source: California Dept. of Public Health, *2011–2013 Death Statistical Master Files*, and California Dept. of Finance, Demographic Research Unit, *State and County Population Projections by Race/Ethnicity, Detailed Age, and Gender, 2010–2060*, Jan. 2013, as reported in *California County Health Status Profiles 2015*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2015. **Source: California Dept. of Public Health, *California Comprehensive Master Death Files, 2015–2017*, compiled Aug. 2018, and California Dept. of Finance, Demographic Research Unit, *State and county population projections 2010–2060*, Jan. 2018, as reported in *California County Health Status Profiles 2019*, published by California Dept. of Public Health and California Conference on Local Health Officers, April 2019.

Table 104: Sonoma County Age-adjusted Mortality Rates per 100,000 Population by Selected Causes of Death and Subcounty Areas, 2013–2015

	Age-Adjusted Mortality Rates by 100,000 Population									
Cause of Death	**Sonoma County**	**Santa Rosa**	**Petaluma**	**Sonoma Valley**	**Rohnert Park**	**Sebastopol-West County**	**Windsor**	**Healdsburg**	**Russian River**	**Cloverdale/ Geyserville**
All causes	612.7	664.0	630.5	606.0	710.3	535.9	540.0	472.6	805.6	383.3
All cancers	147.5	160.6	147.1	132.2	187.4	123.7	131.6	118.9	174.4	180.6
Colorectal cancer	14.5	32.7	28.4	33.6	46.0	22.9	28.2	27.2	48.1	42.9
Lung cancer	31.7	15.9	13.8	11.7	19.3	15.3	11.2	7.3	16.8	11.1
Female breast cancer	19.0	20.3	18.3	16.6	27.0	25.7	17.1	13.5	-	35.3
Prostate cancer	20.6	9.6	8.7	10..4	12.2	8.4	7.8	14.9	13.3	8.3
Heart disease	130.6	9.5	7.3	8.2	7.5	8.1	7.2	7.9	-	7.3
Stroke	33.8	148.0	155.0	161.3	147.5	117.8	107.2	85.2	183.4	135.4
Alzheimer's disease	41.6	37.7	28.6	44.8	34.2	25.8	38.0	34.3	38.5	27.1
Chronic lower respiratory disease	32.4	44.5	54.6	48.5	36.9	37.2	35.6	38.2	32.4	38.5
Accident/unintentional injury	30.2	33.8	20.9	35.3	29.1	26.9	26.9	25.9	56.5	41.5

Source: *Sonoma County Summary Measures of Health: A review of life expectancy, disability status, leading causes of death and premature death with trends 2005–2015*, Sonoma County Dept. of Health Services, Jan. 2018

FUTURE GROWTH OPPORTUNITIES

Examining patient data and service patterns, it becomes apparent that provider capacity has been a significant roadblock in the growth of Alexander Valley Healthcare's patient volume. Service trends suggest current demand that exceeds the clinical capacity of current provider staff.

A major roadblock to expanding provider capacity is physical space. Put simply, the health center has reached the limits of its available exam rooms, dental operatories, and counseling rooms, and there is insufficient space to add more rooms in the facilities AVH currently leases.

For those reasons, AVH is planning to build a major new community wellness center in Cloverdale to replace both its current medical and dental clinic buildings.

Figure 19: Architect's Rendering of Proposed Alexander Valley Wellness Center

Source: Stromberg Architecture, Berkeley, Calif., *http://www.strombergarchitecture.com/*

Based on a consultant study by nonprofit CHC facility experts Capital Links, the planned new building will have 30,000 square feet of programmable space. This facility will house additional medical exam rooms, dental operatories, group and individual counseling rooms, classrooms, conference rooms, movement rooms, and administrative space.

Also included in this square footage are 5,000 sq. ft. to be leased to other health-related organizations wishing to establish a presence in Cloverdale (or relocate from an existing leased space to co-locate with AVH) and 5,000 sq. ft. for future expansion.

With the planned larger facility, AVH will have a number of opportunities to grow its volume of patients and service visits. Those opportunities fall into three areas:

(1) **External growth opportunities** through strategic outreach and information efforts, in tandem with the planning and opening of AVH's new facility.

(2) **Internal growth opportunities**, including:

    a. Encouraging current intermittent medical patients to access care more regularly.

    b. Encouraging more of AVH's medical patients to become dental patients.

    c. Expanding behavioral health services to meet the evident patient need.

(3) **Service expansion opportunities** that will become possible with a larger facility and that are likely to attract both new and existing users. Some of those potential service expansions can already be anticipated based on the needs data presented in this assessment.

External Growth Opportunities

This community needs assessment included an analysis of AVH's potential to attract new patients from the area, including both the three ZIP Codes that comprise the primary service area and the larger surrounding region from which AVH draws about one-fifth of its current patient volume (the secondary catchment area).[128]

UDS Mapper and Census data estimates that those ZIP Code Tabulation Areas (ZCTAs) had a combined 2016 population of 145,670, of whom 52,937 (36.3 percent) were low-income, with annual gross incomes below 200 percent of the federal poverty level (FPL).

In 2016, 39,720 of those residents were served by federal community health centers (CHCs), a penetration rate of 35.1 percent of low-income residents and 27.3 percent of all area residents. This means there are at least 13,217 low-income residents who may currently be unserved.

Of course, low-income residents are not the only ones who may seek health services from a community health center. Many residents of rural or small-town areas, regardless of income or payment type, depend on CHCs as their sole local sources of care. AVH currently serves this role in Cloverdale.

[128] In addition to Cloverdale, Geyserville, and Hopland, which are all in the primary service area, this includes Ukiah, Healdsburg, Windsor, Lakeport, Willits, Redwood Valley, Kelseyville, Yorkville, Clearlake, and Clearlake Oaks.

Much of the Mendocino and Lake County areas included in this analysis are rural or small-town populations. Based on UDS Mapper data, in 2016:

- About 15 percent of residents of this region (21,851 people) were without a regular source of care.
- About 10 percent (14,567 people) postponed care in the previous year due to cost.
- About 34 percent (49,538 people) had no dental care due to cost or unavailability of providers.

Table 105: Key Demographics for Estimating Unmet Need in AVH Primary and Secondary Catchment Areas, 2016

ZIP Code	Community Name	Est. Total Population	Residents Below 200% of FPL	Residents Served by CHCs
95425	Cloverdale	10,675	3,628	4,388
95482	Ukiah	31,993	13,378	14,389
95448	Healdsburg	17,666	4,347	3,636
95441	Geyserville	1,889	510	562
95492	Windsor	29,590	5,499	4,628
95449	Hopland	1,794	767	776
95453	Lakeport	10,717	4,010	2,010
95490	Willits	12,688	6,023	5,655
95470	Redwood Valley	6,226	2,064	1,888
95451	Kelseyville	3,058	959	241
95454	Yorkville	196	138	111
95442	Clearlake	15,360	9,594	1,184
95422	Clearlake Oaks	3,818	2,030	302
	Totals	**145,670**	**52,937**	**39,770**

Source: 2016 UDS reporting data, via UDS Mapper, *https://www.udsmapper.org/*

Since AVH served a total of 4,898 patients from these ZIP Codes in the two-year period 2017–2018, there is a potential to serve additional patients from those same ZIP Codes in the new, larger AVH site.

Internal Growth Opportunities

ENCOURAGING INTERMITTENT PATIENTS TO BECOME REGULAR USERS

As explained in the Service Patterns chapter, a substantial number of AVH patients do not have medical visits in every calendar year, even though they may use other types of services.

Although some of these intermittent users may have left the area or obtained care elsewhere since their last medical visit, it is likely that AVH could significantly increase its service volume by encouraging such intermittent users to return for more frequent medical visits.

For the purposes of this analysis, "intermittent users" were defined as follows:

(1) Patients who had only one medical visit in the 2017–2018 period, or who had any number of medical visits in 2017 and none in 2018.

(2) Patients who had at least one dental and/or mental health visit in 2017–2018, but no medical visits in the same timeframe.

(3) Patients who had at least one enabling or support visit in 2017–2018, but no face-to-face provider visits (medical, dental, or mental health) in the same timeframe. Enabling or support visits include lab visits, medication-related visits, immunizations, insurance applications, case management, etc.

Of all the patients seen from in the two year period Jan. 1 2017 – Dec. 31, 2018, **approximately 2,370 unduplicated patients fit one or more of these criteria**, around 43 percent of all unduplicated 2017–2018 patients.

Although there were some patients who used only enabling/support services in 2017–2018, EHR data indicates that the number was small, meaning that nearly all intermittent users had at least one face-to-face visit with providers in one of the three main departments.

Almost three-fourths (72.2 percent) of all 2017–2018 intermittent users — 1,711 individuals — were from the AVH service area, and almost 85 percent (2,012 individuals) were from Sonoma County.

Table 106: Intermittent Users by Patient Origin, 2017–2018

Patient Origin	Number of Intermittent Patients	Percentage of Intermittent Patients
Within AVH service area	1,711	72.2%
Another Sonoma ZIP Code	301	12.7%
Mendocino or Lake County	252	10.5%
Other county or state	106	4.5%
Totals	**2,370**	**100.0%**

Those patients would be the logical initial targets for any outreach campaign aimed at intermittent users. An analysis of 2017–2018 data shows that users within the primary service area tend to average more visits per patient than users from outside the service area, so such an outreach campaign could produce a significant increase in total service volume.

Table 107: Average Visits per Patient by Patient Origin, 2017–2018

Patient Origin	Total Patients	Average Visits/Patient
Within AVH service area	4,313	4.9
Another Sonoma ZIP Code	567	4.1
Mendocino or Lake County	427	4.0
Other county or state	138	2.9
Totals	**5,445**	

Three other demographic variables might influence a user's willingness or ability to come in for more frequent medical care: age, poverty, and insurance status.

In general, the demographics of intermittent users are very similar to the demographics of all AVH patients. However, children under 18 make up a somewhat larger proportion of intermittent users than of all users, while adults over 65 make up a somewhat smaller proportion. (Since adults over 65 are typically covered by Medicare, they tend to have more consistent insurance coverage as well as more frequent health care needs.)

Table 108: Intermittent Users from AVH Service Area by Age Group, 2017–2018

Patient Age Group	Percentage of Intermittent Patients	Percentage of All 2017–2018 Patients
Under 18 years	27.3%	24.8%
18 to 64 years	60.4%	60.1%
65 years or older	12.3%	15.1%

The percentage of 2017–2018 intermittent medical users who were below the federal poverty level (38.1 percent) was similar to the percentage of all patients below the poverty level (39.8 percent). However, the percentage of intermittent patients with incomes between 100 percent and 200 percent of poverty (51.8 percent) was slightly higher than patients overall (48.5 percent). This suggests that more intermittent users may be above the eligibility ceiling for expanded Medi-Cal, 138 percent of poverty.

Table 109: Intermittent Users by Percentage of Federal Poverty Level (FPL), 2017–2018

Patient Income by FPL	Percentage of Intermittent Patients	Percentage of All Patients in Category
Below 100% of FPL	38.1%	39.8%
100–199% of FPL	51.8%	48.5%
200% of FPL or more	10.1%	11.6%
Under 200% of FPL	89.9%	88.4%
Unknown or not reported	37.1%	30.6%

The percentage of patients whose income level was unknown is higher among intermittent patients. This may reflect patients who choose not to disclose their incomes because they are

ineligible for sliding scale discounts or public assistance programs, and/or patients whose income is highly unstable, such as seasonal workers or homeless individuals.

Similar factors may help explain why a larger percentage of intermittent users are uninsured and a smaller percentage have private insurance than do patients overall.

Table 110: Intermittent Users by Insurance Category, 2017–2018

Insurance Category	Percentage of Intermittent Patients	Percentage of All Patients in Category
Uninsured	23.3%	14.7%
Medi-Cal (Medicaid)	47.4%	44.8%
Medicare	7.5%	14.5%
Private insurance	21.8%	26.0%

ENCOURAGING MORE MEDICAL PATIENTS TO BECOME DENTAL PATIENTS

As data in the Service Patterns section of this report shows, only 1,248 of AVH's 4,788 medical patients (26.1 percent) also received dental care from AVH providers. The robust numbers of visits per patient for those who do use AVH dental services (an average of 6.1 visits/patient for 2017–2018) suggest that this is likely only a fraction of total demand even within the existing patient population.

Currently, AVH does not have the dental capacity (in either staffing or operatories) to handle a sizable influx of additional patients. However, after the transition to the new facility is complete, another logical step in expanding service volume would be to market AVH's dental services to AVH medical patients.

That transition might also represent an appropriate moment to reexamine AVH's policies regarding dental insurance. At present, AVH's dental department serves Medi-Cal recipients (who represent 80 percent of current patients) and uninsured patients, but accepts no private dental insurance.

Historically, this policy served to focus limited resources on the patients most in need while avoiding direct competition with local dental practices. (When AVH opened its dental department in late 2013, no local dental offices accepted Medi-Cal or had a sliding discount scale for uninsured patients.) However, with more capacity, this policy could be changed to encourage greater integration of medical, dental, and mental health services. This would also eliminate the need for existing AVH dental patients to find a new dental practice if they gain dental coverage (such as an employer plan).

Service Expansion Opportunities

With the addition of a new, much larger facility, Alexander Valley Healthcare will also have an opportunity to expand the scope of its services to attract more patients and fill gaps in existing area services. Those new services could be launched either through AVH staff expansions or by providing space to other providers to co-locate in the new community wellness center.

EXPAND BEHAVIORAL HEALTH SERVICES

In 2018, AVH provided 2,360 mental/behavioral health visits to 351 unduplicated patients. Those figures undoubtedly represent only a fraction of the total need.

As explained in the Service Patterns chapter, 1,860 current patients have one or more existing mental or behavioral health diagnoses. That does not reflect other, as yet undiagnosed need within the AVH patient population or the surrounding region.

In order to adequately serve all existing patients with chronic mental health conditions would require three times the behavioral health capacity AVH now has. Furthermore, AVH is only now beginning to add in-house substance abuse services, a critical shortage in the service area.

As noted in the Service Patterns chapter, **substance use disorders are probably undercounted in the 2017–2018 patient statistics.** AVH has had an active depression screening program for nearly a decade, using the evidence-based PHQ-2 and PHQ-9 screening questionnaires, and added an opioid drug screening program two years ago, but only began systematically screening for alcohol and other substances (using SAMSHA's evidence-based Screening, Brief Intervention and Referral for Treatment (SBIRT) protocol) in 2019.

A high percentage of AVH patients with other chronic conditions were screened for alcohol abuse in the first six months of2019, but only 23.4 percent of AVH patients without any chronic conditions and only 40 percent of all adult adults over 21 were screened.

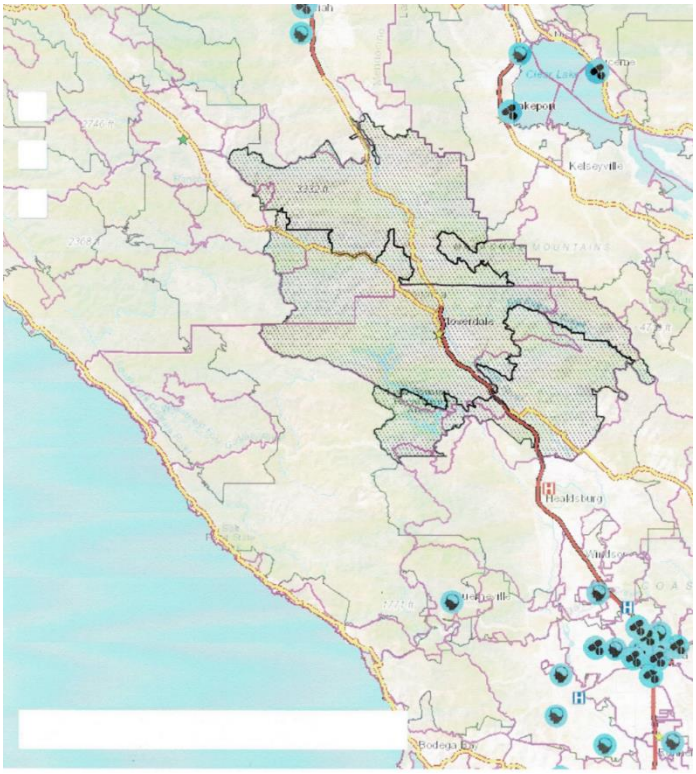
Table 111: Patients Who Received Depression or Alcohol Screening by Chronic Condition Diagnosis, 2017–2018

Diagnosis	Patients Received Depression Screening	Patients Received Alcohol Screening
Group A		
Asthma	77.8%	57.2%
Chronic bronchitis and emphysema	91.8%	67.6%
Chronic pain	98.3%	69.1%
Diabetes mellitus	97.2%	59.9%
Heart disease (selected)	96.4%	63.6%

Diagnosis	Patients Received Depression Screening	Patients Received Alcohol Screening
Hypertension	96.5%	58.4%
Overweight and obesity	85.8%	56.0%
Any Group A diagnosis	89.2%	57.2%
Group B		
Alcohol-related disorder	92.6%	50.0%
Tobacco use disorder	98.6%	56.8%
Other substance-related disorders	95.6%	52.8%
Depression and other mood disorders	93.8%	56.6%
Anxiety disorders, including PTSD	91.5%	58.2%
Attention deficit and disruptive behavior disorders	62.1%	71.1%
Other mental disorders, excluding drugs or alcohol	79.6%	59.0%
Any Group B diagnosis	87.2%	52.4%
Any diagnosis from Group A **or** Group B	86.1%	49.7%
No diagnosis from Group A or Group B	52.0%	23.4%
All patients aged 21 and older	70.5%	40.0%

As illustrated by the following map, there are no substance abuse treatment sites in the Cloverdale area.

Figure 20: Substance Abuse Treatment Programs in Sonoma County



Source: UDS Mapper, *https://www.udsmapper.org/*

LIFE TRANSITION SUPPORT GROUPS

Behavioral health departments can also provide support for other patients that may not have a chronic condition, but who may be in need of professional or peer support through counseling groups. This might include people who are:

- **Recovering from traumatic events,** such as domestic violence, bullying, or grief due to loss of a loved one, or
- **Undergoing life transitions**, such as postpartum adjustment to a new baby; divorce or spousal abandonment; retirement; problems of aging; or recovery from major surgery or disabling injury.

SERVICES TO SUPPORT FAMILY CAREGIVERS

According to the California Health Interview Survey, 20.8 percent of Sonoma County adults and 22.7 percent of Mendocino County adults are acting as caregivers for friends or family members. Many such caregivers are providing care for multiple persons: 29.1 percent of Sonoma County adult caregivers are caring for two or more persons, as are 39.2 percent of Mendocino County caregivers.

Most such family caregivers are also working at outside jobs. Most are untrained for their roles. Most experience stress due to having to juggle other responsibilities along with the serious decisions involved caring for an ill or disabled person. Such responsibilities can create health problems for the caregiver due to stress and lack of personal time.

In addition to offering support to caregivers, such as access to case managers, patient portals, and quick response to caregiver calls for assistance, AVH mental health professionals could create venues for counseling, peer support groups, or chat lines to ease the strain on caregivers and better prevent burnout.

FALL PREVENTION

For older adults, falls are a significant source of unintentional injury that can have lasting, sometimes permanent consequences, including loss of mobility and capacity for self-care.

In the 2011–2012 California Health Interview Survey, 13.3 percent of Sonoma County respondents over 65 reported having fallen to the ground at least once in the past year, compared to 12.4 percent of seniors statewide. Sonoma County seniors were also more likely to need medical care as a result of a fall; 45.6 percent of Sonoma County respondents who had

fallen in the past 12 months sought medical care related to a fall, where the statewide figure was only 41.6 percent.[129]

By adding fall prevention education and movement programs, AVH could help to reduce the incidence of falls for older patients, which could pay significant dividends for these older adults' quality of life.

CHRONIC PAIN SERVICES

The number of chronic pain patients served by AVH has risen from 360 in the 2013–2014 period to 595 chronic pain patients in 2017–2018. EHR shows that many of those chronic pain patients also have other chronic conditions, including mental and behavioral health conditions such as depression, anxiety disorders, or alcohol or other substance abuse.

Growing concerns over the health impact of opioid painkillers has increased demand for other, non-medicative forms of pain relief. Health centers in various parts of the country have reported progress using alternative approaches to pain management, including:

- **Alternative therapies for pain relief**, such as Osteopathic Manipulation Treatment, physical therapy, acupuncture, Feldenkrais Functional Integration (FI), or cranial sacral therapy.

- **Offering safe movement programs** to help pain patients regain range of movement through practices such as tai chi, yoga, Feldenkrais Awareness Through Movement, qigong, or Pilates.

AVH's staff doctors of osteopathy have already begun offering Osteopathic Manipulation Therapy, which may be contributing to the rise in pain patients coming to AVH.

It is likely that offering alternative chronic pain services (and expanding the range of those services once AVH transitions to the new facility) would continue to draw new patients to AVH, including both local service area residents and out-of-area residents from Lake, Mendocino, and Sonoma Counties.

NUTRITION EDUCATION SERVICES

During the 2017–2018 period, a total of 663 patients were identified as overweight and obese, 431 were diabetic, 874 were diagnosed with hypertension, and 281 had heart disease.

[129] California Health Interview Survey (CHIS), UCLA Center for Health Policy Research, 2011–2012 pooled data.

This suggests that a significant fraction of AVH patients could benefit from well-designed nutrition programs tailored to their condition and personal characteristics.

EXERCISE PROGRAMS

Similarly, many AVH patients could benefit from additional physical activity and exercise, for which AVH is planning to add a large activity room in its new facility.

This space could be used to offer a range of programs and classes. Some might be for children or families needing a safe indoor class space for yoga, Zumba, dance, or other fun movement programs. Other offerings might include exercise program aimed at patients with flexibility or mobility problems, such as tai chi or qigong classes and rehabilitative or yin yoga.

Postpartum exercise programs for new mothers might also be offered as part of larger “new parent” classes or support groups.

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