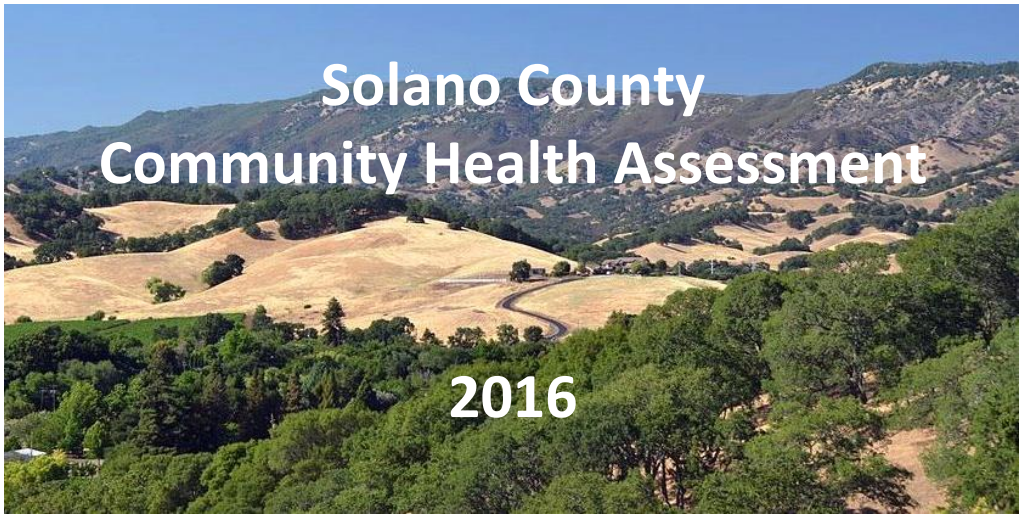

Solano County
Community Health Assessment

2016

Acknowledgements

The Healthy Solano Planning Committee would like to sincerely thank everyone who contributed their time, expertise and opinions to the process to this Community Health Assessment. Such an in-depth process could not have been completed without the hundreds of community members, partners, subject matter experts and advocates who informed the direction and outcomes of the report. Thank you.

Gratefully,
Healthy Solano Planning Committee Members

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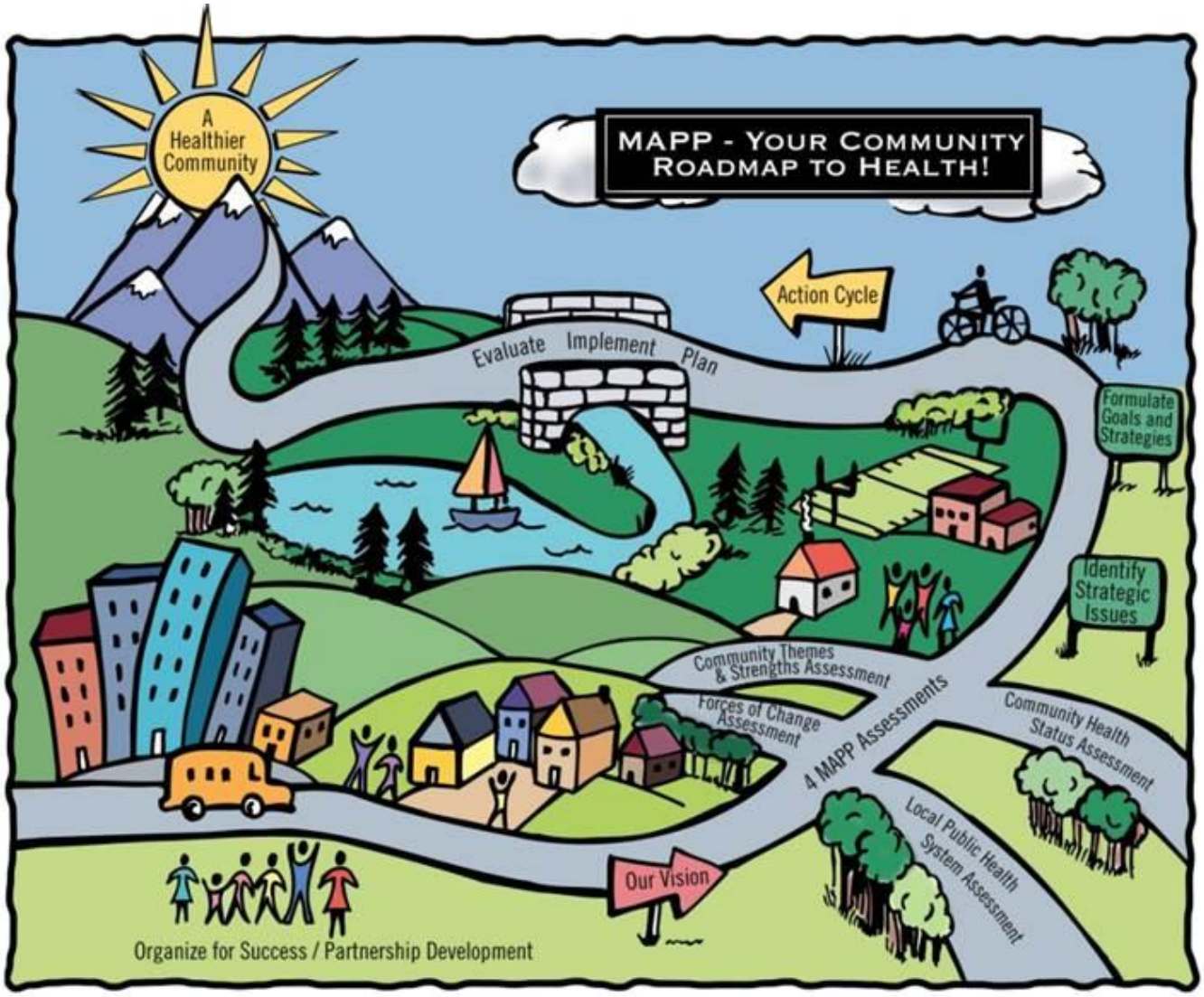
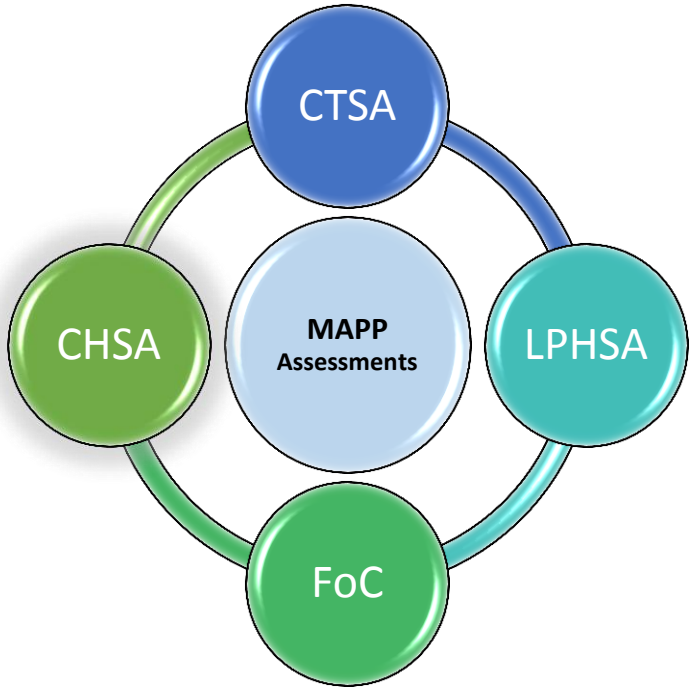
Executive Summaries

Solano Public Health chose the Mobilizing for Action through Planning & Partnerships (MAPP) process to complete its Community Health Assessment and Community Health Improvement Plan. The primary task of the MAPP process is to complete four health assessments: the Community Health Status Assessment, the Community Themes & Strengths Assessment, the Local Public Health System Assessment, and the Forces of Change Assessment. These assessments gather and analyze qualitative and quantitative data to provide a comprehensive picture of health in the community.



Solano County Community Health Status Assessment

Executive Summary



CHSA Background/Purpose

The Community Health Needs Assessment for Solano County provided the data for the Community Health Status Assessment (CHSA) for Solano County Public Health, in preparation for the development of their Community Health Improvement Plan (CHIP). The CHNA is done in collaboration with the hospital systems serving Solano County.

Assessment Process and Methods

This report documents the processes, methods, and findings of the CHNA conducted on behalf of the Solano CHNA Collaborative, a collaborative of three nonprofit hospital systems – Kaiser Permanente, NorthBay Healthcare and Sutter Health Sacramento Sierra Region – Solano County Department of Public Health and the Solano Coalition for Better Health serving Solano County, California. The Solano CHNA Collaborative project was conducted over a period thirteen months, beginning in April 2015 and concluding in May 2016. For the purposes of this assessment, the health service area (HSA) was defined by the 18 ZIP codes that make up Solano County. The CTSA is data extracted from this process.

The objective of the 2016 CHNA was:

> *To identify and prioritize community health needs and identify resources available to address those health needs, with the goal of improving the health status of the community at large and for specific locations and/or populations experiencing health disparities.*

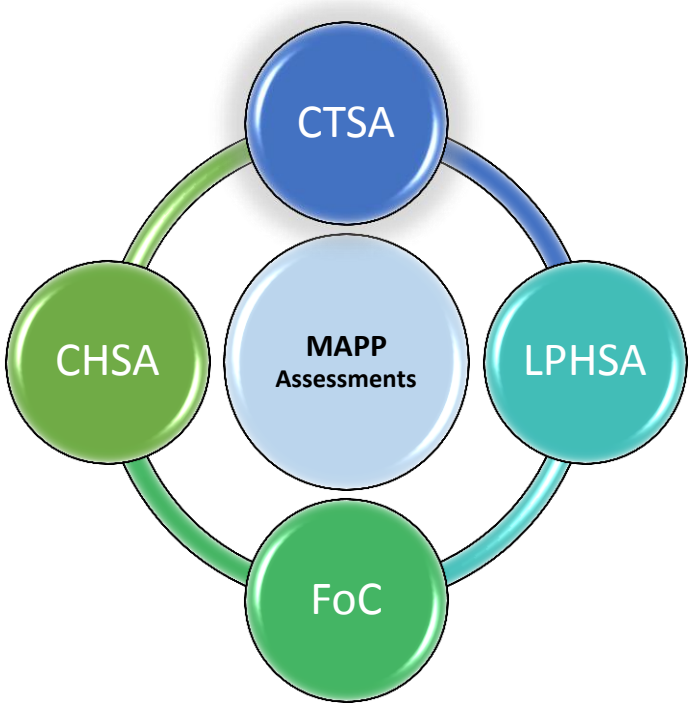
To meet the project objectives, a defined set of data collection and analytic stages were developed. Data collected and analyzed included both primary or qualitative data, and secondary or quantitative data. To determine geographic locations within the HAS affected by social inequities, data were compiled and analyzed at the census tract and ZIP code levels as well as mapped by geographic information systems (GIS). Additionally, indicators were collected from a variety of secondary sources (see full report, Appendix A) to assess overall health status and disparities in health outcomes. Overall, more than 170 indicators were included in the CHNA.

Solano County Community Themes Strengths Assessment

Executive Summary

CTSA Background/Purpose

The Community Themes & Strengths Assessment (CTSA) is used to gage community members' perceptions, concerns and suggestions for creating a healthier community. The CTSA not only helps to engage the broader public in the health assessment process, but also provides insights into what the community needs and desires around their health needs.



Assessment Process and Methods

Information within the CTSA came from three major sources: 1) a survey disseminated to the general public and partners; 2) focus groups; and 3) key informant interviews. The Solano County Community Health Survey was developed in late spring 2014 to capture the community's ideas regarding the quality of life in Solano County and its cities, and to gather information on the health issues, behaviors and environmental circumstances that most affect the community. The survey was available in both Spanish and English, and over two years, the survey was administered at more than 45 libraries, community centers, and fairs and festivals. In 2016, an electronic version of the survey was also developed and sent out through email and as a link on social media. Over 1,300 surveys were collected, representing all cities and age groups within Solano County.

In addition to information collected in the surveys, the CTSA includes information collected between May and November 2015 through key informant interviews and focus groups. Key informant interviews were conducted using a standardized series of questions with area health experts and service providers familiar with health issues, as well as in places and within populations experiencing health disparities. A total of 11 key informant interviews were completed. Focus group interviews were conducted with community members representing vulnerable populations such as the medically underserved, minority and low-income populations and/or community members living in vulnerable locations. A total of 6 focus groups were conducted with 67 participants.

Summary of Quality of Life Data

- 91% indicated Solano County is an OK, good or excellent place to live
- 85% indicated there is a sense of community involvement or responsibility which is OK, good or excellent
- 90% believed the quality of life in Solano is OK, good or excellent
- 83% indicated their satisfaction with the health care system is OK, good or excellent
- 77% & 75% felt Solano County is OK, good or excellent as a place to raise children and grow old, respectively
- 63% rated the job availability in Solano as OK, good or excellent
- 97% rated their individual health as OK, good, or excellent

➢ In all cases, except related to job availability and individual health, the respondents rated their communities as 'excellent' more often than the County, as a whole

Summary of Health Issue Data

The following were identified as the issues most impacting health of Solano County in the areas of Health, Individual Behaviors, Social/Economic, and Environmental, as well as the characteristics of a Healthy Community

Health Issues	Individual Behaviors	Social / Economic	Environmental	Healthy Community
Alcohol/drug abuse	Drug abuse	Unemployment	Cigarette smoke	Low crime/safe neighborhoods
Obesity	Alcohol abuse	Poverty	Poor housing conditions	Safe place to raise kids
Mental health problems	Poor eating habits	Lack of education/no high school education	Air pollution	Job opportunities

Additionally, key informants and focus group discussions raised issues such as:

- Lack of culturally competent providers
- Poor health behaviors such as physical inactivity and tobacco use
- Availability of healthy food options
- Lack of dental care
- Lack of transportation options
- Tension with law enforcement
- Violence directed at LGBTQ community

Strategic Issues Identified from the CTSA

- Shortage of medical provides
- Alcohol abuse
- Drug use & abuse issues in Solano County
- Significant mental health issues in Solano County communities
- Lack of exercise
- Poor eating habits
- Barriers to educational attainment
- Diabetes
- Dental/oral health
- Shortage of quality affordable housing
- Wrap-around services for the homeless
- Violent crime
- Pollution
- Cigarette smoke
- Lack of food security and high cost of living
- No health insurance
- Unemployment disparities & need for job training resources
- Sexual and domestic violence
- Human trafficking and prostitution
- Tension with police
- Child abuse & trauma

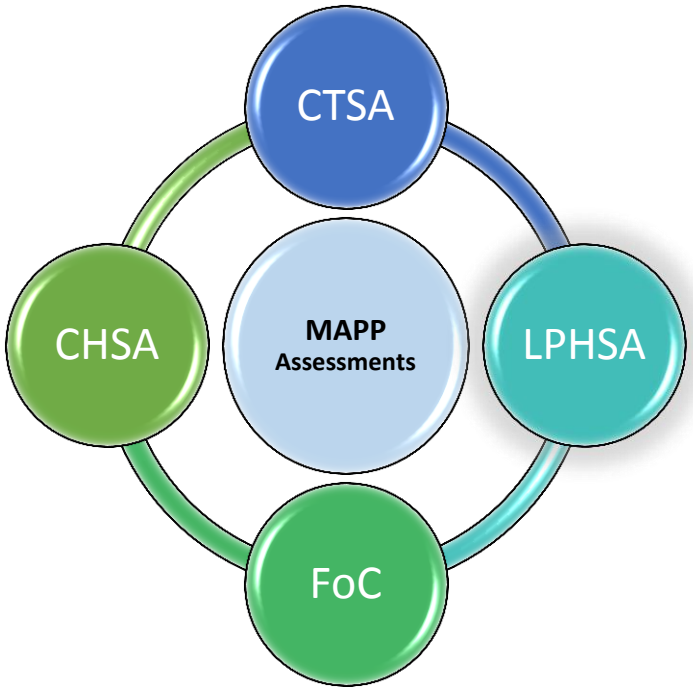
Solano County Local Public Health System Assessment

Executive Summary

LPHSA Background/Purpose

The LPHSA for Solano County is one of the four Assessments in the Mobilizing for Action through Planning and Partnerships (MAPP) and is done in preparation for the development of their Community Health Improvement Plan (CHIP). The Instrument is a valuable tool for:

- Identifying areas for system improvement
- Strengthening local partnerships
- Assuring that a strong system is in place for effective delivery services and response to emergencies



Assessment Process and Methods

Solano County Public Health (SCPH) conducted several meetings with partners to assess the current status of the local public health (health of the public) system and to begin to determine the improvements needed to have a positive impact on health outcomes for all of the citizens and visitors of Solano County. Partners were engaged either in existing meeting structures or were invited to special meetings. The 10 Essential Services (ES) assessed in the LPHSA were assigned to the groups with the most knowledge of how each ES are delivered/provided in the community or those who need to be engaged in improved solutions. The facilitated discussions brought the groups to consensus (when possible) on a rating for each area of the assessment and partners' thoughts and suggestions were gathered for making improvements in the system.

Summary of Potential System Improvements Needed to Meet Local Health Needs

The following highlights the opportunities identified through the LPSHA process to improve the overall system of health service providers. This system is not just the traditional "health service" providers, but must include all of the partners who support the health of the community, including such services as law enforcement, policy making bodies, transportation services, educational institutions, etc.

- Look for ways to coordinate and make sense of all the data collected throughout the system and use data to improve outcomes, being sure to solve for root cause
- Work to ensure all populations are connected to health systems & lab access
- Include more organizations in the existing networks and utilize existing models that work well, like the Food Council.
- Create a Public Information Officer network to develop communication protocols for emergency/disaster communications
- Create a hub for information that everyone can access
- Be clear about what jurisdiction is responsible for what monitoring /enforcing laws/regulations and remove duplicative efforts
- Build the leadership capacity of people who are representative of the communities in the County
- Incentivize learning for all employees in the network agencies

- Focus research efforts on the health needs of the community and create formal channels to communicate research findings throughout the network

The 10 Essential Services assessed in the LPSHA indicated the following:

Most Needing Improvement:

- Educate/Empower
- Link to Health Services
- Assure Workforce
- Evaluate Services

Fair Amount of Improvement Needed:

- Monitor Health Status
- Develop Policies/Plans
- Research/Innovation
- Mobilize Partnerships
- Enforce Laws

Maintain Efforts

- Diagnose & Investigate

Strategic Issues Identified from the LPHSA

Solano County's Local Public Health System needs to:

- Identify community members with unmet access and health service needs, and understand the reasons why they do not get care
- Ensure the provision of health care where currently inaccessible
- Ensure effective entry and ongoing care management for socially and economically disadvantage and other vulnerable populations into a coordinated system of clinical care
- Assess whether community members, including vulnerable populations, are satisfied with the approaches taken toward the promotion of health and prevention of disease, illness, and injury
- Create communication, connection, coordination, and advocacy infrastructure for the local public health system.
    - Collaborate on workforce development and training synergies
    - Update communications plan
- Enhance evaluation capabilities to improve services and program delivery
- Apply available evaluation, survey, and registry data to improve care and care services

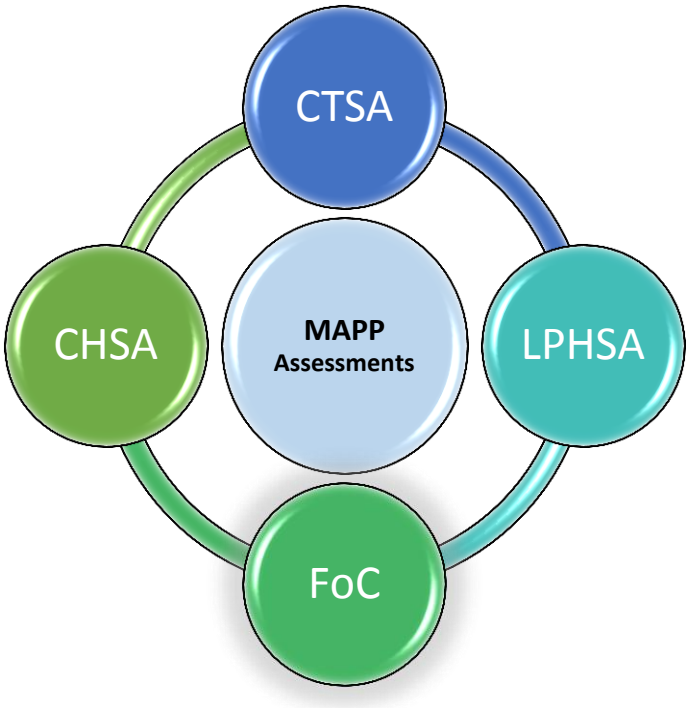
Solano County Forces of Change Assessment

Executive Summary

FoC Background/Purpose

In addition to assessing the current status of the health system in Solano County from the various perspectives and the quantitative data, it is necessary to look at what the future might hold for the County's communities. The FoC Assessment looks at what opportunities and threats could be generated by:

- **Trends -** Patterns over time, such as immigration to Solano County, or increasing traffic on major roadways.
- **Factors** - Discrete elements such as proximity to the San Francisco Bay Area, or diverse ethnic populations
- **Events -** One-time occurrences, such as the Napa earthquake, a local, state or national election, or passage of new legislation.



Assessment Process and Methods

The best approach to foreseeing the future change is to gather individuals knowledgeable about upcoming trends, factors and events likely to affect Solano County, and gather their best judgment of threats and opportunities. Two meetings with a diverse group of community members, as well as key informant interviews and focus groups were conducted to gather this information.

Summary of Key Findings

The forces identified clustered into the following themes:

- Income / Economics
- Demographics
- Policy & Politics
- Crime & Violence
- Medical & Health
- Education
- Technology & Communication
- Built Environment & Urban Sprawl
- Environmental Change
- Community Resources / Infrastructure

Assessment key findings:

- *The population is aging in Solano County*. While services for older residents may remain inadequate, there are opportunities over the next few years to focus on preventative health programs, to encourage aging in place, and to hire staff and establish volunteer networks to serve this population.

- *Increased immigration is changing the demographic make-up of the County*, threatening to increase ethnic tension and reduce services. Opportunities include increasing language and cultural competency and expanding care for undocumented residents.

- *The population of the county is likely to increase,* bringing increased congestion, transportation difficulties and reduced open space. At the same time, there is significant opportunity for re-development of Mare Island and the waterfront, which could increase jobs and income. In addition, there is opportunity for creative transportation planning. Creative city and county planning, were emphasized.

- *Health (particularly mental health) and other services in outlying areas of the county predicted to remain inadequate.* Opportunities include de-centralizing services, locating more providers outside of Fairfield and Vallejo; instituting team delivery of care; expanding Telehealth; and trying out other creative models of service delivery.

- *The cost of living and housing is predicted to increase*, putting greater stress on low-income residents but potentially increasing the tax base as higher-income residents move to the county.

- *Poor educational outcomes and increased crime* were noted as threats, but increased school funding, technical training and internships, as well as strong community engagement, community policing, youth mentoring and afterschool programs could mitigate the threats.

- Youth and community focus groups also cited the need for *improved and safer access to parks, as well as more options to obtain healthy foods* and establish more grocery stores in urban areas.

Strategic Issues Identified from the Forces of Change Assessment

- Shortage of quality affordable housing
- Inadequate K-12 education in Solano County schools.
- Severe shortage of mental health providers
- Services for the aging population

Community Health Status Assessment

Summary Report

for Solano County

Prepared by KIELY GROUP
What are you solving for?

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Community Health Status Assessment (CHSA) Overview

The CHSA is an assessment to examine the health of the residents in Solano County. Indicators are reviewed and compared to other populations, such as the State of California. Trends are identified and existing resources are identified. The resulting data will be combined with the results from the other 3 MAPP assessments to help determine priorities for the Community Health Improvement Plan (CHIP).

Process

The Solano County CHSA was extracted from the Solano Community Health Needs Assessment (CHNA) conducted by Valley Vision on behalf of Kaiser Permanente, NorthBay Healthcare, Sutter Solano Medical Center, Solano County Public Health, and the Solano Coalition for Better Health. The CHNA process was as follows:

The objective of the 2016 CHNA was:

> *To identify and prioritize community health needs and identify resources available to address those health needs, with the goal of improving the health status of the community at large and for specific locations and/or populations experiencing health disparities.*

The following research questions were used to guide the 2016 CHNA:

1. What is the community or health service area (HSA) served by each hospital in the CHNA Collaborative?
2. What specific geographic locations within the community are experiencing social inequities that may result in health disparities?
3. What is the health status of the community at large as well as of particular locations or populations experiencing health disparities?
4. What factors are driving the health of the community?
5. What are the significant and prioritized health needs of the community and requisites for the improvement or maintenance of health status?
6. What are the potential resources available in the community to address the significant health needs?

The Solano CHNA collaborative project was conducted over a period of thirteen months, beginning in April 2015 and concluding in May 2016. The project was conducted using a series of data collection and analytical phases. The CHNA process began with the collection and analysis of secondary data indicators of social inequities and proceeded with collection of both "upstream" and "downstream" health indicators. Indicators were collected from a variety of secondary sources (see Appendix A) to assess overall health status and disparities in health outcomes. Overall, more than 170 indicators were included in the CHNA.

Primary data collection began with interviews of area health experts such as public health and social service representatives. The first stage of data analysis resulted in the identification of vulnerable communities (e.g., low-income, medically underserved and minority populations), which then guided further primary data collection including community member focus groups. The primary data collected during the CHNA process was added to the Community Themes and Strengths Assessment report, in order to gather all the MAPP primary data in one report.

Community Definition

For the purposes of this report, the health service area (HSA) is the 18 ZIP codes which make up Solano County, California. The HSA was designated as Solano County because all Solano CHNA Collaborative partners serve communities within the county. Due to data availability, the HSA was examined two separate ways. One approach was to use Solano County as the service area. While this approach was the most natural and best reflected the focus area of collaborative members, it did not allow for a consideration of variation in conditions across the county. An alternative approach was also used in which the service area was defined based on the ZIP Code Tabulation Areas (ZCTAs), as defined by the US Census Bureau. In this approach, all ZCTAs that had a meaningful overlap with Solano County were included in the analyses. The benefit of this approach was that it allowed for the calculation of morbidity and mortality rates based on data available at the ZIP code level. This allowed for a better understanding of how these conditions varied within the county. Figure 1 and Table 1 show the Solano County HSA.

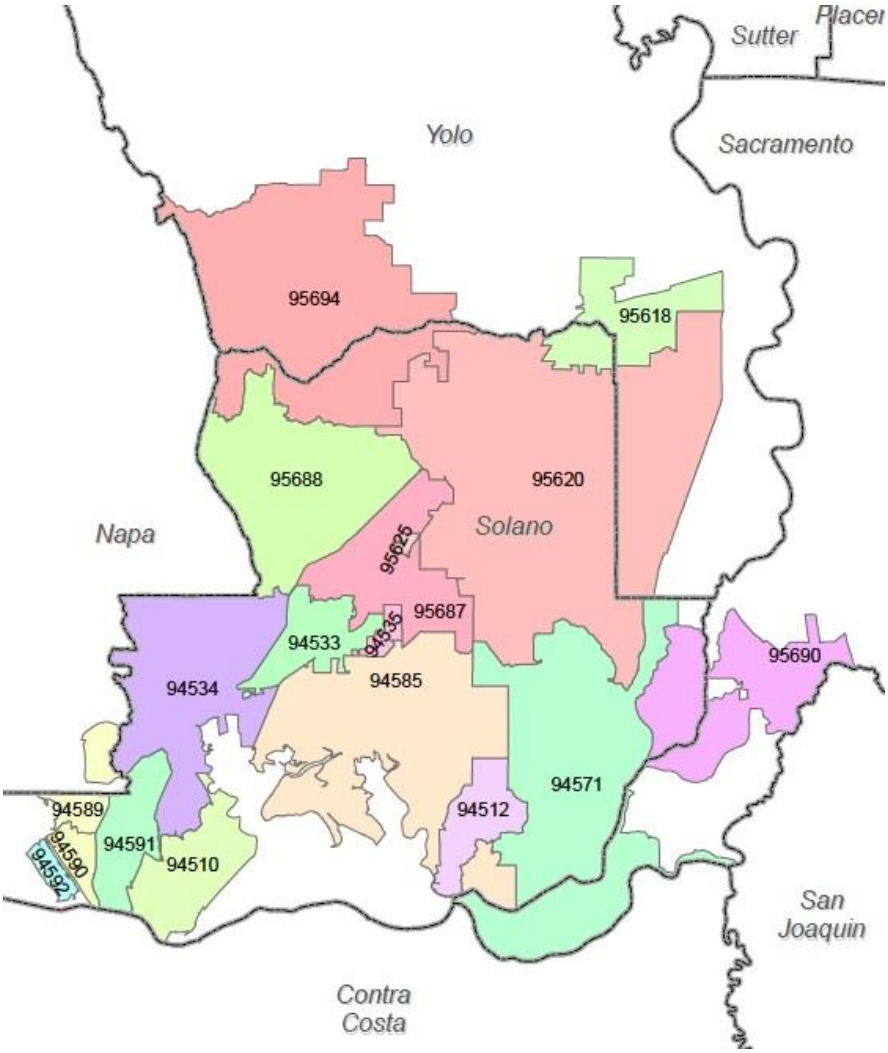

Figure 1: Solano County Hospital Service Area

Table 1. Solano County ZIP Codes and Corresponding Areas/Communities

ZIP Code	Community/Area
95620	Dixon
95687	East Vacaville
95688	West Vacaville
95625	Elmira
94533	East Fairfield
94534	West Fairfield
94535	Travis AFB
94585	Suisun City
94512	Birds Landing
94571	Rio Vista
94510	Benicia
94589	North Vallejo
94590	South/Central Vallejo
94591	East Vallejo
94592	Mare Island

Demographics of the HSA

The health service area of Solano County is located in Northern California and has approximately 417 thousand residents. As Tables 2 and 3 show, the area is considerably diverse in population, economic stability (income and poverty), and insurance status. Table 2 shows the total population count for the Solano County HSA, the median age of the HSA, and the median income compared to the state benchmarks. Table 3 provides information on the presence of medically underserved, low income, and minority residents in Solano County.

Population characteristics

Table 2: Census population counts, median age, and median income for the Solano County HSA, compared to the state

Area	Population	Median Age	Median Income
94510	27,294	44.2	$88,930
94512	231	41.0	$142,885
94533	69,067	32.9	$55,413
94534	36,560	39.7	$92,676
94535	4,728	21.3	$50,970
94571	8,025	56.9	$54,223
94585	28,823	32.8	$70,374
94589	30,364	36.8	$56,068
94590	35,263	37.4	$41,819
94591	53,548	40.1	$73,509
94592	562	38.0	$105,352
95620	20,845	34.6	$71,261
95625	188	30.4	$75,114
95687	66,129	38.0	$73,583
95688	34,599	38.4	$79,452

Solano County	417,258	37.1 years	$67,177
CA State	37,659,181	35.4 years	$61,094

Source: 2013 American Community Survey 5-year Estimates

The population of Solano County makes up 1% of all residents in the State of California. The population count at the ZIP code level varied from 188 residents in ZIP code 95625 (Elmira) to 69,067 residents in ZIP code 94533 (East Fairfield). The median age of the county is similar to the median age of the state. The ZIP code with the youngest median age was 94535 (Travis AFB) with a median age of 21.3 years, and the ZIP code with the oldest median age was 94571 (Rio Vista) with a median age of 56.9 years. The median income for the county was higher than the state median income, at $67,177. The ZIP code in the HSA with the lowest median income was 94590 (South/Central Vallejo) at $47,819 per year compared to the highest median income in ZIP code 94512 (Elmira) at $142,885 per year, a range of nearly $95,000 dollars a year.

Table 3: Percent living below federal poverty level, percent uninsured and percent minority for the Solano County HSA

Area	Percent below Federal poverty (less than or equal to 100% FPL)	Percent Uninsured	Percent Minority (Hispanic or non-White)
94510	5.7%	8.6%	36.4%
94512	0.0%	0.0%	52.4%
94533	17.9%	14.6%	70.9%
94534	5.4%	6.9%	53.2%
94535	12.7%	0.9%	34.1%
94571	10.9%	21.2%	31.3%
94585	13.4%	11.6%	76.0%
94589	17.7%	20.7%	83.6%
94590	25.0%	20.9%	70.6%
94591	12.5%	12.4%	72.7%
94592	6.0%	3.7%	58.2%
95620	11.2%	14.7%	49.7%
95625	11.7%	0.0%	0.0%
95687	9.1%	8.4%	46.4%
95688	10.1%	11.3%	37.1%
Solano County	13.0%	12.9%	59.5%
CA State	15.9%	17.8%	60.3%

Source: 2013 American Community Survey 5-year Estimates

*Values in blue are those that fall above or below the desired direction in comparison to the county, state or national benchmarks.

The percent of population living in poverty was lower in Solano County compared to the state benchmark. The Solano HSA ZIP code with the highest percent of population in poverty was 94590 (South/Central Vallejo) at 25.0% compared to the lowest percent poverty in ZIP code 94534 (West Fairfield) at 5.4%.

Data collected on percent uninsured for the Solano County HSA was from 2013, prior to implementation of the Affordable Care Act (ACA). The percent of residents uninsured was lower for Solano County compared to the state benchmark. The ZIP code with the highest percent uninsured was 94571 (Rio Vista) at 21.2% and the lowest percent was 0.9% in ZIP code 94535 (Travis AFB). The Solano County percent of minority residents was 59.5%, similar the state at 60.3%. An examination of areas throughout the county revealed a large degree of diversity. ZIP code 94589 (North Vallejo) showed 83.6% minority population, which is drastically different from the Rio Vista ZIP code of 94571 that had 31.28% minority residents.

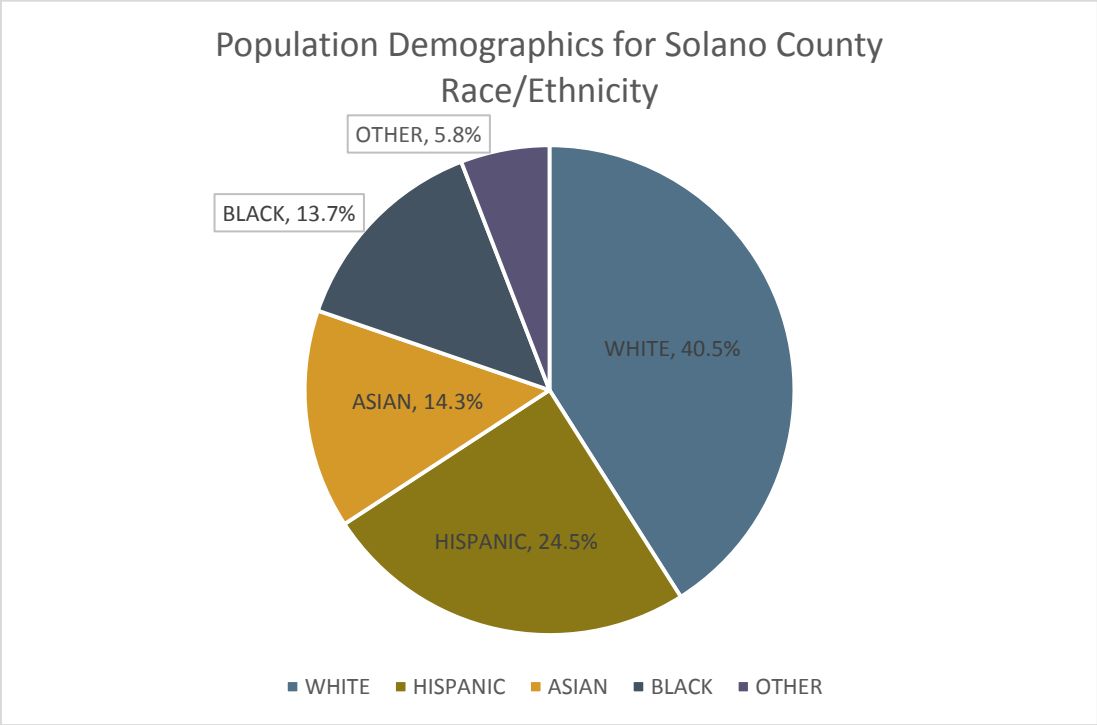

Figure 2: Population demographics for Solano County by race/ethnicity
Source: 2013 American Community Survey, 5-year Estimates

Demographic data for the Solano HSA showed that Whites make up the highest percent of residents in Solano County, followed by Hispanics, Asians and Blacks.

Identifying Geographical Disparities - Focus Communities

In an effort to identify geographic locations throughout the HSA that suffer from social inequities that may result in poor health outcomes, a 4-step process was used. This process included:

1. Identification of ZIP Codes with unfavorable social inequities values through analysis of 22 indicators (e.g., poverty and educational attainment). ZIP codes that scored in the top 20% of having the worst values were considered as a potential Focus Community.
2. Identification of ZIP Codes with census tracts that have high Community Health Vulnerability Index (CHVI) scores. For a complete description of the CHVI, please refer to Appendix A.

3. Expert input from area-wide service providers, including Solano County Health and Human Services.
4. Focus Communities identified in the 2013 Community Health Needs Assessment.

These inputs provided a unique perspective on social determinants of health within the HSA and were considered both separately and collectively when selecting Focus Communities. Though similar social inequity and CHVI indicators were analyzed, the CHVI examined vulnerability within the ZIP codes to identify pockets by census tract where more health inequities may exist. A ZIP code was identified as a Focus Community if three out of the four criteria were met and/or expert opinion of the Collaborative stressed the importance of including additional geographic areas.

The Focus Communities for Solano County are found in Figure 3 and listed in Table 4. Figure 3 displays the 6 ZIP code Focus Communities, denoted by diagonal hash marks. The specific ZIP codes and area names are provided in Table 4, with the census population for each.

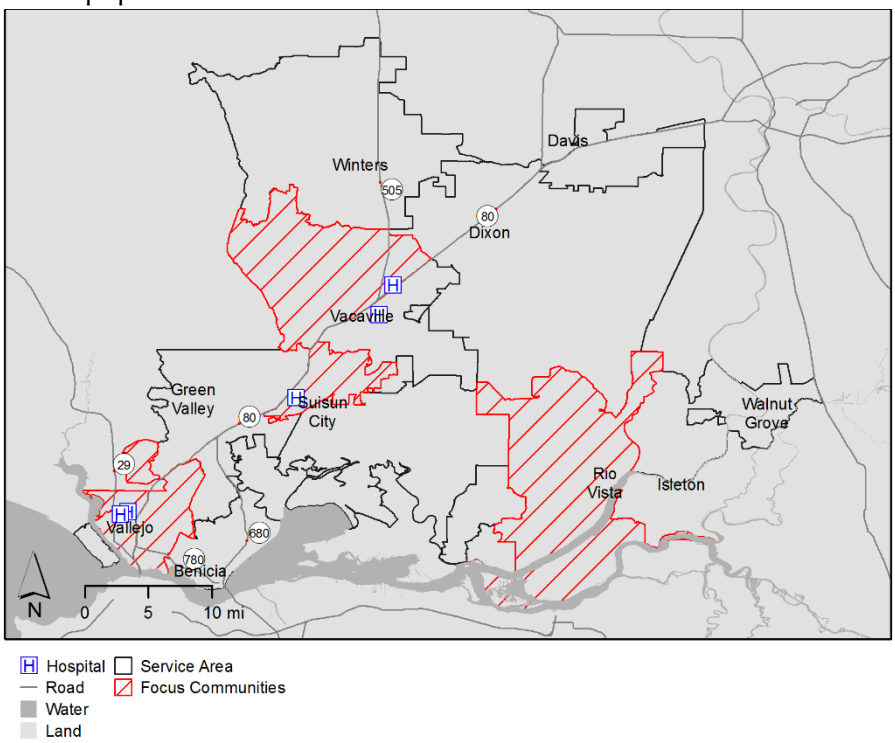

Figure 3: Focus Communities for the Solano County HAS

Table 4: Identified Focus Communities for the Solano County HSA

ZIP Code	Community/Area*	Population
94533	East Fairfield	69,067
94571	Rio Vista	8,025
94589	North Vallejo	30,364
94590	South/Central Vallejo	35,263
94591	East Vallejo	53,548
95688	West Vacaville	34,599
Total Population in the Focus Communities		**230,866**
Total Population in the HSA		**417,258**
Percent of the HSA in the Focus Communities		**55%**

Source: US Census, 2013

*ZIP code and community/area name is approximate here and throughout the report.

Bay Area Regional Health Inequities Initiative (BARHII) Model

Selection and organization of quantitative indicators used in this assessment was guided by a conceptual framework developed by the Bay Area Regional Health Inequities Initiative (BARHII) (Figure 5). The BARHII Model demonstrates the connection between social inequities and health and focuses attention on measures that are not characteristically within the scope of public health departments. Valley Vision used the BARHII framework to organize quantitative indicators, as well as frame the primary data collection tool, to capture both "upstream" and "downstream" factors influencing health in the HSA. The BARHII framework was also used in the organization of this report, starting with the most "downstream factors" of mortality and morbidity. Social inequities data is spread throughout the body of the report.

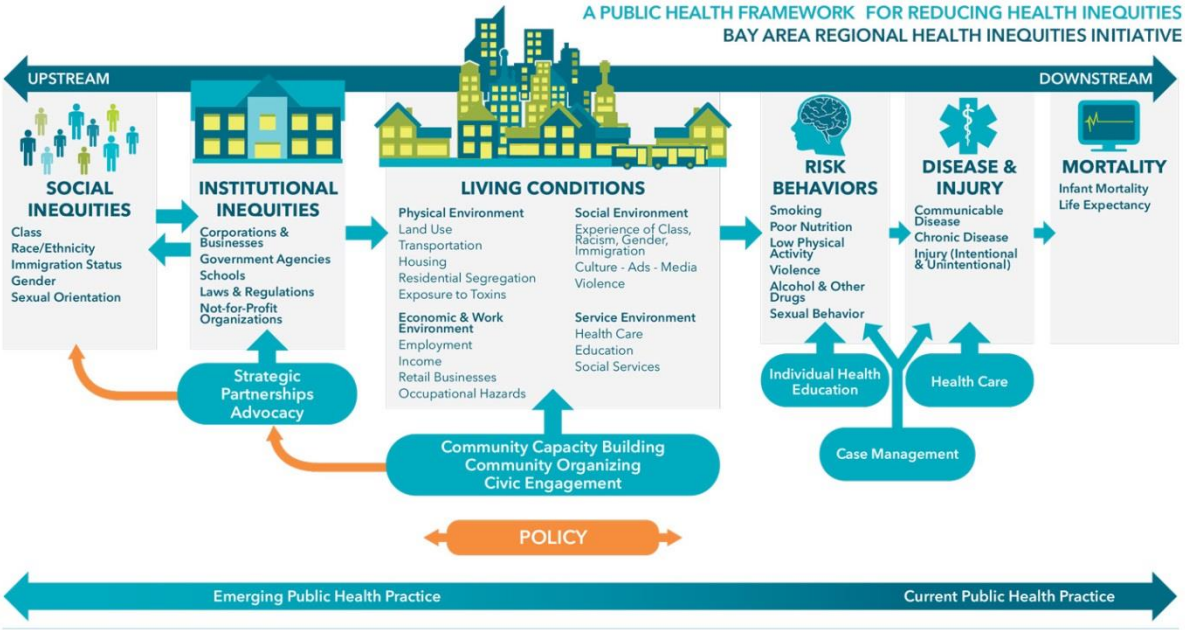

Figure 4: Bay Area Regional Health Inequities Initiative (BARHII) Model[1]

Secondary Data Collection – Processing and Analyzing

Data Collection: Overview

This section serves to provide a brief overview of the secondary data collection, processing and analysis approaches used to support the Community Health Needs Assessment (CHNA). For additional detail, including detailed project methodology, please refer to Appendices A and B.

The secondary data supporting the CHNA were collected from a variety of sources and were processed in multiple stages before they were used for analysis. The selection of secondary data indicators was guided by the Bay Area Regional Health Inequities Initiative (BARHII) Framework previously illustrated in Figure 5. Specific secondary data indicators were selected to represent the concepts organized in the six categories in the BARHII model that reflect both "upstream" and "downstream" factors influencing health. A number of general principles guided the selection of secondary data indicators to represent these concepts. First, only indicators associated with concepts in the BARHII framework were included in the analysis. Second, indicators available at a sub-county level (such as at a ZIP code or smaller level) were preferred for their utility in revealing variations

[1] Bay Area Health Inequities Initiative (BARHII). BARHII Framework. Available at: http://barhii.org/framework/. Accessed Jan 20, 2016.

within the health service area (HSA). Finally, indicators were only collected from data sources deemed reliable and reputable, with a preference for indicators that were more current than those used in the 2013 CHNA report.

Mortality data were primarily obtained from the California Department of Public Health (CDPH), and morbidity data were primarily obtained from Office of Statewide Health Planning and Development (OSHPD). These data were processed using methods described in detail in Appendix A to result in a set of indicators for risk behaviors, disease/injury, and mortality. Data from CDPH were used to develop mortality rates and broader measures of health status for each ZIP code in the HSA. Data from OSHPD were used to develop hospitalization (H) and emergency department (ED) discharge rates for each ZIP code in the HSA. The majority of indicators pertaining to living conditions and other "upstream" factors in the report were obtained from the US Census Bureau. These indicators primarily focus on the socio-demographic characteristics of the population within the HSA, and are also listed in Appendix A. Health outcome and health behaviors were also collected from the Kaiser Permanente Community Commons Data Platform (CCDP) to compliment the indicators already collected from additional sources. Indicators in the CCDP were only selected for final analysis and inclusion if they did not duplicate indicators that were pulled from other sources. A detailed list of indicators collected for the 2016 CHNA is in Appendix A, Data Dictionary and Processing.

The secondary data were processed in multiple stages before they were analyzed. The three basic processing steps included rate smoothing, age-adjustment and obtainment of benchmark rates. A detailed description of this process is outlined in Appendix A, Data Dictionary and Processing.

Information Gaps/Limitations

Some data were only available at a county level, making an assessment of health needs at a neighborhood level challenging. Furthermore, disaggregated data around age, ethnicity, race, and gender are not available for all data indicators, which limited the ability to examine disparities of health within the community. Lastly, data are not always collected on a yearly basis, meaning that some data are several years old.

ASSESSMENT DATA AND FINDINGS

The main findings of this assessment are organized in accordance to the Bay Area Regional Health Inequities Initiative (BARHII) model beginning with the most downstream factors (mortality and morbidity) moving towards more upstream factors (risk behaviors and living conditions).

Mortality, Disease and Injury in Solano County

Examination of health outcomes for the assessment included measures of illness (morbidity) and death (mortality) including communicable and non- communicable diseases, and injuries. The conditions examined included: Chronic disease, cancer, respiratory health, mental health, substance abuse, sexually transmitted infections (including HIV/AIDS), tuberculosis, and dental health, along with unintentional and self-inflicted injuries. This section begins with an examination of overall health indicators including age-adjusted all-cause mortality, infant mortality, and life expectancy at birth.

Overall Health Status – Rates of Age-adjusted All-Cause Mortality, Infant Mortality and Life Expectancy at Birth

These health status indicators provide information about the overall health status of the Solano County community. Though specific measures of mortality show how communities suffer from specific conditions, overall health status indicators communicate length of life, quality of life, socioeconomic factors, and the intersection of the environment and personal behaviors. Table 5 examines three common overall health status indicators: age-adjusted all-cause mortality, infant mortality, and life expectancy at birth for each of the Solano County ZIP codes. Throughout the entire report: Values in blue are those that fall above or below the desired direction in comparison to county, state or national benchmarks; tables that contain a "0" indicate that the rate for that ZIP code was zero or that data was not provided by OSHPD due to small cell counts (less than 5). Additionally, tables with a "N/A" notation indicate that data were missing or unavailable for that ZIP code.

Table 5: Overall health status indicators: Age-adjusted all-cause mortality, infant mortality & life expectancy at birth

	ZIP Code	Age-Adjusted All-Cause Mortality (per 10,000 pop)	Infant Mortality Rate (per 1,000 live births)	Life Expectancy at Birth (years)
Overall Health Status Indicators	94510	68.35	4.47	80.68
	94512	0.00	0.00	N/A
	94533*	78.86	5.10	77.45
	94534	63.71	4.62	81.04
	94535	0.00	4.72	N/A
	94571*	59.57	0.00	81.07
	94585	68.88	5.06	81.60
	94589*	68.98	4.75	78.98
	94590*	76.05	4.61	77.29
	94591*	63.68	5.19	79.87
	94592	0.00	0.00	N/A
	95690	62.40	0.00	79.04
	95694	64.27	4.55	80.54
	95618	54.23	4.49	83.59
	95620	54.32	4.20	82.88
	95625	0.00	0.00	N/A
	95687	80.93	4.65	78.16
	95688*	64.61	4.67	79.90
	Solano County	70.83	5.50	79.11
	CA State	64.60	4.90	80.50
	National 2013	N/A	N/A	78.80[2]
	Healthy People 2020 Target	N/A	6.00[3]	N/A

Source: CDPH, 2010-2012

**Indicates Focus Community*

[2] Centers for Disease Control and Prevention. (2015). *Deaths: Final data for 2013*. Retrieved from: http://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64_02.pdf

[3] Office of Disease Prevention and Health Promotion. (2014). *Maternal, Infant and Child Health*. Retrieved from: https://www.healthypeople.gov/2020/leading-health-indicators/2020-lhi-topics/Maternal-Infant-and-Child-Health/data

Seven Solano ZIP codes had age-adjusted all-cause mortality rates that were above the state benchmark, while three of the ZIP codes were above both the county and state benchmarks. Age-adjusted overall mortality was highest in ZIP code 95687 (East Vacaville). Three of the 18 ZIP codes in Solano County had high rates of infant mortality above the state benchmark at 4.90 deaths per 1,000 live births. Seven of the 18 ZIP codes also had lower life expectancy relative to the state. The community with the lowest life expectancy was seen in ZIP code 94590 (South/Central Vallejo), also a Focus Community, at 77.29 years of age.

Chronic Diseases -- Diabetes, Heart Disease, Stroke, Hypertension and Kidney Disease

Both primary and secondary data indicated that most chronic illnesses are common in the Solano County health service area (HSA).

Diabetes

Diabetes was the seventh leading cause of death nationally in 2013[4]. Table 6 displays rates of mortality, emergency departments (ED) visits, and hospitalizations (H) due to diabetes for each ZIP code in Solano County.

Rates -- Mortality, ED visits and Hospitalizations due to diabetes

Table 6: Mortality, ED visit, and hospitalization rates for diabetes compared to county, state, and Healthy People 2020 benchmarks (rates per 10,000 population)

	ZIP Code	Mortality	Age-Adjusted ED Visits	Age-Adjusted Hospitalizations
Diabetes	94510	2.26	199.41	117.45
	94512	0.00	87.06	133.75
	94533*	2.61	423.03	255.59
	94534	2.03	199.96	135.41
	94535	0.00	84.13	97.65
	94571*	2.84	199.70	167.82
	94585	1.84	310.40	212.19
	94589*	3.01	545.31	260.74
	94590*	2.76	663.37	281.21
	94591*	2.19	367.11	182.60
	94592	0.00	195.95	124.54
	95690	0.00	167.35	175.72
	95694	0.00	253.32	144.25
	95618	1.51	118.82	76.11
	95620	2.19	267.22	151.58
	95625	0.00	221.28	143.26
	95687	2.03	267.57	168.15
	95688*	1.84	268.21	217.14
	Solano County	2.56	342.51	194.13
	CA State	2.11	209.15	192.30
	Healthy People 2020 Target	6.60	N/A	N/A

Sources: Mortality: CDPH, 2012; ED visits and hospitalizations: OSHPD, 2011-2013

**Indicates Focus Community*

[4] Centers for Disease Control and Prevention. (2015). *Leading Causes of Death*. Retrieved from: http://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm

Seven of the 18 ZIP codes had mortality rates due to diabetes that were above the state benchmark but below the Health People 2020 benchmark set at 6.60 deaths per 10,000 population. The county rate for ED visits due to diabetes was clearly above the state benchmark. The highest mortality rate due to diabetes was found in 94589 (North Vallejo) at 3.01 deaths per 10,000. Ten of the 18 ZIP codes had ED visit rates due to diabetes that were clearly above the state benchmark. The ZIP codes with the highest rates were 94590 (South/Central Vallejo), 94589 (North Vallejo) and 94533 (East Fairfield). All three ZIP codes were also identified as Focus Communities for Solano County. ZIP code 94590 (South/Central Vallejo) had the highest rate for both ED visits and hospitalizations due to diabetes. Figure 7 (below) displays ED visits and hospitalizations due to diabetes by race and ethnicity.

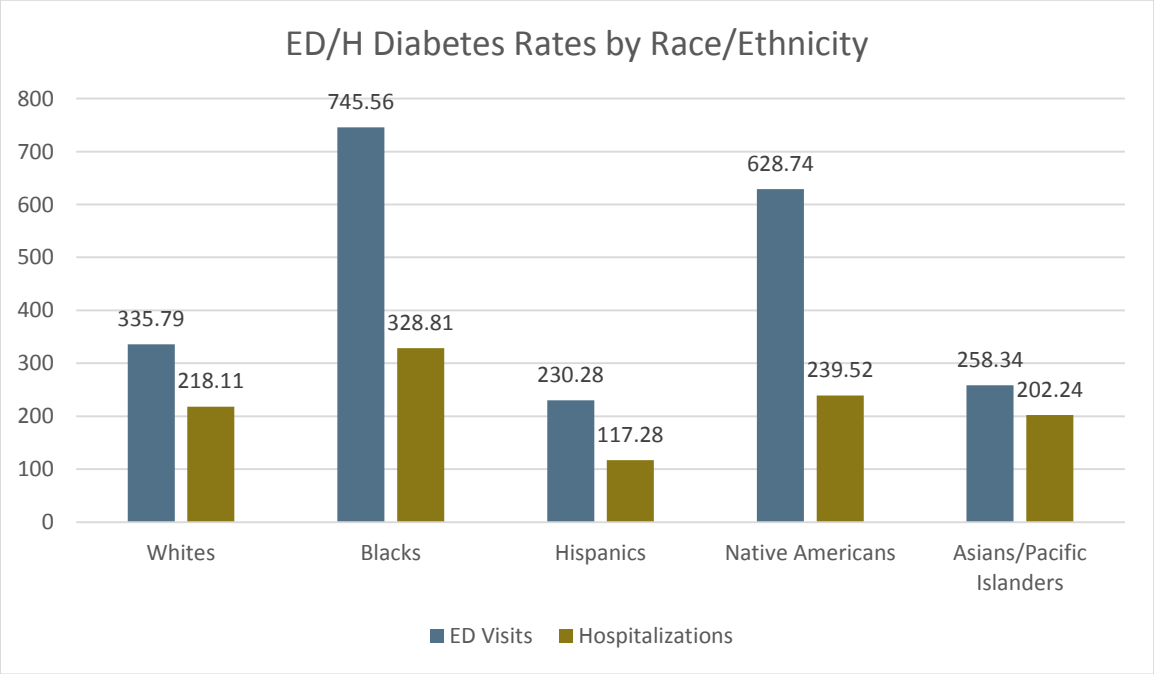

Figure 5: ED visits/hospitalizations due to diabetes by race/ethnicity
Source: OSHPD, 2011-2013

Data by race and ethnicity in Solano County for ED visits due to diabetes indicated vast disparities between Black and Hispanic populations (745.56 per 10,000; 230.28 per 10,000). The Native American population had the second highest rate of ED visits due to diabetes at 628.74 per 10,000, almost three times the rate of the Hispanic population (230.28 per 10,000). Similarly, the Black population had the highest rate of hospitalizations due to diabetes at 328.81 per 10,000 population.

Percent -- Adults over 20-year-old with diabetes
Reported by the National Center for Chronic Disease Prevention and Health Promotion (2012), the percent of adults over the age of 20 that had ever been told by a doctor that they have diabetes was 9.5% for Solano County, above the state benchmark at 8.0%.

Percent -- Medicare patients with diabetes that received a hA1c exam
Preventive screening for diabetes is important. According to the Dartmouth College Institute for Health Policy & Clinical Practice (2012), the percent of Medicare patients with diabetes which report having had a hA1c exam to monitor their diabetes diagnosis was 72.7% in Solano County, below the state benchmark at 81.5%.

Heart Disease

Heart disease is the leading cause of death in the nation for individuals under the age of 85, and includes a number of different types of heart-related conditions, with coronary heart disease being the most common and a major cause of heart attacks. Nationwide, more than 600,000 people die of heart disease each year. [5] Table 7 examines rates for mortality, ED visits, and hospitalizations due to heart disease.

Rates -- Mortality, ED visits and hospitalizations due to heart disease

Table 7: Mortality, ED visit and hospitalization rates for heart disease compared to county, state, and Healthy People 2020 benchmarks (rates per 10,000 population)

	ZIP Code	Mortality	Age-adjusted ED Visits	Age-adjusted Hospitalizations
Heart Disease	94510	11.23	207.57	191.89
	94512	0.00	45.19	168.51
	94533*	16.32	252.45	275.53
	94534	11.25	174.35	194.85
	94535	0.00	33.62	47.82
	94571*	28.88	152.06	204.53
	94585	9.06	210.97	235.47
	94589*	15.14	327.93	266.45
	94590*	19.90	403.83	319.57
	94591*	14.29	270.13	219.46
	94592	0.00	135.48	131.94
	95690	19.07	156.49	254.42
	95694	12.43	198.82	163.49
	95618	7.50	97.42	113.50
	95620	10.13	165.15	164.89
	95625	0.00	125.12	147.26
	95687	11.78	244.38	228.83
	95688*	9.62	239.47	280.72
	Solano County	13.23	246.40	234.79
	CA State	15.82	112.64	222.00
	Healthy People 2020 Target	10.10	N/A	N/A

Sources: Mortality: CDPH, 2012; ED visits and hospitalizations: OSHPD, 2011-2013

**Indicates Focus Community*

Examination of mortality due to heart disease revealed that 61% of ZIP codes had rates higher than the Healthy People 2020 benchmark. The highest rates were found in ZIP codes 94533 (East Fairfield), 94571 (Rio Vista), 94590 (South/Central Vallejo) and 95690 (Walnut Grove), the highest being 94571 at a rate of 28.88 deaths per 10,000 population, drastically higher than the county rate at 13.23 deaths per 10,000. Fifteen of the 18 ZIP codes in Solano County had rates of ED visits for heart disease above the state benchmark, while four ZIP codes had rates above the county and state benchmarks. Most notable was ZIP code 94590 (South/Central Vallejo) with an

[5] Centers for Disease Control and Prevention. (2015). *Heart Disease Facts*. Retrieved from: http://www.cdc.gov/heartdisease/facts.htm

ED visit rate of 403.83 per 10,000 and a hospitalization rate of 319.57 per 10,000, both clearly above the county and state benchmarks.

Data showed vast disparities between racial and ethnic groups in Solano County. ED visits due to heart disease indicated that Whites had a rate of 333.75 per 10,000 population, compared to Hispanics at 86.06, Native Americans at 414.17, Asians/Pacific Islanders at 149.28, and Blacks at 429.34 per 10,000 population. Data by race and ethnicity for hospitalizations due to heart disease showed that Whites had a rate of 326.25 per 10,000, compared to Hispanics at 93.26, Native Americans at 266.97, Asian/Pacific Islander at 192.44, and Blacks at 335.93 per 10,000 population.

Percent -- Adults over 18 years old with heart disease
The California Health Interview Survey indicated that for 2011-2012, the percent of adults over the age of 18 that had ever been told by a doctor that they have heart disease was 7.8% for the Solano County area, higher than the state benchmark at 6.3%.

Stroke, Hypertension and Kidney Disease
The fifth leading cause of death nationally is stroke.[6] Approximately 800,000 people have a stroke each year, with the most common type being those which restrict blood flow to the brain.[7] Tobacco smoking and hypertension drastically increase risk for stroke. Hypertension is common in approximately 1 out of every 3 adults.[8] Stroke, hypertension, and kidney disease are discussed together here. Hypertension also increases risk for kidney diseases, along with heart disease and diabetes. Tables 8, 9, and 10 examine mortality, ED visits, and hospitalizations related to stroke, hypertension, and kidney disease.
Rates -- Mortality, ED visits and hospitalizations due to stroke

Table 8: Mortality, ED visit and hospitalization rates for stroke compared to county, state, and Healthy People 2020 benchmarks (rates per 10,000 population)

	ZIP Code	Mortality	Age-Adjusted ED Visits	Age-Adjusted Hospitalizations
Stroke	94510	3.87	42.01	48.57
	94512	0.00	4.63	17.94
	94533*	3.60	47.82	71.87
	94534	3.22	37.10	45.62
	94535	0.00	0.00	0.64
	94571*	4.48	24.91	38.16
	94585	3.28	37.88	59.80
	94589*	5.01	65.06	74.51
	94590*	3.67	72.39	78.32
	94591*	4.03	55.59	61.50
	94592	0.00	17.05	33.50

[6] Centers for Disease Control and Prevention. (2015). *Leading Causes of Death*. Retrieved from: http://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm

[7] Centers for Disease Control and Prevention. (2015). *Stroke Facts*. Retrieved from: http://www.cdc.gov/stroke/facts.htm

[8] Centers for Disease Control and Prevention. (2015). *Blood Pressure Facts*. Retrieved from: http://www.cdc.gov/bloodpressure/facts.htm

	95690	4.80	17.85	46.42
	95694	3.77	27.55	41.54
	95618	2.31	20.80	29.76
	95620	4.28	30.07	47.63
	95625	0.00	9.70	29.80
	95687	2.79	44.84	51.60
	95688*	3.71	44.06	64.77
	Solano County	3.67	48.71	59.30
	CA State	3.60	18.55	52.23
	Healthy People 2020 Target	3.40	N/A	N/A

Sources: Mortality: CDPH, 2012; ED visits and hospitalizations: OSHPD, 2011-2013
**Indicates Focus Community*

Mortality rates due to stroke were high in ten of the 18 ZIP codes with the highest rate seen in ZIP code 94589 (North Vallejo) at 5.01 deaths per 10,000 population. ED visits due to stroke were also clearly above the state benchmark in 13 of the 18 ZIP codes. The highest rate was in 94590 (South/Central Vallejo), also a Focus Community, at 72.39 ED visits per 10,000 population, more than three times the state benchmark of 18.55 per 10,000. ZIP code 94590 also had the highest rate of hospitalizations for stroke compared to the county and state benchmark, at 78.32 hospitalizations per 10,000 population.

Data by race and ethnicity for ED visits due to stroke showed that Whites had a rate of 61.91 per 10,000, compared to Hispanics at 19.23, Native Americans at 49.90, Asians/Pacific Islanders at 34.18, and Blacks at 87.74 per 10,000 population, nearly double the county benchmark. Data by race and ethnicity for hospitalizations due to stroke showed that Whites had a rate of 74.49 per 10,000, compared to Hispanics at 22.34, Native Americans at 54.89, Asians/Pacific Islanders at 59.17, and Blacks at 96.89 per 10,000 population, above the state and county benchmarks.

Rates -- Mortality, ED visits and hospitalizations due to hypertension

Table 9: Mortality, ED visit and hospitalization rates for hypertension compared to county and state benchmarks (rates per 10,000 population)

	ZIP Code	Mortality	ED Visits	Hospitalizations
Hypertension	94510	1.04	518.58	307.93
	94512	0.00	177.29	197.70
	94533*	1.11	812.33	463.84
	94534	1.28	471.13	304.45
	94535	0.00	178.31	160.26
	94571*	1.38	474.27	342.28
	94585	1.52	674.70	398.74
	94589*	0.86	1088.87	449.31
	94590*	0.00	1326.25	515.34
	94591*	1.55	791.77	350.85
	94592	0.00	553.06	343.74
	95690	0.00	427.52	406.43
	95694	0.00	515.71	264.10
	95618	1.18	299.42	181.52

	95620	0.99	513.23	274.60
	95625	0.00	518.11	380.86
	95687	1.21	587.33	358.80
	95688*	1.07	631.85	486.77
	Solano County	N/A**	724.05	385.16
	CA State	1.21	408.99	383.74

Sources: Mortality: CDPH, 2012; ED visits and hospitalizations: OSHPD, 2011-2013

**Indicates Focus Community*

***CDPH data on mortality due to Hypertension for the County was not available*

Mortality rates due to hypertension were above the state benchmark in four of the 18 ZIP codes in Solano County. Examination of ED visits due to hypertension showed 83% of ZIP codes with rates clearly higher than the state benchmark. Specifically, ZIP code 94590 (South/Central Vallejo), also a Focus Community in Solano County, had a rate of 1326.25 ED visits per 10,000 population, nearly twice the county rate and three times the state rate. The rate for hospitalizations due to hypertension was also highest in ZIP code 94590 (South/Central Vallejo) at 515.34 hospitalizations per 10,000 population, far above the county and state benchmarks.

Data by race and ethnicity for ED visits due to hypertension showed that Whites had a rate of 811.12 per 10,000, compared to Hispanics at 333.76, Native Americans at 978.04, Asians/Pacific Islanders at 487.98, and Blacks at 1609.08 per 10,000 population, more than twice the county rate and almost four times the state rate. Data by race and ethnicity for hospitalizations due to hypertension showed that Whites had a rate of 503.90 hospitalizations per 10,000 population, compared to Hispanics at 174.74, Native Americans at 439.12, Asian/Pacific Islander at 325.07, and Blacks at 609.29, per 10,000 population.

Percent -- Adults with hypertension not taking medication

The Centers for Disease Control and Prevention Behavioral Risk Factor Surveillance System survey results for 2006-2010 indicated that the percentage of adults self-reporting high blood pressure for which they do not take medication was 28.0% for Solano County, below the state percent of 30.0%.

Rates -- Mortality, ED visits and hospitalizations due to kidney disease

Table 10: Mortality, ED visit and hospitalization rates for kidney disease compared to county and state benchmarks (rates per 10,000 population)

	ZIP Code	Mortality	Age-Adjusted ED Visits+	Age-Adjusted Hospitalizations+
Kidney Disease	94510	0.00	115.61	138.21
	94512	0.00	12.36	26.29
	94533*	0.96	159.57	232.85
	94534	0.56	111.49	149.57
	94535	0.00	0.05	28.91
	94571*	0.78	90.06	145.87
	94585	0.92	140.49	203.27
	94589*	1.21	238.16	238.98
	94590*	0.97	267.99	267.13
	94591*	0.82	165.79	178.43
	94592	0.00	96.19	171.54
	95690	0.00	59.13	155.59
	95694	0.00	109.88	120.33

	95618	0.73	46.17	86.45
	95620	0.90	90.74	121.10
	95625	0.00	41.61	104.99
	95687	0.74	156.09	183.22
	95688*	0.87	135.32	226.47
	Solano County	N/A	156.84	190.83
	CA State	0.73	57.09	160.01

Sources: Mortality: CDPH, 2012; ED visits and hospitalizations: OSHPD, 2011-2013
+OSHPD data includes data for nephritis, nephrotic syndrome, and nephrosis
**Indicates Focus Community*

Mortality rates due to kidney disease were elevated in nine of the 18 ZIP codes with the highest rate in 94589 (North Vallejo), also a Focus Community for Solano County. The county rate for ED visits due to kidney disease was nearly three times higher than the state benchmark. Fourteen ZIP codes in Solano County had rates of ED visits above the state benchmark, and four ZIP codes exceeded both county and state benchmarks. The highest rates of ED visits due to kidney disease were in ZIP codes 94589 (North Vallejo) and 94590 (South/Central Vallejo), also Focus Communities for Solano County. Hospitalizations due to kidney disease were higher than the state rate in eight of the 18 ZIP Codes in Solano County. The highest rates for hospitalizations were in the same two ZIP codes, 94589 (North Vallejo) and 94590 (South/Central Vallejo).

Data by race and ethnicity found that the rate of ED visits due to kidney disease for Whites was 174.12 per 10,000 population, compared to Hispanics at 63.25, Native Americans at 217.07, Asians/Pacific Islanders at 124.19, and Blacks at 334.60 per 10,000 population, above the county and state benchmarks. Data by race and ethnicity found that the rate of hospitalizations due to kidney disease for Whites was 232.06 hospitalizations per 10,000 population, compared to Hispanics at 86.73, Native Americans at 252.00, Asians/Pacific Islanders at 173.49, and Blacks at 335.06 per 10,000 population.

Cancer -- Incidence, ED visit, Hospitalization, Mortality and Screening Rates by Specific Cause of Cancer
Cancer is one of the leading causes of death in the nation, with more than 8% of the population receiving a cancer diagnosis at least once in their lifetime[9]. In an attempt to gain a better understanding of how Solano County is affected by cancer, the assessment included the examination of cancer incidence for female breast, colorectal, lung and prostate cancers at the ZIP code level. All-cause cancer mortality and ED visits and hospitalizations for specific causes of cancer are also examined by ZIP code and included lung cancer, colorectal cancer, prostate cancer, and female breast cancer. These specific cancers were chosen for this assessment because they are among the leading causes of new cases and/or of deaths related to cancer among Americans today. Screening rates for breast cancer, cervical cancer and colorectal cancer were also examined at the HSA level.

Rates -- Breast (female), colorectal, lung, and prostate cancer incidence
Cancer incidence communicates risk for cancer within the Solano County communities. Table 11 shows incidence rates for female breast, colorectal, lung and prostate cancers for each of the ZIP codes in Solano County. Rates for each ZIP code are compared to the state benchmark as well as the Solano County HSA rate, which is an aggregate of all 18 ZIP codes within the HSA.

[9] Centers for Disease Control and Prevention. (2015). *Cancer*. Retrieved from: http://www.cdc.gov/nchs/fastats/cancer.htm

Table 11: Cancer incidence (new cases) for female breast cancer, colorectal cancer, lung cancer and prostate cancer (rates per 10,000 population)

	ZIP Code	Breast-Female	Colorectal	Lung	Prostate
Cancer Incidence	94510	25.49	2.92	6.51	19.77
	94512	N/A	N/A	N/A	N/A
	94533*	16.80	4.19	5.01	12.24
	94534	20.65	4.12	3.98	16.63
	94535	N/A	N/A	N/A	N/A
	94571*	30.00	5.47	8.02	24.93
	94585	12.92	3.13	3.87	12.89
	94589*	18.23	4.40	6.85	14.51
	94590*	19.93	5.01	7.00	16.79
	94591*	18.35	4.37	6.22	18.75
	94592	N/A	N/A	N/A	N/A
	95690	21.73	N/A	N/A	15.68
	95694	11.07	3.76	N/A	13.14
	95618	16.44	2.78	2.11	9.52
	95620	16.15	3.77	5.49	11.36
	95625	N/A	N/A	N/A	N/A
	95687	20.61	3.72	6.23	9.96
	95688*	18.37	4.14	5.85	25.00
	Solano County HSA	18.75	4.01	5.45	14.89
	CA State	13.16	3.88	4.54	11.61

Source: California Cancer Registry, 2010-2012
**Indicates Focus Community*

The breast cancer incidence rate for Solano County was clearly above the state benchmark of 13.16 new cases per 10,000 population. Twelve ZIP codes within the HSA exceeded the state benchmark, six of which also exceeded the HSA rate: 94510 (Benicia), 94534 (West Vacaville), 94571, (Rio Vista), 94590 (South/Central Vallejo), 95690 (Walnut Grove) and 95687 (East Vacaville). Colorectal cancer incidence rates exceeded the state and HSA rates in seven of the 18 ZIP codes, with 94571 (Rio Vista) having the highest rate at 5.47 new cases per 10,000 population. Nine of the 18 ZIP codes had rates of lung cancer incidence that were above the state benchmark, with the highest rate seen in ZIP code 94571 (Rio Vista) at 8.02 new cases per 10,000 population. Eleven of the 18 ZIP codes had incidence rates for prostate cancer above the state benchmark, with the highest rates in the following two ZIP codes: 94571 (Rio Vista) and 95688 (West Vacaville). Most notable were ZIP codes 94571 (Rio Vista) and 94590 (South/Central Vallejo), both Focus Communities, which had elevated incidence rates for all four cancer types.

Rates -- All-cause cancer mortality and lung cancer ED visits and hospitalizations
An all-cause cancer mortality rate shows the overall effect of cancer as an illness in Solano County. Unfortunately, mortality data for specific cancers are not available at the sub-county level, and therefore are not included in this assessment. However, ED visits and hospitalization rates due to lung cancer are reported in Table 12, followed by rates for colorectal, prostate and female breast cancer in Table 13.

Table 12: Mortality rates for all-cause cancer, and ED visits and hospitalization rates for lung cancer compared to county, state, and Healthy People 2020 benchmarks (rates per 10,000 population)

ZIP Code	Mortality All-Cause Cancer	ED Visits Lung Cancer	Hospitalizations Lung Cancer
94510	17.59	6.99	10.02
94512	0.00	3.49	9.97
94533*	16.84	6.19	8.44
94534	15.51	5.92	7.43
94535	0.00	2.74	3.71
94571*	31.62	6.59	11.80
94585	13.15	2.75	8.58
94589*	17.86	7.93	11.52
94590*	18.17	10.12	15.74
94591*	17.06	10.65	11.96
94592	0.00	4.08	8.70
95690	15.18	2.93	12.16
95694	16.70	3.25	4.79
95618	12.64	0.51	2.58
95620	12.74	4.00	7.18
95625	0.00	0.00	0.00
95687	23.29	5.02	8.12
95688*	17.42	4.14	12.24
Solano County	18.18	6.80	10.06
CA State	15.41	2.68	7.95
Healthy People 2020	16.10	N/A	N/A

Source: Mortality: CDPH, 2012; ED visits: OSHPD, 2011-2013
**Indicates Focus Community*

Ten of the 18 ZIP codes exceeded the state benchmark for mortality due to all-cause cancer. Nine of these ten ZIP codes also exceeded the Healthy People 2020 benchmark set at 16.10 deaths per 10,000 population, with the highest rate in ZIP code 94571 (Rio Vista) at 31.62 deaths per 10,000 population. The county benchmark for ED visits due to lung cancer was more than two times the state rate of 2.68 ED visits per 10,000 population. Eighty-nine percent of the ZIP codes had rates of ED visits due to lung cancer that were higher than the state benchmark, with the highest rate in ZIP code 94591 (East Vallejo). Twelve of the 18 ZIP codes had lung cancer-related hospitalization rates above the state benchmark, seven of which also exceeded the county benchmark. The highest rate of hospitalizations due to lung cancer was in ZIP code 94590 (South/Central Vallejo) at 15.74 hospitalizations per 10,000 population, nearly double the state benchmark.

Data by race and ethnicity for ED visits due to lung cancer showed that Whites had a rate of 9.83 ED visits per 10,000 population, compared to Hispanics at 1.47, Native Americans at 2.50, Asians/Pacific Islanders at 5.58, and Blacks at 9.84 per 10,000 population, above the county and state benchmarks. Data by race and ethnicity for hospitalizations due to lung cancer found that Whites had a rate of 15.81 hospitalizations per 10,000 population, compared to Hispanics at 1.68, Native Americans at 17.47, Asians/Pacific Islanders at 8.97 and Blacks at 11.23 per 10,000 population. The rate of ED visits due to lung cancer in the Native American population was over two and a half times the county rate and over six and a half times the state rate.

Rates -- Female breast, colorectal, prostate cancer ED visit and hospitalizations

A lack of access to primary health care greatly effects the risk for late diagnosis of cancer. It is especially crucial for those cancers for which early diagnosis and prevention are important in order to reduce further related morbidity and mortality. Table 13 examines ED visit and hospitalizations related to female breast cancer, colorectal cancer (male and female) and prostate cancer.

Table 13: Rates of ED visits and hospitalizations for female breast cancer, colorectal cancer, and prostate cancer (rates per 10,000 population)

ZIP Code	ED visits Female Breast Cancer	Hospitalization Female Breast Cancer	ED visits Colorectal Cancer	Hospitalization Colorectal Cancer	ED visits Prostate Cancer	Hospitalization Prostate Cancer
94510	15.19	11.02	2.56	4.87	13.22	14.18
94512	0.00	11.46	0.00	0.00	8.51	0.00
94533*	14.76	9.33	3.38	6.36	12.32	11.73
94534	16.24	11.08	1.85	5.89	13.53	14.27
94535	0.00	0.00	0.00	2.79	0.00	0.00
94571*	9.99	16.70	3.05	9.04	22.83	22.96
94585	9.99	9.14	2.82	4.81	6.23	7.51
94589*	11.84	12.37	4.21	7.09	17.27	9.98
94590*	38.28	21.24	7.63	8.12	21.93	12.78
94591*	16.49	10.06	3.56	7.62	17.88	14.37
94592	7.15	0.00	0.00	0.00	0.00	0.00
95690	6.42	12.28	3.19	5.92	4.78	18.35
95694	4.11	9.37	3.77	6.98	12.21	7.60
95618	6.78	7.35	0.94	3.12	4.04	7.68
95620	14.16	10.47	2.05	5.36	7.00	9.97
95625	0.00	0.00	2.40	13.82	0.00	0.00
95687	15.13	10.66	3.57	6.16	11.18	8.88
95688*	13.67	11.12	3.02	10.51	11.03	21.01
Solano County	17.09	11.51	3.69	6.79	13.68	12.24
CA State	6.59	11.07	1.85	6.43	5.79	12.37

Source: OSHPD, 2011-2013

**Indicates Focus Community*

Examination of ED visits related to breast cancer in females revealed that 13 ZIP codes had rates above the state benchmark. Seven ZIP codes exceeded the state benchmark for hospitalizations related to breast cancer among females. The highest rates of ED visits and hospitalizations due to breast cancer were found in ZIP code 94590 (South/Central Vallejo) at 38.28 ED visits and 21.24 hospitalizations per 10,000 female population, drastically higher than the respective county and state benchmarks. Rates of ED visits related to colorectal cancer showed that thirteen ZIP codes had rates above the state benchmark and three ZIP codes had rates above the county and state benchmarks. Hospitalization data for colorectal cancer showed seven of the 18 ZIP codes in Solano County having higher rates than both the county and state benchmark rates, with ZIP code 95625 (Elmira) at 13.82 hospitalization visits per 10,000 population. ED visit rates for prostate cancer were higher than the state rate in thirteen ZIP codes, with the highest rates in ZIP code 94571 (Rio Vista) at 22.83 ED visits per 10,000 population. ZIP codes 94571 (Rio Vista), 94590 (South/Central Vallejo) and 95688 (West Vacaville) had elevated rates for ED and hospitalizations for all three cancer types.

Table 14: Race/ethnic disparities of ED visits and hospitalizations for breast cancer, colorectal and prostate cancer (rates per 10,000 populations)

Race/Ethnicity	Breast Cancer		Colorectal Cancer		Prostate Cancer	
	ED Visits	Hospitalizations	ED Visits	Hospitalizations	ED Visits	Hospitalizations
White	10.80	7.40	4.44	8.67	8.47	8.65
Black	19.04	9.96	8.10	8.62	15.80	9.84
Hispanic	2.58	2.41	1.07	2.58	1.94	1.71
Native American	12.48	4.99	0.00	9.98	2.50	4.99
Asian/Pacific Islander	4.59	4.85	1.46	7.20	3.44	4.49
Solano County	17.09	11.51	3.69	6.79	13.68	12.24
CA State	6.59	11.07	1.85	6.43	5.79	12.37

Source: OSHPD, 2011-2013

Data by race and ethnicity indicated that breast cancer ED visits were highest among the Black population at 19.04 per 10,000, above the Solano County and state benchmarks. Hospitalizations for breast cancer were also highest among the Black population at 9.96 per 10,000, although all race and ethnic group rates were below the county and state benchmarks. ED visits for colorectal cancer were highest among the Black population at 8.10 per 10,000, while hospitalizations due to colorectal cancer were highest among the Native American population at 9.98 per 10,000 population. ED visits for prostate cancer were highest in the Black population at 15.80 per 10,000, above both the county and state benchmarks and over eight times the rate of the Hispanic/Latino population at 1.94 per 10,000. Hospitalizations due to prostate cancer were also elevated in the Black population at 9.84 per 10,000, however all race and ethnic group rates were below the county and state benchmarks.

Screening rates -- Breast (mammogram), pap (cervical) and colorectal (sigmoid/colonoscopy) screening rates
Data on the percent of Medicare enrollees aged 67-69 years old or older reports the percent receiving a mammogram within the last two years was lower for Solano County than the state benchmark (Figure 8). The percent of female adults over the age of 18 that reported having had a pap test in the last three years for Solano County was higher than the state percent at 78%. Additionally, more 50-year-olds (64%) in Solano County report having had a sigmoidoscopy or colonoscopy at least once in comparison to the state (58%).

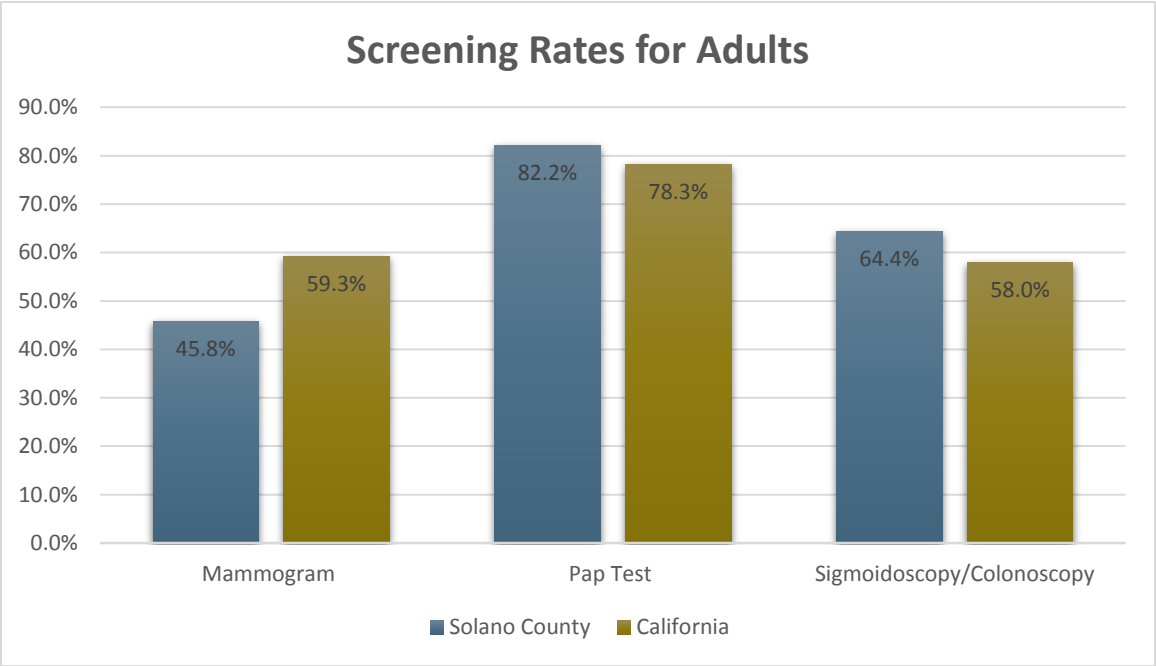

Figure 6: Screening rates in adults for mammograms, pap test and sigmoidoscopy/colonoscopy
Sources: Dartmouth College Institute for Health Policy & Clinical Practice, 2012; CDC, 2006 – 2012

Respiratory Health – Chronic Obstructive Pulmonary Disease (COPD), Asthma, and Tuberculosis
COPD is a progressive lung disease that makes it very hard to breathe and refers to the two main conditions of emphysema and chronic bronchitis.[10] Tobacco smoking is the biggest risk factor for COPD. As many as 6.8 million people have COPD at the national level. Tuberculosis (TB) is a respiratory condition caused by a bacterium called Mycobacterium tuberculosis. In 2014 there were 2.96 cases of TB per 100,000 population in the United States.[11] In an effort to understand the impact of respiratory illness in Solano County, mortality rates for chronic lower respiratory disease (CLRD) are presented in Table 15 along with rates of ED visits and hospitalizations related to COPD. Rates of ED visits and hospitalizations due specifically to asthma are examined independently in Table 16.

Rates -- Mortality, ED visits and hospitalizations due to Chronic Obstructive Pulmonary Disease (COPD)
Table 15: Mortality rates due to chronic lower respiratory disease, ED visits and hospitalization rates due to COPD compared to county, state, and Healthy People benchmarks (rates per 10,000 population)

	ZIP Code	Mortality CLRD	ED Visits COPD	Hospitalizations COPD
Chronic Lower Respiratory Disease (CLRD) & Chronic Obstructive Pulmonary Disease (COPD)	94510	3.62	289.57	146.58
	94512	0.00	113.66	84.38
	94533*	4.24	447.79	205.95
	94534	3.79	240.54	133.48
	94535	0.00	20.15	27.09
	94571*	4.22	385.00	313.14
	94585	2.39	326.38	148.78
	94589*	5.99	529.97	221.34

[10] National Heart, Lung and Blood Institute. (2013). *What is COPD?* Retrieved from: http://www.nhlbi.nih.gov/health/health-topics/topics/copd

[11] Centers for Disease Control and Prevention. (2014). Tuberculosis. Retrieved from: http://www.cdc.gov/tb/statistics/default.htm

	94590*	4.11	700.55	261.52
	94591*	3.57	404.94	170.00
	94592	0.00	319.18	115.33
	95690	0.00	217.27	230.07
	95694	2.18	181.55	122.18
	95618	2.00	99.05	70.40
	95620	2.39	229.01	126.76
	95625	0.00	989.82	326.84
	95687	4.84	319.39	166.11
	95688*	4.17	341.39	232.43
	Solano County	4.18	384.51	183.83
	CA State	3.46	218.3	154.44
	Healthy People 2020	N/A	56.80	50.10

Source: Mortality: CDPH, 2012; ED visits: OSHPD, 2011-2013
**Indicates Focus Community*

Nine of the 18 ZIP codes for Solano County had mortality rates due to CLRD above the state benchmark. Thirteen of the 18 ZIP codes had high rates of ED visits due to COPD above the state benchmark with the highest rate in 95625 (Elmira) at 989.82 ED visits per 10,000 population, more than four times the state and 17 times the Healthy People 2020 benchmark. Data by race and ethnicity showed that Whites had a rate of 425.77 per 10,000, compared to Native Americans at 508.98, Hispanics at 222.91, Asian/Pacific Islander at 186.07, and Blacks at 806.83 per 10,000 population.

Similar to ED visits, ZIP code 95625 (Elmira) showed elevated rates for hospitalizations due to COPD at 326.84 hospitalizations per 10,000 population, over six times above the Healthy People 2020 benchmark. Data by race/ethnicity showed that Whites had a rate of 254.95 per 10,000, compared to Hispanics at 78.09, Native Americans at 242.02, Asian/Pacific Islander at 119.18, and Blacks at 266.01 per 10,000 population, over three and a half times more than the Hispanic population.

Rates -- ED visits and hospitalizations due to Asthma

Asthma is one of the leading health issues in the US. National data indicate that one in 12 adults and one in 11 children have asthma.[12] Table 16 examines ED visits and hospitalizations due to asthma (all ages) in Solano County.

Table 16: ED visit and hospitalization rates due to asthma compared to county and state benchmarks (rates per 10,000 population)

	ZIP Code	ED Visits	Hospitalizations
Asthma	94510	202.13	81.08
	94512	83.01	0.00
	94533*	333.64	116.90
	94534	184.17	81.52
	94535	13.35	21.67
	94571*	256.24	137.64
	94585	255.00	93.89

[12] Centers for Disease Control and Prevention. (n.d.) *Asthma Fact Sheet*. Retrieved from: http://www.cdc.gov/asthma/impacts_nation/asthmafactsheet.pdf

	94589*	375.27	120.07
	94590*	470.83	131.67
	94591*	291.99	100.54
	94592	238.09	84.74
	95690	110.42	98.91
	95694	119.94	72.84
	95618	57.13	43.60
	95620	160.19	79.35
	95625	841.33	176.76
	95687	221.48	88.85
	95688*	254.32	120.87
	Solano County	276.21	102.22
	CA State	148.86	70.55

Source: OSHPD, 2011-2013
**Indicates Focus Community*

Seventy-two percent of ZIP codes for Solano County had ED visit rates due to asthma that fell above the state benchmark with twenty-eight percent of ZIP codes above both the county and state benchmarks. The highest rates of ED visits were found in ZIP codes 94533 (East Fairfield), 94589 (North Vallejo), 94590 (South/Central Vallejo) and 95625 (Elmira), with ZIP code 95625 having the highest rate of ED visits for asthma at 841.33 per 10,000 population, over five times the state benchmark and three times the county benchmark. Data by race and ethnicity showed that Whites had a rate of 271.33 ED visits per 10,000 population, compared to Hispanics at 181.40, Native Americans at 419.16, Asians/Pacific Islanders at 147.98, and Blacks at 624.97 per 10,000 population. Moreover, the rate of ED visits due to asthma in the Black population was over two times the county rate and four times the state rate.
Eighty-three percent of the ZIP codes in Solano County had elevated rates of hospitalizations due to asthma compared to the state benchmark, with the highest rate also in 95625 (Elmira) at 176.76 hospitalizations due to asthma per 10,000 population. Data by race and ethnicity showed that Whites had a rate of 122.99 per 10,000, compared Hispanics at 56.68, Native Americans at 127.25, Asian/Pacific Islanders at 77.54, and to Blacks at 166.28 per 10,000 population.

Percent -- Adults over age 18 with asthma
As reported by the Centers for Disease Control and Prevention from the Behavioral Risk Factor Surveillance System survey, the percent of adults over the age of 18 that had ever been told by a doctor that they have asthma was 30.8% for Solano County, more than twice the state percent of 14.2% in 2011-2012.

Rates -- ED visits and hospitalizations due to tuberculosis
Table 17: ED visit and hospitalization counts due to tuberculosis compared to county and state benchmarks (rates per 10,000 population)

	ZIP Code	ED Visits	Hospitalizations
Tuberculosis	94510	1	1
	94512	0	0
	94533*	4	15
	94534	1	1
	94535	0	0
	94571*	0	1

	94585	0	4
	94589*	3	4
	94590*	1	9
	94591*	2	15
	94592	0	1
	95690	0	0
	95694	0	3
	95618	0	1
	95620	0	0
	95625	0	0
	95687	2	6
	95688*	1	12
	Solano County	15	69
	CA State	1,705	9,166

Source: OSHPD, 2011-2013
**Indicates Focus Community*

As table 17 shows, there were a total of 15 counts of ED visits due to tuberculosis (TB) in Solano County. The ZIP code with the highest count was 94533 (East Fairfield) at four ED visits due to TB. Other ZIP codes that had at least one or more counts of ED visits due to TB include 94510 (Benicia), 94534 (West Fairfield), 94589 (North Vallejo), 94590 (South/Central Vallejo), 94591 (East Vallejo), 95687 (East Vacaville) and 95688 (West Vacaville). For hospitalizations due to TB, there were a total of 69 counts in Solano County. The ZIP codes with the highest counts were 94533 (East Fairfield), 94591 (East Vallejo) and 95688 (West Vacaville) at 12 or more hospitalizations due to TB.

Mental Health

Mental illness is defined as "health conditions that are characterized by alterations in thinking, mood, or behavior (or some combination thereof) associated with distress and/or impaired functioning."[13] Depression is the most common type of mental illness in the United States and by 2020 will be the second leading cause of disability worldwide. Mental illness is strongly correlated with many risks for chronic diseases, such as physical inactivity, smoking, excessive drinking, and insufficient sleep.[14] Mental health data at the sub-county level is difficult to obtain. ED visits and hospitalizations due to mental health conditions are provided in Table 18 as a way of examining mental health in the HSA.

Rates -- ED visits and hospitalizations due to mental health

Table 18: ED visit and hospitalization rates due to mental health issues compared to county and state benchmarks (rates per 10,000 population)

	ZIP Code	ED Visits	Hospitalizations
Mental Health	94510	259.24	158.66
	94512	91.34	109.80
	94533*	259.14	186.82
	94534	153.77	110.47
	94535	12.44	27.20

[13]Centers for Disease Control and Prevention. (2013). Mental Health Basics. Retrieved from: http://www.cdc.gov/mentalhealth/basics.htm
[14] Ibid.

	94571*	293.13	281.61
	94585	188.99	141.65
	94589*	373.68	208.45
	94590*	522.80	252.42
	94591*	283.46	152.65
	94592	272.90	158.46
	95690	167.20	150.76
	95694	148.55	115.95
	95618	106.13	91.48
	95620	160.04	126.71
	95625	803.13	346.79
	95687	227.13	154.28
	95688*	230.35	200.83
	Solano County	263.42	169.96
	CA State	149.93	186.92

Source: OSHPD, 2011-2013

Indicates Focus Community

ED visits due to mental health conditions were high in 78% of the ZIP codes in Solano County, relative to the state rate. The rate of ED visits related to mental health issues in ZIP code 95625 (Elmira) was drastically higher than any other ZIP code in the HSA at 803.13 ED visits per 10,000 population, three times the county rate and five times the state rate. Six of the 18 ZIP codes in Solano County had elevated rates of mental health-related hospitalizations, compared to the county benchmark at 169.96 hospitalizations per 10,000 population. ZIP code 95625 also had the highest rate of hospitalizations for mental health at 346.79 per 10,000, approximately two times higher than the county and state benchmarks.

Data by race and ethnicity for ED visits due to mental health showed that Whites had a rate of 360.84 per 10,000, compared to Hispanics at 124.32, Native Americans at 553.89, Asians/Pacific Islanders at 88.39, and Blacks at 456.37 per 10,000 population. The highest rate of ED visits due to mental health was in the Native American population, over six times higher than that of the Asian/Pacific Islander population. Data by race/ethnicity for hospitalizations due to mental health found that Whites had a rate of 248.88, compared to Hispanics at 75.24, Native Americans at 202.10, Asians/Pacific Islanders at 81.61, and Blacks at 229.14 per 10,000 population. The Whites had the highest rate for hospitalizations due to mental health, followed by the Black population.

Percent-- Adults reporting insufficient social and emotional support (age-adjusted)

Aggregated data from the Centers for Disease Control and Prevention Behavioral Risk Factor Surveillance System survey for 2006-2012 showed that 23.2% of respondents in Solano County, over the age of 18, indicated that they receive insufficient social and emotional support most of the time. This percent was lower than the state percent at 24.6% of respondents.

Dental Health

Oral health is important to overall quality of life. Data used in this assessment to examine the status of oral health in the Solano County HSA included rates of ED visits and hospitalizations related to dental conditions. This data is dated from 2011 – 2013 before the reinstatement of dental coverage under the state Medicaid (Medi-Cal) program. Additional examination of data on dental health is included in later sections of this report.

Rates -- ED visits and hospitalizations due to dental health

Table 19: ED visit and hospitalization rates due to dental issues compared to county and state benchmarks (rates per 10,000 population)

	ZIP Code	ED Visits	Hospitalizations
Dental Health	94510	27.17	6.74
	94512	32.32	0.00
	94533*	102.77	10.72
	94534	21.63	4.87
	94535	6.82	3.70
	94571*	39.85	10.52
	94585	63.76	6.05
	94589*	83.13	8.39
	94590*	147.22	12.30
	94591*	59.43	8.31
	94592	40.25	7.47
	95690	32.08	8.00
	95694	38.71	5.76
	95618	17.54	4.88
	95620	37.98	6.77
	95625	195.28	8.39
	95687	49.86	7.82
	95688*	45.45	9.90
	Solano County	65.59	8.43
	CA State	41.34	7.81

Source: OSHPD, 2011-2013

*****_Indicates Focus Community_

Rates of ED visits for dental health issues were elevated in eight of the 18 ZIP codes in Solano County compared to the state benchmark. Four of the 18 ZIP codes compared exceeded both the county and state benchmarks. ZIP codes with the highest rates of ED visits include 94533 (East Fairfield), 94590 (South/Central Vallejo) and 95625 (Elmira). Hospitalizations due to dental health were elevated in nine out of 18 ZIP codes in Solano County compared to the state benchmark. Four of the 18 ZIP codes exceeded both the county and state benchmarks. ZIP code 94590 (South/Central Vallejo) had the highest rate of hospitalizations due to dental health issues at 12.30 hospitalizations per 10,000 population.

Data by race and ethnicity for ED visits due to dental health showed that Whites had a rate of 66.98 per 10,000, compared to Native Americans at 77.35, Hispanics at 44.29, Asian/Pacific Islander at 13.98, and Blacks at 162.06 per 10,000 population, over two times the Solano County rate and almost four times the state rate. Data by race and ethnicity for hospitalizations due to dental health indicated that Whites had a rate of 9.59 per 10,000, compared to Hispanics at 6.26, Native Americans at 12.48, Asians/Pacific Islanders at 5.58, and Blacks at 12.73 per 10,000 population. Similarly, the Black population had the highest rates of hospitalizations due to dental health, above the county and state benchmarks.

Injury -- Intentional (Suicide and Self- inflicted injury) and Unintentional

In 2013, suicide was the 10th leading cause of death nationally, and the second leading cause of death for Americans 15-34 years of age.[15] Unintentional injuries were the third leading cause of death overall but the first leading cause of death for Americans 1-44 years of age.[16] Unintentional injuries are defined as "predictable and preventable when proper safety precautions are taken" and not considered accidents.[17]

Rates -- Mortality, ED visits and hospitalizations due to suicide and self-inflicted injury

Table 20: Mortality rates due to suicide and ED visits and hospitalization rates due to self-inflicted injury compared to county, state, and Healthy People 2020 benchmarks (rates per 10,000 population)

	ZIP Code	Mortality	ED Visits	Hospitalizations
Suicide/Self-Inflicted Injury	94510	1.06	8.81	2.51
	94512	0.00	0.00	6.44
	94533*	0.73	14.50	3.68
	94534	0.62	5.99	2.36
	94535	0.00	2.18	2.08
	94571*	1.33	10.78	4.31
	94585	0.00	8.39	3.00
	94589*	0.83	12.37	2.31
	94590*	0.93	15.23	5.72
	94591*	0.85	7.59	2.67
	94592	0.00	9.32	4.65
	95690	0.00	8.25	3.18
	95694	0.00	9.75	3.35
	95618	1.25	5.05	2.69
	95620	0.00	8.54	3.21
	95625	0.00	14.83	0.00
	95687	1.36	10.08	4.22
	95688*	1.86	16.60	6.71
	Solano County	0.94	10.94	3.63
	CA State	1.04	8.18	4.40
	Healthy People 2020	1.00	N/A	N/A

Sources: Mortality: CDPH, 2012; ED visits and hospitalizations: OSHPD, 2011-2013

**Indicates Focus Community*

ZIP code 95688 (West Vacaville) had the highest rates for mortality, ED visits and hospitalizations due to self-inflicted injury compared to all other ZIP codes in Solano County. Five out of 18 ZIP codes had elevated rates for mortality due to self-inflicted injury. Rates of ED visits due to self-inflicted injury were elevated in thirteen of the 18 ZIP codes compared to the state benchmark, with ZIP code 95688 (West Vacaville) showing the highest rate at 16.60 ED visits due to intentional self-harm per 10,000. The same ZIP code had the highest rate due to hospitalizations for self-inflicted injury at 6.71 per 10,000.

[15] Centers of Disease Control and Prevention. (2015). Ten leading causes of death by age group – 2013. Retrieved from: http://www.cdc.gov/injury/wisqars/leadingcauses.html

[16] Ibid.

[17] Ibid.

Data by race and ethnicity found that the rate of ED visits due to self-inflicted injuries for Whites was 14.35 per 10,000 population, compared to Hispanics at 7.24, Native Americans at 22.46, Asians/Pacific Islanders at 3.65, and Blacks at 14.41 per 10,000 population. The Native American population had the highest rate of ED visits due to self-inflicted injuries compared to the other race and ethnic groups. Data by race and ethnicity found that the rate of hospitalizations due to self-inflicted injuries for Whites was 5.41 per 10,000, compared to Hispanics at 2.28, Native Americans at 9.98, Asians/Pacific Islanders at 1.25, and Blacks at 3.70 per 10,000 population. The Native American population also had the highest rate of hospitalizations due to self-inflicted injuries, above both the county and state benchmarks.

Rates -- Mortality, ED visits and hospitalizations due to unintentional injury

Table 21: Mortality, ED visit and hospitalization rates due to unintentional injury compared to county and state benchmarks (rates per 10,000 population)

	ZIP Code	Mortality	ED Visits	Hospitalizations
Unintentional Injury	94510	2.17	738.31	138.08
	94512	0.00	532.99	176.92
	94533*	2.60	1124.02	177.96
	94534	2.19	629.21	132.15
	94535	0.00	102.93	28.25
	94571*	2.74	742.17	278.87
	94585	1.84	841.27	129.02
	94589*	3.32	1076.99	171.94
	94590*	3.89	1522.23	210.52
	94591*	3.14	911.13	149.90
	94592	0.00	995.98	163.19
	95690	3.76	634.11	215.10
	95694	2.08	644.23	115.40
	95618	1.71	407.75	68.78
	95620	2.59	762.98	125.27
	95625	0.00	2252.02	217.92
	95687	3.01	802.35	143.61
	95688*	1.84	1005.20	220.20
	Solano County	2.63	935.70	161.45
	CA State	2.88	666.38	154.85
	Healthy People 2020	3.40	N/A	N/A

Sources: Mortality: CDPH, 2012; ED visits and hospitalizations: OSHPD, 2011-2013

**Indicates Focus Community*

Mortality rates due to unintentional injury were elevated in 33% of the ZIP codes in Solano County, relative to the county benchmark. ZIP codes 94589 (North Vallejo), 94590 (South/Central Vallejo), 94591 (East Vallejo) and 95690 (Walnut Grove) showed the highest rates compared to the county, state and Healthy People 2020 benchmarks. ZIP code 95625 (Elmira) had over two times the county and three times the state rate for ED visits due to unintentional injury at 2252.02 per 10,000. Fifty-percent of the ZIP codes in Solano County showed high rates of hospitalizations due to unintentional injury compared to the county and state benchmarks.

Data by race and ethnicity for ED visits due to unintentional injury showed that Whites had a rate of 1051.75 per 10,000, compared to Hispanics at 732.41, Native Americans at 950.60, Asians/Pacific Islanders at 371.51, and

Blacks at 1582.34 per 10,000 population, clearly above the state and county benchmarks. Data by race and ethnicity for hospitalizations due to unintentional injury showed that Whites had a rate of 213.43 per 10,000, compared to Hispanics at 95.04, Native Americans at 167.17, Asians/Pacific Islanders at 106.50, and Blacks at 205.58 per 10,000 population. Hospitalizations due to unintentional injury were highest in the White population, above both the county and state benchmarks.

Risk Behaviors and Living Conditions in Solano County

Risk behaviors contribute to increased risk for morbidity and mortality of most health conditions in a community, and are often the focus of community-based health promotion efforts. These risk behaviors include smoking, poor nutrition, physical inactivity, violent behavior, alcohol and drug usage, and risky sexual behaviors. In order to gain a clear understanding of reasons behind why individuals engage in risky behavior it is equally important to consider the conditions in which they live. These living conditions include the physical, social, economic/work, and service environment.

Risk Behaviors – Substance Abuse, Poor Nutrition, Physical Inactivity, and Risky Sexual Behavior

This section of the report will detail all indicators used in the assessment to examine the various risk behaviors in Solano County communities.

Substance Abuse

Substance abuse, specifically the use of alcohol and drugs, is a leading preventable cause of death in the United States, costing states millions of dollars each year in treatment costs.[18] Alcohol impaired driving is the cause of 33% of all fatal car accidents.[19] This assessment included examination of multiple indicators addressing substance abuse. The indicators presented here include: ED visits and hospitalizations due to substance abuse by ZIP code, alcohol and tobacco smoking prevalence, liquor store access and percent of household expenditures for alcohol and tobacco. Prescription drug abuse has also become a major problem for adults nationally.[20]

Rates -- ED visits and Hospitalizations due to Substance Abuse

Table 22: ED visit and hospitalization rates due to substance abuse compared to county and state benchmarks (rates per 10,000 population)

	ZIP Code	ED Visits	Hospitalizations
Substance Abuse+	94510	334.28	113.76
	94512	157.41	128.56
	94533*	421.38	181.09
	94534	160.20	74.79
	94535	27.13	25.61
	94571*	312.93	205.94
	94585	307.28	135.32
	94589*	762.71	186.08
	94590*	1480.94	312.17
	94591*	550.91	134.68
	94592	285.17	106.83
	95690	271.85	174.89

[18] Centers for Disease Control and Prevention. (2015.) *Alcohol and Drug Use*. Retrieved from: http://www.cdc.gov/stltpublichealth/didyouknow/topic/alcohol.html

[19] Ibid.

[20] Ibid.

	95694	265.58	103.96
	95618	127.60	44.17
	95620	291.83	103.97
	95625	942.30	285.86
	95687	268.81	120.95
	95688*	289.65	195.15
	Solano County	466.25	155.25
	CA State	253.80	145.00

Source: OSHPD, 2011-2013, +coded under **Mental Health codes**
***Indicates Focus Community*

Examination of ED visits due to substance abuse showed elevated rates in 78% of the ZIP codes in Solano County compared to the state benchmark. ZIP codes 94589 (North Vallejo), 94590 (South/Central Vallejo), 94591 (East Vallejo) and 95625 (Elmira) had the highest rates of ED visits due to substance abuse compared to the state and county benchmark, with ZIP code 94590 having the highest rate at 1480.94 ED visits due to substance abuse per 10,000 population. ZIP code 94590 (South/Central Vallejo) also had the highest rate of hospitalizations due to substance abuse at 312.17 per 10,000, just over two times the county and state benchmarks.

Data by race and ethnicity for ED visits due to substance abuse showed that Whites had a rate of 535.25 ED visits per 10,000, compared to Hispanics at 226.39, Native Americans at 755.99, Asians/Pacific Islanders at 126.74, and Blacks at 1121.10 per 10,000 population, more than two times the county rate and over four times the state rate. Data by race and ethnicity for hospitalizations due to substance abuse showed that Whites had a rate of 204.52 hospitalizations per 10,000, compared to Hispanics at 74.60, Native Americans at 306.89, Asians/Pacific Islanders at 55.47, and Blacks at 229.14 per 10,000 population. The Native American population had the highest rate of hospitalizations due to substance abuse per 10,000, above both the county and state benchmarks.

Percent – Adults reporting excessive alcohol consumption (age-adjusted)
Results of the national Center for Disease Control and Prevention Behavioral Risk Factor Surveillance System survey indicated that approximately 18.6% of respondents in Solano County reported that they engaged in excessive alcohol consumption (more than 2 drinks per day for males and more than 1 per day for females), higher than the state rate at 17.2%.

Rate -- Liquor store access per 100,000 population
Data on liquor stores from the US Census Bureau for 2012 revealed that Solano County has 6.77 liquor stores per 100,000 people, lower than the state rate of 10.02 per 100,000.

Percent -- Home expenditures spent on alcohol
Alcohol expenditure data from Nielsen (2014) showed the percent of at home expenditures for alcohol at the census tract level. Data aggregated to the HSA level showed that the percent of alcohol expenditures for the HSA was 13.1%, above the state percent at 12.9%.

Percent -- Prevalence of tobacco usage
Data from the California Health Interview Survey for 2014 showed that the prevalence of smoking among adults and teens was 11.1% for Solano County compared to the state prevalence at 10.8%.

Percent -- Home expenditures spent on tobacco
Tobacco expenditure data from Nielsen (2014) indicated the percent of at home expenditures for tobacco at the census tract level. This indicator aggregated to the HSA level showed that the percent of expenditures for the HSA was 1.1%, similar to the state percent at 1.0% for 2014.

Obesity, Poor Nutrition and Physical Inactivity
Though obesity is a clear outcome of poor dietary choices and a lack of adequate exercise, it is also a contributor to most of the morbidity and mortality health conditions mentioned in the previous sections of the report. Consideration of diet and exercise data for this health assessment included an examination of obesity data. Many factors contribute to high rates of obesity, poor nutrition, lack of physical activity and chronic disease in Solano County. These factors included conditions of poverty, access to health care and healthy foods, pollution in a community, and education.

Percent -- Overweight and obese in youth
Table 23: Percent overweight and obesity in youth grades 5th, 7th and 9th as measured by the FitnessGram

Indicator	Percent Overweight	Percent Obese
Solano County	20.4%	21.0%
CA State	19.3%	19.0%

Source: California Department of Education, 2013-2014

As the data presented in Table 23 indicates, the percent overweight and obese in youth was slightly higher in the Solano County in comparison to the state benchmark. Additionally, data by race and ethnicity indicated that the percent of White overweight students was 17.81% compared to Black students at 21.09%, Hispanic students at 22.89% and multiple race at 21.44%. Unfortunately, overweight and obesity data is seldom available at the ZIP code level in order to examine how rates compare within the Solano County HSA.
2014 FitnessGram data also showed that among 5th, 7th and 9th graders in Solano County, 4 in 9 youth are considered physically inactive.

Solano County youth* are
LESS ACTIVE
compared to the average California youth

4 IN 9
Solano County youth* are physically inactive

Percent -- Mothers reporting breastfeeding
Research indicated that when a child is breastfed the risk for negative health conditions decreases, especially reducing the risk for infant mortality. According to data from the California Department of Public Health for 2012, the percent of mothers breastfeeding their infants at birth was slightly higher for Solano County at 94.4% compared to the state percent at 93.0%. Data by race and ethnicity revealed that while 94.8% of Whites report breastfeeding, 87.1% of Blacks, 97.2% Asian, 95.6% Hispanic/Latino, 97.2% non-Hispanic other and 95.09% non-Hispanic multiple race reported breast feeding their infants at birth.

Area -- USDA defined Food Desert

The USDA defines a food desert as: "urban neighborhoods and rural towns without ready access to fresh, healthy, and affordable food. Instead of supermarkets and grocery stores, these communities may have no food access or are served only by fast food restaurants and convenience stores that offer few healthy, affordable food options."[21] As defined by USDA and indicated in Figure 9, any census tract with distances greater than 1 mile to the nearest supermarket in urban areas, and greater than 10 miles to the nearest supermarket in rural areas are flagged as a food desert. The lack of access to healthy food results in a poor diet and can lead to higher levels of obesity and other diet-related diseases, such as diabetes and heart disease.

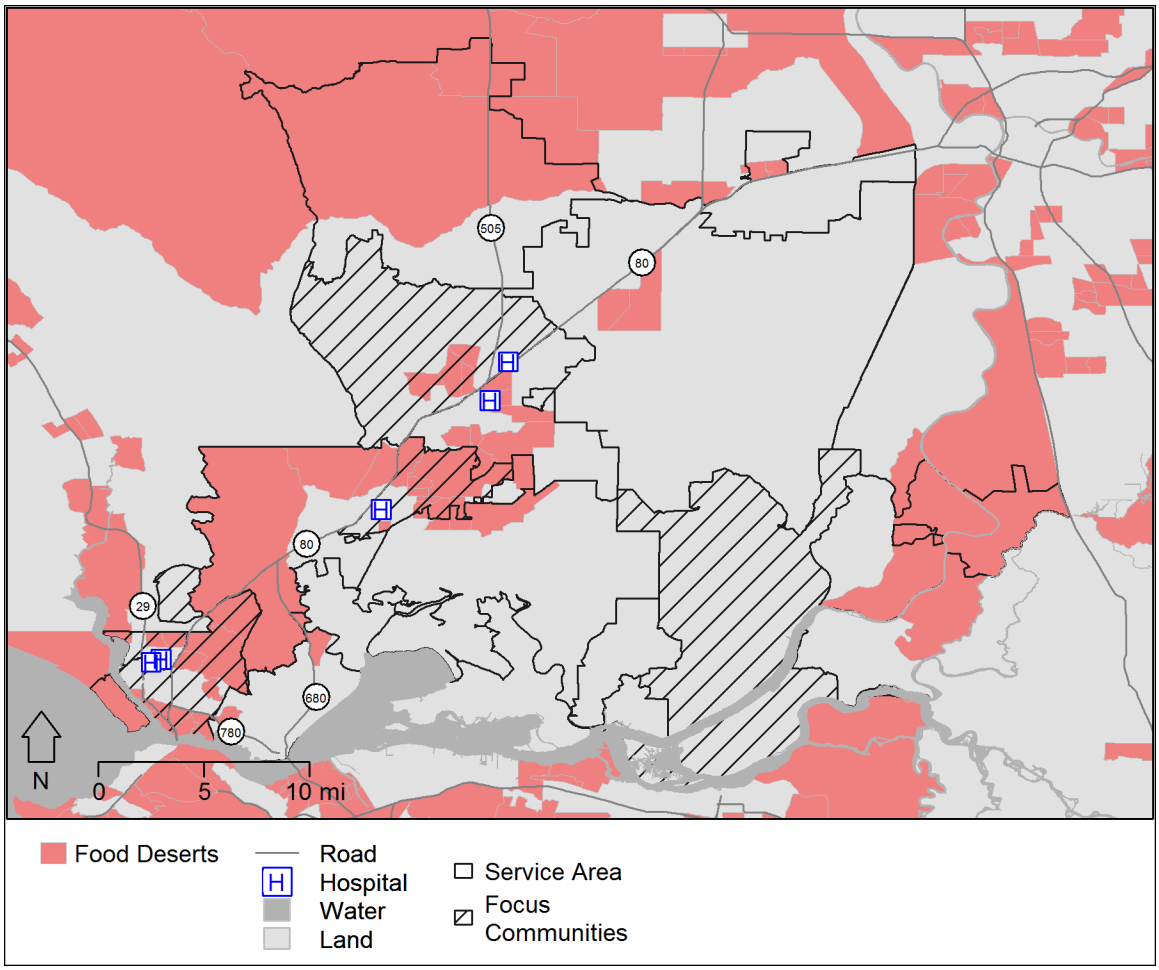

Figure 7: USDA defined food deserts
Source: USDA Defined Food Desert (2010)

As shown in Figure 9, portions of eight of 18 Solano County ZIP codes were designated USDA food deserts. The eight ZIP codes that contained a food desert area include 94533 (East Fairfield) and 94534 (West Fairfield), 94571 (Rio Vista), 94585 (Suisun City), 94590 (South/Central Vallejo), 94591 (East Vallejo), 95618 (Davis) and 95620 (Dixon).

[21] US Department of Agriculture. (n.d.) *Food Deserts*. Retrieved from: https://apps.ams.usda.gov/fooddeserts/fooddeserts.aspx

Percent -- Population with food insecurity and receiving Supplementary Nutrition Assistance Program
According to Feeding America, the percentage of population with food insecurity in 2013 for Solano County (15.2%) was slightly higher than the state percent (15.0%). Also, the percentage of population receiving SNAP (Supplementary Nutrition Assistance Program) in 2011 was slightly lower for Solano County (9.7%) compared to the state percent (10.6%).

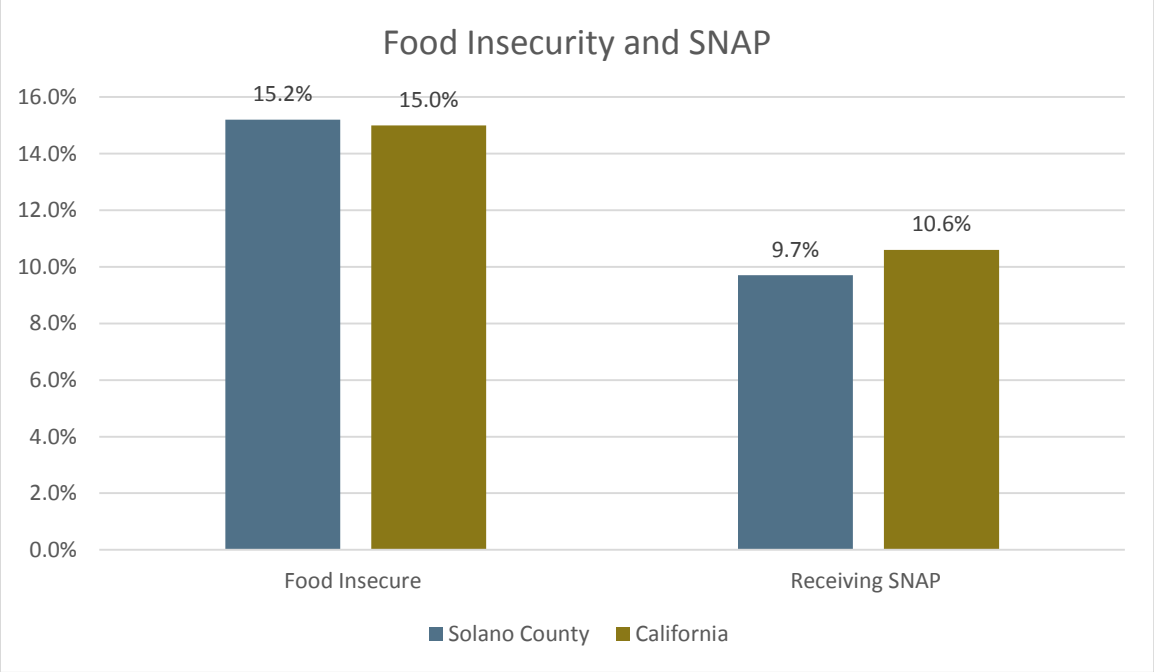

Figure 8: Percent food Insecure and percent receiving SNAP
Sources: Feeding America, 2013; US Census Bureau, 2011

Index -- Modified Retail Food Environment Index (mRFEI)
The modified Retail Food Environment Index (mRFEI) consists of two aspects of food availability: both the presence of food outlets within a ZIP code, as well as the relative abundance of healthier food outlets. Negative mRFEI values occur in areas with no food outlets. All other values report the percentage of healthier food outlets, from among all food outlets, in the ZIP code. Figure 11 shows the mRFEI for the Solano County HSA. Lighter areas indicate poor or no access to healthy food outlets and darker areas indicate greater access to healthy food outlets.

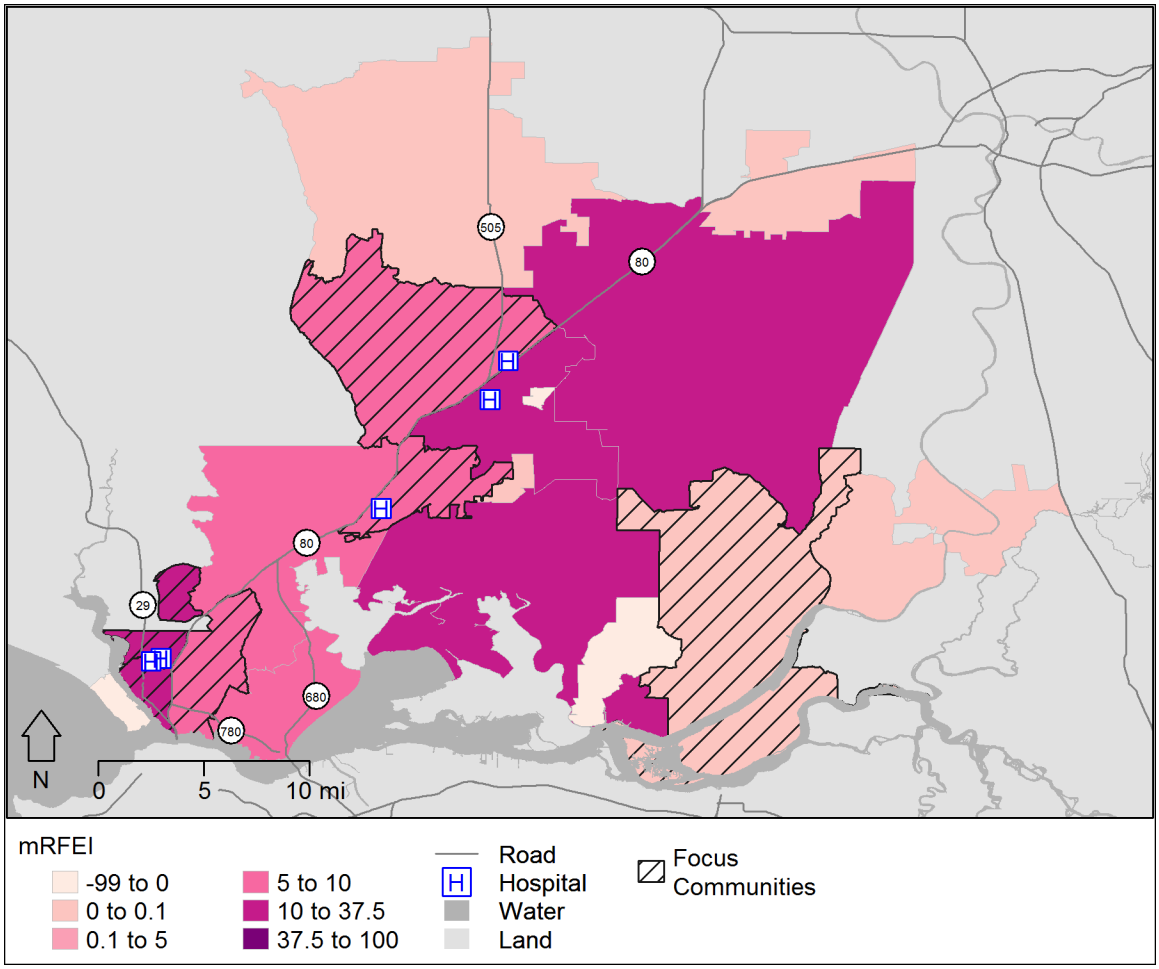

Figure 9: Modified Retail Food Environment Index (mRFEI)
Source: US Census Bureau County Business Patterns, 2013

As shown in Figure 11, many Solano County ZIP codes had lower mRFEI scores, indicating poor or no access to healthy foods. More specifically, the ZIP code areas of 94585 (Suisun City), 94589 (North Vallejo), 94590 (South/Central Vallejo) and 95625 (Elmira) had lower mRFEI scores.

Rate -- Fast food restaurants and grocery stores per 100,000 population

According to business data reported by the US Census Bureau in 2011, the rate of fast food restaurants for the Solano County HSA was lower than the state rate of 74.51 per 100,000 population. Additionally, the rate of grocery stores for the Solano County HSA was lower than the state rate of 21.51 per 100,000 population. Data indicated that the Solano County HSA had fewer fast food restaurants and fewer grocery stores per 100,000 population compared to the state.

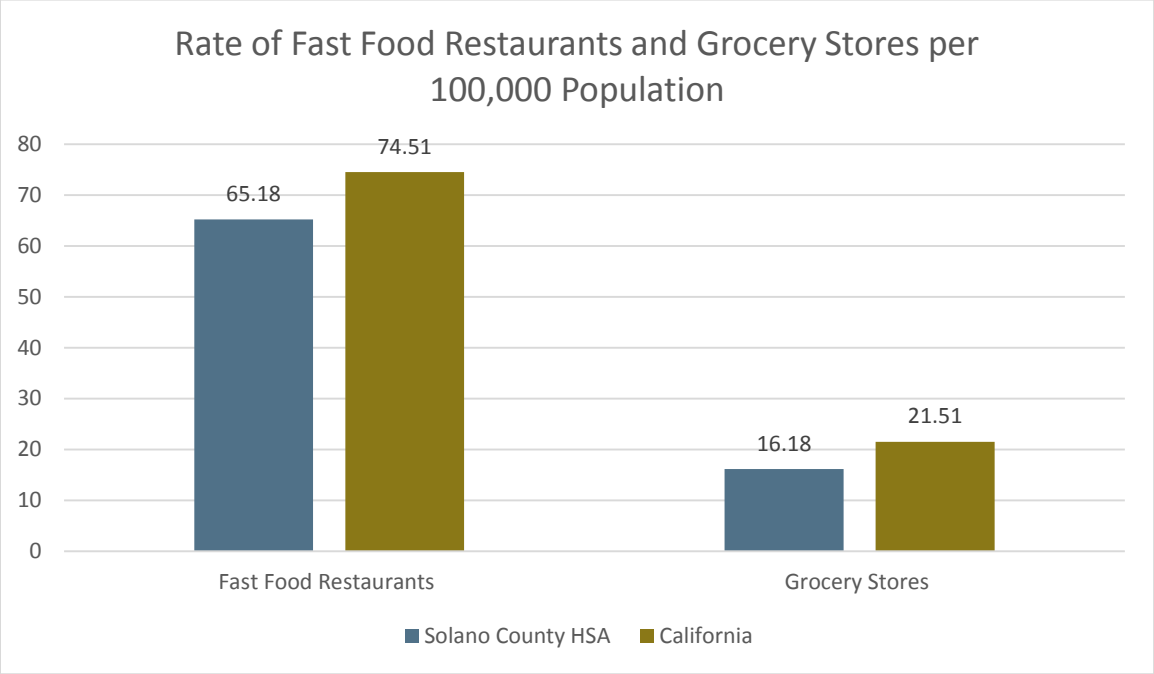

Figure 10: Fast food restaurants and grocery stores per 100,000 population
Source: US Census Bureau, County Business Patterns, 2011

Percent – Youth eating less than five servings of fruits and vegetables a day
Data from the 2011-2012 California Health Interview Survey indicated that 44.0% of youth in Solano County reported eating less than five servings of fruits and vegetables daily, below the state rate at 47.4%. Examination by race and ethnicity showed that 34.0% of Whites report eating less than five servings a day, compared to Blacks at 53.7% and Hispanic/Latino at 62.9%.

Percent – Home expenditures spent on fruits and vegetables and soda
County results for the percent of at-home food expenditures for fruits and vegetables, as well as sodas were close to the state rate. Data from Nielsen (2014) showed that the percent of food expenditures for fruits and vegetables was 14.0% for the HSA, only slightly lower than the state percent of 14.1%. The same is true for soda expenditures. The soda expenditure percent was 3.5% for the HSA, slightly below the state percent of 3.6%.

Percent -- Physical inactivity for adults and youth
Indicators which examine physical activity in the HSA are very hard to find. In 2012, the CDC reported that the percent of adults over the age of 20 indicating they perform no regular physical activity was 18.2% for the HSA, slightly above the state rate of 16.6%. Physical inactivity for youth in the HSA, as reported using the FitnessGram Physical Fitness Test, was also above the state rate. There were 44% of youth in grades 5, 7, and 9 classified as physically inactive, compared to the state percent at 35.9%. Examination by race and ethnicity revealed that 32.5% of Whites were classified as physically inactive, compared to 43.7% of Blacks, 30.5% of Asians, 41.6% of non-Hispanic multiple race, and 49.2% of Hispanic/Latinos.

Percent - Population living within one-half mile of a park
Access to recreational areas contributes to whether or not people will be physically active. Figure 13 shows the percent of the population by ZIP code in the service area that live within one-half mile of a recreational park. The lighter colors denote fewer residents with nearby park access and darker colors show more residents living within one-half mile of a park.

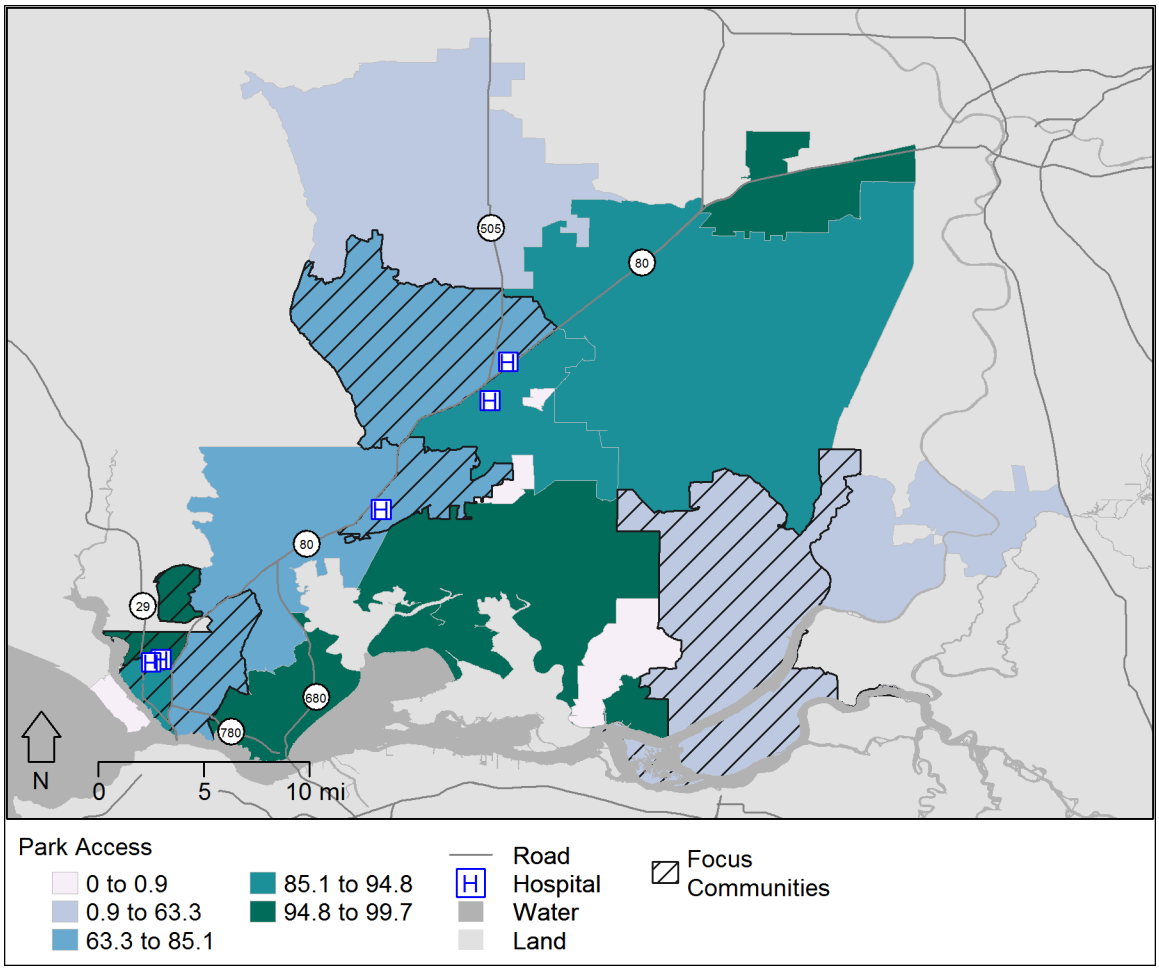

Figure 11: Percent of population by ZIP code that live within one-half mile of a park
Source: ESRI U.S. Parks, 2014

As displayed in Figure 13, access to a park varies among the Solano County communities. ZIP codes 94512 (Birds Landing), 94571 (Rio Vista), 94592 (Mare Island) and 95625 (Elmira) had the lowest percent of the population with access to a park in their community. Having access to a park or physical space where people of all ages can engage in play and be physically active is important for overall health and wellbeing. Unfortunately, this indicator is not available at the census tract level, making it difficult to examine variation within each ZIP code.

Risky Sexual Behavior -- Teen birth rate and sexually transmitted Infections (Chlamydia, Gonorrhea, and HIV/AIDS)

Rate -- Teen births to women 15 to 19 years old
The teen birth rate (births to women 15-19 years old) is an indicator used in this assessment to examine sexual behavior throughout the HSA. Data from 2013 indicated that the national rate for teen births (age 15-19 years old) currently sits at 26.5 per 1,000 live births. [22] Figure 14 shows the teen birth rate for the Solano County HSA.

[22] Centers for Disease Control and Prevention. (2015). *Teen Births*. Retrieved from: http://www.cdc.gov/nchs/fastats/teen-births.htm

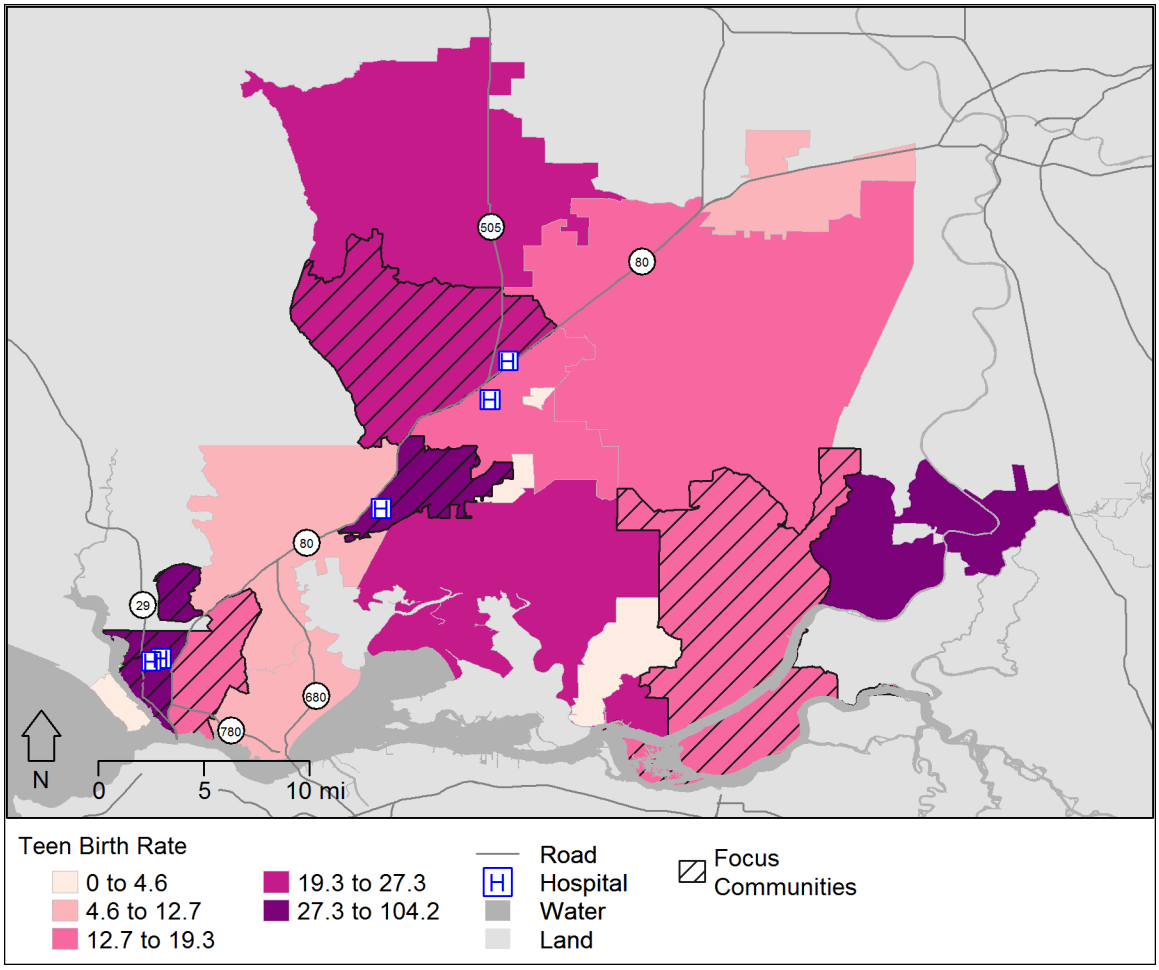

Figure 12: Teen birth rate for 15-19 year olds per 1,000 live births
Source: CDPH, 2010 – 2012

Four out of 18 ZIP codes in the HSA had higher teen birth rates compared to the county (24.10 per 1,000) and state (28.30 per 1,000) benchmarks. As Figure 14 shows, four of the 18 ZIP codes had teen birth rates in the range of 29.64 to 104.10 per 1,000 teen births, clearly over the national rate of 26.50 per 1,000 live births. These four ZIP codes included the areas of 94533 (East Fairfield), 94589 (North Vallejo), 94590 (South/Central Vallejo) and 95690 (Walnut Grove). ZIP code 95690 (Walnut Grove) had the highest rate of teen births at 104.10 per 1,000 live births.

Sexually transmitted infections (STIs) - Chlamydia, Gonorrhea, and HIV/AIDS
Rates of STIs, including chlamydia, gonorrhea, and HIV, illustrate the presence of risky sexual behavior in the HSA. Since STIs are largely preventable, knowing where community members are infected by STIs helps with targeting interventions for treatment and prevention. Tables 24 and 25, as well as Figures 15 and 16, display incidence rates for chlamydia and gonorrhea per 100,000 population. Incidence rates are a measure of new cases of disease of condition in a community. Table 26 shows rates of ED visits and hospitalizations related to STIs, as well as those specific to HIV/AIDS.

Rates -- Chlamydia and Gonorrhea Incidence

Table 24: Chlamydia incidence rates for 2014 in Solano County (per 100,000)

Area	Incidence Rate
Solano County	527.40
CA State	453.40

Source: Solano County Public Health, 2014

As seen in Table 24, the chlamydia incidence rate in 2014 was elevated in the county compared to the state rate.

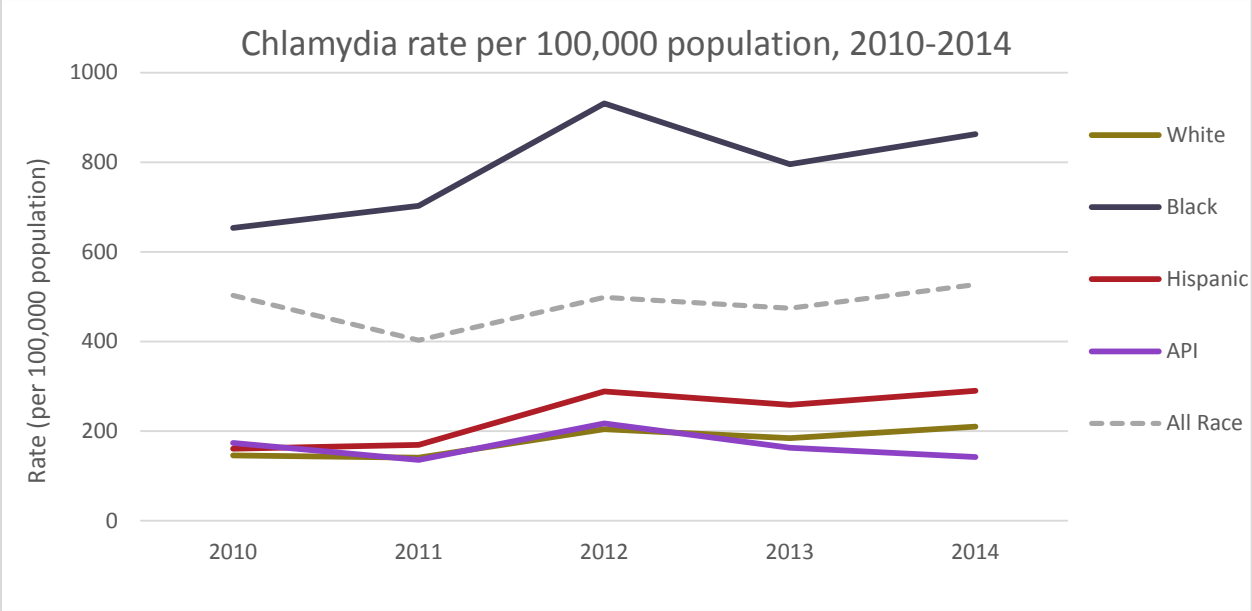

Figure 13: Chlamydia incidence rates (new cases) for 2010 through 2014 by race/ethnicity (rates per 100,000)
Source: Solano County Public Health, 2010 – 2014

As seen in Figure 15, chlamydia rates among Blacks were higher in Solano County than other racial/ethnic groups. More specifically, chlamydia rates among Blacks were four times higher than the rate of Whites in 2014, and far above both the county and state benchmarks shown in Table 24.

Table 25: Gonorrhea incidence rates for 2014 in Solano County (per 100,000)

Area	Incidence Rate
Solano County	137.86
CA State	116.81

Source: Solano County Public Health, 2014

As seen in Table 25, the gonorrhea incidence rates in 2014 were elevated in the county compared to the state benchmark.

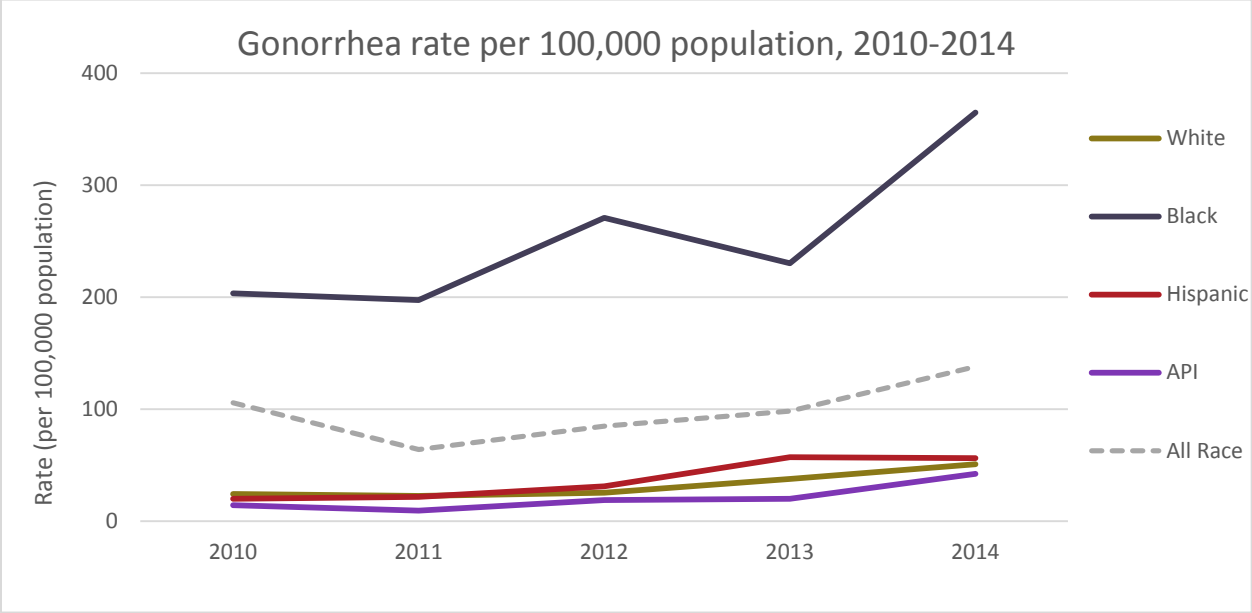

Figure 14: Gonorrhea incidence rates (new cases) for 2010 - 2014 by race/ethnicity (rates per 100,000)
Source: Solano County Public Health, 2010-2014

Gonorrhea rates were above the state benchmark in Solano County, especially among the Black population. The Black population had the highest rate of gonorrhea, which appeared to be increasing over the years and was over three times higher than the state benchmark and two times higher than the county benchmark in 2014. Gonorrhea rates among Blacks were also more than seven times higher than Whites in 2014.

Rates -- ED visits and hospitalizations due to STIs and HIV/AIDS

Table 26: ED visit and hospitalization rates due to STIs and HIV/AIDS compared to county and state benchmarks (rates per 10,000 population)

	ZIP Code	ED visits STIs	Hospitalizations STIs	ED visits HIV/AIDS+	Hospitalizations HIV/AIDS+
Sexually Transmitted Infections	94510	1.74	1.39	1.11	0.52
	94512	0.00	0.00	0.00	0.00
	94533*	7.58	4.35	4.39	2.80
	94534	1.13	2.61	0.66	1.40
	94535	0.00	0.00	0.00	0.00
	94571*	3.01	3.47	1.31	2.60
	94585	2.43	3.12	1.27	1.85
	94589*	11.66	7.67	5.41	5.01
	94590*	15.51	9.30	6.72	7.50
	94591*	5.67	4.80	2.15	4.16
	94592	22.39	12.64	18.58	12.79
	95690	3.30	0.00	0.00	0.00
	95694	1.76	0.81	0.40	0.00
	95618	0.42	1.05	0.15	0.28
	95620	1.17	1.98	0.00	1.32
	95625	0.00	0.00	0.00	0.00
	95687	1.84	2.30	0.62	1.33

	95688*	2.72	8.01	1.94	6.47
	Solano County	5.21	4.43	2.50	3.16
	CA State	3.20	4.58	1.95	3.36

Source: OSHPD, 2011-2013

+HIV/AIDS is considered a subcategory of STIs in the ICD 9 diagnostic codes.

*****_Indicates Focus Community_

Table 26 indicates that rates of both ED visits and hospitalizations due to STIs were elevated in four of the 18 ZIP codes in Solano County. The highest rates for ED visits due to STIs were seen in ZIP codes 94589 (North Vallejo), 94590 (South/Central Vallejo), 94591 (East Vallejo) and 94592 (Mare Island), with the highest rate in ZIP code 94592 at 22.39 ED visits per 10,000 population, more than four times the county benchmark and seven times the state benchmark. The same ZIP code, 94592 (Mare Island), also showed the highest rate for hospitalizations due to STIs at 12.64 per 10,000, two times higher than the state and county benchmarks. The same three ZIP codes in the Vallejo area showed the highest rates for the STI subcategory of HIV/AIDS. Much like rates for the larger STI grouping, ZIP codes 94589 (North Vallejo), 94590 (South/Central Vallejo), 94591 (East Vallejo), and 94592 (Mare Island) had the highest rates of ED visits and/or hospitalizations due to HIV/AIDS. ZIP code 94592 (Mare Island) had the highest rate for ED visits due to HIV/AIDS at 18.58 per 10,000, six times higher than the county and over nine times higher than the state benchmark. Similarly, the same ZIP code had a high rate for hospitalizations due to HIV/AIDS at 12.79 per 10,000, four times higher than the state and county benchmark.

Data by race and ethnicity for ED visits due to STIs showed that Whites had a rate of 3.59 ED visits per 10,000 populations, compared to Hispanics at 2.41, Native Americans at 2.50, Asians/Pacific Islanders at 0.73, and Blacks at 20.83 per 10,000, nearly six time the rate of Whites. Data by race and ethnicity for hospitalizations due to STIs showed that Whites had a rate of 4.11, compared to Hispanics at 1.91, Native Americans at 4.99, Asians/Pacific Islanders at 1.36, and Blacks at 13.89 per 10,000 population, clearly above both the state and county benchmarks.

Data by race and ethnicity for ED visits due to HIV/AIDS showed that Whites had a rate of 2.19 per 10,000, compared to Hispanics at 0.94, Native Americans at 2.50, Asian/Pacific Islanders at 0.37, and Blacks at 9.03 per 10,000 population, almost two times the county and state benchmarks and four times the rate of Whites. Data by race and ethnicity for hospitalizations due to HIV/AIDS showed that Whites had a rate of 2.82 per 10,000, compared Hispanics at 0.94, Native Americans at 2.50, and Asian/Pacific Islander at 0.83, and to Blacks at 11.00 per 10,000, above the county and state benchmarks.

Rate -- Prevalence of HIV/AIDS per 100,000 population

The CDC reported that for 2010, the prevalence of HIV/AIDS in the Solano County HSA was 345 cases per 100,000 population, lower than the state rate at 363 cases per 100,000. Data by race and ethnicity showed that Whites had a rate of 286.46 cases per 100,000, compared to Hispanic/Latinos at 269.51, and Blacks at 972.66 cases per 100,000, over two times the Solano County HSA rate.

Percent -- Adults never screened for HIV

Data from the national Centers for Disease Control and Prevention Behavioral Risk Factor Surveillance System survey for 2011-2012 indicated that as many as 59.7% of respondents between 18-70 years of age in Solano County reported never being screened for HIV, a percent equal to the state percent.

Living Conditions – Physical Environment, Social Environment, Economic/Work Environment and Service Environment

This section of the report will examine various indicators which help to illuminate the daily living conditions of Solano County residents. The indicators are organized in accordance to the BARHII model discussed previously: physical environment, social environment, economic/work environment, and service environment.

Physical Environment

Examination of the physical environment of the Solano County HSA included analyzing indicators of transportation, traffic accidents, housing, and pollution.

Area -- Population living one-half mile from a transit stop

There are limits to the distances community members will travel to access public transportation services. These distances are documented in research and vary due to a number of factors including climate, attractiveness of the area, and the amount of traffic on streets.[23] Most research states that individuals will travel no more than one-fourth to one-third of a mile to access public transportation. Identifying areas in the HSA that are at least one-half mile from a transit station helps to highlight transportation availability in the area. Figure 16 shows areas of the Solano County HSA in 2012 that were within one-half mile from a transit stop.

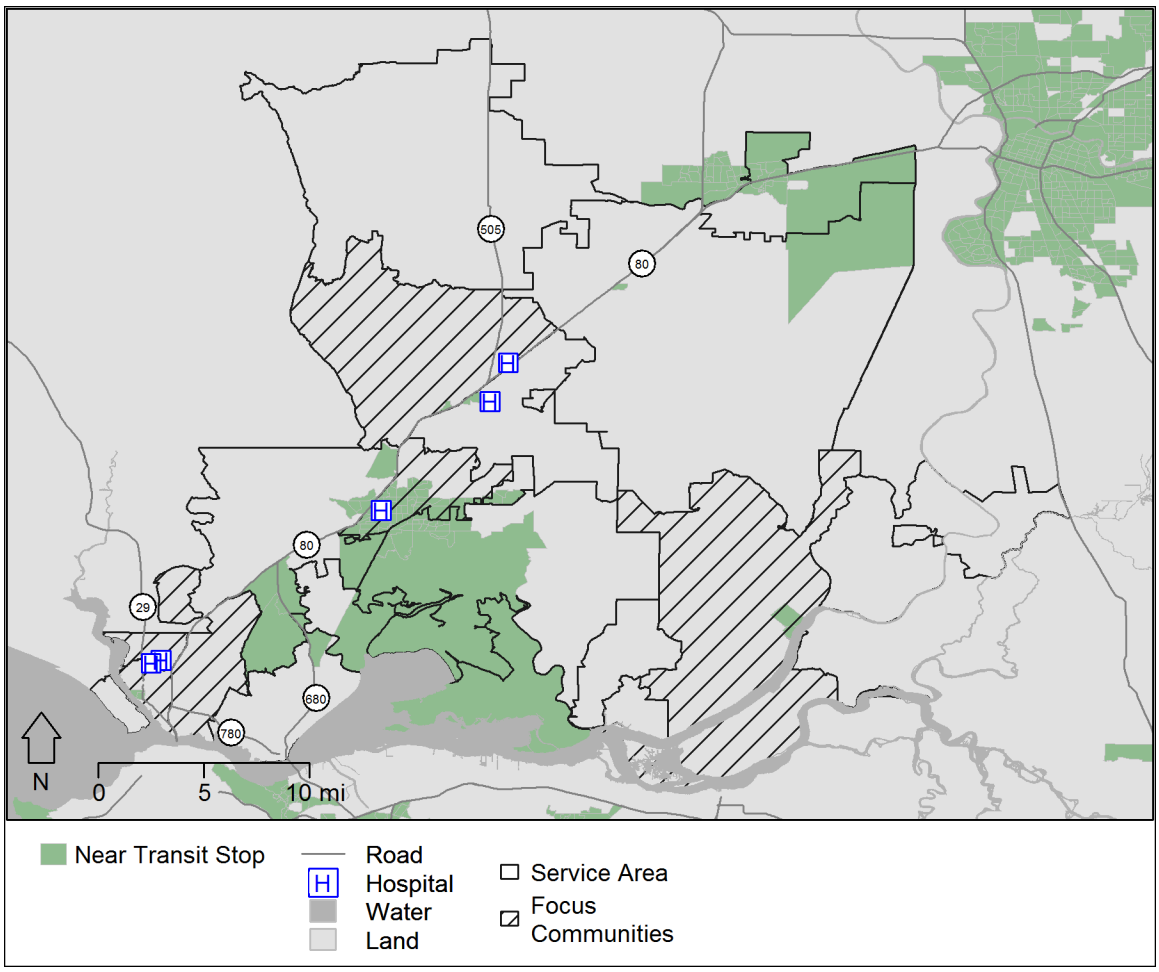

Figure 15: Locations in the HSA within one-half mile of a transit stop
Source: Health Resources and Services Administration, 2012

In Figure 17, grey shaded portions of the map were more than a half-mile from a transit stop. All 18 ZIP codes in Solano County were flagged as having areas where there is not a transit stop within one-half mile.

[23] *Building Transit-Friendly Communities: A design and development strategy for the Tri-State Metropolitan Region* (1997). Regional Plan Association. Retrieved from: http://ntl.bts.gov/DOCS/GL.html

Percent -- Households with no vehicle

Having access to a vehicle is an important factor in the determination of a person's ability to access the things they need to stay healthy. A working vehicle means the ability to get to work, to the grocery store, to school, and to access care needed. Figure 18 shows the percent of households with no vehicle in the Solano County HSA.

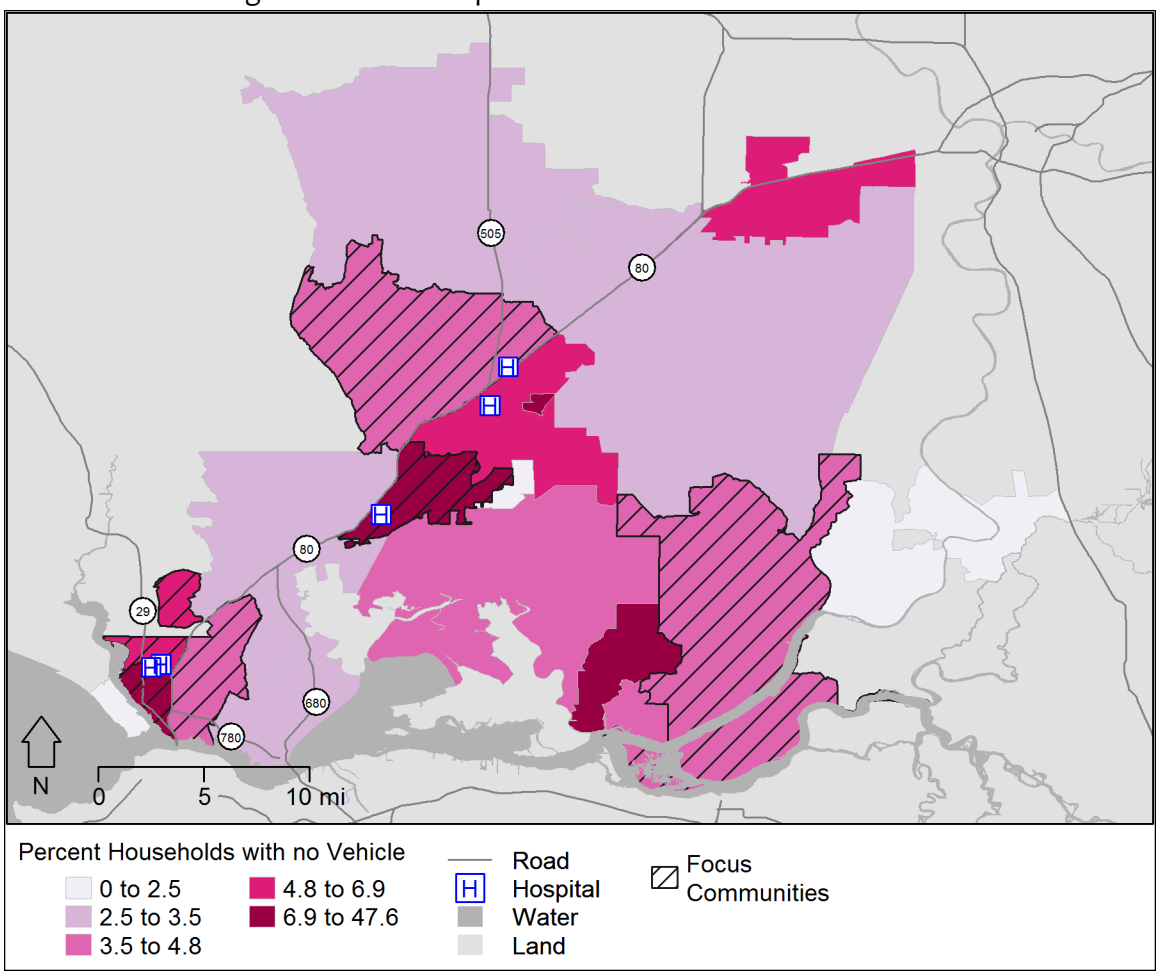

Figure 16: Percent households with no vehicle
Source: 2013 American Community Survey, 5-year estimates

As Figure 18 shows, many ZIP codes in Solano County have a high percent of households with no vehicle. The ZIP code of 94512 (Birds Landing) had the highest percent at 47.6%, followed by ZIP codes 94589 (North Vallejo), 94590 (South/Central Vallejo), 94533 (East Fairfield) and 95625 (Elmira). The percent of households with no vehicle for the state was 7.8% and in Solano County was 5.6%.

Percent -- Workers that commute than 60 minutes to work

Long commute times are associated with increased likelihood of being overweight, higher blood pressure, increased stress and neck pain, exposure to more pollution, and other negative health effects.[24] Figure 19 displays the percent of workers in each ZIP code which commute more than 60 minutes to work.

[24] MacMillan, A. (2015). Five ways your commute is hurting your health. Retrieved from: http://news.health.com/2015/03/31/5-ways-your-commute-is-hurting-your-health/

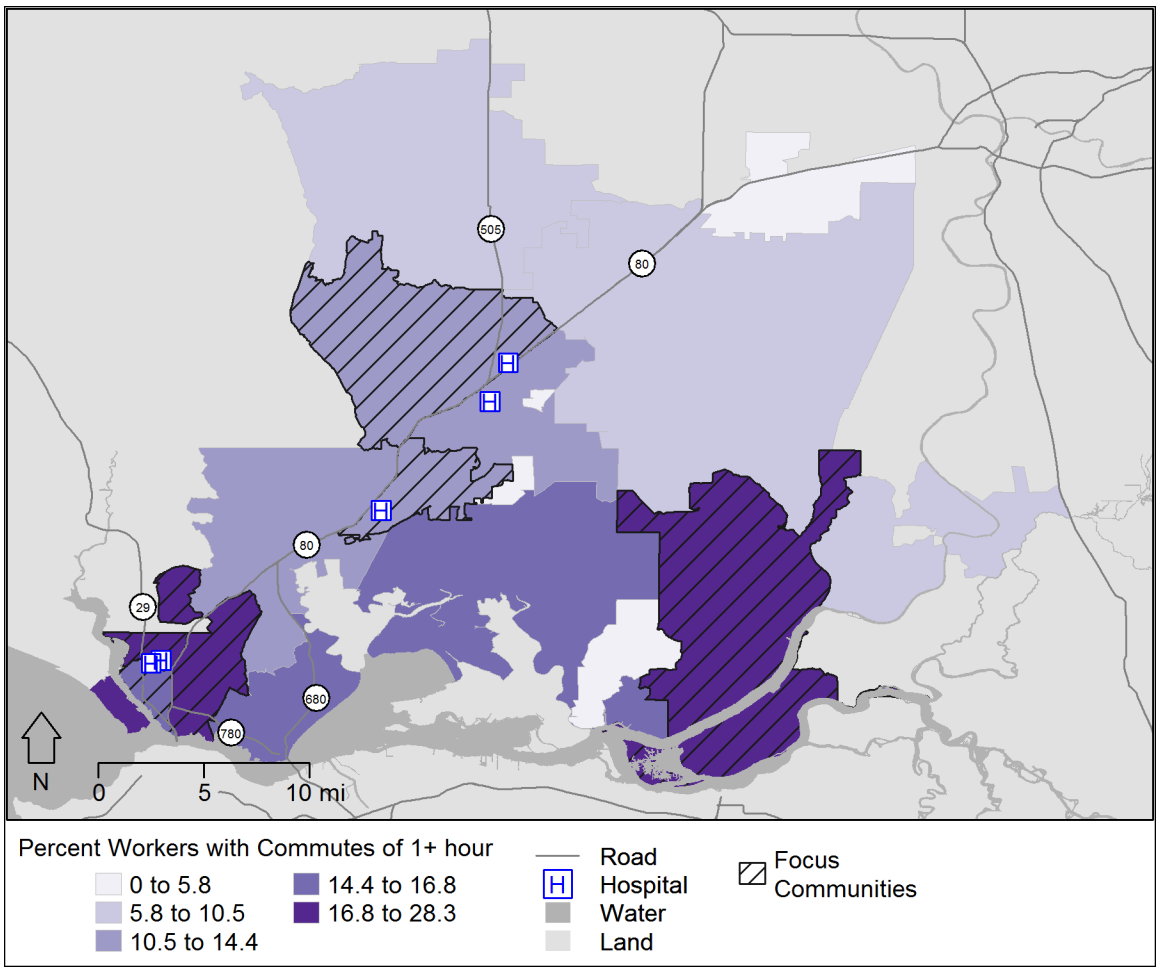

Figure 17: Percent workers with commutes of 1+ hour
Source: 2013 American Community Survey, 5-year estimates

Many ZIP codes in Solano County had a high percentage of residents commuting more than 60 minutes to work. ZIP codes 94571 (Rio Vista) and 94592 (Mare Island) were in the highest percent range of residents commuting more than 60 minutes, followed by ZIP codes 94591 (East Vallejo) and 94589 (North Vallejo), 94585 (Suisun City), 94510 (Benicia) and 94533 (East Fairfield) which were higher than the county benchmark of 13.9% of residents commuting more than 60 minutes to work.

Percent -- Workers reporting commuting alone and walking/biking to work

Data from the US Census Bureau indicated that 75.0% of respondents in the HSA over the age of 16 years old reported commuting to work alone, higher than the state percent (73.0%). The Census data also indicated that 3.7% of HSA respondents stated that they walk or bike to work, just below the state percent of 3.8%.

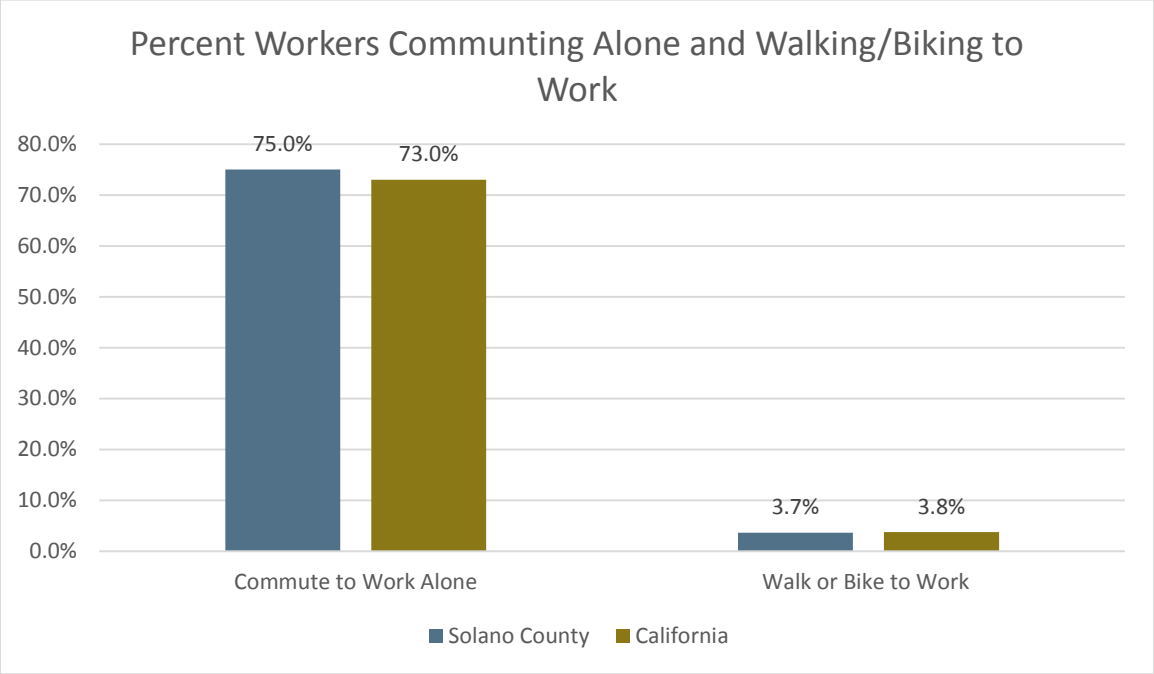

Figure 18: Percent of workers commuting to work alone and walking or biking to work
Source: US Census Bureau, 2009 - 2013

Rate -- Road density network per square mile

Examination of road network density revealed that Solano County has more roads per square mile than the state. The number of roads per square mile for Solano County is 2.81 compared to the state rate of 2.02 roads per square mile. Increased road density is related to increased exposure to vehicle emissions and other environmental pollutants which negatively impact health.

Area -- Fatal traffic accidents

ZIP code 94510 (Benicia) had eight fatal traffic accidents, the highest number of fatal traffic accidents compared to all other ZIP codes in the HSA in 2013, followed by 95688 (West Vacaville) at five accidents. The majority of the fatal traffic accidents in Solano County appear to be on the major highways. For 94510 (Benicia) the traffic accidents appear to be on Highway 680 and Highway 780.

Rate-- Fatal accidents per 100,000 population involving a motor vehicle and/or pedestrian

The rate of fatal motor vehicle accidents for 2010-2012, as reported by the California Department of Public Health, showed that the Solano County HSA rate (3.23 per 100,000) of fatal accidents was below the state rate (5.18 per 100,000). In addition, fatal accidents involving a pedestrian (motor vehicle killed a pedestrian) showed that the Solano County rate (0.90 per 100,000) was also below the state rate (1.97 per 100,000).

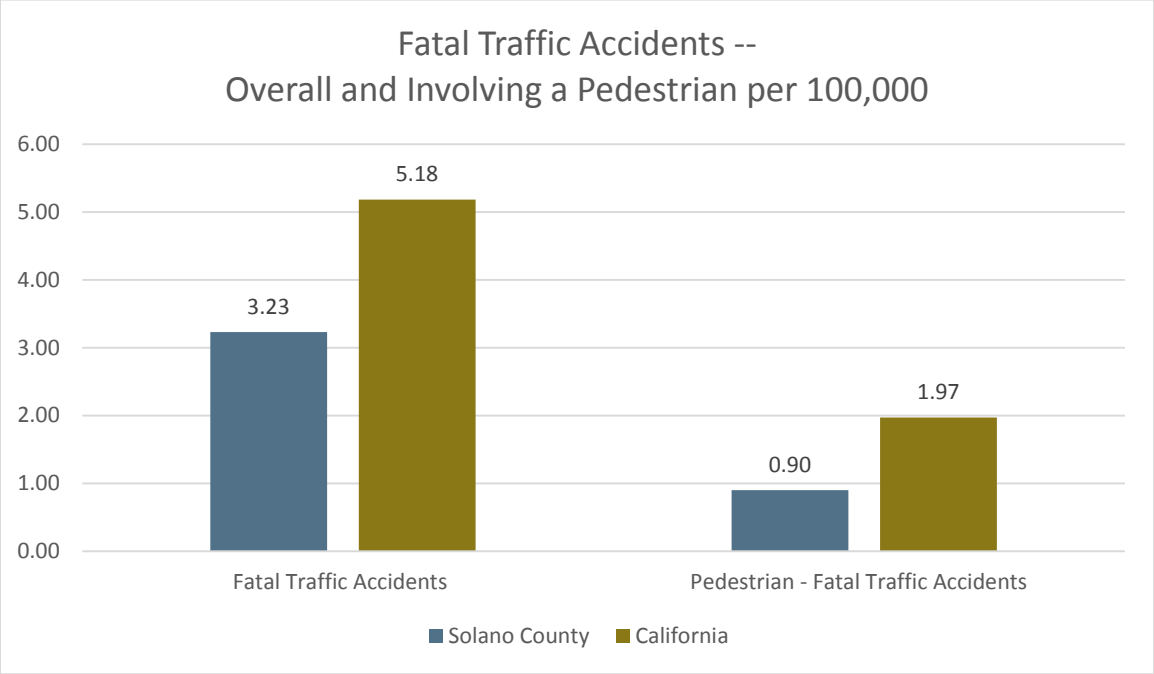

Figure 19: Rate of fatal accidents overall and involving a pedestrian
Source: CDPH, 2010 – 2012

Housing Stability – Percent housing vacancy, people per housing unit and percent renting

Stable, clean and affordable housing is an essential public health need. The lack of a stable place to live can have negative health effects on individuals and families, making it hard to manage daily life responsibilities.[25] Table 27 shows rates for various indicators of housing stability by ZIP code for Solano County.

Table 27: Housing vacancy, people living per housing unit, and percent of population renting by ZIP code

ZIP Code	Percent Housing Vacancy	People per Housing Unit	Percent Renting
94510	6.4	2.54	31.1
94512	0.0	2.75	47.6
94533*	7.5	3.04	48.6
94534	2.3	2.87	24.1
94535	10.0	3.50	99.0
94571*	10.6	2.09	28.9
94585	4.3	3.22	33.8
94589*	8.9	3.18	37.5
94590*	16.2	2.51	56.2
94591*	9.8	2.92	32.1
94592	16.3	2.61	5.6
95690	20.4	2.73	36.4
95694	2.5	2.86	41.8
95618	4.6	2.85	43.2
95620	6.6	3.08	37.1

[25] John Hopkins University. (2016). Stable Housing. Retrieved from: http://www.jhsph.edu/research/centers-and-institutes/johns-hopkins-center-to-eliminate-cardiovascular-health-disparities/about/influences_on_health/stable_housing.html

95625	0.0	3.24	86.2
95687	5.2	2.73	38.4
95688*	5.6	2.79	32.5
Solano County	7.6	2.85	38.3
CA State	8.6	2.94	44.7

Source: 2013 American Community Survey, 5-year estimates
**Indicates Focus Community*

The largest percent of housing vacancies were in 95690 (Walnut Grove), followed by 94592 (Mare Island) and 94590 (South/Central Vallejo). High vacancy rates are indicators of housing market conditions[26], specifically the affordability of housing in the area. The number of people per housing unit is an indicator of multiple people living together, which can be an indicator of poverty. The highest people-per-housing unit rates were seen in ZIP codes 94533 (East Fairfield), 94535 (Travis AFB), 94585 (Suisun City), 94589 (North Vallejo), 94591 (East Vallejo), 95620 (Dixon) and 95625 (Elmira). Also, a large number of renters in a given geographical area can be an indicator of the area's economic stability as well as housing costs. ZIP code 94535 (Travis AFB) and 95625 (Elmira) had the highest rate of renters in the Solano County HSA renting at 99.0% and 86.2% respectively. These were both far above county and state benchmarks. It should be noted that ZIP code 94535 (Travis AFB) is a unique geographical location given the housing provisions for military personnel and their families.

Rate -- Households that are HUD households per 10,000 housing units
The United States Department of Housing and Urban Development (HUD) reports in 2013 that the total number of HUD funded housing units in Solano County is 467.13 units per 10,000 housing units, above the state rate of 368.32 units per 10,000. This is an important indicator, as access to affordable housing impacts a person's economic stability and ability to access other basic needs such as health care, affordable healthy foods, and places to be physically active.

Percent -- Households with at least one substandard housing condition
HUD also reports that, in 2013, the percent of households defined as substandard was 44.5% in Solano County, lower than the state percent at 48.4% of households.

Housing Costs -- Households with housing costs greater than 30% of income
The high cost of housing can be a barrier for community members to maintain stable housing and optimal health. Data on the cost of housing for the Solano County HSA shows the percent of homeowners and renters with housing expenses and gross rent greater than 30% of income. Figure 22 shows the indicator across the HSA.

[26] Belsky, E.S. (n.d.) *Vacancy rates: A policy primer*. Housing Policy Debate, vol 3(I3), 793-814. Retrieved from: http://content.knowledgeplex.org/kp2/img/cache/kp/2627.pdf

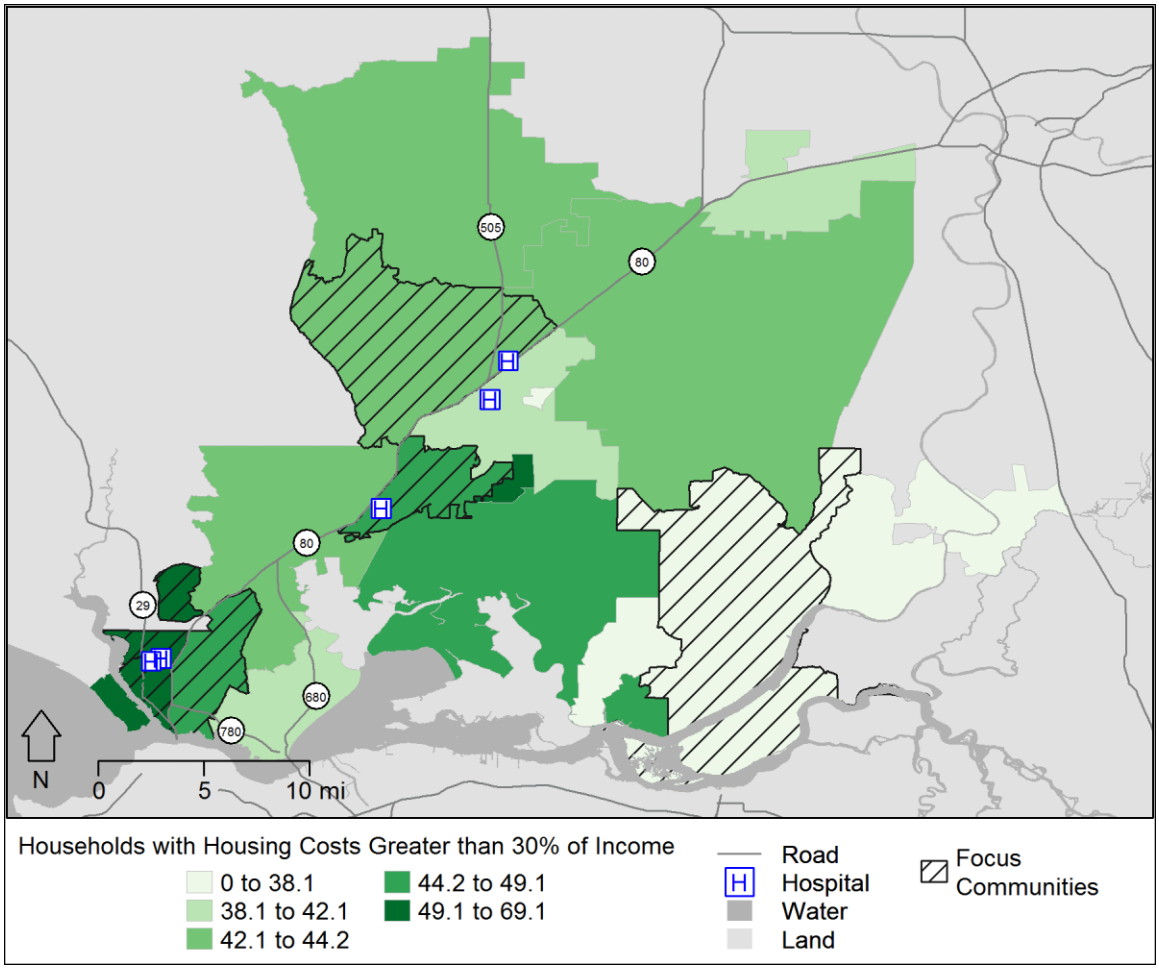

Figure 20: Percent of households with housing costs greater than 30% of income
Source: 2013 American Community Survey, 5-year estimates

Four of the 18 ZIP codes in Solano County fell into the category of having the highest percentage of residents with household costs greater than 30% of income. This category ranged from 49.1% to 69.1% and included the following ZIP codes: 94535 (Travis AFB), 94589 (North Vallejo), 94590 (South/Central Vallejo) and 94592 (Mare Island). ZIP code 94535 (Travis AFB) is a unique geographical location given the housing provisions for military personnel and their families.

Index -- Pollution Burden Score

The California Environmental Protection Agency and the Office of Environmental Health Hazard Assessment developed the *California Communities Environmental Health Screening Tool, Version 2.0*.[27] This tool was designed to identify California communities that are disproportionately burdened by multiple sources of pollution. The tool combines 13 types of pollution and environmental factors to produce a "pollution burden" score for each census tract in the state ranging between a minimum of 0 and a maximum of 100, with higher scores indicating a greater pollution burden. The pollution factors included ozone and $PM_{2.5}$ concentrations, diesel PM emissions, pesticide use, toxic releases from facilities, traffic density, drinking water contaminants, cleanup sites, impaired water bodies, groundwater threats, hazardous wastes facilities and generators, and solid waste sites and facilities.

[27] *California Communities Environmental Health Screening Tool, Version 2.0 (CalEnviroScreen 2.0). Guidance and Screen Tool*. October 2014. Retrieved from: http://oehha.ca.gov/ej/pdf/CES20FinalReportUpdateOct2014.pdf

A pollution burden score was identified for each census tract in the Solano County HSA and is displayed in Figure 23. Each census tract's pollution burden score ranged from 0 to 100 and was assigned to a quintile, displayed in the figure using color gradation. In the figure census tracts with darker colors have higher pollution burden scores.

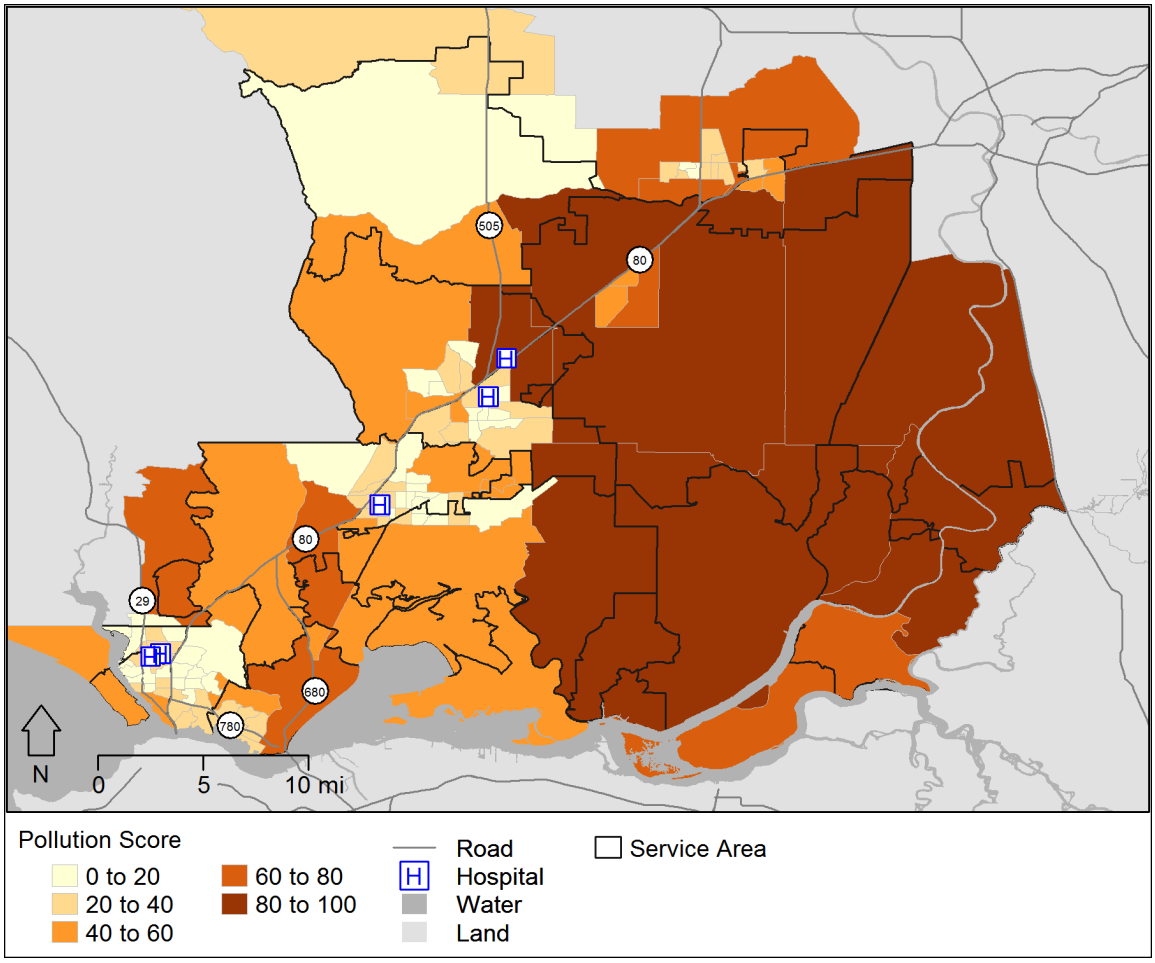

Figure 21: Pollution burden score by census tracts in the HSA
Source: California Office of Environmental Health Hazard Assessment, 2014

Figure 23 shows that a majority of the following ZIP codes had a pollution burden score in the highest quintile, 80-100: 94512(Birds Landing), 94571 (Rio Vista) and 95620 (Dixon). Portions of ZIP codes 94585 (Suisun City) and 95687 (East Vacaville) had census tracts with scores in the second highest quintiles.

Social Environment

This assessment included indicators for crime, assault and homicide in the Solano County HSA. Crime data included major crimes, violent crime, property crime, arson and domestic violence.

Rates -- Major crime, violent crime, property crime, arson and domestic violence

Criminal activity in a community has a strong effect on a community's actual and perceived safety. Data on major crimes reported to the California Department of Justice are provided for the law enforcement jurisdictions in the Solano County HSA and compared to an estimated county benchmark.

Table 28: Major crime, violent crime, property crime, arson and domestic violence per 10,000 population by police jurisdiction

Police Municipality	Major Crimes*	Violent Crime	Property Crime	Arson	Domestic Violence
Benicia	154.64	11.02	140.68	2.94	26.81
Dixon	241.31	18.89	221.87	0.54	24.83
Fairfield	380.35	46.75	331.73	1.88	66.74
Rio Vista	374.45	42.95	328.81	2.68	33.55
Suisun	245.50	22.57	222.22	0.71	20.11
Vacaville	248.45	21.58	225.04	1.83	39.08
Vallejo	581.40	87.04	489.75	4.61	41.00
Solano County Sheriff	333.88	64.35	263.73	5.80	33.76
Solano	375.04	47.96	324.33	2.76	43.62
CA State	312.65	40.26	270.41	1.98	40.18

Source: California Department of Justice, 2013
*combination of violent crimes, property crimes, and arson

Table 28 indicates that major crime rates reported for both Fairfield and Vallejo jurisdictions were noticeably higher than the Solano County estimated major crime rate. Vallejo also had the highest violent crime rate. Rates of property crime were highest in the Fairfield, Rio Vista, and Vallejo jurisdictions. The Solano County Sheriff jurisdiction includes the unincorporated parts of Solano County. The highest rate of arson was found in the unincorporated areas of Solano County where the Solano County Sheriff's Office patrols. Rates for domestic violence crimes in Fairfield and Vallejo were higher than the state benchmark.

Rates -- ED visits and Hospitalizations due to assault

Understanding safety in Solano County requires the examination of both crime rates as shown above as well as incidents of intentional harm, such as rates of assault. Rates of assault (intentionally harming another person) are included in this assessment to gain an understanding of violence in the Solano County HSA. Figures 24 and 25 show ED visits and hospitalizations related to assault in the area.

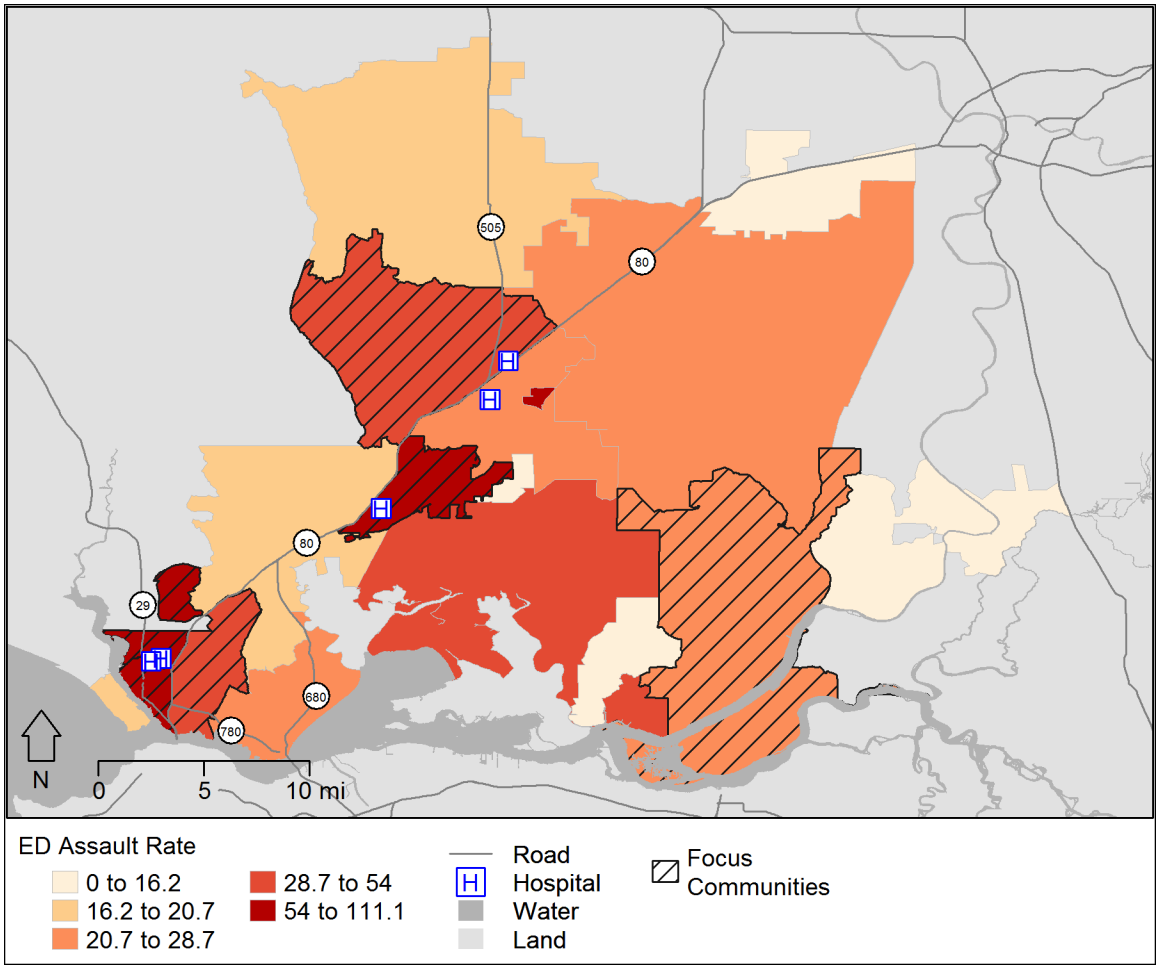

Figure 22: ED visits related to assault
Source: OSHPD, 2012

Rates of ED visits due to assault were elevated in seven of the 18 ZIP codes in Solano County compared to the county benchmark (44.29 per 10,000) and state benchmark (30.36 per 10,000). ZIP codes 94533 (East Fairfield), 94589 (North Vallejo), 94590 (South/Central Vallejo) and 95625 (Elmira) had the highest rates of ED visits in Solano County ranging from 60.30 visits to 111.10 visits per 10,000. Data by race and ethnicity showed that Whites had a rate of 38.99 per 10,000, compared to Hispanics at 34.87, Native Americans at 44.81, Asian/Pacific Islander at 12.26, and Blacks at 114.37 ED per 10,000 population.

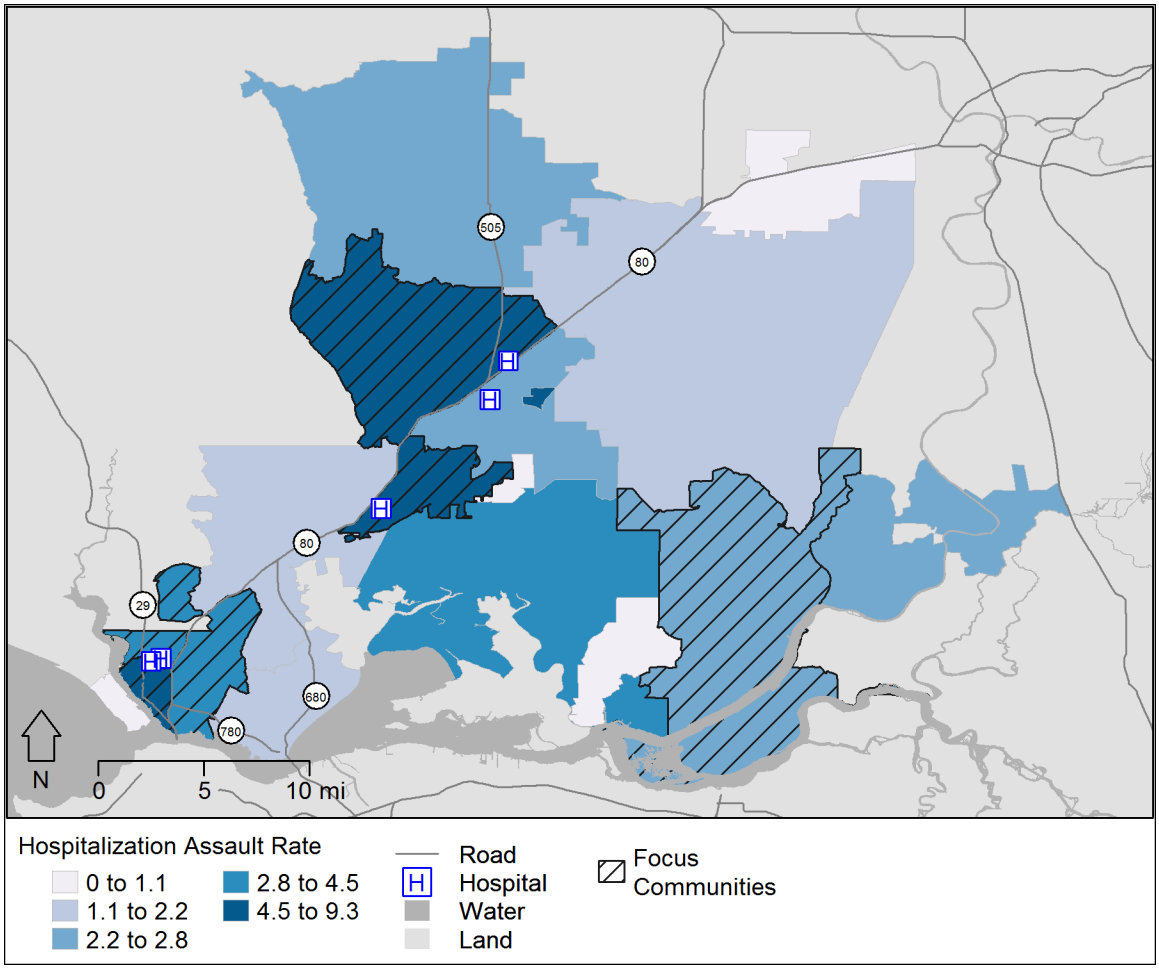

Figure 23: Hospitalization related to assault
Source: OSPHD, 2012

Six out of 18 ZIP codes in Solano County had high rates of hospitalizations due to assault. ZIP code 94590 (South/Central Vallejo) had the highest rate of hospitalizations at 9.22 hospitalizations per 10,000 population, more than twice the county rate (4.02 per 10,000) and three times the state rate (3.88 per 10,000). Data by race and ethnicity showed that Whites had a rate of 2.25 per 10,000, compared to Hispanics at 4.76, Native Americans at 4.99, Asian/Pacific Islander at 1.10, and Blacks at 10.36 per 10,000 population. Hospitalizations due to assault where four times higher in the Black population compared to the White population.

Rate -- Mortality due to homicide (age-adjusted)
Data from the California Department of Public Health on mortality due to homicide collected for 2010-2012 revealed that the Solano County HSA (8.10 per 100,000) had a higher rate than the state benchmark (5.15 per 100,000).

Economic & Work Environment
Economic stability is crucial to overall health and wellbeing. Community members that struggle to pay for basic needs like stable housing, adequate food, and health care are at greater risk of negative health outcomes. This assessment examined indicators related to lack of employment, income, poverty and insurance status.

Percent -- Unemployed and median income by ZIP code

Table 29: Percent Unemployed and median income by ZIP code

	ZIP Code	Percent Unemployed	Median Income
Economic Stability	94510	7.8	$88,930
	94512	0.0	$142,885
	94533*	13.2	$55,413
	94534	6.4	$92,676
	94535	11.6	$50,970
	94571*	24.1	$54,223
	94585	10.5	$70,374
	94589*	17.1	$56,068
	94590*	19.0	$41,819
	94591*	13.7	$73,509
	94592	16.3	$105,352
	95690	18.1	$61,150
	95694	8.1	$55,163
	95618	7.2	$82,313
	95620	10.5	$71,261
	95625	0.0	$75,114
	95687	9.4	$73,583
	95688*	10.5	$79,452
	Solano County	12.1	$67,177
	CA State	11.5	$61,094

Source: Census, 2013

**Indicates Focus Community*

As Table 29 shows, unemployment rates in the Solano County HSA were highest in ZIP codes 94571 (Rio Vista) at 24.1% and 94590 (South/Central Vallejo) at 19.0% both clearly over the Solano County percent of 12.1% and state percent of 11.5%. Seven ZIP codes had median incomes below that of the county. The lowest median incomes were seen in ZIP codes 94590 (South/Central Vallejo) and 94535 (Travis AFB).

Percent -- Population living in poverty, families with children, single female headed households, and elderly households

Table 30: Percent populations living in poverty, percent families with children in poverty, percent single FHH in poverty, and percent elderly households in poverty

Poverty	ZIP Code	Percent Under 100% Federal Poverty Level	Percent Families with Children in Poverty	Percent Single Female Headed Households (FHH) in Poverty	Percent Elderly Households in Poverty
	94510	5.7	7.3	24.1	1.3
	94512	0.0	0.0	0.0	0

	94533*	17.9	21.1	38.6	2.51
	94534	5.4	6.2	23.6	0.8
	94535	12.7	14.0	52.7	0
	94571*	10.9	8.4	43.7	2.48
	94585	13.4	14.9	32.3	0.47
	94589*	17.7	21.6	34.5	2.74
	94590*	25.0	29.0	41.6	3.53
	94591*	12.5	16.6	35.3	1.5
	94592	6.0	11.1	100.0	0
	95690	14.0	15.3	0.0	1.21
	95694	10.7	14.0	14.7	2.11
	95618	18.8	7.0	24.0	1.24
	95620	11.2	14.2	40.3	1.48
	95625	11.7	0.0	0.0	0
	95687	9.1	10.3	26.0	1.44
	95688*	10.1	12.4	37.3	1.53
	Solano County	13.0	15.4	34.2	1.8
	CA State	15.9	17.8	36.8	2.26

Source: Census, 2013
******Indicates Focus Community*

Six of the 18 ZIP codes had a higher percent of the population living under the 100% poverty level, relative to the county benchmark. ZIP code 94590 (South/Central Vallejo) had a rate that was drastically higher than the county and state benchmarks. ZIP codes with the highest percentage of children living in poverty were seen in 94533 (East Fairfield), 94589 (North Vallejo), 94590 (South/Central Vallejo) and 94591 (East Vallejo), with ZIP code 94589 (North Vallejo) having the highest percentage (21.6%) in Solano County. ZIP code 94590 (South/Central Vallejo), had the highest rate of female-headed households and elderly households in poverty in the entire Solano County HSA.

Percent -- Population uninsured

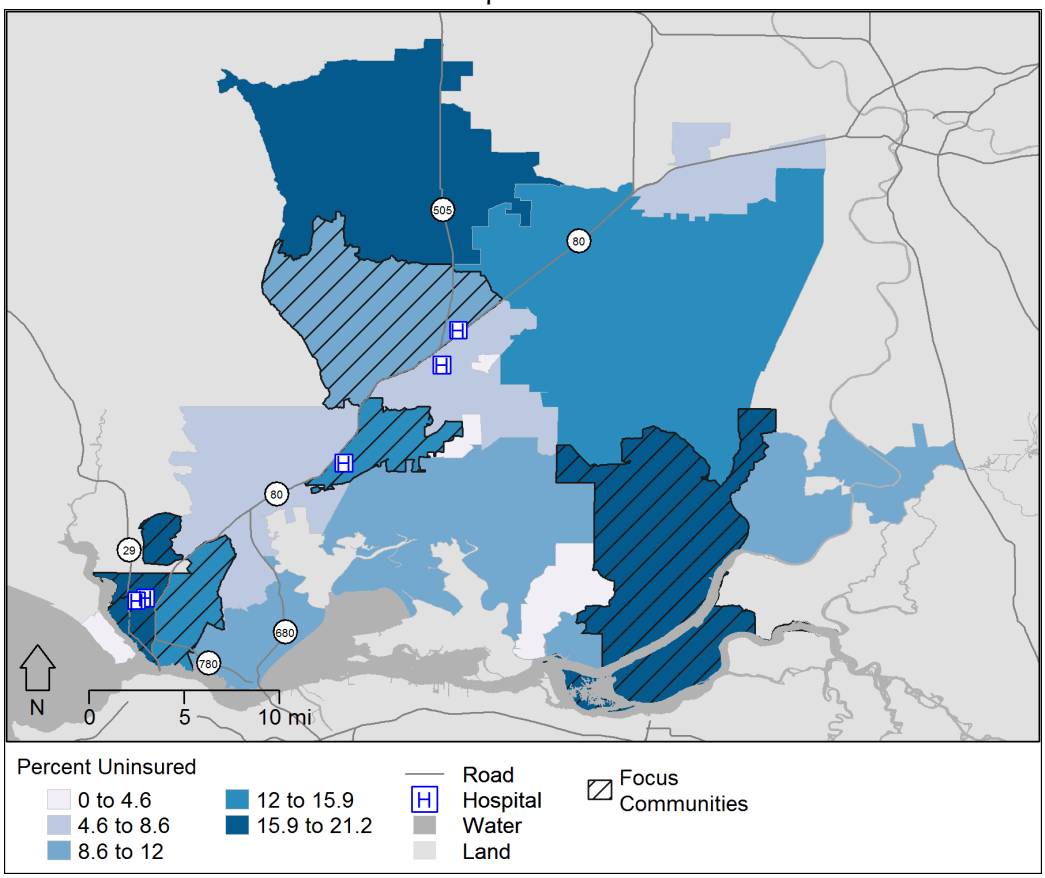

Figure 24: Percent uninsured by ZIP code in the HSA
Source: US Census Bureau, 2009 - 2013

According to the US Census Bureau, American Community Survey (2009-2013), the percent of population without insurance for Solano County was 12.5% while the state level was 17.8%. Six of the 18 Solano County ZIP codes had a larger percent of population that was uninsured compared to the county and state benchmarks. The highest percentages were found in ZIP codes 94571 (Rio Vista) and 94589 (North Vallejo) and 94590 (South/Central Vallejo).

Service Environment
This assessment examined access to care measures and education in order to best understand the service environment for the Solano County HSA. Information in this section of the report examine access to care for primary care, mental health care and dental health.

Access to care (Primary Care, Mental Health, and Dental)

Rate -- Primary care physicians per 100,000 population
Data from the US Department of Health and Human Services revealed that the rate of primary care physicians per 100,000 population was 77.70 for Solano County in 2012, barely above the state rate of 77.20.

Area -- Health Professional Shortage Area -- Primary Care
Health Professional Shortage Areas (HPSAs) are designated by the US Government Health Resources and Services Administration (HRSA) as having shortages of primary medical, dental, or mental health providers;

these shortages may be geographic (e.g., a county or service area), demographic (e.g., a low income population) or institutional (e.g., comprehensive health center, federally qualified health center, or other public facility).[28]

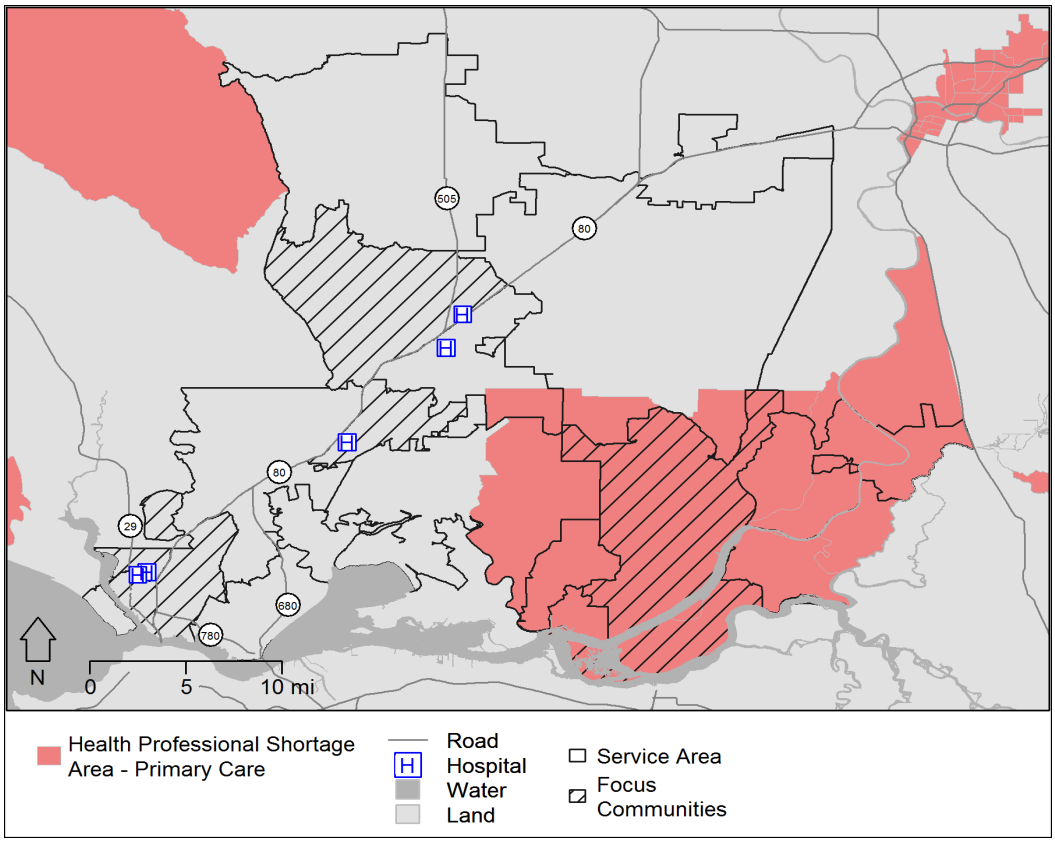

Figure 25: Primary care HPSA in the HSA
Source: Health Resources and Services Administration, 2015

Solano County ZIP codes 94512 (Birds Landing), 94535 (Travis AFB), 94571 (Rio Vista), 94585 (Suisun City), 95690 (Walnut Grove), 95694 (Winters), 95620 (Dixon) and 95687 (East Vacaville) all had portions of their ZIP codes that were designed HPSA for Primary Care.

Percent -- Prenatal care in the 1st trimester and low birth weight
Prenatal care during the first trimester has been linked to improved health outcomes of pregnancy for both mothers and infants. The most significant benefits of early and ongoing prenatal care include healthy birth weight and decreased risk of preterm delivery[29].

[28] Health Resources and Services Administration. (n.d.). *Primary Medical Care HPSA: Designation Overview*. Retrieved from: http://bhpr.hrsa.gov/shortage/hpsas/designationcriteria/primarycarehpsaoverview.html

[29] Human Resources and Services Administration (n.d.) Prenatal – First Trimester Care Access. Retrieved from: http://www.hrsa.gov/quality/toolbox/measures/prenatalfirsttrimester/

Table 31: Percent of live births with the mother receiving prenatal care in the 1st trimester and percent of births with low birth weight

	ZIP Code	Percent of Live Births with Prenatal Care in 1st Trimester	Percent of Births with Low Birth Weight
Prenatal Health	94510	86.6	6.1
	94512	N/A	0.0
	94533*	69.4	6.9
	94534	83.4	7.1
	94535	78.0	6.7
	94571*	78.2	6.7
	94585	77.2	6.3
	94589*	77.2	7.9
	94590*	76.2	7.8
	94591*	81.3	7.0
	94592	N/A	0.0
	95690	77.7	6.7
	95694	81.1	6.0
	95618	86.8	6.2
	95620	79.9	5.5
	95625	N/A	0.0
	95687	77.8	6.2
	95688*	77.2	6.1
	Solano County	77.8	6.7
	CA State	83.6	6.8

Source: CDPH, 2010-2012

*****_Indicates Focus Community_

Data revealed that 13 Solano County ZIP codes had lower percentages of mothers who received prenatal care in the first trimester compared to the state percentage. The ZIP code with the lowest percent of mothers receiving prenatal care in the first trimester was 94533 (East Fairfield). Additionally, ten ZIP codes had higher percentages of low birth weight babies compared to the county benchmark. The ZIP code with the highest percent of low birth weight babies was 94589 (North Vallejo), followed by 94590 (South/Central Vallejo).

Percentage – Early entry to prenatal care by birth year and payor source

Figure 28 displays the percentage of women in Solano County who used public or private insurance for prenatal care during their first trimester from 2007 – 2015.

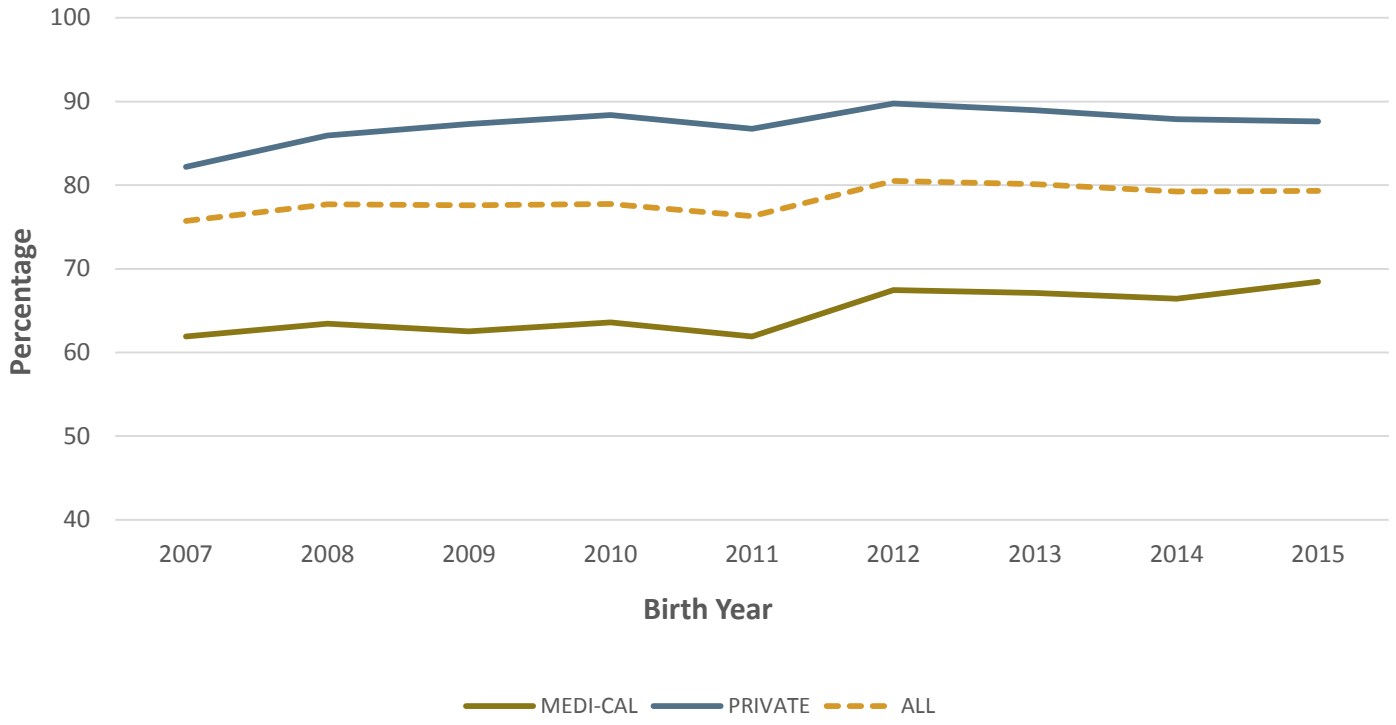

Figure 26: Early entry to prenatal care by birth year and payor source
Source: Solano County Public Health Department, 2007 – 2015

On average, women with Medi-Cal insurance had 34% lower early entry to prenatal care compared to women with private insurance in the past 9 years. Rates by race and ethnicity showed that on average over the last nine years, 82% of Whites had prenatal care during the first trimester, compared to 75% of Blacks and 74% of Hispanics.

Rate -- Federally Qualified Health Centers per 100,000 population
Data from the US Department Health and Human Services for 2015 indicated that the rate of Federally Qualified Health Centers (FQHCs) in the Solano County HSA (2.88 FQHCs per 100,000) was higher than the state rate (1.97 FQHCs per 100,000).

Rate -- Preventable hospital events per 10,000 population (age-adjusted)
The rate of preventable hospitalizations reported by the Office of Statewide Health Planning and Development (OSHPD) for 2011 in Solano County was 80.58 events per 10,000 population versus the state rate of 83.17 per 10,000 population. Preventable hospital events are ambulatory care sensitive conditions which could have been prevented if adequate access to primary care was available and utilized by the community.

Rate -- Mental health providers per 100,000 population
Data from the US Department of Health and Human Services for 2015 revealed that the rate of mental health providers per 100,000 population was 169.5 for Solano County, compared to the state rate of 157.0 per 100,000 population.

Area -- Healthy Professional Shortage Area (HPSA)- Mental Health
Figure 29 displays areas in Solano County that are HPSAs for mental health providers. ZIP codes 94571 (Rio Vista), 95694 (Winters), 95620 (Dixon) and 95618 (Davis) all contain areas which are designated as HPSAs for mental health providers.

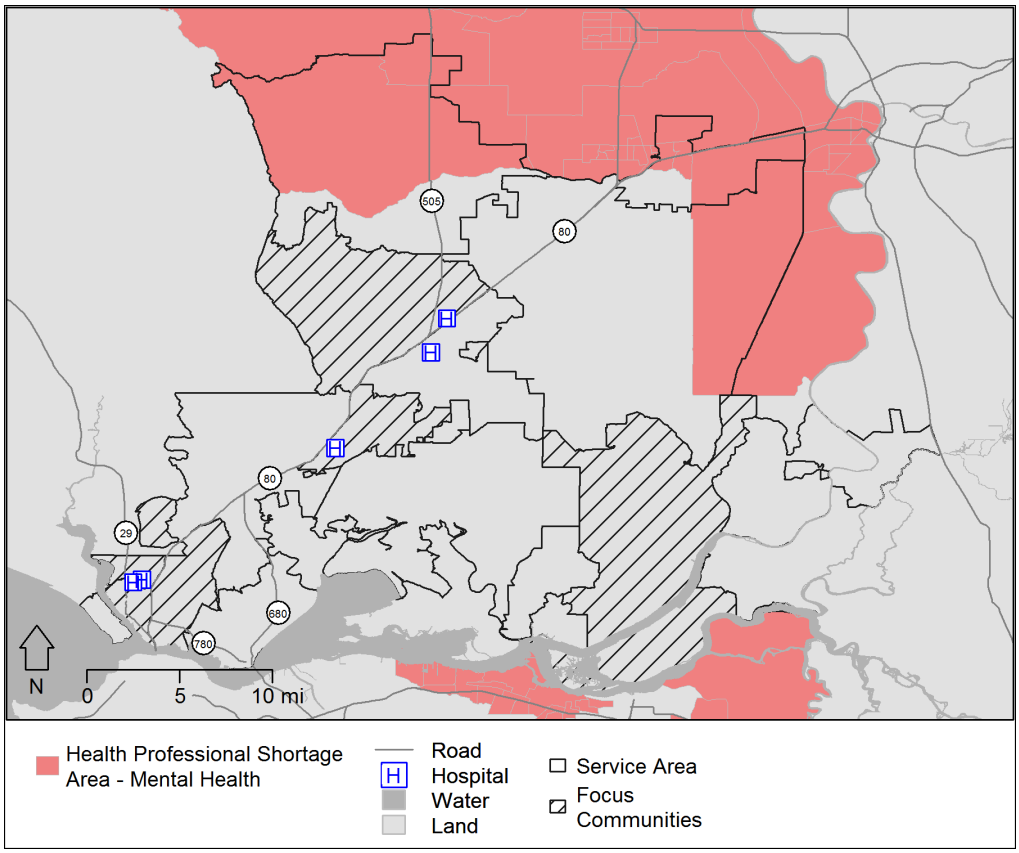

Figure 27: Mental health HPSA in the HSA
Source: Health Resources and Services Administration, 2015

Rate -- Dental health providers per 100,000 population
Data from the US Department of Health and Human Services for 2013 revealed that the rate of dental health providers per 100,000 population was 85.5 for Solano County, compared to the state rate of 77.5 per 100,000 population.

Area -- Healthy Provider Shortage Area- Dental Health
There were no federally designated HPSAs for dental care in Solano County.

Education
Educational attainment is important for overall health and wellbeing. Education is positively associated with health status.

Percent -- High school students graduating in four years
The California Department of Education reports the high school graduation rate as the percent of high school students receiving their high school diploma in four years. The high school graduation rate in 2013 for Solano County was 81.5%, slightly above the state percent at 80.4%. Rates by race and ethnicity showed that 88.2% of

Whites graduate in four years, compared to 69.9% of Blacks, 75.7% of Hispanic/Latinos, 91.0% of Asians and 88.0% of non-Hispanic other.

Percent -- Adults over the age of 25 with no high school diploma

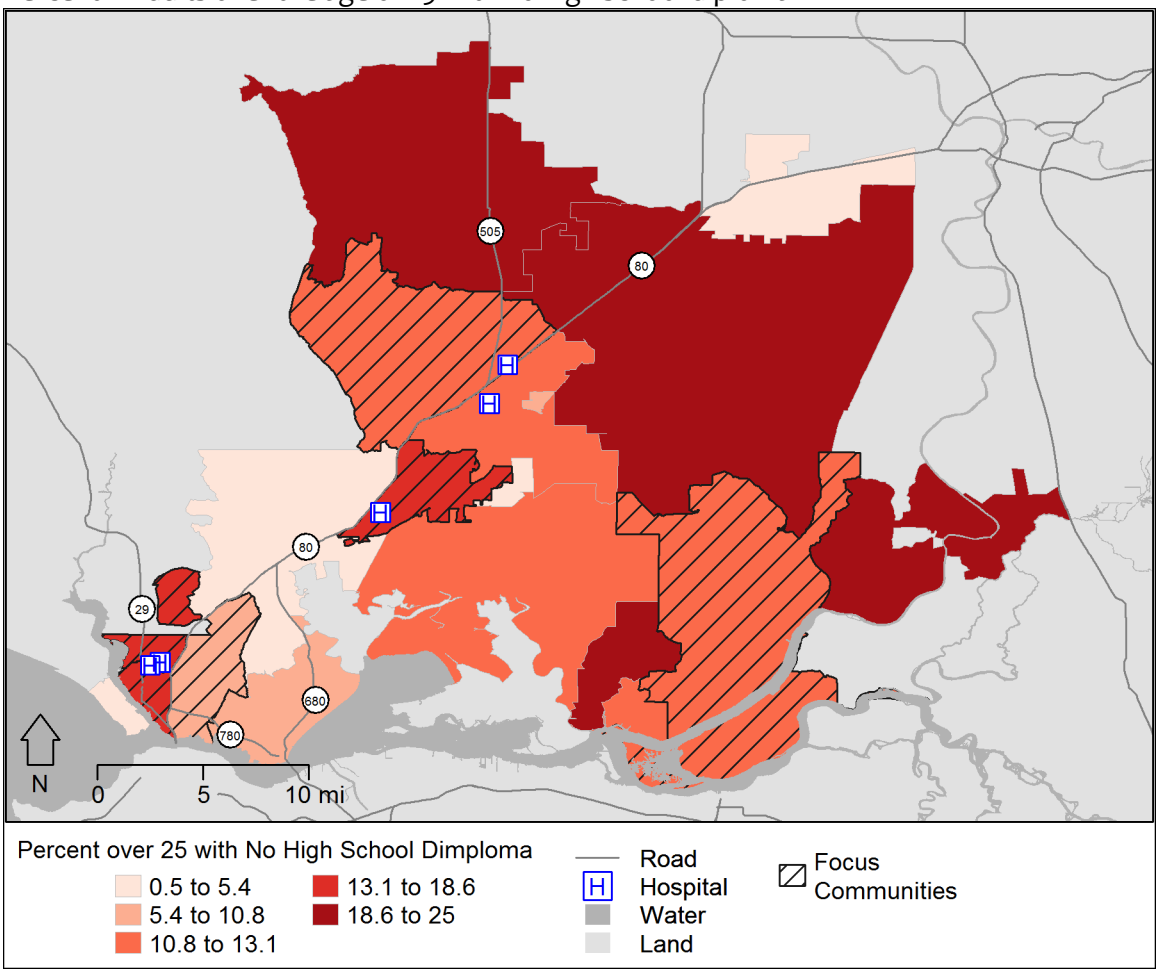

Figure 28: Percent over 25 years old with no high school diploma
Source: 2013 American Community Survey, 5-year estimates

The percent of residents with no high school diploma in the county was 12.8%, lower than the state percent of 18.8%. Seven of 18 Solano County ZIP codes had a higher percentage of residents without a diploma than both the county and state benchmarks. The highest percent was in 94512 (Birds Landing) at 25.0%.

Percent -- Non-proficient reading level in fourth grade

Data from the California Department of Education for 2012-2014 indicated that 38.0% of 4th graders in Solano County were not proficient in reading at the 4th grade level, slightly above the state benchmark of 36.0%. Reading proficiency in fourth grade is important because it is linked to poverty, unemployment and barriers to healthcare access. Percent of reading proficiency differs significantly by race and ethnicity. While 27.0% of White students were not proficient, 54.0% of Black students, 46% of Hispanic/Latino students, 41.2% of Native American/Alaskan Native students, 50.8% of Native Hawaiian/Pacific Islander students, and 24.9% of Asian students were not proficient.

Percent -- 3 and 4 year olds enrolled in preschool
Data from the US Census Bureau for 2009-2013 indicated that 46.5% of 3 and 4 year olds in the Solano County HSA are in preschool, below the state benchmark of 49.1%. This data is important as access to early education is a social determinant of health.

Rate -- Suspensions per 100 students
The rate of suspensions as reported by the California Department of Education for the Solano County HSA was 12.40 per 100 students, three times above the state rate of 4.04 per 100 students. This is an important health indicator because it is related to educational attainment and high school dropout rates.

Social Services
Indicators used in this assessment to examine social services included data on the percent of population receiving services including public insurance, Medicaid, public assistance, and percent of families eligible for free and reduced lunch.

Percent -- Population on public health insurance

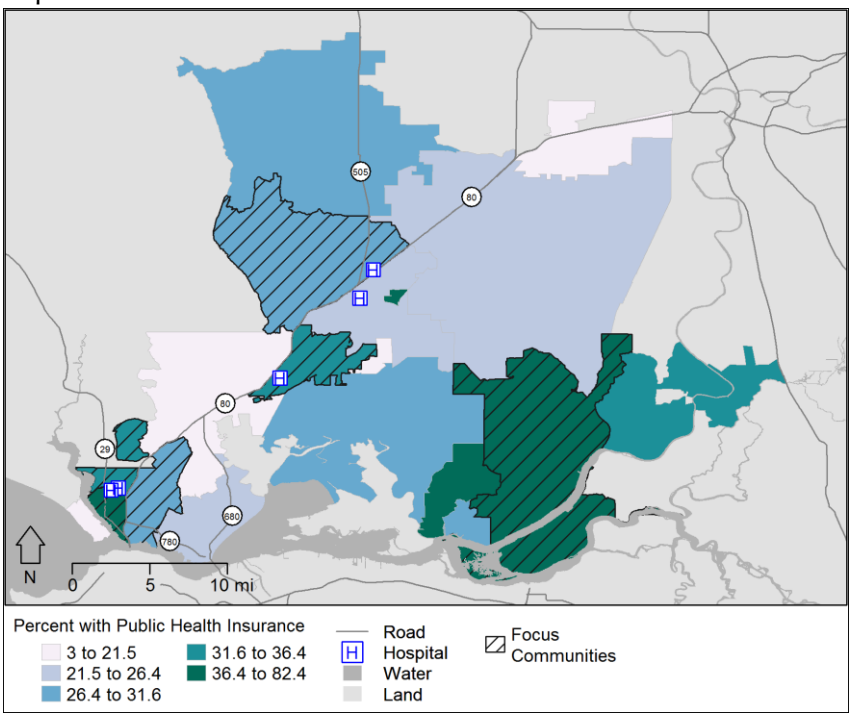

Figure 29: Percent of population on public health insurance
Source: 2013 American Community Survey, 5-year estimates

Data on the percent of population utilizing public insurance showed clear economic and access disparities. Eight of the 18 ZIP codes in Solano County had high percentages of population on public insurance in the range of 31.2% to 82.4% of residents. ZIP code 96525 (Elmira) had the highest percentage at 80.4%, drastically higher than the county percent of 32.5% and state at 29.5%.

Percent -- Population receiving Medicaid (Medi-Cal)
Though the above data provides information on the percent of population on all sources of public health insurance, the US Census Bureau reports the percent of population receiving just Medicaid. For the Solano County HSA, 19.2% of residents receive Medicaid, below the state percent at 23.4%.

Percent -- Population receiving public assistance

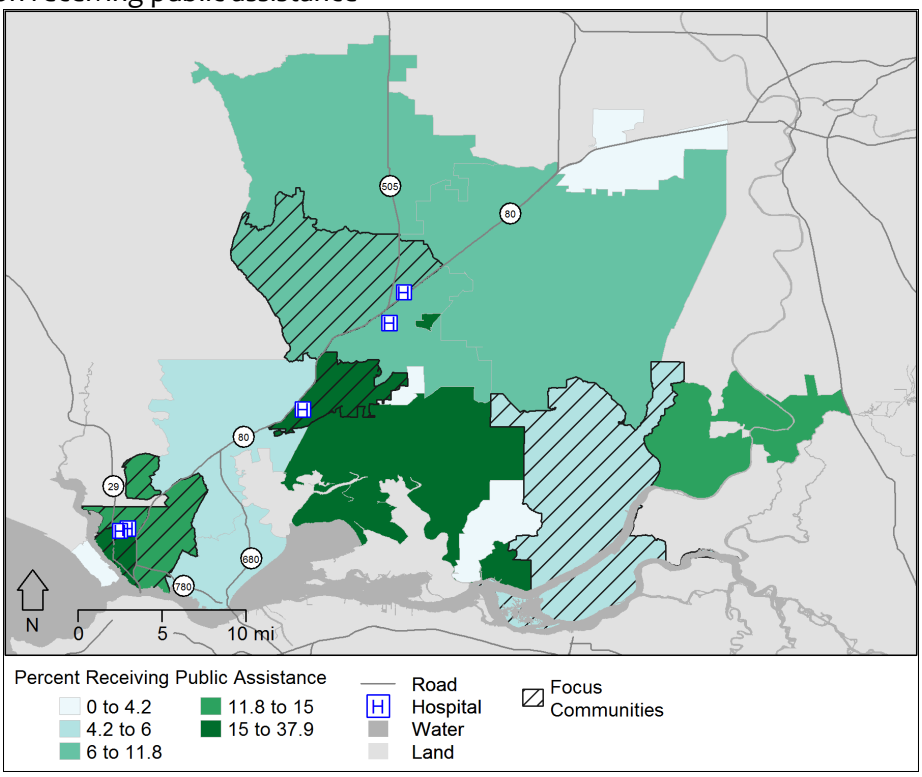

Figure 30: Percent of population receiving public assistance
Source: 2013 American Community Survey, 5-year estimates

The percent of population receiving public assistance varied greatly across the HSA. ZIP code 95625 (Elmira) had the highest percent at 37.9%, significantly above both the county (11.7%) and state (12.1%) benchmarks.

Percent -- Students eligible for Free and Reduced Price Lunch in schools

Data from the National Center for Education Statistics in 2013-2014 indicated that 50.0% of school age children in the Solano County HSA were eligible for Free and Reduced Price Lunch, below the state percent of 58.1%. This indicator is important because it identifies service needs associated with poverty, which is a social indicator of health status in a community.

CONCLUSION

CHSA helps the health care networks, as well as other community organizations, determine where to focus community benefit and improvement efforts, including geographic locations and specific populations living in their service areas. The intention of the CHSA is to assist in improving the lives of health service area residents, and the larger geographical area served. Results provided in this assessment will help inform efforts with work towards creating a healthier community and a better quality of life.

APPENDICES

Appendix A: Secondary Data Dictionary and Processing

Introduction

The secondary data supporting the 2016 Community Health Needs Assessment (CHNA) was collected from a variety of sources, and was processed in multiple stages before it was used for analysis. This document details those various stages. Approaches used to define ZIP code boundaries, and the approaches that were used to integrate records reported for PO boxes into the analysis are described. General data sources are then listed, followed by a description of the basic processing steps applied to most variables. It concludes by detailing additional specific processing steps used to generate a subset of more complicated indicators.

HSA vs. County Benchmark Rates

Due to data availability, the service area for the Solano 2016 Community Health Needs Assessment was defined in two separate ways. One approach was to use Solano County as the service area. While this approach was the most natural, and best reflected the focus area of collaborative members, it did not allow for a consideration of variation in conditions across the county. An alternative approach was also used, where the service area was defined based on ZIP Code Tabulation Areas (ZCTAs), as defined by the US Census Bureau. In this approach, all ZCTAs that had a meaningful overlap with Solano County were included in the analysis. The benefit of this approach was that it allowed for the calculation of morbidity and mortality rates based on data available at the ZIP code level. This allowed for a better understanding of how these conditions varied within the county.

These different service area definitions also lead to the creation of different benchmarks representing the overall conditions within the study area. For indicators reported at the actual county level, county rates were either obtained or calculated for the county as a whole. Some indicators were not available at the county level. In these instances, benchmark rates were calculated for the set of ZCTAs (or estimated for ZIP codes, depending on the indicator). Rates calculated for the set of ZCTAs contained in the service area were found by summing cases across all ZCTAs, and dividing that number by the sum of the appropriate denominator across all ZCTAs. Service area rates obtained from the Kaiser Permanente Community Commons Data Platform (CCDP) were estimated using a process described on their community commons platform. In most cases, the service area values represent the aggregate of all data for geographies (ZIP codes, counties, tracts, etc.) which fall within the service area boundary. For more detail, visit the CCDP (http://www.communitycommons.org/groups/community-health-needs-assessment-chna/chna-data-platform/faqs/).

ZIP Code Definitions

All morbidity and mortality variables collected in this analysis are reported by patient mailing ZIP codes. ZIP codes are defined by the US Postal Service as a single location (such as a PO Box), or a set of roads along which addresses are located. The roads that comprise such a ZIP code may not form contiguous areas, and do not match the approach of the US Census Bureau, which is the main source of population and demographic information in the US. Instead of measuring the population along a collection of roads, the Census reports population figures for distinct, contiguous areas. In an attempt to support the analysis of ZIP code data, the Census Bureau created ZIP Code Tabulation Areas (ZCTAs). ZCTAs are created by identifying the dominant ZIP code for addresses in a given Census block (the smallest unit of Census data available), and then grouping blocks with the same dominant ZIP code into a corresponding ZCTA. The creation of ZCTAs allows us to identify population figures that, in combination the morbidity and mortality data reported at the ZIP code level, allow us

to calculate rates for each ZCTA. But the difference in the definition between mailing ZIP codes and ZCTAs has two important implications for analyses of ZIP level data.

First, it should be understood that ZCTAs are approximate representations of ZIP codes, rather than exact matches. While this is not ideal, it is nevertheless the nature of the data being analyzed. Secondly, not all ZIP codes have corresponding ZCTAs. Some PO Box ZIP codes or other unique ZIP codes (such as a ZIP code assigned to a single facility) may not have enough addressees residing in a given census block to ever result in the creation of a ZCTA. But residents whose mailing addresses correspond to these ZIP codes will still show up in reported morbidity and mortality data. This means that rates cannot be calculated for these ZIP codes individually because there are no matching ZCTA population figures.

In order to incorporate these patients into the analysis, the point location (latitude and longitude) of all ZIP codes in California[30] were compared to ZCTA boundaries[31]. Because various morbidity and mortality data sources were available in different years, this comparison was made between the ZCTA boundaries and the point locations of ZIP codes in April of the year (or the final year in the case of variables aggregated over multiple years) for which the morbidity and mortality variables were reported. All ZIP codes (whether PO Box or unique ZIP code) that were not included in the ZCTA dataset were identified. These ZIP codes were then assigned to either ZCTA that they fell inside of, or in the case of rural areas that are not completely covered by ZCTAs, the ZCTA to which they were closest. Morbidity and mortality information associated with these PO Box or unique ZIP codes were then assigned added to the ZCTAs to which they were assigned.

For example, 94609 is a PO Box located in Carmichael. 94609 is not represented by a ZCTA, but it could have patient data reported as morbidity and mortality variables. Through the process identified above, it was found that 94609 is located within 94608, which does have an associated ZCTA. Morbidity and mortality data for ZIP codes 94609 and 94608 were therefore assigned to ZCTA 94608, and used to calculate rates. All ZIP code level morbidity and mortality variables given in this report are therefore actually reporting approximate rates for ZCTAs. But for the sake of familiarity of terms they are presented in the body of the report as ZIP code rates.

Data Sources

The majority of mortality, morbidity, and socio-economic variables were collected from three main data sources: the US Census Bureau (Census), the California Office of Statewide Health Planning and Development (OSHPD), and the California Department of Public Health (CDPH). Census data was collected both to provide descriptions of population characteristics for the study area, as well as to calculate rates for morbidity and mortality variables. Table 42 below lists the 2013 population characteristic variables and sources. Table 43 below lists sources for variables used to calculate morbidity and mortality rates, which were collected for 2012, 2013, and 2014. These demographic variables were collected variously at the Census blocks and tracts, ZCTA, county, and state levels. In urban areas, Census blocks are roughly equivalent to a city block, and tracts to a neighborhood. Health outcome and health behavior indicators were also collected from the Kaiser Permanente Community Commons Data Platform (CCDP) to compliment the indicators already collected from other sources.

Kaiser Permanente Community Commons Data Platform

The Community Commons Data Platform (CCDP) is a web-based platform designed to assist hospitals, non-profit organizations, state and local health departments, financial institutions and other organizations seeking to better understand the needs and assets of their communities. The CCDP was used to collect additional

[30] Datasheer, L.L.C. (2015, April 15). *ZIP Code Database DELUXE BUSINESS.* Retrieved from Zip-Codes.com: http://www.Zip-Codes.com

[31] U.S. Census Bureau. (2015). *TIGER/Line® Shapefiles and TIGER/Line® Files.* Retrieved August 31, 2011, from http://www.census.gov/geo/maps-data/data/tiger-line.html

indicators, including indicators by race and ethnicity, in order to better understand what is driving health in the community and prioritize issues that require the most urgent attention. The list of CCDP indicators used is detailed below in Table 46, Remaining Secondary Indicators.

Table 32: Demographic variables collected from the US Census Bureau[32]

Derived Variable Name	Source Variable Names	Source
Percent Minority (Hispanic or non-White)	Total Population - Not Hispanic or Latino: - White alone	2013 American Community Survey 5-year Estimate Table B03002
Population 5 Years or Older who speak Limited English	For age groups 5 to 17; 18 to 64; and 65 years and over: Speak Spanish: - Speak English "not well"; Speak Spanish: - Speak English "not at all"; Speak other Indo-European languages: - Speak English "not well"; Speak other Indo-European languages: - Speak English "not at all"; Speak Asian and Pacific Island languages: - Speak English "not well"; Speak Asian and Pacific Island languages: - Speak English "not at all"; Speak other languages: - Speak English "not well"; Speak other languages: - Speak English "not at all"	2013 American Community Survey 5-year Estimate Table B16004
Percent Households 65 years or Older in Poverty	Income in the past 12 months below poverty level: - Family households: - Married-couple family: - Householder 65 years and over; Income in the past 12 months below poverty level: - Family households: - Other family: - Male householder, no wife present: - Householder 65 years and over; Income in the past 12 months below poverty level: - Family households: - Other family: - Female householder, no husband present: - Householder 65 years and over; Income in the past 12 months below poverty level: - Nonfamily households: - Male householder: - Householder 65 years and over; Income in the past 12 months below poverty level: - Nonfamily households: - Female householder: - Householder 65 years and over; Total Households	2013 American Community Survey 5-year Estimate Table B17017
Median income	Estimate; Median household income in the past 12 months (in 2013 inflation-adjusted dollars)	2013 American Community Survey 5-year Estimate Table B19013
GINI Coefficient	Gini Index	2013 American Community

[32] U.S. Census Bureau. (2015). *2013 American Community Survey 5-year estimates; 2012 American Community Survey 5-year estimates; 2011 American Community Survey 5-year estimates..* Retrieved February 14, 2015, from American Fact Finder: http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t

		Survey 5-year Estimate Table B19083
Average Population per Housing Unit	Total population in occupied housing units	2013 American Community Survey 5-year Estimate Table B25008
Percent with Income Less Then Federal Poverty Level	Total: - Under .50; Total: - .50 to .99	2013 American Community Survey 5-year Estimate Table C17002
Percent Foreign Born	Total population - Foreign born	2013 American Community Survey 5-year Estimate Table DP02
Percent Non-Citizen	Foreign-born population - Not a U.S. citizen	2013 American Community Survey 5-year Estimate Table DP02
Percent Over 18 that are Civilian Veterans	VETERAN STATUS - Civilian population 18 years and over - Civilian veterans	2013 American Community Survey 5-year Estimate Table DP02
Percent Civilian Noninstitutionalized Population with a Disability	DISABILITY STATUS OF THE CIVILIAN NONINSTITUTIONALIZED POPULATION - Total Civilian Noninstitutionalized Population	2013 American Community Survey 5-year Estimate Table DP02
Percent with Public Assistance	INCOME AND BENEFITS (IN 2013 INFLATION-ADJUSTED DOLLARS) – With Food Stamp/SNAP benefits in the past 12 months	2013 American Community Survey 5-year Estimate Table DP03
Percent with Public Insurance	HEALTH INSURANCE COVERAGE - Civilian noninstitutionalized population - With health insurance coverage - With public coverage	2013 American Community Survey 5-year Estimate Table DP03
Percent Renter Occupied Households	Occupied housing units - Renter-occupied	2013 American Community Survey 5-year Estimate Table DP04
Percent Vacant Housing Units	Total housing units - Vacant housing units	2013 American Community Survey 5-year Estimate Table DP04
Percent Households with No Vehicle	Occupied housing units - No vehicles available	2013 American Community Survey 5-year Estimate Table DP04
Percent Households with Commute Times to work 60 minutes or more	Workers with travel times 60 to 89 minutes; workers with travel times 90 minutes or more; Total workers 16 years and over who did not work at home;	2013 American Community Survey 5-Year Estimate Table B08012
Total Population	Total population	2013 American Community Survey 5-year Estimate Table DP05
Percent Asian (not Hispanic)	Total population - Not Hispanic or Latino - Asian alone	2013 American Community Survey 5-year Estimate

		Table DP05
Percent Black (not Hispanic)	Total population - Not Hispanic or Latino - Black or African American alone	2013 American Community Survey 5-year Estimate Table DP05
Percent Hispanic (any race)	Total population - Hispanic or Latino (of any race)	2013 American Community Survey 5-year Estimate Table DP05
Percent American Indian (not Hispanic)	Total population - Not Hispanic or Latino - American Indian and Alaska Native alone	2013 American Community Survey 5-year Estimate Table DP05
Percent Pacific Islander (not Hispanic)	Total population - Not Hispanic or Latino - Native Hawaiian and Other Pacific Islander alone	2013 American Community Survey 5-year Estimate Table DP05
Percent White (not Hispanic)	Total population - Not Hispanic or Latino - White alone	2013 American Community Survey 5-year Estimate Table DP05
Percent Other or Two or More Races (not Hispanic)	Total population - Not Hispanic or Latino - Some other race alone; Total population - Not Hispanic or Latino - Two or more races	2013 American Community Survey 5-year Estimate Table DP05
Percent Female	Total population – Female	2013 American Community Survey 5-year Estimate Table DP05
Percent Male	Total population – Male	2013 American Community Survey 5-year Estimate Table DP05
Median Age	Median age (years)	2013 American Community Survey 5-year Estimate Table DP05
Population by Age Group	Under 5 years; 5 to 9 years; 10 to 14 years; 10 to 14 years; 20 to 24 years; 25 to 34 years; 35 to 44 years; 5 to 54 years; 55 to 59 years; 60 to 64 years; 65 to 74 years; 75 to 84 years; 85 years and over	2013 American Community Survey 5-year Estimate Table DP05
Percent Single Female Headed Households	Female householder, no husband present, family household	2013 American Community Survey 5-year Estimate Table S1101
Percent 25 or Older	100 - Percent high school graduate or higher	2013 American Community

Without a High School Diploma		Survey 5-year Estimate Table S1501
Percent Families with Children in Poverty	All families - Percent below poverty level; Estimate; With related children under 18 years	2013 American Community Survey 5-year Estimate Table S1702
Percent Single Female Headed Households in Poverty	Female householder, no husband present - Percent below poverty level; Estimate; With related children under 18 years	2013 American Community Survey 5-year Estimate Table S1702
Percent Unemployed	Unemployment rate; Estimate; Population 16 years and over	2013 American Community Survey 5-year Estimate Table S2301
Percent Uninsured	Percent Uninsured; Estimate; Total civilian noninstitutionalized population	2013 American Community Survey 5-year Estimate Table S2701
Percent of Homeowners with Mortgage with Housing Costs above 30% of Income	Percent; SELECTED MONTHLY OWNER COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME (SMOCAPI) - Housing units with a mortgage (excluding units where SMOCAPI cannot be computed) - 30.0 to 34.9 percent; Percent; SELECTED MONTHLY OWNER COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME (SMOCAPI) - Housing units with a mortgage (excluding units where SMOCAPI cannot be computed) - 35.0 percent or more	2013 American Community Survey 5-year Estimate Table DP04
Percent of Homeowners with no Mortgage with Housing Costs above 30% of Income	Percent; SELECTED MONTHLY OWNER COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME (SMOCAPI) - Housing unit without a mortgage (excluding units where SMOCAPI cannot be computed) - 30.0 to 34.9 percent; Percent; SELECTED MONTHLY OWNER COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME (SMOCAPI) - Housing unit without a mortgage (excluding units where SMOCAPI cannot be computed) - 35.0 percent or more	2013 American Community Survey 5-year Estimate Table DP04
Percent of Renters with Rent above 30% of Income	Percent; GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI) - Occupied units paying rent (excluding units where GRAPI cannot be computed) - 30.0 to 34.9 percent; Percent; GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI) - Occupied units paying rent (excluding units where GRAPI cannot be computed) - 35.0 percent or more	2013 American Community Survey 5-year Estimate Table DP04
Percent of All Housing Units with Housing Costs above 30% of Income	Percent; SELECTED MONTHLY OWNER COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME (SMOCAPI) - Housing units with a mortgage (excluding units where SMOCAPI cannot be computed) - 30.0 to 34.9 percent; Percent; SELECTED MONTHLY OWNER COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME (SMOCAPI) - Housing units with a mortgage (excluding units where SMOCAPI cannot be computed) - 35.0 percent or more;	2013 American Community Survey 5-year Estimate Table DP04

	Percent; GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI) - Occupied units paying rent (excluding units where GRAPI cannot be computed) - 30.0 to 34.9 percent; Percent; GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI) - Occupied units paying rent (excluding units where GRAPI cannot be computed) - 35.0 percent or more; Percent; GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI) - Occupied units paying rent (excluding units where GRAPI cannot be computed) - 30.0 to 34.9 percent; Percent; GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME (GRAPI) - Occupied units paying rent (excluding units where GRAPI cannot be computed) - 35.0 percent or more; Housing units with a mortgage (excluding units where SMOCAPI cannot be computed); Housing unit without a mortgage (excluding units where SMOCAPI cannot be computed);Occupied units paying rent (excluding units where GRAPI cannot be computed)

Table 33: Census variables used for mortality and morbidity rate calculations[3,33]

Derived Variable Name	Source Variable Names	Source
Total Population	Total Population	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014) 2010 Decennial Census Summary File 1
Female	Female	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014)
Male	Male	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014)
Age Under 1	DP05: Under 5 years PCT12: Male and Female, ages under 1, 1, 2, 3, and 4	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014); 2010 Decennial Census Summary File 1 Table PCT12
Age 1 to 4	DP05: Under 5 years PCT12: Male and Female, ages under 1, 1, 2, 3, and 4	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014); 2010 Decennial Census Summary File 1 Table PCT12
Age 5 to 14	5 to 9 years; 10 to 14 years	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014)
Age 15 to 24	15 to 19 years; 20 to 24 years	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014)
Age 25 to 34	25 to 34 years	American Community Survey 5-year Estimate

[33] U.S. Census Bureau. (2013). *2010 Census Summary File 1.* Retrieved February 14, 2013, from American Fact Finder: http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t

Age 35 to 44	35 to 44 years	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014)
Age 45 to 54	45 to 54 years	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014)
Age 55 to 64	55 to 59 years; 60 to 64 years	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014)
Age 65 to 74	65 to 74 years	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014)
Age 75 to 84	75 to 84 years	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014)
Age 85 and over	85 years and over	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014)
White	HISPANIC OR LATINO AND RACE - Total population - Not Hispanic or Latino - White alone	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014)
Black	HISPANIC OR LATINO AND RACE - Total population - Not Hispanic or Latino - Black or African American alone	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014)
Hispanic	HISPANIC OR LATINO AND RACE - Total population - Hispanic or Latino (of any race)	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014)
Native American	HISPANIC OR LATINO AND RACE - Total population - Not Hispanic or Latino - American Indian and Alaska Native alone	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014)
Asian/Pacific Islander	HISPANIC OR LATINO AND RACE - Total population - Not Hispanic or Latino - Asian alone; HISPANIC OR LATINO AND RACE - Total population - Not Hispanic or Latino - Native Hawaiian and Other Pacific Islander alone	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013, 2014)

Collected morbidity and mortality data included the number of emergency department (ED) discharges, hospital (H) discharges, and mortalities associated with a number of conditions, as well as various cancer and STI incidence rates. Aggregated 2011 – 2013 ED and H discharge data were obtained from the Office of Statewide Health Planning and Development (OSHPD). Table 44 lists the specific variables collected by ZIP code and county. These values report the total number of ED or H discharges that listed the corresponding ICD9 code as either a primary or any secondary diagnosis, or a principle or other E-code, as the case may be. In addition to reporting the total number of discharges associated with the specified codes per ZIP code/county, this data was also broken down by sex (male and female), age (under 1 year, 1 to 4 years, 5 to 14 years, 15 to 24 years, 25 to 34 years, 35 to 44 years, 45 to 54 years, 55 to 64 years, 65 to 74, 75 to 84 years, and 85 years or older), and normalized race and ethnicity (Hispanic of any race, non-Hispanic White, non-Hispanic Black, non-Hispanic Asian or Pacific Islander, non-Hispanic Native American.

Table 34: 2011 – 2013 OSHPD hospitalization and emergency department discharge data

Category	Variable Name	ICD9/E-Codes
Cancer	Breast Cancer	174, 175
	Colorectal Cancer	153, 154
	Lung Cancer	162, 163
	Prostate Cancer	185
Chronic Disease	Diabetes	250
	Hypertension	401-405
	Heart Disease	410-417, 428, 440, 443, 444, 445, 452
	Chronic Kidney Disease	580-589
	Stroke	430-436, 438
Infectious Disease	HIV/AIDS	042-044
	STIs	042-044, 090-099, 054.1, 079.4
	Tuberculosis	010-018, 137
Injuries[34]	Assault	E960-E969, E999.1
	Self-Inflicted Injury	E950-E959
	Unintentional Injury	E800-E869, E880-E929
Mental Health	Mental Health	290, 293-298, 301,311
	Mental Health: Substance Abuse	291-292, 303-305
Respiratory	Asthma	493-494
	Chronic Obstructive Pulmonary Disease (COPD)	490-496
Other	Hip Fractures	820
	Oral cavity/Dental	520-529
	Osteoporosis	733

Mortality data, along with some birth data, for each ZIP code in 2010, 2011, and 2012 were collected from the California Department of Public Health (CDPH). The specific variables collected are defined in Table 40. The majority of these variables were used to calculate specific rates of mortality for 2012. A smaller number of them were used to calculate more complex derived indicators. To increase the stability of these derived indicators, rates were calculated using data from 2010 to 2012. These variables include the total number of live births, total number of infant deaths (ages under 1 year), all-cause mortality by age, births with low infant birthweight, and births with mother's age at delivery under 20. Table 45 consequently also lists the years for which each variable was collected.

Table 35: CDPH birth and mortality data by ZIP code

Variable Name	ICD10 Code	Years Collected
Total Deaths		2012
Male Deaths		2012
Female Deaths		2012

[34] E-code definitions for injury variables derived from CDC. (2011). *Matrix of E-code Groupings.* Retrieved March 4, 2013, from Injury Prevention & Control: Data & Statistics(WISQARS): http://www.cdc.gov/injury/wisqars/ecode_matrix.html

Deaths by Age Group:		
Under 1, 1-4, 5-14, 15-24, 25-34,45-54, 55-64, 65-74, 75-84, and 85 and over		2010 - 2012
Diseases of the Heart	I00-I09, I11, I13, I20-I51	2012
Malignant Neoplasms (Cancer)	C00-C97	2012
Cerebrovascular Disease (Stroke)	I60-I69	2012
Chronic Lower Respiratory Disease	J40-J47	2012
Alzheimer's Disease	G30	2012
Unintentional Injuries (Accidents)	V01-X59, Y85-Y86	2012
Diabetes Mellitus	E10-E14	2012
Influenza and Pneumonia	J09-J18	2012
Chronic Liver Disease and Cirrhosis	K70, K73-K74	2012
Intentional Self Harm (Suicide)	U03, X60-X84, Y87.0	2012
Essential Hypertension & Hypertensive Renal Disease	I10, I12, I15	2012
Nephritis, Nephrotic Syndrome and Nephrosis	N00-N07, N17-N19, N25-N27	2012
All Other Causes	Residual Codes	2012
Total Births		2010 - 2012
Births with Infant Birthweight Under 1500 Grams, 1500-2499 Grams		2010 - 2012
Births with Mother's Age at Delivery Under 20		2010 - 2012

Cancer incidence data were obtained from the California Cancer Registry for each ZIP code. The data reported the total aggregated incidence of cancers from 2010 – 2012 for breast, colorectal, lung, and prostate cancers. ZIP codes with more than zero but fewer than three cases were masked. For processing purposes, these masked values were treated as zeros.

Chlamydia and gonorrhea incidence data for 2014 were obtained from the County Public Health offices in El Dorado, Placer, Sacramento, Solano and Yolo counties. The incidence data were reported by 2014 ZCTA per 10,000 population. A number of steps were taken to process these variables due to differences in reporting geography and data provided. First, some counties provided pre-calculated rates, while others provided raw counts by ZIP code. Second, some counties provided data for all ZIP codes, while others provided only data for those with reported cases exceeding a certain masking standard. Finally, because ZIP codes can cross county boundaries, each county health office provided only information on the cases that occurred in ZIP codes within their respective counties.

The following approaches were applied to address these irregularities. First, pre-calculated rates were only used for those counties for which raw counts were not reported. Second, a consistent standard to mask rates for ZIP codes with 5 or fewer cases was applied across all counties reporting raw counts, and for counties only reporting rates for a subset of ZIP codes (i.e. Solano County), it was assumed that counties for which data was not reported had 0 incidence rates. For ZIP codes that fell within multiple counties providing data, these cases were simply totaled for the given ZIP code. For ZIP codes that fall partially outside of the counties reporting data, the calculated rates are based only on cases occurring within the reporting counties.

The remaining secondary variables were collected from a variety of sources, and at various geographic levels. Table 46 lists the sources of these variables, and lists the geographic level at which they were reported.

Table 36: Remaining secondary variables

Variable	Year	Definition	Reporting Unit	Data Source
Current Smokers	2014	Current Smoking Status - Adults and Teens	County	2014 California Health Interview Survey http://ask.chis.ucla.edu/AskCHIS/tools/_layouts/AskChisTool/home.aspx#/geography (last accessed 9 Oct 2015)
Food Deserts	2010	USDA Defined Food Desert; Low Access 1 mile Urban 10 Mile rural	Tract	USDA http://www.ers.usda.gov/data-products/food-access-research-atlas/download-the-data.aspx (Last Accessed 9 Oct 2015)
Modified Retail Food Environment Index (mRFEI)	2013	Table 00CZ2 for the following NAICS codes: 445120, 722513, 445230, 452910, 445110	ZCTA	US Census Bureau 2013 County Business Patterns
Park Access	2010	Percent of 2010 ZCTA Population in blocks located within 1/2 mile of a park	ZCTA	2010 Decennial Census SF1; ESRI U.S. Parks 2014, park_dtl.gdb Series Name Data and Maps for ArcGIS® Issue 2014 - World, Europe, and United States
Health Professional Shortage Areas (Primary Care, Dental, Mental Health)	2015	Current Primary Care, Dental Health, and Mental Health Provider Shortage Areas	Shortage Areas (non-point locations)	US Department of Health & Human Services Health Resources and Services Administration; http://datawarehouse.hrsa.gov/data/datadownload/hpsadownload.aspx (last accessed 29 Aug 2015)
Major Crime Rate	2013	Major Crimes (combination of violent crimes, property crimes, and arson)	Law enforcement jurisdiction	California Attorney General - Criminal Justice Statistics Center: Crimes and Clearances http://oag.ca.gov/crime/cjsc/stats/crimes-clearances (last accessed 3 Sep 2015)
Domestic Violence Rate	2013	Domestic Violence-Related Calls for Assistance	Law enforcement jurisdiction	California Attorney General – Criminal Justice Statistics Center: Domestic Violence-Related Calls for Assistance http://oag.ca.gov/crime/cjsc/stats/domestic-violence

Variable	Year	Definition	Reporting Unit	Data Source
				(last access 30 Oct 2015)
Traffic Accidents Resulting in Fatalities	2013	Traffic Accidents Resulting in Fatalities	Point locations	National Highway Traffic Safety Administration Fatality Analysis Reporting System (FARS) ftp://ftp.nhtsa.dot.gov/fars/2013/DBF/ (lass accessed 8 Sep 2015)
Pollution Burden	2014	Cal EnviroScreen Pollution Burden Scores indicator (based on ozone and PM2.5 concentrations, diesel PM emissions, drinking water contaminants, pesticide use, toxic releases from facilities, traffic density, cleanup sites, impaired water bodies, groundwater threats, hazardous waste facilities and generators, and solid waste sites and facilities)	Tract	California Office of Environmental Health Hazard Assessment CalEnviroScreen Version 2.0 http://oehha.ca.gov/ej/ces2.html
Population Living Near a Transit Stop	2012	Population weighted centroid distance to the closest fixed public transit stop	Census Block Group	US EPA Smart Location Database https://edg.epa.gov/data/Public/OP/SLD/SmartLocationDb.zip (last accessed 29 Aug 2015)
Access to Dentists	2013	Dentists, Rate per 100,000 Population	County	US Department of Health and Human Services, Health Resources and Services Administration, Areas Health Resource File

Variable	Year	Definition	Reporting Unit	Data Source
				http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Access to Mental Health Providers	2014	Mental Health Care Provider, Rate per 100,000 Population	County	University of Wisconsin Population Health Institute, County Health Ranking http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Access to Primary Care	2012	Primary Care Physicians, Rate per 100,000 Population	County	US Department of Health & Human Services, Health Resources and Services Administration, Area Health Resource File http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Alcohol – Excessive Consumption	2006 – 2012	Estimated Adults Drinking Excessively (Age-Adjusted Percentage)	County	Center for Disease Control and Prevention, Behavioral Risk Factor Surveillance System. Accessed via the Health Indicators Warehouse. U.S. Department of Health and Human Services, Health Indicators Warehouse http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Alcohol – Expenditures	2014	Alcoholic Beverage Expenditures, Percentage of Total Food-At-Home Expenditures	Tract	Nielsen, Nielsen SiteReports http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Asthma – Prevalence	2011 – 2012	Percent Adults with Asthma	County	Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System. Additional data analysis by CARES http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Breastfeeding (Any)	2012	Percentage of Mothers Breastfeeding (Any)	County	California Department of Public Health (CDPH) – Breastfeeding Statistics http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Cancer Incidence (Cervical)	2010 – 2012	Annual Cervical Cancer Incidence Rate (per 100,000 Population)	County	National Institute of Health, National Cancer Institute, Surveillance, Epidemiology, and End Results Program. State Cancer Provides, 2008-2012 http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Cancer Screening - Mammogram	2008 - 2012	Annual Cervical Cancer Incidence,	County	National Institutes of Health, National Cancer Institute, Surveillance, Epidemiology, and End Results Program. State Cancer Profiles http://www.communitycommons.org/groups/c

Variable	Year	Definition	Reporting Unit	Data Source
		Rate per 100,00 Population		ommunity-health-needs-assessment-chna
Cancer Screening – Pap Test	2012	Percent Adults Females Age 18+ with Regular Pap Test (Age Adjusted)	County	Dartmouth College Institute for Health Policy & Practice, Dartmouth Atlas of Health Care http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Cancer Screening – Sigmoid/Colonoscopy	2006 – 2012	Percent Adults Screened for Colon Cancer (Age Adjusted)	County	Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System. Accessed via the Health Indicators Warehouse. US Department of Health & Human Services, Health Indicators Warehouse http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Children Eligible for Free/Reduced Price Lunch	2013 - 2014	Percent Students Eligible for Free or Reduced Price Lunch	Address	National Center for Education Statistics, NCES – Common Core of Data http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Commute to Work – Alone in Car	2009 – 2013	Percentage of Workers Commuting by Car, Alone	Tract	US Census Bureau, American Community Survey http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Commute to Work – Walking/Biking	2009-2013	Percentage Walking or Biking/Work	Tract	US Census Bureau, American Community Survey http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Diabetes Management (Hemoglobin A1c Test)	2012	Percent Medicare Enrollees with Diabetes with Annual Exam	County	Dartmouth College Institute for Health Policy & Clinical Practice, Dartmouth Atlas of Health Care http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Diabetes Prevalence	2012	Percent Adults with Diagnosed Diabetes (Age Adjusted)	County	Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Economic Security – Commute Over 60 Minutes	2009 - 2013	Percent of Workers Communities More than 60 Minutes	Tract	US Census Bureau, American Community Survey http://www.communitycommons.org/groups/community-health-needs-assessment-chna

Variable	Year	Definition	Reporting Unit	Data Source
Education – High School Graduation Rate	2013	Cohort Graduation Rate	County	California, Department of Education http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Education – Reading Below Proficiency	2012 – 2013	Percentage of Grade 4 ELA Test Score Not Proficient	County	California, Department of Education http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Education – School Enrollment Age 3-4	2009 - 2013	Percentage Population Age 3-4 Enrolled in School	Tract	US Census Bureau, American Community Survey http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Federally Qualified Health Centers	2015	Federally Qualitied Health Centers, Rate per 100,000 Population	Address	U.S. Department of Health & Human Services, Center for Medicare & Medicaid Services, Provider of Services File - Sept. 2015. http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Food Environment – Fast Food Restaurants	2011	Fast Food Restaurants, Rate per 100,000 Population	Tract	U.S. Census Bureau, County of Business Patterns. Additional data analysis by CARES http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Food Environment – Grocery Stores	2011	Grocery Stores, Rate per 100,000 Population	Tract	U.S. Census Bureau, County of Business Patterns. Additional data analysis by CARES http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Food Security – Food Insecurity Rate	2013	Percentage of the Population with Food Insecurity	County	Feeding America http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Food Security – Population Receiving SNAP	2011	Percent Population Receiving SNAP Benefits	County	U.S. Census Bureau, Small Area Income & Poverty Estimates. http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Fruit/Vegetable Expenditures	2014	Fruit / Vegetable Expenditures, Percentage of Total Food-At-Home Expenditures	Tract	Nielsen, Nielsen SiteReports http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Heart Disease Prevalence	2011 – 2012	Percent Adults with Heart	County (Grouping)	University of California Center for Health Policy Research, California Health Interview Survey

Variable	Year	Definition	Reporting Unit	Data Source
		Disease		http://www.communitycommons.org/groups/community-health-needs-assessment-chna
High Blood Pressure - Unmanaged	2006 - 2010	Percent Adults with High Blood Pressure	County	Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System. Additional data analysis by CARES http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Housing – Assisted Housing	2013	HUD – Assisted Units, Rate per 10,000 Housing Units (2010)	County	U.S. Department of Housing and Urban Development http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Housing – Substandard Housing	2009 – 2013	Percent Occupied Housing Units with One or More Substandard Conditions	County	U.S. Census Bureau, American Community Survey http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Insurance – Population Receiving Medicaid	2009 – 2013	Percent of Insured Population Receiving Medicaid	Tract	U.S. Census Bureau, American Community Survey http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Lack of Social or Emotional Support	2006 – 2012	Percent Adult Without Adequate Social / Emotional Support (Age-Adjusted)	County	Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System. Accessed via the Health Indicators Warehouse. US Department of Health & Human Services, Health Indicators Warehouse http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Liquor Store Access	2012	Liquor Stores, Rate per 100,000 Population	County	U.S. Census Bureau, County Business Patterns. Additional data analysis by CARES http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Low Fruit/Vegetable Consumption (Youth)	2011 - 2012	Percent Population Age 2-13 with Inadequate Fruit/Vegetable Consumption	County (Grouping)	University of California Center for Health Policy Research, California Health Interview Survey http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Mental Health – Poor Mental	2006 - 2012	Average Number of	County	Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System.

Variable	Year	Definition	Reporting Unit	Data Source
Health Days		Mentally Unhealthy Days per Month		Accessed via the Health Indicators Warehouse http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Mortality – Homicide	2010 - 2012	Homicide, Age-Adjusted Mortality, Rate per 100,000 Population	ZIP Code	University of Missouri, Center for Applied Research and Environmental Systems. California Department of Public Health, CDPH - Death Public Use Data http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Mortality – Motor Vehicle Accident	2010 - 2012	Motor Vehicle Accident, Age Adjusted Mortality, Rate per 100,000 Population	ZIP Code	University of Missouri, Center for Applied Research and Environmental Systems. California Department of Public Health, CDPH - Death Public Use Data http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Mortality – Pedestrian Accident	2010 - 2012	Pedestrian Accident – Age Adjusted Mortality, Rate per 100,000 Population	ZIP Code	University of Missouri, Center for Applied Research and Environmental Systems. California Department of Public Health, CDPH - Death Public Use Data http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Obesity (Youth)	2013 - 2014	Percent Obese	County	California Department of Education, FITNESSGRAM® Physical Fitness Testing http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Overweight (Youth)	2013 - 2014	Percent Overweight	County	California Department of Education, FITNESSGRAM® Physical Fitness Testing http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Physical Inactivity (Adult)	2012	Percent Population with no Leisure Time Physical Activity	County	Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Physical Inactivity (Youth)	2013 - 2014	Percent Physically Inactive	County	California Department of Education, FITNESSGRAM® Physical Fitness Testing http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Preventable Hospital Service Days	2011	Age-Adjusted Discharge, Rate per 10,000 Population	County	California Office of Statewide Health Planning and Development, OSHPD Patient Discharge Data. Additional data analysis by CARES http://www.communitycommons.org/groups/community-health-needs-assessment-chna

Variable	Year	Definition	Reporting Unit	Data Source
Soft Drink Expenditures	2014	Soda Expenditures, Percentage of Total Food-At-Home Expenditures	Tract	Nielsen, Nielsen Site Reports http://www.communitycommons.org/groups/community-health-needs-assessment-chna
STD – HIV Hospitalizations	2011	Age-Adjusted Discharge, Rate per 10,000 Population	County	California Office of Statewide Health Planning and Development, OSHPD Patient Discharge Data. Additional data analysis by CARES http://www.communitycommons.org/groups/community-health-needs-assessment-chna
STD – HIV Prevalence	2010	Population with HIV/AIDS, Rate by 100,000 Population	County	US Department of Health & Human Services, Health Indicators Warehouse. Centers for Disease Control and Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention http://www.communitycommons.org/groups/community-health-needs-assessment-chna
STD – No HIV Screening	2011 - 2012	Percent Adults Never Screened for HIV/AIDS	County	Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System. Additional data analysis by CARES http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Tobacco Expenditures	2014	Cigarette Expenditures, Percentage of Total Household Expenditures	Tract	Nielsen, Nielsen SiteReports http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Transit – Road Network Density	2011	Total Road Network Density (Road Miles per Acre)	County	Environmental Protection Agency, EPA Smart Location Database http://www.communitycommons.org/groups/community-health-needs-assessment-chna
Violence – School Suspensions	2013-2014	Suspension Rate	County	California Department of Education. 2013-2014 school year http://www.communitycommons.org/groups/community-health-needs-assessment-chna

General Processing Steps

Rate Smoothing

All OSHPD, as well as all single-year CDPH, variables were collected for all ZIP codes in California. The CDPH datasets included separate categories that included either patients who did not report any ZIP code, or patients from ZIP codes whose number of cases fell below a minimum level. These patients were removed from the analysis. As described above, patient records in ZIP codes not represented by ZCTAs were added to those ZIP codes corresponding to the ZCTAs that they fell inside or were closest to. When consolidating ZIP codes into ZCTAs, any ZIP code with no value reported were treated as having a value of 0. If a two or more ZIP codes were combined into a single ZCTA, and at least one of those ZIP codes had a value reported, all other ZIP codes with a masked value were treated as having values of 0. Thus ZCTA values were recorded as NA only if all ZIP codes contributing values to them had masked values reported for all associated ZIP codes.

The next step in the analysis process was to calculate rates for each of these variables. However, rather than calculating raw rates, empirical bayes smoothed rates (EBR) were created for all variables possible[35]. Smoothed rates are considered preferable to raw rates for two main reasons. First, the small population of many ZCTAs, particularly those in rural areas, meant that the rates calculated for these areas would be unstable. This problem is sometimes referred to as the small number problem. Empirical bayes smoothing seeks to address this issue by adjusting the calculated rate for areas with small populations so that they more closely resemble the mean rate for the entire study area. The amount of this adjustment is greater in areas with smaller populations, and less in areas with larger populations.

Because the EBR were created for all ZCTAs in the state, ZCTAs with small populations that may have unstable high rates had their rates "shrunk" to more closely match the overall variable rate for ZCTAs in the entire state. This adjustment can be substantial for ZCTAs with very small populations. The difference between raw rates and EBR in ZCTAs with very large populations, on the other hand, is negligible. In this way, the stable rates in large population ZIP codes are preserved, and the unstable rates in smaller population ZIP codes are shrunk to more closely match the state norm. While this may not entirely resolve the small number problem in all cases, it does make the comparison of the resulting rates more appropriate. Because the rate for each ZCTA is adjusted to some degree by the EBR process, it also has a secondary benefit of better preserving the privacy of patients within the ZCTAs.

EBR were calculated for each variable using the appropriate base population figure reported for ZCTAs in the American Community Survey 5-year estimate tables: overall EBR for ZCTAs were calculated using total population; and sex, age, and normalized race/ethnicity EBR were calculated using the appropriate corresponding population stratification. In cases where multiple years of data were aggregated, populations for the central year were used and multiplied by the number of years of data to calculate rates. For OSHPD data, 2012 population data was used. For multi-year CDPH variables (2010 – 2012), 2011 data was used. Population data from 2012 was used to calculate single-year CDPH variables.

ZCTAs with NA values recorded were treated as having a value of 0 when calculating the overall expected rates for a state as a whole, but were kept as NA when smoothing the value for the individual ZCTA. This meant that smoothed rates could be calculated for each variable in each area, but if a given ZCTA had a value of NA for a given variable, it retained that NA value after smoothing.

[35] Anselin, L. (2003). *Rate Maps and Smoothing.* Retrieved February 16, 2013, from http://www.dpi.inpe.br/gi

EBR were attempted for every overall variable, but could not be calculated for certain variables. In these cases, raw rates were used instead. The final rates in either case for H, ED, and the basic mortality variables were then multiplied by 10,000, so that the final rates represent H or ED discharges, or deaths, per 10,000 people.

Age Adjustment

The additional step of age adjustment[36] was performed on the all-cause mortality variables. Because the occurrence of these conditions varies as a function of the age of the population, differences in the age structure between ZCTAs could obscure the true nature of the variation in their patterns. For example, it would not be unusual for a ZCTA with an older population to have a higher rate of ED visits for stroke than a ZCTA with a younger population. In order to accurately compare the experience of ED visits for stroke between these two populations, the age profile of the ZCTA needs to be accounted for. Age adjusting the rates allows this to occur. To age adjust these variables, we first calculated age stratified rates by dividing the number of occurrences for each age category by the population for that category in each ZCTA. Because estimates of age under 1 and from 1 to 4 were not available in the American Community Survey datasets used in this analysis, the proportion of the population under age 5 that was also under age 1 was calculated using 2010 decennial Census data for each geographic area. These proportions were then compared to the age under 5 variables from the American Community Survey datasets for each geographic area to estimate the values for the population under 1 and from 1 to 4. These estimated values were then used to calculate age stratified rates. Age stratified EBR were used whenever possible. Each age stratified rate was then multiplied by a coefficient that gives the proportion of California's total population that was made up by that age group as reported in the 2010 Census. The resulting values are then summed and multiplied by 10,000 to create age adjusted rates per 10,000 people.

Benchmark Rates

A final step was to obtain or generate benchmark rates to compare the ZCTA level rates to. Benchmarks for all OSHPD variables were calculated at the HSA, county, and state levels. HSA rates were calculated by first summing the total number of cases and relevant populations for each variable across all ZCTAs in the HSA. ZCTAs with NA values were treated at this stage as having a value of 0. Smoothed EBR rates were then calculated for each HSA using a broader set of HSAs.

County benchmark rates were calculated as raw rates for each county, or in the case of small counties, group of counties, using the relevant populations variables. State rates were calculated as raw rates by first summing all county level values (treating and NA value as a 0), and then dividing these values by the relevant population value.

HSA, county, and state benchmark rates were also provided for CDPH data. HSA benchmarks were calculated in a process similar to that described above for OSHPD HSA benchmarks: the total number of cases and relevant populations were summed for each variable across all ZCTAs in the HSA, and used to calculate smoothed EBR rates using a broader set of HSAs.

County and state benchmark rates were either calculated using CDPH data reported at the county and state level[37,38], or else obtained from the County Health Status Profiles 2014[39]. The resulting benchmark values for

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[36] Klein, R. J., & Schoenborn, C. A. (2001). *Age adjustment using the 2000 projected U.S. population. Healthy People Statistical Notes, no. 20.* Hyattsville, Maryland: National Center for Health Statistics.

[37] California Department of Public Health. (2010,2011,2012). *Ten Leading Causes of Death, California Counties and Selected City Health Departments*. Retrieved July 7, 2015, from http://www.cdph.ca.gov/data/statistics/Documents/VSC-2012-0520.pdf; http://www.cdph.ca.gov/data/statistics/Documents/VSC-2011-0520.pdf; http://www.cdph.ca.gov/data/statistics/Documents/VSC-2010-0520.pdf

[38] California Department of Public Health. (2015a, July 17). Retrieved from Center for Health Statistics and Informatics: Vital Statistics Query System.: http://www.apps.cdph.ca.gov/vsq/

CDPH and OSHPD variable were all reported as rates per 10,000 unless the original variable was reported using some other standard as described below.

Processing for Specific Variables

Additional processing was needed to create the Community Health Vulnerability Index (CHVI), the CDPH related variables, and as well as some of the other variables. The process used to calculate these variables are described in this section below.

Social Inequities Dataset

The social inequities dataset included 22 indicators (presented in Table 47) that were analyzed at the ZIP code level to identify and flag the top 20% of ZIP codes with the highest rates of social inequities compared to county and state benchmarks. For the CHVI, ZIP codes were flagged if they intersected a census tract whose CHVI value fell within the top 20% of the HSA, values 3.9 to 6.0. In addition to quantitative measures, Focus Communities were further verified through analysis of input from initial service area wide key informant interviews. Input on vulnerable locations within the HSA were considered from interviews with public health experts and area service providers. Locations identified as vulnerable were then cross-referenced with the ZIP codes that were flagged in the CHVI and social inequities data, as well as with ZIP codes that were identified as Focus Communities in 2013. This was included to allow greater continuity between CHNA round and to reflect the work of the hospitals oriented to serve these disadvantaged communities.

Table 37: Social Inequities indicators to determine Focus Communities

Median income	**Percent Non-White or Hispanic population**
GINNI coefficient (measure of income inequality)	**Foreign born population**
Population in poverty (under 100 Federal Poverty Level)	**Citizenship status**
Percent with public assistance	**Population 5 Years or Older who speak Limited English**
Percent households 65 years or older in poverty	**Single female headed households**
Percent families with children in poverty	**Percent homeowners with housing expenses greater than 30% of income (homes with mortgages)**
Percent single female headed households in poverty	**Percent homeowners with housing expenses greater than 30% of income (homes without mortgages)**
Percent unemployed	**Percent renters with housing expenses greater than 30% of income**
Uninsured population	**Population over 18 that are civilian**

[39] California Department of Public Health. (2015b, July 2). Retrieved from County Health Status Profiles 2014: http://www.cdph.ca.gov/programs/ohir/Documents/OHIRProfiles2014.pd

	veterans
Population with public insurance	**Percent renter occupied housing units**
Population with any disability	**Percent population 25 or older without a high school diploma**

Community Health Vulnerability Index (CHVI)

The CHVI is a health care disparity index based in largely based on the Community Need Index (CNI) developed by Barsi and Roth[40]. The CHVI uses the same basic set of demographic variables to address health care disparity as outlined in the CNI, but these variables are aggregated in a different manner to create the CHVI. For this report, the following nine variables were obtained from the 2013 American Community Survey 5-year Estimate dataset at the census tract level:

- Percent Minority
- Population 5 Years or Older who speak Limited English
- Percent 25 or Older Without a High School Diploma
- Percent Unemployed
- Percent Families with Children in Poverty
- Percent Households 65 years or Older in Poverty
- Percent Single Female Headed Households in Poverty
- Percent Renter Occupied Households
- Percent Uninsured

All census tracts that crossed ZCTAs within the HSA were included in the analysis. Each variable was scaled using a min-max stretch, so that the tract with the maximum value for a given variable within the study area received a value of 1, and the tract with the minimum value for that same variable within the study area received a 0. All scaled variables were then summed to form the final CHVI. Areas with higher CHV values therefore represent locations with higher concentrations of the target index populations, and are likely experiencing poorer health care disparities.

[40] Barsi, E. L., & Roth, R. (2005). The "Community Need Index". *Health Progress, 86*(4), 32-38. Retrieved from https://www.chausa.org/docs/default-source/health-progress/the-community-need-index-pdf.pdf?sfvrsn=2

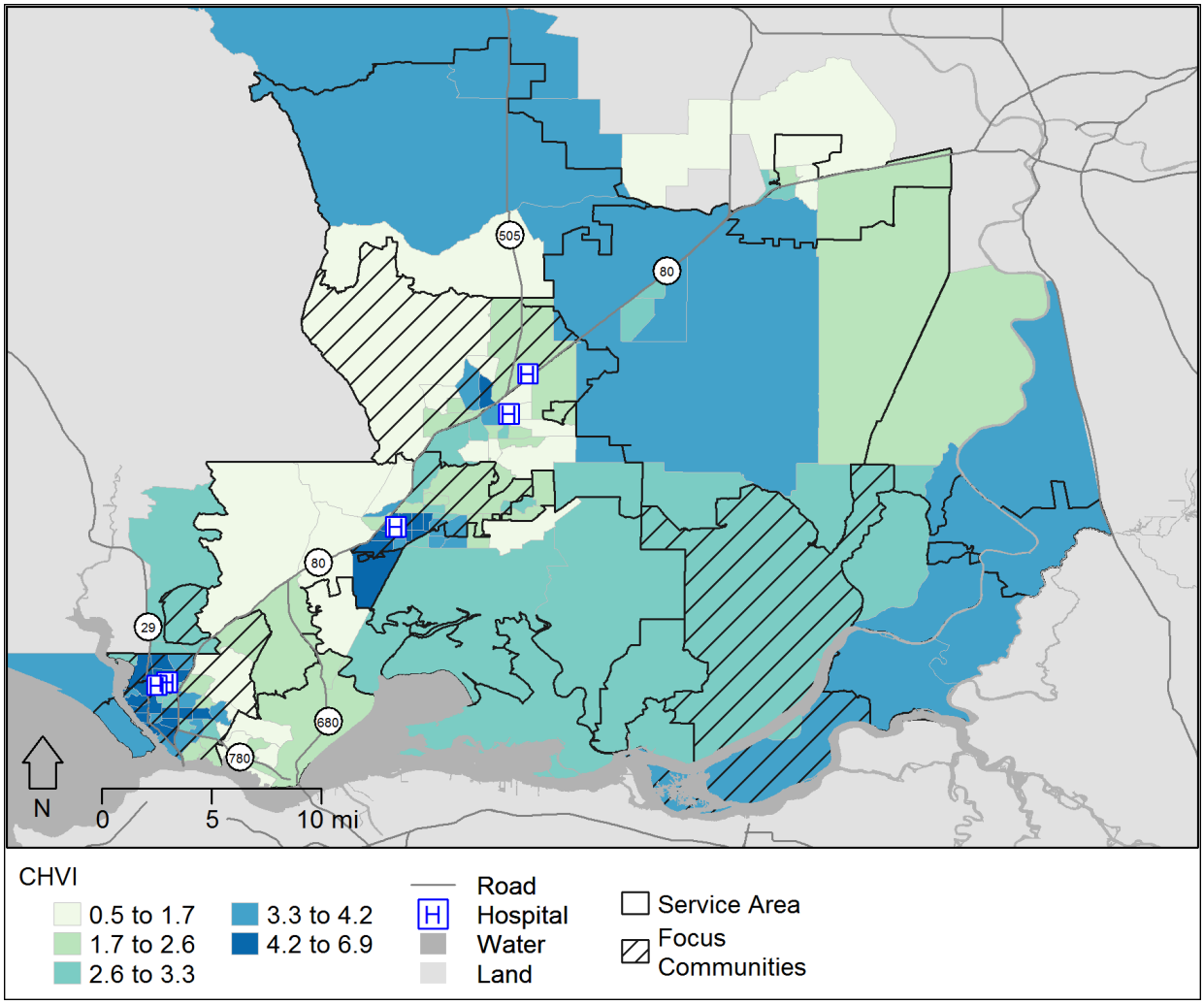


Figure 31: Community Health Vulnerability Index for Solano County

Infant Mortality Rate

Infant mortality rate reports the number of infant deaths per 1,000 live births. It was calculated by dividing the number of deaths for those with ages below 1 from 2010 - 2012 by the total number of live births for the same time period (using smoothed EBR), and multiplying the result by 1,000.

Teen Pregnancy Rate

Teen Pregnancy Rate reports the number of live births to mothers under the age of 20 per 1,000 females between the ages of 15 and 19. It was calculated by dividing the number of live births to mothers whose age at delivery was under 20 reported in 2010 – 2012 by three times the total population of females from ages 15 to 19 in 2011 (using smoothed EBR), and multiplying the result by 1,000.

Life Expectancy at Birth

Life expectancy at birth values are reported in years, and were derived from period life tables created in the statistical software program R[41] using the Human Ecology, Evolution, and Health Lab's[42] example period life

[41] R Development Core Team. (2015). R: A language and environment for statistical computing. Vienna, Austria: R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL http://www.R-project.org.

[42] Human Ecology, Evolution, and Health Lab. (2009, March 2). *Life tables and R programming: Period Life Table Construction*. Retrieved February 16, 2013, from Formal Demography Workshops, 2006 Workshop Labs: http://www.stanford.edu/group/heeh/cgi-bin/web/node/75

table function. This function was modified to calculate life tables for each ZCTA, and to allow the life table to be calculated from submitted age stratified mortality rates. The age stratified mortality rates were calculated for each ZIP code by dividing the total number of deaths in a given age category from 2010 - 2012 by three times the ZCTA population for that age group in 2010 (smoothed to EBR). The age group population was multiplied by three to match the three years of mortality data that were used to derive the rates. Multiple years were used to increase the stability of the estimates.

Diversity Index

The diversity index was calculated to measure the racial and ethnic diversity of geographic regions within the HSA. It was calculated using concepts from Iceland[43], but using the Shannon's evenness index (Beals, Gross, & Harrell, 2000) rather than the specific methodology described therein. The diversity index represents how evenly population within a given geographic unit is divided between the following seven racial/ethnic groups (described previously): Asian, Black, Hispanic, American Indian, Pacific Islander, White, Other or Two or More Races. Diversity index values range between 0 and 1, with a value of 0 in areas where the entire population belongs to just one racial/ethnic group and a value of 1 in areas with population evenly divided between the seven groups. Readers interested in the specifics of index calculation are referred to the previously listed sources.

Major Crime and Domestic Violence Rates

Major crimes and domestic violence related calls for assistance reported in the State of California Department of Justices' Crime Data reports are listed by reporting police agency. In order to estimate major crime and domestic violence rates, these values need to be associated with particular geographic areas, and then divided by those area populations. This was done for this report by comparing the names of police agencies to populations reported for "places" (including both incorporated and unincorporated areas) by the US Census. Both crime and population data were obtained for 2013.

Many reporting agencies, such as those associated with hospitals, transit and freight rail lines, university campuses, and state and federal agencies, did not correspond to a specific census place. Internet searches were used to identify the Census places they were associated with, and their cases were added to those places. For example, the crimes or calls for assistance reported by a University police department were added to the city or county that the university campus was located in. For areas where this was unclear based on the name alone, internet searches were conducted to determine the place an agency fell inside of. Because reported crimes or calls for agencies were organized by county, if the crimes for an agency could not be associated with any specific place, its reported crimes were grouped together with those for the county sheriff's department.

To calculate rates, the total number of crimes or calls for assistance for each Census place resulting from the process described above were was divided by the population of that place and multiplied by 10,000 to report the number of crimes per 10,000 in that place. For crimes reported for (or grouped with) the county sheriff's department, the county population was modified by subtracting the total population of all Census places with reported crimes. This meant that the major crime rate reported for the county was reporting not the total county's crime rate, but the rate of crimes occurring in those portions of the county that were not otherwise covered by another reporting agency.

Overall county major crime rates and domestic violence related calls for assistance were, however, calculated for benchmarking purposes by summing the total number of major crimes reported by any agency within the

[43] Iceland, J. (2004). *The Multigroup Entropy Index (Also Known as Theil's H or the Information Theory Index).* US Census Bureau. Retrieved June 20, 2015, from http://www.census.gov/housing/patterns/about/multigroup_entropy.pdf

county, dividing that by the total population of the county, and multiplying the result by 10,000. For further detail as to which specific crimes are covered within the "major crime" category, interested readers are referred to the State of California Department of Justices' Crime Data reports, available online at: http://oag.ca.gov/crime.

Park Access

The park access variable reports the percent of the 2010 population residing within each ZCTA that lives in a Census block that intersects a ½ mile buffer around the closest park. ESRI's U.S. Parks data set[44], which includes the location of local, county, regional, state, and national parks and forests, was used to determine park locations.

Modified Retail Food Environment Index (mRFEI)

The Modified Retail Food Environment Index (mRFEI) variable reports the percentage of the total food outlets in a ZCTA that are considered healthy food outlets. Values below 0 are given for ZCTAs with no food outlets. The mRFEI variable was calculated using a modification of the methods described by the National Center for Chronic Disease Prevention and Health Promotion[45] using ZIP code level data obtained from the US Census Bureau's 2013 County Business Pattern datasets. Healthy food retailers were defined based on North American Industrial Classification Codes (NAICS), and included:

- Large grocery stores: NAICS code 445110, with 50 or more employees
- Fruit and vegetable markets: NAICS 445230
- Warehouse clubs: NAICS 452910

Food retailers that were considered less healthy included:

- Small grocery stores: NAICS code 445110, with 1 – 4 employees
- Limited-service restaurants: 722513
- Convenience stores: 445120

To calculate the mRFEI, ZIP code values were converted to ZCTAs using previously described processes. The total number of health food retailers was then divided by the total number of healthy and less healthy food retailers for each ZCTA, and the result was multiplied by 100 to calculate the final mRFEI value for the ZCTA. HSA mRFEI benchmark values were calculated by first summing the total number of each type of food retailer that fell within the HSA, and then by following the same approach.

[44] ESRI. (2010). U.S. and Canada Detailed Streets. *ESRI Data & Maps: StreetMap* (10 edition)

[45] National Center for Chronic Disease Prevention and Health Promotion. (2011). *Census Tract Level State Maps of the Modified Retail Food Environment Index (mRFEI).* Centers for Disease Control. Retrieved Jan 11, 2016, from http://ftp.cdc.gov/pub/Publications/dnpao/census-tract-level-state-maps-mrfei_TAG508.pdf

Appendix B: Detailed Analytic Methodology including SHN Categorization

Significant Health Need Identification Process

The Significant Health Need identification process began with a review of significant health needs identified in the Community Health Need Assessment (CHNA) reports conducted by Valley Vision, Inc. during the 2013 CHNA round. This list of significant health needs was compared to preliminary secondary data, health needs associated with the Kaiser Permanente (KP) Community Commons Data Platform (CCDP) and input from health systems participating in the Solano 2016 collaborative CHNA process. This culminated in the final set of 8 potential health needs for the 2016 CHNA shown in Table 48 below.

Table 38: Overview of Potential Health Need (PHN) categories

Potential Health Need Category	**Abbreviation**
Access to High Quality Health Care and Services *(i.e., Access to Care, Oral Health, Maternal and Infant Health)*	Access to Care
Access to Behavioral Health Services *(i.e., Mental Health, Substance Abuse)*	Behavioral Health
Affordable and Accessible Transportation	Transportation
Basic Needs *(i.e., Food, Housing, Employment, Education)*	Basic Needs
Disease Prevention, Management and Treatment *(i.e., Cancer, Asthma, CVD/Stroke, HIV/AIDS/STIs)*	Disease Prevention
Healthy Eating and Active Living	HEAL
Pollution Free Living and Work Environments	Pollutant Free
Safe, Crime and Violence-Free Communities	Safe Communities

The next step in the significant health need identification process was to identify those secondary indicators associated with each of these significant health needs. Values for these indicators were then calculated for each health service area, and then compared to relevant state benchmarks. The percentage of indicators comparing poorly to state benchmarks for each health need was then calculated. Table 49 below shows the indicator/health need cross walk table, shows which variables were collected directly by Valley Vision and which were obtained through the CCDP. Finally, it gives a general description of the type of value calculated for the health service area (HSA) for each variable, as well as the direction of comparison to the state benchmark.

Table 39: Indicators, health needs, and benchmarks

Name	HEAL	MH_SA	ACT	BASIC NEEDS	POLLUTION	VIOLENCE	TRANSIT	DISEASE PREVENTION	HSA Value	Benchmark Comparison	Source
Breastfeeding (Any)	Yes		Yes						County Rate	Below State Benchmark	CCDP
Soft Drink Expenditures	Yes		Yes						Calculated HSA Rate	Exceeds State Benchmark	CCDP
Economic Security - Commute Over 60 Minutes	Yes			Yes			Yes		Kaiser Rate	Exceeds State Benchmark	CCDP
Physical Inactivity (Adult)	Yes				Yes	Yes		Yes	Maximum Rate for Associated County	Exceeds State Benchmark	CCDP
Physical Inactivity (Youth)	Yes				Yes	Yes		Yes	Maximum Rate for Associated County	Exceeds State Benchmark	CCDP
Obesity (Youth)	Yes				Yes			Yes	Maximum Rate for Associated County	Exceeds State Benchmark	CCDP
Heart Disease (ED)	Yes				Yes			Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Heart Disease (H)	Yes				Yes			Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Commute to Work - Walking/Biking	Yes						Yes		Calculated HSA Rate	Below State Benchmark	CCDP
Diabetes Management (Hemoglobin A1c Test)	Yes							Yes	Calculated HSA Rate	Below State Benchmark	CCDP
Diabetes Prevalence	Yes							Yes	County Rate	Exceeds State Benchmark	CCDP
Fruit/Vegetable Expenditures	Yes							Yes	Calculated HSA Rate	Below State Benchmark	CCDP
Overweight (Youth)	Yes							Yes	Maximum Rate for Associated County	Exceeds State Benchmark	CCDP
Colorectal Cancer (ED)	Yes							Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Colorectal Cancer (H)	Yes							Yes	Calculated HSA Rate	Exceeds State Benchmark	VV

Name	HEAL	MH_SA	ACT	BASIC NEEDS	POLLUTION	VIOLENCE	TRANSIT	DISEASE PREVENTION	HSA Value	Benchmark Comparison	Source
Colorectal Cancer (Incidence)	Yes							Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Diabetes (ED)	Yes							Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Diabetes (H)	Yes							Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Food Deserts	Yes							Yes	HSA Intersects Food Desert	Exceeds 25% of ZCTAs	VV
Hypertension (ED)	Yes							Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Hypertension (H)	Yes							Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Park Access	Yes							Yes	Calculated HSA Rate	Below State Benchmark	VV
Food Environment - Fast Food Restaurants	Yes								Calculated HSA Rate	Exceeds State Benchmark	CCDP
Food Environment - Grocery Stores	Yes								Calculated HSA Rate	Below State Benchmark	CCDP
Low Fruit/Vegetable Consumption (Youth)	Yes								Maximum Rate for Associated County	Exceeds State Benchmark	CCDP
Diabetes Mellitus – MORT	Yes								Calculated HSA Rate	Exceeds State Benchmark	VV
Modified Retail Food Environment Index (MRFEI)	Yes								Calculated HSA Rate	Below State Benchmark	VV
Osteoporosis (ED)	Yes								Calculated HSA Rate	Exceeds State Benchmark	VV
Osteoporosis (H)	Yes								Calculated HSA Rate	Exceeds State Benchmark	VV
Life Expectancy at Birth		Yes		Yes					Calculated HSA Rate	Below State Benchmark	VV
Tobacco Expenditures		Yes			Yes			Yes	Calculated HSA	Exceeds State	CCDP

Name	HEAL	MH_SA	ACT	BASIC NEEDS	POLLUTION	VIOLENCE	TRANSIT	DISEASE PREVENTION	HSA Value	Benchmark Comparison	Source
									Rate	Benchmark	
Tobacco Usage (Adults and Teens)		Yes			Yes			Yes	Maximum Rate for Associated County	Exceeds State Benchmark	VV
Chronic Lower Respiratory Disease - MORT		Yes			Yes				Calculated HSA Rate	Exceeds State Benchmark	VV
COPD (ED)		Yes			Yes				Calculated HSA Rate	Exceeds State Benchmark	VV
COPD (H)		Yes			Yes				Calculated HSA Rate	Exceeds State Benchmark	VV
Alcohol - Excessive Consumption		Yes				Yes		Yes	County Rate	Exceeds State Benchmark	CCDP
Alcohol - Expenditures		Yes				Yes		Yes	Calculated HSA Rate	Exceeds State Benchmark	CCDP
Liquor Store Access		Yes				Yes		Yes	Maximum Rate for Associated County	Exceeds State Benchmark	CCDP
Substance Abuse (ED)		Yes				Yes			Calculated HSA Rate	Exceeds State Benchmark	VV
Substance Abuse (H)		Yes				Yes			Calculated HSA Rate	Exceeds State Benchmark	VV
Lung Cancer (ED)		Yes						Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Lung Cancer (Incidence)		Yes						Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Access to Mental Health Providers		Yes							County Rate	Below State Benchmark	CCDP
Lack of Social or Emotional Support		Yes							County Rate	Exceeds State Benchmark	CCDP
Mental Health - Poor Mental Health Days		Yes							County Rate	Exceeds State Benchmark	CCDP
Alzheimer's Disease		Yes							Calculated HSA Rate	Exceeds State Benchmark	VV

Name	HEAL	MH_SA	ACT	BASIC NEEDS	POLLUTION	VIOLENCE	TRANSIT	DISEASE PREVENTION	HSA Value	Benchmark Comparison	Source
Chronic Liver Disease and Cirrhosis – MORT		Yes							Calculated HSA Rate	Exceeds State Benchmark	VV
Health Professional Shortage Area - Mental Health		Yes							HSA Intersects Mental Health Shortage Area	Intersects HPSA	VV
Intentional Self Harm (Suicide) - MORT		Yes							Calculated HSA Rate	Exceeds State Benchmark	VV
Mental Health (ED)		Yes							Calculated HSA Rate	Exceeds State Benchmark	VV
Mental Health (H)		Yes							Calculated HSA Rate	Exceeds State Benchmark	VV
Self-Inflicted Injuries (ED)		Yes							Calculated HSA Rate	Exceeds State Benchmark	VV
Self-Inflicted Injuries (H)		Yes							Calculated HSA Rate	Exceeds State Benchmark	VV
Education - School Enrollment Age 3-4			Yes	Yes					Calculated HSA Rate	Below State Benchmark	CCDP
Insurance - Population Receiving Medicaid			Yes	Yes					Calculated HSA Rate	Exceeds State Benchmark	CCDP
Population with Public Insurance			Yes	Yes					Calculated HSA Rate	Exceeds State Benchmark	VV
Uninsured Population			Yes	Yes					Calculated HSA Rate	Exceeds State Benchmark	VV
Low Birth Weight			Yes		Yes				Calculated HSA Rate	Exceeds State Benchmark	VV
Cancer Screening - Mammogram			Yes					Yes	County Rate	Below State Benchmark	CCDP
Cancer Screening - Pap Test			Yes					Yes	County Rate	Below State Benchmark	CCDP
Cancer Screening - Sigmoid/Colonoscopy			Yes					Yes	County Rate	Below State Benchmark	CCDP

Name	HEAL	MH_SA	ACT	BASIC NEEDS	POLLUTION	VIOLENCE	TRANSIT	DISEASE PREVENTION	HSA Value	Benchmark Comparison	Source
Access to Dentists			Yes						County Rate	Below State Benchmark	CCDP
Access to Primary Care			Yes						County Rate	Below State Benchmark	CCDP
Federally Qualified Health Centers			Yes						HSA Calculated Rate	Below State Benchmark	CCDP
Preventable Hospital Events			Yes						County Rate	Exceeds State Benchmark	CCDP
Dental/Oral Diseases (ED)			Yes						Calculated HSA Rate	Exceeds State Benchmark	VV
Dental/Oral Diseases (H)			Yes						Calculated HSA Rate	Exceeds State Benchmark	VV
Health Professional Shortage Area - Dental			Yes						HSA Intersects Dental Shortage Area	Intersects HPSA	VV
Health Professional Shortage Area - Primary Care			Yes						HSA Intersects Primary Care Shortage Area	Intersects HPSA	VV
Infant Mortality Rate			Yes						Calculated HSA Rate	Exceeds State Benchmark	VV
Prenatal Care			Yes						Calculated HSA Rate	Below State Benchmark	VV
Teen Births			Yes						Calculated HSA Rate	Exceeds State Benchmark	VV
Households with No Vehicle				Yes			Yes		Calculated HSA Rate	Exceeds State Benchmark	VV
Children Eligible for Free/Reduced Price Lunch				Yes					Calculated HSA Rate	Exceeds State Benchmark	CCDP
Education – High School Graduation Rate				Yes					County Rate	Below State Benchmark	CCDP

Name	HEAL	MH_SA	ACT	BASIC NEEDS	POLLUTION	VIOLENCE	TRANSIT	DISEASE PREVENTION	HSA Value	Benchmark Comparison	Source
Education - Reading Below Proficiency				Yes					County Rate	Exceeds State Benchmark	CCDP
Food Security - Food Insecurity Rate				Yes					County Rate	Exceeds State Benchmark	CCDP
Food Security - Population Receiving SNAP				Yes					County Rate	Exceeds State Benchmark	CCDP
Housing - Assisted Housing--HUD units				Yes					County Rate	Exceeds State Benchmark	CCDP
Housing - Substandard Housing				Yes					County Rate	Exceeds State Benchmark	CCDP
Violence - School Suspensions				Yes					County Rate	Exceeds State Benchmark	CCDP
Households with housing costs greater than 30% of income				Yes					Calculated HSA Rate	Exceeds State Benchmark	VV
Housing Vacancy Rate				Yes					Calculated HSA Rate	Exceeds State Benchmark	VV
Percent Population 25 or Older Without a High School Diploma				Yes					Calculated HSA Rate	Exceeds State Benchmark	VV
Percent Unemployed				Yes					Calculated HSA Rate	Exceeds State Benchmark	VV
Population 5 Years or Older who speak Limited English				Yes					Calculated HSA Rate	Exceeds State Benchmark	VV
Population in Poverty (Under 100% Federal Poverty Level)				Yes					Calculated HSA Rate	Exceeds State Benchmark	VV

Name	HEAL	MH_SA	ACT	BASIC NEEDS	POLLUTION	VIOLENCE	TRANSIT	DISEASE PREVENTION	HSA Value	Benchmark Comparison	Source
Population Living Near a Transit Stop					Yes		Yes		Percent of HSA ZCTAs that intersect census blocks with centroids greater than abt. 1/2 mile from public transit stops	Exceeds 25% of ZCTAs	VV
Asthma - Prevalence					Yes			Yes	County Rate	Exceeds State Benchmark	CCDP
Asthma (ED)					Yes			Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Asthma (H)					Yes			Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Malignant Neoplasms (Cancer) - MORT					Yes			Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Pollution Burden Score					Yes			Yes	Percent of HSA ZCTAs that intersect census tract within the top 20% of pollution burden scores in the state	Exceeds 25% of ZCTAs	VV
Transit - Road Network Density					Yes				County Rate	Exceeds State Benchmark	CCDP
Mortality - Homicide						Yes			Calculated HSA Rate	Exceeds State Benchmark	CCDP
Mortality - Motor Vehicle Accident						Yes			Calculated HSA Rate	Exceeds State Benchmark	CCDP
Mortality - Pedestrian Accident						Yes			Calculated HSA Rate	Exceeds State Benchmark	CCDP
Assault (ED)						Yes			Calculated HSA Rate	Exceeds State Benchmark	VV

Name	HEAL	MH_SA	ACT	BASIC NEEDS	POLLUTION	VIOLENCE	TRANSIT	DISEASE PREVENTION	HSA Value	Benchmark Comparison	Source
Assault (H)						Yes			Calculated HSA Rate	Exceeds State Benchmark	VV
Domestic violence/intimate partner violence						Yes			Maximum Rate for Associated Agencies	Exceeds State Benchmark	VV
Major Crimes (Violent Crimes, Property Crimes, Larceny/Theft, Arson)						Yes			Maximum Rate for Associated Agencies	Exceeds State Benchmark	VV
Unintentional Injury (ED)						Yes			Calculated HSA Rate	Exceeds State Benchmark	VV
Unintentional Injury (H)						Yes			Calculated HSA Rate	Exceeds State Benchmark	VV
Commute to Work - Alone in Car							Yes		Calculated HSA Rate	Exceeds State Benchmark	CCDP
Population with Any Disability							Yes		Calculated HSA Rate	Exceeds State Benchmark	VV
Cancer Incidence - Cervical								Yes	County Rate	Exceeds State Benchmark	CCDP
Heart Disease Prevalence								Yes	County Rate	Exceeds State Benchmark	CCDP
High Blood Pressure - Unmanaged								Yes	County Rate	Exceeds State Benchmark	CCDP
STD - HIV Hospitalizations								Yes	County Rate	Exceeds State Benchmark	CCDP
STD - HIV Prevalence								Yes	County Rate	Exceeds State Benchmark	CCDP
STD - No HIV Screening								Yes	County Rate	Exceeds State Benchmark	CCDP
Breast Cancer (ED)								Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Breast Cancer (H)								Yes	Calculated HSA	Exceeds State	VV

Name	HEAL	MH_SA	ACT	BASIC NEEDS	POLLUTION	VIOLENCE	TRANSIT	DISEASE PREVENTION	HSA Value	Benchmark Comparison	Source
									Rate	Benchmark	
Breast Cancer (Incidence)								Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Cerebrovascular Disease (Stroke) - MORT								Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Chlamydia – Incidence								Yes	Maximum Rate for Associated County	Exceeds State Benchmark	VV
Essential Hypertension & Hypertensive Renal Disease – MORT								Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Gonorrhea – Incidence								Yes	Maximum Rate for Associated County	Exceeds State Benchmark	VV
Heart Disease - MORT								Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
HIV/AIDS (ED)								Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Lung Cancer (H)								Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Prostate Cancer (ED)								Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Prostate Cancer (H)								Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Prostate Cancer (Incidence)								Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
STIs (ED)								Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
STIs (H)								Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Stroke (ED)								Yes	Calculated HSA Rate	Exceeds State Benchmark	VV
Stroke (H)								Yes	Calculated HSA Rate	Exceeds State Benchmark	VV

Appendix G: Resources Potentially Available to Meet Identified Health Needs

Resource/ Organization Name	Service Site Location	ZIP	Access to Behavioral Health Services	Healthy Eating and Active Living	Safe, Crime and Violent-Free Communities	Disease Prevention, Management and Treatment	Access to Affordable and Reliable Transportation	Basic Needs	Access to High Quality Health Care and Services	Pollution-free Communities
AA, Al-Anon, Al-ateen - Solano North	Vacaville	95688	x							
AIDS Prevention & Care- Solano County AIDS Community Education Program	Fairfield	94533				x				
Aldea Children and Family Services	Fairfield	94533	x					x		
Alternative Family Services	Vallejo	94590	x					x		
Amador Street Hope Center - Food Bank	Vallejo	94590						x		
American Cancer Society	Suisun City	94585					x		x	
Archway Recovery Services	Fairfield	94533	x							
ARC-Solano (Association for Retarded Citizens) - Solano Network of Care	Vallejo	94590	x						x	
Area Agency on Aging	Vallejo	94590						x	x	
Baby First Solano	Vallejo	94590	x				x		x	

Bay Area Services Network (BASN)- Solano County Department of Mental Health	Fairfield	94533	x							
Benicia Community Action Council	Benicia	94510	x				x	x		
Blood Center of the Pacific: Community Presbyterian Church	Vallejo	94591						x		
Boys and Girls Club-Travis Youth Center	Travis AFB	94535	x	x	x			x	x	
Boys and Girls Club-Trower Center	Vacaville	95688	x	x	x			x	x	
Caminar, Inc.	Vallejo	94590	x					x	x	
Carquinez Counseling Center	Vallejo	94590	x							
Casa of Solano County	Fairfield	94533			x			x		
Catholic Social Services of Solano County	Vallejo	94590	x					x		
Child Haven, Inc.	Fairfield	94533	x		x					
Children in Need of Hugs	Suisun City	94585						x	x	
Children's Nurturing project	Fairfield	94533	x		x					
Christian Help Center in Vallejo	Vallejo	94590						x		
Church On The Hill - Vallejo Dream Center	Vallejo	94591						x		
Circle of Friends	Fairfield	94533	x				x	x		
City of Fairfield Housing Authority	Fairfield	94533						x		

City Of Vacaville Youth Services: Vacaville High School	Vacaville	95688	x							
Community Action North Bay (CAN-B)	Fairfield	94533						x		
Community Medical Centers	Vacaville	95687				x			x	
Crossroads Christian Church	Vacaville	95688	x							
DART Paratransit-Fairfield-Suisun Transit (FAST)	Fairfield	94533					x			
Delta Intergroup of Alcoholics Anonymous - Serving Rio Vista	Rio Vista	94571	x							
Disabled American Veterans- Vallejo Chapter (21)- Solano Network of Care	Vallejo	94591						x	x	
Dixon Family Resource Center	Dixon	95620	x				x	x		
Dixon Migrant Farm Labor Camp	Dixon	95620						x		
Dungarvin California	Vacaville	95688	x				x			
Emergency Medical Services- Solano County	Fairfield	94533							x	
Fairfield Adult Recreation Center- City of Fairfield	Fairfield	94533		x				x	x	
Fairfield Christian Reformed Church	Fairfield	94533						x		
Fairfield Family Resource Center	Fairfield	94533	x						x	

Fairfield Health Center-Planned Parenthood	Fairfield	94533	x						x	
Fairfield WIC Clinic	Fairfield	94533		x					x	
Fairfield Youth Coalition	Fairfield	94533			x					
Fairfield-Suisun Community Action Council, Inc.	Fairfield	94533						x		
Faith PAC (Partners Against Crime)	Fairfield	94533			x			x		
Family Health Services-Solano County	Vacaville	95688							x	
Fighting Back Partnership	Vallejo	94590	x		x			x		
First 5 Solano- Children & Families Commission	Fairfield	94533							x	
First Baptist Church	Fairfield	94533						x		
Florence Douglas Senior Center - Activities	Vallejo	94590						x		
Food Bank of Contra Costa and Solano County	Fairfield	94533		x				x		
For A Child's H.E.A.R.T.	Vallejo	94591	x					x		
Genesis House	Vallejo	94591	x					x		
Global Center for Success	Vallejo	94592	x	x		x		x	x	
Head Start Program	Fairfield	94533	x	x				x		
Head Start Program	Dixon	95620	x	x				x		
Head Start Programs	Vacaville	95687	x	x				x		

Head Start Programs	Vallejo	94589	x	x				x		
Healthy Partnerships	Fairfield	94533	x							
Healthy Partnerships	Vacaville	95688	x							
Heather House	Fairfield	94533	x					x		
Heritage Home	Fairfield	94534						x	x	
Heritage Home	Vallejo	94591						x	x	
House of Acts	Vallejo	94590	x					x	x	
Kaiser Permanente - Bethel Health Center	Vallejo	94591		x					x	
Kaiser Permanente Educational Theatre Program (ETP)	Vacaville	95688		x					x	
Kaiser Permanente Fairfield Medical Offices	Fairfield	94533				x			x	
Kaiser Permanente L.A.U.N.C.H. (High School Summer Internship Program)	Fairfield	94533						x		
Kaiser Permanente L.A.U.N.C.H. (High School Summer Internship Program)	Dixon	95620						x		
Kaiser Permanente L.A.U.N.C.H. (High School Summer Internship Program)	Vacaville	95688						x		
Kaiser Permanente L.A.U.N.C.H. (High School Summer Internship Program)	Vallejo	94589						x		

Kaiser Permanente Vacaville Medical Offices	Vacaville	95688	x	x					x	
Kaiser Permanente Vallejo Medical Center	Vallejo	94589							x	
Katargeo, Inc.	Vallejo	94589	x							
La Clinica de La Raza - Dental	Vallejo	94590							x	
La Clinica de La Raza - North Vallejo	Vallejo	94589	x						x	
La Clinica de La Raza- Great Beginnings Prenatal Clinic	Vallejo	94589	x						x	
Meals on Wheels of Solano County	Suisun City	94585						x		
MedMark Treatment Centers	Fairfield	94533	x							
MedMark Treatment Centers	Vallejo	94590	x							
Mission Solano	Fairfield	94533						x	x	
Mission Solano: Bridge to Life Center	Fairfield	94533	x					x		
Mission Solano: Community Outreach Center	Fairfield	94533						x	x	
Mission Solano: Social Enterprises	Fairfield	94533						x		
NAACP	Vallejo	94591						x		
Narcotics Anonymous - Solano County	Fairfield	94533	x							

National Alliance on Mental Illness (NAMI) of Solano County	Fairfield	94533	x							
New Dawn Vallejo- iBall (a.k.a Late Night Basketball Programs)	Vallejo	94590		x	x				x	
NorthBay Cancer Center	Fairfield	94533		x					x	
NorthBay Medical Center	Fairfield	94533	x	x		x			x	
Opportunity House	Vacaville	95688						x		
Pharmatox, Inc.	Fairfield	94533	x							
Rio Vista CARE	Rio Vista	94571	x							
Rio Vista Family Resource Center	Rio Vista	94571	x				x	x		
Rio Vista Food Pantry	Rio Vista	94571						x		
SafeQuest Solano	Fairfield	94533	x		x			x		
Second Baptist Church	Vallejo	94591						x		
Shamia Recovery Center	Vallejo	94590	x							
Solano Asthma Coalition	Fairfield	94533				x				x
Solano Coalition for Better Health	Suisun City	94585						x	x	
Solano Coalition for Better Health- SKIP (Solano Kids Insurance Program)	Suisun City	94585							x	
Solano Community College	Fairfield	94534						x		
Solano Community College	Vacaville	95688						x		

Solano County Dental Clinic- Mobile Dental Van	Vacaville	95688							x	
Solano County Department of Parks and Recreation	Fairfield	94533				x			x	
Solano County Department of Public Health- Communicable Disease Control Program	Fairfield	94533							x	
Solano County Department of Public Health- Emergency Medical Services	Fairfield	94533	x					x		
Solano County Department of Public Health- Health Education & Community Resources	Fairfield	94533		x						
Solano County Department of Public Health- Health Promotion & Community Wellness- Safe Routes to School Solano	Fairfield	94533				x			x	
Solano County Department of Public Health- Maternal, Child & Adolescent Health	Fairfield	94533							x	

Solano County Department of Public Health- Maternal, Child & Adolescent Health- Baby First Solano- Healthy Families America Program	Fairfield	94533							x	
Solano County Department of Public Health- Maternal, Child & Adolescent Health- Black Infant Health Program	Fairfield (Must reside in Vallejo to participate)	94533	x			x		x	x	
Solano County Department of Public Health- Maternal, Child & Adolescent Health- Nurse-Family Partnership Program	Fairfield	94533						x	x	
Solano County Department of Public Health- Nutrition Services Program	Fairfield	94533			x				x	
Solano County Department of Public Health- Nutrition Services Program- Nutrition Education & Obesity Prevention	Fairfield	94533							x	
Solano County Family Health Services	Vallejo	94590	x	x					x	

Solano County Family Health Services- Adult Primary Care Services	Fairfield	94533		x		x			x	
Solano County Family Health Services- Dental Clinic	Fairfield	94533							x	
Solano County Health and Social Services Department- CalFresh Food Stamps	Fairfield	94533		x				x		
Solano County Mental Health Services	Fairfield	94533	x							
Solano County- Suisun Family Resource Center	Suisun City	94585	x				x	x		
Solano County- Vallejo Family Resource Center	Vallejo	94590	x				x	x		
Solano County-Benicia Family Resource Center	Benicia	94510	x				x	x		
Solano Hearts United	Fairfield	94534						x		
Solano Pride Center	Fairfield	94533	x					x		
Solano/Napa Habitat for Humanity	Fairfield	94534						x		
Sparkpoint Fairfield	Fairfield	94533						x		
Sparkpoint Vallejo	Vallejo	94589						x		
St. Mark's Lutheran Church	Fairfield	94533						x		
St. Mary's Catholic Church	Vacaville	95688						x		
St. Paul's United Methodist Church	Vacaville	95688	x							
Sutter Fairfield Medical Campus	Fairfield	94534				x			x	

Sutter Medical Plaza	Vacaville	95688				x			x	
Sutter Solano Medical Center	Vallejo	94589				x			x	
The California Maritime Academy	Vallejo	94590						x		
The Children's Network of Solano County	Fairfield	94533	x	x					x	
The Children's Network of Solano County- Earn it! Keep It! Save It! Solano	Fairfield	94533						x		
The Children's Network of Solano County- Parent Leadership Training Institute (PLTI)	Fairfield	94533		x					x	
The Father's House	Vacaville	95688	x							
The Salvation Army	Vallejo	94590	x				x	x		
Touro University Student-Run Free Clinic	Vallejo	94590		x		x			x	
Touro University- Teen Life Conference	Vallejo	94592		x					x	
Vaca FISH - Bethany Lutheran Church	Vacaville	95688						x		
Vacaville Community Services Department	Vacaville	95688		x						
Vacaville Family Resource Center	Vacaville	95688	x				x	x		
Vacaville Unified School District- After-School Enrichment	Vacaville	95687		x				x		
Vacaville WIC Clinic	Vacaville	95688		x						

Vacaville Youth Roundtable	Vacaville	95688			x					
Vallejo Community Change Coalition	Vallejo	94590			x					
Vallejo Health Center-Planned Parenthood	Vallejo	94590		x					x	
Vallejo Open MRI Center	Vallejo	94591							x	
Vallejo USD- Full Service Community Schools	Vallejo	94592	x	x	x			x		
Vallejo WIC Clinic	Vallejo	94590		x				x	x	
Voces Unidas Solano	Fairfield	94533						x		
Workforce Investment Board of Solano County	Fairfield	94534						x		
Youth & Family Services	Fairfield	94534	x							
Youth and Family Services	Vallejo	94590	x							
Youth Takin' On Tobacco (YTOT)	Vacaville	95688	x							

Community Themes & Strengths Assessment

Summary Report

for Solano County

CTSA Overview

The Community Themes and Strengths Assessment (CTSA) is one of the four assessments in the Mobilizing for Action through Planning and Partnerships (MAPP) process. The CTSA engages community members by asking them to voice their thoughts, experiences, opinions, and concerns. The CTSA provides valuable insight into the health issues residents feel are important, perceptions of the quality of life in our community, and community strengths and assets. The information collected helped identify themes that Solano residents are interested in, concerned about, and would support. This community input has helped determine strategic health issues and identify strengths and assets in our community that will be incorporated in the strategies of our Solano Community Health Improvement Plan.

CTSA data was supplemented with primary data from the Community Health Needs Assessment (CHNA) gathered by Valley Vision's focus groups and key informant interviews. The data from the CHNA are presented in text boxes to support survey findings. Unique perspectives are also included at the end of the survey.

Process

Information within the CTSA came from three major sources: 1) a survey disseminated to the general public and partners; 2) focus groups; and 3) key informant interviews. The Solano County Community Health Survey was developed in late spring 2014 to capture the community's ideas regarding the quality of life in Solano County and its cities, and to gather information on the health issues, behaviors and environmental circumstances that most affect the community. The survey was available in both Spanish and English, and over the next two years, the survey was administered at more than 45 libraries, community centers, and fairs and festivals. In 2016, an electronic version of the survey was also developed and sent out through email and as a link on social media. A total of 1365 surveys were collected, representing all cities and age groups within Solano County.

In addition to information collected in the surveys, the CTSA includes information collected between May and November 2015 through key informant interviews and focus groups. Key informant interviews were conducted using a standardized series of questions with area health experts and service providers familiar with health issues, as well as in places and within populations experiencing health disparities. A total of 11 key informant interviews were completed. Focus group interviews were conducted with community members representing vulnerable populations such as the medically underserved, minority and low-income populations and/or community members living in vulnerable locations. A total of 6 focus groups were conducted with 67 participants.

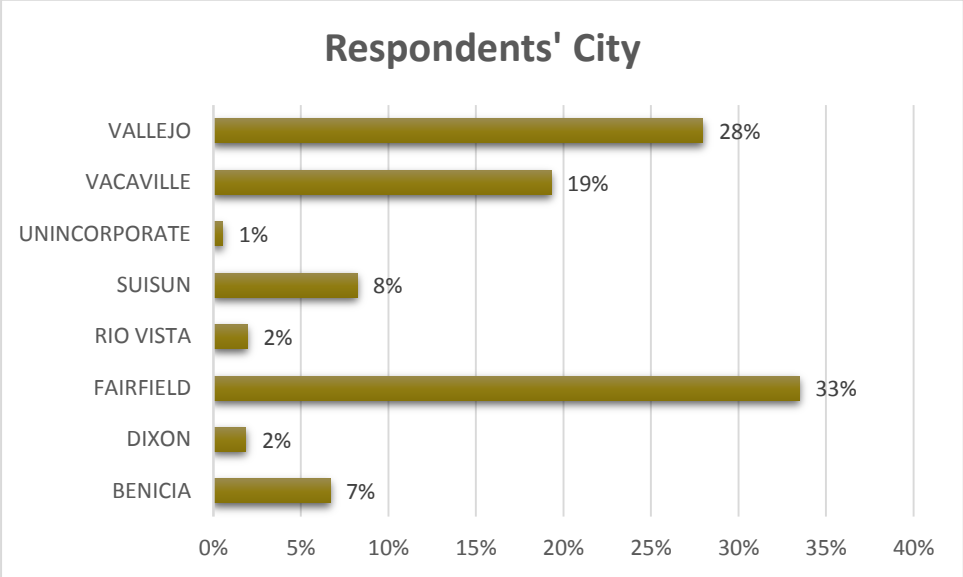
Survey Collection

Event	Date
Public Health Fair	4/16/2014
CDA Cares	4/24-4/25/2014
Annual Public Health Division Meeting	4/29/2014
Flu Clinic	

Event	Date
PHASPAR Meeting	5/8/2014
Fairfield FRC (Cleo Gordon)	5/20/2014
Vacaville FRC	5/20/2014
Suisun FRC	5/27/2014
Fairfield FRC (Anna Kyle)	5/20/2014
Emergency Medical Services Fair	
Pista Sa Nayon	6/7/2014
Juneteenth	6/21/2014
Latino Festival	6/22/2014
Suisun library	7/22/2014, 8/29/14
Fairfield Library	8/13/2014
Vacaville Library	
Rio Vista Library	
Dixon Library	
FHS Parking Lot Celebration (Vacaville)	8/13/2014
Emergency Medical Response Summit	8/14/2014
Other (family, friends, etc)	8/29/2014
Diversity Festival (Fairfield)	9/13/2014
Open Enrollment Employee Health Fair	9/16/2014
Kroc Center: Senior Health Fair	9/17/2014
Vacaville Kid Fest	10/4/2014
Benicia Senior Center Flu Clinic	10/15/2014
Vacaville Town Square Library Flu Clinic	11/3/2014
Fairfield Library Flu Clinic	11/6/2014
Cordelia Library	11/1/2014
Healthy Solano Steering Committee Meeting	2/23/2015
Public Health Fair	4/9/2015
Health Safety Fair (FF/Suisun Adult School)	4/25/2015
Fruit and Veggie Fest (Vallejo)	5/8/2015
Celebrate Seniors (Vacaville)	5/13/2015
Latino Festival	6/14/2015
KP Youth Focus Group	7/30/2015
Solano County Fair	7/29-8/2/2015
Vital Records	8/2015 - 3/2016
Get Fit Vallejo	9/26/2015
Lambtown	10/3-10/4/2015
Solano Family Justice Center	10/17/2015
Rio Vista Library	5/4/2016
Benicia Farmer's Market	5/5/2016

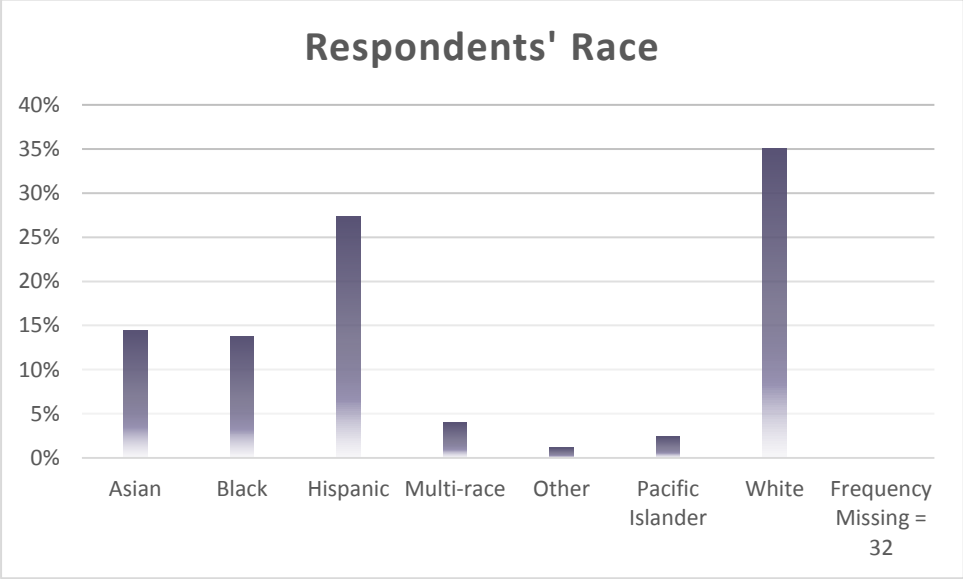
Demographic Information

The following charts, graphs and tables summarize the information about who participated in this survey. The diversity of participants, while not an exact match for those living in the County; it does provide a good assessment of what the public is concerned about regarding the health and well-being of their communities and the county. Continued planning efforts will need to include strategies to include even more community input.



County Data:
Population distribution, by city

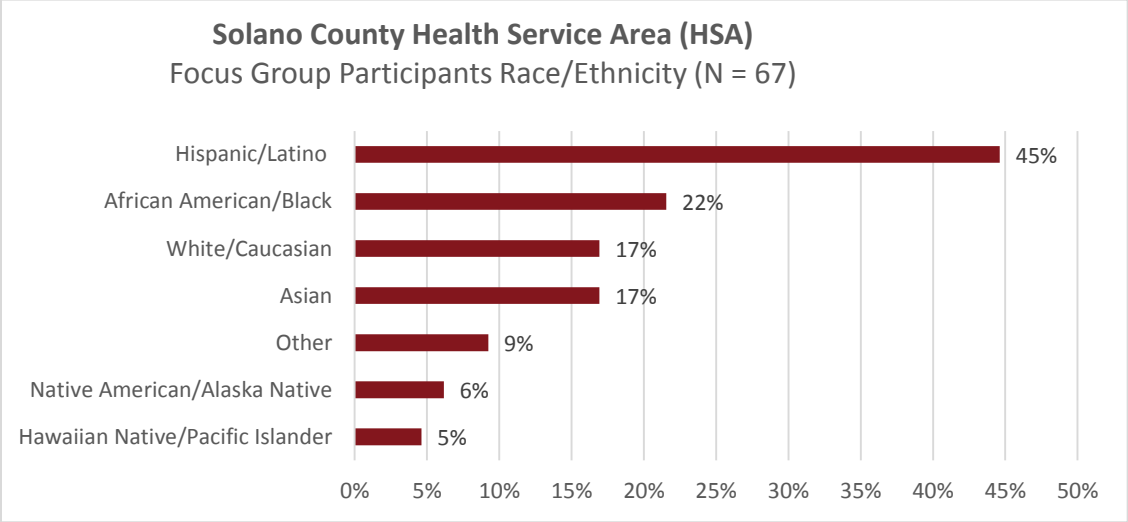
City	2016 5-Yr Percentage
Benicia	6.4
Dixon	4.4
Fairfield	26.0
Rio Vista	1.9
Suisun City	6.8
Vacaville	22.4
Vallejo	27.5
Unincorporated	4.6

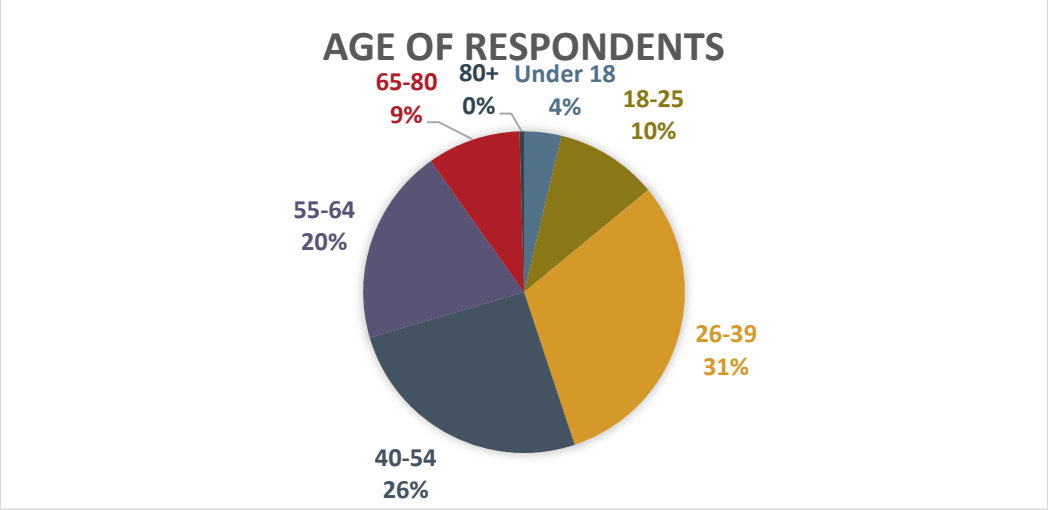


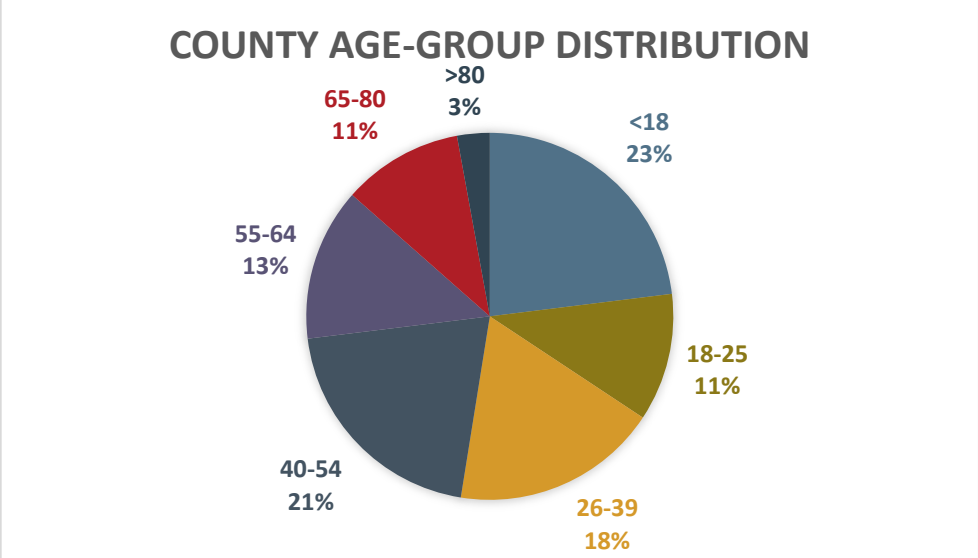
County Data:
Population distribution, by race

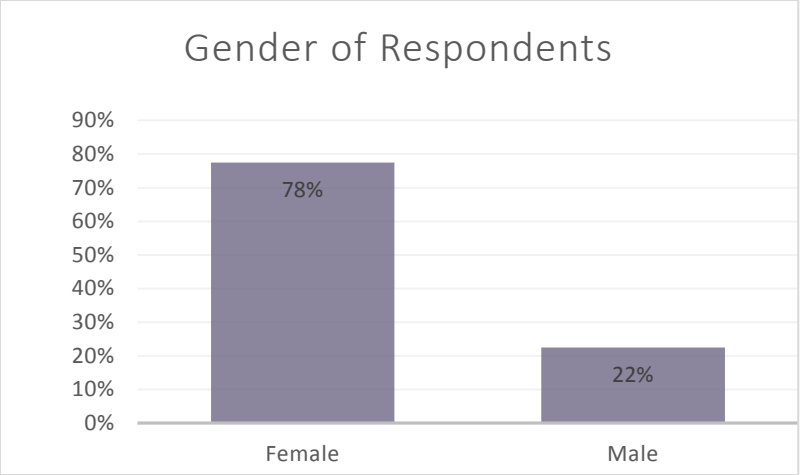
Race	2016 5-Yr Percentage
Asian	14.6
Black	14.0
Hispanic	24.9
Multiracial	5.4
Native American	0.5
Pacific Islander	0.8
White	39.8

The table below demonstrates the focus group participants' race/ethnicity for the CHNA data included in this report.









The County distribution is 50% Female and 50% Male.

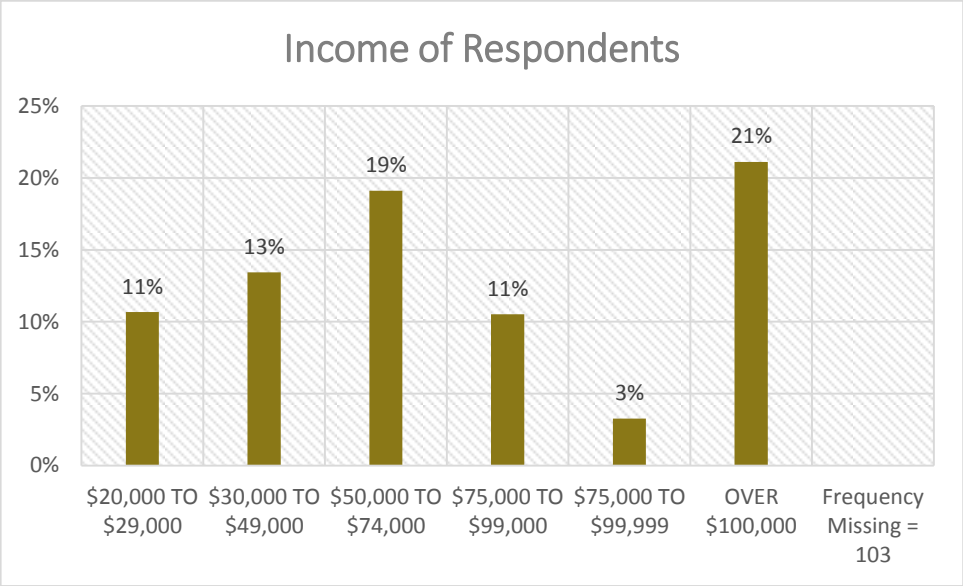
Languages

Respondents' Language were as follows:

- English (68%)
- Multiple Languages (18%)
- Spanish (10%)
- Tagalog (2%)
- Unknown (2%)
- The following were less than 1% - Arabic, Chinese, Indonesian, Punjabi, Urdu, Vietnamese

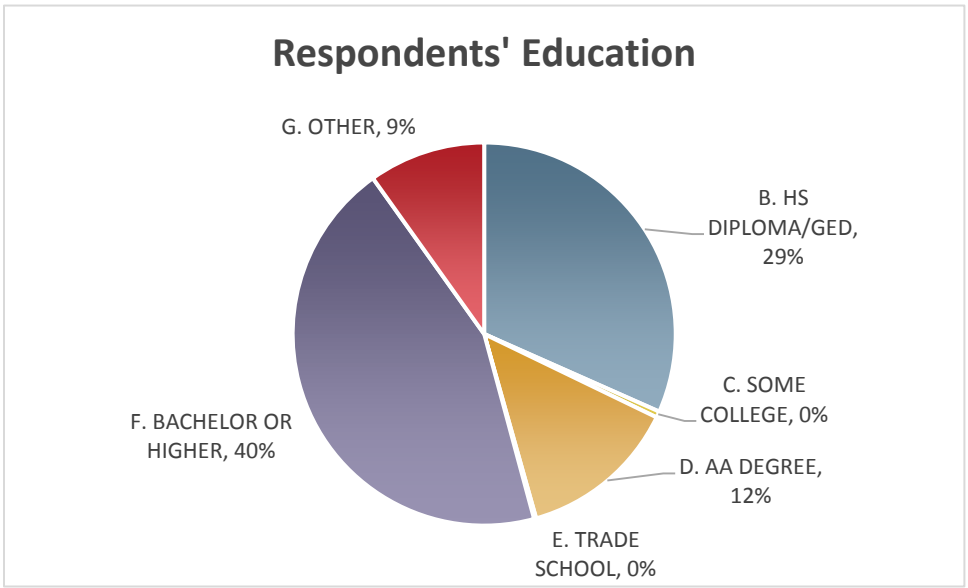
The following languages were listed by the respondents when they indicated speaking multiple languages:

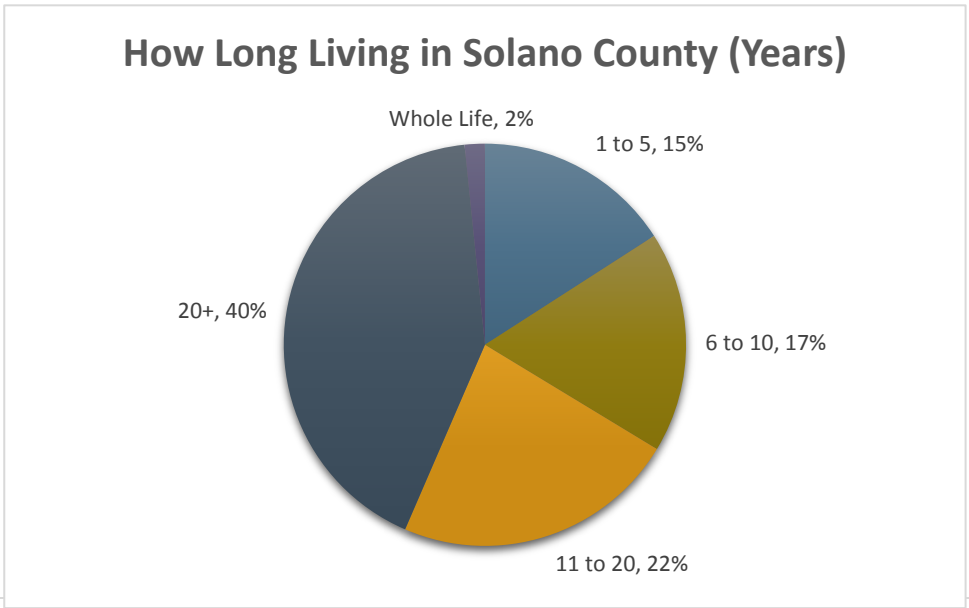
- Cantonese
- Chinese
- English
- German
- Hmong
- Ilocano
- Indonesian
- Italian
- Japanese
- Korean
- Pampanga
- Pangilinan
- Portuguese
- Punjabi
- Sign Language
- Spanish
- Sign Language
- Tagalog
- Vietnamese
- Visayan



County Income Data

Household Income	2014 5-Yr Est.
Less than $50,000	36.4
$50,000 – $74,000	18.4
$75,000 – $99,000	14.7
$100,000 or more	30.6

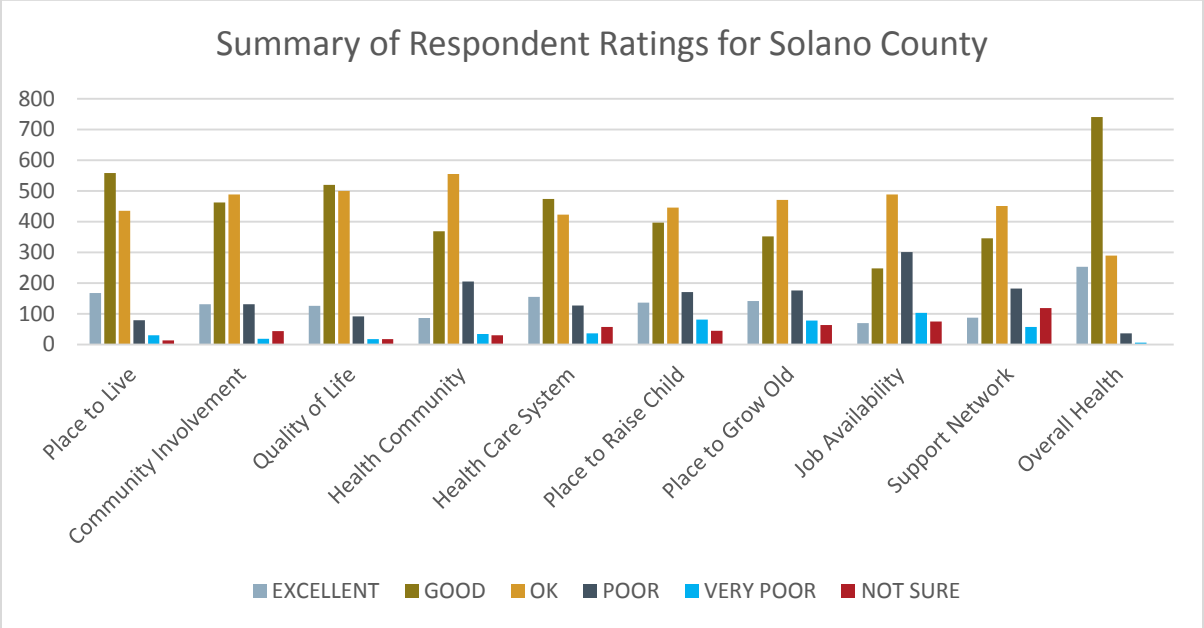




Survey Results

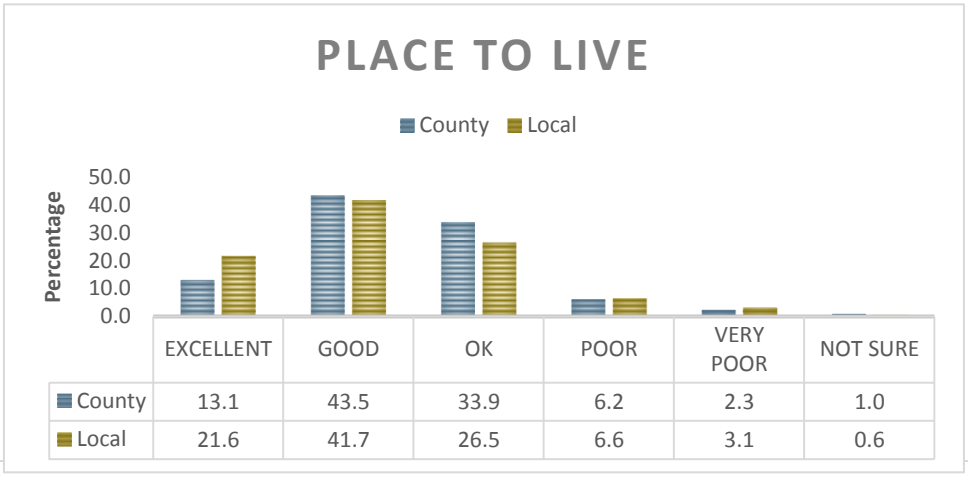
Ratings of County, Communities, & Individual Health

The CTSA results summarized below highlight the findings from inquiring of the residents and service providers knowledgeable about health issues in Solano County about their perceptions of health and well-being in Solano County and their communities. The chart below demonstrates that for the County overall, people rated the categories generally at least OK. Following that table are charts where the results are compared with how respondents feel about the County vs their local communities. One notable finding, for each of the categories, except Job Availability and Overall Health, citizens rated their local communities as excellent more often than the County.



Solano County and Your Community as a Place to Live

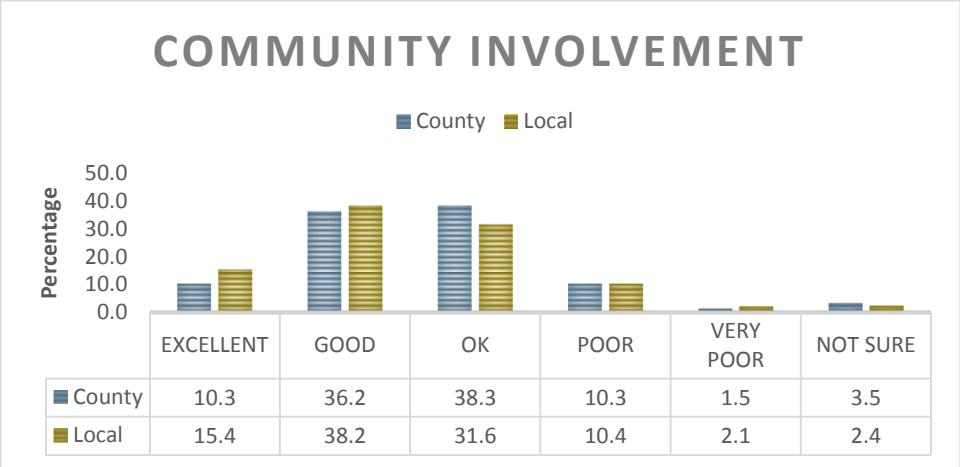
Participants were asked, *how would you rate local community AND Solano County as a place to live?* The following chart summarizes the responses. Over 56% of the people responding indicated that the County is Good or Excellent. For their local communities, it was slightly higher, at 63%.



	EXCELLENT	GOOD	OK	POOR	VERY POOR	NOT SURE
County	13.1	43.5	33.9	6.2	2.3	1.0
Local	21.6	41.7	26.5	6.6	3.1	0.6

Sense of Community Involvement and Responsibility

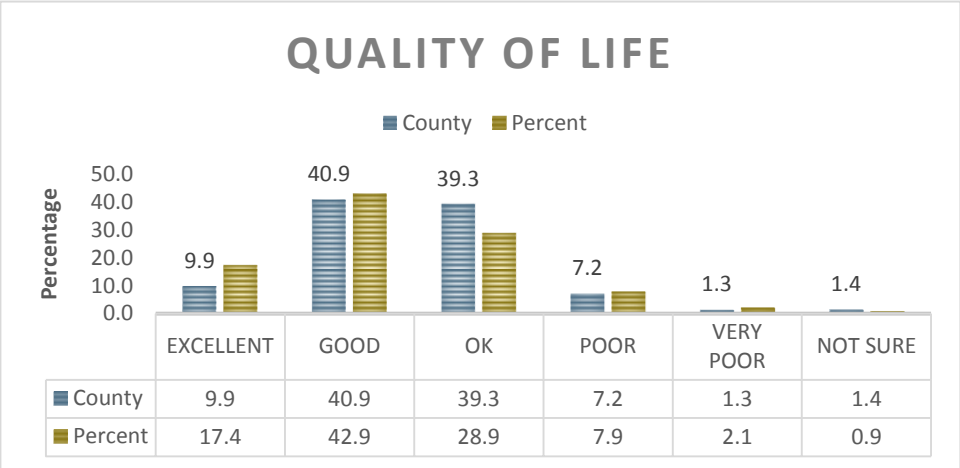
The chart below depicts the responses to *How would you rate the sense of community involvement and responsibility in your local community AND in all of Solano County?* The responses for the County indicate that almost 47% believe that Community Involvement is Good or Excellent, and for local communities, it is again slightly higher at 54%. For the local community, more people responded the community involvement is excellent compared to the county.



	EXCELLENT	GOOD	OK	POOR	VERY POOR	NOT SURE
County	10.3	36.2	38.3	10.3	1.5	3.5
Local	15.4	38.2	31.6	10.4	2.1	2.4

Quality of Life

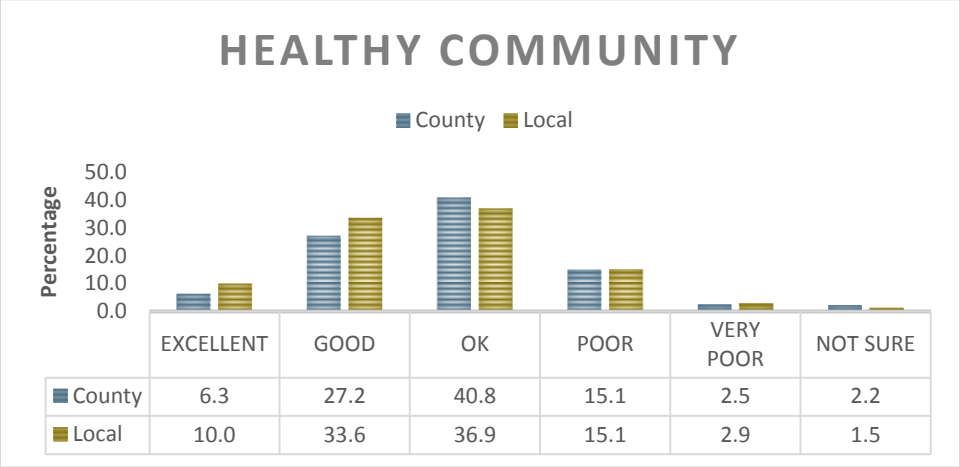
How would you rate the quality of life in your local community AND in all of Solano County? In rating Quality of Life, over 50% of the respondents again said that Solano County is Good, or Excellent. Just over 60% rated their local communities the same.



	EXCELLENT	GOOD	OK	POOR	VERY POOR	NOT SURE
County	9.9	40.9	39.3	7.2	1.3	1.4
Percent	17.4	42.9	28.9	7.9	2.1	0.9

Healthy Community

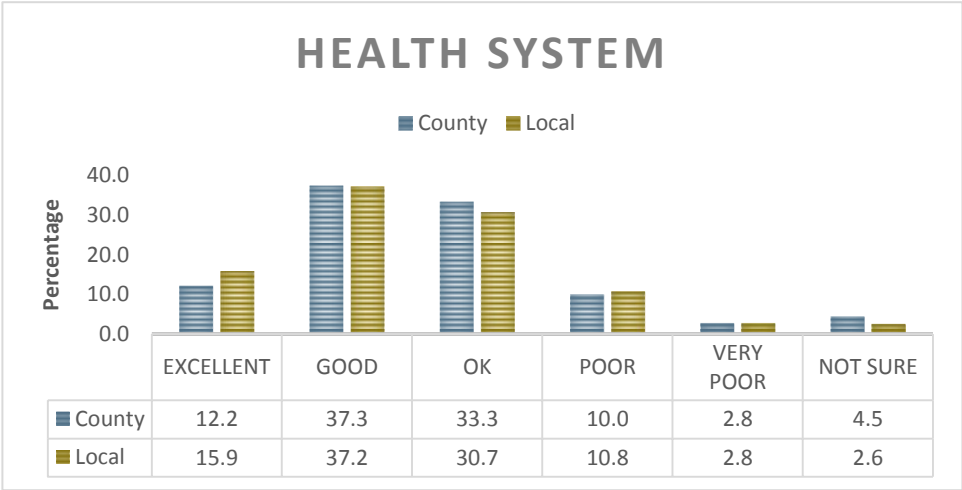
The question on healthy community asked the respondents *how would you rate your local community AND all of Solano County as a "healthy community"?* For this question, only around 1/3 (33%) of the people thought the County is Excellent or Good. For their local communities, 2/5 (44%) feel the health of the community is Excellent or Good.



	EXCELLENT	GOOD	OK	POOR	VERY POOR	NOT SURE
County	6.3	27.2	40.8	15.1	2.5	2.2
Local	10.0	33.6	36.9	15.1	2.9	1.5

Satisfied with the Health Care System

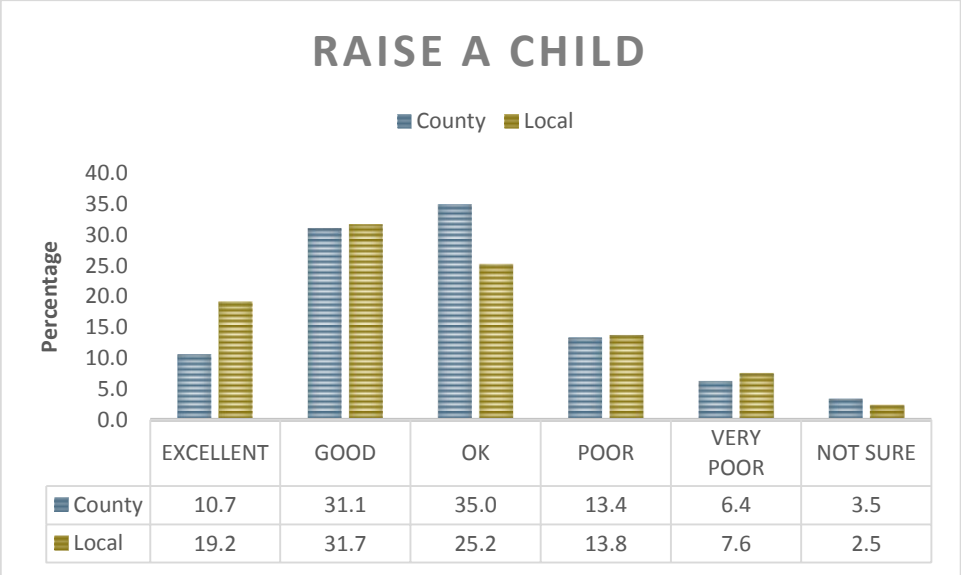
Just under 50% of the people responding indicated their satisfaction with the Health Care System in the County is Good or Excellent and just over 53% for their local communities. The question read, *how satisfied are you with the health care system in your local community AND in all of Solano County?*



	EXCELLENT	GOOD	OK	POOR	VERY POOR	NOT SURE
County	12.2	37.3	33.3	10.0	2.8	4.5
Local	15.9	37.2	30.7	10.8	2.8	2.6

Good Place to Raise Children

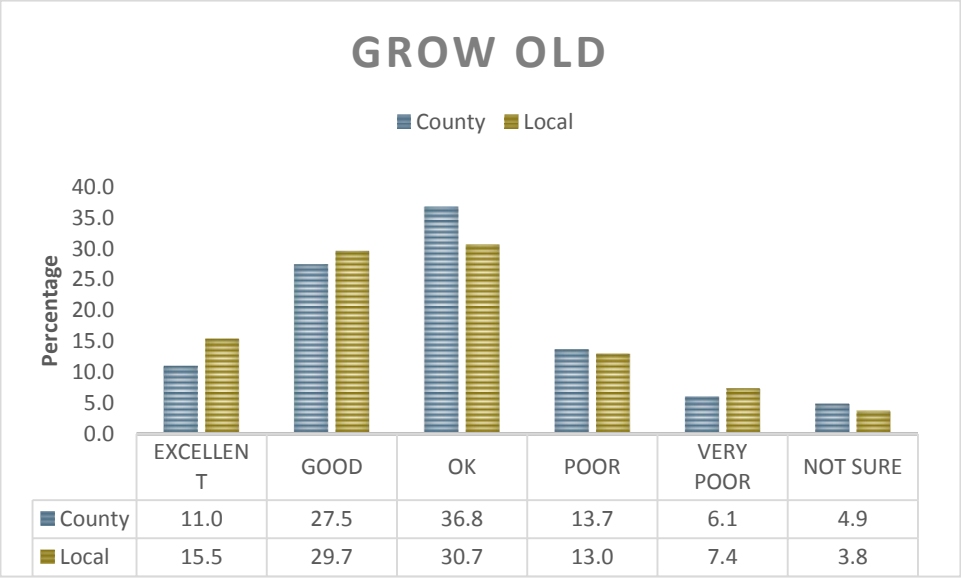
How would you rate your local community AND all of Solano County as a good place to raise children? For Solano County and local communities, the responses were Excellent or Good for more than 40% of the people responding. Again, the trend is that more people indicated their local communities (19.2%) are Excellent vs how they feel about Solano County (10.6%).



	EXCELLENT	GOOD	OK	POOR	VERY POOR	NOT SURE
County	10.7	31.1	35.0	13.4	6.4	3.5
Local	19.2	31.7	25.2	13.8	7.6	2.5

Place to Grow Old

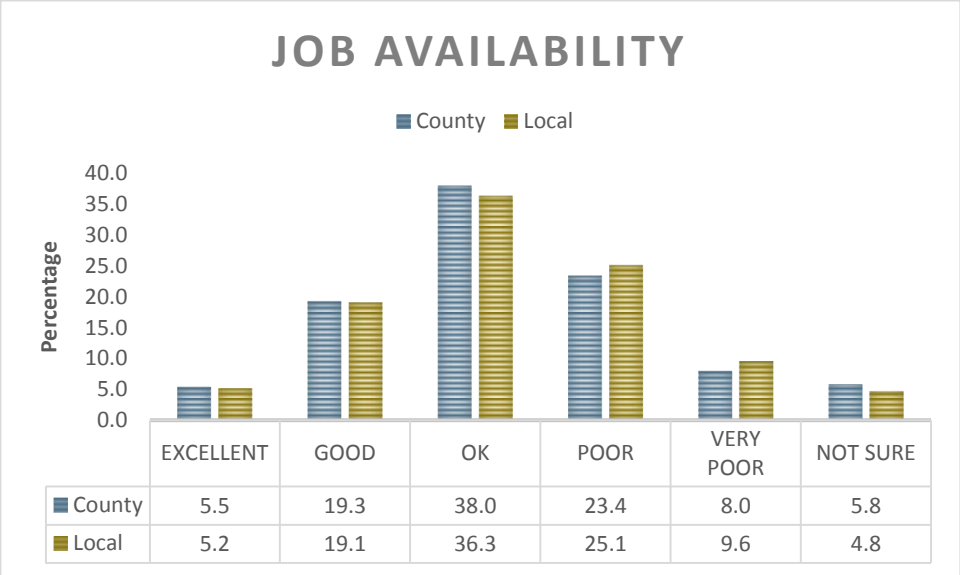
Solano County and people's local communities rated Good or Excellent as a place to grow old by over 1/3 of the respondents. The question read *how would you rate your local community AND all of Solano County as a place to grow old?*



	EXCELLENT	GOOD	OK	POOR	VERY POOR	NOT SURE
County	11.0	27.5	36.8	13.7	6.1	4.9
Local	15.5	29.7	30.7	13.0	7.4	3.8

Job Availability

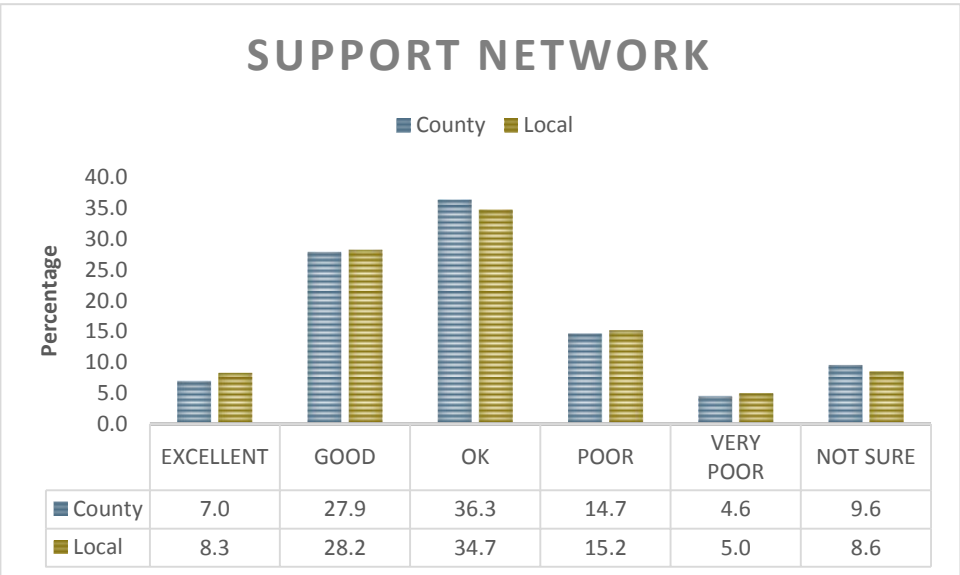
How would you rate your local community AND all of Solano County with regards to job availability? Over 69% of the respondents considered the availability of jobs to be OK, Poor or Very Poor for the County and local communities. This is the only one of the 10 category rated where the number of people felt the situation was Poor or Very Poor more frequently than Good or Excellent.



	EXCELLENT	GOOD	OK	POOR	VERY POOR	NOT SURE
County	5.5	19.3	38.0	23.4	8.0	5.8
Local	5.2	19.1	36.3	25.1	9.6	4.8

Support Networks for Individuals and Families During Times of Stress and Need

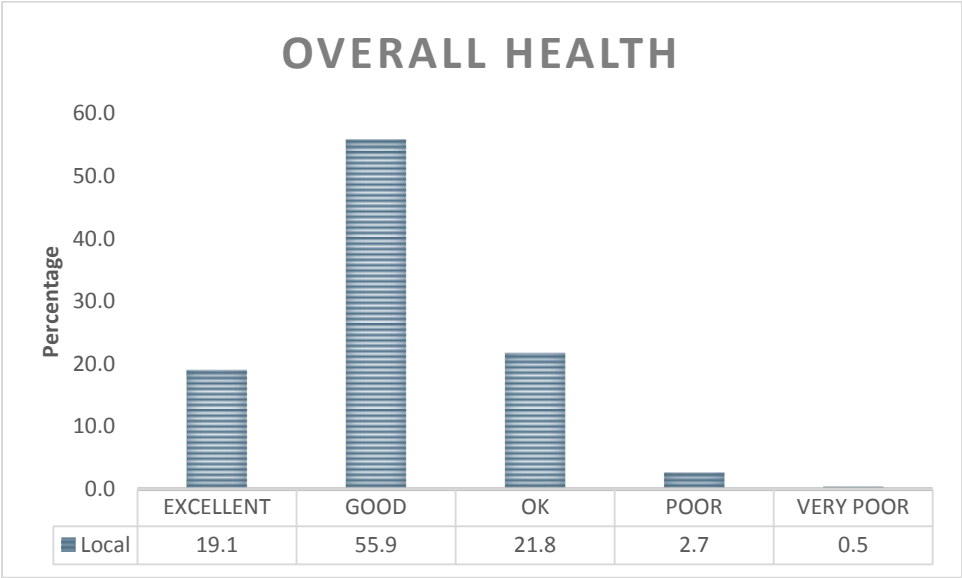
How would you rate your local community AND all of Solano County as a place with support networks for individuals and families during times of stress and need? For this question, over 1/3 of the people responded that the Solano County and local community support networks are Good or Excellent.



	EXCELLENT	GOOD	OK	POOR	VERY POOR	NOT SURE
County	7.0	27.9	36.3	14.7	4.6	9.6
Local	8.3	28.2	34.7	15.2	5.0	8.6

Individual Overall Health

People rated their overall health. Almost 90% of the respondents rated their health as OK, Good, or Excellent with 75% of them indicating their health is Good or Excellent. They did not indicate any significant difference between the County vs. their local community for this factor.



Top Factors Impacting Solano County Health

The tables below list the top 10 issues influencing Health in Solano County for each of the 5 factors which were:

- Health Issues
- Individual Behaviors
- Social / Economic
- Environmental
- Healthy Community

Participants were asked to select their top 3 issues for each factor. In the tables below, the overall top 3 ranks for each factor are highlighted in light blue for Solano County.

Health Issues

The top 3 issues were Alcohol/drug abuse, Obesity and Mental health problems. In the Community Health Improvement Plan (CHIP) development process, it will be crucial to understand the root causes of drug and alcohol in the County to determine what strategies are most crucial.

Health Issues	Percent
Alcohol/drug abuse	62%
Obesity	43%
Mental health problems	37%
Diabetes	26%
Aging problems (e.g., arthritis, hearing/vision loss)	18%
Cancer	14%
Homicide	14%
Child abuse/neglect	12%
Heart disease and stroke	12%
Respiratory/lung disease/asthma	12%

Key informant and focus group participants spoke about the need for more substance abuse treatment facilities in the county. Substance abuse treatment programs to support homeless, as well as youth, were specifically mentioned. Community members expressed concern with the lack of consistent and comprehensive care, which sometimes resulted in recidivism with many residents going back to using substances.

The use of marijuana and the number of medical marijuana dispensaries in Solano County was concerning for key informants, especially in Vallejo. One key informant mentioned about Vallejo, "*the vaping stores have been opening up, but the problem with those stores isn't really the tobacco and nicotine, so much as it is that they're becoming more focused on marijuana and dispensing marijuana*" *(KI_10).*

Lack of psychiatrists and access to mental health providers has resulted in many residents going untreated for mental illness. Participants discussed patients needing care for mental illness and having a difficult time getting adequate care in the HSA. The need for access to mental health/behavioral health services was mentioned in all 17 primary data sources.

Participants also spoke about mental illness in the homeless populations of the county, stating the majority of the homeless population suffers from mental illness and substance abuse.

Diabetes was mentioned in more than half of the key informant and focus group interviews as a health issue for community residents. Interviewees often mentioned diabetes in both adults and youth as a significant health need for Solano County and discussed possible causes, such as low access to healthy, affordable food options and health education, including understanding how to manage the disease.

Community Health Needs Assessment Category	Qualitative Themes
Access to behavioral health services	• Lack of psychiatrists and mental health providers • Mental health care services are limited • Lack of law enforcement education on handling mental health cases • Depression, anxiety and daily stress common for both youth and adults • Dual diagnoses (mental health and substance abuse) has increased • Barriers in accessing care - lack of providers in general - delay of appointment times - transportation • Long wait times and provider insensitivity • Lack of culturally competent providers who understand LGBTQ populations • Mental health issues such as depression, schizophrenia, Alzheimer's and dementia were mentioned most often • Accessing behavioral and substance abuse care is difficult • Care system in county lacks capacity • Alcohol and drug use a major issue - drug paraphernalia in streets and parks where kids play • Substance abuse programs are limited • Substances most commonly mentioned include crack, crystal meth, alcohol and tobacco • Homelessness youth and adults with mental health and drug/alcohol abuse common
Access to disease prevention, management & treatment	• Sexually transmitted infections are high in the county, most common are chlamydia, gonorrhea and HIV • Heart disease, hypertension and diabetes were most commonly mentioned conditions in the community • Asthma and allergies are high in the county for both adults and youth

Individual Behaviors

For Individual Behaviors, the top 3 issues as rated by the respondents were drug abuse, alcohol abuse and poor eating habits. Crime/violence was fourth, but only by 1 percentage point.

Individual Behaviors	Percent
Drug abuse	55%
Alcohol abuse	38%
Poor eating habits	30%
Crime/violence	29%
Life stress/lack of coping skills	21%
Lack of exercise	19%
Tobacco use/smoking or electronic cigarette use	16%
Not getting regular check-ups by a health provider	11%
Texting/cell phone use while driving	10%
Bullying	10%

Key informant interview and community focus group participants spoke about their concerns regarding poor eating habits and drug abuse.

"Physical inactivity, healthy eating and tobacco use are our top three modifiable risk factors that impact some many others things" (KI_8)

"I would say that, if we address the risk factors of physical activity, quality of nutrition, and smoking, that the results of those are diabetes, heart disease, and a number of cancers… so if you ask me what is most important from the stand point of burden impact on the county, I would say those." (KI_1)

"In Vallejo, we have more fast foods restaurants than we have healthy exercising places" (FG_4).

"Certain areas of Vallejo are deemed as a food desert, there's a lot of families that doesn't have access to healthy foods and therefore affecting their health" (KI_7).

Regarding crime and violence, one community member stated, *"Fourth of July, we don't hear fireworks, we hear gun shots. Right down where I live… I know somebody who got shot there" (FG_3)*

Community Health Needs Assessment Category	Qualitative Themes
Healthy Eating and Active Living	• Lack of access to places to be physically active - crime and drug abuse; concerns with safety - large freeways, spread-out and non-walkable communities • More liquor stores than grocery stores • Lack of healthy and affordable foods in the community • Lack of healthy and affordable food options in a walkable distance • Abundance of unhealthy food options, including fast food restaurants • Increased marketing and advertisements of unhealthy food options • Not enough outdoor activities for youth • High cost of eating healthy – cheaper food is more filling • Food deserts in low SES communities • Concern that youth are drinking sugar-sweetened; unhealthy food options and vending machines in public places, including schools • Need more WIC locations, making it more accessible to access fresh food • Knowledge and education on how to make healthier food options is needed

Social / Economic

Unemployment, Poverty and Education issues sorted to the top of the list, but were followed closely by Homelessness and No Health Insurance. Further exploration is needed to understand what is meant by the responses that indicated no health insurance is an issue. Does it mean undocumented people or those who cannot afford insurance.

Social / Economic	Percent
Unemployment	46%
Poverty	39%

Lack of education/no high school education	31%
Homelessness	30%
No health insurance	28%
Lack of affordable and safe housing	24%
Language barriers	19%
Racism and discrimination	18%
Cultural barriers	16%
Lack of preventive services	15%

"*So for our low income families, we have a lot of families that are homeless or rooming with another family because they can't afford the rent. We had a meeting with the Housing Office last week and they did explain that for a 1 bedroom in Vacaville, it could be $1,000, so it's really, really hard for families" (KI_7).*

"*I've been on the waiting list to get affordable housing for 2 years now and I'm still waiting. And I'm basically disabled...I'm still waiting, even though I'm labeled as disabled and I got that extra point up. I'm not the only disabled person who's trying to get that affordable housing and housing is just going up, like ridiculous" (FG_4).*

"*I think poverty is the biggest barrier and I think we've designed our county to require a car. And so, if you don't have one, you really can't get access to services. So, I think poverty is the driver for that...I think transportation therefore is an issue. I think distribution of necessary resources is poor." (KI_1).*

The key informant said, "q*uality of life, it is affected by healthy choices, it is affected by dealing with poverty, dealing with… having to go to schools that are not as good as schools in wealthier areas" (KI_5).*

Community Health Needs Assessment Category	Qualitative Themes
Basic Needs	• Lack of affordable housing options leaving people homeless • Long waiting lists to access affordable housing • Concern with the amount of homeless adults and youth in the community • A need for more homeless shelters and safe place for them to go • Cost of living is high and wages are low • A common need to work more than one job in order to make ends meet • A lot of poverty spread out through Solano County • Too many family living in poverty • People still recovering from the recession • Often times over qualified for child care, however working multiple jobs to make ends meet • Lack of employment opportunities in the region

Environmental:

All of the issues in this category have direct impact on the ability to meet the basic needs of the citizens. This aligns with the recent discoveries and work on the Social Determinants of Health and indicates a need to address such issues in future planning efforts.

Environmental	Percent
Cigarette smoke	40%
Poor housing conditions	34%
Air pollution	33%
Lack of access to healthy foods	27%
Trash on streets and sidewalks	23%
Lack of access to places for physical activity	18%
Lack of public transportation	17%
Lack of safe walkways and bikeways	17%
Poor neighborhood designs	15%
Heat/hot days	14%

One key informant said, "*for Fairfield, what we have encountered as common among the families that we serve is asthma, especially in children" (KI_7).* Another key informant mentioned Rio Vista as having high rates of asthma. A key informant from Rio Vista said, "*for Rio Vista, I could say that asthma is one of our biggest things in this town. We hear a lot [about] adults and kids with asthma…" (KI_7).*

If someone is in Section 8 Housing or in a multi-unit housing and smoke drifts through outlets and across patios and through heating and ventilation HVAC systems and so children and seniors or anyone who is exposed to secondhand smoke in their dwelling… can't have a choice, who may not have a voice (KI_9).

Solano County has adequate but not excellent transportation infrastructure. People have a lot of trouble getting, again I am speaking to MediCal beneficiaries not people that own cars, they have trouble getting to their services. They often can't get there or they are late and then they are excluded from their visits. So there's that lack of infrastructure for that particular population… (KI_4).

One key informant talked about transportation issues in Rio Vista: "*The bus only comes here twice a day. It comes at nine in the morning and one in the afternoon. So if you are in Rio Vista and you want to come here* [Fairfield], *you just don't" (KI_1).*

One community member mentioned, *"it's really hard to exercise in Vallejo because, like if you wanted to run it's dangerous and you have no open free space that's free to exercise." (FG_3).*

Primary data participants also expressed concern about the safety of the parks in Solano County; the perception that there were a lot of persons experiencing homelessness, active drug users and gang activity, even during the day.

Community Health Needs Assessment Category	Qualitative Themes
Pollution-Free Living and Work Environments	• High density of freeways throughout Solano County • Pesticide used on agriculture crops -Plane spraying crops with chemicals on a reoccurring basis • Dust and mold believed to be contributing to asthma • Asthma and allergies are major issues for area residents • Concerns with second hand smoke going through vents in section 8 housing impacting adults and kits
Affordable and accessible transportation	• Many residents lack adequate reliable and affordable transportation • Lack of transportation effects ability to get to grocery stores, health care services and jobs • Residents have to travel far to get comprehensive care services • Bus system is inconsistent and not running often enough • Transportation is least common in low SES communities • County residents have to travel far for work • Public transportation is expensive for daily usage

Factors of Healthy Community

For this question, respondents defined the factors impacting the health of a community. Safety, housing and jobs were on the top of the lists along with good schools.

Factors of a Healthy Community	Percent
Low crime/safe neighborhoods	45%
Safe place to raise kids	34%
Job opportunities	31%
Affordable housing	27%
Good schools	26%
Park and recreation facilities	23%
Community involvement	14%
Well-informed community about health programs	14%
Access to healthcare	12%
Time for family	12%

In the Solano County HSA, gang violence, gun violence, domestic violence and drug use were mentioned most often as making communities feel unsafe and non-walkable.

"There are truly things we can do to make our school infrastructure healthier… like using green cleaners like less harsh chemicals in the classrooms so kids have less asthma." (KI_8)

Community Health Needs Assessment Category	Qualitative Themes
Safe, crime & violence-free communities	• Concern over park safety (homelessness, active drug users, needles and gang activity even during the day) • Gang violence is an issue throughout the county • Safety concerns in high schools; lots of crimes, gangs and bullying • Domestic violence is of concern in the county • Need safe places to go for families experiencing domestic violence • Sex trafficking and prostitution is a concern • Need increased community and law enforcement connectedness • Concern over gun violence in Solano County communities • Concern over people growing up with few resources and turning to drugs and gang violence • Alcohol and substance abuse contributed in increased community violence

Social Services Benefits

Respondents were asked which types of social services they or their family needed in the past year. The table below displays the percentage of respondents who needed each service (they checked all that applied).

Social Service Benefit	Percentage of Respondents Indicating Need
Medi-Cal	31%
Food Stamps/Cal Fresh	22%
Housing Assistance	13%
Medicare	13%
Health Families Insurance	11%
Veteran's Administration	7%
Subsidized Child Care	4%
CHIP	1%
None	48%

5% of the respondents indicated needing other benefits and listed some of the following needs:

- After School Program
- Homeless Help
- Job Assistance
- Mental Health
- Immunizations
- Dental

Health Care Services

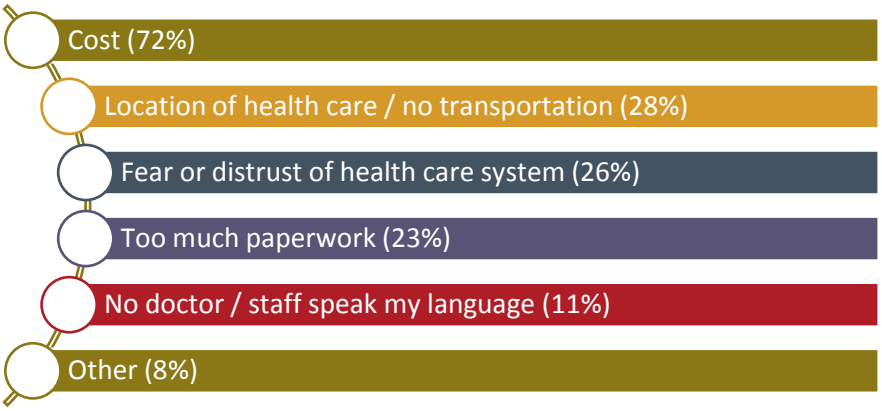
Participants were asked where they go when they are sick or need health care services.

Health Care Service Provider	Percentage of Respondents Using
Doctor's Office	73%
Hospital Emergency Department	19%
Hospital Outpatient Department	13%
Public Health Clinic	12%
Community Health Center	9%

The majority of the 2% who responded "other", specified that they currently do not go anywhere.

Barriers to Getting Health Care

In the graphic below are the percentage of respondents who indicated each barrier is a problem for their communities. Themes in the responses for "other" include: access to care, cultural barriers, wait times, no time off work for appointments, and lack of providers.



One of the biggest findings of the primary data was the need for increased access to primary care for residents of Solano County HSA. Community members expressed concern over the lack of access to health care providers, especially Medi-Cal providers.

Key informants and community members shared that there's a lack of culturally competent health care providers in their communities. One key informant stated, *"the Spanish speaking providers are called Unicorns because you can never find them" (KI_7).* One focus group interviewee said, *"what is needed is training and cultural competency for all staff. Yes, education training, compassion, and understanding is needed because right now there is a lack of those things" (FG_6).*

The requirement of presenting a picture ID to go to doctor's appointment, so that is a challenge… a lot of our clients do not have the ID that is required and so it might be that once they're there at that appointment, they might be seen even if they don't have the ID, but when they're told on the phone that they need to present an

ID, that discourages them to keep that appointment or even make the appointment because they don't have the ID" (KI_7).

Many participants mentioned the lack of access to dental care services to support oral hygiene, including oral health in schools. It was shared that people are not going to the dentist because they don't have insurance, and it's too expensive to pay without insurance.

Key informant and community members mentioned the lack of rapport and understanding between the community members and police officers.

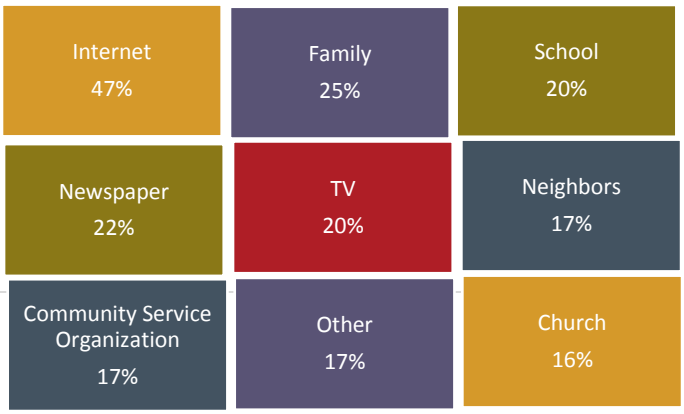
The transgender community expressed concern over violence that's often times directed at the LGBTQ community.

One community member spoke about the need for more mental health providers and counselors in all three major cities (i.e., Vacaville, Fairfield and Vallejo) who have experience and education working with LGBTQ populations. The same community member also stated, "*We need culturally competent health care. For all types of health care, not just mental health" (FG_4)*

Community Health Needs Assessment Category	Qualitative Themes
Access to high quality health care and services	• Access to a provider is hard for low SES communities • Waiting times to see a provider are long (more people insured under the Affordable Care Act and not enough providers, causing increased weight times to see a doctor) • Coordinated, culturally competent care is important • Transportation barriers to health services • Majority of health care services are in Vacaville, Fairfield and Vallejo making it challenging for people outside these communities to access services without transportation • Medi-Cal providers are hard to find (High turnover rates of providers; lack of culturally competent care) • Lack of dentists who accept Denti-Cal • More education on understand the health care system and accessing care • Language barriers between provider and patient • A need for more health education, especially sex education in schools • Lack of understanding among community providers and organizations of who is providing what services • Lack of services for undocumented population • Health care prevention services are important

Information About Health Care Resources

This graphic shows the percentage of respondents who get their information about health care resources from the various sources. Other places people listed most often were co-workers/work, medical providers, and public agencies.



Strengths in your local community

The word cloud below highlights the frequently mentioned strengths of the Solano County communities that respondents think most improve the quality of life.

What makes residents proud of their local communities?

The following themes were seen the respondents' answers to the question, "What makes you most proud of your local community?"

Theme	Includes Responses Like:
Community Involvement	People Care, Pull Together, Look Out for Each Other, Belonging
Community Events & Resources	Fairs, Parades, Libraries, Social Services, VA Services
Small Town / Rural Feel	Good Neighbors, Stick Together, Agricultural
Beautiful Landscape	Parks, Mountains, Open Space, Waterways
Safe Place	Safe Neighborhood, Safe Schools, Safe Place to Raise Children
Diversity	Diverse Neighborhood, Diverse Groups Working Together
Nothing	I don't know, Nothing

What Spurs Involvement in Community?

People were asked what excites them enough to get involved in building a healthier community. The graphic below illustrates the responses.

Conclusion

The CTSA informs the MAPP process about what the people in the County (residents and visitors) are concerned about related to their health and well-being. People generally feel the same about how the County overall and their local communities are doing, but there are some areas where their concerns differ vastly. Issues like race and discrimination in the local communities being of most concern is one that is among the noteworthy. More input and analysis needs to be done related to these types of concerns to determine the root cause of the concern and what areas should become priorities for action moving forward the in the MAPP process.

Additionally, there were a significant number of concerns raised that related to access to services for such things as substance abuse and mental health services as well as transportation to get to health care services. Also Jobs, housing and access to healthy food surfaced which affect the ability of citizens to meet their basic needs. While the responses indicate there is a general feeling Solano County and its communities are generally a good to excellent place, there is room for improvement identified by the CTSA.

Local Public Health System Assessment

Summary Report

for Solano County

Local Public Health System Assessment Overview[i]

The Local Public Health System Assessment (LPHSA) is a valuable tool for identifying areas for system improvement, strengthening local partnerships, and assuring that a strong network is in place for effective delivery of day-to-day public health services and response to public health emergencies. Communities that have completed the LPHSA indicate that it accomplishes the following:

- Improved organizational and community communication and collaboration by bringing a broad spectrum of partners to the same table.
- Educated participants about public health and how activities are interconnected.
- Strengthened the diverse network of partners within state and LPHSs.
- Identified strengths and weaknesses to be addressed in quality improvement efforts.
- Provided a baseline measure of performance to use in preparing for voluntary national public health department accreditation.
- Established a model for performance to which public health systems can aspire.

Process

Solano County Public Health (SCPH) conducted several meetings with partners to assess the current status of the system that ensures the health of the public in Solano County (the local public health system) and to begin to determine the improvements needed to have a positive impact on health outcomes for all of the citizens and visitors of Solano County. LPHSA is one of four assessment activities in the Mobilizing for Action through Planning and Partnership (MAPP) process. MAPP is a community-driven strategic planning process for improving community health.

Partners participating in the LPHSA were engaged either in existing meeting structures or were invited to special meetings. The 10 Essential Services (ES) assessed in the LPHSA were assigned to the groups with the most knowledge of how each ES are delivered/provided in the community or need to be engaged in improved solutions. The table below indicates which areas of the LPHSA were assigned to which meetings. More information about the meetings are detailed below.

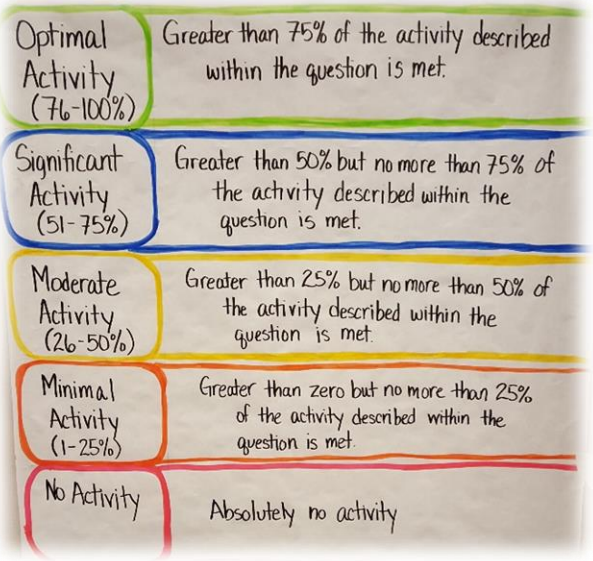
TABLE 1

Date	Essential Services Address	Model Standards Addressed
5/6/15	ES#2 ES#5	2.2, 5.4
5/11/15	ES#4	4.1, 4.2
2/17/16 (am)	ES#7 & ES#9	all
2/17/16 (pm)-1	ES#8	all
2/17/16 (pm)-2	ES#10	all
3/29/16 (am)	ES#1 ES#2 ES#6	1.2, 1.3, 2.1, 2.3, 6.1, 6.2, 6.3
3/29/16 (pm)	ES#1 ES#3 ES#5	1.1, 3.1, 5.1, 5.2, 5.3
4/21/16	ES#3	3.2, 3.3

Five special meetings were facilitated on Feb 17 and March 29. During these meetings:

- Participants were introduced to the MAPP process, LPHSA, and SCPH's goals
- Groups were engaged in discussions to ensure all of the participants had a basic understanding of context for the Essential Services they'd be assessing
- Each individual assessed each Model Standards (MS) assigned to the group. (MS are the components that make up the 10 ES)

- Group Discussions were facilitated to achieve consensus scores for the LPHSA



***Note**: Feedback from earlier meetings prompted a few changes in later meetings. One improvement included providing future meetings with a list of operational definitions of terms in the assessment questions. In addition, the table discussions were also captured on a large graphic for participants to reference as they completed their individual assessment of the MS.*

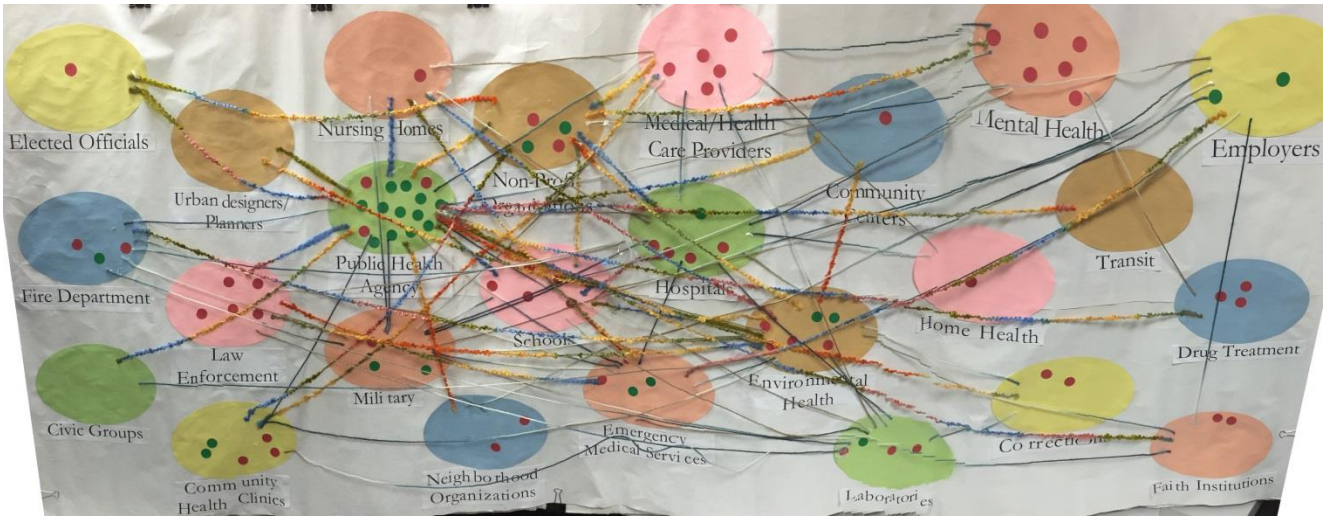
Similar processes were conducted at the following existing partner meetings:

- May 6, 2015 at the Public Health and Safety Preparedness and Response meeting
- May 11, 2015 at the Healthy Solano Steering Committee meeting
- April 21, 2016 at the Solano Public Information Network meeting

Partners Representation

- Advocacy organizations
- City and county governmental agencies
- Colleges and universities
- Community development organizations
- Community health planners
- Community members
- Community-based organizations
- Consultants
- Corrections facilities
- Dept. of transportation/transportation services
- Elected officials and policymakers
- Emergency preparedness teams
- Environmental health agencies
- Environmental health data experts
- Epidemiologists
- FQHCs or community health centers
- Fire department
- Health educators
- Health officer/public health director
- Health service providers
- Health service recipients
- Healthcare providers
- Healthcare systems
- Health-related coalition leaders
- Hospitals and clinics
- Human resources departments
- Law enforcement agencies and emergency
- Lesbian, gay, bisexual, transgender (LGBT)
- Managed care organizations
- Mental health and substance abuse
- Non-profit organizations/advocacy groups
- Preschool and day care programs
- Primary care clinics
- Public and private schools
- Public assistance programs
- Public health laboratories
- Public Information Officers
- Public safety and emergency response organizations
- Service providers
- Service recipients
- Social services
- Substance abuse or mental health
- University or academic institutions
- Waste management facilities
- Other community/grassroots organizations
- The local health department or public health agency

These partners and others are what this report references as the Local Public Health System (LPHS), not just the Solano County Department of Public Health.



Assessment Scores / Discussion Notes & Improvement Suggestions

Essential Service #1 - *Monitor Health Status to Identify Community Health Problems*

The first essential service deals with the how well the LPHS monitors the health status of the community, in order to understand the personal and collective health of Solano County. This includes not only what is currently happening, but also what trends and potential threats will impact future health. It is vital for the LPHS to understand the health issues that exist in Solano, before deciding what action to take to improve the health of the community.

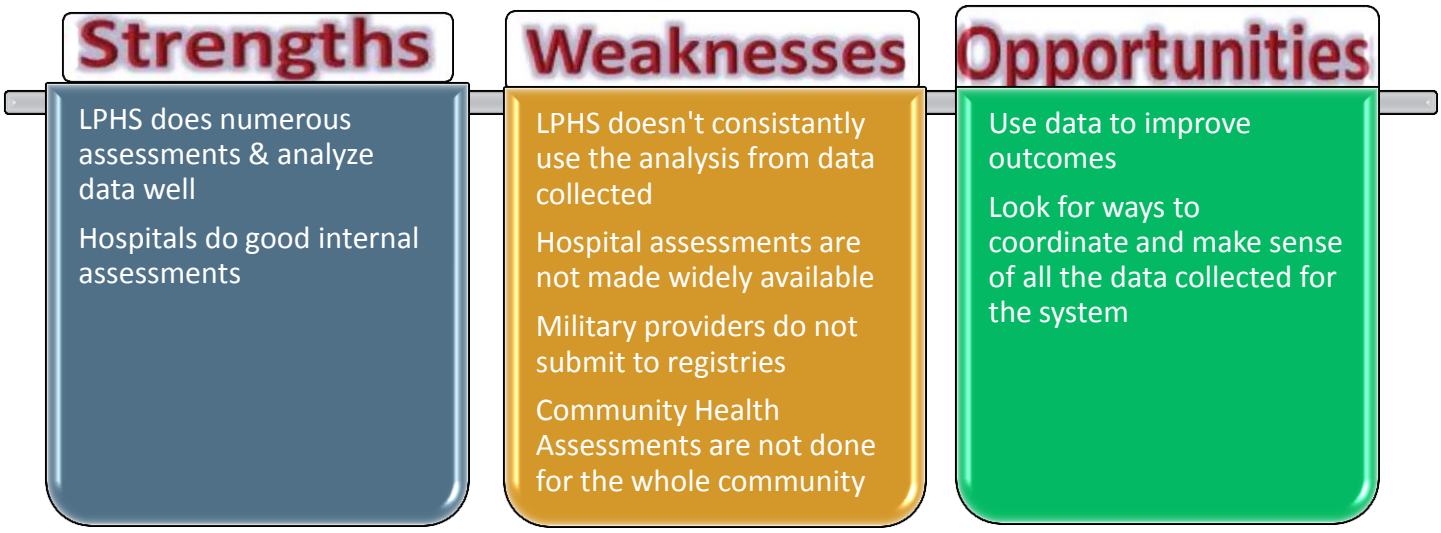
WHAT IS GOING ON IN OUR COMMUNITY?

DO WE KNOW HOW HEALTHY WE ARE??

Monitoring health status to identify community health problems encompasses the following:

- Assessing, accurately and continually, the community's health status.
- Identifying threats to health.
- Determining health service needs.
- Paying attention to the health needs of groups that are at higher risk than the total population.
- Identifying community assets and resources that support the public health system in promoting health and improving quality of life.
- Using appropriate methods and technology to interpret and communicate data to diverse audiences.
- Collaborating with other stakeholders, including private providers and health benefit plans, to manage multi-sectorial integrated information systems.

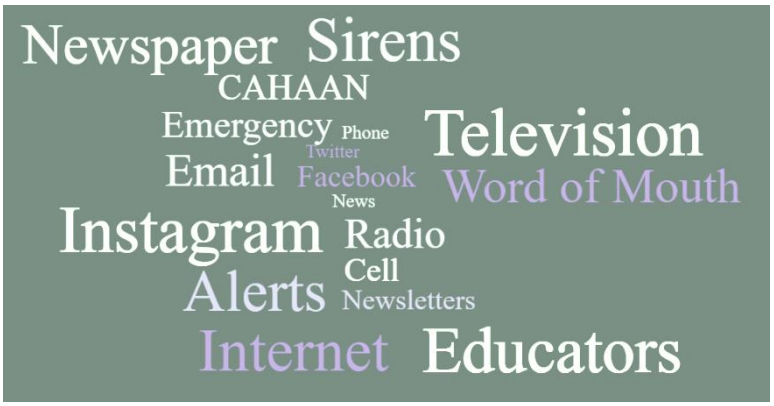
Stakeholder Discussion Highlights:



Below are some examples of how health data is collected and reported in Solano County:

- Hospitals
- Clinics
- Jails
- Schools
- Nursing Homes
- State Websites
- FBI
- California Department of Public Health
- Professional Journals
- Public Service Announcements
- Community Health Assessments
- Data Mining

The graphic below highlights some of the technologies used to communicate with the general public and amongst parters.



Consensus Scores for ES#1 (To review specific LPHSA questions, please see Appendix A)

	Optimal 76-100%	**Significant 51-75%**	**Moderate 26-50%**	**Minimal 1-25%**	**No Activity 0%**
1.1 Population-Based Community Health Assessment – Average 41.7%:					
1.1.1			X		
1.1.2			X		
1.1.3				X	
1.2 Current Technology to Manage and Communicate Population Health Data – Average 58.3%:					
1.2.1			X		
1.2.2		X			
1.2.3			X		
1.3 Maintenance of Population Health Registries – Average 50.0%:					
1.3.1		X			
1.3.2				X	

Essential Service #2 - *Diagnose and Investigate Health Problems and Health Hazards*

The elements considered for Essential Service #2 are related to the readiness and responsiveness to address health concerns, when they arise. Are there resources in place? Do the people who need information and access to services know where to go? The community needs to be prepared to respond to all types of potential health threats, those known and unknown.

Diagnosing and investigating health problems and health hazards in the community encompass the following:

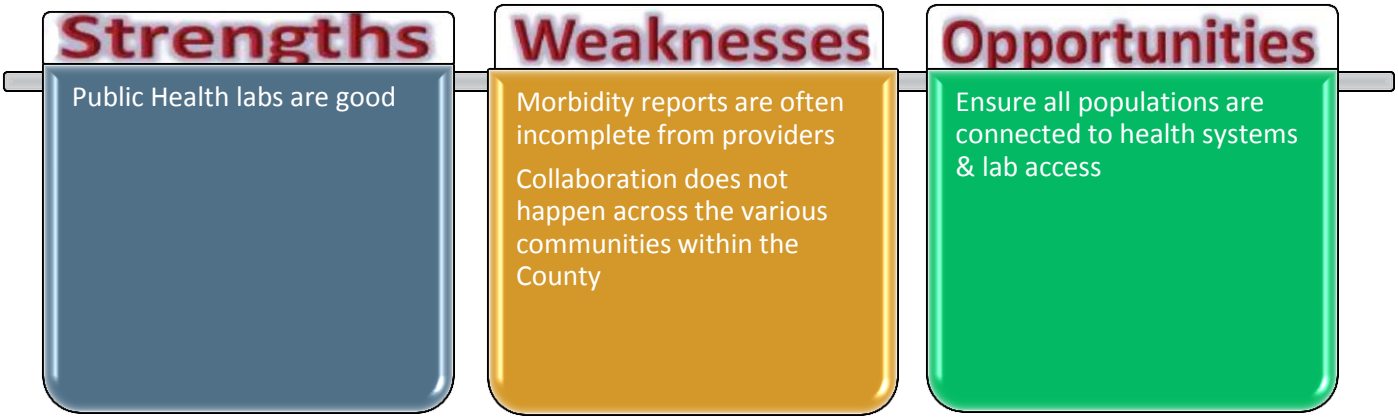
- Accessing a public health laboratory capable of conducting rapid screening and high-volume testing.
- Establishing active infectious disease epidemiology programs.
- Creating technical capacity for epidemiologic investigation of disease outbreaks and patterns of the following: (a) infectious and chronic diseases, (b) injuries, and (c) other adverse health conditions.

ARE WE READY TO RESPOND TO HEALTH PROBLEMS OR HEALTH HAZARDS IN OUR COUNTY?

HOW QUICKLY DO WE FIND OUT ABOUT PROBLEMS?

HOW EFFECTIVE IS OUR RESPONSE?

Stakeholder Discussion Highlights:



The following agencies investigate/report overall health status data for Solano County:

- Community Health Profile
- AMCHIP
- Medi-Cal Data
- School Data
- PRAMS
- MCAH Assessments
- WIC Assessments
- Hospital's CHA
- Managed Care Plan (HEDIS)
- American Lung Association & Similar Assessments

Consensus Scores for ES#2 (To review specific LPHSA questions, please see Appendix A)

	Optimal 76-100%	Significant 51-75%	Moderate 26-50%	Minimal 1-25%	No Activity 0%
2.1 Identification and Surveillance of Health Threats – Average 58.3%:					
2.1.1			X		
2.1.2		X			
2.1.3			X		
2.2 Investigation and Response to Public Health Threats – Average 100%:					
2.2.1	X				
2.2.2	X				
2.2.3	X				
2.2.4	X				
2.2.5	X				
2.2.6	X				
2.3 Laboratory Support for Investigation of Health Threats – Average 93.8%:					
2.3.1	X				
2.3.2		X			
2.3.3	X				
2.3.4	X				

Essential Service #3 - *Inform, Educate, and Empower People about Health Issues*

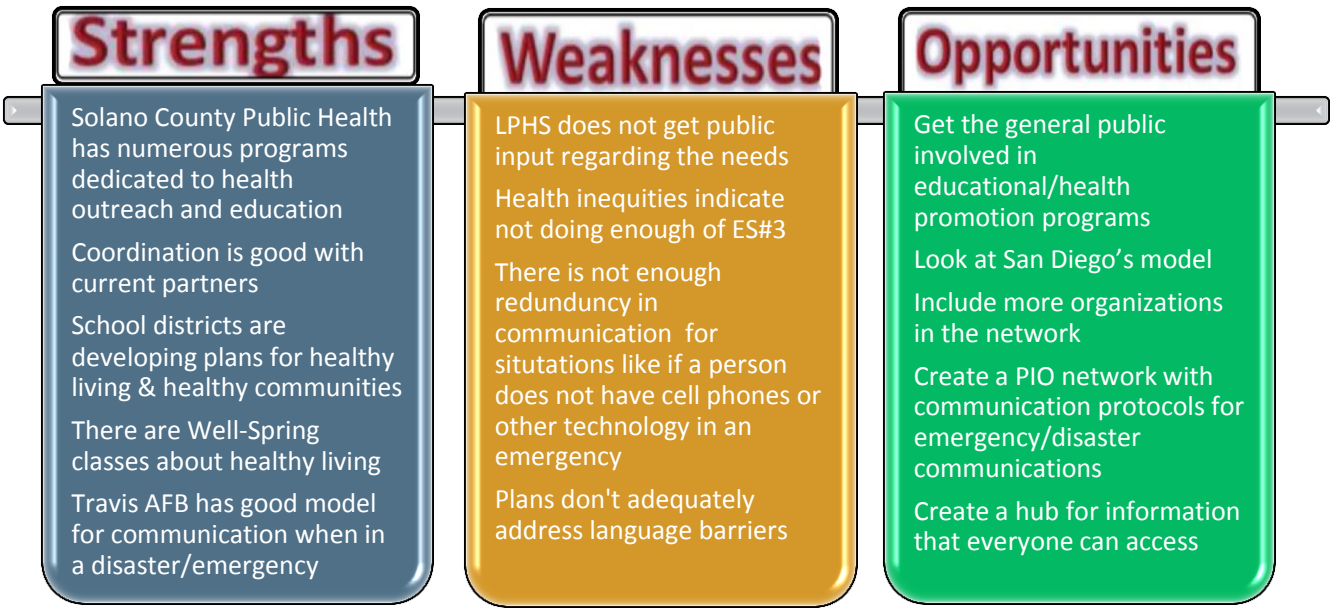
Essential Service #3 is about building a general knowledge base for the entire community regarding health and safety information. How are the formal health providers communicating with the general public about health concerns and resources? Ideally, these services will align with community partners already connected with the public, and all partners will utilize multiple channels of communication to reach the diverse populations in the community.

HOW WELL DO WE KEEP ALL SEGMENTS OF OUR COMMUNITY INFORMED ABOUT HEALTH ISSUES?

Informing, educating, and empowering people about health issues encompass the following:

- Creating community development activities.
- Establishing social marketing and targeted media public communication.
- Providing accessible health information resources at community levels.
- Collaborating with personal healthcare providers to reinforce health promotion messages and programs.
- Working with joint health education programs with schools, churches, worksites, and others.

Stakeholder Discussion Highlights:



The partners identified technology & best practices for tracking and communicating health outcomes. Some of those are:

- CalREDIE
- CPPH/CDC
- Electronic Health Records
- Geo-spatial Technologies
- Emergency Management
- Reviewing Health Monitoring Data for Trends

Consensus Scores for ES#3 (To review specific LPHSA questions, please see Appendix A)

	Optimal 76-100%	**Significant 51-75%**	**Moderate 26-50%**	**Minimal 1-25%**	**No Activity 0%**
3.1 Health Education and Promotion – Average 33.3%:					
3.1.1				X	
3.1.2			X		
3.1.3				X	
3.2 Health Communication – Average 50%:					
3.2.1			X		
3.2.2			X		
3.2.3			X		
3.3 Risk Communication – Average 41.7%:					
3.3.1			X		
3.3.2			X		
3.3.3			X		

Essential Service #4 - *Mobilize Community Partnerships to Identify and Solve Health Problems*

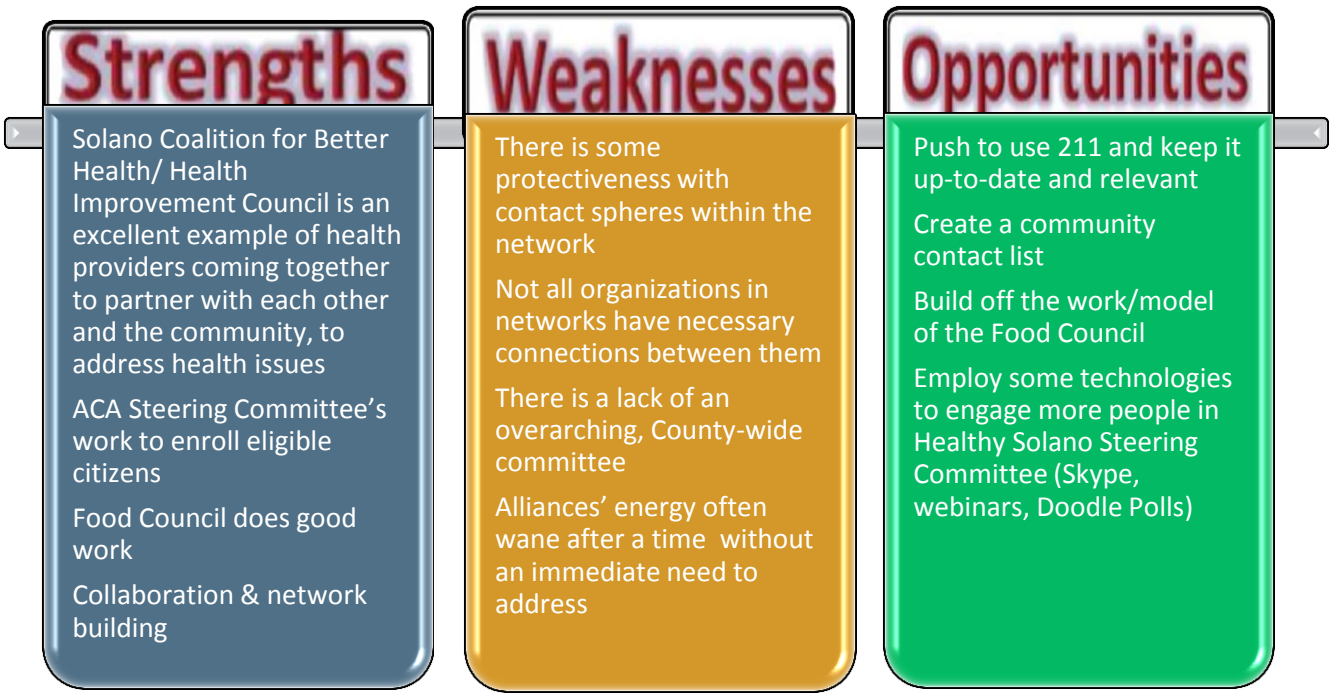
The capacity of formal health institutions is one of the issues that hampers perfectly identifying and solving all of the health problems. Others factors include client trust of the health system, relationships with communities and access to available services. This makes it critical for the formal health systems to partner with community-based agencies and neighborhood resources in order to truly impact health for all communities.

Mobilizing community partnerships to identify and solve health problems encompasses the following:

- Convening and facilitating partnerships among groups and associations (including those not typically considered to be health related).
- Undertaking defined health improvement planning process and health projects, including preventive, screening, rehabilitation, and support programs.
- Building a coalition to draw on the full range of potential human and material resources to improve community health.

HOW WELL DO WE TRULY ENGAGE PEOPLE IN LOCAL HEALTH ISSUES?

Stakeholder Discussion Highlights:



Consensus Scores for ES#4 (To review specific LPHSA questions, please see Appendix A)

	Optimal 76-100%	Significant 51-75%	Moderate 26-50%	Minimal 1-25%	No Activity 0%
4.1 Constituency Development – Average 56.3%:					
4.1.1			X		
4.1.2			X		
4.1.3		X			
4.1.4			X		
4.2 Community Partnerships – Average 50%:					
4.2.1			X		
4.2.2			X		
4.2.3			X		

Essential Service #5 - *Develop Policies and Plans That Support Individual and Community Health Efforts*

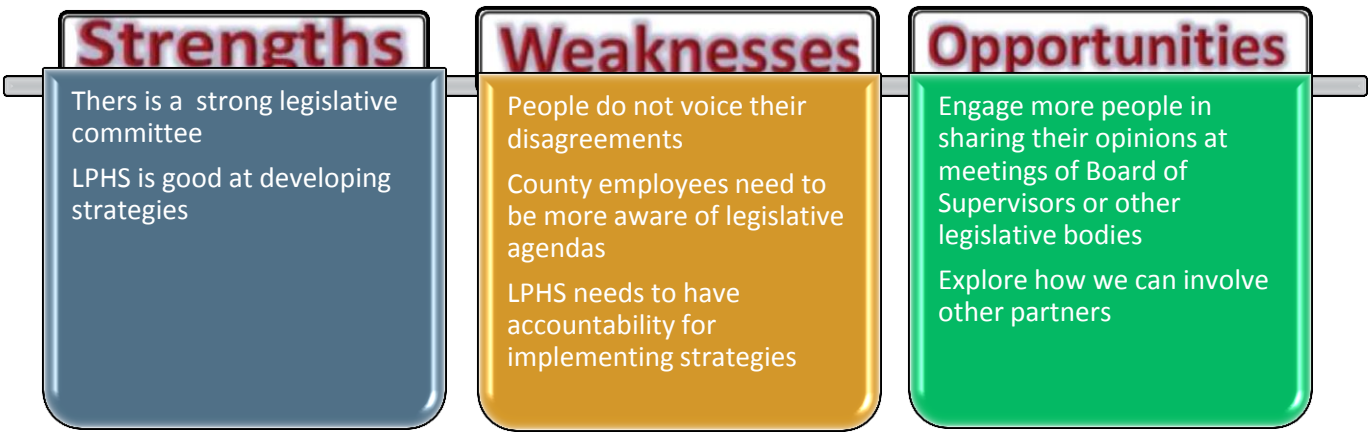
The optimal health of any community is only achieved by coordinated effort. This is achieved by developing both comprehensive plans and supporting policies. Essential Service #5 investigates how well this is done in the Solano County LPHS.

Developing policies and plans that support individual and community health efforts encompasses the following:

WHAT LOCAL POLICIES IN BOTH THE GOVERNMENT AND PRIVATE SECTOR PROMOTE HEALTH IN MY COMMUNITY?
HOW WELL ARE WE SETTING HEALTHY LOCAL POLICIES?

- Ensuring leadership development at all levels of public health.
- Ensuring systematic community-level and state-level planning for health improvement in all jurisdictions.
- Developing and tracking measurable health objectives from the (CHIP) as a part of a continuous quality improvement plan.
- Establishing joint evaluation with the medical healthcare system to define consistent policies regarding prevention and treatment services.
- Developing policy and legislation to guide the practice of public health.

Stakeholder Discussion Highlights:



When Continuous Quality Improvement efforts are used to check the pulse of the community, the information gained through such processes needs to inform the policy-making activities at all levels. It is also important to be sure that policy development takes into account racial, ethnic, and cultural equity issues.

Consensus Scores for ES#5 (To review specific LPHSA questions, please see Appendix A)

	Optimal 76-100%	**Significant 51-75%**	**Moderate 26-50%**	**Minimal 1-25%**	**No Activity 0%**
5.1 Governmental Presence at the Local level – Average 33.3%:					
5.1.1			X		
5.1.2				X	
5.1.3				X	
5.2 Public Health Policy Development – Average 41.7%:					
5.2.1			X		
5.2.2			X*	X*	
5.2.3				X	
5.3 Community Health Improvement Process – Average 41.7%:					
5.3.1				X	
5.3.2			X*	X*	
5.3.3				X	
5.4 Plan for Public Health Emergencies – Average 83.3%:					
5.4.1		X			
5.4.2		X			
5.4.3	X				

*Consensus was not fully reached for 5.2.2 & 5.3.2. 5.2.2 the partners felt that the two parts of the question differed Moderate for informing policy makers, but Minimal for informing the community. Similar for 5.3.2 they felt the development of strategies were Moderate, but accountability is only Minimal.

Essential Service #6 - *Enforce Laws and Regulations That Protect Health and Ensure Safety*

The laws and regulations governing health and safety encompass many different areas within the community. Essential Service #6 explores how these laws and regulations are enforced. Does the enforcement ensure the intent of law is achieved? Are they enforced with equity and technical competence? Are the laws aligned with current technological advances and best practices?

Enforcing laws and regulations that protect health and ensure safety encompasses the following:

- Enforcing sanitary codes, especially in the food industry.
- Protecting drinking water supplies.
- Enforcing clean air standards.
- Initiating animal control activities.
- Following-up hazards, preventable injuries, and exposure-related diseases identified in occupational and community settings.
- Monitoring quality of medical services (e.g., laboratories, nursing homes, and home healthcare providers).
- Reviewing new drug, biologic, and medical device applications.

WHEN WE ENFORCE HEALTH REGULATIONS ARE WE TECHNICALLY COMPETENT, FAIR, AND EFFECTIVE?

Stakeholder Discussion Highlights:

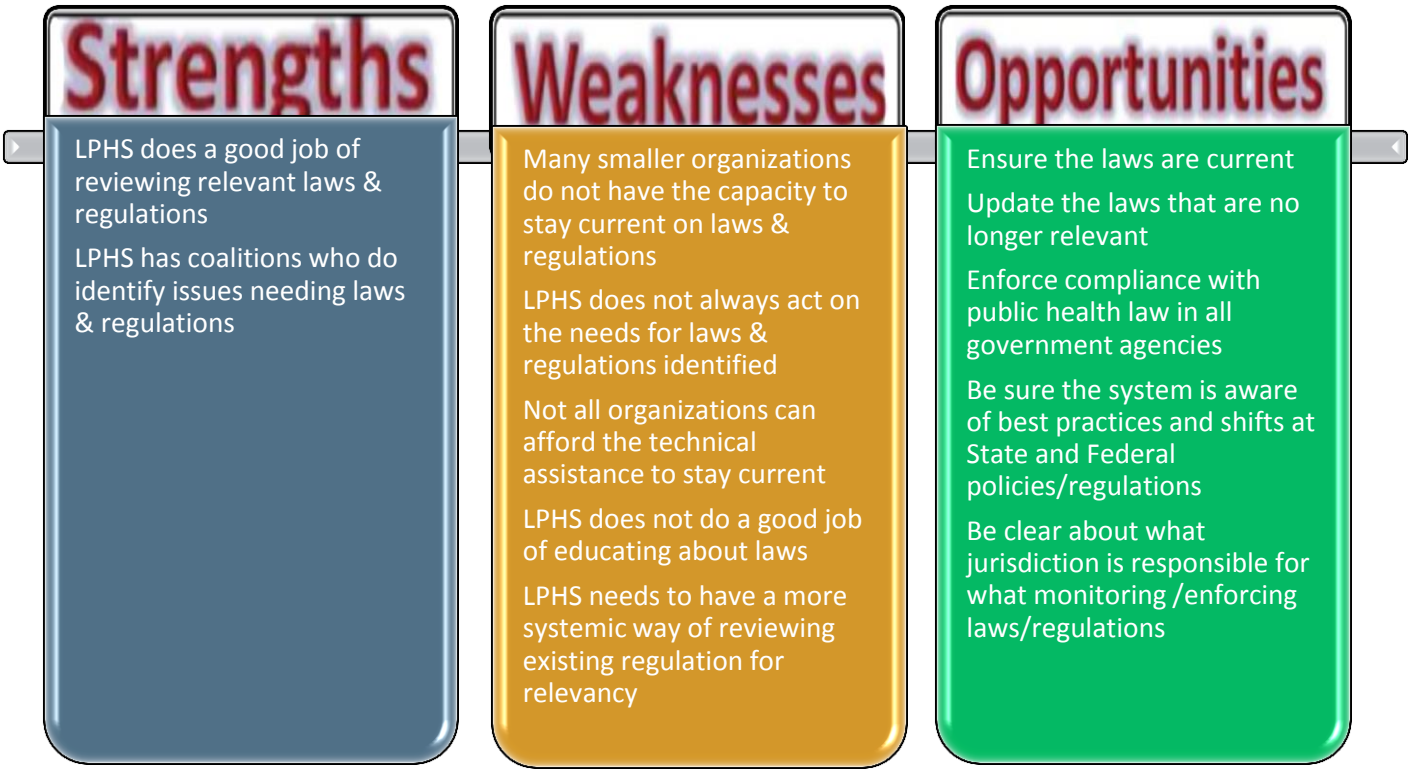


TABLE 2

Need laws/regulations/ordinances	Do NOT need laws/regulations/ordinances
Communicable Disease	Chronic Disease
Infectious Disease	Parenting
Public Threats - (i.e. weapons of mass destruction)	Individual Needs
Environmental Health	
Transportation of Goods	
Fire Codes	
Smoking	
Nutrition Access	
Human Trafficking	
Community Needs	

Consensus Scores for ES#6 (To review specific LPHSA questions, please see Appendix A)

	Optimal 76-100%	Significant 51-75%	Moderate 26-50%	Minimal 1-25%	No Activity 0%
6.1 Review and Evaluation of Laws, Regulations, and Ordinances – Average 81.3%:					
6.1.1		X			
6.1.2		X			
6.1.3		X*			
6.1.4	X				
6.2 Involvement in the Improvement of Laws, Regulations, and Ordinances – Average 58.3%:					
6.2.1		X			
6.2.2			X		
6.2.3			X		
6.3 Enforcement of Laws, Regulations, and Ordinances – Average 70%:					
6.3.1		X			
6.3.2	X				
6.3.3		X			
6.3.4			X		
6.3.5			X		

***** 6.1.3 the partners wanted to add the word "relevant" to the assessment question, and they were split between Significant and Moderate.

Essential Service #7: - *Link People to Needed Personal Health Services and Assure the Provision of Healthcare When Otherwise Unavailable*

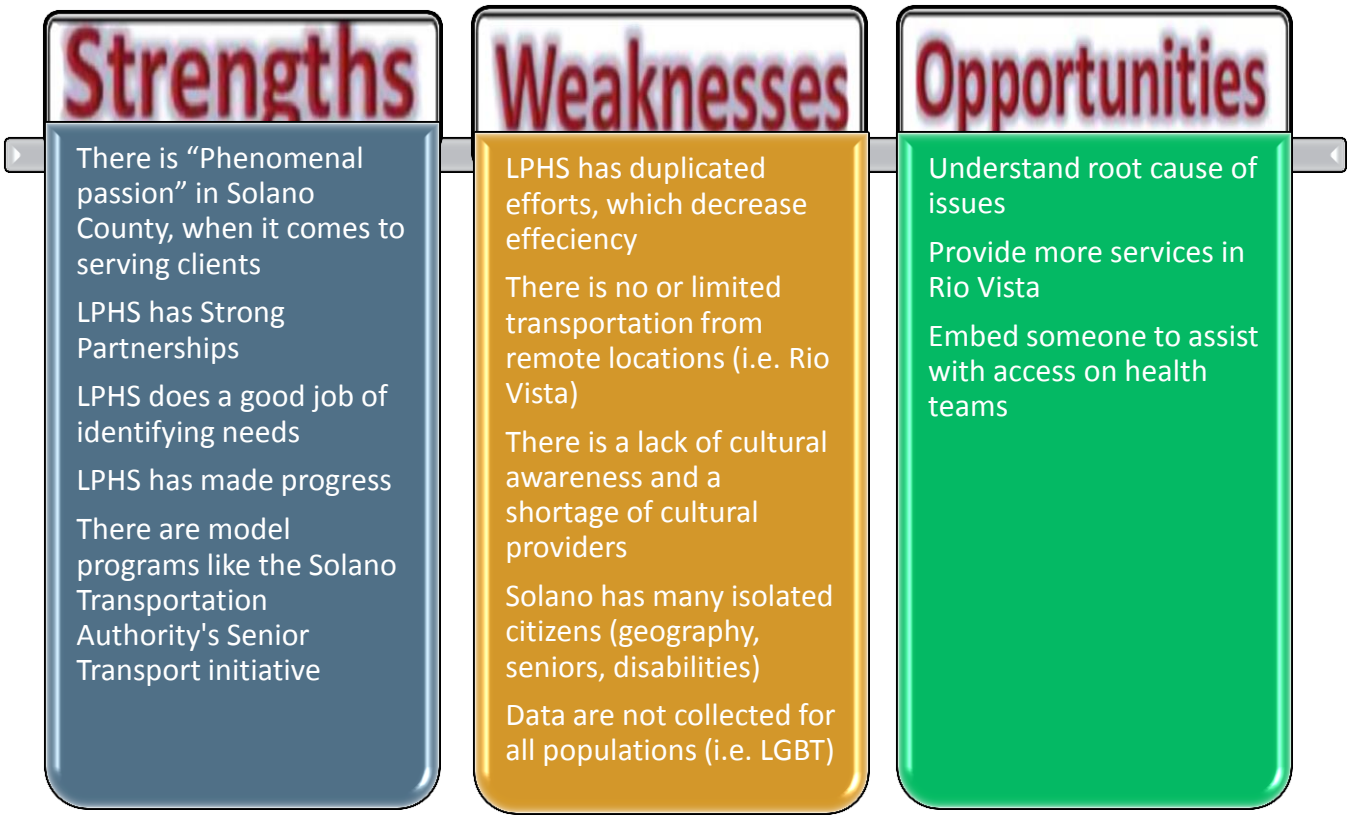
Essential Service #7 addresses the critical nature of getting the people in the community the services they need. Access to service is hindered in many ways and it is critical to know what barriers there are and what capacities the LPHS is lacking.

Linking people to needed personal health services and assuring the provision of healthcare when otherwise unavailable (sometimes referred to as outreach or enabling services) encompass the following:

- Ensuring effective entry for socially disadvantaged and other vulnerable persons into a coordinated system of clinical care.
- Providing culturally and linguistically appropriate materials and staff to ensure linkage to services for special population groups.
- Ensuring ongoing care management.
- Ensuring transportation services.
- Orchestrating targeted health education/promotion/disease prevention to vulnerable population groups.

ARE PEOPLE IN MY COMMUNITY RECEIVING THE HEALTH SERVICES THEY NEED?

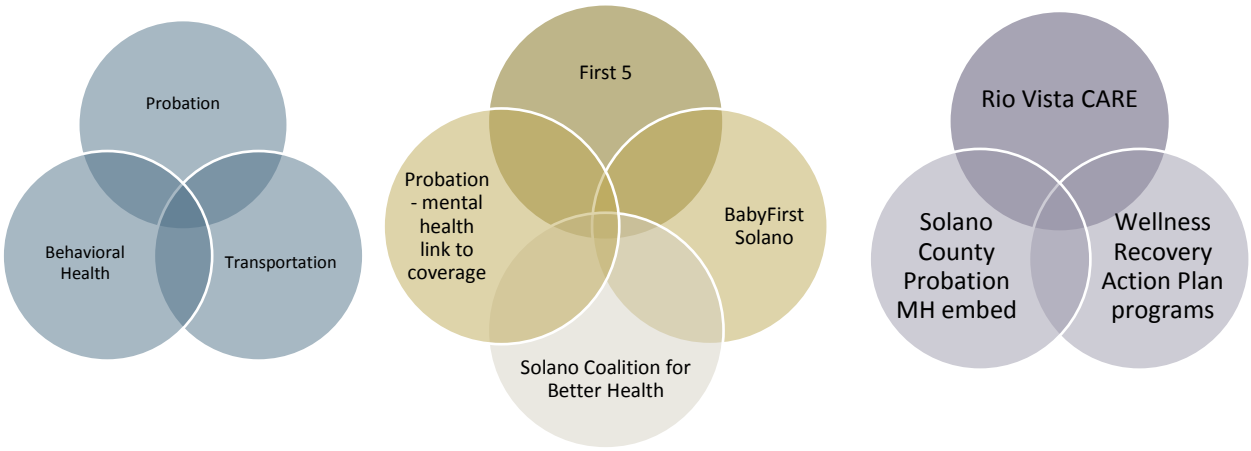
Stakeholder Discussion Highlights:



The following programs are examples of efforts which help Solano County to achieve the objectives in ES#7:

- ☐ Solano First5
- ☐ BabyFirst Solano
- ☐ Women's Reentry Association Program
- ☐ Solano Kids Insurance Program
- ☐ Black Infant Health
- ☐ Community Health
- ☐ La Clínica de La Raza
- ☐ Potter's House
- ☐ NorthBay ABC
- ☐ TCP
- ☐ Federally Qualified Health Center
- ☐ Churches
- ☐ Touro University
- ☐ County Mobile Vans (Primary Care and Dental)
- ☐ NorthBay Healthcare: ER Social Workers
- ☐ Solano Coalition for Better Health
- ☐ Transitional Care Programs
- ☐ Rio Vista CARE

Examples of good partnerships Solano that work to achieve the goals of ES#7



Consensus Scores ES#7 (To review specific LPHSA questions, please see Appendix A)

	Optimal 76-100%	**Significant 51-75%**	**Moderate 26-50%**	**Minimal 1-25%**	**No Activity 0%**
7.1 Identification of Personal Health Service Needs of Populations – Average 25%:					
7.1.1				X	
7.1.2				X	
7.1.3				X	
7.1.4				X	
7.2 Assuring the Linkage of People to Personal Health Services – Average 43.8%:					
7.2.1			X		
7.2.2				X	
7.2.3		X			
7.2.4				X	

Essential Service #8 - *Assure a Competent Public Health and Personal Healthcare Workforce*

The system providing health services to the local community is only as strong as the individual employees within this system. Essential Service #8 looks at the factors that help to guarantee the workforce is ready and competent to address the health needs of the community.

Ensuring a competent public and personal healthcare workforce encompasses the following:

- Educating, training, and assessing personnel (including volunteers and other lay community health workers) to meet community needs for public and personal health services.
- Establishing efficient processes for professionals to acquire licensure.
- Adopting continuous quality improvement and lifelong learning programs.
- Establishing active partnerships with professional training programs to ensure community-relevant learning experiences for all students.
- Continuing education in management and leadership development programs for those charged with administrative/executive roles.

DO WE HAVE COMPETENT PUBLIC HEALTH STAFF?
DO WE HAVE COMPETENT HEALTHCARE STAFF?
HOW CAN WE BE SURE THAT OUR STAFF STAYS CURRENT?

Stakeholder Discussion Highlights:

Strengths	Weaknesses	Opportunities
Required licenses are tracked to ensure State/National compliance	LPHS does not monitor how it is going	Start with high schoolers to build for the future
Shortages have created some opportunities for creative solutions	It often takes months to get licenses in some cases	Gather data to help inform decisions
People show up	Smaller organizations may not have standardized competencies	Offer more continuing education opportunities
	Budgets drive available training	Incentivize learning
	There is not enough Continuing Education	Partner with Touro University
	There is difficulty retaining employees	Create some standards for providers
		Promote the good we do
		Build the leadership capacity of people who are representative of the communities in the County

The group identified the following topics as needs for more training/education:

- Mental Health Awareness
- Substance Abuse
- Disaster Preparedness
- Leadership Development
- Cultural Competence/Awareness/Humility
- Social Determinants of Health

ES#8 is an area where more collaboration could greatly improve the health of the community. Preparedness of the workforce through system-wide offerings and tracking were examples of how to work together.

Consensus Scores for ES#8 (To review specific LPHSA questions, please see Appendix A)

	Optimal 76-100%	**Significant 51-75%**	**Moderate 26-50%**	**Minimal 1-25%**	**No Activity 0%**
8.1 Workforce Assessment, Planning and Development – Average 25%:					
8.1.1				X	
8.1.2				X	
8.1.3				X	
8.2 Public Health Workforce Standards – Average 58.3%:					
8.2.1		X			
8.2.2			X		
8.2.3			X		
8.3 Life-Long Learning through Continuing Education, Training, and Mentoring – Average 35%:					
8.3.1		X			
8.3.2				X	
8.3.3				X	
8.3.4				X	
8.3.5				X*	
8.4 Public Health Leadership Development – Average 37.5%:					
8.4.1				X	
8.4.2			X		
8.4.3			X		
8.4.4				X	

***** 8.3.5 one partner wanted the score to be Moderate.

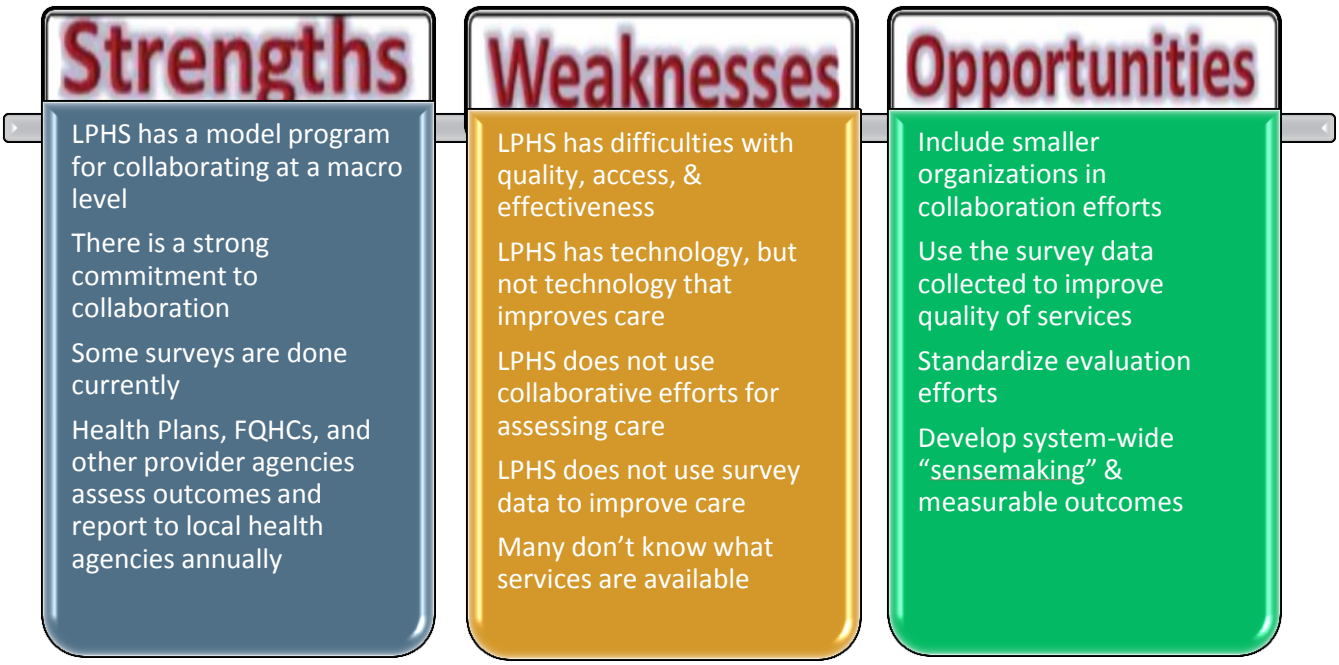
Essential Service #9 - *Evaluate Effectiveness, Accessibility, & Quality of Personal & Population-Based Health Services*

The LPHS must understand the outcomes being achieved through its efforts. This assessment item addresses how well evaluation is done and if this information is used to make decisions about how to move forward so that individuals and the population have the best possible health outcomes.

Evaluating effectiveness, accessibility, and quality of personal and population-based health services encompasses the following:

- Assessing program effectiveness through monitoring and evaluating implementation, outcomes, and effect.
- Providing information necessary for allocating resources and reshaping programs.

Stakeholder Discussion Highlights:



Solano Kids Thrive is an emerging collective impact approach, dedicated to moving the needle towards better health outcomes for kids across multiple programs and sectors. This model may be one to follow and learn from.

Consensus Scores for ES#9 (To review specific LPHSA questions, please see Appendix A)

	Optimal 76-100%	Significant 51-75%	Moderate 26-50%	Minimal 1-25%	No Activity 0%
9.1 Evaluation of Population-Based Health Services – Average 31.3%:					
9.1.1				X	
9.1.2				X	
9.1.3			X		
9.1.4				X	
9.2 Evaluation of Personal Health Services – Average 45%:					
9.2.1				X	
9.2.2			X		
9.2.3			X		
9.2.4			X		
9.2.5				X	
9.3 Evaluation of the Local Public Health System – Average 25%:					
9.3.1				X	
9.3.2				X	
9.3.3				X	
9.3.4				X	

Essential Service #10 - *Research for New Insights and Innovative Solutions to Health Problems*

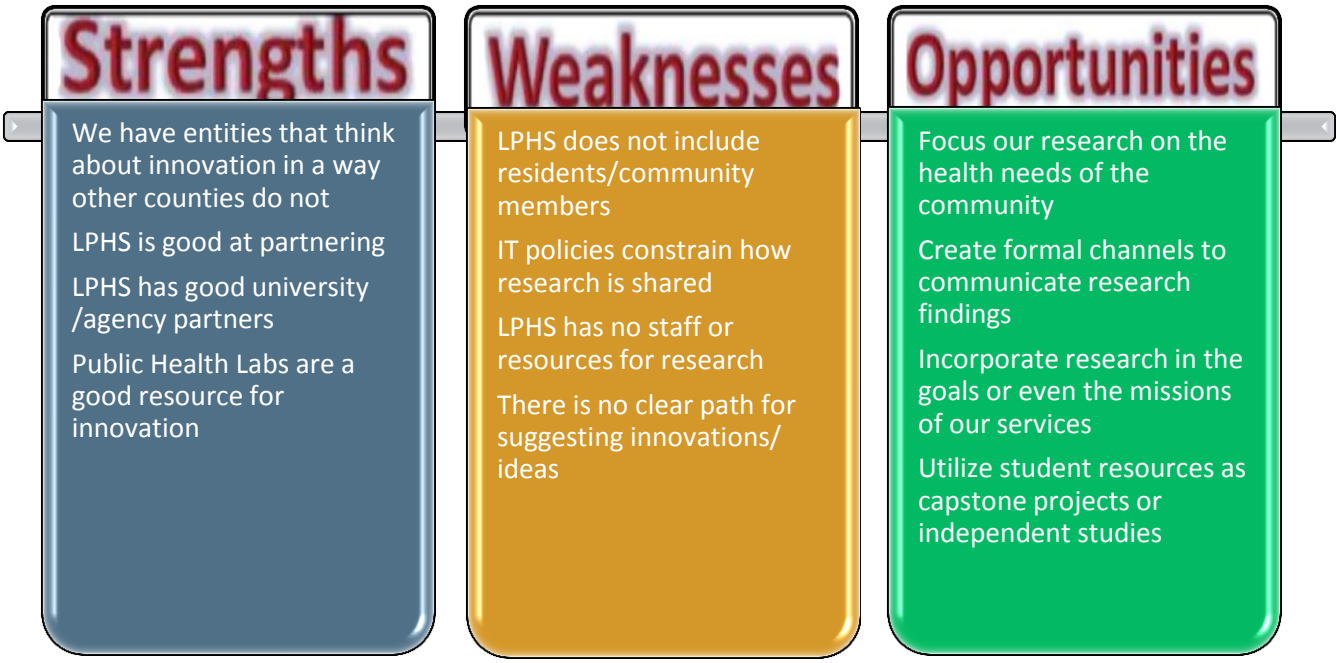
The services provided in the current LPHS are time-limited in this global world of always-changing, highly complex health care. Essential Service #10 addresses how the LPHS is paying attention to the needs of the future. What innovations are going to be needed to maintain health of the local communities in the future? How do we make decisions about the strategies and directions needed?

Researching new insights and innovative solutions to health problems encompasses the following:

- Establishing full continuum of innovation, ranging from practical field-based efforts to fostering change in public health practice to more academic efforts that encourage new directions in scientific research.
- Continually linking with institutions of higher learning and research.
- Creating internal capacity to mount timely epidemiologic and economic analyses and conduct health services research.

ARE WE DISCOVERING AND USING NEW WAYS TO GET THE JOB DONE?

Stakeholder Discussion Highlights:



Research partners include:

- Touro University
- UC Davis
- Chico State
- Veterans Administration
- UC San Francisco
- Stanford University
- Singapore Ministry of Health
- Partnership Health Plan

One notable example of the local public health system prompting action/research involves the NAACP and Planned Parenthood raising awareness around the high STD rates among Vallejo youth to the Board of Supervisors. This is one example of how the LPHS can look for ways to utilize data collected to surface issues and innovations in need of a study or pilot program.

Consensus Scores for ES#10 (To review specific LPHSA questions, please see Appendix A)

	Optimal 76-100%	Significant 51-75%	Moderate 26-50%	Minimal 1-25%	No Activity 0%
10.1 Fostering Innovation – Average 56.3%:					
10.1.1			X		
10.1.2			X		
10.1.3		X			
10.1.4				X	
10.2 Linkage with Institutions of Higher Learning and/or Research – Average 58.3%:					
10.2.1		X			
10.2.2			X		
10.2.3			X		
10.3 Capacity to Initiate or Participate in Research – Average 31.3%:					
10.3.1			X		
10.3.2				X	
10.3.3			X		
10.3.4				X	

Indications of LPHSA Scores:

Tables 3 & 4 below summarize the scores for all 10 Essential Services. These scores serve as baseline data for Solano County's LPHS, in its current capacities and activities. This baseline data will allow the LPHS to measure its progress in certain areas for improvement. These indicators of how well the LPHS performs currently will also be one factor to guide the priorities for the Community Health Improvement Plan (CHIP) and the strategic direction for the many of the LPHS partners.

In looking at Table 3, while there were Model Standards where the evidence indicated only minimal efforts (1 to 25%) currently, none of the Essential Services *as a whole* indicated minimal activity. Seven of the Essential Services average scores fell in the moderate activity range (26-50%). These are:

- Monitor Health Status
- Educate/Empower
- Develop Policies/Plans
- Link to Health Services
- Assure Workforce
- Evaluate Services
- Research/Innovations

Of those 7, Monitor Health Status, Develop Policies/Plans, and Research/Innovation were close to the 51% mark, which is would signal a significant level of effort and place them in a similar range with Mobilize Partnerships and Enforce Laws. The apparent strength for Solano's local public health system is around Diagnosing and Investigating, with 84% activity or optimal efforts.

With that being said, the Essential Services could be categorized into 3 areas, based upon their scores: those in overall in the most need of improvement, those needing a fair amount of improvement and those needing to be maintained.

Most Needing Improvement:

- Educate/Empower
- Link to Health Services
- Assure Workforce
- Evaluate Services

Fair Amount of Improvement Needed:

- Monitor Health Status
- Develop Policies/Plans
- Research/Innovation
- Mobilize Partnerships
- Enforce Laws

Maintain Efforts:

- Diagnose & Investigate

For the last category (and those individual Model Standards scoring well) it is crucial that the areas do not get overlooked in the improvement plans, because it would be easy to ignore those doing well and have the performance erode due to lack of attention.

TABLE 3

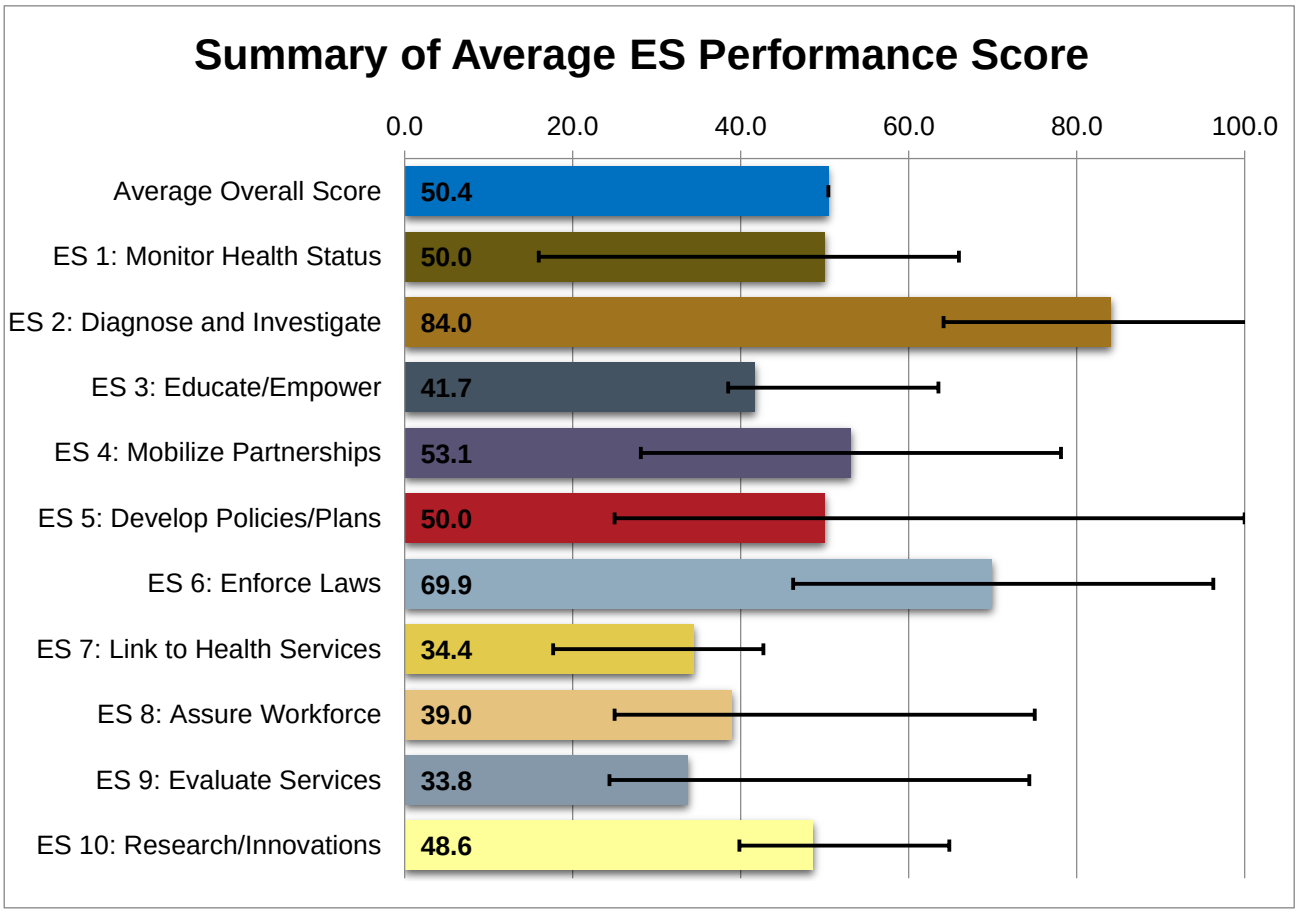
Activity: 0-25% = Minimal; 26%-50% = Moderate; 51%-75% = Significant; 76%-100% = Optimal

Model Standards by Essential Services	Performance Scores
ES 1: Monitor Health Status	**50.0**
1.1 Community Health Assessment	41.7
1.2 Current Technology	58.3
1.3 Registries	50.0
ES 2: Diagnose and Investigate	**84.0**
2.1 Identification/Surveillance	58.3
2.2 Emergency Response	100.0
2.3 Laboratories	93.8
ES 3: Educate/Empower	**41.7**
3.1 Health Education/Promotion	33.3
3.2 Health Communication	50.0
3.3 Risk Communication	41.7
ES 4: Mobilize Partnerships	**53.1**
4.1 Constituency Development	56.3
4.2 Community Partnerships	50.0
ES 5: Develop Policies/Plans	**50.0**
5.1 Governmental Presence	33.3
5.2 Policy Development	41.7
5.3 CHIP/Strategic Planning	41.7
5.4 Emergency Plan	83.3
ES 6: Enforce Laws	**69.9**
6.1 Review Laws	81.3
6.2 Improve Laws	58.3
6.3 Enforce Laws	70.0
ES 7: Link to Health Services	**34.4**
7.1 Personal Health Service Needs	25.0
7.2 Assure Linkage	43.8
ES 8: Assure Workforce	**39.0**
8.1 Workforce Assessment	25.0
8.2 Workforce Standards	58.3
8.3 Continuing Education	35.0
8.4 Leadership Development	37.5
ES 9: Evaluate Services	**33.8**
9.1 Evaluation of Population Health	31.3
9.2 Evaluation of Personal Health	45.0
9.3 Evaluation of LPHS	25.0
ES 10: Research/Innovations	**48.6**
10.1 Foster Innovation	56.3
10.2 Academic Linkages	58.3
10.3 Research Capacity	31.3
Average Overall Score	**50.4**
Median Score	**49.3**

To further help prioritize the health needs of Solano County, it is important to consider the information in Table 4, below. This table provides the range of performance within each of the Essential Services. Looking at the range for of scores for Link to Health Services (ES #7), it becomes obvious there is the most room for improvement in this area. The range of just under 20% to just over 40% is the lowest performance range for any of the service areas. In fact, it is the only area where the assessed performance fell completely below 50%. While Monitor Health Status (ES #1) has a similar low end; the high end is significantly greater. While it may not be the highest priority, certainly one focus should be on improving the linkage to health services for the community.

Another learning from this information is that there are things Solano County does well and things that need significant improvement within each Essential Service. In order to make decisions on where the community needs to put the limited time and energy, consideration should be given to the macro (ES) and micro (MS) details of this assessment and the others in the MAPP process.

Table 4



Conclusion

As is the case with most communities, there are areas where the efforts and results are significant, contributing to good health outcomes and reduced risk for the community's well-being. And there are those areas where the opposite is true. There are many factors contributing to this, from the social determinants of health to funding decisions to the political will. This assessment serves as one component of getting to the root of where the services of the LPHS may be falling short, and informing the path for moving forward. The results should be viewed as a piece of the puzzle and we invite you to review the summary document incorporating the findings from all of the MAPP process assessments. They are a baseline measure for Solano County in 2016.

[i] LPHSA Overview & Essential Services descriptions are excerpts from the LPHSA Instrument.

Forces of Change

Summary Report

for Solano County

Forces of Change Overview

The development of a community health improvement plan involves not only exploring the current status of health in Solano County, but also looking ahead to plan for the future. What is likely to happen in Solano County during the next five years that would affect health and the health system, for better or for worse? What opportunities or threats will these "forces of change" bring to the county?

Forces can emerge from multiple arenas, including (but not limited to) the social, economic, political, geographic, environment, technological, legal, ethical, demographic realms.

They can include:

- Trends: Patterns over time, such as immigration to Solano County, or increasing traffic on major roadways.
- Factors: Discrete elements such as proximity to the San Francisco Bay Area, or diverse ethnic populations
- Events: One-time occurrences, such as the 2014 Napa earthquake, a local, state or national election, or passage of new legislation.

Figure 1: The themes that emerged from the Forces of Change process

Process

Without a crystal ball, the best approach to foreseeing the future change is to convene individuals knowledgeable about upcoming trends, factors and events likely to affect Solano County, and gather their best judgment of threats and opportunities. The Forces of Change Assessment, one of four assessments

included in the Mobilizing for Action through Planning and Partnerships (MAPP) model is designed to capture this "best thinking."

Forces of Change Workshops

Two Forces of Change Assessment workshops gathered these data. In November, 2015, a broad range of community members who work in, or are affected by the health system in Solano County, were invited to a half-day workshop. Participants included thirteen individuals representing Solano County Public Health, the Department of Health and Social Services, Sheriff's Office, County Administrator's Office and Human Resource Management, as well as leaders of a non-profit organization and the Solano Coalition for Better Health.

The Forces of Change Assessment was repeated at two meetings of the Solano Coalition for Better Health Board of Directors in February and April, 2016, attended by ten representatives of health systems providing services in Solano County.

Prior to the workshops, attendees were sent a worksheet, with definitions of forces of change, and asked to begin thinking about forces of change for Solano County. During the first half of the workshop, attendees were introduced to and provided examples of forces of change, and asked to brainstorm individual lists of forces that were specific to Solano County, would have significant impact and would be likely to occur. They then selected their top three forces and through a large-group discussion, similar forces were combined into clusters. A name was then chosen to reflect each cluster. During the second half of the workshop, participants selected clusters that most interested them, and broke into small discussion groups. Each small group refined the forces in their cluster, listed pertinent threats and opportunities, and reported back with their findings. The full group then provided additional input to the forces, threats and opportunities.

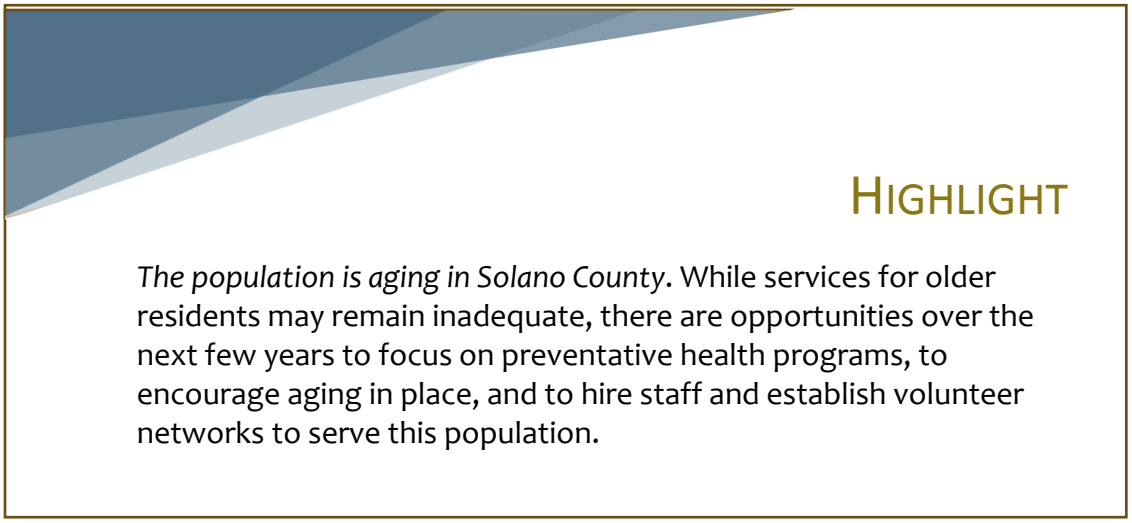
Key Informant Interviews and Focus Groups

To supplement information gathered in the two Forces of Change Assessment workshops, participants in Key Informant Interviews and Focus Groups -- conducted as part of the Solano Community Needs Assessment -- were asked two questions about Forces of Change in Solano County. They were asked to discuss policies, laws and regulations that affect the health of the community, as well as trends, factors and events that affect the health of the community. Twenty-six participants and twelve non-profit organizations were included in Key Informant Interviews, representing Solano County. Six focus groups included 67 community members from targeted populations:

- Kaiser Permanente Youth Internship Program: youth from multiple school districts in Solano County; African American, Latino, Hawaiian Native/Pacific Islander, Native American, Asian; Male and Female; 10th - 12th graders; 16 - 18 years
- Circle of Friends: homeless, mental health, African American, White, Latino; Male and Female
- Parent Leadership Training Institute (PLTI) Parent Leadership Program: Hispanic, African American, Native American; Vallejo, Vacaville; parents; Female

- Dixon Migrant Community Center: Migrant Community, Latino, adults over 65
- Filipino American Focus Group: Filipino, Vallejo
- Solano Pride: LGBTQ, Transgender, Adults, Vallejo, Fairfield

The results of the two Forces of Change Workshops, Focus Groups and Key Informant are reported below.



1. Demographics Cluster		
Forces	**Threats**	**Opportunities**
• Increase in aging population	• Potential increase in low income senior population • Increased retirements could lead to loss of intellectual property • Increased medical expenses • May result in early dismissal from providers/hospitals/clinics which could pose threat for seniors needing more intensive treatment • Fewer resources • Fewer options • Increased falls and Alzheimer's	• Establish aging in place programs • Increase prevention at younger age • Creation of low-income programs for seniors • Increased hiring opportunities for millennials; succession planning • Focus on preventative health • Hire RNs, nutritionists • Use alternative modes of pain control • Increase in volunteer network

• Changes in county ethnic make-up due to Increased immigration (foreign- born Latinos, other groups) • Decrease of Vallejo Latino/Hispanic population	• Language barriers • Inadequate resources in specific areas of need • More unaccompanied children without parents • Lack of housing • Greater tension around language, culture, religion, acceptance of diversity; impact of anti-immigrant rhetoric • Increased anti-immigrant rhetoric due to local and national politics • Immigrants may not seek out care	• Expand self-advocacy • Research opportunity for analysis • Overcome unconscious bias • Expand health care for undocumented • Expand immigration reform efforts • Increase language programs

HIGHLIGHT

The cost of living and housing is predicted to increase, putting greater stress on low-income residents but potentially increasing the tax base as higher-income residents move to the county.

2. Income and Economics Cluster		
Forces	**Threats**	**Opportunities**
• Increasing housing prices and rents /gentrification • Less financial stability/ Increased cost of living	• Inadequate affordable housing • Higher rents pushing folks out of Vallejo • Increased Stress • Increased poverty • Less healthy food • Less affordable housing • Increased homelessness • New minimum wage law may reduce eligibility for welfare benefits, free school lunch	• Increase home values • Building industry bouncing back
• Increased population • Post Base Realignment & Closure	• Still awaiting "next big thing" • Business may not bring many jobs	• Increase the tax base • Economic development in Vallejo • More jobs, less homelessness

HIGHLIGHT

The population of the county is likely to increase, bringing increased congestion, transportation difficulties and reduced open space. At the same time, there is significant opportunity for re-development of Mare Island and the waterfront, which could increase jobs and income. In addition, there is opportunity for creative transportation planning. Creative city and county planning, were emphasized.

3. Built Environment/Urban Sprawl Cluster		
Forces	**Threats**	**Opportunities**
• Increased congestion due to growth in Rio Vista, Vacaville and Dixon	• More people with no access to healthcare • Longer transit time, increased stress, • Reduced Emergency Medical Services (EMS) • Decreased open space	• Locate providers in new areas • Tie development to health care access • Tie development to increased open space
• Mare Island and waterfront development	• More people with no access to healthcare • Longer transit time, increased stress, • Reduced EMS • Decreased open space	• Increase jobs and income; reduce poverty • Create usable open space • Reduce blight
• Commuter parenting; increased reliance on daycare	• Increased risk of neglect • Increased risk for drugs, crime, etc. • Increase in negative SPOH • Impact on education, income	• Recognize potential harm and reverse trend

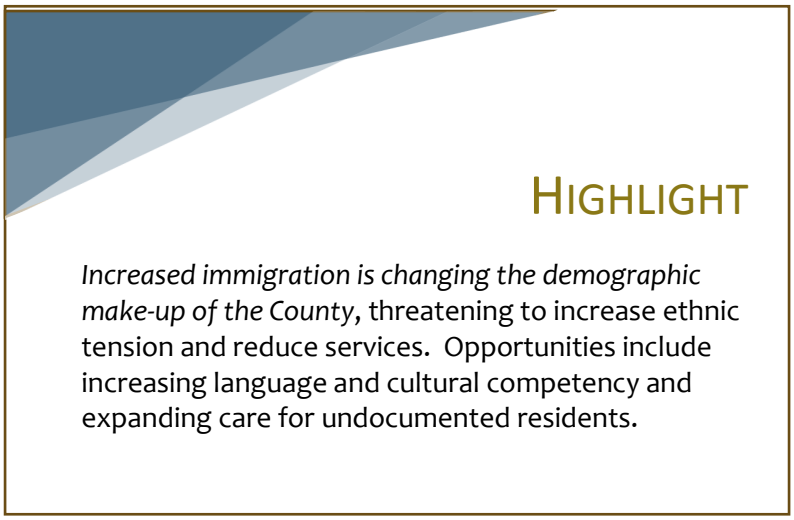
4. Community Resources and Infrastructure Cluster		
Forces	**Threats**	**Opportunities**
• Inadequate access to and options for public transportation within cities and throughout county	• Inability to access services, including health and good, nutritious food (food deserts) • Increased congestion, pollution, stress • Increased commute times	• Move health care and services to the community • Increase routes; restructure current transportation system (i.e. Uber) • Engage the community • Establish mobile markets • Create community gardens • Develop alternative lanes for golf carts, bicycles. • Plan walkable, bike-friendly communities
• Inadequate highway infrastructure, especially I-80 and I-680 interchange	• Increased congestion if done poorly	• Reduced congestion
• Lack of coordinated response to homelessness	• Increase of homeless population • Inadequate space in homeless shelters	• Create new shelter system • Coordinate services
• Lack of community clinics	• Lack of health access in certain regions • Lack of providers	• Increase or improve efficiency in current clinics, • Offer competitive salaries
• Lack of safe parks, affordable places to play or exercise; more restrictions on park usage	• Increased obesity, heart disease, diabetes, co-morbidity • Decreased physical activity	• Include in city planning • Engage in One Plan Bay Area effort
• Overall lack of services in 505 corridor, Rio Vista	• Greater disconnect between public health and city, county, school planning	• Increase community voice • Integrate agriculture into community planning
• Fewer places in urban areas to obtain fresh food		• Increase health education • Institute healthier school lunches

HIGHLIGHT

Youth and community focus groups also cited the need for improved and safer access to parks, as well as more options to obtain healthy foods and establish more grocery stores in urban areas

5. Technology and Communications Cluster		
Forces	**Threats**	**Opportunities**
• Increased reliance on technology & big /bad data	• Greater misunderstanding and misinterpreting information • Potential loss of communication grid -cell phones and internet unable to communicate between facilities • Inability to communicate with public	• Increase access to data • Increase preparedness • Build partnerships, relationships • Establish redundant systems
• Improved IT infrastructure and applications	• Public health information breaches • Falling behind in technology • Limited community resources • Less Safety	• Integrate care • Increase access to information • Increase accessible community systems • Increase productivity • Establish better instant communication

6. Policy and Politics Cluster		
Forces	**Threats**	**Opportunities**
• Potential Federal political change to Republican administration	• May undermine Affordable Care Act	• May positively modify or shift ACA administration from federal to state
• Public safety realignment	• State and local release of inmates • Inadequate services for inmates released from state prisons • Primary care shortages • Lack of infrastructure	
• Implementation of County Medical Services Program		• Services for undocumented will be covered starting in May 2016.
• Cannabis legalization, regulation		



7. Environmental Change Cluster		
Forces	**Threats**	**Opportunities**
• Climate change, including drought, extreme of prolonged heat or cold, excessive rain, rising sea levels	• Increased societal disruption • Greater water restrictions • Increased crop losses • Parts of Vallejo, Benicia and Rio Vista may be inundated	• Create better accommodation to environment • Build warming/cooling centers • Educate the public
• Natural Disasters (earthquake, flood, fire,)	• Loss of life • Separation of families • Loss of home, basic necessities • Hurts economy, job losses	• Increase preparedness • Unite communities • Develop disaster plans, with outreach to Hispanic community

HIGHLIGHT

Health (particularly mental health) and other services in outlying areas of the county predicted to remain inadequate. Opportunities include de-centralizing services, locating more providers outside of Fairfield and Vallejo; instituting team delivery of care; expanding Telehealth; and trying out other creative models of service delivery.

8. Medical/Health Cluster		
Forces	**Threats**	**Opportunities**
• New delivery models of health care, including tech-supported or team care • Shared EMR/HIE	• Greater cost for internet access and devices • Inadequate health workforce development on new models for aging population • Increased cost of care	• Improve health access and outcomes • Establish alternative modalities of care (i.e. acupuncture)
• Lack of access to mental/behavioral health, due to shortages of prescribers, LCSWs and residential care for dementia	• Negative impact to health status • Negative economic impact to neighborhoods and cities • Increased crime, decreased safety • Criminal justice system becomes the crisis system	• Expand Telehealth • Expand local workforce development • Increase philanthropy to build infrastructure and capacity
• Lack of primary care physicians and other health care providers	• Negative impact to health access • Inadequate number of specialists • Increased discharge in place	• Create better partnerships with Touro • Build residency programs • Build support for nursing students to do clinical hours locally

• Increase in:
  • STDs
  • Potential disease outbreaks or epidemics, including E coli or H1N1
  • Gestational diabetes
  • Drug resistance
	• Poorer health outcomes
	• Poorer birth outcomes
	• Disparities among low-income populations in obesity, malnourishment
		• North Bay Hospital now baby-friendly
		• Increase health education
		• Opportunity for "teachable moment" in pregnancy to forestall chronic diseases

HIGHLIGHT

Poor educational outcomes and increased crime were noted as threats, but increased school funding, technical training and internships, as well as strong community engagement, community policing, youth mentoring and afterschool programs could mitigate the threats.

9. Education Cluster		
Forces	**Threats**	**Opportunities**
• Poor graduation rate in Vallejo • Poorly educated high school grads • Fewer options for higher education due to reduced funding	• More homelessness • Reduced health literacy • Increased crime • Worse health outcomes	• Offer specialized technical training • Implement life skills • Establish mentoring • Establish internship programs • Lower class ratios • Increase diversity in teacher training

10. Crime and Violence Cluster		
Forces	**Threats**	**Opportunities**
• Increase in violence-related incidents/disasters, including riots, terrorism, bullying and school violence, police actions	• Lack of public will to deal with gun violence • Threat to life, security • Panic • Retaliation • Threatens economy	• Expand community alternatives to crime in Vallejo and other target areas: • Build community capacity to address issues (some areas ripe for action.) • Expand community policing • Promote block parties • Expand afterschool programs • Expand PALS • Create high school mentoring programs

Conclusion

While the future will always remain uncertain, the Forces of Change Assessment clearly outlines several areas where preventative measures, direct interventions and community engagement will help positively impact the health and well-being of Solano County residents and visitors. Those areas include:

- Demographics
- Income & Economics
- Built Environment/Urban Sprawl
- Community Resources & Infrastructure
- Technology & Communications
- Policy & Politics
- Environmental Change
- Medical/Health
- Education
- Crime & Violence

As a part of the Mobilizing for Action through Planning and Partnerships (MAPP) process, the Forces of Change Assessment is one piece of information that will inform a larger Community Health Assessment and Community Health Improvement Plan (CHIP). This CHIP will include strategies for how to address and prepare for the issues identified above. As part of the MAPP prioritization process, local health system representatives will determine how addressing these areas can align with current activities of the various agencies, information from the other MAPP assessments, and what new initiatives might be needed for the future.