

A Community Health Needs Assessment
of the
Sutter Delta Medical Center Service Area

Conducted on the behalf of:

Sutter Delta Medical Center

3901 Lone Tree Way
Antioch, CA 94509

Conducted by:



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Report Summary

Introduction

Both state and federal law require that nonprofit hospitals conduct a community health needs assessment (CHNA) every three years to identify and prioritize the significant health needs of the communities they serve. The results of the CHNA guide the development of implementation plans aimed at addressing identified health needs.

Federal regulations define a *health need* accordingly: "...health needs include requisites for the improvement or maintenance of health status in both the community at large and in particular parts of the community (such as particular neighborhoods or populations experiencing health disparities)" (p. 78963).¹

This report documents the processes, methods, and findings of a CHNA conducted on behalf of Sutter Delta Medical Center (SDMC), a Sutter Health affiliate hospital located in Antioch, California. The CHNA was conducted over a period of eight months, beginning in May 2015, and concluding in March 2016. Specifically, the objective of the 2016 CHNA was to:

Building on the 2013 CHNA, identify and prioritize the requisites, (or basic provisions and conditions needed), for the improvement and/or maintenance of health status within a defined hospital service area (HSA), and in particular within neighborhoods and/or populations in the service area experiencing health disparities (the "Communities of Concern.")

SDMC is located in Antioch, California, a community located in the eastern portion of Contra Costa County. The community served by SDMC, or the hospital service area (HSA), was defined by six ZIP codes noted in the table below. This area was identified as the HSA as most of SDMC's patients resided in these ZIP codes. The HSA was home to over 280,000 community residents, and was rich in diversity along a number of dimensions.

ZIP Code	Population	Median Age	Median Income (\$)	Percent Minority
94509	62,651	34.0	\$53,953	61.7
94513	55,488	36.3	\$91,343	43.4
94531	41,700	33.5	\$87,927	72.9
94548	338	39.1	\$77,750	20.4
94561	37,679	33.7	\$76,693	55.4
94565	86,204	32.4	\$55,255	80.2
Total HSA Population	284,060			
<i>Contra Costa County</i>	1,065,794	38.6	\$78,756	52.8
<i>CA State</i>	37,659,181	35.4	\$61,094	60.0

Processes and Methods

The data used to conduct the CHNA were both identified and organized using the widely recognized Robert Wood Johnson Foundation's County Health Rankings model (for a detailed data

¹ *Federal Register*, Vol. 79, No. 250, (Wednesday, December 31, 2014). Department of the Treasury, Internal Revenue Service.

dictionary see Appendix A). This model of population health includes the many factors that impact and account for individual health and wellbeing. Further, to guide the overall process of conducting the assessment, a defined set of data collection and analytic stages were developed. These served as the roadmap for the research team as they went about the work of the CHNA (for a detailed description of the processes followed in conducting the CHNA see Appendix B).

Data collected and analyzed included both primary or qualitative data, and secondary or quantitative data. Primary data included eight interviews with 16 community health experts as well as three focus groups conducted with 38 community residents (see Appendices F and G). Secondary data included health outcome and health factor indicators. Health outcome indicators included measures of both mortality and morbidity such as mortality rates and emergency department visit and hospitalization rates. Health factor indicators included measures of 1) health behaviors such as diet and exercise, tobacco, alcohol, and drug use; 2) clinical care including access and quality of care; 3) social and economic factors such as race/ethnicity, income, educational attainment, employment, and similar; and 4) the physical environment measures such as air and water quality, housing stability, and transit and mobility resources. In all, 114 different health outcome and factor indicators were collected for each of the six ZIP codes included in the assessment.

Data were analyzed to identify Communities of Concern within the HSA. These are defined geographic areas (ZIP codes) and populations within the HSA that have the greatest concentration of poor health outcomes and are home to more medically underserved, low income, and diverse populations at greater risk for poorer health. Communities of Concern were important to the overall CHNA methodology because, after assessing the HSA more broadly, they allowed for a focus on those portions of the HSA likely experiencing the greatest health disparities.

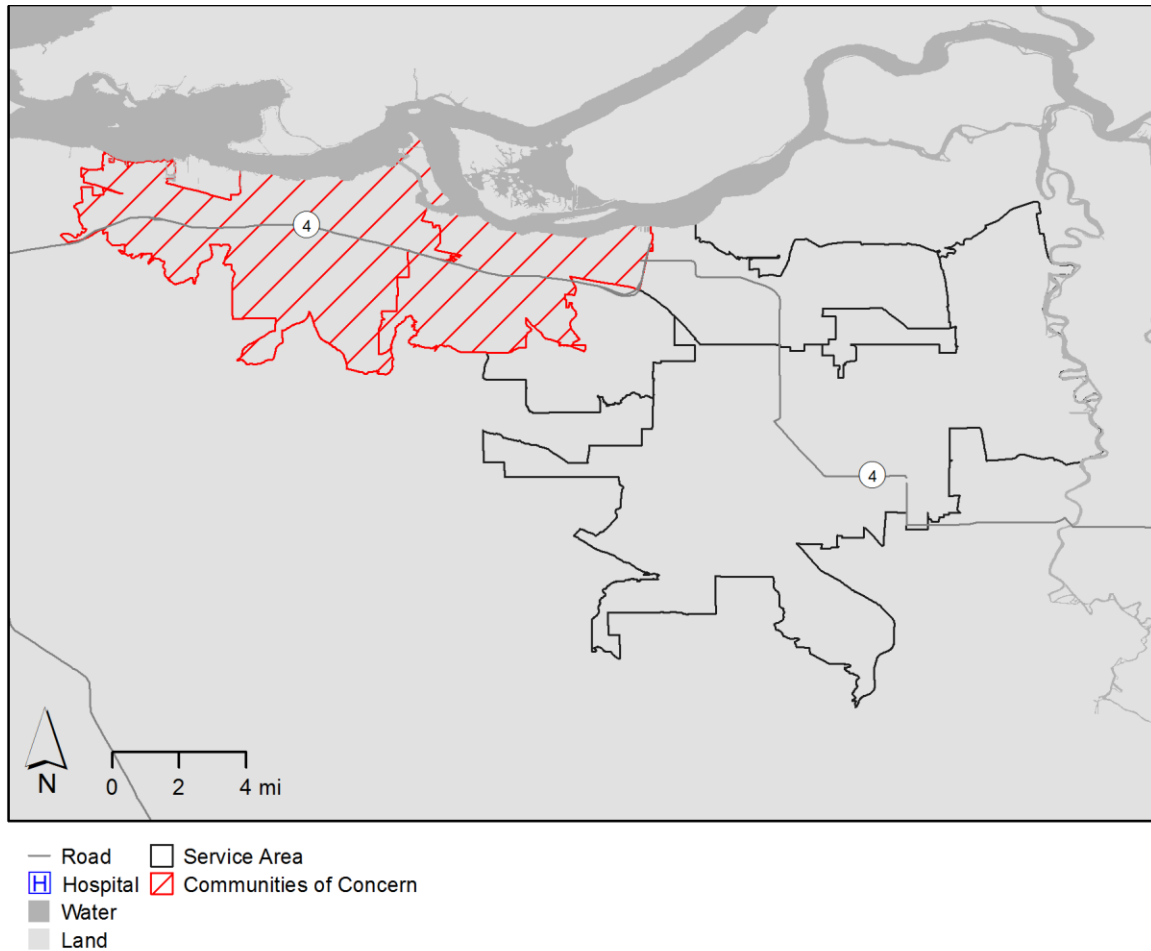
Findings

Analysis of both primary and secondary data revealed two ZIP codes that met the criteria for classification as a Community of Concern. These are noted in the table below, with the census population provided for each. These are also described in the following figure.

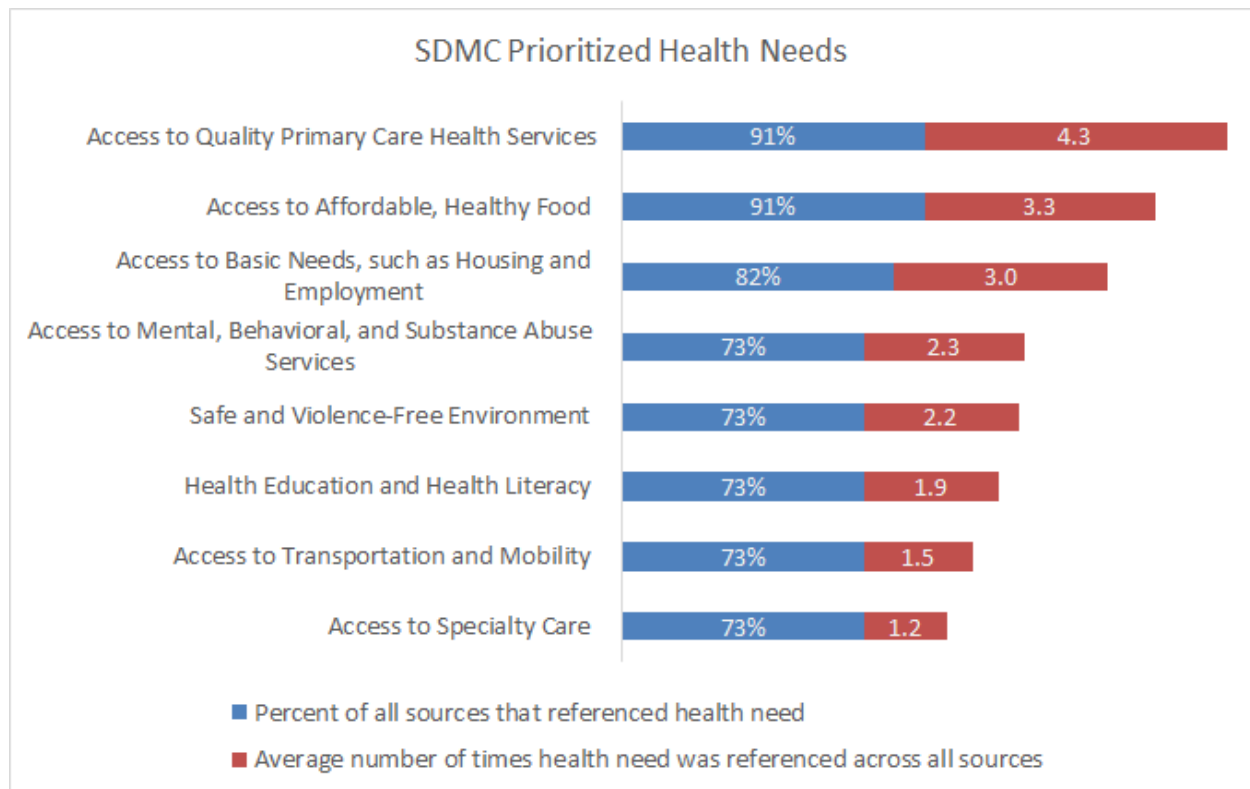
ZIP Code	Community/Area*	Population
94509	Antioch	62,651
94565	Bay Point/Pittsburg	86,204
<i>Total Population Communities of Concern</i>		<i>148,855</i>
<i>Total Hospital Service Area Population</i>		<i>284,060</i>
<i>CC Population as a Percent of Total HSA Population</i>		<i>52.4%</i>

(Source: US Census, 2013)

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



Primary and secondary data were also analyzed to identify and prioritize the significant health needs within the SDMC Communities of Concern. This included identifying 10 potential health needs (PHNs) that could be identified in these communities. These potential health needs were those identified in the previously conducted CHNAs for Sutter Health East Bay (conducted in 2013). Data were analyzed to discover which, if any, of the PHNs were present in the SDMC Communities of Concern. In all, eight of the 10 PHNs were identified as significant health needs. After these were identified, they were prioritized based on an analysis of primary data sources that discussed the potential health need as a significant health need. These are displayed in the figure below. The length of the bar denotes prioritization. In the figure, the blue portion of the bar notes the percent of all primary data sources that referenced the PHN as a current, significant health need. This was combined with the average number of times that each potential health need was referenced among all primary data sources and is displayed in the red portion of the bar.



The identified significant health needs for the SDMC Communities of Concern are listed below in prioritized order. Secondary data indicators that had undesirable rates in at least 75% of the Communities of Concern are listed in the table below each significant health need. Qualitative themes that emerged during analysis are also provided in the table.

1. Access to Quality Primary Care Health Services

The highest priority significant health need for the SDMC HSA was access to quality primary care health services. Primary care resources include community clinics, pediatricians, family practice physicians, internists, nurse practitioners, pharmacists, telephone advice nurses, and similar. Primary care services are typically the first point of contact when an individual seeks healthcare. These services are the front line in the prevention and treatment of common diseases and injuries in a community.

Quantitative Indicators	Qualitative Themes
<ul style="list-style-type: none"> Health Professional Shortage Area – Primary Care Prevention Quality Indicators Total ED visits Total hospitalizations 	<ul style="list-style-type: none"> Shortage of physicians Low quality healthcare services—limited time with provider, misdiagnoses Limited availability of appointments Number of uninsured residents Impact of ACA in increasing demand for primary care Culturally competent providers

2. Access to Affordable, Healthy Food

The second highest priority significant health need for the SDMC HSA was access to affordable, healthy foods. Eating a healthy diet is important for one's overall health and well-being. When access to healthy foods is challenging for community residents, many turn to unhealthy foods that are convenient, affordable, and readily available. Communities experiencing social vulnerability and poor health outcomes often are overloaded with fast food and other establishments where unhealthy food is sold.

Quantitative Indicators	Qualitative Themes
<ul style="list-style-type: none">• USDA Food desert• Mortality due to diabetes• Diabetes ED visits• Heart disease ED visits• Hypertension ED visits• Kidney disease ED visits• Diabetes hospitalizations• Heart disease hospitalizations• Hypertension hospitalizations• Kidney disease hospitalizations• Stroke hospitalizations	<ul style="list-style-type: none">• Costs of healthier foods relative to fast food• Limited availability of fresh food outlets• Stress as a driver of poor nutrition• Cultural influences on diet and nutrition• Food insecurity

3. Access to Basic Needs, such as Housing and Employment

The third highest priority significant health need for the SDMC HSA was access to basic needs such as housing and jobs. Access to affordable and clean housing, stable employment, quality education, and adequate food for health maintenance are vital for survival. Maslow's Hierarchy of Needs² says that only when members of a society have their basic physiological and safety needs met can they then become engaged members of society and self-actualize or live to their fullest potential, including their health.

Quantitative Indicators	Qualitative Themes
<ul style="list-style-type: none">• All-cause mortality• Percent living in poverty• Life expectancy• Median income• Percent on public assistance• People per housing unit• Percent unemployed	<ul style="list-style-type: none">• Impact of growth on housing costs• High cost of quality housing• Housing instability• High cost to rent housing• Substandard quality of affordable housing• Overcrowded housing conditions• Low-wage jobs

4. Access to Mental, Behavioral, and Substance Abuse Services

The fourth highest priority significant health need for the SDMC HSA was access to mental, behavioral, and substance abuse services. Individual health and well-being are inseparable from individual mental and emotional outlook. Coping with daily life stressors is challenging for many people, especially when other social, familial, and economic challenges also occur. Adequate access to mental, behavioral, and substance abuse services helps community members to obtain additional support when needed.

² McLeod, S. (2014). *Maslow's Hierarchy of Needs*. Retrieved from: <http://www.simplypsychology.org/maslow.html>

Quantitative Indicators	Qualitative Themes
<ul style="list-style-type: none"> • Health Professional shortage area – mental health • Mental health ED visits • Mental health substance abuse ED visits • Mental health hospitalizations • Mental health substance abuse hospitalizations 	<ul style="list-style-type: none"> • Living in a constant state of stress and anxiety due to limited resources such as food and shelter • Increasing demand for mental health services • Lack of mental health services available in the community • Stress of living in isolation for undocumented residents • Untreated traumatic childhood experiences

5. Safe and Violence-Free Environment

The fifth highest priority significant health need for the SDMC HSA was a safe and violence-free environment. Feeling safe in one's home and your community are fundamental to overall health. Next to having basic needs met (food, shelter, clothing) is physical safety. Feeling unsafe affects the way people act and react to everyday life occurrences.

Quantitative Indicators	Qualitative Themes
<ul style="list-style-type: none"> • Motor vehicle accidents • Major crime rates • Assault ED visits • Mental health ED visits • Mental health substance abuse ED visits • Assault hospitalizations • Mental health hospitalizations • Mental health substance abuse hospitalizations 	<ul style="list-style-type: none"> • Violence in neighborhoods • Bullying in schools • Unsafe streets for pedestrian traffic • Mentally ill individuals on the streets • Fear of being out-of-doors limiting physical activity • High crime rates in low income areas • Personal safety as a priority health concern • Level of violence in parks and recreation areas • Law enforcement abuse of homeless populations

6. Health Education and Health Literacy

The sixth highest priority significant health need for the SDMC HSA was health education and health literacy. Knowledge is important for individual health and well-being, and health education interventions are powerful tools to improve community health. When community residents lack adequate information on how to prevent, manage, and control their health conditions, those conditions tend to worsen. Health education around infectious disease control (e.g. STI prevention, influenza shots) and intensive health promotion and education strategies around the management of chronic diseases (e.g. diabetes, hypertension, obesity, and heart disease) are important for community health improvement. Health literacy pertains to the extent that people have the knowledge and ability to obtain, process, and understand health information and services needed to make appropriate health decisions.³ Health education is important, but equally important is health literacy where the people have the knowledge and ability to understand health information and are able to navigate the health care system.

³ Almader-Douglas, D. (2013). *Health Literacy*. National Network of Libraries of Medicine. Retrieved from <https://nnlm.gov/outreach/consumer/hlthlit.html>

Quantitative Indicators	Qualitative Themes
<ul style="list-style-type: none"> • Mortality due to diabetes • Diabetes ED visits • HIV ED visits • Heart disease ED visits • Hypertension ED visits • Kidney disease ED visits • STI ED visits • Unintentional injury ED visits • Diabetes hospitalizations • HIV hospitalizations • Heart disease hospitalizations • Hypertensions hospitalizations • Kidney disease hospitalizations • STI hospitalizations • Stroke hospitalizations • Unintentional injury hospitalizations • Percent smokers • Teen birth rate 	<ul style="list-style-type: none"> • Lack of knowledge in proper nutrition and diet • Limited understanding of managing multiple diseases • Lack of understanding concerning safe sex • Tobacco use

7. Access to Transportation and Mobility

The seventh highest priority significant health need for SDMC Communities of Concern was access to transportation and mobility. Having access to transportation services to support individual mobility is a necessity of daily life. Without transportation, individuals struggle to attain their basic needs, including those that promote and support a healthy life.

Quantitative Indicators	Qualitative Themes
<ul style="list-style-type: none"> • Percent living within ½ mile of transit stop 	<ul style="list-style-type: none"> • Limited public transportation options • Poor transportation infrastructure in fast growing East County • No automobile ownership • Congestion of existing roads

8. Access to Specialty Care

The eighth highest priority significant health need for SDMC Communities of Concern was access to specialty care. Specialty care services are those devoted to a particular branch of medicine and focus on the treatment of a particular disease. Primary and specialty care go hand-in-hand, and without access to specialists such as endocrinologists, cardiologists, and gastroenterologists community residents are often left to manage chronic diseases such as diabetes and high blood pressure on their own.

Quantitative Indicators	Qualitative Themes
<ul style="list-style-type: none"> • Prevention quality indicators • Mortality due to diabetes • Diabetes hospitalizations • Heart disease hospitalizations • Hypertension hospitalizations • Kidney disease hospitalizations 	<ul style="list-style-type: none"> • Affordability of specialty care • Availability of specialty care for low income residents

- Stroke hospitalizations

Limitations

Study limitations included challenges obtaining secondary data and assuring community representation via primary data collection. Most data used in this assessment were not available by race/ethnicity. In addition, data on behavioral issues and conditions like obesity were both difficult to obtain at the sub-county level and were not available by race and ethnicity; therefore, county rates were used. Data timeliness was also a challenge, because some data represent different years. However, these are clearly noted to allow for proper data comparison.

Conclusion

Nonprofit hospitals play a vital role in the communities they serve. In addition to the delivery of newborns and the treatment of disease, these important institutions work with and alongside other organizations to improve community health and well-being by working to prevent disease, improve access to healthcare, promote health education, eliminate health disparities, and similar. CHNAs play an important role in helping nonprofit hospitals, 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.

Introduction

Both state and federal law (California SB697 and The Patient Protection and Affordable Healthcare Act of 2010 (ACA)) require nonprofit hospitals to conduct community health needs assessment (CHNA) every three years. These assessments identify and prioritize the significant health needs of the communities served by hospitals. Based on the results, nonprofit hospitals develop implementation plans to address particular, significant health needs. Specifically, the ACA requires that nonprofit hospitals:

- Define the community they serve
- Assess the health needs of the community, taking into account input from persons representing the broad interests of the community, including those with expertise in public health
- Identify and prioritize significant health needs
- Identify resources within each community available to meet health needs
- Evaluate the impact of actions taken by the hospital since its previous CHNA
- Document the CHNA and make it widely available to the public

The Department of Treasury, Internal Revenue Service, issued final regulations effective December 29, 2014, that specify the requirements regarding nonprofit or charitable hospitals conducting a CHNA. These regulations define a health need accordingly: "...health needs include requisites for the improvement or maintenance of health status in both the community at large and in particular parts of the community (such as particular neighborhoods or populations experiencing health disparities)"⁴. The proposed regulations go on to describe requisites for the improvement or maintenance of health status, and indicate that these include "...not only the need to address financial and other barriers to care but also the need to prevent illness, to ensure adequate nutrition, or to address social, behavior, and environment factors that influence health in the community" (p. 78963). Further, the final regulations specify that nonprofit hospitals may build upon a previously conducted CHNA, rather than create a new CHNA every three years.

This report documents the processes, methods, and findings of a CHNA conducted on behalf of Sutter Delta Medical Center (SDMC), a Sutter Health affiliate hospital located in Antioch, California. The CHNA was conducted over a period of eight months, beginning in May 2015 and concluding in March 2016. Building on federal and state requirements, the objective of the 2016 CHNA was to:

Building on the 2013 CHNA, identify and prioritize the requisites, (or basic provisions and conditions needed), for the improvement and/or maintenance of health status within a defined hospital service area (HSA), and in particular within neighborhoods and/or populations in the service area experiencing health disparities (the "communities of concern.")

From this objective, the following questions were used to guide the 2016 CHNA:

1. What are the "Communities of Concern" for the hospital service area?
2. What is the current health status of these communities?
3. Who within the community (subgroups) is/are experiencing disparities?
4. What factors are contributing to the health status of those experiencing disparities?

⁴ *Federal Register*, Vol. 79, No. 250, (Wednesday, December 31, 2014). Department of the Treasury, Internal Revenue Service.

5. What are the potential resources (programs, organizations, and facilities) available in the community to address health needs?
6. What are the significant health needs, and the priorities among these, for the community served by the hospital, and specifically the “Communities of Concern”?
7. What is required (the requisites) to improve and/or maintain the health status of residents within these communities?
8. What is the impact of actions taken since the last CHNA?

Community Health Insights (www.communityhealthinsights.com) conducted the CHNA on the behalf of the SDMC. Community Health Insights is a Sacramento-based, research-oriented consulting firm dedicated to improving the health and well-being of communities across northern California. Collectively, the managing partners of Community Health Insights have conducted multiple CHNAs over the previous nine years.

Organization of this Report

Following federal guidelines issued on how to document a CHNA, this report is organized accordingly: First, the community served by the SDMC and how the community was identified is described. Second, the methods used to conduct the CHNA are described, including how data were collected and analyzed, and a listing of all parties with which the SDMC collaborated to conduct the assessment is provided. Third, a description of how the SDMC solicited and considered the input received from persons who represented the broad interests of the community served follows, including a summary of the input received, the time period in which it was received, and a listing of organizations that provided input, including the populations represented by the organization. Following, the prioritized listing of significant health needs identified through the CHNA is described, along with a description of the process and criteria used in identifying and prioritizing these needs. Next, both health outcome and health factor indicators are reviewed in detail for specific areas of the SDMC HSA. Resources potentially available to meet the needs are identified and described, followed by a summary of the impact of actions taken by the SDMC to address significant health needs identified in its previous CHNA, which was conducted in 2013.

Definition of the Community Served by Sutter Delta Medical Center

SDMC is located in Antioch, California, a community located in the eastern portion of Contra Costa County along the San Joaquin-Sacramento River Delta. The community served by SDMC was defined using ZIP code boundaries. The hospital service area (HSA) included a geographic area comprised of six ZIP codes, with the majority of patients served by SDMC residing within these ZIP codes. Major cities in the HSA include Antioch, Bay Point, Brentwood, Clayton, Discovery Bay, Knightsen, Oakley, and Pittsburg. The HSA is depicted in Figure 1. As shown in the legend, black lines denote ZIP code boundaries that are included in the SDMC HSA.

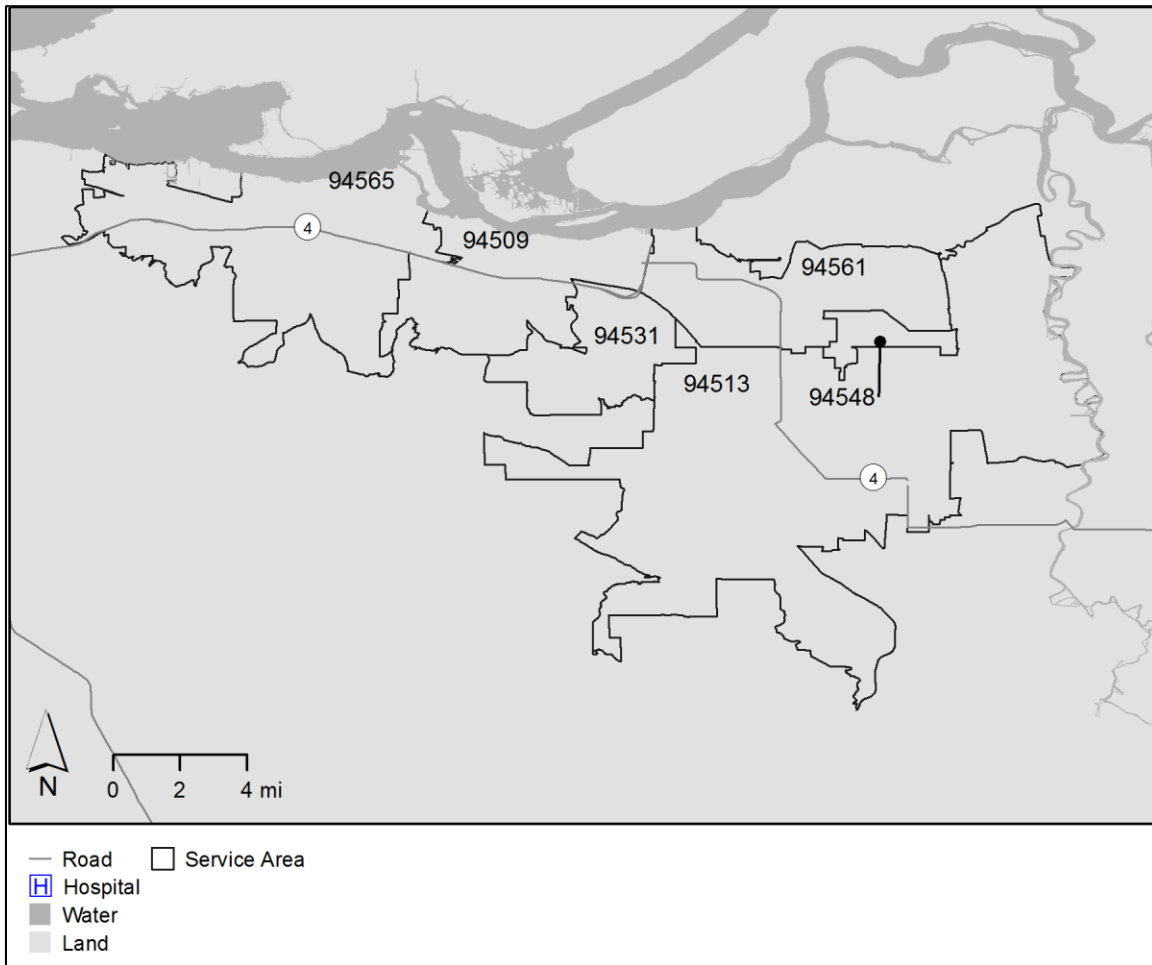


Figure 1: SDMC HSA

General Overview of Community

Population characteristics for each ZIP code that comprised the HSA are presented in Table 1.

Table 1: Population, median age, median income, and percent minority for each ZIP code in the SDMC HSA

ZIP Code	Population	Median Age	Median Income (\$)	Percent Minority
94509	62,651	34.0	\$53,953	61.7
94513	55,488	36.3	\$91,343	43.4
94531	41,700	33.5	\$87,927	72.9
94548	338	39.1	\$77,750	20.4
94561	37,679	33.7	\$76,693	55.4
94565	86,204	32.4	\$55,255	80.2
Total HSA Population	284,060			
<i>Contra Costa County</i>	1,065,794	38.6	\$78,756	52.8
<i>CA State</i>	37,659,181	35.4	\$61,094	60.0

(Source: US Census, 2013)

The HSA was home to over 280,000 residents. Median age varied from a low of 32.4 years for ZIP code 94565 (Bay Point/Pittsburg) to a high of 39.1 for ZIP code 94548. Median income ranged from \$53,953 for ZIP code 94509 (Antioch), to \$91,343 for 94513. Further, the majority of residents in all ZIP codes but two—94513 and 94548—were non-White or Hispanic.

The HSA was rich in racial and ethnic diversity as well. Further examination of racial and ethnic diversity in the HSA is examined in the map below. Areas with index values closer to one indicate a population more evenly divided between race and ethnic groups. In the figure, census tracts within each ZIP code in the HSA are highlighted with different colors to show different values of the diversity index. Darker colored census tracts have a higher diversity index, and thus more diverse populations.

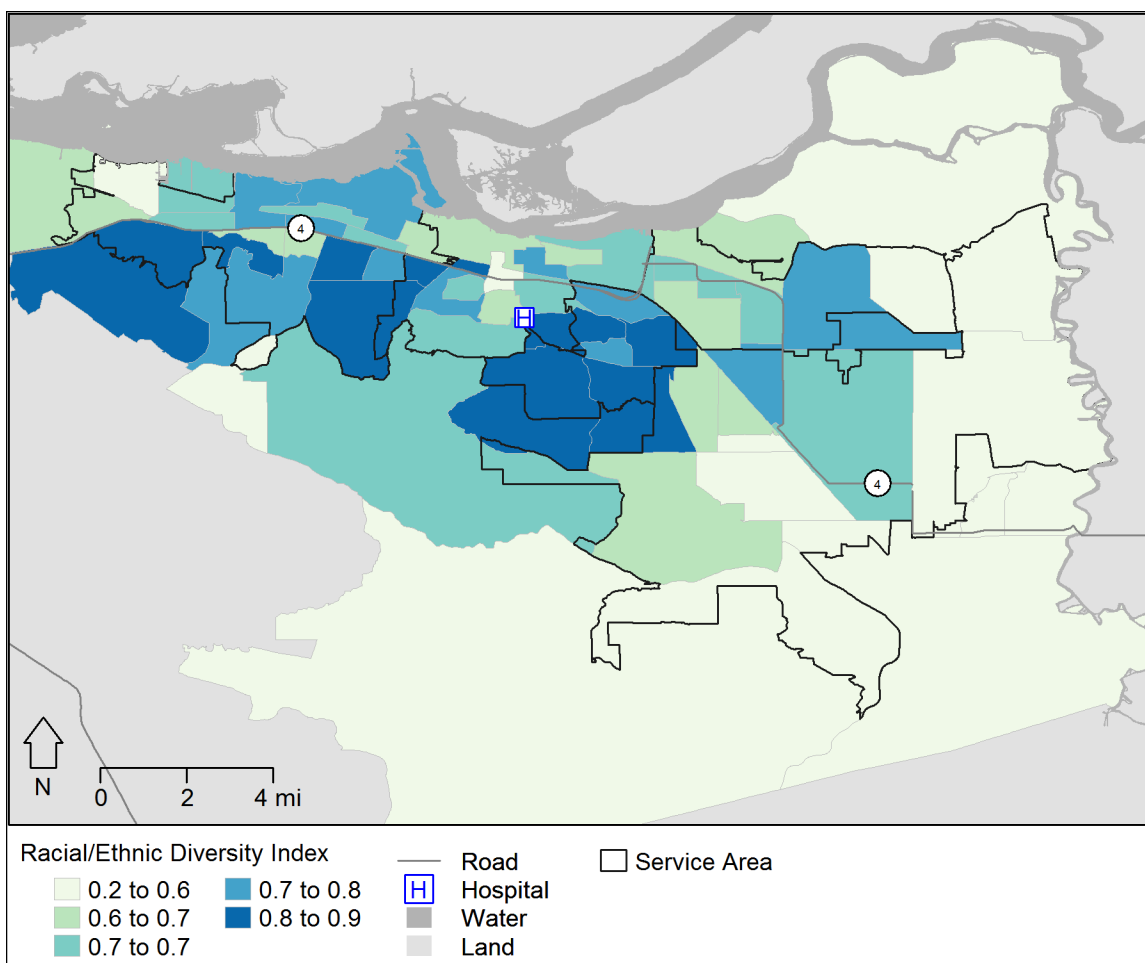


Figure 2: Diversity index for SDMC HSA

Processes and Methods

Determination of Health Status – Conceptual Model

The conceptual model used to support and organize this CHNA was based on a model of population health that includes many of the factors that impact individual health and well-being. Building on the work of America's Health Rankings, the model was developed by the University of

Wisconsin's Population Health Institute and is used by the Robert Wood Johnson Foundation's widely known County Health Rankings.⁵ The model includes health indicators organized into health outcomes and health factors, and then further organized into smaller categories such as morbidity and mortality; health behaviors; clinical care; social and economic factors; and the physical environment. Counties across the nation are then ranked based on each of the indicators in the model in an attempt to compare the health status of one county to the other. The creators of the model write:

*Helping communities become healthier places to live, learn, work, and play means attending to many interrelated factors. These include health factors such as access to clinical care and improvements in healthy behaviors, such as diet and exercise, but also social and economic factors, such as neighborhood safety, employment, housing, and transit. By monitoring these factors, we can identify avenues to create and implement evidence-informed policies and programs that improve community well-being and health.*⁶

The conceptual model presented in Figure 3 is a slightly modified version of the County Health Rankings Model that allowed for the organization of data for this community health assessment (for a detailed description of this organization see Appendix A).

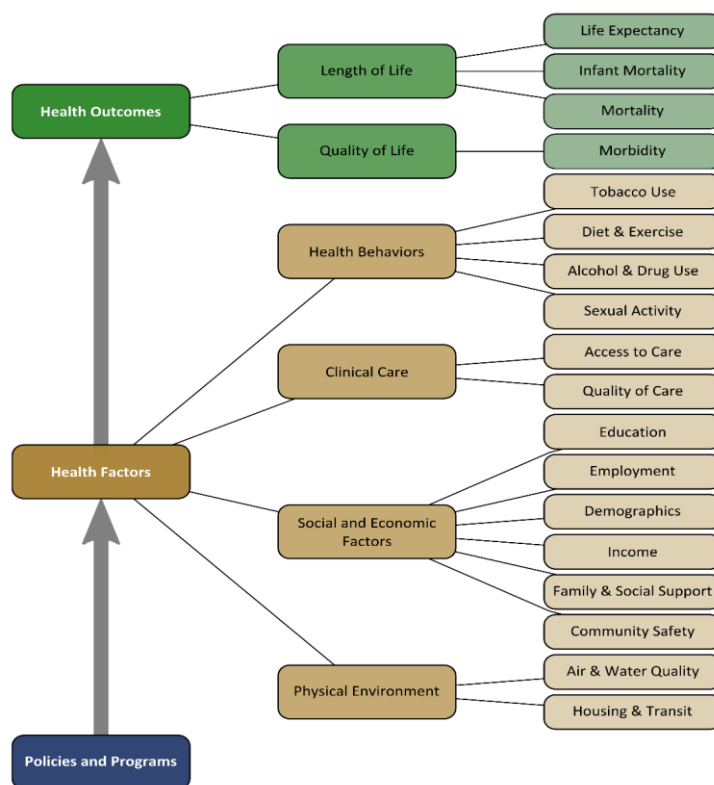


Figure 3: SDMC Community Health Assessment Conceptual Model as modified from the County Health Rankings Model, Robert Wood Johnson Foundation, and University of Wisconsin, 2015.

⁵ Robert Wood Johnson Foundation. (2015). *Our Approach: County Health Rankings*. Retrieved from <http://www.countyhealthrankings.org/our-approach>

⁶ Catlin, B. (2014). *The County Health Rankings: A Treasure Trove of Data*.

Community Health Assessment Process Model

As illustrated in Figure 4, the project was conducted using a series of data collection and analytical stages. The project began with a definition of the HSA based on the definition used for the previous 2013 CHNA. Area-wide primary and secondary data were collected for the defined HSA. Primary data were collected through interviews with area-wide service providers. Secondary data included health factor and health outcome indicators described in detail in Appendix A, as well as the Community Health Vulnerability Index (CHVI) values for each census tract in the HSA.

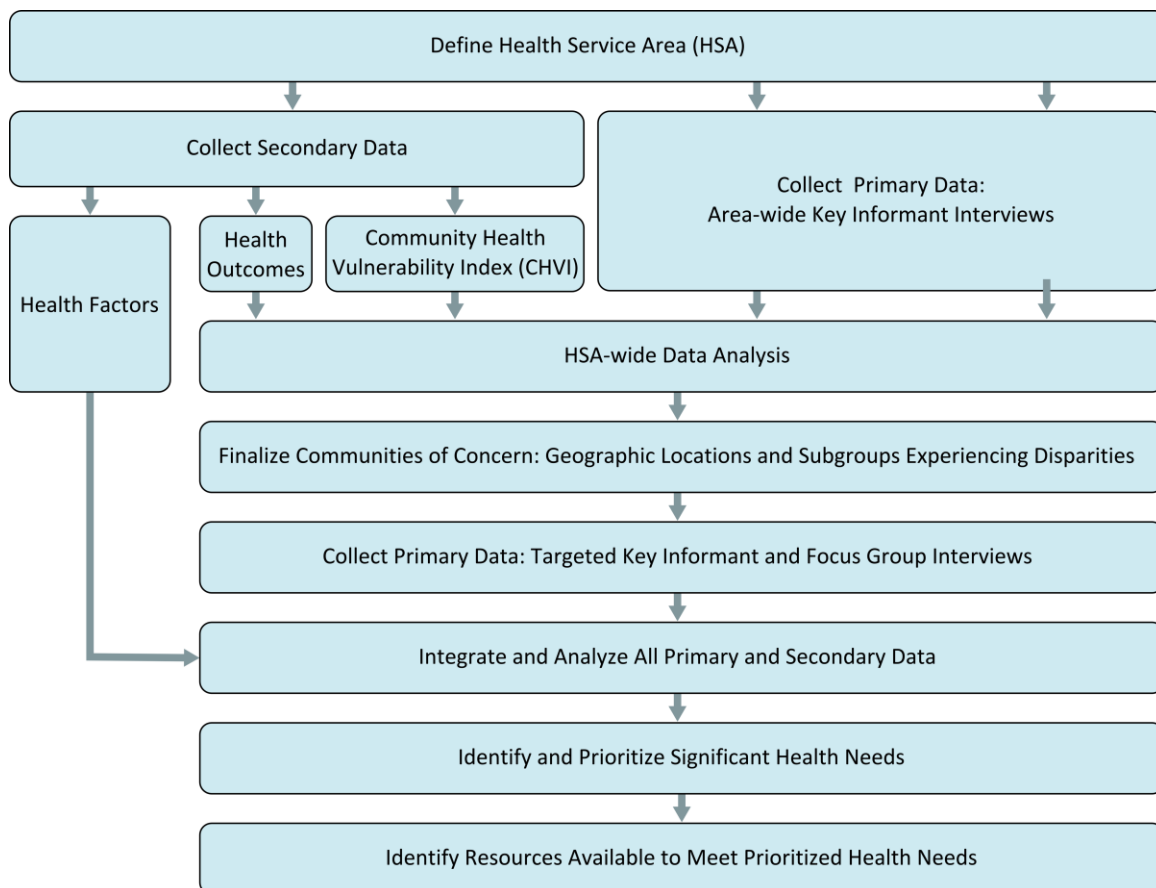


Figure 4: 2016 CHNA process model

Using this approach, 2016 SDMC ZIP code Communities of Concern were defined following an analysis of secondary health outcome indicators, CHVI values, and key informant or health expert input. Next, focus group interviews were conducted in the ZIP code Communities of Concern. Overall primary and secondary data for the Communities of Concern were then integrated to identify the significant health needs for the HSA. Significant health needs were then prioritized based on an analysis of the primary data. Finally, resources available within the HSA to address health needs were identified.

Methods of Primary Data Collection and Processing

Input from the community was collected through two main mechanisms: key informant interviews with community health experts and service providers, and focus group discussions with community members. Instruments used in primary data collection included a participant informed consent, an interview question guide, a project summary sheet, and a reflection sheet. All participants

were given an informed consent form prior to their participation which provided information about the project, asked for permission to record the interview, and listed the potential benefits and risks for involvement in the interview (Appendix C). The interview question guide was used for both the key informant and focus group interviews (Appendix D). The project summary sheet (Appendix E) was given to participants to provide them with information about the project and contact information for CHNA staff. After the interview or focus group was conducted, the facilitator captured the main findings by completing a reflection sheet.

Collecting Primary Data

Primary data were collected between June 2015 and February 2016.

Key Informant Interviews

Key informant interviews were conducted with area service providers and experts representing the broad interests of the community who were familiar with the populations in the HSA (for a listing see Appendix F). Primary data collection began by interviewing area-wide service providers with knowledge of the SDMC HSA, including input from the Contra Costa County Public Health Department. Findings from the area-wide informants were combined with quantitative data showing locations of populations experiencing disparities, to identify and interview key informants with knowledge about these specific populations and locations. These targeted primary data sources were selected based on their knowledge of the needs of particular geographic locations and/or subgroups experiencing disparities. A total of eight key informant interviews were completed with 16 service providers. The key informant interviews were used to identify additional key service providers to include in the assessment, as well as to identify specific populations that should be included in the focus group interviews.

Focus Group Interviews

Focus group interviews were conducted with community members living in geographic areas of the HSA identified as locations in which residents experienced a disparate amount of poor socio-economic conditions and poor health outcomes. Recruitment consisted of referrals from designated service providers representing vulnerable populations in the SDMC HSA, as well as direct outreach from CHVI to acquire input for a special population group. Three focus group discussions were conducted with a total of 38 community members (a listing can be found in Appendix G).

Processing Primary Data

After each interview was completed, the interview recording was sent to a transcription service. Content analysis was done on the transcriptions using NVIVO 10 Qualitative Analytical Software. Content analysis included thematic coding to potential health needs categories, identification of special populations experiencing health issues, identification of resources, as well as additional coding in accordance to the interview question guide. Results were aggregated to inform the determination of prioritized significant health needs and are presented later in this report.

Methods of Secondary Data Collection and Processing

This section serves as a brief overview of the general secondary data collection and processing approaches used to support the CHNA. Interested readers are referred to Appendices A and B for a more detailed description of the secondary data collection and processing and overall project methodology. Here, a brief overview of secondary data collection is given first, followed by a general overview of several key project methodologies.

Secondary Data Collection

The conceptual model shown previously in Figure 3 was used to organize secondary data collection, which was particularly focused on identifying indicators that would illuminate those concepts organized under the health outcomes and health factor categories. A number of general principles guided the selection of secondary indicators to represent these concepts. First, only indicators associated with categories in the conceptual model 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 within the HSA. Third, indicators were only collected from data sources deemed reliable and reputable. Finally, indicators were only collected if they were possible to acquire at a reasonable cost. Based on these criteria, the following indicators were selected.

Health Outcomes

The majority of health outcome indicators can be divided between mortality data, primarily obtained from the California Department of Public Health (CDPH), and morbidity data, primarily obtained from the California Office of Statewide Health Planning and Development (OSHPD). These input data were processed using methods described in detail in Appendix A to result in a set of specific health outcome indicators. Input CDPH data were used to develop mortality rates and broader measures of health status for each ZIP code in the HSA. Input OSHPD data were used to develop hospitalization (H) and emergency department (ED) discharge rates, as well as prevention quality indicators (PQIs), for each ZIP code in the HSA. Tables 2 and 3 list the specific indicators derived from these data sources.⁷

Table 2: CDPH-derived health outcome indicators

By Cause Mortality:	Life Expectancy at Birth
Alzheimer's Disease	Years Potential Life Lost (75)
Cerebrovascular Disease (Stroke)	Age-Adjusted All-Cause Mortality
Chronic Liver Disease and Cirrhosis	Infant Mortality Rate
Chronic Lower Respiratory Disease	Low Birth Weight
Diabetes Mellitus	Female Mortality Rate
Diseases of the Heart	Male Mortality Rate
Essential Hypertension & Hypertensive Renal Disease	Teen Birth Rate*
Influenza and Pneumonia	
Intentional Self Harm (Suicide)	
Malignant Neoplasms (Cancer)	
Nephritis, Nephrotic Syndrome and Nephrosis (Kidney Disease)	
Unintentional Injuries (Accidents)	
All Other Causes	

*Indicator was not treated as a health outcome, but was included because it was derived from the same data source.

⁷ Due to space constraints not all indicators that were available for analysis will be mentioned in this report.

Table 3: OSHPD-derived health outcome indicators (hospitalization and ED visits)

Breast Cancer (H/ED)	Assault (H/ED)
Colorectal Cancer (H/ED)	Self-Inflicted Injury (H/ED)
Lung Cancer (H/ED)	Unintentional Injury (H/ED)
Prostate Cancer (H/ED)	Mental Health (H/ED)
Diabetes (H/ED)	Mental Health, Substance Abuse (H/ED)*
Heart Disease (H/ED)	Asthma (H/ED)
Hypertension (H/ED)	Chronic Obstructive Pulmonary Disease (COPD) (H/ED)
Nephritis, Nephrotic Syndrome and Nephrosis (Kidney Disease) (H/ED)	Hip Fractures (H/ED)
Stroke (H/ED)	Oral Cavity/Dental (H/ED)
HIV/AIDS (H/ED)	Total ED Discharge Rate (H/ED)
STI (H/ED)	Total H Discharge Rate (H/ED)
Tuberculosis (H/ED)	PQI (H)*

*Indicator was not treated as a health outcome, but was included because it was derived from the same data source.

Health Factors

The majority of health factor indicators used in the report were obtained from the US Census Bureau. These indicators primarily focus on the socio-demographic and housing characteristics of the population within the HSA, and are listed in Table 4. Additional health factor indicators were collected from a variety of other sources, and are listed in Table 5. Interested readers are referred to Appendix A for further details about the sources and processing steps applied to these indicators.

Table 4: U.S. Census Bureau-derived health factor indicators

Total Population	Percent Civilian Noninstitutionalized Population with a Disability
Percent Asian (not Hispanic)	Percent Over 18 Who are Civilian Veterans
Percent Black (not Hispanic)	Percent 25 or Older Without a High School Diploma
Percent Hispanic (Any Race)	Percent Single Female-Headed Households
Percent American Indian (Not Hispanic)	Percent Unemployed
Percent Pacific Islander (Not Hispanic)	Percent Uninsured
Percent White (not Hispanic)	GINI Coefficient
Percent Other Race or Two or More Races (Not Hispanic)	Median Income
Percent Minority (Hispanic or Non-White)	Percent Families with Children in Poverty
Racial/Ethnic Diversity Index	Percent Households 65 years or Older in Poverty
Population 5 Years or Older Who Speak Limited English	Percent Single Female-Headed Households in Poverty
Population by Age Group: 0-4, 5-14, 15-24, 25-34, 45-54, 55-64, 65-74, 75-84, and 85 and over	Percent on Public Assistance
Median Age	Percent with Income Less Than Federal Poverty Level

Percent Non-Citizen	Average Population per Housing Unit
Percent Female	Percent Renter-Occupied Housing Units
Percent Foreign-Born	Percent Vacant Housing Units
Percent Male	Percent Households with No Vehicle

Table 5: Remaining health factor indicators

Population Living Near a Transit Stop	Modified Retail Food Environment Index (mRFEI)
Pollution Burden	Park Access
Current Smokers	Health Professional Shortage Areas (Primary Care, Dental, Mental Health)
Binge Drinking	Major Crime Rate
Obesity	Traffic Accidents Resulting in Fatalities
Food Deserts	

Community Health Vulnerability Index (CHVI)

A subset of the demographic health factor indicators (shown in Table 6) was also used to create the Community Health Vulnerability Index (CHVI), a composite index used to help understand the distribution of health disparities within the HSA. Like the *Community Needs Index (CNI)*⁸ on which it was based, the CHVI combines multiple socio-demographic and housing indicators to help identify those locations experiencing greater health disparities. The CHVI differs from the CNI in the manner in which its indicators are combined. Higher CHVI values indicate a greater concentration of groups supported in the literature as being more likely to experience disparities. Interested readers are referred to Appendix A for further details as to its construction.

Table 6: Indicators included in the CHVI

Percent Minority (Hispanic or Non-White)	Percent Families with Children in Poverty
Population 5 Years or Older Who Speak Limited English	Percent Households 65 years or Older in Poverty
Percent 25 or Older Without a High School Diploma	Percent Single Female-Headed Households in Poverty
Percent Unemployed	Percent Renter-Occupied Housing Units
Percent Uninsured	

Report Processes

The analytical processes for this CHNA were designed with care to allow for a tight integration of both qualitative and quantitative data sources. This integration allowed the strength of each approach to buttress the weakness in the other. Secondary quantitative data are useful because it provides a broad and consistently defined view of conditions within the HSA. But its use is limited based on data availability; also, because it lacks the context necessary to provide true understanding, and because its collection is planned ahead of time, it is less useful in identifying emerging trends. While primary qualitative data can sometimes be anecdotal and strongly influenced by the sources from which it is derived, when done well it excels in providing needed context, an understanding of lived experiences,

⁸ Barsi, E. and Roth, R. (2005) The Community Needs Index. *Health Progress*, Vol. 86, No. 4, pp. 32-38.

and an ability to detect new, unanticipated trends or concepts. The sections below describe how qualitative and quantitative data were integrated in key CHNA processes – identifying Communities of Concern, and identifying and prioritizing significant health needs.

Identifying Communities of Concern

A key element of the CHNA methodology is the identification of Communities of Concern, geographic areas or population sub-groups within the HSA that have the greatest concentration of poor health outcomes and are home to more medically underserved, low-income, and diverse populations at greater risk for poorer health. Communities of Concern are important to the overall CHNA methodology because, after assessing the HSA more broadly, they allow for a focus on those portions of the HSA likely experiencing the greatest health disparities.

Geographic Communities of Concern were identified using a combination of primary and secondary data sources. A general description of this process is provided here; interested readers are referred to Appendix B for a more in-depth description. Three secondary data factors were considered in determining if ZIP codes within the HSA would be identified as geographic Communities of Concern: 1) if the ZIP code boundary contained or intersected Census tracts with CHVI scores within the highest 20% in the HSA, 2) if the ZIP code consistently had among the highest morbidity indicator values in the HSA, and 3) if the ZIP code consistently had among the highest mortality indicator values in the HSA. ZIP codes that met at least two of these three criteria were combined with the list of geographic locations consistently mentioned in initial area-wide primary data to result in a final set of geographic Communities of Concern. Population subgroups of concern were identified solely based on the results of primary data.

Identifying Significant Health Needs

A major requirement of the CHNA was the identification of significant health needs. A general description of the process used in this report is given here; interested readers are referred to Appendix B for a more detailed description.

Significant health needs were identified through an integration of both qualitative and quantitative data. The process began by generating a broad list of 10 potential health needs that could exist within the HSA. This list was based on health needs identified in previous Sutter East Bay reports during the 2013 CHNA process, as well as a preliminary review of primary data. Once this list was created, both quantitative and qualitative indicators associated with each potential health need were identified in a crosswalk table. While all of these needs exist within the HSA to a greater or lesser extent, the purpose here was to identify those which were most significant.

Rates for those secondary indicators associated with the potential health needs were reviewed for each Community of Concern to determine which indicators were consistently problematic within the HSA. Next, this set of problematic indicators was compared, via the crosswalk table, to the potential health needs to select a subset of potential health needs for consideration as significant health needs. Primary data sources were also analyzed using the crosswalk table to identify potential health needs for consideration as significant health needs. The results from the primary and secondary potential health needs analyses were then merged to create a final set of significant health needs. (For a more detailed explanation of the processes used to identify significant health needs see Appendix B).

Prioritizing Significant Health Needs

Once significant health needs were identified through the process described above, they were prioritized based on an analysis of primary data. The percent of all primary data sources that referenced each health need and the average number of times health need was referenced by all sources were measured, and the significant health needs were ranked based on a combination of these measures. The significant health need with the highest combined value was identified as having the highest priority, that with the second highest value, the second priority, and so on to the significant health need with the lowest combined values was assigned the lowest priority.

Findings

Communities of Concern

Analysis of both primary and secondary data revealed two ZIP codes that met the criteria for classification as a Community of Concern. These are noted in Table 7, with the census population provided for each, as well as in Figure 4.

Table 7: Identified Communities of Concern for SDMC HSA

ZIP Code	Community/Area*	Population
94509	Antioch	62,651
94565	Bay Point/Pittsburg	86,204
<i>Total Population Communities of Concern</i>		<i>148,855</i>
<i>Total Hospital Service Area Population</i>		<i>284,060</i>
<i>CC Population as a Percent of Total HSA Population</i>		<i>52.4%</i>

(Source: US Census, 2013)

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

Figure 5 displays the SDMC Communities of Concern. In the figure, ZIP code areas with red diagonal hash marks show the Communities of Concern.

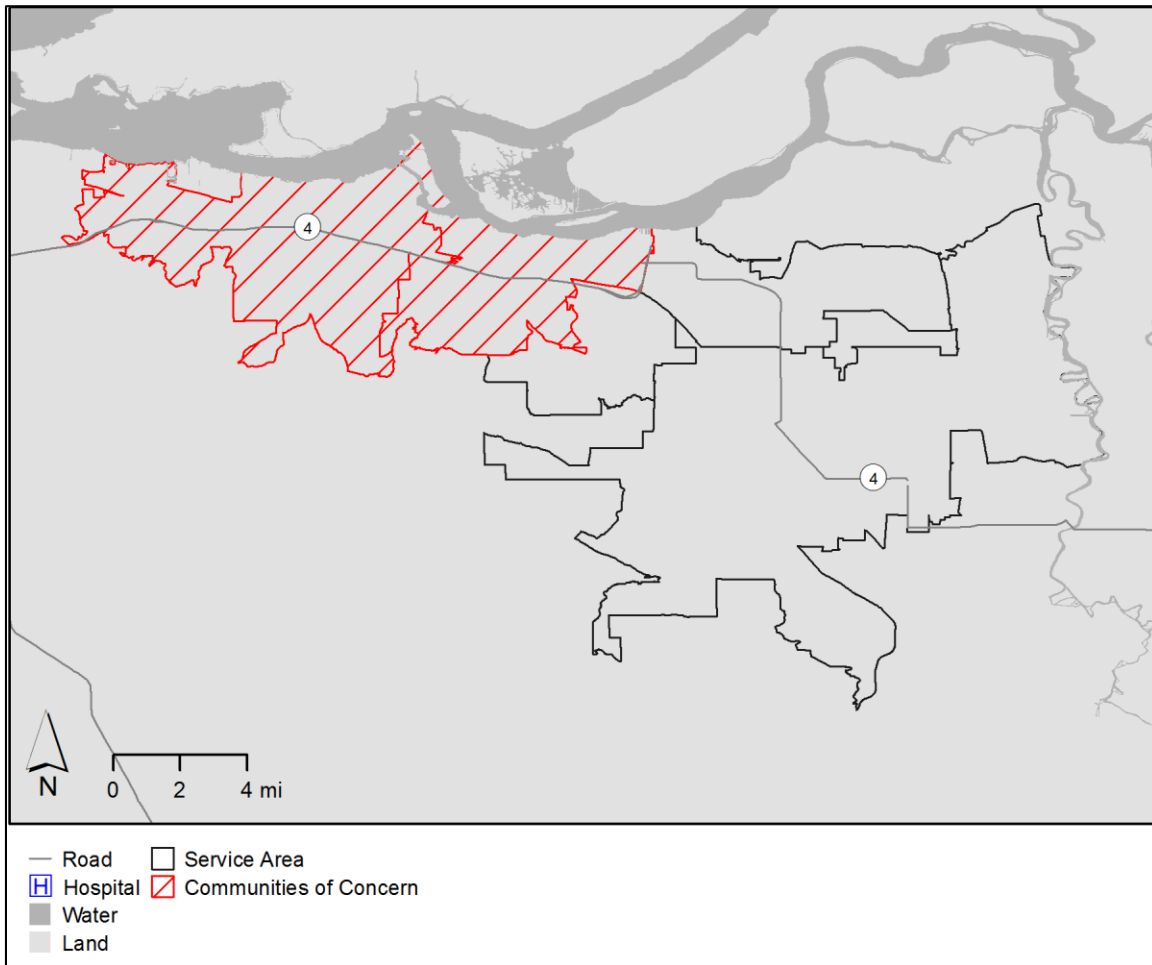


Figure 5: Communities of Concern for SDMC HSA

When asked to identify areas within the SDMC HSA that were experiencing health disparities, all but one key informant pointed to these areas of the HSA—Antioch and Bay Point/Pittsburg—as high need communities. One key informant said: “...*there are areas in Antioch and I know areas in Pittsburg...these are the two that I am very much aware of where there are pockets of low-income folks having health issues*” (KI_6).

The Community Health Vulnerability Index for Communities of Concern

As described previously in this report, the CHVI assists in the identification of geographical areas through the HSA that may be experiencing health disparities based on socio-economic drivers of poor health outcomes. The CHVI results for the SDMC HSA are presented below in Figure 6 with the identified Communities of Concern denoted by the diagonal lines.

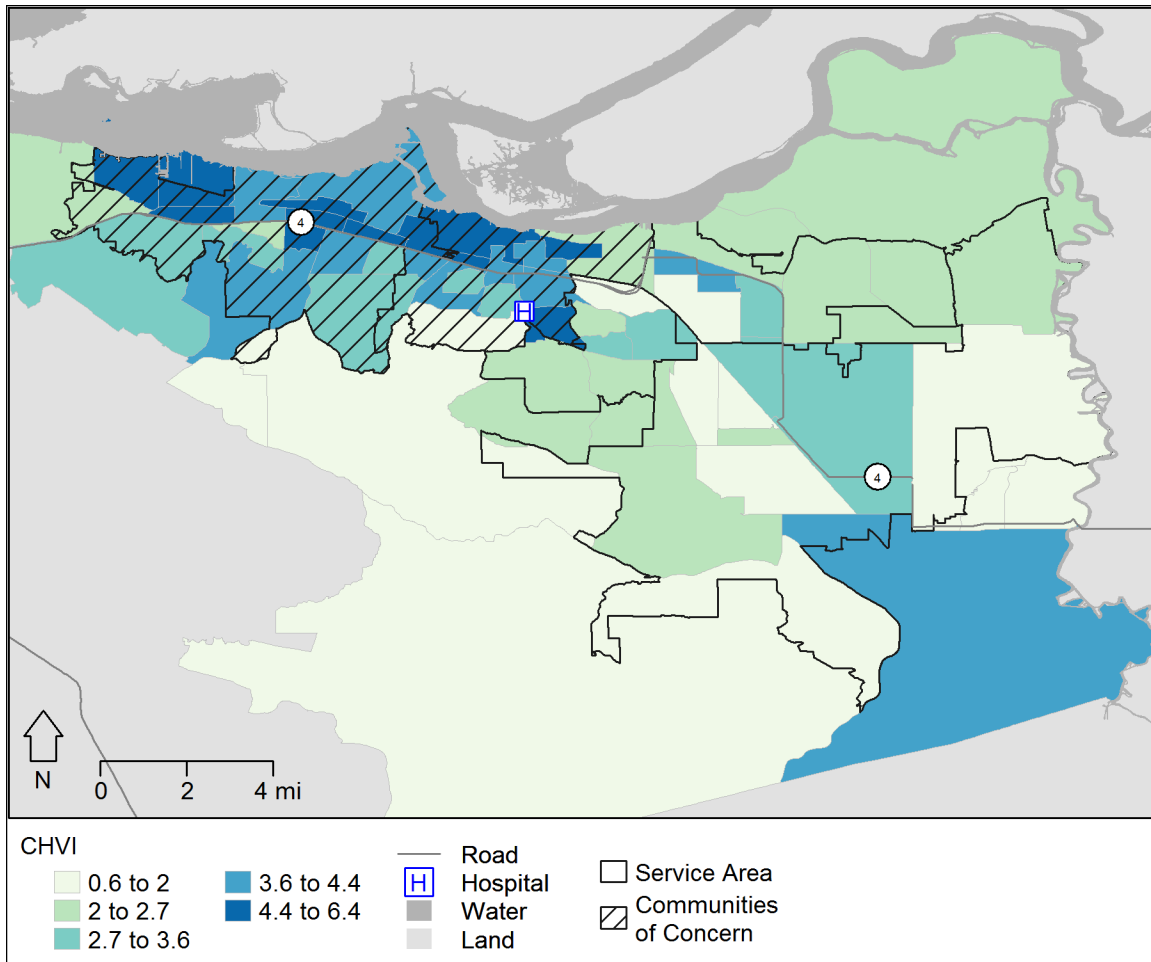


Figure 6: CHVI for SDMC HSA

When examining vulnerability through the SDMC HSA, drastic differences among census tracts were apparent. As displayed in Figure 6, ZIP code Communities of Concern contain census tracts that are identified as “most vulnerable” by the CHVI rankings.⁹ These appear as the darkest colored tracts. Specifically, a high percentage of residents of the Bay Point/Pittsburg and Antioch communities display socio-economic characteristics that are most closely associated with high vulnerability to poor health outcomes (see Table 6 for specific indicators).

Specific Populations Experiencing Disparities in Communities of Concern

When asked to identify specific populations within the Communities of Concern that were experiencing health disparities, key informants pointed to vulnerable groups such as low-income residents, the homeless, and undocumented residents. Key informants also identified specific racial and ethnic groups that included Hispanic/Latino populations and African Americans. Pointing the vulnerability of these racial and ethnic groups, one key informant that provided medical and behavioral health services to these populations said:

⁹ The CHVI is calculated so that its values represent relative levels of vulnerability, and its numbers vary based on the areas for which it is calculated. What is most important in interpreting the CHVI is not the actual numbers, but their relative ranking, in which higher values are associated with higher “vulnerability” (or disadvantage), and lower values with lower vulnerability.

Our highest population is African American; second to that, Latino. And of course the Latino population is growing in proportion. And after that, it's a mixture of Asian, Caucasian, and Native American. But definitely African American and Latino are the largest population (KI_3).

Prioritized, Significant Health Needs in Communities of Concern

Figure 7 displays the eight significant health needs for the SDMC in prioritized order. Prioritization was based on a combination the percent of all primary data sources that referenced the PHN as a current, significant health need, shown by the blue portion of the bar, and the average number of times the PHN was referenced across all primary data sources, shown in the red portion of the bar.

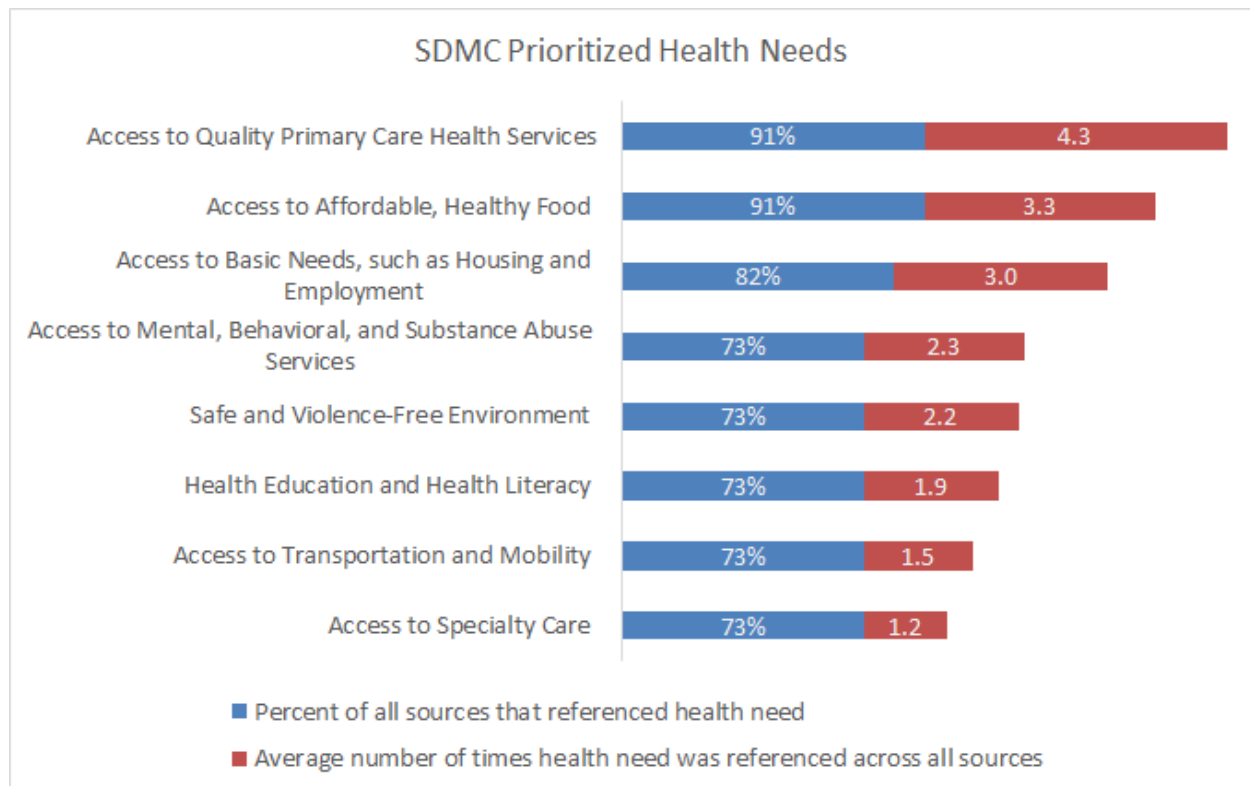


Figure 7: Prioritized, significant health needs for SDMC Communities of Concern

The identified significant health needs for the SDMC Communities of Concern are listed below in prioritized order. Secondary data indicators that had undesirable rates in at least 75% of the Communities of Concern are listed in the table below each significant health need. Qualitative themes that emerged during analysis are also provided in the table.

1. Access to Quality Primary Care Health Services

The highest priority significant health need for the SDMC HSA was access to quality primary care health services. Primary care resources include community clinics, pediatricians, family practice physicians, internists, nurse practitioners, pharmacists, telephone advice nurses, and similar. Primary care services are typically the first point of contact when an individual seeks healthcare. These services are the front line in the prevention and treatment of common diseases and injuries in a community.

Quantitative Indicators	Qualitative Themes
<ul style="list-style-type: none"> • Health Professional Shortage Area – Primary Care • Prevention Quality Indicators • Total ED visits • Total hospitalizations 	<ul style="list-style-type: none"> • Shortage of physicians • Low quality healthcare services—limited time with provider, misdiagnoses • Limited availability of appointments • Number of uninsured residents • Impact of ACA in increasing demand for primary care • Culturally competent providers

2. Access to Affordable, Healthy Food

The second highest priority significant health need for the SDMC HSA was access to affordable, healthy foods. Eating a healthy diet is important for one's overall health and well-being. When access to healthy foods is challenging for community residents, many turn to unhealthy foods that are convenient, affordable, and readily available. Communities experiencing social vulnerability and poor health outcomes often are overloaded with fast food and other establishments where unhealthy food is sold.

Quantitative Indicators	Qualitative Themes
<ul style="list-style-type: none"> • USDA Food desert • Mortality due to diabetes • Diabetes ED visits • Heart disease ED visits • Hypertension ED visits • Kidney disease ED visits • Diabetes hospitalizations • Heart disease hospitalizations • Hypertension hospitalizations • Kidney disease hospitalizations • Stroke hospitalizations 	<ul style="list-style-type: none"> • Costs of healthier foods relative to fast food • Limited availability of fresh food outlets • Stress as a driver of poor nutrition • Cultural influences on diet and nutrition • Food insecurity

3. Access to Basic Needs, such as Housing and Employment

The third highest priority significant health need for the SDMC HSA was access to basic needs such as housing and jobs. Access to affordable and clean housing, stable employment, quality education, and adequate food for health maintenance are vital for survival. Maslow's Hierarchy of Needs¹⁰ says that only when members of a society have their basic physiological and safety needs met can they then become engaged members of society and self-actualize or live to their fullest potential, including their health.

Quantitative Indicators	Qualitative Themes
<ul style="list-style-type: none"> • All-cause mortality • Percent living in poverty • Life expectancy • Median income • Percent on public assistance • People per housing unit • Percent unemployed 	<ul style="list-style-type: none"> • Impact of growth on housing costs • High cost of quality housing • Housing instability • High cost to rent housing • Substandard quality of affordable housing • Overcrowded housing conditions • Low-wage jobs

¹⁰ McLeod, S. (2014). *Maslow's Hierarchy of Needs*. Retrieved from: <http://www.simplypsychology.org/maslow.html>

4. Access to Mental, Behavioral, and Substance Abuse Services

The fourth highest priority significant health need for the SDMC HSA was access to mental, behavioral, and substance abuse services. Individual health and well-being are inseparable from individual mental and emotional outlook. Coping with daily life stressors is challenging for many people, especially when other social, familial, and economic challenges also occur. Adequate access to mental, behavioral, and substance abuse services helps community members to obtain additional support when needed.

Quantitative Indicators	Qualitative Themes
<ul style="list-style-type: none">• Health Professional shortage area – mental health• Mental health ED visits• Mental health substance abuse ED visits• Mental health hospitalizations• Mental health substance abuse hospitalizations	<ul style="list-style-type: none">• Living in a constant state of stress and anxiety due to limited resources such as food and shelter• Increasing demand for mental health services• Lack of mental health services available in the community• Stress of living in isolation for undocumented residents• Untreated traumatic childhood experiences

5. Safe and Violence-Free Environment

The fifth highest priority significant health need for the SDMC HSA was a safe and violence-free environment. Feeling safe in one's home and your community are fundamental to overall health. Next to having basic needs met (food, shelter, clothing) is physical safety. Feeling unsafe affects the way people act and react to everyday life occurrences.

Quantitative Indicators	Qualitative Themes
<ul style="list-style-type: none">• Motor vehicle accidents• Major crime rates• Assault ED visits• Mental health ED visits• Mental health substance abuse ED visits• Assault hospitalizations• Mental health hospitalizations• Mental health substance abuse hospitalizations	<ul style="list-style-type: none">• Violence in neighborhoods• Bullying in schools• Unsafe streets for pedestrian traffic• Mentally ill individuals on the streets• Fear of being out-of-doors limiting physical activity• High crime rates in low income areas• Personal safety as a priority health concern• Level of violence in parks and recreation areas• Law enforcement abuse of homeless populations

6. Health Education and Health Literacy

The sixth highest priority significant health need for the SDMC HSA was health education and health literacy. Knowledge is important for individual health and well-being, and health education interventions are powerful tools to improve community health. When community residents lack adequate information on how to prevent, manage, and control their health conditions, those conditions tend to worsen. Health education around infectious disease control (e.g. STI prevention, influenza shots) and intensive health promotion and education strategies around the management of chronic diseases (e.g. diabetes, hypertension, obesity, and heart disease) are important for community health improvement. Health literacy pertains to the extent that people have the knowledge and ability to obtain, process, and understand health information and services needed to make appropriate health

decisions.¹¹ Health knowledge and education is important, but equally important is health literacy where people have the knowledge and ability to understand health information and are able to navigate the health care system.

Quantitative Indicators	Qualitative Themes
<ul style="list-style-type: none"> • Mortality due to diabetes • Diabetes ED visits • HIV ED visits • Heart disease ED visits • Hypertension ED visits • Kidney disease ED visits • STI ED visits • Unintentional injury ED visits • Diabetes hospitalizations • HIV hospitalizations • Heart disease hospitalizations • Hypertensions hospitalizations • Kidney disease hospitalizations • STI hospitalizations • Stroke hospitalizations • Unintentional injury hospitalizations • Percent smokers • Teen birth rate 	<ul style="list-style-type: none"> • Lack of knowledge in proper nutrition and diet • Limited understanding of managing multiple diseases • Lack of understanding concerning safe sex • Tobacco use

7. Access to Transportation and Mobility

The seventh highest priority significant health need for SDMC Communities of Concern was access to transportation and mobility. Having access to transportation services to support individual mobility is a necessity of daily life. Without transportation, individuals struggle to attain their basic needs, including those that promote and support a healthy life.

Quantitative Indicators	Qualitative Themes
<ul style="list-style-type: none"> • Percent living within ½ mile of transit stop 	<ul style="list-style-type: none"> • Limited public transportation options • Poor transportation infrastructure in fast growing East County • No automobile ownership • Congestion of existing roads

8. Access to Specialty Care

The eighth highest priority significant health need for SDMC Communities of Concern was access to specialty care. Specialty care services are those devoted to a particular branch of medicine and focus on the treatment of a particular disease. Primary and specialty care go hand-in-hand, and without access to specialists such as endocrinologists, cardiologists, and gastroenterologists community residents are often left to manage chronic diseases such as diabetes and high blood pressure on their own.

¹¹ Almadier-Douglas, D. (2013). *Health Literacy*. National Network of Libraries of Medicine. Retrieved from <https://nnlm.gov/outreach/consumer/hlthlit.html>

Quantitative Indicators	Qualitative Themes
<ul style="list-style-type: none"> Prevention quality indicators Mortality due to diabetes Diabetes hospitalizations Heart disease hospitalizations Hypertension hospitalizations Kidney disease hospitalizations Stroke hospitalizations 	<ul style="list-style-type: none"> Affordability of specialty care Availability of specialty care for low income residents

Health Outcomes in Communities of Concern – Length and Quality of Life

Examination of health outcomes for the assessment included measures of morbidity and mortality. The conditions examined included the major categories of chronic disease, mental health, unintentional injury, cancer, respiratory health, and dental health. In addition, all-cause mortality, infant mortality, and life expectancy at birth are also detailed here. Data examined included CDPH mortality data by ZIP code and OSHPD ED visits and hospitalizations by condition.

Overall Health Status (Age-adjusted Mortality, Infant Mortality, and Life Expectancy at Birth)

Various quantitative indicators help to provide information about what it feels like to live in a community on an everyday basis. Though specific measures of mortality tell us how community members suffered related to 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 8 below examines three common overall health status indicators: age-adjusted all-cause mortality, infant mortality, and life expectancy at birth for each of the SDMC Communities of Concern. NOTE: In this table, and all that follow, any indicator that exceeded any benchmark is highlighted.

Table 8: Overall health status indicators: Age-adjusted all-cause mortality, infant mortality, and life expectancy at birth compared to county, state, and Healthy People 2020 benchmarks.

Overall Health Status Indicators	ZIP Code	Age Adjusted All-Cause Mortality (per 10,000 pop)	Infant Mortality Rate (per 1,000 live births)	Life Expectancy at Birth (Years)
	94509 (Antioch)	83.3	5.0	76.7
	94565 (Bay Point/Pittsburg)	76.7	6.2	78.0
	Contra Costa County	62.4	5.0	81.1
	CA State	64.6	4.9	80.5
	National 2013	--	--	78.8 ¹²
	Healthy People 2020 Target	--	6.0 ¹³	--

(Source: CDPH, 2010-2012)

¹² 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

¹³ 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>

Both Communities of Concern had rates that exceeded benchmarks in many categories. For example, age-adjusted all-cause mortality for 94509 (Antioch) was 83.3 compared to the county rate of 62.4. The infant mortality rate for 94565 (Bay Point/Pittsburg) was 6.2 compared to a state rate of 4.9. Life expectancy at birth has gained notoriety in recent “place matters” campaigns.¹⁴ These campaigns note that where someone lives can be a predictor of length of life. Life expectancy at the national level is currently 78.8 years. Life expectancy for all Communities of Concern was lower than both the county and state levels. ZIP code 94509 (Antioch) had a life expectancy of 76.7 years compared to the county with 81.1 years. Said another way, residents of 94509 (Antioch) will on average live 4.4 fewer years than residents across all of Contra Costa County.

Chronic Diseases (Diabetes, Heart Disease, Stroke, Hypertension, and Kidney Disease)

Chronic diseases, specifically diabetes, heart disease, stroke, hypertension, and kidney diseases are among the top leading causes of death in the nation.¹⁵ These conditions were commonly mentioned as health conditions that SDMC residents struggle with. An evaluation of quantitative data also revealed clear geographical disparities of these outcomes within the service area. Data for these conditions in the Communities of Concern follows.

Diabetes

Table 10 displays rates of mortality, ED visits, and hospitalizations due to diabetes for each Community of Concern.

Table 9: 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	ED Visits	Hospitalizations
Diabetes	94509 (Antioch)	2.2	473.6	300.8
	94565 (Bay Point/Pittsburg)	2.3	398.4	252.5
	<i>Contra Costa County</i>	<i>1.8</i>	<i>263.1</i>	<i>179.1</i>
	<i>CA State</i>	<i>2.1</i>	<i>210.9</i>	<i>194.0</i>
	<i>Healthy People 2020 Goal</i>	<i>6.6</i>	<i>--</i>	<i>--</i>

(Source: Mortality: CDPH, 2012; ED visits and hospitalizations: OSHPD, 2011-2013)

In both Communities of Concern, rates for mortality, ED visits, and hospitalizations due to diabetes exceeded both county and state benchmarks, and some were more notable than others. For example, residents of ZIP code 94509 (Antioch) visited the ED due to diabetes at a rate that was over twice the state rate. Further, residents of ZIP code 94565 (Bay Point/Pittsburg) were hospitalized as a result of diabetes at a rate notably higher than the county rate.

Heart Disease

Heart disease is the leading cause of death in the nation for individuals under the age of 85; it includes a number of different types of heart-related conditions, with coronary heart disease the most

¹⁴ Policy Link. (2007) *Why Place Matters: Building a Movement for Healthy Communities*. Retrieved from: http://www.policylink.org/sites/default/files/WHYPLACEMATTERS_FINAL.PDF

¹⁵ Centers for Disease Control and Prevention. (2015). *Leading causes of death*. Retrieved from: <http://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm>

common and a major cause of heart attacks. More than 600,000 people die of heart disease each year.¹⁶ Key informants and community members mentioned heart disease and high cholesterol as common conditions for area residents. Table 10 examines rates for mortality, ED visits, and hospitalizations due to heart disease.

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

Heart Disease	ZIP Code	Mortality	ED Visits	Hospitalizations
	94509 (Antioch)	13.1	154.7	209.5
	94565 (Bay Point/Pittsburg)	13.0	120.6	153.5
	<i>Contra Costa County</i>	<i>14.1</i>	<i>113.7</i>	<i>145.1</i>
	<i>CA State</i>	<i>15.8</i>	<i>70.8</i>	<i>143.0</i>
	<i>Healthy People 2020 Target</i>	<i>10.1</i>	--	--

(Source: Mortality: CDPH, 2012; ED visits and hospitalizations: OSHPD, 2011-2013)

While mortality due to heart disease for both Communities of Concern was lower than county and state benchmarks, rates for ED visits and hospitalizations exceeded all benchmarks for both ZIP codes. ZIP code 94509 (Antioch) had ED visit rates that were over twice the state benchmark. Of the two Communities of Concern, ZIP code 94509 (Antioch) had the highest mortality, ED visit, and hospitalization rates due to diabetes.

Stroke, Hypertension, and Kidney Disease

Stroke was the fifth leading cause of death at the national level in 2013.¹⁷ Approximately 800,000 people have a stroke each year, with the most common type those which restrict blood flow to the brain.¹⁸ Tobacco smoking and hypertension drastically increase risk for stroke. Hypertension is common in approximately 1 out of every 3 adults.¹⁹ Both stroke and hypertension are discussed together here. Hypertension also increases risk for kidney disease, along with heart disease and diabetes. Tables 11, 12, and 13 examine mortality, ED visits, and hospitalizations related to stroke, hypertension, and kidney disease.

Table 11: Mortality, ED visit, and hospitalization rates for stroke compared to county, state, and Healthy People 2020 benchmarks (rates per 10,000 population)

Stroke	ZIP Code	Mortality	ED Visits	Hospitalizations
	94509 (Antioch)	5.4	48.0	83.1
	94565 (Bay Point/Pittsburg)	3.6	35.8	68.9
	<i>Contra Costa County</i>	<i>4.1</i>	<i>39.6</i>	<i>63.8</i>
	<i>CA State</i>	<i>3.6</i>	<i>20.3</i>	<i>56.1</i>
	<i>Healthy People 2020 Target</i>	<i>3.4</i>	--	--

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

¹⁶ Centers for Disease Control and Prevention. (2015). *Heart Disease Facts*. Retrieved from: <http://www.cdc.gov/heartdisease/facts.htm>

¹⁷ Centers for Disease Control and Prevention. (2015). *Leading Causes of Death*. Retrieved from: <http://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm>

¹⁸ Centers for Disease Control and Prevention. (2015). *Stroke Facts*. Retrieved from: <http://www.cdc.gov/stroke/facts.htm>

¹⁹ Centers for Disease Control and Prevention. (2015). *Blood Pressure Facts*. Retrieved from: <http://www.cdc.gov/bloodpressure/facts.htm>

ZIP code 94509 (Antioch) exceeded all benchmarks for mortality, ED visits, and hospitalizations due to stroke. For example, ED visit rates were over twice those for the state (48.0 compared to 20.3). While rates for ZIP code 94565 (Bay Point/Pittsburg) were generally lower than 94509 (Antioch), rates for this Community of Concern were higher than both county and state benchmarks for both ED visits and hospitalizations. Further, the Contra Costa County rate for ED visits due to stroke was nearly twice the state rate.

Table 12: 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	94509 (Antioch)	1.4	933.0	553.5
	94565 (Bay Point/Pittsburg)	1.2	735.2	424.8
	<i>Contra Costa County</i>	--	603.6	387.4
	<i>CA State</i>	1.2	412.6	387.2

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

Similar to the trends noted above for other chronic diseases, ZIP code 94509 (Antioch) had rates that exceeded the county benchmark in all instances, and some notably so. Likewise, ZIP code 94565 (Bay Point/Pittsburg) had rates that exceeded both county and state benchmarks for ED visits and hospitalizations due to hypertension.

Table 13: Mortality, ED visits and hospitalization rates for kidney diseases compared to county and state benchmarks (rates per 10,000 population)

	ZIP Code	Mortality: Nephritis	ED Visits*	Hospitalizations*
Kidney Disease	94509 (Antioch)	0.5	173.1	292.4
	94565 (Bay Point/Pittsburg)	0.7	138.3	235.8
	<i>Contra Costa County</i>	--	110.7	188.2
	<i>CA State</i>	0.7	57.6	161.5

(Sources: Mortality: CDPH, 2012; ED Visits and hospitalizations: OSHPD, 2011-2013)

* OSHPD data includes data for conditions nephritis, nephrotic syndrome, and nephrosis

Residents of both Communities of Concern visited the ED and were hospitalized for kidney disease at rates higher than both the county and state benchmarks. Further, the rates for Contra Costa County were nearly twice those of the state. As a result, ZIP code 94509 (Antioch) had an ED visit rate that was three times greater than the state rate.

Both key informants and focus group participants identified chronic diseases as priority health issues of the Communities of Concern. For example, all key informants referenced hypertension and heart disease, and all but one key informant mentioned diabetes as key health issues and concerns for residents living in the Communities of Concern. One key informant, when asked to identify the key health issues for residents of the Communities of Concern made this comment: “...the chronic diseases are all prevalent in our numbers. We see a lot of diabetes, a lot of pre-diabetes; we see lots of obesity in children” (KI_5). When asked to rank health issues in the population they served, the same key informant indicated diabetes was the most prominent. Another key informant pointed to chronic diseases in the populations they served and how many were undiagnosed or untreated, and the resulting complications that followed:

We get a lot of underserved [patients]; chronic diseases that have never been addressed...Somebody has uncontrolled diabetes for a very long time will have increased retinopathy and neuropathy, which are all common complications for uncontrolled diabetes. These are conditions that we want to catch early and sometimes we can't do that if they have diabetes for ten years and have never seen a doctor (KI_8).

Mental Health and Self-Inflicted Injury

The lack of access to mental health services and the struggle that many community members experience when coping with mental health illness and substance abuse was a main finding of this community health assessment. Area experts and community members consistently reported the immense struggle service area residents have in maintaining positive mental health and accessing treatment for mental illness. As mentioned previously in this report, access to mental health and substance abuse treatment was the fourth highest priority significant health need for the SDMC HSA. Included in this section of the report are ED visits and hospitalizations related to mental health conditions, substance abuse, and suicide/self-inflicted injury.

Mental Health

Table 14 displays the rates for Communities of Concern for all mental health-related ED visits and hospitalizations.

Table 14: 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 (Overall)	94509 (Antioch)	387.1	260.6
	94565 (Bay Point/Pittsburg)	279.0	206.3
	<i>Contra Costa County</i>	<i>254.0</i>	<i>197.1</i>
	<i>CA State</i>	<i>153.6</i>	<i>188.6</i>

(Source: ED visits and hospitalization: OSHPD, 2011-2013)

Both ZIP codes had rates that exceeded both county and state benchmarks for ED visits and hospitalizations due to mental health issues. Consistent with trends noted in the chronic disease section of this report, ZIP code 94509 (Antioch) had higher, unwanted rates than did 94565 (Bay Point/Pittsburg). Further, Contra Costa County as a whole had rates that were higher than the state benchmark. Notably, residents of 94509 (Antioch) visited the ED for mental health issues at a rate that was two-and-a-half times greater than the state rate.

Suicide and Self-Inflicted Injury

Table 15 displays mortality rates due to suicide, and ED visits and hospitalizations due to self-inflicted injury for the four Communities of Concern.

Rates for mortality, ED visits, and hospitalizations resulting from suicide/self-inflicted injury equaled or exceeded both county and state benchmarks, and Healthy People 2020 goals for all Communities of Concern. ZIP code 94509 (Antioch) had the highest rates in all categories.

Table 15: 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	94509 (Antioch)	1.5	11.8	4.8
	94565 (Bay Point/Pittsburg)	1.1	6.9	3.7
	<i>Contra Costa County</i>	<i>1.1</i>	<i>7.0</i>	<i>3.4</i>
	<i>CA State</i>	<i>1.0</i>	<i>8.2</i>	<i>4.4</i>
	<i>Healthy People 2020</i>	<i>1.0</i>	<i>--</i>	<i>--</i>

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

Both key informants and focus group participants consistently mentioned mental health as a key health issue in the Communities of Concern. Issues noted included depression, isolation, addiction, trauma/PTSD, mental illnesses, and stress/anxiety. These issues were brought on by a number of factors such as witnessing violence in the home or at school, self-medicating untreated mental illnesses, and stressors resulting from difficult living conditions associated with living in a low income home.

When discussing mental health issues, one community health practitioner put it this way: “...I want to say that depression is a very common theme, trauma is a big deal for our youth and our communities at large” (KI_5). Another behavioral health practitioner said this: “A lot of our kids are diagnosed with depression and anxiety; we have PTSD...those are the main overarching [issues] that they are diagnosed within our program. There are issues of domestic violence in the home...” (KI_1). This same practitioner went on to say: “...the source of much of the trauma is just living conditions.” For example, this practitioner told a story of a youth that was enrolled in a summer camp program who notified the program on the day before the camp was scheduled to start that he could not attend. Quoting the youth the practitioner said this: “We got kicked out of our house and we were told by our landlord that we have to be out of there by the end of the week; and we’re homeless now and we don’t know where to go.”

Unintentional Injury

Unintentional injury is the fourth leading cause of death in the nation and the leading cause of death for children and teens.^{20,21} National data show that most deaths related to unintentional injuries for young people result from motor vehicle accidents, followed by drowning, fire, falls, and poisoning. ED visits and hospitalizations related to unintentional injuries are included in this section of the report. In the health factors section, data on fatal traffic accidents, major crimes, and assault are detailed. Table 16 examines mortality, ED visits, and hospitalizations related to unintentional injuries.

Rates for all Communities of Concern for mortality, ED visits, and hospitalization exceeded both county and state benchmarks with one exception—mortality for ZIP code 94656. As with trends noted in earlier sections of this report, ZIP code 94509 (Antioch) had the highest rates among the Communities of Concern.

²⁰US National Library of Medicine: MedlinePlus. (2016). *Death among children and adults*. Retrieved from: <https://www.nlm.nih.gov/medlineplus/ency/article/001915.htm>

²¹Centers for Disease Control and Prevention. (2015). *Leading Causes of Death*. Retrieved from: <http://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm>

Table 16: Mortality, ED visit, and hospitalization rates due to unintentional injury compared to county, state and Healthy People 2020 benchmarks (rates per 10,000 population)

Unintentional Injury	ZIP Code	Mortality	ED Visits	Hospitalizations
	94509 (Antioch)	4.9	1,204.3	223.9
	94565 (Bay Point/Pittsburg)	2.2	913.8	178.0
	<i>Contra Costa County</i>	2.8	810.6	174.1
	<i>CA State</i>	2.9	671.3	155.5
	<i>Healthy People 2020</i>	3.4	--	--

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

Cancers

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.²² In an attempt to gain a better understanding of how the Communities of Concern are affected by cancer, the assessment included the examination of cancer incidence at the county level, as well as cancer mortality and ED visits and hospitalizations for specific causes of cancer. County level all-cause cancer incidence and mortality data were examined; however, ZIP code-level incidence data for all-cause cancer and specific cancers were not available for this assessment. ZIP code level data on ED visits and hospitalizations due to lung cancer, colorectal cancer, prostate cancer, and female breast cancer were selected for the assessment and are also detailed below. These specific cancers were chosen for this assessment because they are among the leading causes of new cases and/or of deaths of cancer among Americans today.

Cancer Incidence

Cancer incidence helps to communicate risk for cancer within the HSA, but data are hard to acquire at the sub-county level. Rates of new cases of cancer for the years 2008 through 2012 for both Alameda and Contra Costa County are listed in Table 17. Rates are compared to a regional incidence rate and state rate.

Table 17: Age-adjusted incidence rates of cancer (invasive) for Contra Costa County and Alameda County compared to state and regional benchmarks (rates per 10,000)

Indicator	Rate per 10,000
Contra Costa County All-Cause Cancer Incidence	45.6
Alameda County All-Cause Cancer Incidence	41.3
<i>Bay Area Region All-Cause Cancer Incidence</i>	43.6
<i>CA State All-Cause Cancer Incidence⁺</i>	42.5

(Source: CA Cancer Registry, 2008-2012²³)

Incidence rates of all-cause cancer were higher in Contra Costa County than in neighboring Alameda County and both the East Bay Region and California State rates.

²² Centers for Disease Control and Prevention. (2015). *Cancer*. Retrieved from: <http://www.cdc.gov/nchs/fastats/cancer.htm>

²³ *Age-Adjusted Invasive Cancer Incidence Rates by County in California, 2008 - 2012*. Based on November 2014 Extract (Released November 21, 2014). California Cancer Registry. Cancer-Rates.info. Retrieved Jan 19, 2016, from <http://cancer-rates.info/ca/>

All-Cause Mortality and Lung Cancer

An all-cause cancer mortality rate²⁴ shows the overall effect of cancer as an illness across the SDMC Communities of Concern. Unfortunately, data on death due to specific cancers is 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 18, followed by rates for prostate, colorectal, and female breast cancer in Table 19.

Table 18: 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
94509 (Antioch)	17.3	5.4	10.2
94565 (Bay Point/Pittsburg)	14.0	3.9	8.0
<i>Contra Costa County</i>	17.1	4.4	8.9
<i>CA State</i>	15.4	2.7	8.0
<i>Healthy People 2020</i>	16.1	--	--

(Source: Mortality: CDPH, 2012; ED visits: OSHPD, 2011-2013)

ZIP code 94509 (Antioch) had rates that exceeded all benchmarks for all categories—mortality, ED visits, and hospitalizations for lung cancer. ZIP code 94565 (Bay Point/Pittsburg) had only one category—ED visits—that exceeded only the state benchmark.

Cancer – Female Breast, Colorectal, and Prostate

A lack of access to primary health care greatly affects a community's risk of late diagnosis of cancer, especially those cancers in which early diagnosis and prevention are vital to reducing increased related morbidity and mortality. Table 19 examines ED visit and hospitalizations related to female breast cancer, colorectal cancer (male and female) and prostate cancer.

Table 19: Rates of ED visits and hospitalizations for female breast cancer, colorectal cancer, and prostate cancer compared to county and state benchmarks (rates per 10,000 population)

ZIP Code	ED Visits: Female Breast Cancer	Hospitalizations: Female Breast Cancer	ED Visits: Colorectal Cancer	Hospitalizations: Colorectal Cancer	ED Visits: Prostate Cancer	Hospitalizations: Prostate Cancer
94509	16.2	15.1	2.6	7.0	11.3	11.5
94565	11.5	9.9	2.0	6.9	10.5	7.7
<i>C Costa</i>	12.1	12.4	2.8	7.2	12.5	12.7
<i>CA State</i>	6.6	11.1	1.9	6.5	5.8	12.4

(Source: OSHPD, 2011-2013)

²⁴American Cancer Society. (2014). *Cancer Facts and Figures 2014*. Retrieved from: <http://www.cancer.org/acs/groups/content/@research/documents/webcontent/acspc-042151.pdf>

Contra Costa County had rates that were nearly twice those of the state rate for ED visits due to breast cancer for females. This same trend was seen in ED visits due to prostate cancer.

ZIP code 94509 (Antioch) had rates for ED visits and hospitalizations due to female breast cancer that exceeded both county and state benchmarks, while ZIP code 94565 (Bay Point/Pittsburg) had only hospitalization rates that exceeded both benchmarks. As to colorectal cancer rates, both ZIP codes had ED visit and hospitalization rates that exceeded the state benchmark, but neither ZIP code exceeded the county benchmark. Last, both ZIP codes had ED visit rates due to prostate cancer that exceeded the state benchmark but not the county, and neither had hospitalization rates due to prostate cancer that exceeded either benchmark.

Respiratory Health – Chronic Obstructive Pulmonary Disease and Asthma

Chronic Obstructive Pulmonary Disease (COPD)

COPD is a progressive lung disease that makes it difficult to breathe and refers to the two main conditions of emphysema and chronic bronchitis.²⁵ Tobacco smoking is the biggest risk factor for COPD. In the US approximately 6.8 million people have COPD. In an effort to understand the impact of respiratory illness in the Communities of Concern, mortality rates for Chronic Lower Respiratory Disease (CLRD) are presented below with rates of ED visits and hospitalizations related to COPD. Rates of ED visits and hospitalizations due specifically to asthma are examined in Table 20.

Table 20: ED visit and hospitalization rates due to COPD compared to county, state and Healthy People 2020 benchmarks (rates per 10,000 population)

Chronic Lower Respiratory Disease (CLRD) & Chronic Obstructive Pulmonary Disease (COPD)	ZIP Code	Mortality CLRD	ED Visits COPD	Hospitalizations COPD
	94509 (Antioch)	4.5	165.1	142.2
	94565 (Bay Point/Pittsburg)	4.6	128.6	96.6
	<i>Contra Costa County</i>	3.9	90.6	84.8
	<i>CA State</i>	3.5	74.6	89.1
	<i>Healthy People 2020</i>	--	56.8	50.1

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

Both ZIP code Communities of Concern had rates that exceeded both county and state benchmarks for mortality due to CLRD, and ED visits and hospitalizations due to COPD. ED visits due to COPD were notably higher than the county and state rates for both ZIP codes.

Asthma

Asthma is a major health issue in the nation. National data indicate that one in 12 adults and one in 11 children have asthma.²⁶ Table 21 examines ED visits and hospitalization due to asthma (all ages).

²⁵ National Heart, Lung and Blood Institute. (2013). *What is COPD?* Retrieved from: <http://www.nhlbi.nih.gov/health/health-topics/topics/copd>

²⁶ Centers for Disease Control and Prevention. (n.d.) *Asthma Fact Sheet*. Retrieved from: http://www.cdc.gov/asthma/impacts_nation/asthmafactsheet.pdf

Contra Costa County rates were higher than the state rate for both ED visits and hospitalizations due to asthma. Residents of ZIP code 94509 (Antioch) visited the ED for asthma nearly four times more frequently than did the state resident as a whole. Further, residents of both ZIP codes were hospitalized due to asthma at rates approximately twice that of the state rate.

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

Asthma	ZIP Code	ED Visits	Hospitalizations
	94509 (Antioch)	593.5	170.0
	94565 (Bay Point/Pittsburg)	445.4	134.2
	<i>Contra Costa County</i>	288.2	93.8
	<i>CA State</i>	149.1	68.7

(Source: ED visits and hospitalizations: OSHPD, 2011-2013)

Both key informants and focus group participants pointed to respiratory issues brought on by air pollution as a key health concern for the HSA Communities of Concern. Several mentioned living in close proximity to oil refineries, mills, and the Dow Chemical Plant in Pittsburg as a probable cause of many of these respiratory issues. One key informant said it succinctly: *"I think another huge health issue for us is asthma in this area, asthma is really big"* (KI_1).

Dental Health

Dental health is very important for the overall health of an individual. Access to dental care was not noted as a significant health issue in this CHNA; however, both key informants and focus group participants mentioned oral health as a health concern. Though dental insurance was re-instated for adults in 2014 under Medi-Cal, the data presented here is from 2013. Clear geographic disparities were evident among the ZIP code Communities of Concern in comparison to the county and state benchmarks. Table 22 provides data on ED visits and hospitalizations related to dental issues.

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

Dental	ZIP Code	ED Visits	Hospitalizations
	94509 (Antioch)	124.5	12.7
	94565 (Bay Point/Pittsburg)	100.7	10.4
	<i>Contra Costa County</i>	57.1	8.3
	<i>CA State</i>	41.8	7.9

(Source: OSHPD, 2011-2013)

All Communities of Concern had rates of ED visits and hospitalizations due to dental issues that exceeded both state and county benchmarks. Residents from ZIP code 94509 (Antioch) visited the ED due to dental issues at a rate almost three times that of the state as a whole. Residents of ZIP code 94565 (Bay Point/Pittsburg) had ED visit rates that were 2.4 times greater than the state rate. Both ZIP codes had hospitalization rates that exceeded both county and state benchmarks.

Health Factors in Communities of Concern – Health Behaviors, Clinical Care, Social and Economic Factors, and the Physical Environment

Health factors are those that intersect with people in their everyday lives. Multiple health factors interconnect to increase risk for a single health outcome or multiple health outcomes, as presented in the previous section. Health factors can be seen as the upstream drivers that must be changed to improve downstream health outcomes that affect the community. Much like the Health Outcomes section of this report, health factors presented in this section are organized in accordance with the conceptual model as presented previously.

Health Behaviors – Tobacco Use, Diet and Exercise, Alcohol and Drug Use, and Sexual Activity

Tobacco Use

Tobacco use is a risk behavior that is commonly addressed through educational interventions, and a major contributor to most of the leading causes of death in the US, especially heart disease, COPD, asthma, and cancer. Though smoking rates are not available for the SDMC service area, these rates are available for Contra Costa County. Data from the California Health Interview Survey (CHIS) showed that 11.5% of county residents were current smokers, compared to the state rate of 10.8%.

Diet and Exercise – USDA defined Food Deserts, mRFEI, and Park Access

Obesity

Consideration of diet and exercise data for this health assessment also included an examination of obesity data. 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 section of the report. Table 23 displays the percentage of adults overweight and obese for Contra Costa County as compared to the state. Residents of Contra Costa County were less obese than the state as a whole, yet slightly more overweight.

Table 23: Self-reported BMI for the determination of percent overweight and obese for Contra Costa County in comparison to the state benchmark rate

	Percent Overweight	Percent Obese
Contra Costa County	36.3%	16.2%
CA State	35.5%	27.0%

(Source: California Health Interview Survey, 2014).

Food Deserts

The USDA defines food deserts 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.”²⁷ 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. The USDA further describes a food desert as “a census tract with a substantial share of residents who live in

²⁷ US Department of Agriculture. (n.d.) *Food Deserts*. Retrieved from: <https://apps.ams.usda.gov/fooddeserts/fooddeserts.aspx>

low-income areas that have low levels of access to a grocery store or healthy, affordable food retail outlet.”²⁸ Figure 8 identified food deserts for the SDMC Communities of Concern.

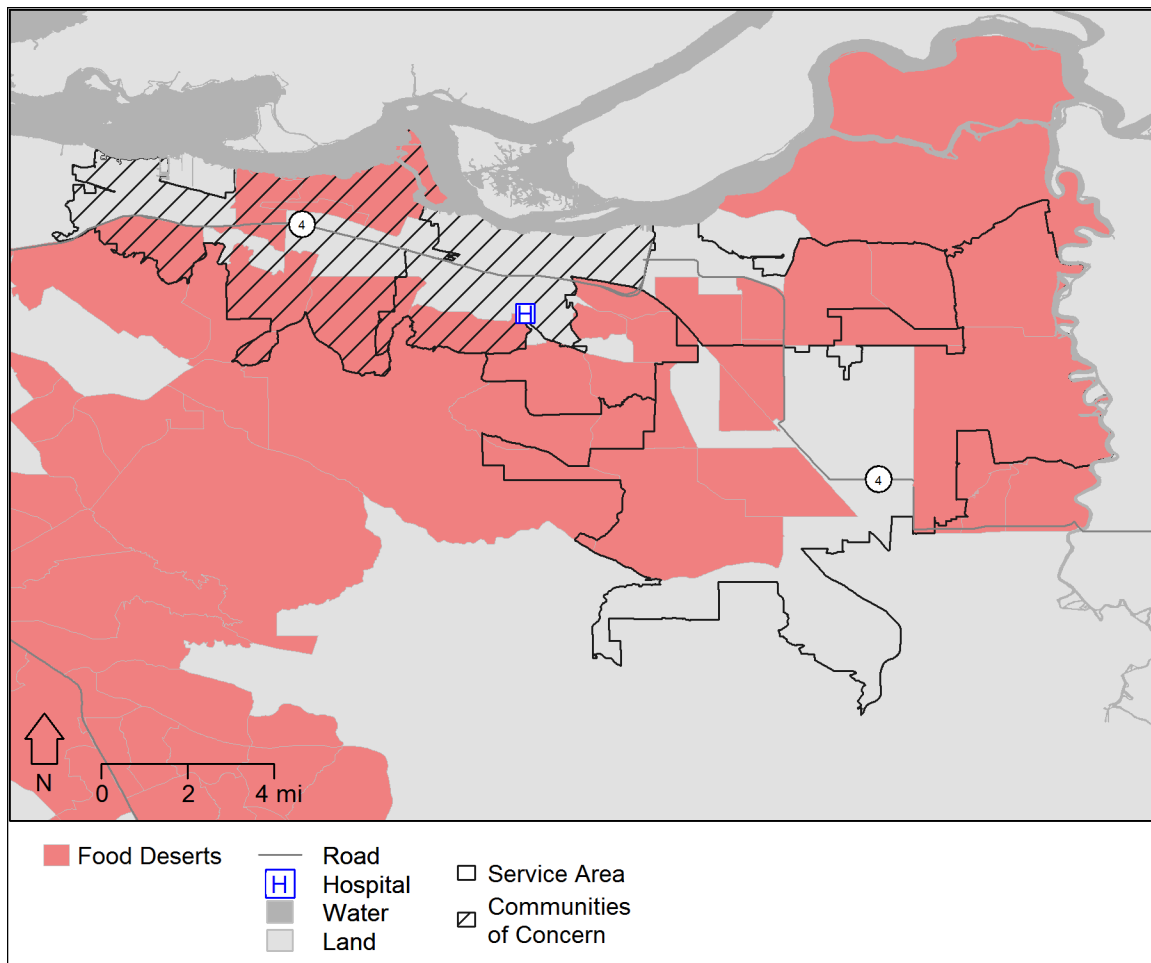


Figure 8: USDA defined food deserts for SDMC Communities of Concern

Each of the ZIP code Communities of Concern contained census tracts designated as food deserts by the USDA, including the areas surrounding Bay Point, Pittsburg, and Antioch.

Modified Retail Food Environment Index (mRFEI)

The mRFEI (modified Retail Food Environment Index) is an index that represents 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, out of all food outlets, in the ZIP code. Figure 9 below shows the mRFEI for the SDMC HSA. Lighter areas indicate poor or no access to healthy food outlets and darker areas indicate greater access to healthy food outlets.

²⁸ US Department of Agriculture. (n.d.) *Food Deserts*. Retrieved from: <https://apps.ams.usda.gov/fooddeserts/fooddeserts.aspx>

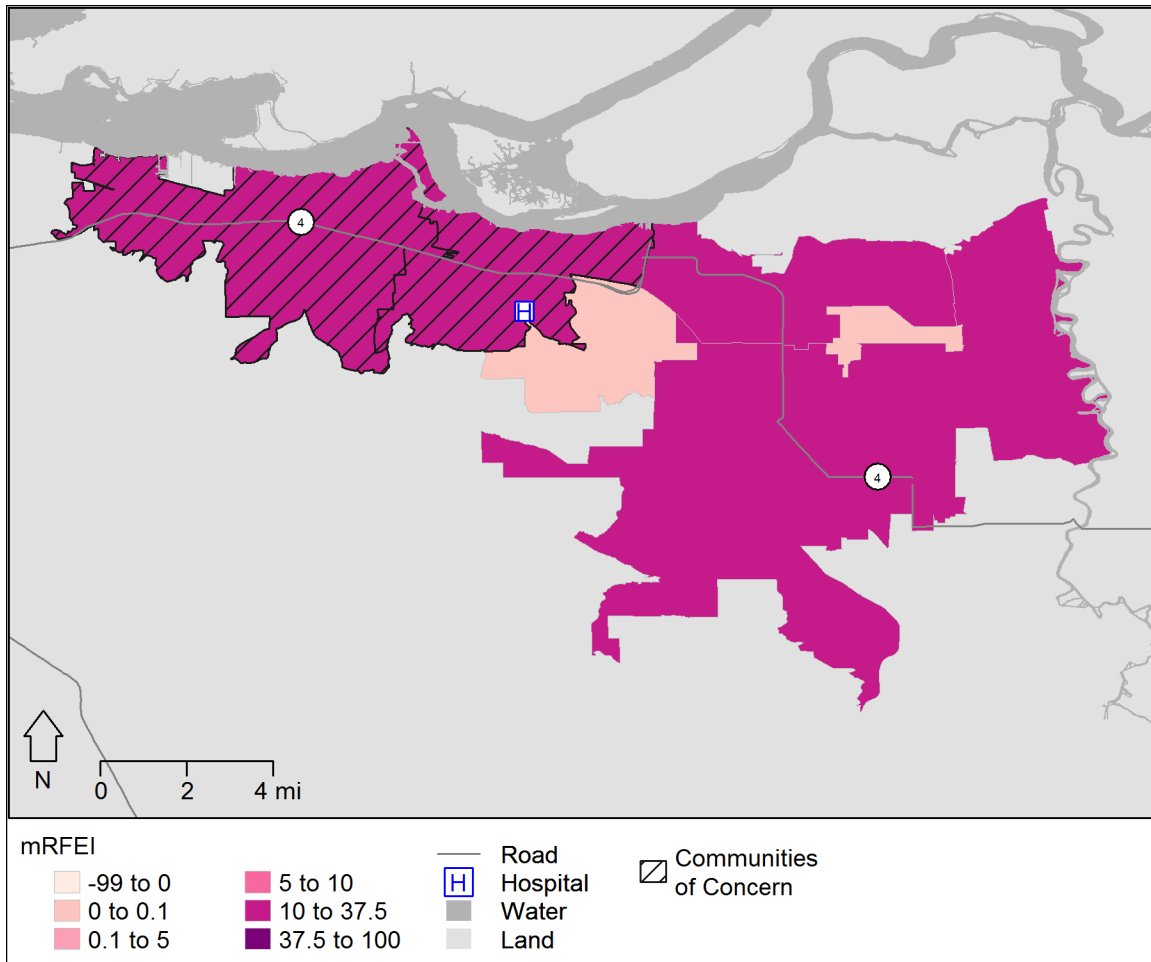


Figure 9: Modified Retail Food Environment Index (mRFEI) for the SDMC HSA

When viewed at the ZIP code level, both Communities of Concern had a relatively high mRFEI value. The values for both fell into the 10 to 37.5 range. Neither ZIP code nor any other ZIP code within the HSA fell into the highest range, while two ZIP codes, 94548 (Knightsen area) and 94531 (South Antioch area) fell into the lowest range of values (-99 to 0). However, fresh food availability, when viewed at the census tract level varies within each ZIP code as seen by the USDA food desert designations noted above.

Key informants and focus group participants frequently mentioned the limited availability of fresh foods as a challenge to living a healthier life for residents living in the Communities of Concern. One focus group participant living in the Pittsburg area said this:

They encourage older people to eat fresh vegetables and everything else, but there isn't any place to buy them...you have to wait for a farmer's market or get in your car and get to Antioch or to Bay Point to get them (FG_2).

Another focus group participant mentioned the challenges of preparing fresh foods while working a full schedule as an obstacle to a healthier diet:

For me, as a working adult with a full schedule, it's convenience. It's the Subways, the Lean Cuisines that I can pop in the microwave. Lately I'll go pick up some produce and I'll make a smoothie. But just finding time... (FG_3).

A key informant identified the lack of fresh foods in the Communities of Concern as a priority health issue. When asked to identify the key challenges residents in these communities faced when trying to improve their health, this informant said: “...we often see a lot of hypertension, chronic health issues, obesity...based on a lack of really good food options” (KI_3).

Park Access

Access to recreational areas is a contributor to whether or not people will be physically active. Figure 10 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.

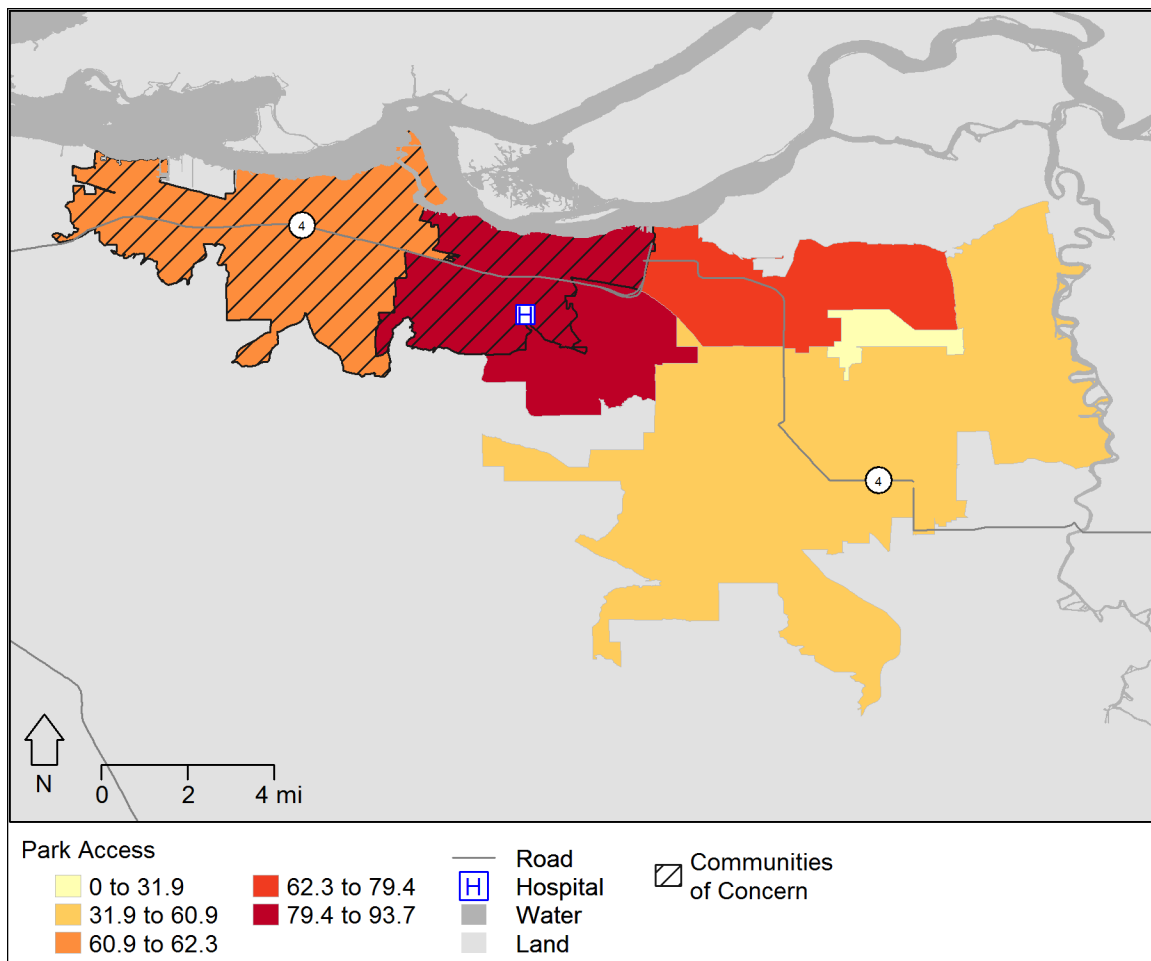


Figure 10: Percent of population in a ZIP code living within ½ mile of a park

ZIP code 94509 (Antioch) had moderate access to parks, while ZIP code 94565 (Bay Point/Pittsburg) had better access to parks. However, residents' use of parks is often mitigated by their sense of feeling safe in public places. Many focus group participants expressed concerns about personal safety in the Communities of Concern due to crime. This is discussed in greater detail later in this report.

Alcohol & Drug Use

Adult Binge Drinking

Reported rates of binge drinking are not available at the sub-county level for the SDMC HSA. However, CHIS data indicates that the percentage of respondents reporting binge drinking at the county level is slightly below the state level reported for binge drinking in 2014. The Contra Costa County rate is 32.5% of adult respondents reporting engaging in binge drinking in the past year, in comparison to the state rate of 32.6%.

Table 24: Self-reported adult binge drinking in the past year

	Percent Binge Drinking
<i>Contra Costa County</i>	32.5%
<i>CA State</i>	32.6%

(Source: California Health Interview Survey, 2014)

Substance Abuse

Rates of ED visits and hospitalizations related to substance abuse are not direct measures of prevalence of substance abuse in the ZIP codes, but rather provide a glimpse into the struggle with these issues across the HSA. Table 25 shows the rates for ED visits and hospitalizations by ZIP code due to substance abuse.

Table 25: ED visit and hospitalization rates due to substance abuse issues compared to county and state benchmarks (rates per 10,000 population)

Mental Health: Substance Abuse	ZIP Code	ED Visits	Hospitalizations
	94509 (Antioch)	688.5	273.3
	94565 (Bay Point/Pittsburg)	370.7	198.2
	<i>Contra Costa County</i>	316.4	144.2
	<i>CA State</i>	256.3	145.8

(Source: OSHPD, 2011-2013)

Both Communities of Concern had ED visit and hospitalization rates that exceed both county and state benchmarks. As with trends found throughout this report, ZIP code 94509 (Antioch) had the highest rates, and had an ED visit rate that was over twice both the state and county rate.

Key informants and focus group participants pointed to mental illness, and specifically substance abuse and addiction, as a key health issues in the Communities of Concern. This topic was discussed at greater length in the section on Mental Health (the section begins on page 39 of this report).

Sexual Activity – Teen Birth Rate and STI Rates (including Chlamydia, Gonorrhea, and HIV/AIDS)

Teen Birth Rate

The teen birth rate (births to women under the age of 20) is an indicator used in this assessment to examine sexual behavior throughout the HSA. The national rate of teen births (age 15-19) is currently

26.5 per 1,000 live births.²⁹ The California state rate was 28.3 per 1,000 live births, and the Contra Costa County rate was 17.1 per 1,000 live births. Teenage births pose several health issues. Teen mothers, especially those who are single, are more likely to have dropped out of high school and are less able to support themselves; a high percentage end up on public assistance. In fact, half of all current welfare recipients had their first child as a teenager.³⁰ Figure 11 shows the teen birth rate for SDMC HSA.

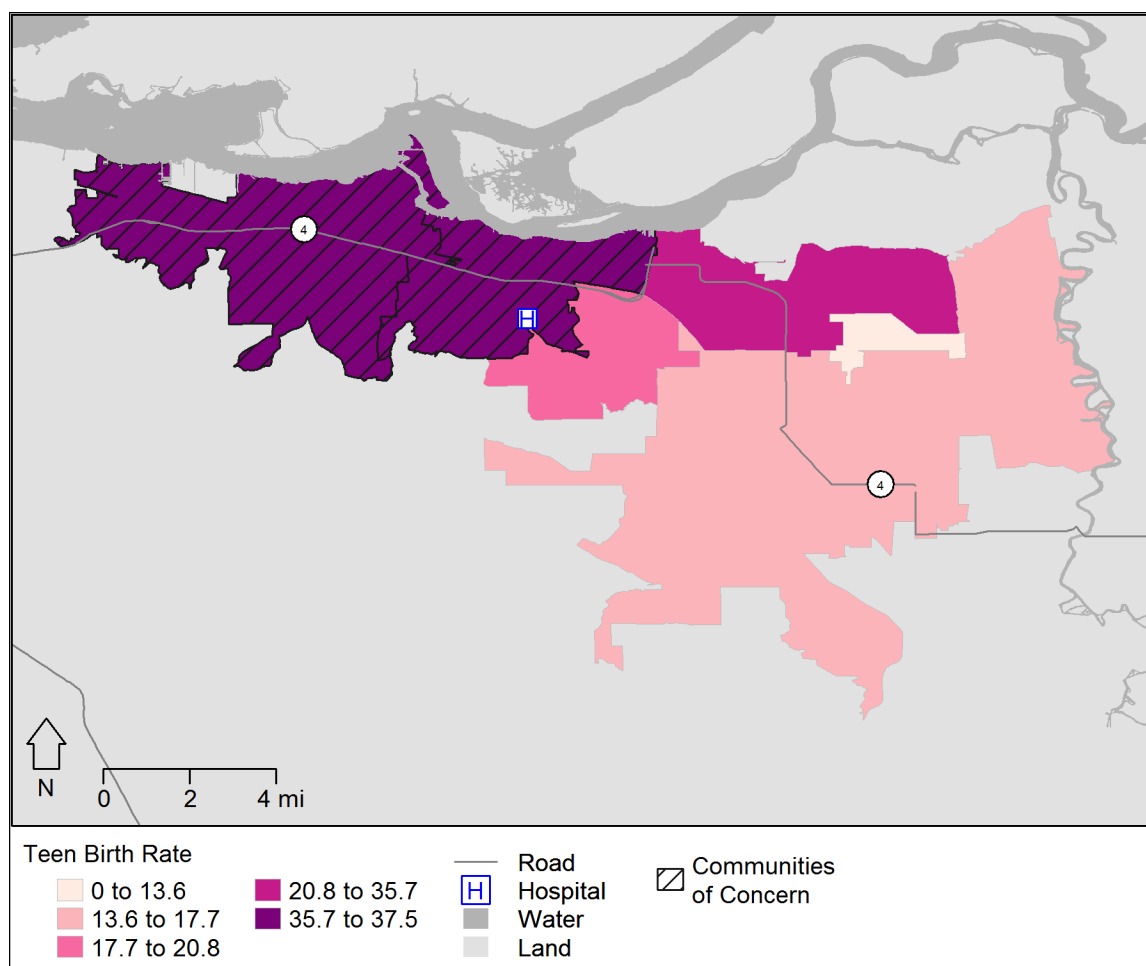


Figure 11: Teen birth rate for 15-19 year olds per 1,000 live births

Both Communities of Concern had teen birth rates that fell into the highest quintile among the HSA (range between 35.7 to 37.5). These rates are over twice the county rate of 17.1.

Sexually Transmitted Infections (STIs) and HIV/AIDS

Rates of STIs, including chlamydia, gonorrhea, and HIV, help describe engagement in risky sexual behavior in the Communities of Concern. Given that STIs are largely preventable, knowing which community members are most infected with STIs helps with targeting interventions for treatment and prevention. Table 26 displays prevalence rates for chlamydia and gonorrhea among 10-19 year olds in

²⁹ Centers for Disease Control and Prevention. (2015). *Teen Births*. Retrieved from: <http://www.cdc.gov/nchs/fastats/teen-births.htm>

³⁰ Sawhill, I.V. (2001). *What can be done to reduce teen pregnancy and out of wedlock births?* Retrieved from: <http://www.brookings.edu/research/papers/2001/10/childrenfamilies-sawhill>

Contra Costa County compared to the state benchmark. Rates were above the state comparative benchmark for gonorrhea, and below for chlamydia. Table 27 displays ED visits and hospitalizations related to STI, and those specific to HIV/AIDS.

Table 26: Prevalence of chlamydia and gonorrhea among 10-19 year olds in Contra Costa County compared to the state rate (per 10,000)

STI Rates ³¹	Chlamydia Rate	Gonorrhea Rate
Contra Costa County	65.9	11.8
CA State	68.4	11.2

(Source: CDPH, 2010-2014)

Table 27: ED visit and hospitalization rates due to STIs and HIV/AIDS compared to county and state benchmarks (rates per 10,000 population)

Sexually Transmitted Infections	ZIP Code	ED Visits: STIs	Hospitalizations: STIs	ED Visits: HIV/AIDS*	Hospitalizations: HIV/AIDS*
	94509 (Antioch)	9.2	6.2	4.1	3.5
	94565 (Bay Point/Pittsburg)	8.0	6.3	4.7	5.0
	Contra Costa County	5.5	4.0	2.9	2.8
	CA State	3.2	4.6	2.0	3.4

(Source: OSHPD, 2011-2013)

*HIV/AIDS is considered a subcategory of STI in the ICD 9 diagnostic codes

Both Communities of Concern had ED visit and hospitalization rates for STIs and HIV/AIDS that exceeded both county and state rates. Rates for ED visits due to STIs were notably higher for both ZIP codes than the state rates. Further, ED visit rates for HIV/AIDS were over twice the state rate for both ZIP codes as well.

Clinical Care – Access to Care and Quality of Care

Health Professional Shortage Areas – Primary Care, Mental Health, and Dental

Health Professional Shortage Areas (HPSAs) are designated by the US Government Health Resources and Services Administration (HRSA) as having a shortage of primary medical, dental, or mental health professionals; these shortages may be geographic (e.g., a county or service area); demographic (e.g., low income population) or institutional (e.g., comprehensive health center, federally qualified health center, or other public facility).³² The data that follows includes HPSAs for primary care, mental health and dental care providers in the HSA, and specifically the ZIP code Communities of Concern.

³¹ Lucile Packard Foundation for Children's Health. (n.d.). *Sexually Transmitted Infections, by Age Group* (from the California Department of Public Health 2010-2014). Retrieved from: <http://www.kidsdata.org>

³² Health Resources and Services Administration. (n.d.). *Primary medical care HPSA: Designation Overview*. Retrieved from: <http://bhpr.hrsa.gov/shortage/hpsas/designationcriteria/primarycarehpsaoverview.html>

Health Professional Shortage Area – Primary Care

There were no federally designated primary care HPSAs in the SDMC HSA. However, both key informants and focus group participants consistently mentioned the challenges of accessing primary care as a health issue for the Communities of Concern. The difficulty in accessing the primary healthcare system was referenced by each focus group and in all but one of the key informant interviews. One focus group participant made this statement when asked to describe the most significant health need in their community:

Access to care has always been a challenge in this county. I work with a lot of hardworking educated people who are either uninsured or underinsured. My sister was the one who told me to come to [this clinic]. She's been here twice before and she's a graduate of UC Berkeley. She works two full-time jobs. She's single, but we are both uninsured (FG_3).

One key informant discussed the impact of the Affordable Care Act (ACA) noting the seemingly contradictory nature of the impact of the new law—while many previously uninsured have become insured, many still have not purchased health insurance. This has increased the demand for primary care services, and aggravated capacity issues for an already strained system that serves low income residents: The informant commented: “*We still have a significant number of people who are uninsured; so a good 40% of our patients still remain uninsured...demand for our services has gone through the roof*” (KI_8). Another key informant, discussing this unintended impact of ACA said this:

I was just going to say I think county clinics from what I saw prior to the ACA coming into effect; they were already strapped and then once the ACA came through, and I believe if I'm not mistaken, that in Contra Costa county we added at least 70,000 patients in like day one. You add 70,000 patients to a system that is already completely strapped, and you're not adding more providers, and you're not adding more office space for clinics, and you're not really adding anything other than a giant number of patients. The only thing that you are going to be doing is delaying people's care (KI_6).

One focus group participant, describing their experience with the challenges of accessing care said they often encounter a three-month wait period to get an appointment for primary care services. A key informant also discussed the shortage of providers working in the community:

[The ACA] has expanded access to care for a lot of the population, but with that comes the issue of not having enough providers to provide care for the undocumented population that is left out of the ACA because of their immigration status (KI_6).

Health Professional Shortage Area – Mental Health

Figure 12 displays census tracts within the HSA that were identified as federally designated mental health HPSAs.

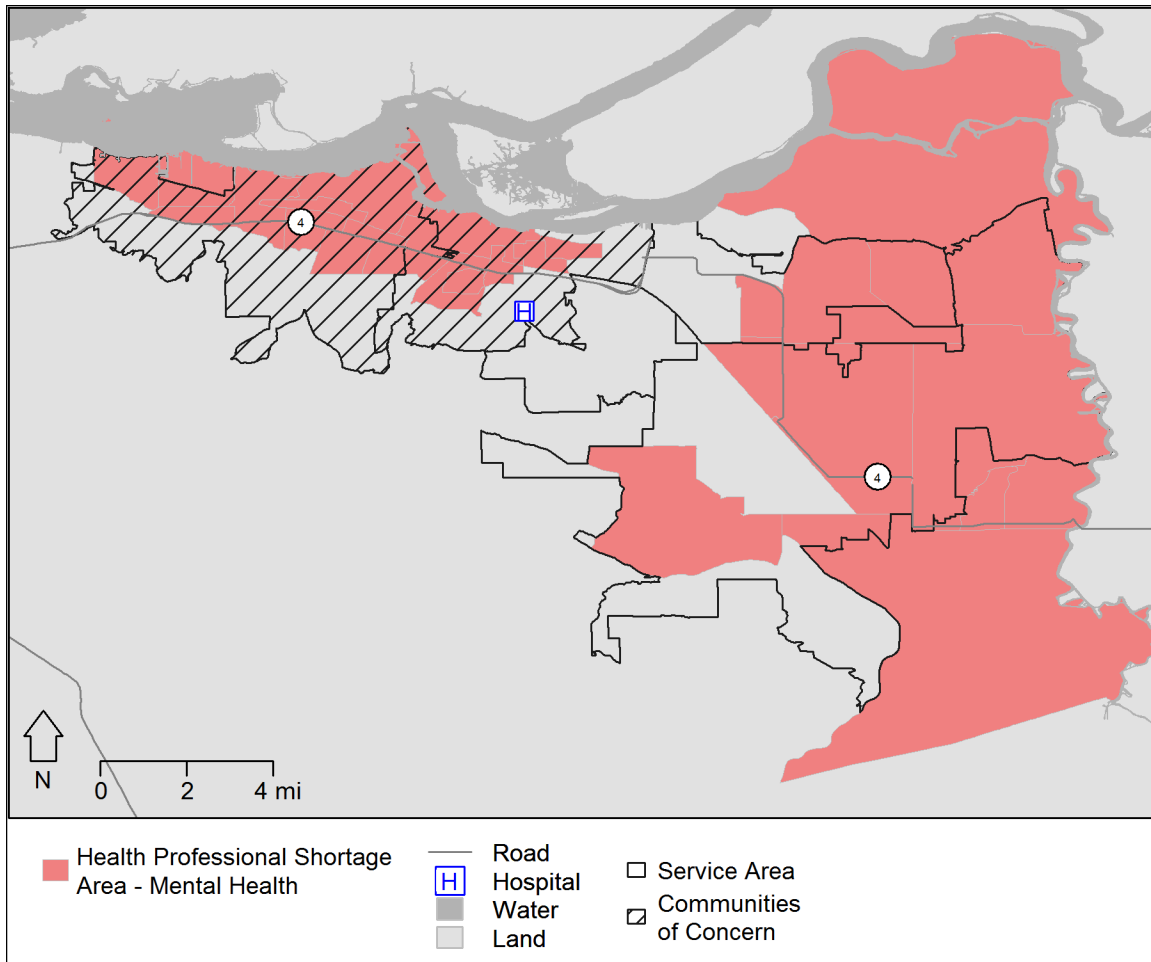


Figure 12: Mental health HPSAs for the SDMC HSA

Mental health outcomes have been discussed earlier in this report. This section notes the designated mental health HPSA areas in the Communities of Concern. Both the Bay Point/Pittsburg and Antioch areas had multiple census tracts with the designation.

Key informants spoke of the challenges many residents faced when trying to get mental health services in the Communities of Concern: *“A lot of our families have mental health issues; the parents and the kids aren’t able to get services and get the help they need”* (KI_1). Another key informant discussed the challenges of finding mental health practitioners: *“...we lost our psychologist about a year ago and so far we have not found a replacement. And in [location] we don’t have a psychologist...”* (KI_8). Yet another key informant expressed the frustration of seeing the need for services, yet not having them in the community:

Why can’t we get mental services to a kid in a school when they need it? Why can’t we figure out a way to make that happen so that they are getting it early and as a prevention approach rather than when they have gotten to a point of either being hospitalized or God forbid, getting involved in the Juvenile Justice system because they have done something (KI_3).

Health Professional Shortage Area – Dental Care

Like primary care, there are no federally designated HPSAs for dental care in the SDMC HSA. ED visits and hospitalizations (2013) related to dental care were provided earlier in this report, and clear geographic disparities were seen. However, as mentioned previously, these data were from a period prior to reinstatement of adult dental services under Medi-Cal coverage. The HPSA dental data presented here are from 2015, after the reinstatement of coverage. In addition, very few participants indicated that dental health issues were a significant challenge in the HSA.

Health Insurance Status

With the passage of the ACA, the overall number of Californians without any type of health insurance has decreased. However, many residents living within the SDMC HSA remain uninsured, and many of these residents are particularly vulnerable. Table 28 displays the percentage of uninsured residents in the SDMC Communities of Concern.

Table 28: Percent uninsured by ZIP code compared to county and state benchmarks

Uninsured Rates	ZIP Code	Percent Uninsured
	94509 (Antioch)	17.0
	94565 (Bay Point/Pittsburg)	18.7
	<i>Contra Costa County</i>	11.9
	<i>CA State</i>	17.8

(Source: US Census, 2013)

Both Communities of Concern had uninsured rates that were higher than the county rate, but only 94565 (Bay Point/Pittsburg) had rates that exceeded the state rate. However, it should be noted that uninsured rates have continued to decrease as a result of the implementation of the ACA. For example, The Henry J. Kaiser Family Foundation reported a 30% decrease in the number of uninsured residents of California between years 2013-2014.³³

Quality of Care – Total Hospitalization and Emergency Department Utilization and Prevention Quality Indicators

Emergency Department and Hospital Utilization

Total hospitalization and ED visit rates can shed light on the overall health status of a community, and describe the state of the healthcare system, including access to primary healthcare services. In some instances, community residents are unable to obtain care in an ambulatory setting. Some obtain primary care in local hospital EDs, and others may allow a health condition to become acute, and then seek care in the ED. In some instances residents are hospitalized for these conditions. Figures 13 and 14 show the distribution of ED and hospitalization utilization by SDMC HSA residents.

³³ The Henry J. Kaiser Family Foundation. *State Health Facts: Percent Change in Number of Uninsured by Age, 2013-2014*. Retrieved from: <http://kff.org/other/state-indicator/percent-change-in-uninsured-rate-by-age-2013-2014/>

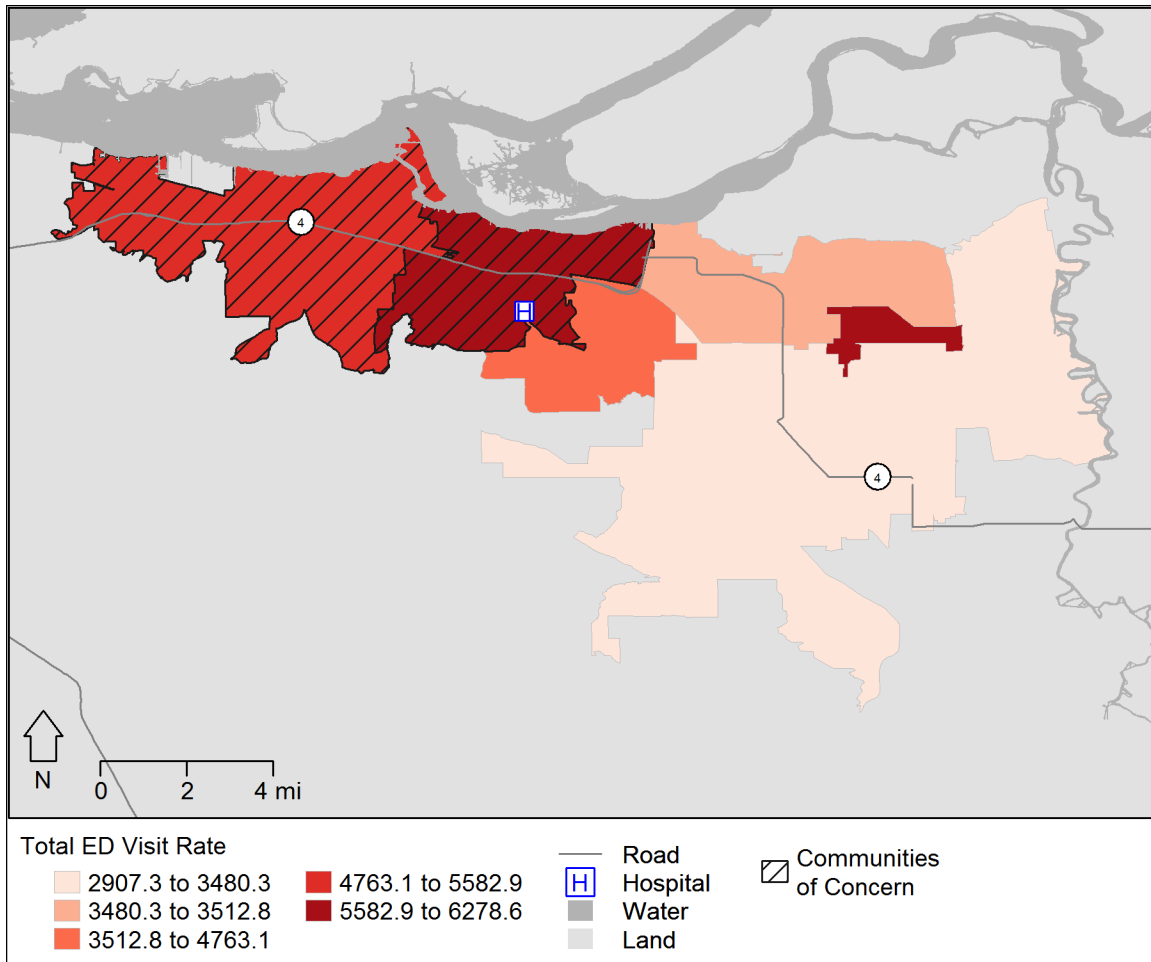


Figure 13: Total ED visit rates for SDMC HSA

Figure 13 displays the distribution of total ED visit rates across the SDMC HSA. ZIP code Community of Concern 94509 (Antioch), as well as 94548 (Knightsen), both fell into the highest quintile for total ED visits (5,582.9 to 6,278.6 per 10,000 of population). ZIP code Community of Concern 94565 (Bay Point/Pittsburg) (Bay Point/Pittsburg) fell into the second highest quintile for total ED visits falling within the 4,763.1 to 5,582.9 range.

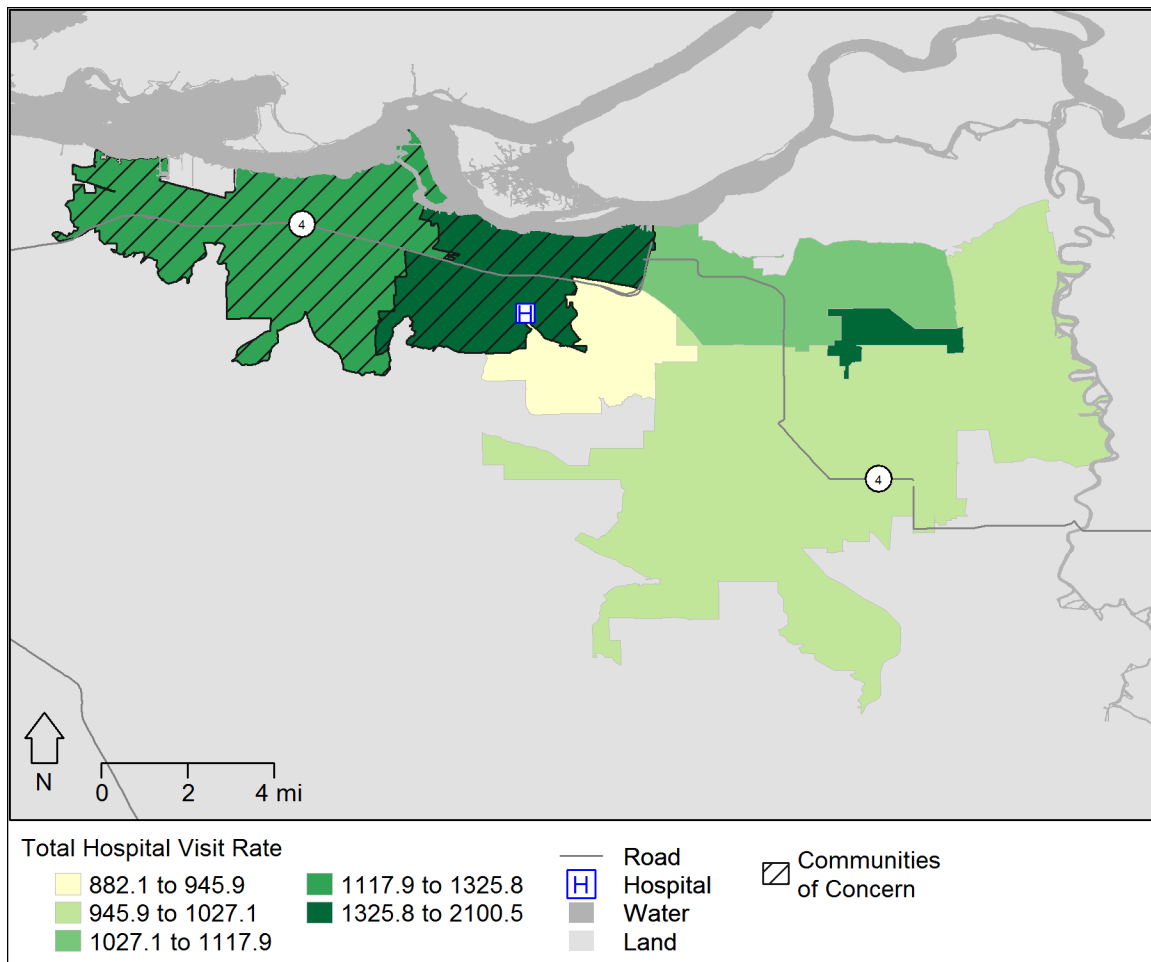


Figure 14: Total hospitalizations for SDMC HSA

The total hospitalization rates for the HSA were similar to the pattern seen for total ED visits. ZIP code Community of Concern 94565 (Bay Point/Pittsburg) fell into the highest quintile while 94509 (Antioch) fell into the second highest quintile.

Preventable Hospitalizations – Prevention Quality Indicators

The Prevention Quality Indicators (PQIs) were developed by the Agency for Healthcare Research and Quality (AHRQ). The 13 identified PQIs are used to assess the quality of care for conditions for which good outpatient care could prevent the need for hospitalization, or when early intervention could prevent complications or decrease disease severity. These conditions are also known as ambulatory-sensitive conditions (ASCs) and are sometimes referred to as preventable hospitalizations.³⁴ Based on hospitalization rates, these indicators provide insight on the community health care system or services outside the hospital setting, such as access to quality healthcare and related services. The PQI indicator numbers and corresponding diagnosis are listed in Table 29. Each PQI indicator rate for each Community of Concern is noted in Table 30. Rates that exceeded any benchmark are highlighted.

³⁴ Agency for Healthcare Research and Quality. (n.d.) *Prevention quality indicators overview*. Retrieved from: http://qualityindicators.ahrq.gov/modules/pqi_resources.aspx

Table 29: PQI number with corresponding diagnosis

PQI #	Indicator
PQI1	Diabetes short-term complications
PQI2	Perforated appendix
PQI3	Diabetes long-term complications
PQI5	Chronic obstructive pulmonary disease (COPD): chronic bronchitis or emphysema or asthma in older adults (ages 40 and over)
PQI7	Hypertension (high blood pressure)
PQI8	Heart failure
PQI10	Dehydration
PQI11	Bacterial pneumonia
PQI12	Urinary tract infection (UTI)
PQI13	Angina without procedure (chest pain)
PQI14	Uncontrolled diabetes
PQI15	Asthma in younger adults (ages 18-39)
PQI16	Lower-extremity amputation among patients with diabetes (removal of leg or foot due to diabetes complications)

Table 30: PQI for SDMC Communities of Concern as rates of hospitalizations per 10,000 of population

ZIP Code	PQI1	PQI2	PQI3	PQI5	PQI7	PQI8	PQI10	PQI11	PQI12	PQI13	PQI14	PQI15	PQI16
94509	9.7	3.2	22.6	77.2	4.8	49.2	11.1	20.8	16.5	2.3	2.1	9.8	2.8
94565	9.3	2.6	19.8	63.1	5.5	41.4	7.7	15.4	13.4	1.5	1.1	5.4	2.5
C Costa	5.4	3.0	10.4	37.1	2.9	31.7	7.7	15.4	12.4	1.3	0.7	3.5	1.6
CA	5.6	2.9	10.7	35.2	3.4	28.1	7.3	18.8	13.7	1.9	1.0	2.8	1.5

(Source: OSHPD, 2013)

ZIP code 94509 (Antioch) exceeded both county and state benchmarks for every PQI, and some notably so. For example, PQI3 (Diabetes long-term complication) rates were over twice both the county and state benchmarks while PQI 15 (Asthma in younger adults ages 18-39) was approximately three times higher than both the county and state benchmarks. ZIP code 94565 (Bay Point/Pittsburg) had rates that exceeded either the county or state benchmark for all PQIs with only two exceptions—PQI2 (Perforated appendix) and PQI11 (Bacterial pneumonia).

Social and Economic Factors – Economic Stability (Income, Employment, and Education) and Community Safety (Major Crime, Violence, and Traffic Accidents)

Economic Stability – Education and Income

Indicators of economic stability used in the CHNA included percent of residents in each Community of Concern that 1) had no high school diploma, 2) lived below the federal poverty level, 3) were unemployed, 4) received public assistance, as well as the median household income for the area. Table 31 examines economic stability in SDMC Communities of Concern.

Table 31: Percent: Adults with no high school diploma, living below 100% federal poverty level, median household income, percent on public assistance, and percent unemployed by ZIP code compared to county and state benchmarks

ZIP Code	Percent Adults with No High School Diploma	Percent Living in Poverty	Median Income	Percent Receiving Public Assistance	Percent Unemployed
94509	16.0	18.0	\$53,953	19.9	15.1
94565	10.9	6.1	\$55,255	18.0	13.9
<i>Contra Costa</i>	<i>11.2</i>	<i>10.5</i>	<i>\$78,756</i>	<i>8.2</i>	<i>10.4</i>
<i>CA State</i>	<i>18.8</i>	<i>15.9</i>	<i>\$61,094</i>	<i>12.1</i>	<i>11.5</i>

(Source: US Census, 2013)

In all area, ZIP code 94509 (Antioch) had rates that indicated limited or low economic stability. For example, in ZIP code 94509 (Antioch), 18.0% of all residents lived in poverty compared to a county rate of 10.5%. In the same ZIP code median income was \$24,803 lower than the county level. ZIP code 94565 (Bay Point/Pittsburg) displayed similar characteristics, yet not as pronounced. For example, median income of \$55,255 for this ZIP code was slightly higher than 94509 (Antioch), yet still notably lower than the county level of \$78,756 and the state level of \$61,094.

Community Safety – Major Crime Rates, Assault, and Traffic Accidents with Fatalities

Feeling safe in the community you live in is an important part of overall health. Safety is affected by both the physical and social environment in which community members reside. People who feel safe in their physical environment are more likely to spend time outdoors in a variety of activities.³⁵ Moreover, violence and crime in a community are related to the social environment of how much community residents feel they can trust the people around them to not engage in violent or criminal activity which may cause harm to themselves, the people they care about or their property. Conversely, repeated exposure to violence and crime could lead residents feeling traumatized and lacking trust in their safety of their community.

Indicators examined included measures of crime and violence, ED visits, and hospitalizations related to assault and intentional injury, as well as factors related to physically navigating the community and feeling safe from traffic related injury.

Major Crimes

Criminal activity in a community has a large effect on the community's actual and perceived safety. Major crimes reported to the California Department of Justice were used to create estimated major crime rates for places in the HSA. Crime data were examined for the SDMC Communities of Concern areas of Pittsburg and Antioch (note: ZIP codes are approximations for these areas). Crimes included both violent crime such as homicide, rape, robbery, and assault, and property crimes such as burglary, motor vehicle theft, and larceny. Crimes are reported per 10,000 of population.

³⁵ Cubbin, C., Pedregon, V., Egarter, S. and Braveman, P. (2008). *Where we live matters for our health: Neighborhoods and Health*. Retrieved from: <http://www.commissiononhealth.org/PDF/888f4a18-eb90-45be-a2f8-159e84a55a4c/Issue%20Brief%203%20Sept%2008%20-%20Neighborhoods%20and%20Health.pdf>

Table 32: Major crimes by jurisdiction and ZIP codes for SDMC Communities of Concern

Major Crimes	ZIP Code	Place	Crimes by Area
	94509	Antioch	523.2
	94565	Bay Point/Pittsburg	342.5
	Contra Costa County		332.7
	CA State		312.7

(Source: California Department of Justice, 2013)

Both Communities of Concern had crime rates that exceeded both the county and state benchmarks. ZIP code 94509 (Antioch) had the highest rates, and these were one-and-a-half times greater than the county rate.

Participants from all focus groups and over 60% of all key informants discussed safety and community violence as a priority health concern in the Communities of Concern. Focus group participants often described living in a state of fear for personal safety. One member said this: *“Well, we live in danger and there [are] bullets flying daily...nightly...seriously”* (FG_1). A focus group participant living in the Pittsburg area made this comment: *“I recently moved to my apartment and it’s a high crime area; and it’s gated, but people break the gates. Management does not fix it that often. It’s been broken now for three months and my car broken into three times since Christmas”* (FG_2). Members of another focus group, when asked to rank key health issues their community faced, ranked high crime rates second only to access to healthcare. One member of this group said: *“...really bad crime is another stress thing; we stress about people breaking into our homes”* (FG_3).

While focus group participants discussed their experiences with crime in their neighborhoods, key informants often discussed the effects of living in an unsafe environment on one’s health and well-being. One key informant discussed trauma and PTSD as a key health issue. When asked about the source of the trauma the informant said: *“Violence in the community, violence in the home, violence in the country they just left”* (KI_5). Another key informant discussed community violence and its relationship to mental health:

...a lot of violence in our communities and you hear of all the things that happen; just a lack of trust with the police in the minority communities and all of the things that are happening are impacting health. It’s impacting mental health... (KI_6).

Assault: Emergency Department Visits and Hospitalizations

Understanding safety in the SDMC requires the examination of both crime rates as shown above as well activities of intentional harm. Rates of assault (intentionally harming another person) are included in this assessment to gain a good understanding of violence and safety in the SDMC HSA area. Figures 15 and 16 show ED visits and hospitalizations related to assault for the area.

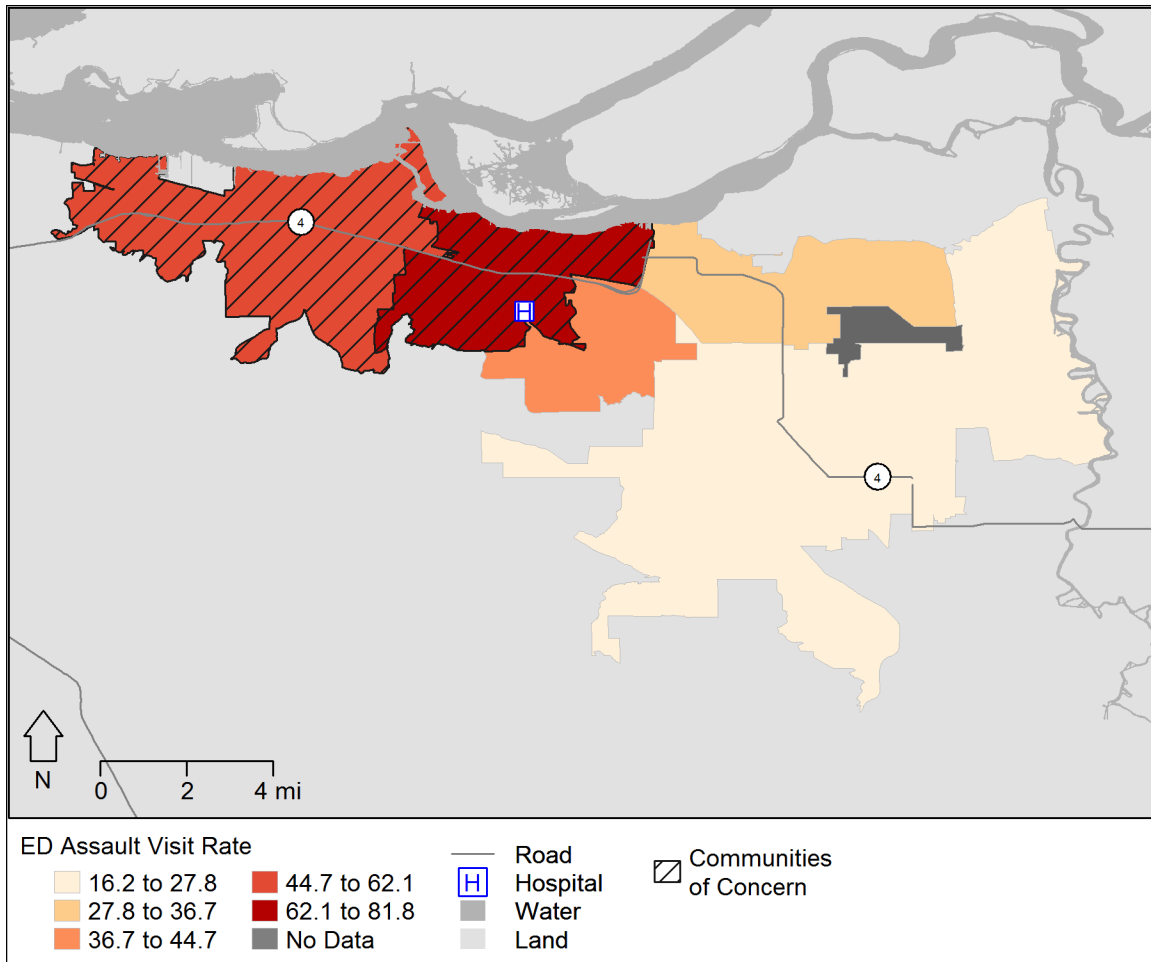


Figure 15: ED visits related to assault

ED visits due to assaults were highest for ZIP code Community of Concern 94509 (Antioch), while 94565 (Bay Point/Pittsburg) fell into the second highest quintile within the HSA. This same pattern is seen for hospitalizations due to assault as displayed in Figure 16.

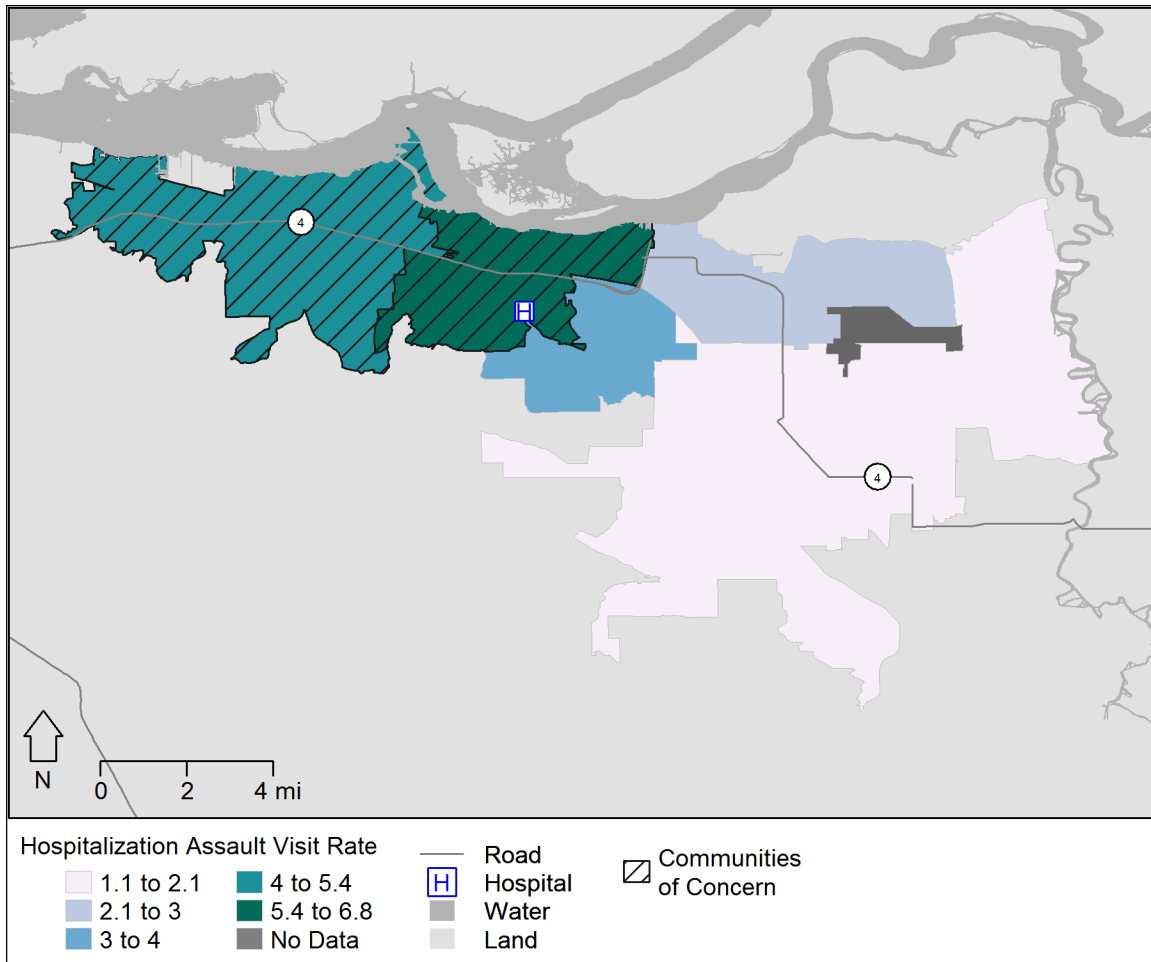


Figure 16: Hospitalizations related to assaults for the SDMC HSA

Traffic Accidents with Fatalities

An examination of fatal traffic accident data helps us to understand the safety of people as they travel through the area they work and live. Figure 17 shows traffic accidents that resulted in a fatality. Data indicates that traffic accidents resulting in a fatality were spread throughout the SDMC HSA.

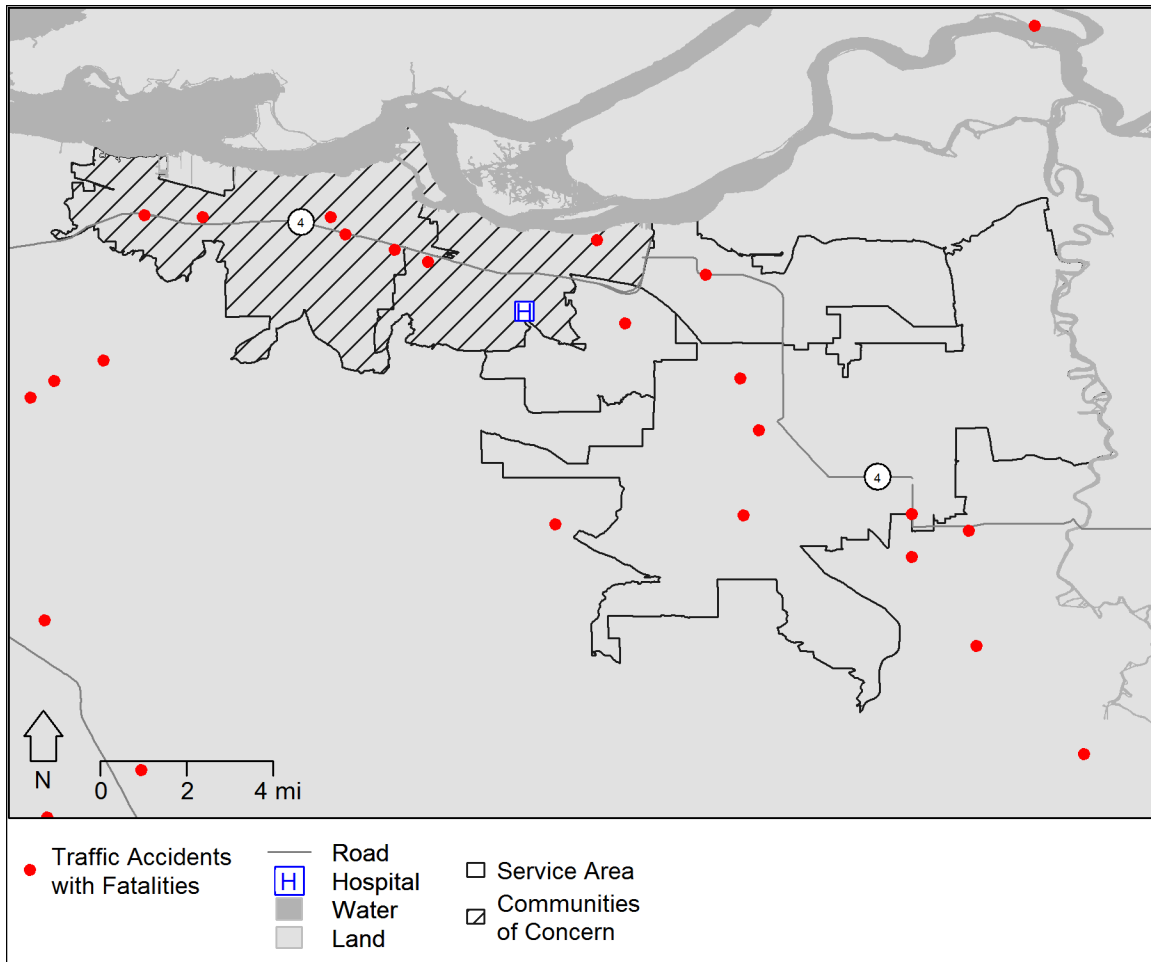


Figure 17: Traffic accidents resulting in a fatality for the SDMC HSA and surrounding area

Physical Environment – Air and Water Quality, Housing, and Transportation

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*.³⁶ This tool was designed to identify California communities that are disproportionately burdened by multiple sources of pollution. The tool combines 13 types of pollution, environmental factors, and various population characteristics to produce a “pollution burden” score for each census tract in the state, ranging between a minimum 0 and a maximum of 100, with higher scores indicator a great pollution burden. The pollution factors include ozone and PM2.5 concentrations; diesel PM emissions; pesticide use; toxic releases from facilities; traffic density; drinking water contaminants; cleanup sites; impaired bodies of water; groundwater threats; hazardous wastes facilities and generators; and solid waste sites and facilities.

A pollution burden score was identified for each census tract in the SDMC Communities of Concern and is displayed in Figure 18. Each census tract’s pollution burden score ranged from 0 to 100

³⁶ *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>

and was assigned to a quintile. This is displayed in the figure using color gradation; in the figure, census tracts with darker colors have higher pollution burden scores.

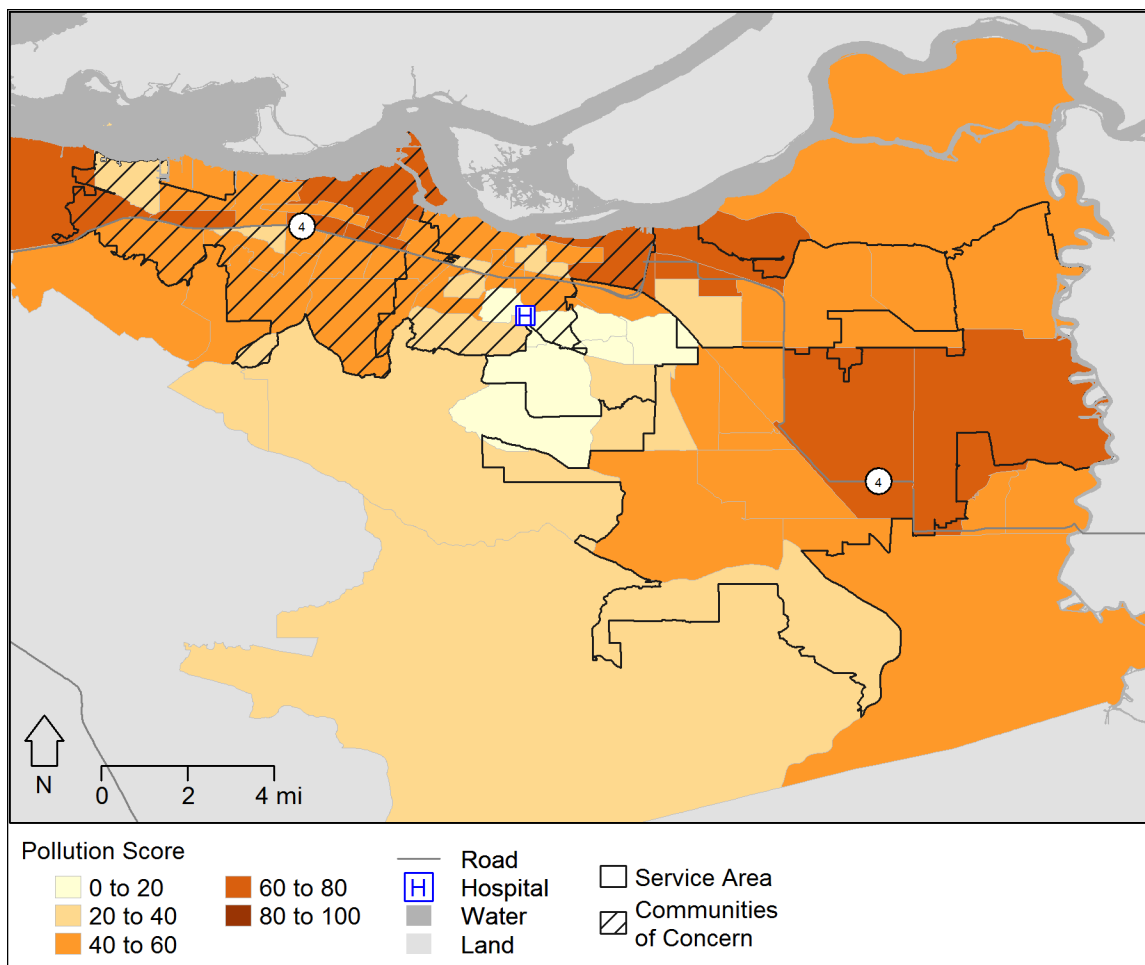


Figure 18: Pollution burden scores for census tracts in the SDMC HSA

For the SDMC Communities of Concern, no census tracts fell into the highest quintile for the pollution burden score. However, census tracts fell into the second highest quintile in both Communities of Concern as indicated in Figure 18.

Both focus group participants and key informants discussed issues of pollution, and specifically air quality and its impact on health, within the Communities of Concern. One key informant made this comment: *"I know we have Dow Chemical here, we have the steel mills and that makes me a little nervous. I'm raising my own children here so we have this huge [issue]...lots of asthma and lots of cancer"* (KI_1).

Another key informant pointed to traffic congestion along Highway 4 and its impact on air quality:

...if you look at the traffic along 4, between 680 and Brentwood, it is packed like a parking lot. And there are a lot of people that live right next to that highway, so even though we don't

consider it one of our main transportation corridors, it is, and the pollution along there is very high (KI_4).

Housing & Transit – Housing Stability and Distance to Nearest Transit Stop

Examining where people live and how they navigate their community is important to understand the health of the community overall. This section examines housing stability and distance to a transit stop.

Housing Stability

A consistent health needs mentioned in the assessment was clean, stable, and good quality housing. The lack of a stable place to live can have negative health effects on individuals and families. Table 33 shows rates for various housing indicators by ZIP code for the Communities of Concern as indicators of housing stability.

Table 33: 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
94509 (Antioch)	9.9	3.0	43.1
94565 (Bay Point/Pittsburg)	6.6	3.3	44.2
<i>Contra Costa County</i>	6.5	2.8	34.1
<i>CA State</i>	8.6	2.9	44.7

(Source: US Census, 2013)

Both Communities of Concern had rates that exceeded the county benchmarks for housing stability indicators. Housing vacancy rates for ZIP code 94509 (Antioch) were over 50% higher than the county benchmark. ZIP code 94565 (Bay Point/Pittsburg) had 3.3 people per housing unit compared to the county rate of 2.8.

Qualitative data also pointed to housing issues for the Communities of Concern. Over 80% of all key informants and focus group participants referenced housing as a key health issue faced by community residents. Many pointed to the growth of the area as more people move from the San Francisco and East Bay areas due to housing costs, and its impact on housing prices within the SDMC HSA. One focus group participant made this comment: *“I think there’s a housing shortage. There’s more people coming from Silicon Valley that are willing to commute to make their money stretch as well because even San Francisco is too rich for their blood to live there”* (FG_3). Another key informant said this: *“housing is a huge, huge, huge problem for our families”* (KI_3).

Distance to Nearest Transit Stop

Research shows that there are limits to the distances community residents are willing and capable of walking to access public transportation services. These distances have been documented in a number of studies and vary due to a number of factors such as climate, attractiveness of the area, the amount of traffic on streets, and similar;³⁷ however, most estimates note that individuals will travel no more than one-fourth to one-third of a mile to access public transportation. Identifying areas that are at

³⁷ *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>

least one-half mile from a transit station helps highlight where transportation barriers may be contributing to poorer health outcomes.

Figure 19 shows areas of SDMC Communities of Concern that are within one-half mile from a transit stop.

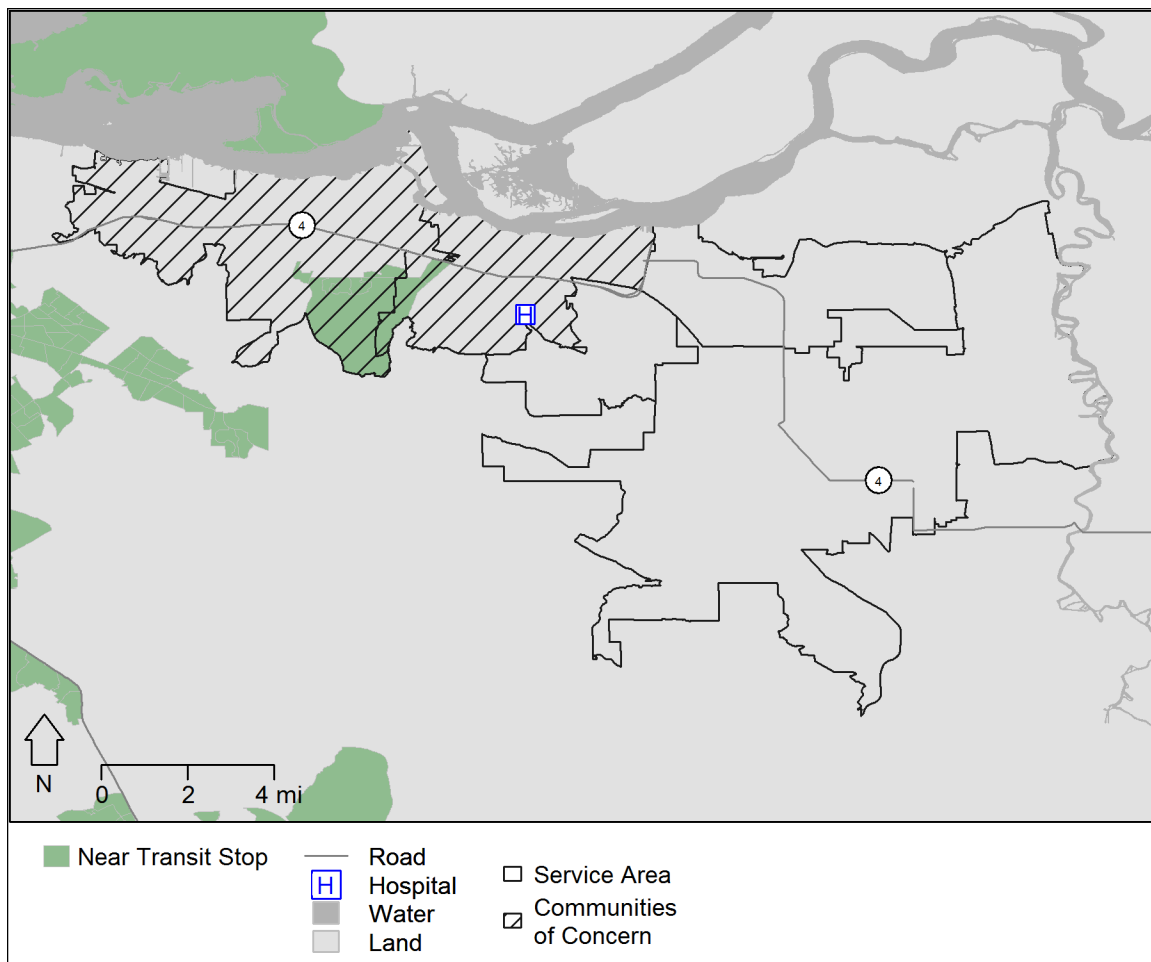


Figure 19: Locations in SDMC HSA within one-half mile of a transit stop

One area within each of the two Communities of Concern was within one-half mile of a transit stop. Qualitative data supported this finding as well as many key informants and focus group participants mention transportation challenges within the HSA. One focus group participant, when discussing the importance of transportation in accessing needed resources within Communities of Concern said this: “...everything is up away from us, so it is really far away...traveling the buses, like it takes eight hours sometimes” (FG_3). Another made this comment when discussing the challenges of using public transportation: “Usually for the bus you have to wait. One hour, exactly” (FG_2). A key informant, when discussing the transportation infrastructure of the HSA, said it this way:

And then, this is really true for East [Contra Costa] County as well, but the major transportation issue, so like to get to the WIC office, to get to the clinic, just a complete lack of transportation infrastructure. So we are moving all of these poor people out there and there is no infrastructure to support them (KI_4).

Resources Potentially Available to Meet Significant Health Needs

There were 146 resources identified in the Communities of Concern in accordance to the analytical method detailed in Appendix B. The method for resource identification began with the list of resources from the 2013 SDMC CHNA, verifying that the resource still existed, and then adding other resources identified in the primary data for the 2016 CHNA. Examination of the resources revealed the following number of resources for each significant health need:

Table 34: Resources available to meet significant health needs in priority order

Significant Health Need (in priority order)	Number of Resources
Access to quality primary care health services	26
Access to affordable, healthy food	5
Access to basic needs such as housing and employment	30
Access to mental, behavioral, and substance abuse services	25
Safe and violence-free environment	13
Health literacy	29
Access to transportation and mobility	2
Access to specialty care	12

For more specific examination of resources by significant health need and by geographic location, see the full list in Appendix H.

Impact of Actions Taken Since Previous CHNA

The final regulations issued by the Department of Treasury on December 29, 2014, regarding nonprofit hospitals conducting CHNAs require that each hospital's CHNA report include: "... an evaluation of the impact of any actions that were taken since the hospital facility finished conducting its immediately preceding CHNA to address the significant health needs identified in the hospital facility's prior CHNA(s) (p. 78969)."³⁸ Prior to this report, SDMC conducted its most recent CHNA in 2013. The 2013 CHNA identified seven specific health needs. Working within its mission and capabilities, SDMC identified three of the seven needs to address in its community benefit implementation strategy:

1. Lack of access to behavioral health services
2. Limited access to primary health care services
3. Lack of access to affordable, healthy food

A detailed report of the impact of the actions taken by SDMC to address the health needs identified in the 2013 CHNA can be found in Appendix I.

Soliciting for Public Comments

SDMC requested written comments from the public on its 2013 CHNA and most recently adopted implementation strategy through its website.³⁹ At the time of the development of this CHNA report SDMC had not received written comments. However, input from the broader community was considered and taken into account when identifying and prioritizing the significant health needs of the community we serve for the 2016 CHNA through key informant interviews, surveys, focus groups, and

³⁸ *Federal Register*, Vol. 79, No. 250, (Wednesday, December 31, 2014). Department of the Treasury, Internal Revenue Service.

³⁹ See: <http://www.sutterdelta.org/about/community-need.html>.

more. SDMC will continue to use its website as a tool to solicit for public comments and ensure that these comments are considered community input in the development of future CHNAs.

Limitations

Study limitations included challenges obtaining secondary quantitative data and assuring community representation via primary qualitative data collection. For example, most of the data used in this assessment were not available by race/ethnicity. In addition, data about behavioral issues and conditions like obesity were difficult to obtain at the sub-county level and were not available by race and ethnicity, resulting in the reliance on county data. The timeliness of the data also presented a challenge, as some of the data were collected in different years; however, this is clearly noted in the report to allow for proper comparison.

As always with primary data collection, gaining access to participants that best represent the populations needed for this assessment proved to be a challenge. Measures were taken to reach out to area organizations for recruitment, assuming that the organization represented a Community of Concern geographically, racially, ethnically, or culturally. Some key informants and organizations that helped with focus groups participated in the 2013 round of data collection, possibly contributing to assessment fatigue. To help with recruitment, focus group participants were offered incentives such as food and refreshments. Additionally, data collection of health resources in the hospital service areas was challenging; though an effort was made to verify all resources (assets) collected in the 2013 round via web search, we recognize that ultimately some resources may not be listed that exist in the HSA.

Conclusion

Nonprofit hospitals play a vital role in the communities they serve. In addition to the delivery of newborns and the treatment of disease, these important institutions work with and along-side other organizations to improve community health and wellbeing by working to prevent disease, improve access to healthcare, promote health education, eliminate health disparities, and similar. CHNAs play an important role in helping nonprofit hospitals, 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.

Appendices

Appendix A: Secondary Data Dictionary and Processing

The secondary data supporting the 2016 Community Health Needs Assessment were collected from a variety of sources, and was processed in multiple stages before it was used for analysis. This document details those stages. It begins with a list of the secondary indicators collected, organized according to the conceptual model used in the CHNA. Next, the approaches used to define ZIP code boundaries and integrate P.O. box records into the analysis are described. General data sources are then listed, followed by a description of the basic processing steps applied to most indicators. It concludes by detailing additional specific processing steps used to generate a subset of more complicated indicators.

Secondary Indicators

The conceptual model illustrated in Figure A1 below guided the selection of secondary indicators. This model organizes individual health-related characteristics of populations in terms of how they relate to up- or down- stream factors of health and health disparities. Specific secondary indicators were selected to represent these characteristics in the needs assessment. Table A1 below lists these indicators, and identifies which health-related characteristic they are primarily used to represent.

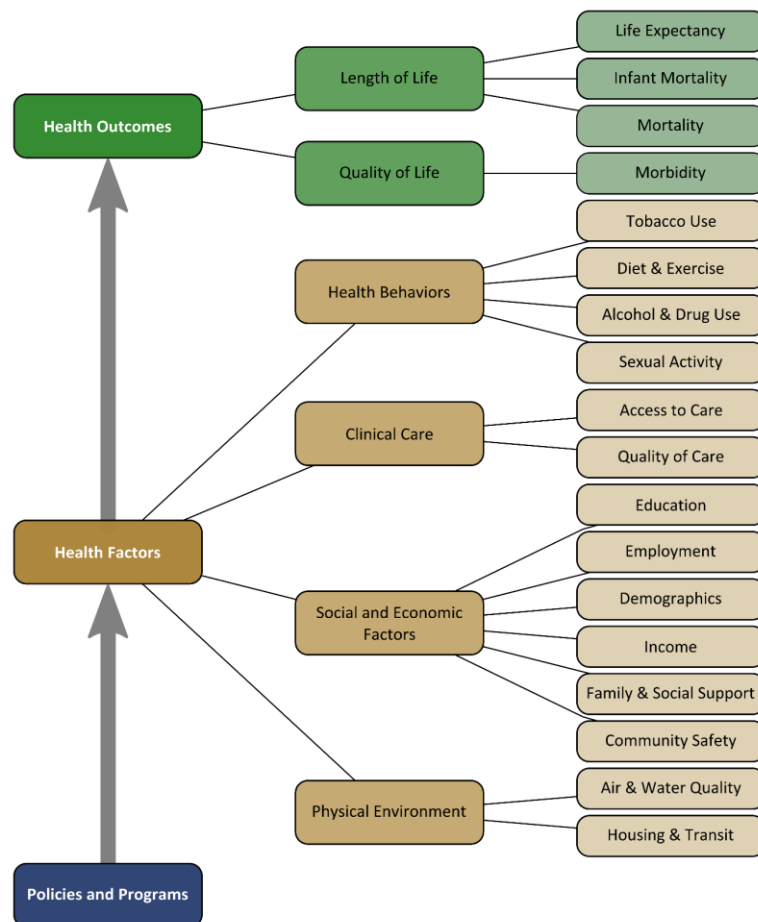


Figure A1: SDMC Community Health Assessment Conceptual Model as modified from the County Health Rankings Model, Robert Wood Johnson Foundation, and University of Wisconsin, 2015

Table A1: Indicators used in the CHNA as organized by the County Health Rankings Model, Robert Wood Johnson Foundation, and University of Wisconsin, 2015

Conceptual Model			
Main Area	Sub Area	Concept	Indicator
Health Outcomes	Length of Life	Infant Mortality	Infant Mortality Rate
		Life Expectancy	Life Expectancy at Birth
		Mortality	Age-Adjusted All-Cause Mortality
			All Other Causes
			Alzheimer's Disease
			Cerebrovascular Disease (Stroke)
			Chronic Liver Disease and Cirrhosis
			Chronic Lower Respiratory Disease
			Diabetes Mellitus
			Diseases of the Heart
			Essential Hypertension & Hypertensive Renal Disease
			Female Mortality Rate
			Influenza and Pneumonia
			Intentional Self Harm (Suicide)
			Male Mortality Rate
			Malignant Neoplasms (Cancer)
			Years Potential Life Lost (75)
			Nephritis, Nephrotic Syndrome and Nephrosis (Kidney Disease)
			Unintentional Injuries (Accidents)
	Quality of Life/ Morbidity	Cancer	Breast Cancer
			Colorectal Cancer
			Lung Cancer
			Prostate Cancer
		Chronic Disease	Diabetes
			Heart Disease
			Hypertension
			Nephritis, Nephrotic Syndrome and Nephrosis (Kidney Disease)
			Stroke
		Infectious Disease	HIV/AIDS
			STIs
			Tuberculosis
		Injuries	Assault
			Self-Inflicted Injury
			Unintentional Injury
		Mental Health	Mental Health
		Respiratory	Asthma
			Chronic Obstructive Pulmonary Disease (COPD)
		Other Indicators	Hip Fractures
			Oral Cavity/Dental
			Low Birth Weight
			Total ED Discharge Rate
			Total H Discharge Rate

Conceptual Model			
Main Area	Sub Area	Concept	Indicator
Health Factors	Health Behavior	Tobacco Use	Current Smokers
		Alcohol and Drug Use	Binge Drinking
			Mental Health, Substance Abuse
		Diet & Exercise	Obesity
			Food Deserts
			Modified Retail Food Environment Index (mRFEI)
			Park Access
		Sexual Activity	Teen Birth Rate
	Clinical Care	Access to Care	Health Professional Shortage Areas (Primary Care, Dental, Mental Health)
			Percent Uninsured
		Quality of Care	Prevention Quality Indicators (PQI)
	Social and Economic Factors	Community Safety	Major Crime Rate
			Traffic Accidents Resulting in Fatalities
		Demographics	Percent Asian (Not Hispanic)
			Percent Black (Not Hispanic)
			Percent Hispanic (Any Race)
			Percent American Indian (Not Hispanic)
			Percent Pacific Islander (Not Hispanic)
			Percent White (Not Hispanic)
			Percent Other Race or Two or More Races (Not Hispanic)
			Percent Minority (Hispanic or Non-White)
			Racial/Ethnic Diversity Index
			Population 5 Years or Older Who Speak Limited English
			Population by Age Group: 0-4, 5-14, 15-24, 25-34, 45-54, 55-64, 65-74, 75-84, and 85 and over
			Median Age
			Percent Non-Citizen
			Percent Female
			Percent Foreign-Born
			Percent Male
			Percent Civilian Noninstitutionalized Population with a Disability
			Total Population
			Percent Over 18 Who are Civilian Veterans
		Education	Percent 25 or Older Without a High School Diploma
		Family and Social Support	Percent Single Female-Headed Households
		Employment	Percent Unemployed
		Income	GINI Coefficient
			Median income
			Percent Families with Children in Poverty
			Percent Households 65 years or Older in Poverty
			Percent Single Female Headed Households in Poverty

Conceptual Model			
Main Area	Sub Area	Concept	Indicator
			Percent with Public Assistance
			Percent with Income Less Than Federal Poverty Level
	Physical Environment	Air & Water Quality	Pollution Burden
		Housing	Average Population per Housing Unit
			Percent Renter-Occupied Housing Units
			Percent Vacant Housing Units
		Transit	Percent Households with No Vehicle
			Population Living Near a Transit Stop

ZIP Code Definitions

All health outcome indicators 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 health outcome data reported at the ZIP code level, make it possible 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 health outcome 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 California⁴⁰ were compared to ZCTA boundaries⁴¹. Because various health outcome 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 central year in the case of indicators aggregated over multiple years) for which the health outcome indicators 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 in which they fell, or in the case of rural areas that are not completely covered by ZCTAs, the ZCTA to which they were closest. Health outcome information associated with these PO Box or unique ZIP codes were then assigned added to the ZCTAs to which they were assigned.

For example, 94540 is a PO box located in Hayward, CA. ZIP Code 94540 is not represented by a ZCTA, but it could have patient data reported as health outcome indicators. Through the process identified above, it was found that 94540 is located within 94544, which does have an associated ZCTA. Health outcome data for ZIP codes 94540 and 94544 were therefore assigned to ZCTA 94544, and used to calculate rates. All ZIP code level health outcome indicators given in this

⁴⁰ Datasheer, L.L.C. (2015, April 15). *ZIP Code Database DELUXE BUSINESS*. Retrieved from Zip-Codes.com: <http://www.Zip-Codes.com>

⁴¹ US 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>

report are therefore 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 health factor and health outcome indicators 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 health outcome indicators. Table A2 below lists the 2013 population characteristic indicators and sources. Table A3 below lists sources for indicators used to calculate health outcome indicator rates, which were collected for 2012, 2013, and 2014. These demographic indicators 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.

Table A2: Demographic indicators collected from the US Census Bureau⁴²

Derived Indicator Name	Source Indicator 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

⁴² US 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>

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 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 Than 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 Who 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 on Public Assistance	INCOME AND BENEFITS (IN 2013 INFLATION-ADJUSTED DOLLARS) - With cash public assistance income; INCOME AND BENEFITS (IN 2013 INFLATION-ADJUSTED DOLLARS) - With cash public assistance income	2013 American Community Survey 5-year Estimate Table DP03
Percent on 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
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 Without a High School Diploma	100 - Percent High School Graduate Or Higher	2013 American Community 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

Table A3: Census indicators Used for Health Outcome Rate Calculations^{42,43}

Derived Indicator Name	Source Indicator Names	Source
Total Population	Total Population	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013) 2010 Decennial Census Summary File 1
Female	Female	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013)
Male	Male	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013)
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); 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); 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)
Age 15 to 24	15 to 19 years; 20 to 24 years	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013)
Age 25 to 34	25 to 34 years	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013)
Age 35 to 44	35 to 44 years	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013)
Age 45 to 54	45 to 54 years	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013)
Age 55 to 64	55 to 59 years; 60 to 64 years	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013)
Age 65 to 74	65 to 74 years	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013)
Age 75 to 84	75 to 84 years	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013)
Age 85 and Over	85 Years And Over	American Community Survey 5-year Estimate Table DP05 (2011, 2012, 2013)
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)

⁴³ 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>

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)
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)
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)
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)

Collected health outcome data included the number of emergency department (ED) discharges, hospital (H) discharges⁴⁴, and mortalities associated with a number of conditions. Aggregated 2011 – 2013 ED and H discharge data were obtained from the Office of Statewide Health Planning and Development (OSHPD). Table A4 lists the specific indicators 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 principal 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, these data were 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 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). In addition to the hospitalization and emergency department discharge data shown in Table A4, aggregated 2011 – 2013 Prevention Quality Indicators (PQI) (Version 4.5a) data were also obtained from OSHPD at the ZIP code and county levels.

To address patient privacy concerns, OSHPD applied a number of masking techniques to all their data (both ED and H discharge, and PQI). First, rather than providing data for a single year, data for each condition were totaled for 2011 through 2013 for each ZIP code or county. For the PQI dataset, values were not reported for any ZIP code or county where fewer than 11 cases were reported. For the ED and H discharge datasets, two additional levels of masking were applied. First, ZCTA sex, age, and normalized race/ethnicity indicators were not available for ZCTAs in what OSHPD classifies as “Small Counties.” County level values for these small counties were reported in aggregated groups as follows: Alpine, Inyo, Mariposa, and Mono; Modoc, Plumas, and Sierra; and Colusa, Del Norte, Glenn, and Trinity. Secondly, rates were not reported for any ZIP code or county where fewer than 11 cases were reported.

Table A4: 2011 – 2013 OSHPD Hospitalization and Emergency Department Discharge Data

Category	Indicator Name	ICD9/E-Codes
Cancer	Breast Cancer	174, 175
	Colorectal Cancer	153, 154
	Lung Cancer	162, 163

⁴⁴ While OSHPD data actually refer to discharges, for simplicity they are referred to as the visits they are taken to represent throughout the body of the report.

	Prostate Cancer	185
Chronic Disease	Diabetes	250
	Hypertension	401-405
	Ischemic Heart Disease	410-414
	Chronic Kidney Disease	580-589
	Stroke	430-438
Infectious Disease	HIV/AIDS	042-044
	STIs	042-044, 090-099, 054.1, 079.4
	Tuberculosis	010-018, 137
Injuries ⁴⁵	Assault	E960-E969, E999.1
	Self-Inflicted Injury	E950-E959
	Unintentional Injury	E800-E869, E880-E929
Mental Health	Mental Health	290, 293-298, 301-302, 310-311
	Mental Health: Substance Abuse	291-292, 303-305
Respiratory	Asthma	493
	Chronic Obstructive Pulmonary Disease (COPD)	490-492, 494, 496
Other	Hip Fractures	820
	Oral Cavity/Dental	520-529
	Osteoporosis	733
Overall Discharges	Total Discharges	All Codes

Mortality and birth-related data for each ZIP code in 2010, 2011, and 2012 were collected from the California Department of Public Health (CDPH). The specific indicators collected are defined in Table A5. The majority of these indicators 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 values for the years 2010 to 2012. These indicators 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 birth weight, and births with mother's age at delivery under 20. Table A5 consequently also lists the years for which each indicator was collected.

Table A5: CDPH Birth and Mortality Data by ZIP Code

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

⁴⁵ E-code definitions for injury indicators 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

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

The remaining secondary indicators were collected from a variety of sources, and at various geographic levels. Table A6 lists the sources of these indicators, and lists the geographic level at which they were reported.

Table A6: Remaining Secondary Indicators

Indicator	Year	Definition	Reporting Unit	Data Source
Binge Drinking	2014	Adult Binge Drinking in the Past Year	County	2014 California Health Interview Survey http://ask.chis.ucla.edu/AskCHIS/tools/layouts/AskChisTool/home.aspx#/geography (last accessed 9 Oct 2015)
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 00C22 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 Professional 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)

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/ (last 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
Obesity	2014	Children Overweight for age (does not factor height); Body Mass Index – 4 level (teen only); Body Mass Index – 4 level (adult only)	County	2014 California Health Interview Survey http://ask.chis.ucla.edu/AskCHIS/tools/layouts/AskChisTool/home.aspx#/geography (last accessed 12 Jan 2015)
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)

General Processing Steps

Rate Smoothing

All OSHPD, as well as all single-year CDPH, indicators 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 codes with no value reported were treated as having a value of 0. For OSHPD data, which, unlike CDPH data, had clearly masked values, if 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 OSHPD 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 indicators. However, rather than calculating raw rates, empirical Bayes smoothed rates (EBR) were created for all indicators possible⁴⁶. 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 indicator 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 indicator 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 indicators (2010 – 2012), 2011 data were used. Population data from 2012 were used to calculate single-year CDPH indicators.

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 during the smoothing process, but were kept as NA for the individual ZCTA. This meant that smoothed rates could be calculated for indicators, but if a given ZCTA had a value of NA for a given indicator, it retained that NA value after smoothing.

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

⁴⁶ Anselin, L. (2003). *Rate Maps and Smoothing*. Retrieved February 16, 2013, from <http://www.dpi.inpe.br/gi>

Age Adjustment

The additional step of age adjustment⁴⁷ was performed on the all-cause mortality indicator. Because the occurrence of mortality 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 its pattern. For example, it would not be unusual for a ZCTA with an older population to have higher rate mortality than a ZCTA with a younger population. In order to accurately compare the experience of mortality 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 indicators, 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 age 1 and from ages 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 indicators 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 indicators 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 indicator 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 population values. State rates were calculated as raw rates by first summing all county level values (treating NA values 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 indicator 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^{48,49}, or else obtained from the County Health Status Profiles 2014⁵⁰. The resulting benchmark values for CDPH and OSHPD indicators were all reported as rates per 10,000 unless the original indicator was reported using some other standard, as described below.

⁴⁷ 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.

⁴⁸ 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>

⁴⁹ 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/>

⁵⁰ California Department of Public Health. (2015b, July 2). Retrieved from County Health Status Profiles 2014: <http://www.cdph.ca.gov/programs/ohir/Documents/OHIRProfiles2014.pdf>

Processing for Specific Indicators

Additional processing was needed to create the Community Health Vulnerability Index (CHVI), the CDPH-derived health outcome indicators, as well as some of the other health factor indicators. The process used to calculate these indicators are described in this section below.

Community Health Vulnerability Index (CHVI)

The CHVI is a health care disparity index largely based on the Community Need Index (CNI) developed by Barsi and Roth⁵¹. The CHVI uses the same basic set of demographic indicators to address health care disparities as outlined in the CNI, but these indicators are aggregated in a different manner to create the CHVI. For this report, the following nine indicators 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 indicator was scaled using a min-max stretch, so that the tract with the maximum value for a given indicator within the study area received a value of 1, and the tract with the minimum value for that same indicator within the study area received a 0. All scaled indicators were then summed to form the final CHVI. Areas with higher CHV values therefore represent locations with relatively higher concentrations of the target index populations, and are likely experiencing greater health care disparities.

CDPH-derived Health Outcome Indicators

Infant Mortality Rate

The 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 the years 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

The 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 the years 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

⁵¹ 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>

Life expectancy at birth values are reported in years, and were derived from period life tables created in the statistical software program R⁵² using the Human Ecology, Evolution, and Health Lab's⁵³ example period life table function. This function was modified to calculate life tables for each ZCTA, and to allow the life table to be calculated from pre-calculated, smoothed, age-stratified mortality rates based on mortality reported in given age categories from the years 2010 – 2012.

Years Potential Life Lost (75)

Years Potential Life Lost (75) is a metric that can be used to compare health status across populations that better accounts for premature loss of life than many other metrics⁵⁴. It was calculated here following the method described by Dranger and Remington⁵⁴. In brief, this involved calculating EBR smoothed age stratified death rates using CDPH data from 2010 – 2011. For each age stratification group under 75 years of age, the midpoint age of the group was subtracted from 75, and the resulting value was multiplied by the smoothed age stratified rate. The resulting values for each age stratification were then age-adjusted using a 2010 California base population. These values were then individually multiplied by 10,000 and summed across all age groups to estimate the years of potential life lost before age 75 out of 10,000 people.

Health Factors

Additional specific processing was conducted to derive several health factor indicators. These include the diversity index, major crime rates, park access, and the ZCTA-level Modified Retail Food Environment Index (mRFEI). Details on their calculation are provided below.

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 Iceland⁵⁵, but using Shannon's evenness index⁵⁶ rather than the specific methodology described therein. The diversity index represents how evenly the 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, and 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 Rates

Major crimes reported in the State of California Department of Justice's Crime Data reports are listed by reporting police agency. In order to estimate major crime 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

⁵² 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>.

⁵³ 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>

⁵⁴ Dranger, E., & Remington, P. (2004). YPPL: A Summary Measure of Premature Mortality Used in Measuring the Health of Communities. *Wisconsin Public Health & Health Policy Institute Issue Brief*, 5(7), 1-2. Retrieved May 27, 2015, from <http://uwphi.pophealth.wisc.edu/publications/issue-briefs/issueBriefv05n07.pdf>

⁵⁵ 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

⁵⁶ Beals, M., Gross, L., & Harrell, S. (2000). *Diversity Indices: Shannon's H and E*. Retrieved June 20, 2015, from University of Tennessee Knoxville, The Institute for Environmental Modeling: <http://www.tiem.utk.edu/~gross/bioed/bealsmodules/shannonDI.html>

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 populations were added to those places. For example, the crimes 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 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 for each Census place resulting from the process described above were 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 within the county 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 were, however, calculated for benchmarking purposes by summing the total number of major crimes reported by any agency within the 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 Justice’s Crime Data reports, available online at: <http://oag.ca.gov/crime>.

Park Access

The park access indicator reports the percentage of the 2010 population residing within each ZCTA that lives in a Census block that intersects a one-half mile buffer around the closest park. Esri’s US Parks data set⁵⁷, 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) indicator 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 indicator was calculated using a modification of the methods described by the National Center for Chronic Disease Prevention and Health Promotion⁵⁸ 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

⁵⁷ Esri. (2010). U.S. and Canada Detailed Streets. *Esri Data & Maps: StreetMap* (10 edition)

⁵⁸ 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

- 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 that 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.

Appendix B: Detail Analytic Methodology

The purpose of this appendix is to provide a detailed description of the analytical methodologies utilized in the 2016 Community Health Needs Assessment. It begins with a general methodological overview of the project, and then provides a more detailed description of the methods used to identify 2016 Communities of Concern, identify and prioritize significant health needs, and identify the resources available in the HSA to address health needs.

Overview

As illustrated in Figure B1 below, the project was conducted using alternating data collection and analysis stages. The project began with a definition of the hospital service area based on the definition used for the previous 2013 Community Health Needs Assessment. Area-wide primary and secondary data were then collected for the defined HSA. Primary data included interviews of multiple key informants who were selected based on their ability to speak to conditions across the HSA. Secondary data included the health factor and health outcome indicators described in detail in Appendix A, as well as the Community Health Vulnerability Index (CHVI) values for each HSA ZCTA.

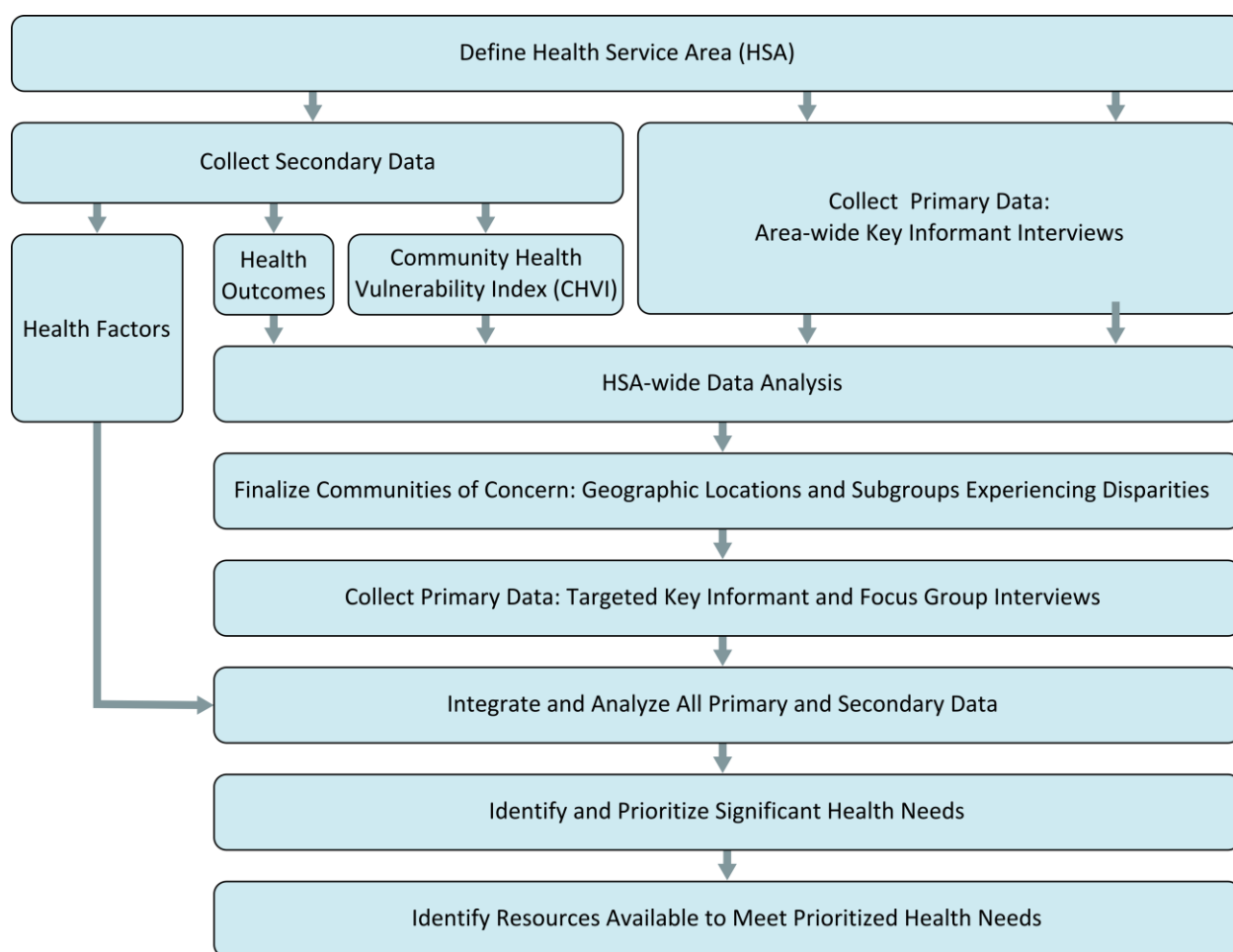


Figure B1: 2016 CHNA process model

2016 Communities of Concern were then defined following an HSA-wide analysis of the secondary health outcome indicators and CHVI values and area-wide key informant interviews. This included both a consideration of geographic areas, identified through secondary data analysis, as well as subgroups experiencing disparities, based on an analysis of the area-wide primary data.

The 2016 Communities of Concern were then used to identify what are referred to as “targeted” key informants and focus groups. These targeted primary data sources were selected based on their ability to speak to the needs of

particular geographic locations or subgroups experiencing disparities. Overall primary data, and secondary data for the Communities of Concern, were then integrated to identify the significant health needs for the HSA. Significant health needs were then prioritized based on analysis of the primary data. Finally, resources available within the HSA to address health needs were identified.

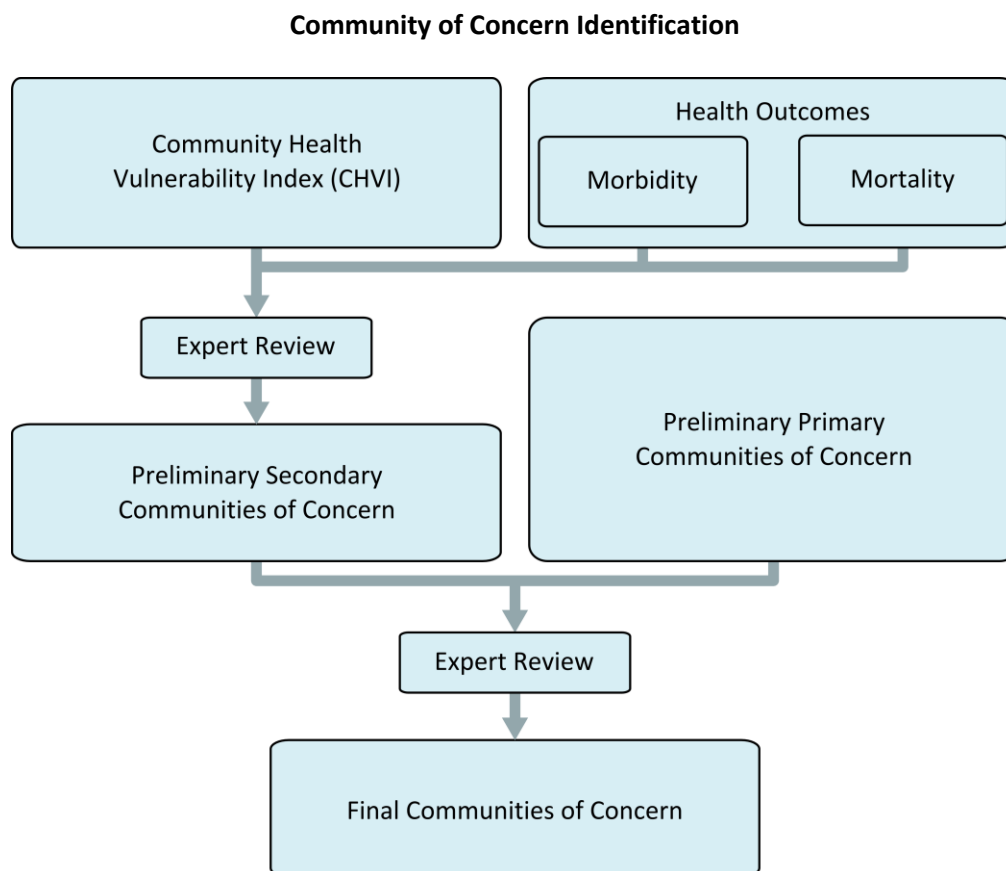


Figure B2: Community of Concern Identification Process

Communities of Concern are used to represent those geographic locations or population subgroups within the HSA that are likely experiencing the greatest overall health disparities. As illustrated in Figure B2 above, the 2016 Communities of Concern were identified through a process that drew upon both primary qualitative data as well as secondary quantitative data. Three main secondary data inputs were used in this analysis: the Census tract-level Community Health Vulnerability Index (CHVI); representing health outcomes, mortality data from CDPH and morbidity data in the form of emergency department, and hospital discharge data obtained from OSHPD.

An evaluation procedure was developed for each of these datasets and applied to each ZCTA within the HSA. In order to be classified as a preliminary secondary Community of Concern, a ZCTA had to meet two of the following three selection criteria:

Community Health Vulnerability Index (CHVI)

The ZCTA intersected a census tract whose CHVI value fell within the top 20% for the HSA. These census tracts represent areas with consistently high concentrations of certain demographic subgroups identified in the research literature as being more likely to experience health-related disadvantages.

Morbidity

The processes for reviewing ZCTAs based on morbidity were substantially more complicated than those used for the 2013 Communities of Concern or the CHVI. It began by selecting a subset of emergency department and hospitalization visit discharge rate indicators obtained from OSHPD, given in Table B1 below. Next, the values reported for each

indicator in that ZCTA were compared to the lowest of the county and state benchmark rates. If a given ZCTA had a value higher than this benchmark for a given indicator, it was given a value of 1 for that indicator. If its value was below this benchmark, it was given a value of 0.

Table B1: OSHPD emergency department and hospitalization visit discharge rate indicators used in Community of Concern identification

OSHPD Emergency Department and Hospitalization Visit Discharge Rate Indicators Used in Community of Concern Identification
Female Breast Cancer, Colorectal Cancer, Lung Cancer, Male Prostate Cancer, Diabetes, Heart Disease, Hypertension, Kidney Diseases, Stroke, HIV, STIs, Tuberculosis, Assault, Intentional Self Injury, Unintentional Injury, Mental Health, Mental Health: Substance Abuse, Asthma, COPD, Hip Fracture, Osteoporosis, Oral/Dental Diseases

Once these comparisons were made for each indicator in each ZCTA, the total recoded values (0 or 1) were summed for each ZCTA across all indicators to create a morbidity index value. ZCTAs that fell within the top 20% of this morbidity index met the Community of Concern morbidity selection criteria.

Mortality

The process for reviewing ZCTAs based on mortality was very similar to that used for morbidity. A subset of CDPH mortality rates, as well as associated derived indicators, was identified for inclusion in the analysis, and is shown in Table B2. As with the morbidity analysis, ZCTA values for each indicator were compared to the better of the appropriate county and state benchmarks, and ZCTAs with indicator values worse than this benchmark were recoded to 1, while ZCTAs with indicator values better than the worst benchmark were recoded to 0.

Table B2: Mortality related indicators used in Community of Concern identification
CDPH Mortality-related Indicators Used in Community of Concern Identification
Diseases of the Heart, Cancer, Stroke, Chronic Lower Respiratory Disease, Alzheimer's Disease, Unintentional Injuries, Diabetes Mellitus, Influenza and Pneumonia, Chronic Liver Disease and Cirrhosis, Hypertension, Intentional Self-Injury, Kidney Diseases, Age-Adjusted Mortality, Infant Mortality Rate, Years Potential Life Lost (75), Life Expectancy at Birth

The main difference between the mortality and morbidity approaches is that instead of all mortality-related indicators being weighted equally, as with the morbidity approach, a relative weighted scheme was developed for the mortality-related indicators.

Expert judgment weights were developed using an Analytical Hierarchy Approach (AHP).⁵⁹ This approach used a comparison matrix completed by an internal Community Health Insight subject area expert to rate the relative importance between each pair of mortality indicators in the analysis. These pair-wise importance comparisons were then processed to generate a priority matrix used to weight the mortality indicators. Indicators receiving a higher prioritization value had more weight in determining which ZCTAs would be included as preliminary secondary Communities of Concern.

The recoded (0 or 1) values for each indicator in each ZCTA were then multiplied by the corresponding indicator weight, and the resulting values were summed across all indicators for each ZCTA to create a mortality index. The ZCTAs that fell within the top 20% of this mortality index met the Community of Concern mortality selection criteria.

Integration of Secondary Criteria

⁵⁹ Saaty, Thomas. 1980. *The Analytic Hierarchy Process: Planning, Priority Setting, Resource Allocation*. New York: McGraw-Hill.

Any ZCTA that met two of the three selection criteria (CHVI, morbidity, and mortality) was reviewed for inclusion as a 2016 Community of Concern. An additional round of expert review was applied to determine if any other ZCTAs not thus far indicated should be included based on some other unanticipated secondary data consideration. This list then became the final Preliminary Secondary Communities of Concern.

Preliminary Primary Communities of Concern

Preliminary primary communities of concern were identified by reviewing the geographic locations or population subgroups that were consistently identified by the area-wide primary data sources (key informant interviews).

Integration of Preliminary Primary and Secondary Communities of Concern

Any ZCTA that was identified in either the Preliminary Primary or Secondary Community of Concern list was considered for inclusion as a 2016 Community of Concern. An additional round of expert review was then applied to determine if, based on any primary or secondary data consideration, any final adjustments should be made to this list. The resulting set of ZCTAs was then used as the final 2016 Communities of Concern.

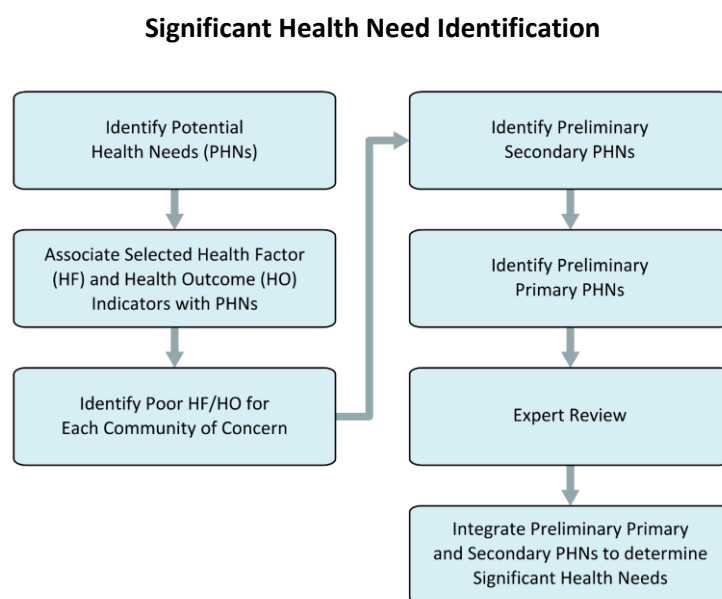


Figure B3: Significant Health Need identification process

The general methods through which significant health needs (SHNs) were identified are shown in Figure B3 above and described here in greater detail. The first step in this process was to identify a set of potential health needs (PHNs) from which significant health needs could be selected. This was done by reviewing the health needs identified in the Sutter East Bay region during the 2013 CHNA, and then supplementing this list based on a preliminary analysis of the primary qualitative data collected for the 2016 CHNA. This resulted in a list of 10 PHNs for the HSA, shown in Table B2 below.

Table B2: Potential health needs

2016 Potential Health Needs (PHNs)	
PHN1	Access to mental / behavioral / substance abuse services
PHN2	Access to quality primary care health services
PHN3	Access to affordable, healthy food
PHN4	Safe and violence-free environment
PHN5	Access to dental care and preventative services
PHN6	Pollution-free living environment
PHN7	Access to basic needs, such as housing and employment
PHN8	Access to transportation and mobility

PHN9	Access to specialty care
PHN10	Health education and health literacy

The next step in the process was to identify primary and secondary indicators associated with each of these health needs as shown in Table B3 below. Primary indicator associations were used to guide coding of the primary qualitative data sources to specific PHNs.

Table B3: Primary and secondary indicators associated with potential health needs

	Health Need	Quantitative Indicators	Qualitative Indicators
PHN1	Access to mental/behavioral/substance abuse services	<ul style="list-style-type: none"> • CDPH – Suicide • OSPHD – Mental Health (ED/H) • Mental Health – Substance Abuse (ED/H) • OSPHD – Intentional Self-Injury (ED/H) • Health Professional Shortage Area: Mental Health 	<ul style="list-style-type: none"> • Self-injury • Mental health and coping issues • Substance abuse • Smoking • Stress • Mentally ill homeless • PTSD
PHN 2	Access to quality primary care health services	<ul style="list-style-type: none"> • OSHPD – Total ED Discharge Rate • OSHPD – Female Breast Cancer (ED/H) • OSHPD – Colorectal Cancer (ED/H) • OSHPD – Male Prostate Cancer (ED/H) • OSHPD – Total Hospital Discharge Rate • OSHPD – PQI • Health Professional Shortage Area – Primary Care • Uninsured 	<ul style="list-style-type: none"> • Quality of care • Access to care • Health insurance • Care for cancer/cancer occurrence • Indicators in PQI: diabetes, COPD, CRLD, HTN, HTD, asthma, pneumonia
PHN 3	Access to affordable, healthy food	<ul style="list-style-type: none"> • CDPH – Cancer • CDPH – Diabetes • CDPH – Heart Disease • CDPH – Hypertension • CDPH – NEP • CDPH – Stroke • OSHPD – Diabetes (ED/H) • OSHPD – Heart Disease (ED/H) • OSHPD – Hypertension (ED/H) • OSHPD – NEP (ED/H) • OSHPD – Stroke (ED/H) • USDA-defined Food Deserts • Modified Retail Food Environment Index 	<ul style="list-style-type: none"> • Food access/insecurity • Community gardens • Fresh fruits and veggies • Distance to grocery stores • Food swamps • Chronic disease outcomes related to poor eating • Diabetes, HTD, HTN, stroke, kidney issues, cancer

PHN 4	Safe and violence-free environment	<ul style="list-style-type: none"> • OSHPD – Assault (ED/H) • OSHPD – Mental Health (ED/H) • OSHPD – Mental Health: Substance Abuse (ED/H) • CHIS – Binge Drinking • Traffic Accidents with Fatalities • Major Crimes • Park Access 	<ul style="list-style-type: none"> • Crime rates • Violence in the community • Feeling unsafe in the community • Substance abuse: alcohol and drugs • Access to safe parks • Pedestrian safety • Safe streets • Safe places to be active
PHN 5	Access to dental care and preventive services	<ul style="list-style-type: none"> • OSHPD – Dental (ED/H) • Health Professional Shortage Area: Dental 	<ul style="list-style-type: none"> • Any issues related to dental health • Access to dental care
PHN 6	Pollution-free living environment	<ul style="list-style-type: none"> • CDPH – Cancer • CDPH – Chronic Lower Respiratory Disease • OSHPD – Asthma (ED/H) • OSHPD – COPD (ED/H) • OSHPD – Lung Cancer (ED/H) • CHIS: Adult and Teen Current Smokers • Pollution Score 	<ul style="list-style-type: none"> • Smoking • Unhealthy air, water, housing, • Health issues: asthma, COPD, CLRD, lung cancer
PHN 7	Access to basic needs, such as food, housing, jobs	<ul style="list-style-type: none"> • CDPH – Age-adjusted all-cause mortality • CDPH – Infant mortality rate • CDPH – Life expectancy at birth • People per occupied housing unit • Housing unit vacancy rate • Percent with no diploma • Median Household Income • Percent below the federal poverty level • Public assistance • Renters • Unemployed 	<ul style="list-style-type: none"> • Employment and unemployment • Poverty • Housing issues • Homelessness • Education access • Community quality of life
PHN 8	Access to transportation and mobility	<ul style="list-style-type: none"> • Households with no vehicle • Distance to transit stop greater than ½ mile 	<ul style="list-style-type: none"> • Physical access issues • Cost of transportation • Ease of transportation access • No car
PHN 9	Access to specialty care	<ul style="list-style-type: none"> • OSHPD – Diabetes (H) • OSHPD – Heart disease (H) • OSHPD – Hypertension (H) • OSHPD – Stroke (H) 	<ul style="list-style-type: none"> • Seeing a specialist for health conditions • Diabetes related specialty care

		<ul style="list-style-type: none"> • OSHPD - Nephritis, nephrotic syndrome and nephrosis (H) • OSHPD – PQI • CDPH – Diabetes • CDPH – Heart disease • CDPH – Hypertension • CDPH - Nephritis, nephrotic syndrome and nephrosis 	<ul style="list-style-type: none"> • Specialty care for: HTD, HTN, stroke, kidney diseases
PHN 10	Health education and health literacy	<ul style="list-style-type: none"> • CHIS – Adult and teen current smokers • CHIS – Binge drinking • CDPH – Influenza and pneumonia • CDPH – Unintentional injury • CDPH – Diabetes • CDPH – Heart disease • CDPH – Hypertension • CDPH – Stroke • CDHP – Nephritis, nephrotic syndrome and nephrosis • CDPH – Teen birth rate • OSHPD – HIV (ED/H) • OSHPD – STI (ED/H) • OSHPD – TB (ED/H) • OSHPD – Unintentional injuries (ED/H) • OSHPD – Diabetes (ED/H) • OSHPD – Heart disease (ED/H) • OSHPD – Hypertension (ED/H) • OSHPD – Stroke (ED/H) • OSHPD – Nephritis, nephrotic syndrome and nephrosis (ED/H) 	<ul style="list-style-type: none"> • Factors related to preventing disease or injury • Unintentional injury • Smoking and alcohol/drug abuse • Teen pregnancy • HIV/STD • TB • Influenza and Pneumonia • Health classes • Health promotion teams and interventions • Need for health literacy

Next, values for the secondary health factor and health outcome indicators identified above in each Community of Concern were compared to the worst relevant state or county benchmarks to determine if a given secondary indicator was problematic in the given Community of Concern. While some indicators were available at the ZCTA level, others were not, and so their geography was compared to the Community of Concern ZCTAs to identify surrogate values for each ZCTA. Additionally, some indicators were considered problematic if they exceeded the relevant benchmark, while others were problematic if they were below the benchmark. Table B4 below lists the ZCTA measures or surrogate values used for each secondary indicator, and describes the comparison made to the benchmark to determine if it was problematic.

Table B4: ZCTA measure for PHN identification and benchmark comparisons

Indicator	ZCTA Measure for PHN Identification	Benchmark Comparison
Life Expectancy at Birth	ZCTA Rate	Less than
Age-Adjusted All-Cause Mortality	ZCTA Rate	Greater than
Infant Mortality Rate	ZCTA Rate	Greater than
Malignant Neoplasms (Cancer) (Mortality)	ZCTA Rate	Greater than
Chronic Lower Respiratory Disease (Mortality)	ZCTA Rate	Greater than
Diabetes Mellitus (Mortality)	ZCTA Rate	Greater than
Diseases of the Heart (Mortality)	ZCTA Rate	Greater than
Essential Hypertension & Hypertensive Renal Disease (Mortality)	ZCTA Rate	Greater than
Unintentional Injuries (Mortality)	ZCTA Rate	Greater than
Chronic Kidney Disease (Mortality)	ZCTA Rate	Greater than
Influenza and Pneumonia (Mortality)	ZCTA Rate	Greater than
Cerebrovascular Disease (Stroke) (Mortality)	ZCTA Rate	Greater than
Intentional Self Harm (Suicide) (Mortality)	ZCTA Rate	Greater than
Traffic Accidents Resulting in Fatalities	Number in ZCTA	Greater than 0
Assault (ED/H)	ZCTA Rate	Greater than
Asthma (ED/H)	ZCTA Rate	Greater than
Breast Cancer (ED/H)	ZCTA Rate	Greater than
Colorectal Cancer (ED/H)	ZCTA Rate	Greater than
COPD (ED/H)	ZCTA Rate	Greater than
Diabetes (ED/H)	ZCTA Rate	Greater than
Oral Cavity/Dental (ED/H)	ZCTA Rate	Greater than
HIV/AIDS (ED/H)	ZCTA Rate	Greater than
Heart Disease (ED/H)	ZCTA Rate	Greater than
Hypertension (ED/H)	ZCTA Rate	Greater than
Lung Cancer (ED/H)	ZCTA Rate	Greater than
Mental Health (ED/H)	ZCTA Rate	Greater than
Mental Health: Substance Abuse (ED/H)	ZCTA Rate	Greater than
Chronic Kidney Disease (ED/H)	ZCTA Rate	Greater than
Prostate Cancer (ED/H)	ZCTA Rate	Greater than
Intentional Self-Injury (ED/H)	ZCTA Rate	Greater than
STIs (ED/H)	ZCTA Rate	Greater than
Stroke (ED/H)	ZCTA Rate	Greater than
Tuberculosis (ED/H)	ZCTA Rate	Greater than
Unintentional Injuries (ED/H)	ZCTA Rate	Greater than
Total ED Discharges	ZCTA Rate	Greater than
Total H Discharges	ZCTA Rate	Greater than

Indicator	ZCTA Measure for PHN Identification	Benchmark Comparison
PQI	ZCTA Rate	Greater than
Teen Pregnancy Rate	ZCTA Rate	Greater than
Binge Drinking	County Rate	Greater than state
Current Smokers	County Rate	Greater than state
Food Deserts	Does ZCTA intersect a food desert?	Yes/No
Modified Retail Food Environment Index	ZCTA Rate	Less than
Health Professional Shortage Area: Dental	Does ZCTA intersect shortage area?	Yes/No
Health Professional Shortage Area: Mental Health	Does ZCTA intersect shortage area?	Yes/No
Health Professional Shortage Area: Primary Care	Does ZCTA intersect shortage area?	Yes/No
Major Crime Rate	Crime rate of jurisdiction associated with ZCTA by Contra Costa County	Greater than
Park Access	ZCTA Rate	Less than
Pollution Burden	Does the ZCTA intersect Census tract with pollution burden score in the top 20% of the state?	Yes/No
Population Living Near a Transit Stop	Does the ZCTA intersect a Census block group for which the population weighted centroid distance to the closest public transit stop was 805 meters (approx. 1/2 mile) or more?	Yes/No
Median Income	ZCTA Rate	Less than
Percent Unemployed	ZCTA Rate	Greater than
Percent Uninsured	ZCTA Rate	Greater than
Percent Vacant Housing Units	ZCTA Rate	Less than
Percent Renter-Occupied Housing Units	ZCTA Rate	Greater than
Percent with Income Less Than Federal Poverty Level	ZCTA Rate	Greater than
Percent 25 or Older Without a High School Diploma	ZCTA Rate	Greater than
Percent Households with No Vehicle	ZCTA Rate	Greater than
Percent with Public Assistance	ZCTA Rate	Greater than
Average Population per Housing Unit	ZCTA Rate	Greater than

Two standards were then developed to determine whether an indicator would be considered as performing poorly across the Communities of Concern as a whole. First, an indicator could be considered as performing poorly if it had problematic values in 75% of the Communities of Concern. Second, an indicator could be considered if it had problematic values in at least 50% of the Communities of Concern.

Once identified using one of these two standards, poorly performing indicators were used to determine which PHNs were considered significant. While all PHNs represent actual health needs within the HSA to a greater or lesser extent, a PHN could be considered a Preliminary Secondary Health Need based on four criteria: any poorly performing associated HF/HO indicator; at least 50% of the associated HF/HO indicators were found to perform poorly; at least 66% of the

associated HF/HO indicators were found to perform poorly; or at least 75% of the associated HF/HO indicators were found to perform poorly.

A similar set of standards were used to identify the Preliminary Primary Health Needs: at least 50% of the primary data sources mentioned a given PHN; at least 66% of primary data sources mentioned a given PHN; at least 70% of primary data sources mentioned a given PHN; or, at least 75% of primary data sources mentioned a given PHN. Allowances were also made for the possibility of a previously unrecognized health need to emerge through qualitative primary data collection. If a health need that did not fit within the previously identified PHNs was found, it was added to the list, and primary data sources were coded to count the percentage of sources mentioning that emergent health need.

These sets of criteria (any mention, 50%, 66%, 75%, etc.) were developed for both the primary and secondary analysis because we could not anticipate which specific standard would be most meaningful within the context of the HSA. Having multiple objective decision criteria allows the process to be more easily described, but still allows for enough flexibility to respond to evolving conditions in the HSA. To this end, a final round of expert review was used to compare the set of primary and secondary SHN selection criteria to find the level at which the criteria converged towards a final set of SHNs. Once the final criteria used to identify the SHN were selected for both primary and secondary analyses, any health PHN included in either the Preliminary Primary or Secondary PHN list was included as a final Significant Health Need for the HSA.

For this report, any indicator above the benchmark in at least 75% of the Communities of Concern was identified as poor performing. A PHN was selected as a Preliminary Secondary Significant Health need only if 50 percent of the associated indicators were identified as performing poorly. A PHN was identified as a Preliminary Primary Significant Health Needs only if it was mentioned by 70% or more of the sources as performing poorly.

Significant Health Need Prioritization

Once identified for the HSA, the final set of SHNs could be prioritized. To reflect the voice of the community, SHNs were prioritized using an analysis of the primary qualitative data, based on two approaches to quantifying the primary data: the percent of all primary data sources that referenced the SHN, and the average number of times the SHN was referenced across all data sources. These measures were developed for each SHN using NVIVO 10 Qualitative Analytical Software.

These SHN measures were next rescaled so that the SHN with the maximum value for each measure equaled 1, and all other SHNs had values appropriately proportional to the maximum value. The rescaled values were then summed to create a combined SHN prioritization index. Finally, SHNs were ranked in descending order so that the SHN with the highest prioritization index value was identified as the highest priority health need, the SHN with the second highest prioritization value was identified as the second highest priority health need, and so on.

Resource Identification Process

The following process was followed in identifying resources and cataloging them for inclusion in the final CHNA report:

1. A search was conducted to identify all resources that meet the federal definition of a resource within the hospital service area, as designated by a set of ZCTA/ZIP codes using the following stages:
 - a. Include all resources identified in the 2013 CHNA report.
 - b. Conduct internet searches for additional resources.
 - c. Use existing area resource guides and directories where available.
 - d. Review qualitative data from key informant interviews and focus groups for additional resources not identified elsewhere.
2. After compiling the initial list, verify that each organization or program still exists using the following approaches:
 - a. Internet searches.

b. Phone verification if needed.

Appendix C: Informed Consent

Purpose

You have been invited to participate in a community health needs assessment. This assessment helps to inform area hospitals about the needs of the communities they serve. Our Community Health Insights team will focus all questions on two basic topics 1) the health of the community, and 2) the aspects of the community which help or prevent the community from being healthy. The information gathered will be combined with that of other interviews and focus groups. Our team will summarize these findings and report these to local area hospital representatives of non-profit healthcare systems.

Procedures

The focus group discussion will attempt to capture your understanding and opinions about community health issues. Completion of the discussion will take approximately 90 minutes. Our team is requesting to record the discussion so that we can later transcribe the session. All identifying information will be removed from the interview transcript, and at the completion of the project both the tape and transcript will be destroyed.

Potential Risks or Benefits

Some of the interview questions may be emotionally charged; otherwise there are no other known risks to answering the questions presented. Each participant will receive a gift card valued at \$10.00. In addition, your participation helps to inform community benefit efforts for your local non-profit hospital.

Participants' Rights

Participation in this discussion is completely voluntary; you may choose not to participate and terminate your involvement at any time you wish. However, participants who do not complete the entire discussion will not receive the \$10.00 gift card.

Confidentiality

If you agree to participate, you will receive a copy of this consent form. The information you provide and anything you share with us will be kept in the strictest confidence. If a direct quote from your interview is used in the final report, a non-identifying coding system will be used.

How to Obtain Additional Information

If you have any questions or comments regarding this document, interview, or final report, please contact: Dale Ainsworth, Project Consultant at dale@communityhealthinsights.com or Heather Diaz, Project Consultant, at heather@communityhealthinsights.com

Participant Print and Sign

Date

Interviewer Print and Sign

Date

Appendix D: Key Informant and Focus Group Interview Guide

Key Informant Interview Guide

- 1) Please tell me about your current role and the organization you work for?
 - a) Probe for:
 - i) Public health (division or unit)
 - ii) Hospital health system
 - b) How would you define the community (ies) you serve?
 - i) Probe for:
 - (1) Specific geographic areas?
 - (2) Specific populations served?
(a) (Who? Where? Racial/ethnic make-up, physical environment (urban/ rural, large/small))
- 2) Describe the health of the community you serve.
 - a) What are the specific health issues the community struggles with the most?
 - b) Probe for:
 - i) What specific locations struggle with health issues the most?
 - ii) What specific groups in the community experience health issues the most?
 - c) Which would you say are the most important or urgent health issues to address?
- 3) What are the challenges to being healthy for the community?
 - a) Probe for:
 - i) Health care access
 - ii) Built environment
 - iii) Food access
 - iv) Social stressors
 - b) What is contributing to the challenges you described in question 3?
- 4) What resources exist in the community to help people live healthy lives?
 - a) Probe for:
 - i) Barriers to accessing these resources.
- 5) What would you say has been the impact of the Affordable Care Act [may also be known as [Covered California, Obamacare, Medi-Cal, universal healthcare] on the community you serve?
- 6) What is needed to improve the health of your community?
 - a) Probe for:
 - i) Policies
 - ii) Care coordination
 - iii) Access to care
 - iv) Environmental change
 - b) Of those items you listed in question 7 above, which would you say is the most significant improvement needed? Which is second most significant? Third? And so on?
- 7) What other people, groups or organizations would you recommend we speak to about the health of the community?
 - a) Probe for:
 - i) Exact names or people and organizations
 - ii) Special populations mentioned
- 8) Is there anything else you would like to share with our team about the health of your community?

Focus Group Interview Guide

- 1) Please tell me about the community that you live in?
 - i) Probe for:

- (1) Specific geographic areas?
 - (2) Specific populations that live there?
 - (a) *How would you describe the people that live there?*
 - (b) *How would you describe the physical layout of the land?*
- 2) Describe the health of the community that you live in?
 - a) What are the specific health issues your community struggles with the most?
 - b) Probe for:
 - i) What specific locations struggle with health issues the most?
 - ii) What specific groups in the community experience health issues the most?
 - c) Which would you say are the most important or urgent health issues to address in your community?
- 3) What are the challenges to being healthy in the community that you live in?
 - a) Probe for:
 - i) Health care access
 - ii) Built environment
 - iii) Food access
 - iv) Social stressors
 - b) What is contributing to the challenges you just described?
- 4) What resources exist in the community to help people live healthy lives?
 - a) Probe for:
 - i) Barriers to accessing these resources.
- 5) What would you say has been the impact of the Affordable Care Act [may also be known as [Covered California, Obamacare, Medi-Cal, universal healthcare] on you or your community?
- 6) What is needed to improve the health of the community you live in?
 - a) Probe for:
 - i) Policies
 - ii) Care coordination
 - iii) Access to care
 - iv) Environmental change
 - b) Of those items you listed above, which would you say is the most significant improvement needed for your community? Which is second most significant? Third? and so on?
- 7) What other people, groups or organizations would you recommend we speak to about the health of your community?
 - a) Probe for:
 - i) Exact names or people and organizations
 - ii) Special populations mentioned
- 8) Is there anything else you would like to share with our team about the health of your community?

Appendix E: Project Summary Sheet

Project Overview

Following state and federal mandates, nonprofit hospitals conduct community health needs assessments (CHNA) every three years. These assessments identify and prioritize the significant health needs of the communities they serve. Based on the results, nonprofit hospitals develop community health improvement or implementation plans to address particular, significant health needs.

Sutter Health East Bay Region affiliated hospitals, including Sutter Alta Bates Medical Center (three campuses) in Berkeley and Oakland, Sutter Delta Medical Center, Castro Valley, and Sutter Delta Medical Center, Antioch, have contracted with Community Health Insights (www.communityhealthinsights.com) to conduct the CHNAs. Community Health Insights is a Sacramento-based, research-oriented consulting firm dedicated to improving the health and well-being of communities across Northern California.

Project Objective

The objective of the 2016 CHNA is to identify and prioritize community health needs—defined as the basic provisions and conditions needed for the improvement and/or maintenance of health—within each hospital’s service area. In particular, health needs within neighborhoods and/or populations in the service area experiencing health disparities will be highlighted.

Project Deliverables

The final deliverable of this project is a written report detailing the CHNA of each individual hospital service area. The report will be posted on each affiliated hospital’s website. Comments by community members on the content of the CHNA are welcomed by each affiliated hospital.

Project Timeline

The CHNA will start in May 2015 and be completed by March 2016.

Project Contact

If you are interested in commenting on or participating in the CHNA in any way, please direct all inquiries to:

Dale Ainsworth, PhD
530-417-1770 (cell)

Appendix F: List of Key Informants

Organization	Number of participants	Area of Expertise	Populations Served	Date of Interview
Contra Costa Health Services	1	Public health; behavioral health; oral health; family, maternal, and child health; healthcare; environmental health	Residents of Contra Costa County	6/24/15
La Clinica Pittsburg	3	Community healthcare; dental health; community health education; behavioral health; early childhood mental health	Low income residents seeking health and related services	7/8/15
Lincoln Child Services	1	Mental and behavioral health; social support; family support; community health and wellness education; early childhood mental health	Youth and families of of east Contra Costa County	7/17/15
Contra Costa Public Health	1	Public health; behavioral health; oral health; family, maternal, and child health; healthcare; environmental health	Residents of Contra Costa County	7/30/15
Sutter Delta Community Clinic	4	Community healthcare; urgent care	Low income residents seeking health and related services	8/4/15
Supervisor Mary N. Piepho District Office	2	Community government; policy	All residents of Contra Costa County District III	8/5/15
Lincoln Child Services	2	Mental and behavioral health; social support; family support; community health and wellness education; early childhood mental health	Youth and families of Contra Costa County	8/6/15
La Clinica	2	Community healthcare; dental health; community health education; behavioral health; optometry care; family planning	Residents of east Contra Costa County	8/13/15

Appendix G: List of Focus Groups

Location	Date	Number of Participants	Demographic Information
Sutter Delta Community Clinic	7/28/15	3	Low income community residents seeking healthcare
Pittsburg Senior Center	2/25/16	20	Senior adults, homeless adults residing in Pittsburg area of Contra Costa County
Loaves and Fishes of Antioch	2/26/16	15	Homeless populations residing in East Contra Costa County

Appendix H: Resources Potentially Available to Meet Significant Health Needs

Organization Information					Health Need Potentially Met by Organization (X)									
Name	Zip Code	Key Words	Website	Specialty	1. Access to mental/behavioral/substance abuse services	2. Access to quality primary care health services	3. Access to affordable, healthy food	4. Safe and violent free environment	5. Access to dental care and preventive services	6. Pollution-free living environment	7. Access to basic needs, such as food, housing, jobs	8. Access to transportation and mobility	9. Access to specialty care	10. Health Education and Health Literacy
Anka Behavioral Health, Casa Verde	94509	Veteran's Housing	http://www.ankabhi.org/whereweserve.html	Veteran's Housing				x			x			
Anka Behavioral Health, Don Brown Shelter MSC	94509	Residential Treatment	http://www.ankabhi.org/whereweserve.html	Residential Treatment	x	x					x			
Antioch Family Health Clinic operated by Brighter Beginnings	94509	Family health clinic	http://www.brighter-beginnings.org/clinics/family-health-clinic-antioch	Brighter Beginnings' Family Health Clinics provide affordable family healthcare to individuals and families who need it most. We operate two Family Health Clinics in Contra Costa County, and provide basic primary health services to		x								

Organization Information					Health Need Potentially Met by Organization (X)									
Name	Zip Code	Key Words	Website	Specialty	1. Access to mental/behavioral/substance abuse services	2. Access to quality primary care health services	3. Access to affordable, healthy food	4. Safe and violent free environment	5. Access to dental care and preventive services	6. Pollution-free living environment	7. Access to basic needs, such as food, housing, jobs	8. Access to transportation and mobility	9. Access to specialty care	10. Health Education and Health Literacy
				patients regardless of their insurance and immigration status.										
Antioch First 5 Center Operated by Brighter Beginnings	94509	First 5; early childhood development	http://www.brighter-beginnings.org/what-we-do/early-childhood-development/first-five-center	Provides free programs and classes to expectant parents and families with children ages 0 to 5	x						x			x
Antioch Health Center	94509	Health center	http://cchealth.org/centers/antioch.php	Primary care, short-notice/same-day appointments, Family Medicine, Pediatrics, Adult Medicine, Prenatal Care, Behavioral Health and Group Classes	x	x								x

Organization Information					Health Need Potentially Met by Organization (X)									
Name	Zip Code	Key Words	Website	Specialty	1. Access to mental/behavioral/substance abuse services	2. Access to quality primary care health services	3. Access to affordable, healthy food	4. Safe and violent free environment	5. Access to dental care and preventive services	6. Pollution-free living environment	7. Access to basic needs, such as food, housing, jobs	8. Access to transportation and mobility	9. Access to specialty care	10. Health Education and Health Literacy
BAART-Antioch	94509	Behavioral health services; substance abuse	http://www.baartprograms.com/outpatient.html	Provides quality, individualized, and comprehensive substance abuse treatment	x									x
Bay Point Family Health Center	94565	Family health center	http://cchealth.org/centers/baypoint.php	Provides Family care, women's health services, prenatal care and other services		x			x					
Bedford Center for Adult Day Health Care-Rehabilitation Services of Northern California	94509	Adult Day Health Care	http://dev-rsnc.pantheon.io/programs/social-day-care-adult-day-health-care/	Provides the services needed for frail elderly and disabled adults to remain independent and retain their dignity while engaging in an active social life		x		x			x			

Organization Information					Health Need Potentially Met by Organization (X)									
Name	Zip Code	Key Words	Website	Specialty	1. Access to mental/behavioral/substance abuse services	2. Access to quality primary care health services	3. Access to affordable, healthy food	4. Safe and violent free environment	5. Access to dental care and preventive services	6. Pollution-free living environment	7. Access to basic needs, such as food, housing, jobs	8. Access to transportation and mobility	9. Access to specialty care	10. Health Education and Health Literacy
Birth Right	94513	Family planning	http://birthright.org/en/our-services	Provides love and support to women facing unplanned pregnancies							x			x
Brentwood Farmworker Services CA Human Development	94513	Job assistance	http://www.nedhelppayingbills.com/html/california_human_development_p.html	Helps clients secure training, education, and access nearby job opportunities. Case managers work on improving social conditions and help people in position to live independently							x			
Brentwood Health Center	94513	Health center	http://cchealth.org/centers/brentwood.php	Provides family and adult medicine, pediatrics, Immunizations, women's health services, prenatal care and other services		x								x
Brentwood Senior Center	94513	Senior center	http://www.brentwoodca.gov/gov/parks/seni	Provides classes, computers, painting classes,				x			x			

Organization Information					Health Need Potentially Met by Organization (X)									
Name	Zip Code	Key Words	Website	Specialty	1. Access to mental/behavioral/substance abuse services	2. Access to quality primary care health services	3. Access to affordable, healthy food	4. Safe and violent free environment	5. Access to dental care and preventive services	6. Pollution-free living environment	7. Access to basic needs, such as food, housing, jobs	8. Access to transportation and mobility	9. Access to specialty care	10. Health Education and Health Literacy
			ors/senior_citizens_club/default.asp	legal services, blood pressure checks, day trips, will preparation, legal services, AARP tax service and driver assistance										
California Children's Services, O'Hara Park Medical Therapy Unit	94561	Medical therapy program	http://cchealth.org/fmch/ccs.php	Provides medically necessary physical, occupational, and medical therapy conference services to children who are medically eligible for the program									x	
California Children's Services, Turner Medical Therapy Unit	94509	Medical therapy program	http://cchealth.org/fmch/ccs.php	Provides medically necessary physical, occupational, and medical therapy conference services to children who are medically eligible for the program									x	

Organization Information					Health Need Potentially Met by Organization (X)									
Name	Zip Code	Key Words	Website	Specialty	1. Access to mental/behavioral/substance abuse services	2. Access to quality primary care health services	3. Access to affordable, healthy food	4. Safe and violent free environment	5. Access to dental care and preventive services	6. Pollution-free living environment	7. Access to basic needs, such as food, housing, jobs	8. Access to transportation and mobility	9. Access to specialty care	10. Health Education and Health Literacy
California Community Transitions-Rehabilitation Services of Northern California	94509	Transitional care	http://dev-rsnc.pantheon.io/programs/california-community-transitions-cct/	Helps adults who have been living in a skilled nursing facility for longer than 90 days and are covered by Medi-Cal can transition back to their home or to community living with the help of a Transition Coordinator							x	x		
CC Café - Antioch	94509	Senior center	http://cccc.bowmansystems.com/?option=com_cpx&task=resource&id=1593127	Provides a hot meal for age 60+ for a suggested donation. Reservations must be made 24 hours in advance. Program can include music and other activities.							x			

Organization Information					Health Need Potentially Met by Organization (X)									
Name	Zip Code	Key Words	Website	Specialty	1. Access to mental/behavioral/substance abuse services	2. Access to quality primary care health services	3. Access to affordable, healthy food	4. Safe and violent free environment	5. Access to dental care and preventive services	6. Pollution-free living environment	7. Access to basic needs, such as food, housing, jobs	8. Access to transportation and mobility	9. Access to specialty care	10. Health Education and Health Literacy
CC Café - Bay Point	94565	Senior center	http://mowsos.org/services/cc-cafes/	Provides a hot meal for age 60+ for a suggested donation. Reservations must be made 24 hours in advance. Program can include music and other activities.							x			
CC Café - Brentwood	94513	Senior center	http://www.brentwoodca.gov/gov/parks/seniors/	Provides a hot meal for age 60+ for a suggested donation. Reservations must be made 24 hours in advance. Program can include music and other activities.							x			
CC Café - Pittsburg	94565	Senior center	http://mowsos.org/services/cc-cafes/	Provides a hot meal for age 60+ for a suggested donation. Reservations must be made 24 hours in advance. Program can							x			

Organization Information					Health Need Potentially Met by Organization (X)									
Name	Zip Code	Key Words	Website	Specialty	1. Access to mental/behavioral/substance abuse services	2. Access to quality primary care health services	3. Access to affordable, healthy food	4. Safe and violent free environment	5. Access to dental care and preventive services	6. Pollution-free living environment	7. Access to basic needs, such as food, housing, jobs	8. Access to transportation and mobility	9. Access to specialty care	10. Health Education and Health Literacy
				include music and other activities.										
Community Health for Asian Americans	94509	Mental health; behavioral health; youth	http://www.chaaaweb.org/locations/east-contra-costa-antioch	The CHAA office in Antioch offers mental health services to underserved children ages 0-18 and their families	x									
Community Outreach Center/ Golden Hills Community Church	94509	Community center; information and resources	http://www.goldenhills.org/connect/community-outreach-center	Provides many services including free meals every week night, help applying for jobs or finding housing, and learning life skills							x			
Community Violence Solutions	94509	Violence prevention; crisis services and treatment	http://www.cvsolutions.org/support-services/	Dedicated to working in partnership with the community to end sexual assault and family violence through prevention, crisis services, and treatment	x			x						x

Organization Information					Health Need Potentially Met by Organization (X)									
Name	Zip Code	Key Words	Website	Specialty	1. Access to mental/behavioral/substance abuse services	2. Access to quality primary care health services	3. Access to affordable, healthy food	4. Safe and violent free environment	5. Access to dental care and preventive services	6. Pollution-free living environment	7. Access to basic needs, such as food, housing, jobs	8. Access to transportation and mobility	9. Access to specialty care	10. Health Education and Health Literacy
Concord Health Center	94519	Health center	http://cchealth.org/centers/concord.php	Provides routine and preventive health care service focusing on the whole person. Special family practice clinics have been established for some non-English speaking patients: Asian, Lao, Afghani, Vietnamese, Russian		x								x
Concord Public Health Clinic	94520	Public health clinic	http://cchealth.org/clinics/concord.php	Provides immunizations and WIC		x	x				x			x
Contra Costa Behavioral Health Services - Mental Health Administration	94553	Mental health; behavioral health	http://cchealth.org/mentalhealth/	The Mental Health Division provides an array of opportunities for partners to work together in the spirit of hope toward recovery. This includes programs and services for	x									x

Organization Information					Health Need Potentially Met by Organization (X)									
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				children, adolescents, young adults, adults, and older adults of Contra Costa Count										
Contra Costa Crisis Center	94598	Mental health; behavioral health; homeless services	http://www.crisis-center.org/programs/	We provide 24-hour crisis lines, crisis-response training, face-to-face grief counseling program, homeless services, and a 211 information and referral program to keep people alive and safe.	x			x			x			

Organization Information					Health Need Potentially Met by Organization (X)									
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Contra Costa Health Plan	94553	Health plan; health services	http://cchealth.org/healthplan/#simple6	Contra Costa Health Plan (CCHP) has been serving the health needs for people in the County for 40 years	x	x			x				x	x
Contra Costa Public Health	94553	Public health	http://cchealth.org/public-health/	Provides clinic services, communicable disease services, community wellness & prevention programs, family, Maternal & Child Health services, HIV/AIDS & STDs prevention, health emergencies services, public health nursing		x	x	x		x	x			x

Organization Information					Health Need Potentially Met by Organization (X)									
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Contra Costa Regional Medical Center	94533	Residential treatment	http://cchealth.org/medicalcenter/	Contra Costa Regional Medical Center (CCRMC) provides a wide array of services to meet the health needs of Contra Costa County residents	x								x	x
COPE - Counseling Options and Parenting Education	94520	Parenting education; counseling; violence prevention	http://copefamilysupport.org/about-us-2/	C.O.P.E. Family Support Center, Inc. is a non-profit organization providing family support services and educational opportunities for ALL FAMILIES in Contra Costa County	x			x						x
Delta Community Services Inc.	94513	Community services; information and resources	http://www.deltacommunityservices.com/	A non-profit organization providing human services, outreach, information and referral services to all citizens of Brentwood, Bryon, Discovery Bay, Knightsen,							x			x

Organization Information					Health Need Potentially Met by Organization (X)									
Name	Zip Code	Key Words	Website	Specialty	1. Access to mental/behavioral/substance abuse services	2. Access to quality primary care health services	3. Access to affordable, healthy food	4. Safe and violent free environment	5. Access to dental care and preventive services	6. Pollution-free living environment	7. Access to basic needs, such as food, housing, jobs	8. Access to transportation and mobility	9. Access to specialty care	10. Health Education and Health Literacy
				Bethel Island, and Oakley										
Delta First 5 Center	94513	First 5; early childhood development	http://www.first5coco.org/	Provides free programs and classes to expectant parents and families with children ages 0 to 5	x						x			x
Diablo Behavioral Health Care	94513	Behavioral health	http://www.behaviorquest.com/	Provides behavioral health care services	x									
East Contra Costa County Meals - Meals on Wheels	94553	Meals on Wheels; food assistance; seniors	http://www.mealsonwheelsofcontracosta.org/index.html	Serves homebound senior citizens who have one or more chronic health conditions that prevent their preparing nutritious daily meals for themselves			x				x			

Organization Information					Health Need Potentially Met by Organization (X)									
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East County Wollam House	94565	Substance abuse services; treatment facility	http://treatment-facilities.healthgrove.com/l/12442/Bi-Bett-Corp	Bi Bett Corp (East County Wollam House/Perinatal) offers substance abuse treatment in Pittsburg, California and includes special programs focused for seniors / older adults and criminal justice clients	x									
First Baptist Church	94565	Church	http://www.fb.pittsburg.org/	Provides basic needs such as food, clothing, housing, pre-school							x			
Food Bank of Contra Costa and Solano	94520	Food bank; food assistance	https://www.foodbankccs.org/about/what-we-do.html	The Food Bank works to reduce food waste, feed hungry people and raise public awareness of issues related to food and hunger.							x			

Organization Information					Health Need Potentially Met by Organization (X)									
Name	Zip Code	Key Words	Website	Specialty	1. Access to mental/behavioral/substance abuse services	2. Access to quality primary care health services	3. Access to affordable, healthy food	4. Safe and violent free environment	5. Access to dental care and preventive services	6. Pollution-free living environment	7. Access to basic needs, such as food, housing, jobs	8. Access to transportation and mobility	9. Access to specialty care	10. Health Education and Health Literacy
Healthcare for the Homeless Medical Mobile Van	94553	Healthcare; homeless	http://cchealth.org/healthcare-for-homeless/	provides accessible, culturally sensitive, non-traditional clinics in Contra Costa County communities to assist the homeless with access to the traditional primary care system	x	x								x
John Muir Health, Brentwood	94513	Medical center	https://www.johnmuirhealth.com/locations.html	Provides urgent care services, outpatient care services and health imaging		x							x	x
Kaiser Antioch Medical Center	94531	Medical center	https://healthy.kaiserpermanente.org/health/care/poc/!ut/p/a1/dY_BT0QwElafZQ8cIxm0EvQGmDUtoq7rKvZiCgulESnp1iW8vUD0sInObTLf_01-	Provides urgent care, primary and specialty care, family and adult medicine and more.	x	x					x		x	

Organization Information					Health Need Potentially Met by Organization (X)									
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			4JAD78RJSWGV7kQ77zx437DdQxx7EWLMLpBm0f3TJWOI6AEDLLtdLOibb7lkk8B7YZu16moNea_L-dJY21876GAtStUqO64PyISl1WZOE Lg6QO4hktCf4agrSDhpTFVXpjLuI5nss-G4KIZhcKXWsq3cUn9O8T8ijT5ayM9JeAV-Xifckxuk-2STBFs6_ccfAAn dLsDtY4Blw_Q5f bKCaL_C_wzEUL_wYuRtKe7ekdlTFp9A89WqYE!/dI5/d5/L2dBISEvZOF BIS9nQSEh/											
Kaiser Delta Fair Medical Office	94509	Medical office	https://healthy.kaiserpermanente.org/html/kaiser/index.shtml	Provides urgent care, primary and specialty care, family and adult medicine and more.	x	x							x	
La Clinica Pittsburg Medical	94565	Medical clinic; primary care; urgent care; family planning; behavioral	http://www.laclinica.org/PittsburgMedical/	Offers comprehensive primary care services and referrals to specialty care as	x	x								x

Organization Information					Health Need Potentially Met by Organization (X)									
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		health; referrals		needed; hosts a senior day clinic once a month offering educational information, screenings and other services for seniors										
La Clinica Dental	94565	Dental clinic; oral health; prevention and education	http://www.laclinica.org/PittsburgDental/	Provides a full scope of primary oral health care including on-site specialists in pediatrics, prosthodontic, periodontist, and oral surgery; strong emphasis on prevention and education.					x					x
La Clinica Oakley	94561	Medical clinic; primary care; urgent care; family planning; referrals	http://www.laclinica.org/Oakley/	Offers comprehensive primary care services and referrals to specialty care as needed		x								x

Organization Information					Health Need Potentially Met by Organization (X)									
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Loaves and Fishes of Contra Costa	94553	Food assistance	http://www.loavesfishescc.org/who-we-are.html	Provides community based food programs and partner services that focus on basic needs							x			
Love-A-Child Missions Homeless Recovery Shelter	94565	Homeless shelter; recovery programs	http://www.loveachildmissions.org/aboutus.html	Serves needy women and children of Contra Costa County by providing emergency shelter, food, clothing, and offering hope through substance recovery programs, job training, educational support, and many other programs	x	x		x			x			
Martinez Health Center	94553	Health center	http://cchealth.org/centers/martinez.php	Provides family and adult medicine, women's health	x	x							x	x

Organization Information					Health Need Potentially Met by Organization (X)									
Name	Zip Code	Key Words	Website	Specialty	1. Access to mental/behavioral/substance abuse services	2. Access to quality primary care health services	3. Access to affordable, healthy food	4. Safe and violent free environment	5. Access to dental care and preventive services	6. Pollution-free living environment	7. Access to basic needs, such as food, housing, jobs	8. Access to transportation and mobility	9. Access to specialty care	10. Health Education and Health Literacy
				services, behavioral health services, prenatal care and more										
Nick Rodriguez Community Center	94509	Community center; recreation facility	http://www.ci.antioch.ca.us/Recreation/facility-rentals.asp	The City of Antioch's Recreation Department offers a wide range of exceptional facilities available to rent for weddings, receptions, reunions, meetings, athletic events, parties, and other social or corporate activities.				x						
Pittsburg East Bay Works Career Center	94509	Career center	https://www.eastbayworks.com/alamedacounty/gsipub/index.asp?docid=492	A unique joint venture of public entities, non-profit agencies, and private organizations in Alameda and Contra Costa Counties helping							x			

Organization Information					Health Need Potentially Met by Organization (X)									
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				businesses and job seekers meet their employment needs										
Pittsburg Health Center	94565	Health center	http://cchealth.org/centers/pittsburg.php	Provides family practice, HIV specialty services, immunizations, pediatrics, STD clinic, women's health and more		x							x	x
Pittsburg Senior Center	94565	Senior center	http://www.ci.pittsburg.ca.us/index.aspx?page=738	Provides classes, computers, painting classes, legal services, blood pressure checks, day trips, will preparation, legal services, AARP tax service and driver assistance							x	x		x
Planned Parenthood - Antioch	94509	family planning; women's health; men's health	https://www.plannedparenthood.org/health-center/california/antioch/9450	family planning; women's health; men's health		x								x

Organization Information					Health Need Potentially Met by Organization (X)									
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			9/antioch-health-center-2573-90200?utm_campaign=antioch-health-center&utm_medium=organic&utm_source=local-listing											
Planned Parenthood-Pittsburg	94565	family planning; women's health; men's health	https://www.plannedparenthood.org/health-center/california/pittsburg/94565/pittsburg-health-center-3074-90200?utm_campaign=pittsburg-health-center&utm_medium=organic&utm_source=local-listing\	family planning; women's health; men's health		x								x
RAINBOW Community Center	94520	Community center	http://rainbowcc.org/	RCC offers many programs and services that benefit the physical and mental health of	x	x		x			x			x

Organization Information					Health Need Potentially Met by Organization (X)									
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				the LGBTQ community										
REACH Project	94509	Substance abuse prevention; treatment	http://www.reachprojectinc.com/	Services are provided at the Antioch, Brentwood and Oakley facilities and are geared toward early and secondary prevention, drug and alcohol treatment and juvenile diversion programs for the Antioch, Brentwood and Oakley police departments										
REACH Project	94513	Substance abuse prevention; treatment	http://www.reachprojectinc.com/	Services are provided at the Antioch, Brentwood and Oakley facilities and are geared toward early and secondary prevention, drug and alcohol treatment and										

Organization Information					Health Need Potentially Met by Organization (X)									
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				juvenile diversion programs for the Antioch, Brentwood and Oakley police departments										
REACH Project	94561	Substance abuse prevention; treatment	http://www.reachprojectinc.com/	Services are provided at the Antioch, Brentwood and Oakley facilities and are geared toward early and secondary prevention, drug and alcohol treatment and juvenile diversion programs for the Antioch, Brentwood and Oakley police departments										
RotaCare Pittsburg Clinic	94565	Health clinic	http://www.rotacarebayarea.org/clinics/pittsburg.html	Provides services for adults 18 years and older who have no health insurance		x								

Organization Information					Health Need Potentially Met by Organization (X)									
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Seneca Family of Agencies-Olivera	94520	Nonpublic School, wraparound	http://senecafoa.org/nps	Non-public school; offers family centered, individualized, and culturally relevant and strength based support for families with children affected by social, emotional or behavioral issues	x			x			x			
Seneca Family of Agencies-Riverview Collaborative	94565	Public school partnership programs	http://senecafoa.org/publicschools	Provides access to educational services that accelerate academic progress and develop the skills needed to successfully transition back into a public school setting	x			x			x			

Organization Information					Health Need Potentially Met by Organization (X)									
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Shepherd's Gate	94513	Faith-based organization; homeless and domestic violence services	https://www.shepherdsgate.org/	Provides long-term, comprehensive care to some of California's most vulnerable people: women and children experiencing homelessness due to poverty, addiction, domestic violence, and other threats				x			x			
Sutter Delta Medical Center	94509	Medical center	http://www.sutterdelta.org/patient/index.html	Sutter Delta Medical Center is a nationally ranked acute care facility proudly serving the communities of Antioch, Brentwood, Discovery Bay, Knightsen, Oakley and Pittsburg		x							x	x

Organization Information					Health Need Potentially Met by Organization (X)									
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Sutter Delta Medical Center-Community Clinic	94509	Community Clinic; walk-in	http://www.sutterdelta.org/community-clinic/	Provides medical services on a walk-in basis		x								
Sutter Urgent Care- Antioch	94531	Urgent care	http://www.sutterbmf.org/urgent-care/antioch/	Sutter Urgent Care offers a faster, convenient and economical alternative to going to the emergency room for non-life-threatening illnesses and injuries.									x	
Ujima East Outpatient Treatment Program	94565	Outpatient treatment program	http://www.ujimafamily.org/programs/ujima-east-outpatient-treatment-program/	Ujima East Outpatient Treatment Program offers evidence based specialized services to promote recovery from drug and alcohol abuse for	x									

Organization Information					Health Need Potentially Met by Organization (X)									
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				pregnant, postpartum and parenting women with young children										
Veterans Outpatient Clinic	94553	Veteran outpatient clinic	http://www.northerncalifornia.va.gov/visitors/mtzopc.asp	The Martinez Outpatient Clinic offers a full range of medical, surgical, mental health, and diagnostic outpatient services, including nuclear medicine, ultrasound, CT and MRI	x	x							x	
Pittsburg WIC	94565	WIC; nutrition education	http://cchealth.org/wic/welcome.php	The Women, Infants & Children (WIC) nutrition program helps pregnant women, new mothers and young children to eat well, learn about nutrition and stay healthy. WIC provides services to pregnant and postpartum			x							x

Organization Information					Health Need Potentially Met by Organization (X)									
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				women, as well as children under 5 years old										
Brentwood WIC	94513	WIC; nutrition education	http://cchealth.org/wic/welcome.php	The Women, Infants & Children (WIC) nutrition program helps pregnant women, new mothers and young children to eat well, learn about nutrition and stay healthy. WIC provides services to pregnant and postpartum women, as well as children under 5 years old			x							x

Appendix I: Impact of Actions Taken Since Previously Conducted CHNA



Sutter Health Sutter Delta Medical Center

Community Health Needs Assessment Impact Report

Responding to the 2013 Community Health Needs Assessment

Sutter Delta Medical Center
3901 Lone Tree Way
Antioch, CA 94509
www.sutterdelta.org

This document serves as a report of the impact from community benefit programs, initiatives and activities put in place to address the needs identified by the 2013 – 2015 Community Benefit Plan for Sutter Delta Medical Center.

2013 – 2015 Implementation Strategy

On December 12, 2013, Sutter East Bay Hospital's Board of Directors passed resolution #13-12004 approving this Community Benefit IRS Implementation Strategy designed to respond to community health needs, defined as health drivers and health outcomes. Different than past community health needs assessments, the 2013 assessment focused on identifying specific vulnerable ZIP codes as communities most in need of support. In addition to the many community benefit programs and services provided throughout Sutter Health East Bay Region, this 2013-2015 implementation strategy is focused on responding to specific health needs of specific zip codes, including, but not limited to, those most vulnerable ZIP codes of Pittsburgh and Antioch.

All Sutter Health East Bay Region Community Benefit Initiatives align with the following pillars:

- 1) Connect patients to the right care, at the right place and time through access to primary care and mental health services
- 2) Invest in vulnerable areas to ensure capacity of care meets demands of vulnerable populations
- 3) Collaborate to influence behavior to utilize preventive care, chronic disease management and community services
- 4) Build community capacity and improve health

This implementation strategy describes how Sutter Delta Medical Center plans to address significant health needs identified in its 2013 Community Health Needs Assessment and consistent with its charitable mission. The strategy describes:

- Actions the hospital intends to take, including programs and resources it plans to commit;
- Anticipated impacts of these actions and a plan to evaluate impact; and
- Any planned collaboration between the hospital and other organizations.

Lack of Access to Primary Care Health Services

Name of Program, Initiative or Activity

Emergency Department Utilization and Care Transitions with Federally Qualified Health Centers – La Clinica

Description

The purpose of this initiative is to establish a stronger working relationship with La Clinica that will 1) improve care transitions for targeted patients between Sutter Delta Medical Center and La Clinica; 2) decrease non-urgent (Level 1 and Level 2) emergency department visits; 3) decrease readmissions of La Clinica patients to Delta; and 4) provide access for uninsured and underinsured patients.

2013 - 2015 Impact

The Care Transition Registered Nurse program was launched in March of 2015. The Care Transitions Nurse (CTRN) coordinates care for established La Clinica patients, Contra Costa Health Plan Members regardless of assignment, and patients with MediCal with no established medical home (including those with presumptive MediCal), when they are discharged from the emergency department and inpatients settings. Uninsured patients without a medical home were also linked to La Clinica as appropriate. Twelve appointment slots are made available each week for patients referred from Sutter Delta. From March to December 2015, 909 patients were contacted by the CTRN and appointments were made at La Clinica for 853. 88% of those patients kept their follow up appointments.

Mechanism(s) Used to Measure Impact

Tracking system is in place that captures all inpatient and ED patients referred by Sutter Delta to La Clinica as well as the number of appointments made and kept. All patient encounters are noted in La Clinica's electronic health record. Community Health Center Network is also tracking patients in order to complete an annual evaluation.

Name of Program, Initiative or Activity

Expansion of Sutter Delta Community Clinic

Description

Sutter Delta Community Clinic, a Community Benefit program of Sutter Delta Medical Center, provides drop-in care for uninsured East County residents six evenings each week. In 2012, more than 4,500 patients received care through the clinic. Currently, the Community Clinic is open 24 evening hours each week. The goal is to expand those hours from four hours daily to eight hours, six days each week.

2013 - 2015 Impact

The Delta Community Clinic allows uninsured patients, who may otherwise have limited access to health care due to documentation status, access to urgent care. Instead of going to the ED for urgent care, these patients can get care at the community clinic on a sliding fee scale. A total of 11,927 patients were seen between 2013 and 2015. Each year the number of patients seen has decreased, due to the Affordable Care Act and increased eligibility for many of our vulnerable community members.

Mechanism(s) Used to Measure Impact	Patients sign in when they arrive and their care is charted in the Electronic Health Record.
Name of Program, Initiative or Activity	Healthy Heart Program
Description	The Healthy Heart Program (HHP) is a free Nurse Practitioner (NP)-led multifactorial outpatient risk reduction program (education, lifestyle change and surveillance) to decrease readmissions. Inpatients with CVD, COPD and pneumonia are identified via computer and visited by the NP. A program brochure is provided and a STOPLIGHT handout about self-monitoring and managing symptoms is reviewed. Patients schedule one follow-up session which includes: focused health assessment and physical examination; weight and edema measurement; medication reconciliation; discharge physician appointments; education on nutrition, symptom management and self-assessment geared toward the patient's literacy level; discussion about behavior changes; and stress management. Written materials are provided.
2013 - 2015 Impact	Fifty patients with Congestive Heart Failure, Myocardial Infarction, CVD, COPD and pneumonia, multiple co-morbidities, low socioeconomic status and low healthy literacy, attended at least one session over a 14 month period. Only 3 patients were readmitted within 30 days of hospital discharge which is a 6% readmission rate. Overall hospital readmission rate for CVD during the same time period was 20.1%
Mechanism(s) Used to Measure Impact	Patients sign in for each encounter with a Nurse Practitioner. All education provided and any monitoring of weight and blood pressure are documented in the Electronic Health Record. The NP also reviews lab results from the most recent visit. Readmission tools are in place and readmission audits are completed to determine readmission rates.
Name of Program, Initiative or Activity	Diabetes Education Services
Description	Sutter Delta Medical Center in collaboration with the Diabetes Center of Alta Bates Summit Medical Center will provide a recurring series of four classes a month serving approximately 100-200 Sutter Delta patients and Bay Point and Pittsburg residents. The education will include: 1) understanding the diabetes disease process and treatment options; 2) incorporating nutritional management and physical activity into their lifestyles; 3) using medications safely and for maximum therapeutic effectiveness; 4) monitoring blood glucose and other parameters and interpreting and using the results for self-management decision making; 5) preventing, detecting, and treating acute and chronic complications; and 6) developing personal strategies that address psychosocial issues and concerns and promote health and behavior change.

2013 - 2015 Impact	<p>Four, 2-hour classes were offered monthly at Sutter Delta in 2014 and 2015 with a total of 408 patient visits.</p> <p>90% of participants answered “very good” to questions regarding overall satisfaction and usefulness of class information.</p> <p>95% of participants answered “very confident” or “confident” to the assessment of their ability to manage their diabetes following the class series.</p> <p>80% of participants succeeded in reaching their self-care behavior or action plan goal by the fourth class.</p> <p>We studied a subset of these patients and found that they have 22% fewer ER visits for diabetes in the year after receiving diabetes education than in the year prior to attending the classes.</p>
Mechanism(s) Used to Measure Impact	Tracking mechanisms include excel spreadsheet and emergency department use via EPIC records, # of patient encounters documented via sign-in sheets, patient action plans, and program evaluations.
Name of Program, Initiative or Activity	Asthma Resource Center (ARC)
Description	Reduce ED utilization and admissions of patients with asthma presenting at the Sutter Delta Emergency Department who may be more appropriately cared for in another setting, by developing an Asthma Resource Center modeled after the ABSMC Alta Bates Campus. The Asthma Resource Center (ARC) provides education, tools for asthma management, and medications, as appropriate, when ordered by a physician with a focus on uninsured and underinsured individuals.
Anticipated Impact and Plan to Evaluate	Support individuals with asthma to improve the management of their disease and to avoid unnecessary emergency department visits or hospitalizations.
2013 - 2015 Impact	The ARC opened in October, 2014 and served 149 people in 2014 and 2015.
Mechanism(s) Used to Measure Impact	Tracking mechanisms include number of patients contacted and number of patients scheduled for in-person education, pre and post Asthma Control Test (ACT), and clinic follow up.
Name of Program, Initiative or Activity	Save a Life Sister

Description	Save a Life Sister provides breast cancer screening and diagnostic services for all adult residents of East Contra Costa County, who, due to low income and/or lack of health coverage do not have access to these services. If cancer is detected, a nurse navigator links women to treatment services. Education and support services are offered as well.
2013 - 2015 Impact	Since program inception, 144 women received diagnoses requiring follow up, and required 220 procedures. These were provided free of charge.
Mechanism(s) Used to Measure Impact	SALS utilize the same screening model of Every Woman Counts (EWC), a state and federal sponsored program, to ensure quality screening. Every individual is monitored annually or as needed via Electronic Health Record and with direct telephone contact.
Name of Program, Initiative or Activity	Access to Homeless Shelter in East Contra Costa County
Description	Sutter Delta will reconnect and strengthen relationships with the Philip Dorn Center Respite Care Program and explore developing an Interim Care Program in East Contra Costa County in collaboration with Contra Costa County, John Muir, and Kaiser.
2013 - 2015 Impact	Sutter Delta reconnected and strengthened its relationship with the Phillip Dorn Center Respite Care Program in December of 2015. Three regular shelter beds were secured for patients who were discharged from Delta. These patients are able to stay at the shelter for up to 120 days and are provided health care and wraparound services on site. Funds also provided transportation for these patients from Delta to the Concord or Brookside shelters.
Mechanism(s) Used to Measure Impact	The Contra Costa Homeless Agency is providing reports on a monthly basis, and daily reports related to bed access.