MORONGO BASIN COMMUNITY HEALTH NEEDS ASSESSMENT

July 2017

USC Price

Sol Price School of Public Policy

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EXECUTIVE SUMMARY

The Sol Price Center for Social Innovation at the University of Southern California collaborated with the Morongo Basin Healthcare District to produce a Community Health Needs Assessment of the Morongo Basin. Using data from a diverse array of sources, as well as key informant interviews to provide additional background and context, the following Community Health Needs Assessment provides an analysis of current health outcomes among Morongo Basin residents, as well as insight into the socioeconomic and environmental factors that shape health in the region.

While the Morongo Basin provides residents with relatively high environmental quality, a solid K-12 school system, and affordable housing, many residents experience high levels of poverty, poor physical and mental health, and lack access to healthy food and transportation.

Key findings from this report include:

- The health needs in the Morongo Basin are significant and are connected to age of the population and the high rates of poverty in the region. Morongo Basin residents are more likely to experience poor mental health, depression, poor physical health, and arthritis than residents across the county and state. For example, rates of depression are 4.5 percentage points higher and rates of self-reported poor physical health are over 2.7 percentage points higher than in the rest of San Bernardino County.
- While residents are drawn to the area for its affordability and the slow pace of life, many end up extremely isolated due to the low population density, the harsh desert climate, and poor transportation options. This isolation creates multiple barriers to healthcare access for residents.
- Morongo Basin residents experience a deep lack of healthcare resources, particularly mental health support services and facilities. Additionally, residents lack access to healthy food options, with some isolated residents relying on food delivery systems.
- Morongo Basin residents lack economic opportunity, which further threatens their physical and mental health. One fifth of Morongo Basin residents live below the federal poverty line and unemployment in Morongo Basin is over 15%.
- Residents expressed a desire for more social and recreational assets, which would provide much needed opportunities for physical activities and social networking.

Many potential options exist for Morongo Basin leaders to intervene to improve health outcomes. This report suggests that, in order to effectively improve resident health, Morongo Basin leaders must confront the social and environmental factors that interrelate to create a socially isolated and economically deprived context.

INTRODUCTION

Individuals face multiple, interrelated factors that influence their health outcomes. Existing studies have found that neighborhood conditions, such as the environment, employment, housing, food insecurity, and education are highly associated with individual health outcomes (e.g., Hill et al. 2005; Ellen et al. 2001; Ross & Mirowsky, 2001; also see World Health Organization, 2016; Center for Disease Control and Prevention, 2015; Robert Wood Johnson Foundation, 2015; Center for Disease Control and Prevention, 2011; Marmot, 2005 for online resources). Due to the complex interactions that influence community health, it has become increasingly important to understand how social and environmental characteristics, or the social and environmental determinants of health, influence individual and community health outcomes.

A Community Health Needs Assessment provides a framework for building this knowledge, to inform local health providers and to develop interventions that work to improve health outcomes. Community Health Needs Assessments gather local data related to resident's current health statuses as well as the community conditions that impact health outcomes. The needs assessment findings are based on quantitative and qualitative data collection and analysis.

The Morongo Basin Community Health Needs Assessment is intended to enable community partners to better understand the local, social, and environmental factors that influence health outcomes, and to identify which populations are particularly vulnerable. This analysis will allow community partners to better match service provision to community need, in order to improve resident health. Based on this Community Health Needs Assessment, community partners can draw from the best available data to assess community assets and vulnerabilities, and ensure that decision makers have the resources and information needed to optimally address local community health needs.

The following Community Health Needs Assessment contains three interspersed elements. First, an analysis of secondary data, which measures changes in the circumstances of Morongo Basin residents over the past 10 years. These circumstances are then compared to other residents' circumstances across San Bernardino County and California to provide valuable context. In addition to analyzing health outcomes and demographic characteristics, this assessment analyzes six additional domains that influence the socioeconomic determinants of health—food insecurity, the environment, employment and income, education, transportation and housing. Not only does this assessment track different variables within each policy domain, these variables are also linked to larger community health outcomes. Second, asset mapping is utilized to explore where resources and institutions (such as hospital, schools, churches, and parks) exist that influence community health outcomes. This allows for a deeper understanding of the spatial distribution of resources, need, vulnerability, and opportunity within the local area. Throughout, quantitative data are supplemented with findings from key informant interviews, which provides valuable local context about the challenges and opportunities facing residents.

The following section describes the data sources, the geographic unit of analysis, and the indicators chosen across each policy area. A brief demographic overview of the region is followed by a detailed analysis of selected indicators for health and social determinants of health. Next, results from the asset mapping exercise help visualize the distribution of resources and institutions across the Morongo Basin. The final section concludes with the implications of the findings.

DATA AND GEOGRAPHIC UNIT OF ANALYSIS

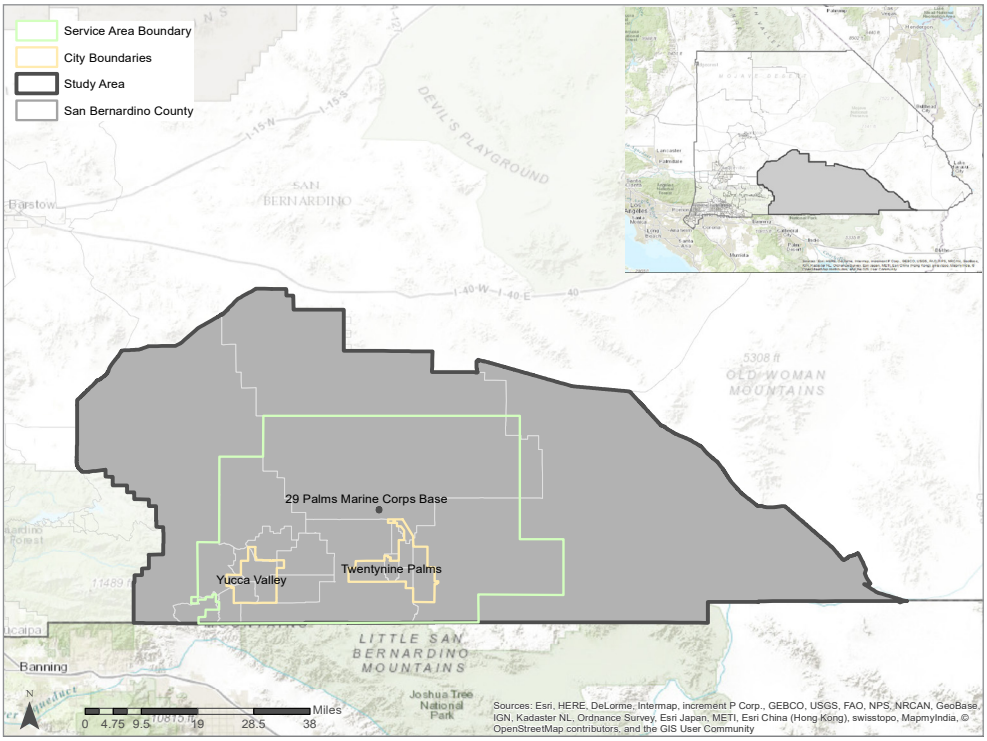
The Morongo Basin is located in the Hi-desert of southern San Bernardino County. The major population centers of the Morongo Basin, as defined by the Morongo Basin Healthcare District catchment area, include two incorporated cities, Yucca Valley and Twentynine Palms, as well as the unincorporated community of Joshua Tree. The catchment area includes other, more isolated unincorporated communities, such as Pioneertown, Wonder Valley and Landers. The Coachella Valley, which lies about an hour south, provides the nearest larger population and employment center. Interview respondents report a "strong synergy" with the Coachella Valley—often referred to as "down the hill"—due to the amenities and opportunities that the relatively larger population center has to offer. However, whether residents can access Coachella Valley jobs and activities hinges on the resources available to them—which, for many residents, forms an insurmountable barrier. Therefore, many impoverished Morongo Basin residents are constrained to this geography, and must rely on the limited resources that are available within the Morongo Basin.

In order to capture variation within the Morongo Basin, this assessment collects and analyzes most variables at the census tract level. The census tract is the most consistently available geographic unit across all of the data, and therefore allows differences across communities in the Morongo Basin to be visualized. According to the US Census, census tracts are "designed to be relatively homogeneous units with respect to population characteristics, economic status, and living conditions." The population size in a Morongo Basin census tract ranges from between 1,200 and 8,000 people, with an average of 4,000 people. This report aggregates data for the entire Morongo Basin and compares those values to San Bernardino County and California, in order to identify change over time in the region, and as compared to other relevant geographies. These quantitative data are supplemented with qualitative data from 19 interviews with community members, service providers and leaders from the Morongo Basin, as identified by personnel from the Morongo Basin Healthcare District (see Table 2). Map 1 presents the study area of interest.

The green boundary in Map 1 represents the Morongo Basin Healthcare District service area. While there are eleven census tracts that are entirely located inside the service area, four additional census tracts proximate to the Morongo Basin area lie both inside and outside of the service area[1]. These four additional tracts are sparsely populated, but include populations that likely rely on Morongo Basin health services. Therefore, the Morongo

[1] *The area outside of the service area within the northernmost census tract (06071010402) is a sparsely populated, mountainous area. The area outside of the service area within the easternmost census tract (06071010409) contains only the Sheephole Valley Wilderness, the Cadiz Dunes Wilderness, as well as salt evaporators, and therefore has no residents. Lastly, the area outside of the service area within the westernmost census tracts (06071010424, 06071010417) is very low density, with a small number of large ranches.*

[MAP 1] STUDY AREA OF INTEREST



Source: American Community Survey (2011-15)

Basin area, as defined in this report, is depicted by the black boundary, which includes fifteen census tracts and the entire the Morongo Basin Healthcare District catchment area.

Table 1 presents the set of variables that are currently available, which were collected and examined in the needs assessment. Indicator variables are selected based on relevance found in previous literature, data availability, and input from local community partners. For each indicator, the data source and years over which these data were collected are noted. The data used in this report includes both demographic information and policy variables that describe conditions in the Morongo Basin.

Variables that impact the social determinants of health span six policy domains: (1) food insecurity (2) environment (3) employment and income (4) education (5) transportation and (6) housing. Next, important civic assets that can influence community health—such as parks, libraries, schools, and churches—are mapped to provide a vibrant picture of how social and institutional factors influence resident health in the Morongo Basin. Moreover, these particular indicators are included because these data are available, reliable, and consistent over time—essential qualities which ensure that the Community Health Needs Assessment analyses and interpretations are based on accurate information.

Despite the fact that community health is the focus of this needs assessment, limited secondary data exists on the health attributes of local residents at smaller geographies than the entire San Bernardino County. Exceptions include the childhood obesity rate, which is available from local schools and the percent of the population that is uninsured available, which is available from the Census. To provide additional information on the likely health conditions that Morongo Basin residents face, the methodology implemented by the 500 Cities project (CDC, 2017), which estimates the prevalence of health conditions based on population and socioeconomic characteristics, is adapted for the Morongo Basin.

The quantitative data listed in Table 1 are supplemented with rich qualitative data from the key informant interviews, which are cross-checked and verified with other sources to ensure that these data represent broad, generalizable experiences and conditions within the Morongo Basin[2].

[2] *Data verification, known as data triangulation, is a technique that involves verifying qualitative information collected in interviews and through other means with other sources to ensure data accuracy (Berg, 1998).*

[TABLE 1] LIST OF VARIABLES

TOTAL NO. OF DATA SERIES: 72

Variables	Detailed Explanation	Years Available	Data Source
Health (No. of Data Series = 8)			
Childhood Obesity (1)	▪ % of Students within the Healthy Fitness Zone	2007-~2015	CDE Ed-Data/Data Quest
Uninsured (1)	▪ % of Individuals without Health Insurance	ACS 2008-12~2011-15	American Community Survey
Asthma Related ER Visits (1)	▪ Asthma Related ER Visits per 10,000	Most Recent	CalEnviroScreen 3.0
Low Birth Weight (1)	▪ % of Infants with Low Birth Weight	Avg. 2006-2012	CalEnviroScreen 3.0
Mental Health (2)	▪ Proportion of Residents with Self-Reported Mental Health Not Good ▪ Proportion of Residents Diagnosed with Depression	2012	Behavioral Risk Factor Surveillance System American Community Survey
Physical Health (2)	▪ Proportion of Residents with Self-Reported Physical Health Not Good ▪ Proportion of Residents Diagnosed with Arthritis	2012	Behavioral Risk Factor Surveillance System American Community Survey
Demography (No. of Data Series = 19)			
Population (1)	▪ Total Number of Population	ACS 2006-10~2011-15	American Community Survey
Age Distribution (2)	▪ % Age Under 18 ▪ % Age over 65	ACS 2006-10~2011-15	American Community Survey
Race & Ethnicity (6)	% Non-Hispanic ▪ % White Alone ▪ % Black Alone ▪ % Asian Alone ▪ % American Indian/Alaska Native Alone ▪ % Other Race ▪ % Hispanic	ACS 2006-10~2011-15	American Community Survey
Household Type (2)	▪ % Family with Children ▪ % Single Parents	ACS 2006-10~2011-15	American Community Survey
Household Size (1)	▪ Average Household Size	ACS 2006-10~2011-15	American Community Survey
Marital Status (4)	▪ % Married – Population over Age 15 ▪ % Never Married – Population over Age 15 ▪ % Divorced/Separated – Population over Age 15 ▪ % Widowed– Population over Age 15	ACS 2006-10~2011-15	American Community Survey
Immigrant (2)	▪ % Immigrant – Non-Citizen ▪ % Immigrant who Entered U.S. in the Past Decade	ACS 2006-10~2011-15	American Community Survey
Linguistic Isolation (1)	▪ % of Households with No One over Age 14 Speaking Fluent English	ACS 2006-10~2011-15	American Community Survey

SOCIAL DETERMINANTS OF HEALTH

Food Insecurity (No. of Data Series = 3)			
SNAP Accepting Institutions (1)	▪ Number of SNAP Accepting Institutions	2015	USDA SNAP Locator
Distance to Grocery Stores (1)	▪ % of Residents Not Living Within 1 Mile of a Supermarket	2009~2014	CDE Ed-Data/Data Quest
Free & Reduced Lunch (1)	▪ % of Students Receiving Free/Reduced Lunch	Census 2010	USDA Food Access Research Atlas

[TABLE I] LIST OF VARIABLES *continued*

Variables	Detailed Explanation	Years Available	Data Source
Environment (No. of Data Series = 3)			
Pollution Burden Score (1)	▪ Pollution Burden Score (1)	Most Recent	CalEnviroScreen 3.0
Air Quality (1)	▪ Air Quality (1)	Most Recent	CalEnviroScreen 3.0
Water Quality (1)	▪ Drinking Water Quality (1)	Most Recent	CalEnviroScreen 3.0
Employment & Income (No. of Data Series = 5)			
Income (1)	▪ Median Household Income	ACS 2006-10~2011-15	American Community Survey
Poverty (1)	▪ % Individual below 100% Poverty Line	ACS 2006-10~2011-15	American Community Survey
Employment (2)	▪ % Workers Age over 16 in Labor Force ▪ Unemployment Rate (%)	ACS 2006-10~2011-15	American Community Survey
Jobs & Industries (1)	Data across 6 of the following industries were included: educational services, retail trade, accommodation & food services, health care & social assistance, construction, administrative & support & waste management & remediation services.	2004 & 2014	LEHD Origin-Destination Employment Statistic
Education (No. of Data Series = 3)			
Educational Attainment (3)	▪ % Enrolled in College (Age 18-24) ▪ % College Graduate (Age 25+) ▪ % High School Drop Out (Age 25+)	ACS 2006-10~2011-15	American Community Survey
Transportation (No. of Data Series = 4)			
Vehicle Ownership (2)	▪ Average Number of Vehicles per Households ▪ % Households with No Vehicles	ACS 2006-10~2011-15	American Community Survey
Transit Riders (1)	▪ % of Workers using Public Transit to Work	ACS 2006-10~2011-15	American Community Survey
Time to Work (1)	▪ Average Time to work	ACS 2006-10~2011-15	American Community Survey
Housing & Real Estate (No. of Data Series = 3)			
Homeownership (1)	▪ Homeownership Rate (%)	ACS 2006-10~2011-15	American Community Survey
Rent Burden (1)	▪ % Renters Paying more than 30 Percent of Income on Rent	ACS 2006-10~2011-15	American Community Survey
Overcrowding (1)	▪ % Households with more than 1 Person per 1 Room	ACS 2006-10~2011-15	American Community Survey
Civic Assets (No. of Data Series = 24)			
Healthcare Services (2)	▪ #/% of Mental Healthcare Services ▪ #/% of General Healthcare Services	2016	Reference USA – U.S. Business Database
Food System Assets (7)	▪ #/% of Farmer's Market ▪ #/% of Grocery Stores ▪ #/% of Healthy Food Stores ▪ #/% of SNAP accepting Institutions ▪ #/% of Convenience Stores ▪ #/% of Fast Food Joints ▪ #/% of Liquor Stores	2016	Reference USA – U.S. Business Database
Financial & Business Assets (2)	▪ #/% of Banks ▪ #/% of Credit Unions	2016	Reference USA – U.S. Business Database

[TABLE 1] LIST OF VARIABLES *continued*

Variables	Detailed Explanation	Years Available	Data Source
Social Service Assets (8)	■ #/% of Churches ■ #/% of Community Centers ■ #/% of Libraries ■ #/% of Non Profit Organizations ■ #/% of Schools ■ #/% of Senior Citizen Centers ■ #/% of Veteran & Military Organizations ■ #/% of Youth Centers	2016	Reference USA – U.S. Business Database
Recreational Assets (5)	■#/% of Bowling & Golf Centers ■ #/% of Fitness Centers ■ #/% of Museum ■ #/% of Parks ■ #/% of Theaters	2016	Reference USA – U.S. Business Database

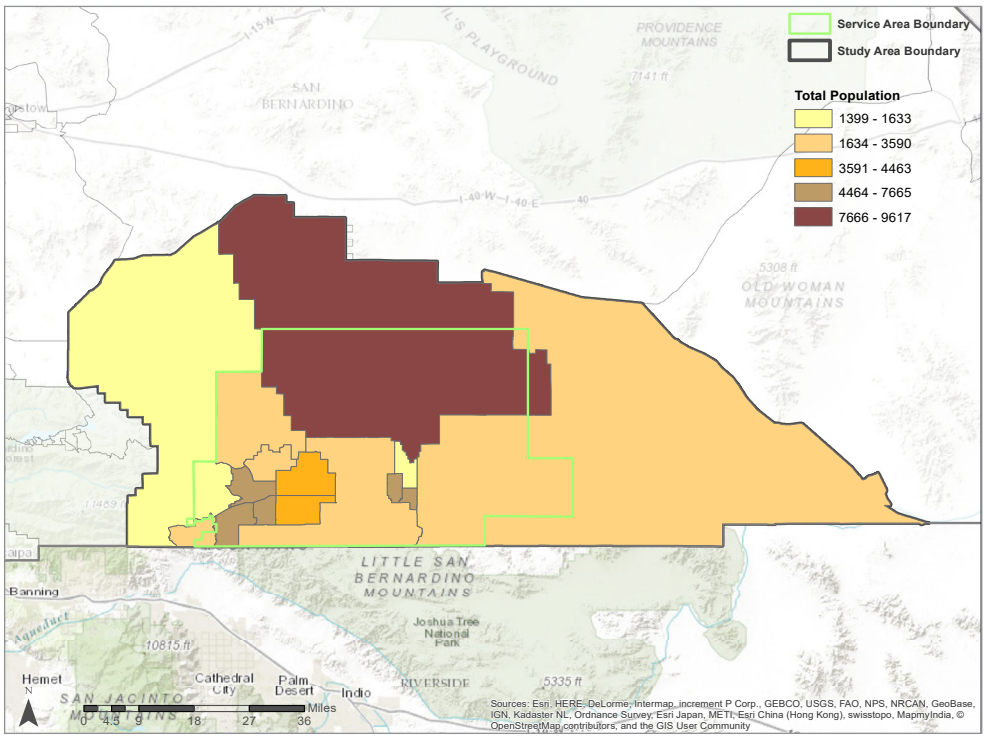
[TABLE 2] INTERVIEW RESPONDENTS

Interviews Respondents	#
Healthcare leaders (including Healthcare District representatives)	8
Government stakeholders	5
Healthcare providers	3
Community representatives	2

DEMOGRAPHIC OVERVIEW

According to the American Community Survey, the current population of the Morongo Basin rests slightly above 70,000 persons. This figure amounts to approximately 3.3 percent of the total San Bernardino County population. Approximately 13 percent of Morongo Basin residents are age 65 or older, which is a slightly higher percentage in this age range, as compared to the rest of the county and the state. Worth noting is the presence of the Marine Corps Base in Twentynine Palms—the largest in the country—which draws a significant population of military personnel and their dependents. The Base influences the local age distribution and is one of the local features that makes this area unique. It is important to note that the share of Morongo Basin residents over age 65 increases to nearly 16 percent if the census tract in which the military base is located is excluded from the Morongo Basin study area. Morongo Basin residents under age 18 comprise 23 percent of the region's total population. Although this is a smaller percentage than across the remainder of the county, the proportion of youth is similar to California as a whole. However, the age distribution within the Morongo Basin differs by census tract. Most residents over the age of 65 live in census tracts located in the western part of the Morongo Basin, outside of the direct Healthcare District service area. Alternatively, most of the working age population lives in census tracts located in the northern part of the Morongo Basin, both within and outside of the Healthcare District service area, including the census tract in which the military base is located.

[MAP 2] TOTAL POPULATION IN THE MORONGO BASIN



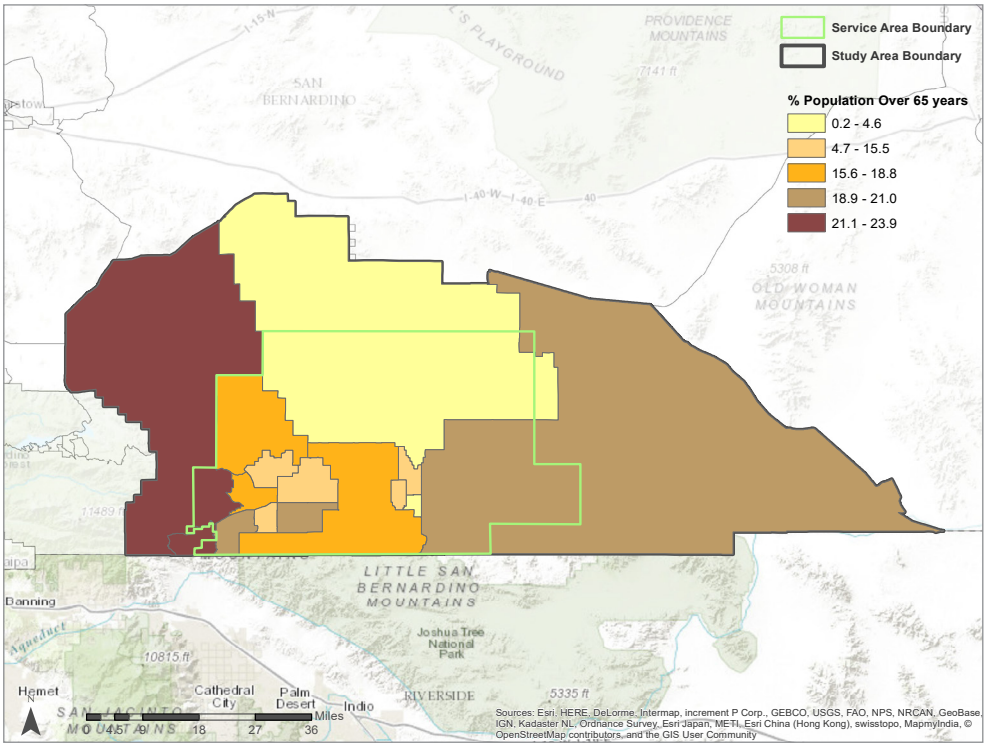
Source: American Community Survey (2011-15)

[TABLE 3] SUMMARY STATISTICS — DEMOGRAPHY

Source: ACS 2011-2015

Variables	Morongo Basin	San Bernardino County	California
Population			
Total Number of Population	70,075	2,094,769	38,421,464
Age Distribution (%)			
Age under 18	23.4	27.7	23.8
Age over 65	13.8	10.0	12.4
Race and Ethnicity (%)			
White (Non-Hispanic)	70.3	31.2	38.7
Black (Non-Hispanic)	4.3	8.1	5.6
Asian (Non-Hispanic)	2.4	6.5	13.5
Native 0.9	0.4	0.4	
Other Race	0.1	2.7	3.4
Hispanic	17.2	51.1	38.4
Household Type (%)			
Family with Children	26.5	37.4	31.9
Single Parents	17.5	16.9	19.6
Household Size			
Average Household Size	2.5	3.3	3.0
Marital Status (%)			
Married	44.8	45.4	46.5
Never Married	30.0	37.0	36.5
Divorced/Separated	17.5	12.9	11.9
Widowed	7.6	4.7	5.1
Immigrant (%)			
Immigrant – Citizen	3.3	9.9	13.1
Immigrant - Non-Citizen	3.1	11.4	13.9
Linguistic Isolation (%)			
HH with No One (Age 14+) Speaking Fluent English	1.6	7.1	9.5

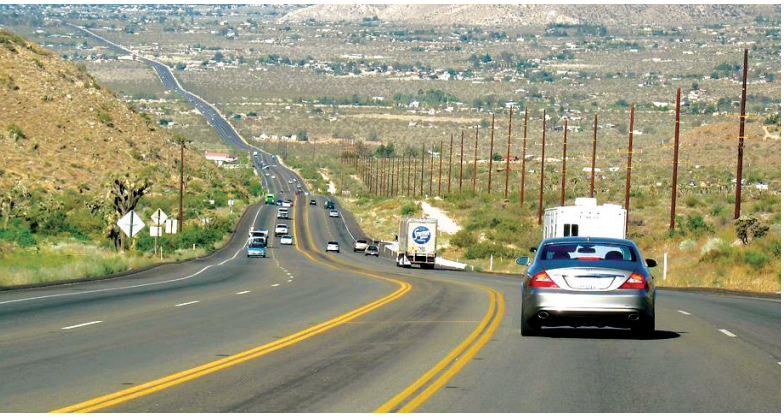
[MAP 3] % POPULATION OVER 65 YEARS OF AGE



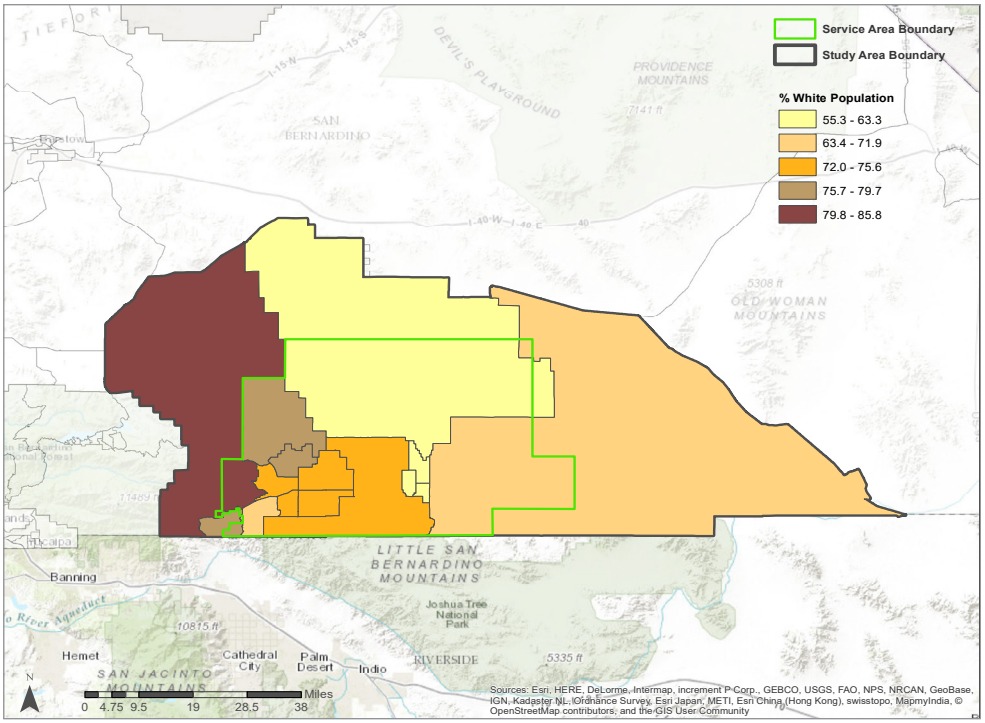
Source: American Community Survey (2011-15)

More than seventy percent of the total population in the Morongo Basin identifies as non-Hispanic white. The share of white residents is much higher than both the remainder of San Bernardino County and California. Non-Hispanic whites are mostly concentrated in census tracts located outside of the Healthcare District service area region, which is located to the west of the Morongo Basin. In comparison to San Bernardino County and California, the Morongo Basin has a slightly higher proportion of Native Americans and a lower proportion of Hispanics, non-Hispanic African Americans and Asians. Approximately 6 percent of Morongo Basin residents are immigrants. This is significantly less than the percentage of immigrants in both San Bernardino County and California. The percentage of families

with children is also lower in the Morongo Basin than across both San Bernardino County and California. Additionally, while the percentage of children under 18 living with a single parent is slightly higher in the Morongo Basin as compared to San Bernardino County, the Morongo Basin has a slightly lower percentage of single parents than across the state. The Morongo Basin also has a lower percentage of linguistic isolation in comparison to county and statewide levels, reflecting the low number of immigrants in the region. For a full demographic comparison, see Table 3.



[MAP 4] % WHITE POPULATION IN THE MORONGO BASIN



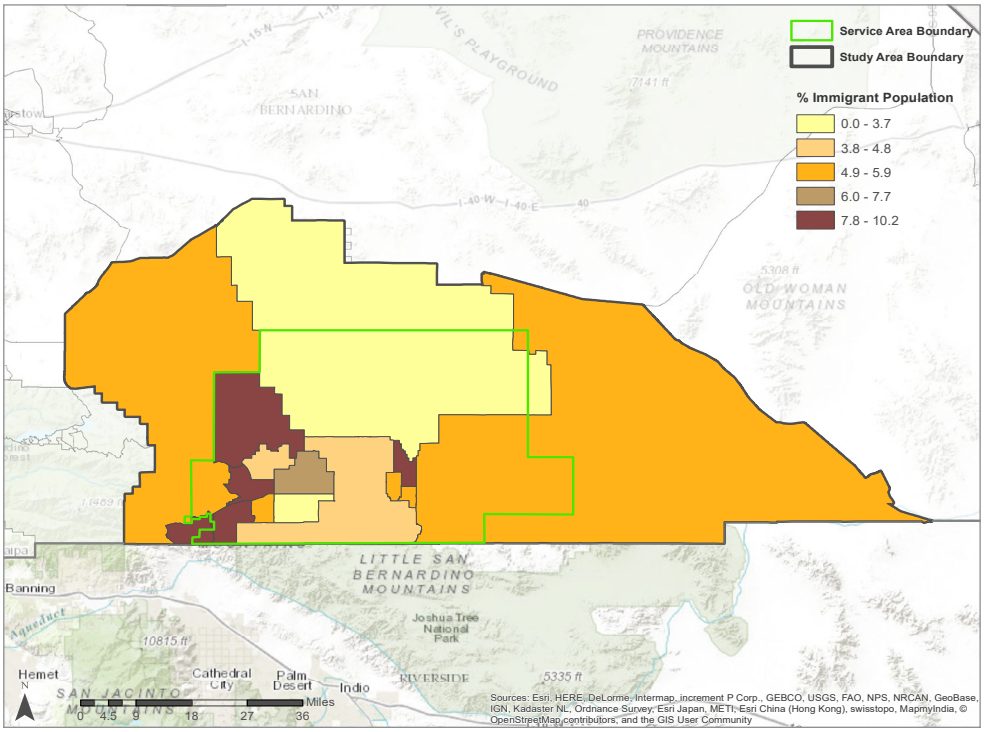
Source: American Community Survey (2011-15)

Morongo Basin residents are drawn by affordability and rural life—but when they move to the area, many end up extremely isolated

Interview respondents widely reported that residents are drawn to the Morongo Basin for similar reasons: the desert climate, open space and natural environment, the relatively low cost of living, and the slow pace of life. Interview respondents expressed considerable concern over what they perceive as an extremely isolated, poor and vulnerable elderly population. Residents described many stories about older residents who move to the Morongo Basin as retirees living on fixed incomes, drawn to the area because of the extremely low housing costs—as little as $300 a month in rent. This housing affordability enables low-income residents to stretch the rest of their fixed incomes as far as possible. Due to the geographic distribution of housing, where the cheapest housing lies miles from the major population centers, impoverished residents are often forced to live in substandard housing, deeply isolated from the services and community centers they desperately need. For many, car ownership and gas is cost-prohibitive, and elderly residents often face severe mobility constraints. Elderly residents who have moved after retiring further lack the social support and assistance that comes from having family live nearby; they therefore have few people to turn to when they need help. Many low-income families, who suffer from the lack of

Enticed by the promise of affordability, many residents get "stuck."

[MAP 5] % IMMIGRANT POPULATION IN THE MORONGO BASIN

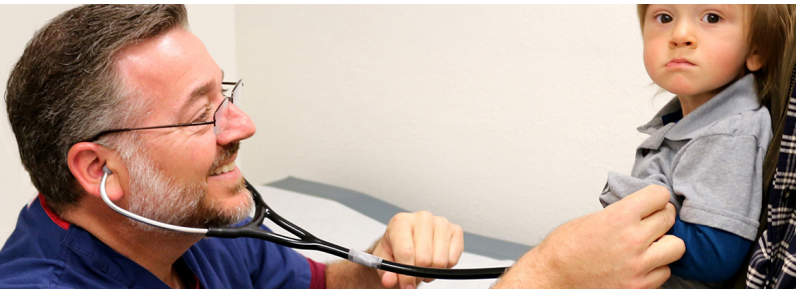


Source: American Community Survey (2011-15)

economic opportunity in the area, face a similar daily struggle, where they remain deeply constrained by living in an under-resourced environment, from which they lack the resources to escape.

The military base shapes the population in important ways. Beyond the concentration of active duty military personnel and their families, respondents also reported that many veterans who were formerly stationed at the base eventually retire to the area. A 2016 Community Impact report by the Combat Center confirms this claim, and estimates that almost 1,700 military and Department of Defense retirees live in the Morongo Basin (Marine Air Grand Task Force Training Command, 2016).

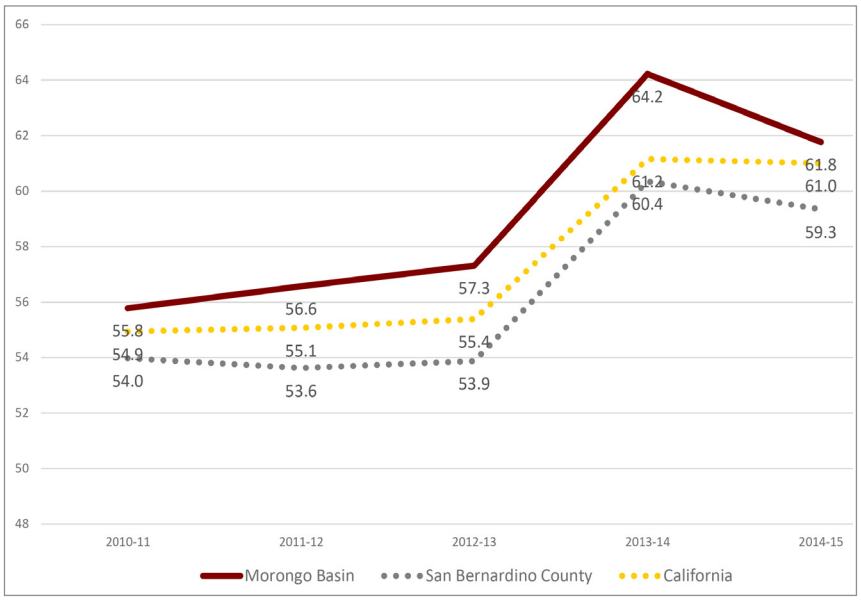
Across the Morongo Basin, the poorest residents, who experience the greatest need for resources, are generally the most physically and socially isolated, and "living on the fringe."



HEALTH INDICATORS

Publicly available data suggests that select health indicators in the Morongo Basin are better than those in the rest of San Bernardino County and in the state. Population data available at the census tract include three health indicators: (1) Childhood Obesity (2) Percent Uninsured (3) Asthma Related ER Visits. However, these three variables provide a very incomplete portrait of the community health of residents. For example, those over 65 are presumably covered by Medicare, but may face high levels of heart disease or diabetes. Based on the feelings of isolation that experts suggest are prevalent among residents, mental health measures are important to include. To obtain such estimates of the likely prevalence of these conditions, methodology proposed by the 500 Cities Project are implemented to impute several mental and physical health variables.

[FIGURE 1] PROPORTION OF STUDENTS WITHIN THE HEALTHY FITNESS ZONE (%)

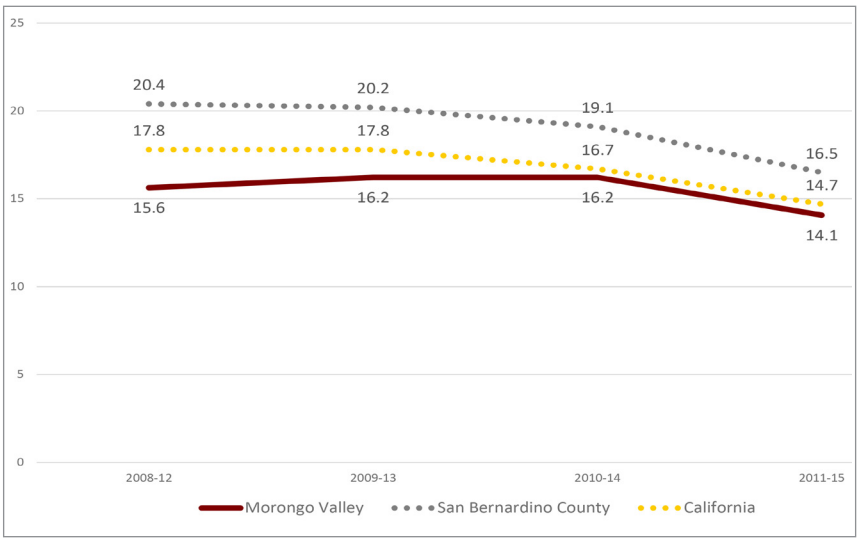


Source: CDE/ED-Data

Comparison across Time and Region

CHILDHOOD OBESITY: In schools throughout California, students are required to take a multi-faceted fitness and health test known as the FITNESSGRAM, which determines whether or not their physical health is at a reasonable level. Students who score at a proficient level are considered in the "Healthy Fitness Zone" (HFZ), which takes into account not only Body Mass Index but also indicators in strength, flexibility, and cardiovascular fitness. For this Community Health Needs Assessment, the Healthy Fitness Zone's Body Composition measure has been used as a proxy for childhood obesity. The California Department of Education school-level data provides the percentage of 5th graders within the HFZ for all schools in California. In all three regions, the share of children within the HFZ spiked up between 2012-13 and 2013-14. However, this is not necessarily attributable to the improvement of children's physical health, as the definitions used to calculate the Body Mass Index changed between the two periods. Although this change makes it difficult to interpret the childhood obesity trends over time, rates for the different geographies indicate that the overall physical health conditions of children in the Morongo Basin is better than San Bernardino County and the State of California.

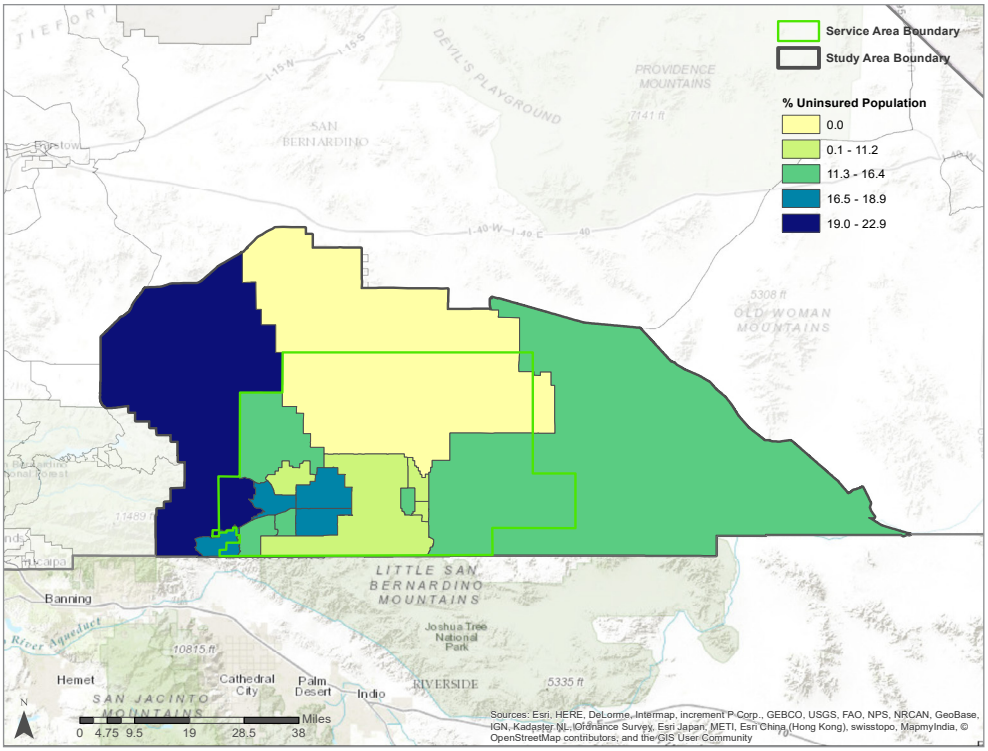
[FIGURE 2] PROPORTION OF RESIDENTS UNINSURED (%)



Source: American Community Survey

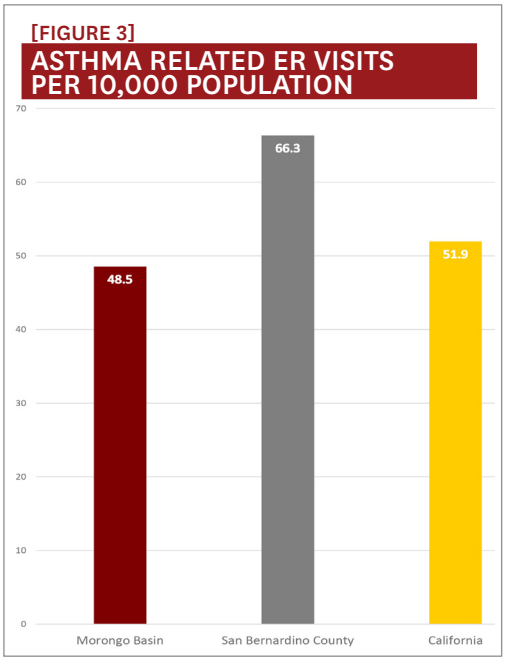
UNINSURED RATE: The proportion of uninsured residents in the Morongo Basin has consistently remained below both the State of California and San Bernardino County. This reflects the fact that the majority of residents in the Morongo Basin are white, and, on average, are more likely to be insured than minorities. While health insurance became mandatory and more accessible under the Affordable Care Act, which explains the decline of uninsured population in all three regions, policy changes could alter the future direction of this curve.

[MAP 6] % UNINSURED POPULATION IN THE MORONGO BASIN



Source: American Community Survey (2011-15)

[FIGURE 3]



Source: CalEnviroScreen 3.0

ASTHMA-RELATED ER VISITS: The number of asthma-related emergency room visits in the Morongo Basin is also lower than the state and county averages, according to the most recent CalEnviroScreen 3.0 data. This corroborates evidence from interviews, in which residents argued that the Morongo Basin enjoys good air quality. This fact is also confirmed with pollution data from CalEnviroScreen 3.0. However, it is important to note that access to ERs is more difficult in the sparsely populated Morongo Basin, and that may reduce the measured incidents of asthma.

PREDICTING THE PREVALENCE OF ADDITIONAL HEALTH CONDITIONS

While the three variables above suggest that residents in the Morongo Basin are in relatively better health compared to San Bernardino County and California, these variables present an incomplete portrait of community health conditions. For example, because the population in Morongo Basin are, on average, older and economically worse off (noted in data presented in the following sections) than the rest of California, Morongo residents may face greater mental health issues due to economic distress or physical health problems related to aging. To obtain additional measures of community health conditions such as mental health, the methodology (Zhang, et al., 2014) developed by the CDC's 500 Cities Project is adapted for the Morongo Basin[3].

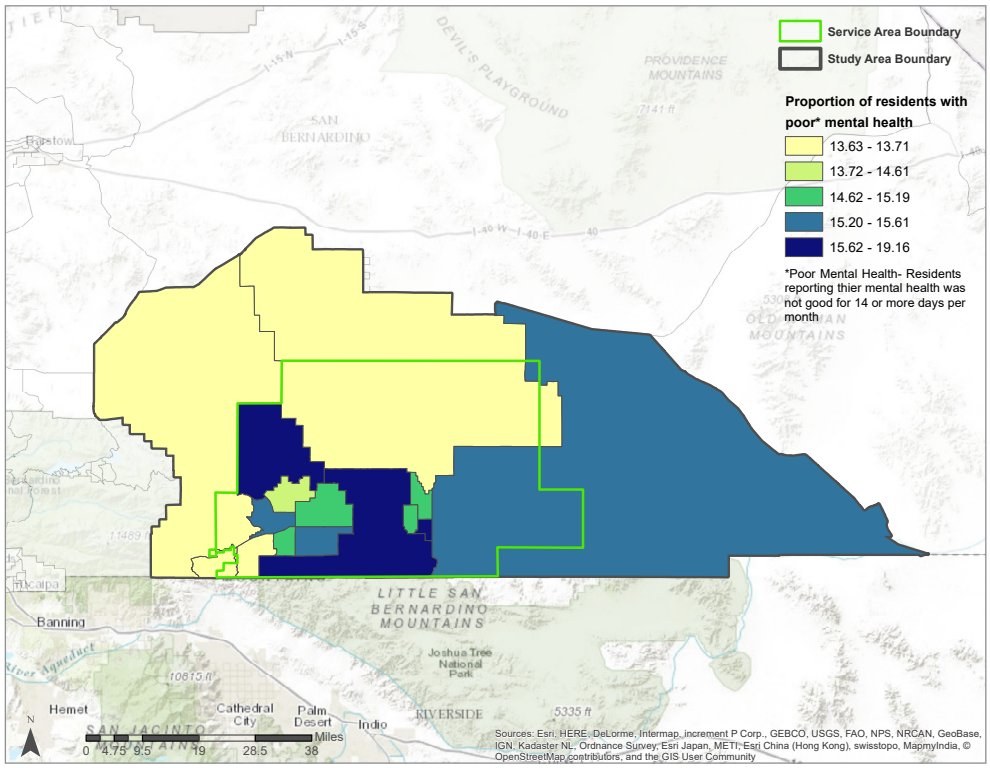
It is important to note that, unlike the previous measures discussed above, these health measures are not based on population data. Instead, these measures represent the likely prevalence of these health conditions based on a small area estimation technique. This technique uses statistical modeling linked to geocoded survey data from the Behavioral Risk Factor Surveillance System (BRFSS) and ACS 2011-15 to produce each indicator. The BRFSS is a health survey administered annually via phone by the CDC collecting data on health behaviors, chronic conditions, and preventative services. The statistical model pulls information from multiple geographic levels to take into account variations in demographic characteristics and corresponding prevalence rates within each state, county, and census block. Included in this Community Health Needs Assessment are two variables that are related to mental health and two variables that are related to physical health, to provide a more complete portrait of community health conditions of Morongo Basin residents. In contrast to the population level measures based on secondary data, the output from the 500 Cities model suggests that for these additional health indicators, community health of residents in Morongo Basin lags significantly behind San Bernardino and California.

MENTAL HEALTH: According to model estimates, mental health conditions are strained for residents of the Morongo Basin. The estimated proportion of residents reporting that their mental health was not good for 14 or more days in the past month was consistently higher in the area than in San Bernardino County or California as a whole. These rates are 2.2 percent and 3.4 percent higher than San Bernardino County and California, respectively.

As estimated, 15.40 percent of residents suffered from poor mental health for 14 or more days in the past month.

[3] *The accuracy of the model was evaluated by comparing the estimated prevalence of diabetes diagnoses in San Bernardino County to the official CDC figure. The CDC provides a lower limit of 8.1 percent and upper limit of 10.5 percent, which suggests that the estimate of 10.3 percent falls within the bounds of statistical precision.*

[MAP 7] PROPORTION OF RESIDENTS WITH SELF-REPORTED MENTAL HEALTH NOT GOOD FOR 14 OR MORE DAYS PER MONTH (%)



Source: Behavioral Risk Factor Surveillance System & American Community Survey

The estimated proportion of residents that would be expected to have been diagnosed with depression also illustrates the prevalence of mental health issues in the Morongo Basin. In the Morongo Basin, 22.4 percent of the population are likely to have been diagnosed with depression, situating the area 4.5 percent and 5.6 percent above San Bernardino County and California, respectively.

PHYSICAL HEALTH:

Day-to-day physical health conditions also lag behind the remainder of San Bernardino County and the rest of California. The proportion of residents reporting 14 or more days each month in which they consider their physical health "not good" is estimated at 14.7 percent—which is 2.7 percent and 3.6 percent higher than San Bernardino County and California, respectively. This indicator is most likely linked to the large elderly population living throughout the region who are more likely to experience difficulties with daily activities.

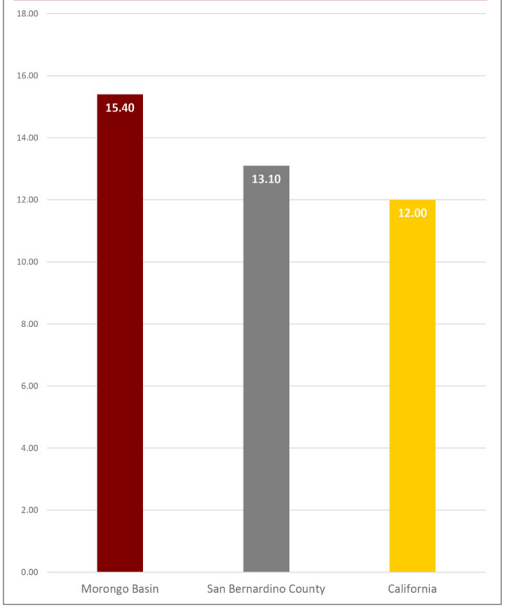
An estimated 14.7 percent of residents suffer from physical health described as 'not good' for 14 or more days per month.

The estimated prevalence of arthritis diagnoses among residents is mostly likely linked to the high degree of residents experiencing poor physical health, explored above, as the disease is noted for impeding quality of life. In the Morongo Basin, 29.7 percent of residents are estimated to have arthritis, which is between 8.5 and 9 percent higher than rates in San Bernardino County and California.

The results of the 500 Cities model estimates provide important information that indicate that significant health challenges exist in the Morongo Basin. While these estimates are approximate since they are not based on population data, they provide a helpful foundation for health practitioners to plan more adequately for the likely health conditions that residents face based on their age, race/ethnic, gender, and income levels.

[FIGURE 4]

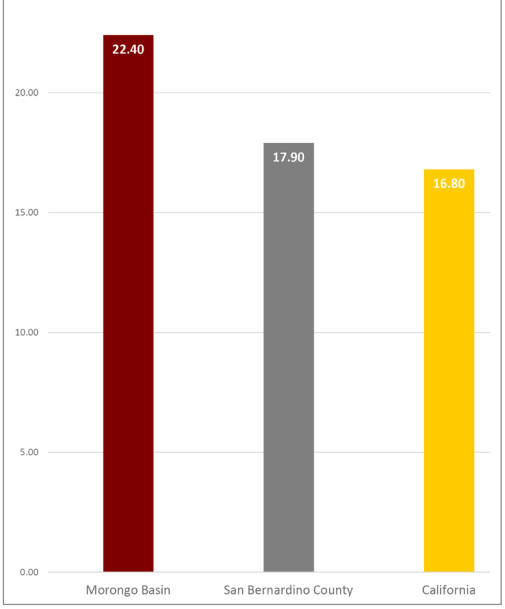
PROPORTION OF RESIDENTS WITH SELF-REPORTED MENTAL HEALTH NOT GOOD FOR 14 OR MORE DAYS PER MONTH (%)



Source: Behavioral Risk Factor Surveillance System & American Community Survey

[FIGURE 5]

PROPORTION OF RESIDENTS DIAGNOSED WITH DEPRESSION (%)



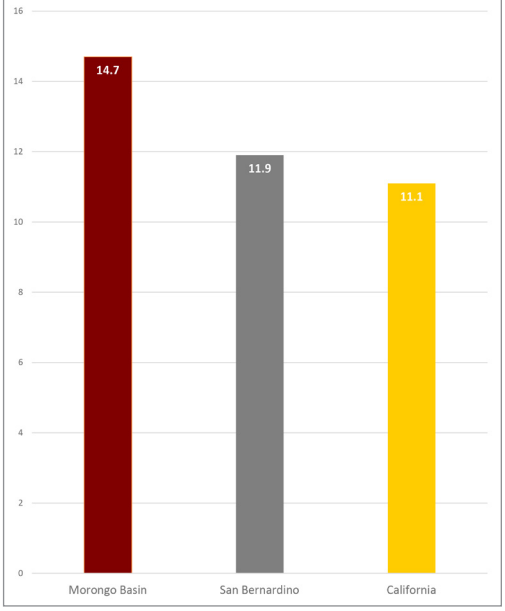
Source: Behavioral Risk Factor Surveillance System & American Community Survey

COMPARISON ACROSS NEIGHBORHOODS

MENTAL HEALTH: The census tracts between Yucca Valley and Twentynine Palms, and the Northwest tract situated adjacent to these tracts have the highest proportions of residents experiencing poor mental health outcomes. In these tracts, approximately 1 in 5 residents are estimated to be experiencing 14 or more days per month in which their mental health is not good. The large rural tract on the eastern edge of Morongo Basin also holds a high rate of residents experiencing poor mental health, which, after taking into account transportation and health access, makes this population especially vulnerable. While other tracts in the area have lower relative rates of poor mental health, nearly all tracts experience poor mental health rates higher than San Bernardino County or the State of California, suggesting that mental health on the whole is a space in need of improvement.

[FIGURE 6]

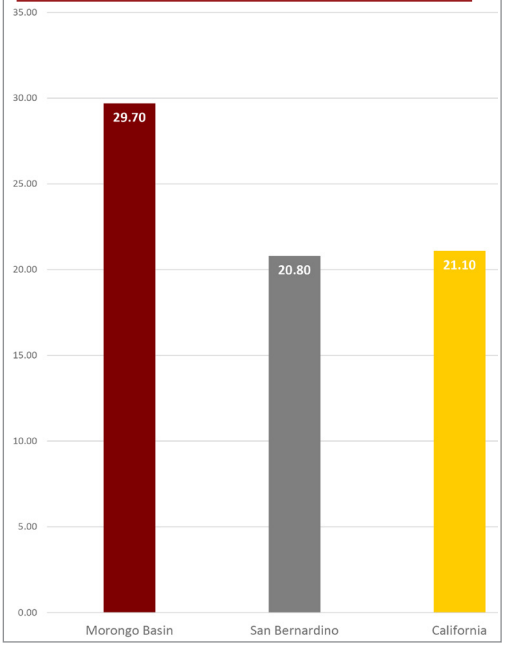
PROPORTION OF RESIDENTS WITH SELF-REPORTED PHYSICAL HEALTH NOT GOOD FOR 14 OR MORE DAYS PER MONTH (%)



Source: Behavioral Risk Factor Surveillance System & American Community Survey

[FIGURE 7]

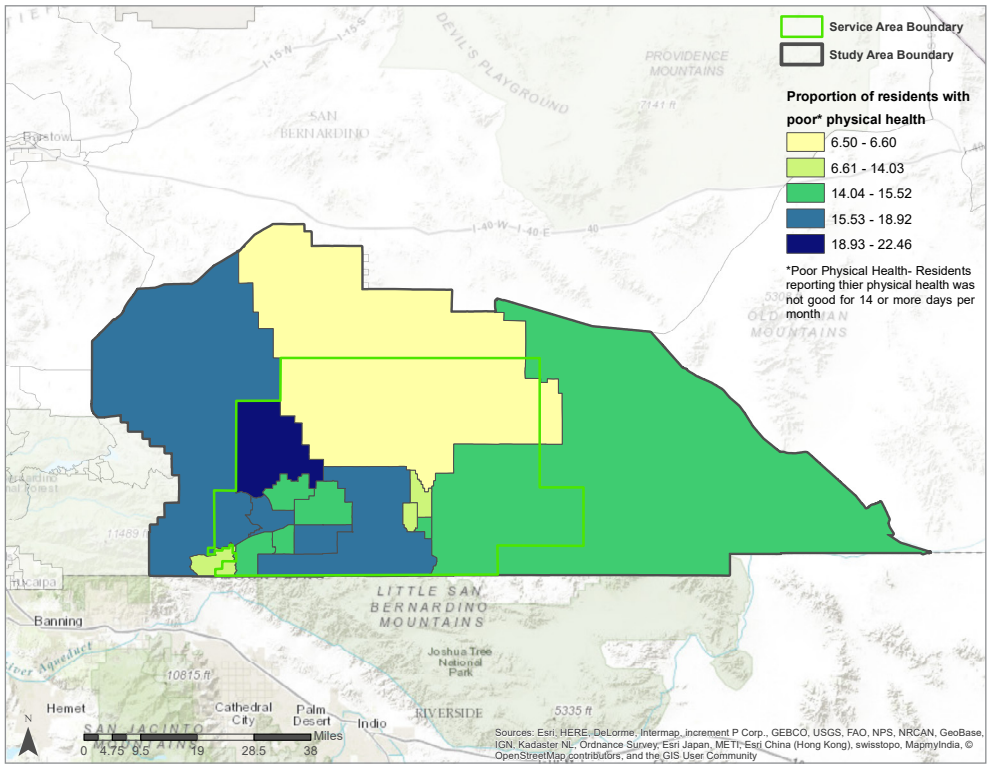
PROPORTION OF RESIDENTS DIAGNOSED WITH ARTHRITIS (%)



Source: Behavioral Risk Factor Surveillance System & American Community Survey

PHYSICAL HEALTH: There is larger variation across census tracts in regard to physical health. Expectedly, the tract holding the Twentynine Palms Marine Base as well as those immediately adjacent to the south have a very low proportion of residents experiencing more than 14 days in which their physical health is considered not good. In contrast, each of the census tracts in the remainder of the Morongo Basin have

[MAP 8] PROPORTION OF RESIDENTS WITH SELF-REPORTED PHYSICAL HEALTH NOT GOOD FOR 14 OR MORE DAYS PER MONTH



Source: Behavioral Risk Factor Surveillance System & American Community Survey

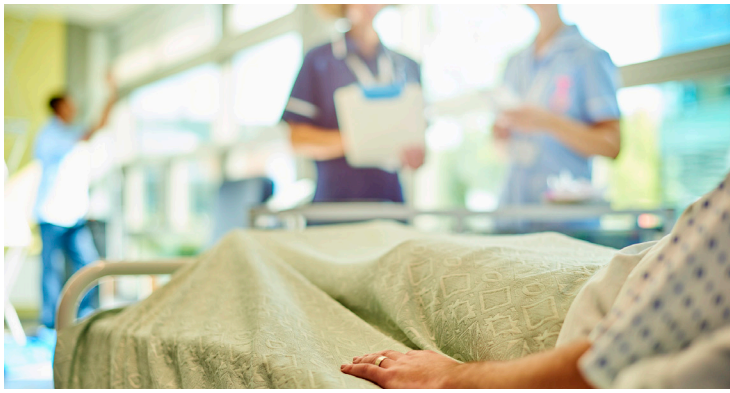
worse outcomes than either San Bernardino County or California. The census tracts between Twentynine Palms and Yucca Valley and the tracts on the western portion of the Morongo Basin face the most acute prevalence rates; between 15 and 23 percent of residents in these tracts are estimated to be experiencing poor physical health. Thus, it appears that day-to-day quality of life in regard to physical health needs to be improved for much of the population. Moreover, the tracts with the highest rates of residents experiencing poor physical health map closely to those with the highest proportion of residents over the age of 65. In turn, advances in care for the elderly represent a potential avenue to improve health outcomes in the Morongo Basin.

Health issues in the Morongo Basin appear strongly related to poverty, age and isolation

Medical providers reported that common health issues and modifiable health risk factors[4] in the Morongo Basin include diabetes, hypertension, obesity, smoking, chronic obstructive pulmonary disease (COPD) and pneumonia, which are health conditions that directly relate to age and socioeconomic status. Health in the Morongo Basin is widely mediated by low incomes and a lack of services; when individuals cannot afford gym access, lack transportation, have minimal affordable healthy eating options and lack sufficient services for support, it is difficult for them to effectively address their physical and mental health issues.

Because they have access to government-provided healthcare, the elderly and extremely poor populations may be somewhat better insured than the working poor. However, for these groups, their quality of healthcare may be limited, and their ability to actually seek healthcare is strongly mediated by transportation access—if they cannot get to an appointment, they generally cannot access the health services they need, regardless of their insurance status. As one healthcare provider said, some people

[4] *Modifiable risk factors are those health risk factors that can be treated, controlled or mitigated in some way through behavioral change.*



are so isolated that "they just can't get to us." Beyond access, health related education appears to be an issue; some respondents reported that the population lacked sufficient information on how to use the Medicare system and the Senior Care Action Network (SCAN) health program.

Substance abuse is a major problem in the area, with broad causes and effects

Many residents reported significant drug issues and alcoholism in the area. According to residents, the Morongo Basin houses a high population of users and recoverees, though opinions differed on whether the problem is improving or worsening. Interview respondents frequently described the harmful ancillary impact of substance abuse for families, particularly on dependent children.

Many respondents argued that marijuana presents a real paradox in the Morongo Basin. Health providers stressed the need for affordable medical marijuana, provided locally, to enable patients to address real medical issues. Currently, patients have to travel to Desert Hot Springs for medical marijuana and it remains expensive; many cannot afford the substance nor the trip to obtain it. However, respondents widely acknowledged that marijuana abuse represents a significant problem for youth and adults, as youth sometimes access their parents' medical supply, which further introduces drugs into local schools.

Medical providers held that mental health represents a significant issue across the Morongo Basin, with schizophrenia, depression and drug use—particularly methamphetamines and heroin—representing the most common health conditions.

The Morongo Basin lacks health providers and facilities, particularly medical specialists

Respondents overwhelmingly reported that the lack of health providers in the area, and particularly specialists, constitutes a major barrier to healthcare access. Medical facilities in the area face enormous difficulties recruiting and retaining doctors, both because of a perceived inability to make money in the Morongo Basin, due to the low population density and high numbers of Medi-Cal users, as well as the local quality of life for young doctors looking to settle down. There is a strong perception, with justification, that specialists are "better off financially" in the lower desert. Most doctors currently live in the lower desert, where there are more amenities, better schools, and more employment opportunities for their spouses. Many doctors work only part-time in the Hi-desert, and residents expressed concern that doctors only work in the Hi-desert until they build a large enough

practice in the lower desert so that they no longer have to commute to the Morongo Basin for work. As a result, the low supply of doctors, with a perception of high turnover among those who do work in the Basin, presents an ongoing concern for residents and leaders in the area.

Specialists are particularly hard to attract. As a result, one resident said that, "pretty much all we have is primary care." One respondent described how the closest cardiologist that takes Medicare patients is 70 miles away, and public transportation to the area is only available on Thursdays. Therefore, discussions relating to healthcare providers and facilities frequently centered on the need to attract more specialists to work in the Hi-desert, at least part-time. Respondents cited a need for a range of specialists, including gerontology, as well as additional facilities for testing and diagnosis. All respondents cited a strong need for additional services, with one individual simply stating, "We have an older population. Older people get sick. We need that critical care."

"People have easier access to drugs and alcohol than they do to professional care."

Physical and social isolation influences whether and how residents seek healthcare

Doctors contend they try to respond to the deficit of specialists and resident isolation by providing additional services. It is widely understood, across medical providers and residents, that many residents do not seek care, miss appointments, do not share their medical information readily, nor pursue necessary follow-up care for a multitude of reasons that relate to their unique, and often unrevealed, life situations. Elderly patients and isolated individuals need advocates who can "take the time to ask the questions, to investigate the reasoning" behind their health problems and health-seeking behavior.

SPOTLIGHT: CASE MANAGEMENT

Case management is the process by which patients' needs are coordinated in a comprehensive manner in order to reduce inefficiency and streamline care. For example, hospitals and other providers often employ case managers to identify challenges that patients face in accessing follow-up care, including scheduling follow-up appointments, reminding patients about doctor's orders, and mutually deciding upon a treatment plan that is tailored to the needs of the patient. The main goal of case management is to improve patient outcomes by identifying the specific needs and conditions of the patient and modifying and improving patients' care plans based on this information. According to the Commission for Case Manager Certification, case management involves advocacy, communication, and resource management. It can also support the patient in order to instill confidence or motivate patients to further their health. Individuals who participate in case management include registered nurses, licensed social workers, and vocational counselors.

Interview respondents widely argued that, particularly given the unique geography and population, including high poverty and an older population, residents in the Morongo Basin would benefit from a case management approach.

"You have to gain their trust before you can change their lifestyle"

However, approaching medical care in the in-depth, case management style that is required to form and maintain relationships with isolated populations and deeply understand patient need requires precious time and resources that doctors express they distinctly lack. Rather, there are so few providers that doctors are "overwhelmed" with demand and feel pressure to treat patients more quickly and efficiently. For this reason, they cannot provide the full care that they know residents need, including individual, persistent follow-ups to make sure that people can overcome their individual circumstances to receive sufficient care, in a manner more aligned with a case management approach.

Children requiring medical attention face acute barriers to healthcare access in the Morongo Basin. For this reason, many pediatric patients are referred to the Coachella Valley or Loma Linda, where there are more specialists and providers who take Medi-Cal. However, their frequent referral out of the Morongo Basin places a significant burden on parents, who may be working multiple jobs, many of whom have transportation barriers, and for all of whom it is inconvenient to have to travel at least an hour in each direction to ensure that their child receives needed care. Even for non-critical care, such as nutritional education, the lack of specialists prevents children from accessing care for preventative health. For example, even though childhood obesity is a recognized problem across the Morongo Basin, the area only has one dietician, and the provider does not take children as patients. For those unable to readily access a specialist outside the Morongo Basin, they are forced to go without necessary care that could improve their health.

Even though children appear to enjoy relatively better insurance coverage rates because low-income children qualify for Medi-Cal, which offers limited services, there are not enough providers—and no specialists—serving pediatric patients in the Morongo Basin.

There is a strong perception that medical services in the Coachella Valley and at Loma Linda are higher quality than at the local hospital. However, even though many respondents critiqued the hospital for providing inadequate services, all noted that the hospital provides an absolutely critical function in the health landscape in the Morongo Basin. The hospital provides the only acute care facility in the community and the only 24-hour emergency department. With Tenet Health running hospitals in both the Hi- and lower desert, the hospital is confident that there is a "better chance of being able to provide full-time work" to specialists, in an effort to attract additional specialists, at least part-time, to the Hi-desert. Beyond overcoming barriers to health access worsened by isolation and poverty, follow-up services are also desperately needed; many individuals use the emergency room but do not get necessary follow-up care for multiple reasons that relate to their socioeconomic status, including transportation and cost.

Residents strongly expressed significant demand, and minimal resources, for mental health support

Residents consistently maintained that the Morongo Basin distinctly lacks desperately needed mental health support services, particularly after the Morongo Basin Mental Health facility was forced to close for financial reasons. This left "a huge gap" in local drug and alcohol residential treatment service provision, but particularly undermined access to mental health services for residents. Many residents seeking help are retired veterans, which transferred an additional burden onto Veterans Affairs and forced residents to go outside of the Morongo Basin for help, or forego treatment altogether.

Respondents reported that no mental health facilities or services are taking new patients, despite a pressing local demand. In other words, "there aren't enough resources to even meet basic need."

While Valley Star Crisis Treatment Center, located in San Bernardino County, offers some mental health services at the county level, including transitional housing for youth ages 18-25 in need of mental health services, these services are at capacity. The lack of mental health services is particularly problematic because addressing mental health needs is a fundamental prerequisite for residents to address other health and wellness issues and the 500 cities data indicate that residents suffer from poor mental health at an alarming rate.

While military personnel, dependents and veterans have better healthcare access, they are still constrained by local service provision deficits

Military personnel and their dependents, as well as veterans, enjoy relatively better access to healthcare and other resources. The base offers a hospital with military healthcare for active-duty and retired military personnel. Even though they enjoy relatively better health access, military personnel, their dependents and veterans still remain constrained by the lack of amenities, providers and services within the Morongo Basin. To access many medical specialists, even military personnel have to travel down the hill to the Coachella Valley or to Loma Linda hospital, which, at a ninety-minute drive, is the closest Veterans Affairs (VA) hospital. Therefore, many respondents noted that veterans, in particular, need more local services, including services related to mental health. Since they live so far from a VA hospital, Morongo Basin veterans can use non-VA services under their healthcare, but they have to pay some out-of-pocket costs. In contrast, if Morongo Basin residents can travel to a VA facility, their treatment is often entirely covered by insurance. For this reason, transportation and access still represent a barrier to medical access even for the highly-insured veteran population.

Residents contend that they receive insufficient attention from the county and their elected representatives

Many respondents reported that the Morongo Basin remains a particularly resource-deprived area of San Bernardino County, and is not a priority for the county or their elected representatives. As a result, they argue that they suffer from a comparative lack of attention, resources and investment. As one resident said, "we are still the stepchild of a very large county." According to another resident, rural populations are underrepresented among the county board of supervisors, which enables the

Morongo Basin to consistently and structurally remain overlooked. Others mentioned that the county presumes that the Morongo Basin residents have resources that either they cannot access or that do not exist locally, in part due to its proximity to the Coachella Valley. In other words, the extreme isolation of many of the Morongo Basin residents is not widely understood outside of the local area.

Local service providers report that they respond by depending on each other and actively working to coordinate their activities toward the mutual goal of creating more opportunities in the Morongo Basin. There appears to be a strong culture of collaboration across different service providers; as one example, there is an informal coffee on Wednesday mornings with community leaders including local government for the different jurisdictions, the military base, the National Park, fire and police, and other services. Despite this local coordination, all respondents cited a lack of resources, which fundamentally limited their capacity for service delivery. Even with the highest efficiency and optimal coordination, low resource availability yields insufficient services and support.

Since most affordable housing is located farther out from the main population areas, the poorest and most vulnerable populations often live the farthest away from the services they require, including healthcare, food distribution, mail, schools, and civic organizations.

Poverty, isolation and climate exacerbate health issues and access for Morongo Basin residents

Geographic and social isolation in the Morongo Basin can be extreme, and represented the single largest barrier to health access cited by interview respondents. They also face a large barrier to using public transportation, which provides limited services concentrated on connecting the largest population areas. Some individuals only have an emergency telephone, rarely leave their homes, and depend on free weekly food deliveries. For those living farthest out, often the hardest part of the journey to a destination is securing a ride down the dirt road to the bus stop.

Many elderly individuals, some living alone after having lost a spouse, are afraid that, if forced to move, they will lose their independence. However, due to their severe isolation, they face significant mobility issues. To this end, interview respondents report that many isolated individuals have become “stubborn” and independent by necessity—they have a toughness about them because

they are singularly focused on survival. However, this independence further exacerbates the difficulties inherent to accessing this population, since trust and relationships become difficult to cultivate. In order to effectively make inroads with isolated, vulnerable populations, and begin to better connect them to the services they require, service providers must expend significant time and resources that they inherently lack in such an under-resourced area.

Many respondents expressed particular concern about the disproportionate concentration, relative to the county, of homeless individuals. While apparently small in number[5], possibly attributable to the relatively high availability of low-cost, sub-standard housing, individuals experiencing homelessness are particularly socially isolated and vulnerable to the harsh desert elements. Respondents widely reported that the Morongo Basin needs additional services to support the homeless population, including a sheltering facility and places they can go daily for water, laundry, food, and bus passes. Currently, many go to Coachella Valley for support services, but Roy's Desert Resource Center, a homeless service center that offers 90 beds, is closing its doors, putting more pressure on other local providers such as Coachella Valley Rescue Mission. Beyond resource constraints in the Coachella Valley, the difficulty of affording and finding transportation for individuals experiencing homelessness led many respondents to argue that the Morongo Basin needs to provide more internal support services for this population.

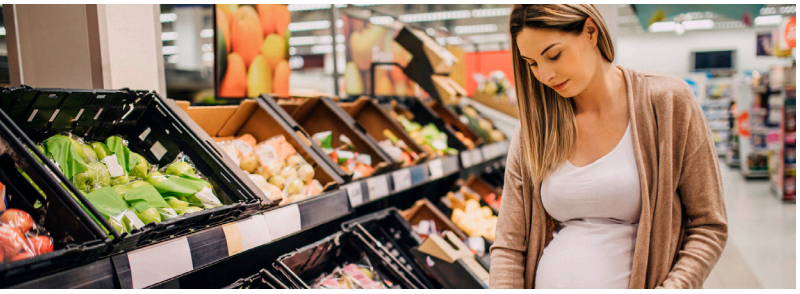
[5] *Homeless populations are inherently difficult to quantify. The local annual 2015 Point In Time Count, which measures the population of individuals experiencing homeless, captured 222 homeless adults and children in the Morongo Basin. While this estimate fell drastically by the next year, interview respondents maintained that this difference can be attributed to on-the-ground efforts to clean up homeless encampments just prior to the count, which produced an artificially low 2016 count. The reliability of the 2016 homeless count estimates could not be verified through triangulation.*

SPOTLIGHT: PROMOTORAS

Promotoras are Latina community members who receive training to be community health workers. They educate underserved communities about health education and lifestyle behaviors and seek to overcome barriers to the dissemination of health-related information. Information barriers may exist for many reasons, including social and community isolation, as well as a distrust of outsiders and the information they provide. Promotoras assist health-related information dissemination by using trusted residents to teach their neighbors relevant information regarding health prevention practices and civic engagement in their community. Promotoras may work in churches, schools, and other public areas. Rather than ordering or targeting residents to undergo certain behaviors, they operate through building relationships and trust in order to more effectively engage residents to participate in healthy behaviors in culturally appropriate ways. Examples of programs in which they aim to involve residents include physical activity, obtaining necessary screenings or vaccines, diabetes and weight management, mental health, and youth leadership.

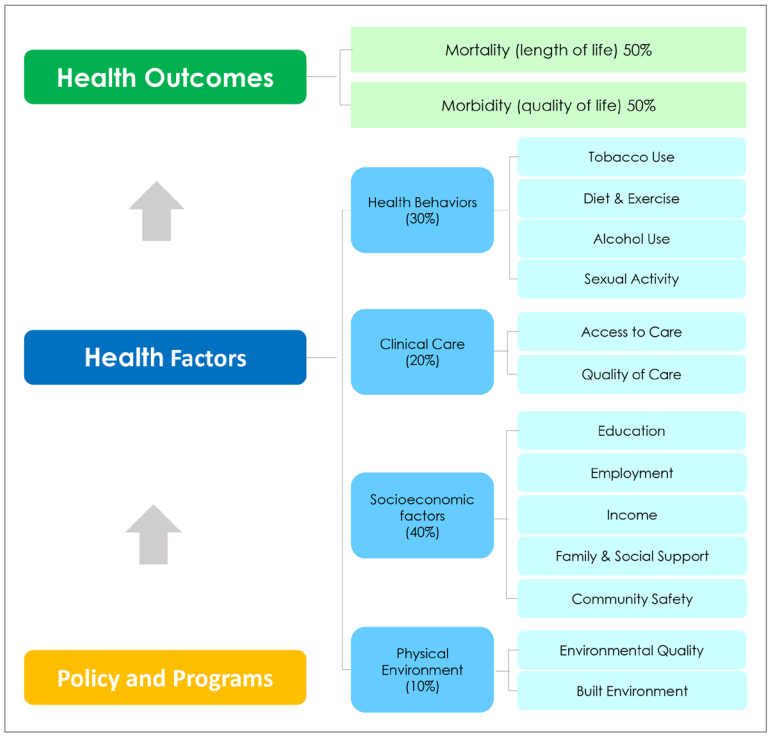
Promatoras may act as a patient advocate, educator, and translator for community members. For example, they may educate residents about where to find a healthcare provider or how to manage their weight. Promatoras are especially prevalent in rural communities in which there is often a lack of access to community health resources. In this way, they help improve both the health of and reduce health disparities among vulnerable populations.

While the promotora model is specific to the Latino community, interviews with respondents in the Morongo Basin revealed instances in which community members essentially function as promotoras in schools, churches and civic organizations. For example, some residents working in these spaces who are connected to health information appear to use their position to spread information about health resources. This appears to be an important way in which residents not directly connected to health-related services, such as students, are overcoming barriers to the dissemination of health-related information in the Morongo Basin.



SOCIAL DETERMINANTS OF HEALTH

[FIGURE 8] LIFE COURSE HEALTH DETERMINANT MODEL



Source: Community Health Ranking Model: UWPHI 2014

Figure 8 provides a framework for understanding how social and environmental factors, known as the social determinants of health, shape health outcomes. As the model depicts, the remaining 20 percent relates to clinical care, which includes both access to care and the quality of care. The remainder depends on individual health behavior, which is also associated with socioeconomic status, including the resources available to individuals. This model provides critical insights into the importance of understanding and addressing the social and environmental context in which people live, in order to improve their physical health[6]. Therefore, prior to developing interventions to improve the overall health conditions of Morongo Basin residents, it is crucial to first identify the current status and trends of key social determinants that affect the health of residents. This section presents the social determinants of health in the Morongo Basin in comparison to San Bernardino County and the State of California across six social domains: (1) food insecurity (2) environment (3) employment and income (4) education (5) transportation and (6) housing.

50 percent of an individual's health outcomes are driven by their socioeconomic status and their surrounding physical environment.

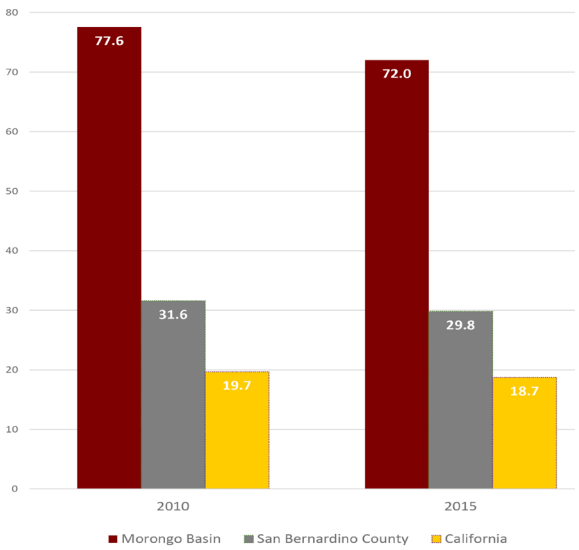
FOOD INSECURITY

Fresh and healthy foods play a crucial role in supporting the health of an individual by providing essential nutrients that reduce the risk of chronic disease and improve overall well-being. Places that lack access to supermarkets or food retailers more generally have become commonly known as "food deserts" (Walker, Keane, & Burke, 2010). Further, communities that have an abundance of fast-food options but few fresh

[6] *This model is created by the University of Wisconsin Population Health Institute (UWPHI) and has been used to rank the health of counties in Wisconsin since 2003.*

[FIGURE 9]

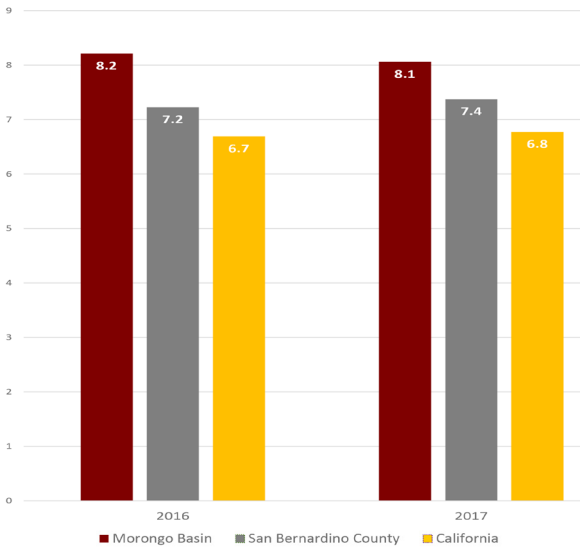
% RESIDENTS NOT LIVING WITHIN 1 MILE OF A SUPERMARKET



Source: USDA Food Atlas

[FIGURE 10]

SNAP-ACCEPTING INSTITUTION PER 10,000 POPULATION



Source: USDA Food Atlas

food retailers are referred to as "food swamps" (Rose, et al, 2009). Past studies have found strong linkages between residents living in under-resourced food landscapes and a higher cost burden, lower quality items, and higher rates of preventable diseases (Hendrickson, Smith, & Eikenberry, 2006; Cotterill & Franklin, 1995). The impact of these issues on residents are further compounded, as both food deserts and food swamps are concentrated in low-income communities, whose resident often lack the means or access to transportation that would allow them to purchase food outside of their own community.

Comparison across Time and Region

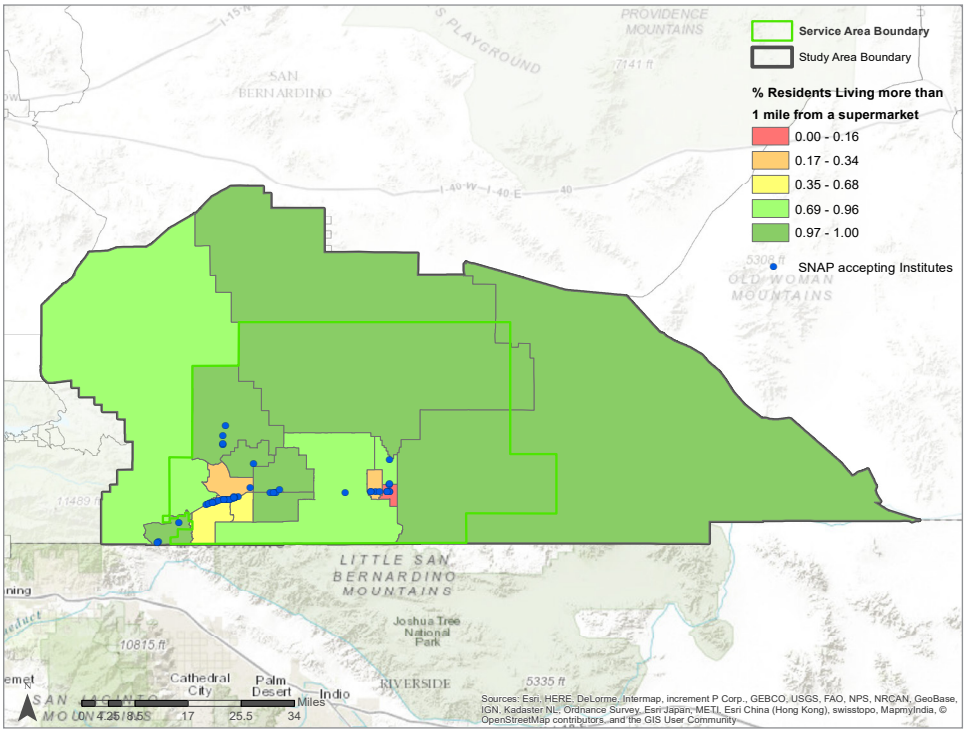
SUPERMARKET ACCESS: Morongo Basin residents experience a high degree of food insecurity due to their limited access to supermarkets. In fact, 72 percent of the population did not live within 1 mile of a supermarket as of 2015, as compared to 29.8 and 18.7 percent of residents in San Bernardino County and California respectively (Figure 9). This measure improved slightly between 2010 and 2015, but it is unclear if this is due to increased access or residential moves.

NUMBER OF SNAP ACCEPTING INSTITUTIONS: On the other hand, the number of Supplemental Nutrition Assistance Programs (SNAP) accepting institutions per 10,000 persons is the highest in the Morongo Basin among the three regions (Figure 10). While this is a positive sign of access, the indicator does not indicate the quality of the food provided at these institutions.

Comparison across Neighborhoods

While SNAP-accepting institutions help alleviate this issue slightly, locations are concentrated around Yucca Valley and Twentynine Palms along Highway 62, and do not reach residents living in outlying communities (Map 9). Furthermore, what food options do exist cannot be termed healthy. Inexpensive fast food restaurants abound and appear to enjoy a health business. Due to the lack of grocery

[MAP 9] FOOD ACCESSIBILITY IN THE MORONGO BASIN



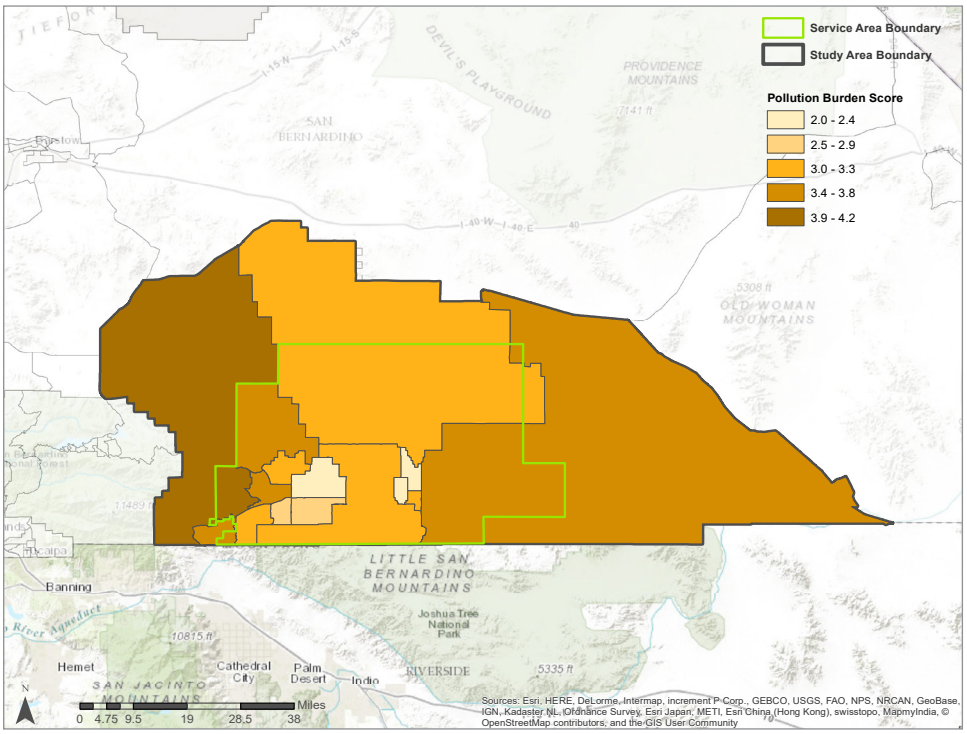
Source: American Community Survey (2011-15)

stores, it's "easier for people to get to a Circle K than a grocery store," but the convenience stores that residents necessarily depend upon for food access offer minimal healthy food options. Moreover, poor nutrition in the Morongo Basin is a function of poverty; with a large population of low-income and elderly retirees with fixed incomes, issues of access to healthy nutrition options go beyond the sheer availability of food. Food giveaway programs exist and are reportedly highly used, including programs through the American Food Bank, the Community Food Pantry, and the United States Department of Agriculture (USDA), administered through the county. Some limited delivery options also exist for those individuals with limited mobility.

ENVIRONMENTAL EXPOSURES

Existing studies have documented that environmental quality has a significant impact on health (Prüss-Ustün, Wolf, Corvalán, Bos, & Neira, 2016; Remoundou & Koundouri, 2009). According to the Office of Disease Prevention and Health Promotion, poor air quality can contribute to various illnesses including cancer, cardiovascular disease, and asthma. The implications on human health are enormous: according to the World Health Organization (WHO), thirteen million deaths annually can be attributed to preventable environmental causes. Poor water quality also contributes to gastrointestinal illness and a range of other health conditions, such as neurological problems and cancer. As environmental data is not available across multiple time periods, the most recent data from CalEnvironscreen 3.0 are included and comparisons are made between the Morongo Basin and the rest of San Bernardino and the State of California. For detailed information of how each variable was measured, please refer to the CalEnviroScreen 3.0 2017 Report (CalEnviroScreen, 2017).

[MAP 10] POLLUTION BURDEN SCORE IN THE MORONGO BASIN

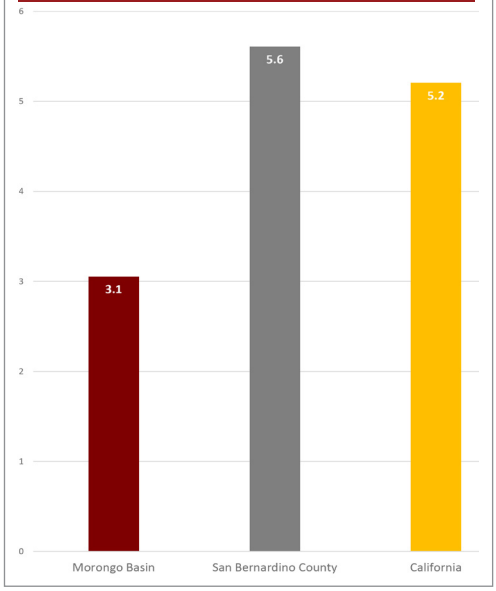


Source: American Community Survey (2011-15)

Comparison across Region

POLLUTION BURDEN SCORE: CalEnviroscreen calculates the pollution burden score by aggregating the average percentiles of their seven exposures indicators (ozone and PM2.5 concentrations, diesel PM emissions, drinking water contaminants, pesticide use, toxic releases from facilities, and traffic density) and their five environmental effects indicators (cleanup sites, impaired water bodies, groundwater threats, hazardous waste facilities and generators, and solid waste sites and facilities). Pollution Burden scores range from 0.1 to 10, with a larger number indicating worse pollution levels. Figure 11 shows that the overall environmental quality in the Morongo Basin is significantly better than both San Bernardino County and California. As the area is close to Joshua Tree National Park and the population density is comparatively low, environmental quality is currently better than the rest of the state.

[FIGURE 11]
POLLUTION BURDEN SCORE

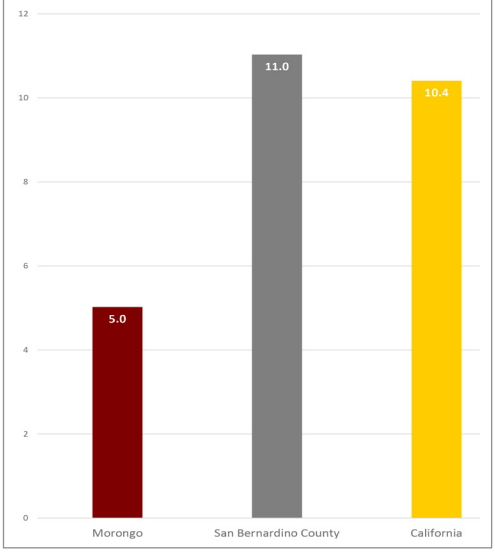


Source: CalEnviroScreen 3.0

AIR QUALITY: Air quality is measured by annual average concentration of fine particle matter (PM2.5) pollution between 2012 and 2014. As expected, the air quality in the Morongo Basin is significantly better than San Bernardino County and California. This is in line with the findings that the Morongo Basin had the least number of ER visits due to asthma among the examined geographies.

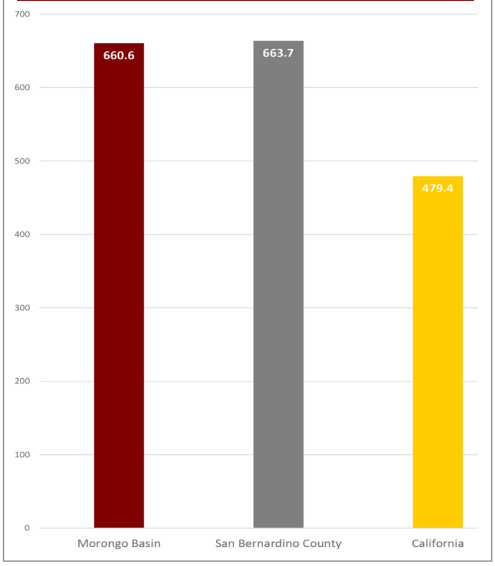
DRINKING WATER QUALITY: Drinking water quality is measured using average contaminant concentrations between 2005 and 2013. The quality of drinking water seems to be worse in the Morongo Basin compared to California, and similar to water quality in San Bernardino County. While the relative contaminant concentration is high, the analysis included in CalEnviroScreen 3.0 highlights that this does not indicate whether the water is safe to drink. Consistent with most areas in California, the Morongo Basin complies with the national drinking water standards, and water quality does not seem to be a major threat to the residents of the Morongo Basin (Figure 13).

[FIGURE 12]
AVERAGE CONCENTRATION OF PM 2.5



Source: CalEnviroScreen 3.0

[FIGURE 13]
DRINKING WATER QUALITY — AVERAGE CONTAMINANT CONCENTRATION



Source: CalEnviroScreen 3.0

Comparison across Neighborhoods

Map 10 presents the pollution burden score for each census tract in the Morongo Basin. The map shows only a small variance across census tracts. The pollution burden score ranges from 2.0 to 4.2. Even the highest pollution burden score in the Morongo Basin is 1.0 point lower than that of California, again suggesting the Morongo Basin has a relatively high environmental quality.

Despite high environmental quality, the desert climate introduces harms to resident health

Resident interviews supported the high environmental quality in the Morongo Basin, but provided an important richness to understanding how living in the high desert climate impacts resident health. Respondents held that the desert climate only exacerbates resident isolation. The Morongo Basin is a sprawling, sparsely-populated geography, with many residents living up rutted dirt roads, far from services and, in many cases, far from even their closest neighbors. With infrequent public transportation, which provides travel to the Coachella Valley and San Bernardino areas even more sporadically, residents face many barriers to accessing services, including routine healthcare. When residents have no alternative but to walk to the closest bus stop, they are trekking through the desert, where the heat reaches scorching levels for much of the year. For this reason, mobility and the climate represent real impediment to resource access and healthy living—particularly for sick residents seeking healthcare. One resident summarized the cumulative impact of daily life in the Morongo Basin, stating that, "all these things wear down a person's health."

Transportation is widely understood to constitute a major barrier to healthcare access and healthy living.

While residents widely maintained that the slower pace makes daily life less stressful, the desert climate, including extreme heat, dryness, lack of tree cover and desert animals creates an environment that can be "harsh sometimes." Temperature extremes occur in both the winter and summer, so people need costly residential heating and cooling for a large portion of the year. Extensive rains contribute to flooding problems that further erode dirt roads, which makes walking difficult and hampers transportation. When it gets particularly hot, many community hubs offer heat relief stations, but residents still have to get a ride to these common locations. The extreme climate also discourages exercise for much of the year; people tend to exercise "in the in-between times—and not so much in the summer and winter" even though obesity remains a common health issue in the Morongo Basin.

EMPLOYMENT & INCOME

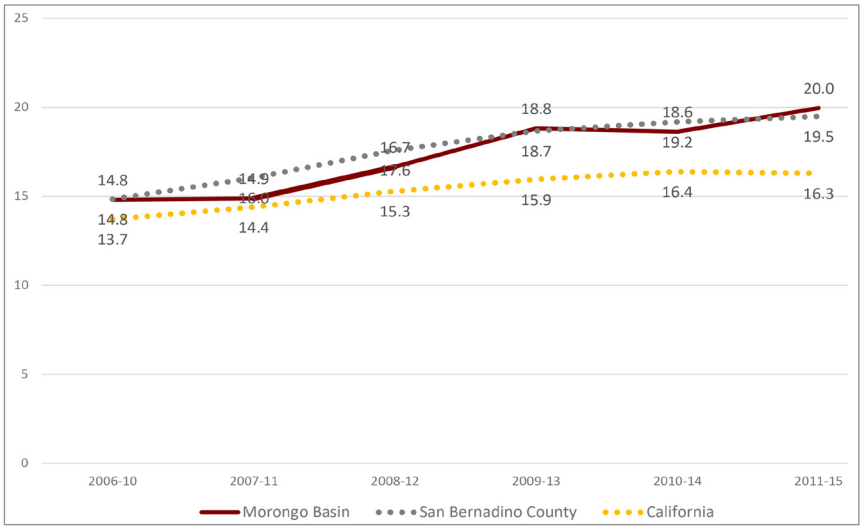
Poverty (or low levels of income) is associated with poor health, and forms a barrier for residents to access necessary healthcare services. Existing studies have found that higher levels of income are associated with a lower likelihood of disease and premature death (Woolfe et al., 2015; Schiller, Lucas, & Peregoy, 2012). Income is both directly and indirectly related to health outcomes because it can enable or constrain the material conditions needed to sustain good health and treat health issues when they do arise (Marmot, 2002). In addition to the harm of low-income levels to health, unemployment is found to correspond with negative health outcomes, especially mental health issues (Paul & Moser, 2006; Linn, Sandifer, & Stein, 1985). Below, five key factors shaping employment and income in the Morongo Basin are analyzed: poverty, median household incomes, labor force participation, unemployment rate, and jobs and industries.

Comparison across Time and Region

POVERTY: The poverty rate is defined as the percentage of households living under 100 percent of the federal poverty line (approximately $24,250 for a family of 4 in 2015). Poverty in the Morongo Basin has increased substantially since the 2007 housing market crisis. From ACS 2006-10 to ACS 2011-15, the poverty rate increased from 14.8 percent to 20.0 percent (Figure 14). While the Morongo Basin trailed California by only 1.1 percent in ACS 2006-10, the poverty rate gap increased to 3.7 percentage points in ACS 2011-15. The overall trends in the poverty rate between the Morongo Basin and San Bernardino County are similar over the same period, with the difference being that the former has experienced a sharp increase (from 2007-11 to 2009-13) and a slight decrease (from 2009-13 to 2010-14), while the latter indicates a rising trajectory. These data illustrate the devastating impact of the recession on the Morongo Basin and San Bernardino County generally.

However, poverty across the county appears to be gradually lessening across the Morongo Basin in a way that is not evident in the quantitative data. Interview respondents argued that the local economy is finally beginning to bounce back after the recession, which they partially attributed to local tourism. As one resident said, "here we are just starting to get out" of the recession. According to one respondent, the economic crash took out a lot of people who were just "kind of getting by," forcing people to leave the area to find employment—with some residents even abandoning their dogs and horses, leaving the residents who stayed struck with a physical, daily reminder of the economic activity that used to exist in the area.

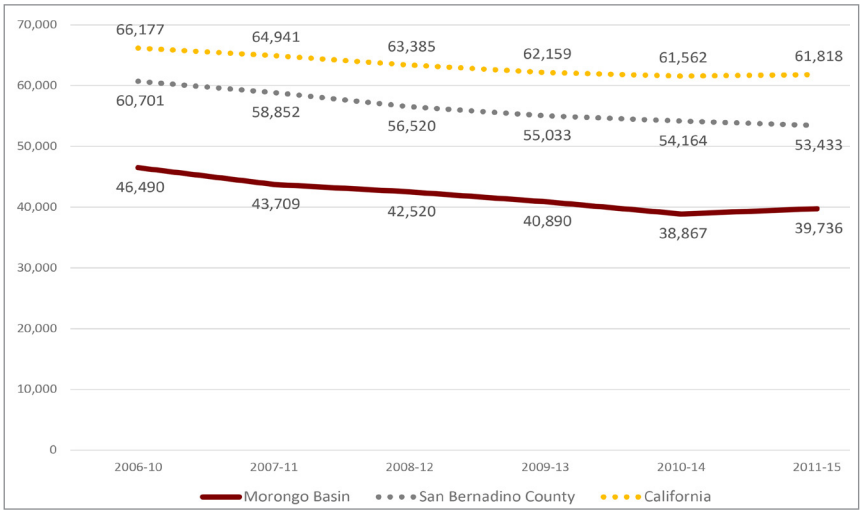
[FIGURE 14] % HOUSEHOLDS BELOW 100% FEDERAL POVERTY LINE



Source: American Community Survey

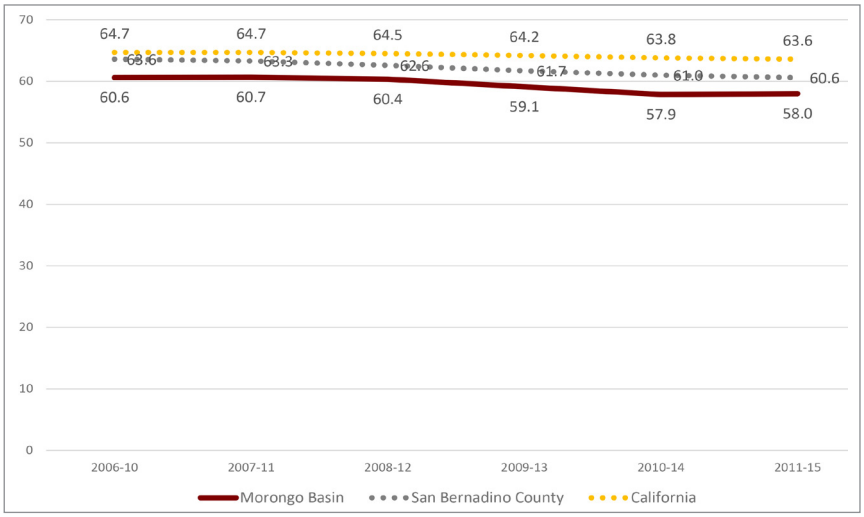
MEDIAN HOUSEHOLD INCOME: Among the three regions, the Morongo Basin has the lowest median household income (Figure 15). In the most recent ACS, the median household income was below $40,000 in the Morongo Basin, which is more than $20,000 lower than across the State of California and $14,000 lower than in San Bernardino

[FIGURE 15] MEDIAN HOUSEHOLD INCOME (2015)



Source: American Community Survey

[FIGURE 16] % IN LABOR FORCE-INDIVIDUALS 16+



Source: American Community Survey

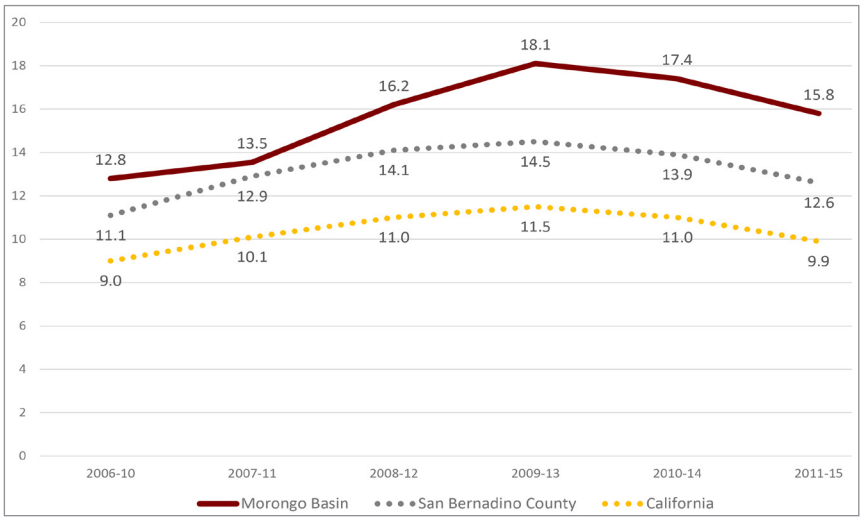
County. In other words, incomes in the Morongo Basin are far lower than across the state and county populations. The median household income fell in all three regions and has not returned to the pre-crisis level. However, the increasing gap between the Morongo Basin and California shows that the impact of the crisis was more severe and sustaining on Morongo Basin households.

LABOR FORCE PARTICIPATION: The labor force participation rate reflects the share of individuals over age 16 who are either working or searching for a job. Less than 60 percent of working age Morongo Basin residents are in the labor force (Figure 16). The rate is 5.6 percent lower than in California and 2.6 percent lower than in San Bernardino County. The relatively low labor force participation rate may reflect both the lack of job opportunities in the Morongo Basin as well as a higher percentage of older residents in the Morongo Basin.

UNEMPLOYMENT RATE: Unemployment in the Morongo Basin rose steadily during the first three periods of ACS examined here, increasing from 12.8 percent in ACS 2006-10 to 18.1 percent in ACS 2009-13 (Figure 17). After reaching the peak, the rate fell in the following two periods, finishing at 15.8 percent. Despite the drop, the 2011-15 unemployment rate (15.8) in the Morongo Basin remains significantly higher than across both California and San Bernardino County, and is still 3 percentage points higher than the local pre-recession unemployment rate.

JOBS AND INDUSTRIES: Table 4 compares changes in the industrial composition from 2004 to 2014. The list of the top four industries remained constant, although their rankings changed. Over the past 10 years, the proportion of healthcare jobs has increased from 8.8 percent to 22.3 percent, ranking as the largest industry in 2014. The Educational Service and Accommodation and Food Service industries have produced a stable number of jobs in both periods. In 2014, the top 5 industries accounted for 74 percent of all industries in the Basin, indicating that the region is highly reliant upon only a few industries. In 2014, there were significantly fewer jobs in the construction industry than would be expected after the housing market crash. According to Longitudinal

[FIGURE 17] UNEMPLOYMENT RATE (%)



Source: American Community Survey

Employer-Household Dynamics data, there were less than 10,000 jobs in the Morongo Basin in 2014. About 60 percent of these jobs employ the Morongo Basin residents, while the rest are taken by workers who live outside of the Morongo Basin. Compared to the total number of working age population (55403 in ACS 2011-15) the total number of jobs is extremely low, and about 40 percent of the jobs that do exist employ people who live outside the area.

Comparison across Neighborhoods

Map 11 to Map 14 present the geographical distribution of all four employment and income indicators in the Morongo Basin using ACS 2011-15. Poverty is highly concentrated in two census tracts that lie in the southern part of the Morongo Basin, between Yucca Valley and Twentynine Palms. The census tract to the northern part of the area, where the Marine Base is located, has, at 11.5 percent, the lowest poverty rate. As expected, the geographic distribution of median household incomes strongly corresponds to the geographical distribution of poverty. The two census tracts with the highest poverty rates have the lowest median income. One census tract, in Twentynine Palms, has the highest median household income, at $55,446, which is close to the median household income of San Bernardino County. This again indicates that the income level in the Morongo Basin is relatively lower than the income level in the rest of the county, and is consistent across all areas of the Morongo Basin.

[TABLE 4] COMPOSITION OF TOP 5 INDUSTRIES—MORONGO BASIN

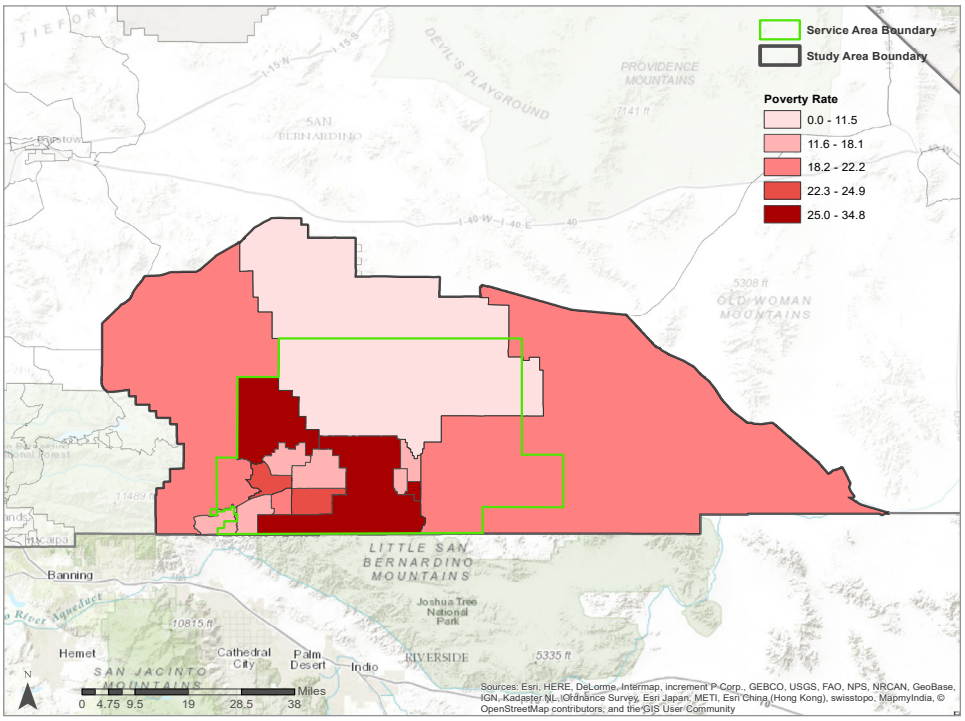
2004			2014		
Industry	**#**	**%**	**Industry**	**#**	**%**
Educational Services	1598	21.6	Health Care & Social Assistance	2189	22.3
Retail Trade	1328	17.9	Educational Services	1602	16.3
Accommodation & Food Services	1151	15.6	Accommodation & Food Services	1585	16.1
Health Care & Social Assistance	651	8.8	Retail Trade	1294	13.2
Construction	529	7.2	Waste Management & Remediation Services	602	6.1

Source: Longitudinal Employer-Household Dynamics

Labor force participation rates and unemployment rates differ significantly across census tracts. Labor force participation rates range widely, from between 26.2 to 82.6 percent. The poorest two census tracts, in the southern area of the Morongo Basin, also

have the lowest labor force participation rates. Meanwhile, for the census tract in the northern part of the geography, in which 90 percent of residents are below age 35, and which houses the military base, over 80 percent of individuals over age 16 are in the labor force. The unemployment rate across the Morongo Basin also ranges widely across census tracts, from between 7.3 to 28.7 percent. The western census tract shows the highest unemployment rate, and also includes the highest proportion of elderly, white residents. Following the housing market crisis, the unemployment rate in this census tract increased significantly, from 18.3 percent in ACS 2006-10 to 40.1 percent in ACS 2008-12.

[MAP 11] POVERTY RATE IN THE MORONGO BASIN (%)

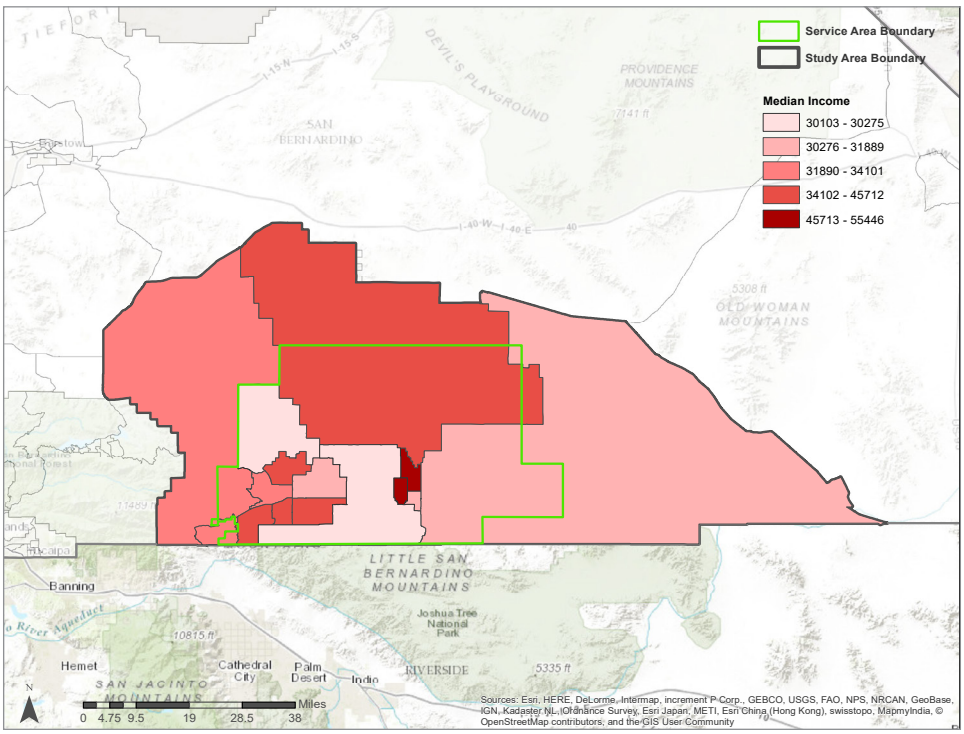


Source: American Community Survey (2011-15)

Low incomes and high poverty rates across the Morongo Basin contribute to poor resident health and constrain healthcare access

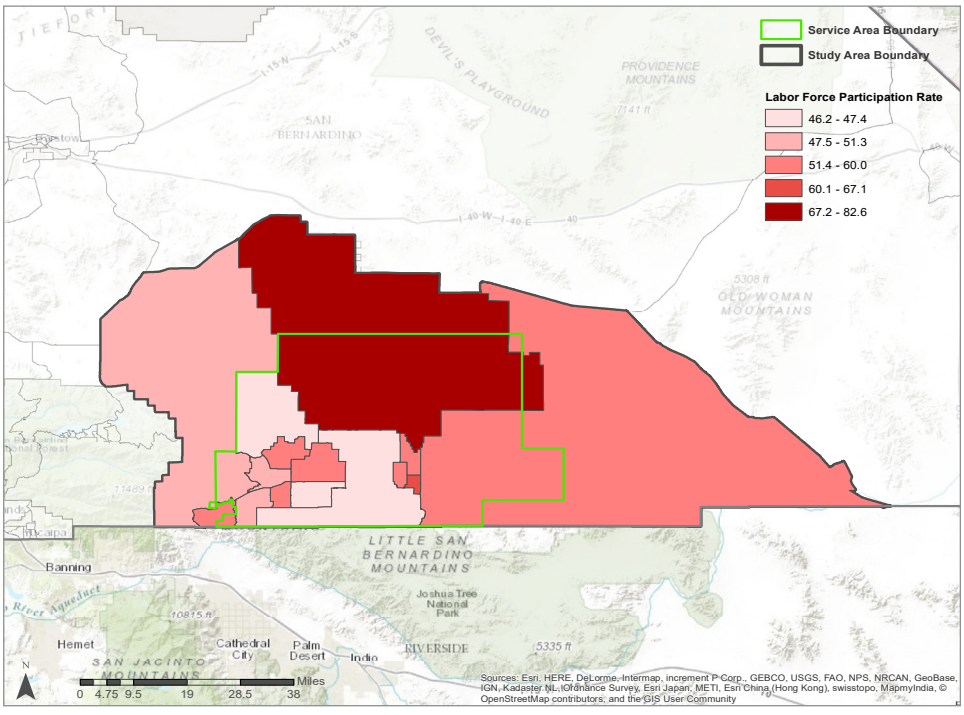
Poverty status is seen as the key issue that determines health access across the Morongo Basin. As one respondent noted, "the best social program is a job." Many noted that the largest employers in the Morongo Basin are the school district, the military base and the hospital. The military base has a particularly large impact; as of 2015, the base included 11,000 active-duty military personnel and 1,900 civilian employees, with total wages across both groups nearing $500 million (Marine Air Ground Task Force Training Command, 2016). Apart from these three main employers, low-paying service jobs also exist, but the economic struggle that many residents face is palpable, and the local economy was

[MAP 12] MEDIAN INCOME IN THE MORONGO BASIN (2015)



Source: American Community Survey (2011-15)

[MAP 13] LABOR FORCE PARTICIPATION RATE IN THE MORONGO BASIN (%)



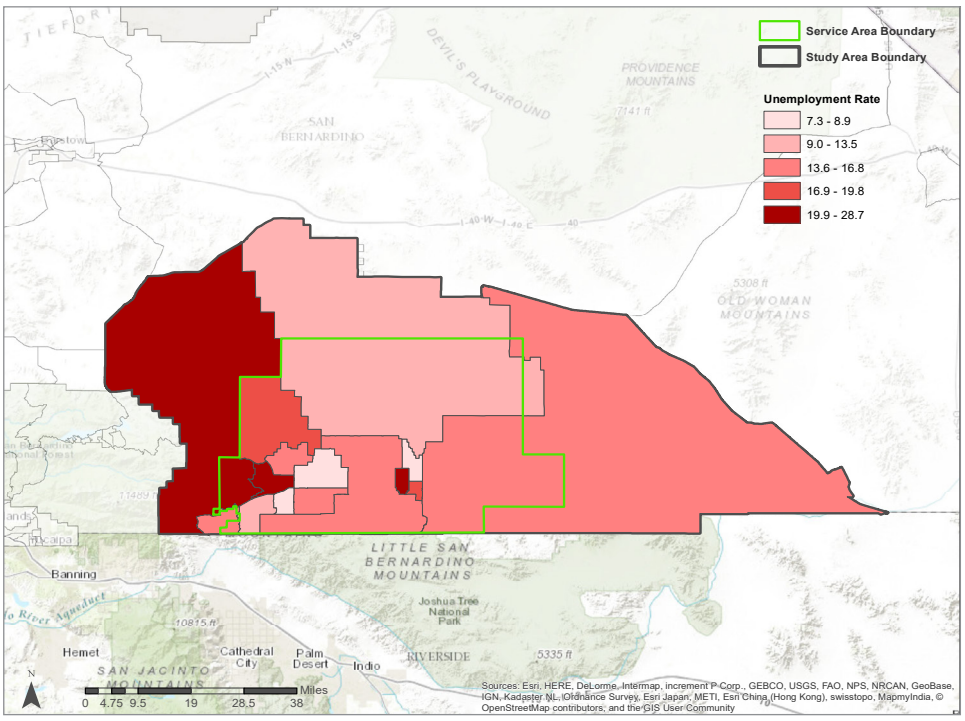
Source: American Community Survey (2011-15)

described as "staggeringly low." This lack of employment opportunity has spilled over into the workforce, as there are insufficient jobs to keep young people, and it is competitive to get the few jobs that do exist at employers like Wal-Mart. Given the significant barriers to transportation access for many residents, jobs and educational opportunities that exist in the Coachella Valley are simply not accessible for a large portion of the population. For this reason, college-bound kids "don't come back" due to the lack of jobs, opportunities and amenities. In other words, "when someone is successful, they leave," which further contributes to an under-skilled local workforce.

"Getting a high paying job can change the trajectory of a family for a generation"

However, many interview respondents claimed that the area is changing and growing after more than a decade of stagnancy, in a way that is not yet observable in large-scale, time-lagged public datasets. Tourism in Joshua Tree, related to the National Park and the emerging, eclectic community of artists and artisans, appears to be leading this trend, and producing spillover effects throughout the entire Morongo Basin. Indeed, Joshua Tree National Park visitation has exploded within recent years; the park is on track to hit 3 million visitors in 2017, up from a then-record-breaking 1.6 million visitors in 2014 (Land, 2015). According to the National Park Service, Joshua Tree National Park brings an

[MAP 14] UNEMPLOYMENT RATE IN THE MORONGO BASIN (%)



Source: American Community Survey (2011-15)

estimated $80 million each year into the local economy.

At the same time that they worry about the pressures that tourism is bringing to the local area, residents express concern that the local economy is not sufficiently diversified to extend past the park, and is overly reliant on federal employees generally. This is evidenced by the significant (albeit short in duration) impact of the 2013 federal government shutdown on the local economy, as described by residents. Residents expressed that the Morongo Basin was disproportionately harmed by the 2013 shutdown, which decimated local tourism related to the national park in October—one of the peak times for local arts and park-related tourism. Moreover, contractors at the base were affected, demonstrating how fluctuations at the base and in federal government policies strongly impact the local economy in the Morongo Basin.

EDUCATION

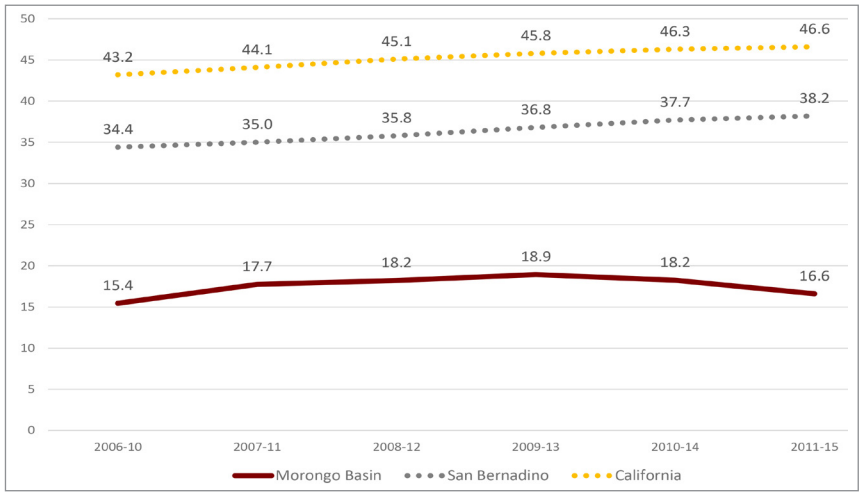
The relationship between an individual's educational attainment and their overall health has been documented by substantial research. For example, existing studies have observed that higher levels of schooling are associated with longer life expectancy (Hayward, Hummer, & Sasson, 2015) a lower risk of some malignant cancers (Mouw, et al., 2008) and a decreased chance of mortality from heart disease (Masters, Hummer, & Powers, 2012). Educational attainment is also associated with factors that indirectly shape health outcomes, including quality of diet (Robinson, Crozier, Borland, Hammond, & al., 2004) and hazardous workplaces (Masters, Hummer, & Powers, 2012). Additionally, the gap in mortality risk based on educational attainment has persisted and widened since the 1990s (Masters, Hummer, & Powers, 2012). Below three key indicators that describe educational opportunities and circumstances in the Morongo Basin are analyzed: college enrollment, college graduates, and no high school diploma.

Comparison across Time and Region

COLLEGE ENROLLMENT: Overall, the data indicates that the Morongo Basin significantly lags county and state college enrollment rates. The Morongo Basin trailed behind California by 30 percent, and below San Bernardino County by 21.6 percent, in ACS 2011-15. However, from ACS 2006-10 to ACS 2011-15, the percentage of college-enrolled young adults in the Morongo Basin increased from 15.4

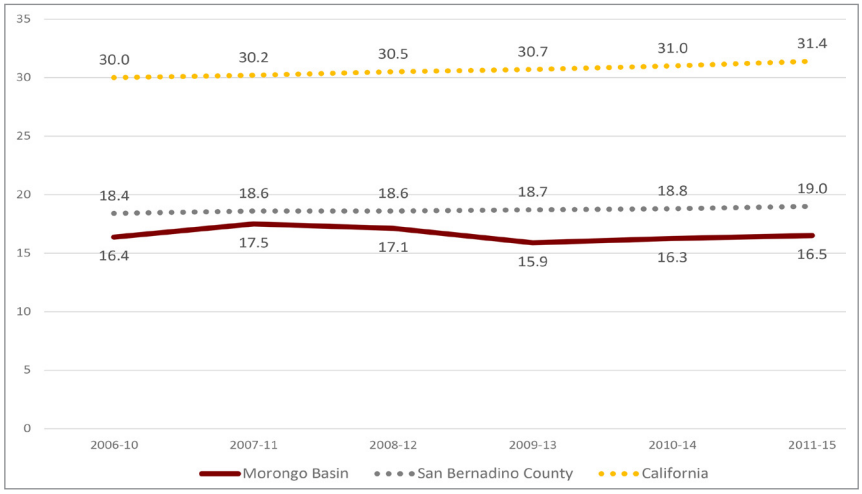
There is a massive 14.9 percent gap between college graduation rates in the Morongo Basin and across California.

[FIGURE 18] PROPORTION OF COLLEGE ENROLLED—INDIVIDUALS 18-24 YEARS OLD (%)



Source: American Community Survey

[FIGURE 19] PROPORTION OF COLLEGE GRADUATES—INDIVIDUALS 25 YEARS AND OLDER (%)



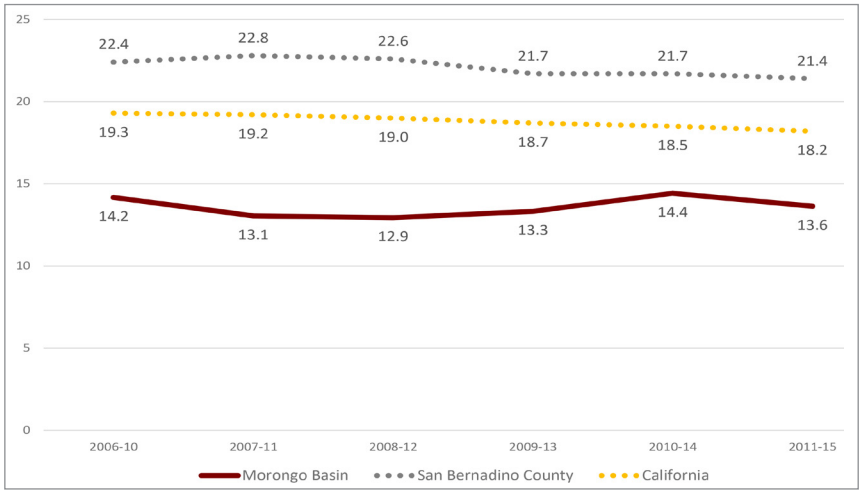
Source: American Community Survey

percent to 16.6 percent (Figure 18). Despite this promising upward trend, the 1.2 percent increase from ACS 2006-10 to ACS 2011-15 in the Morongo Basin falls short of the corresponding 3.4 percent increase in California and 3.8 increase in San Bernardino County. The Morongo Basin reached a peak college enrollment in ACS 2009-13, at 18.9 percent, and then the percentage falls subsequently. This is in contrast to consistent, incremental percentage increases in California and San Bernardino County across the entire time period studied. The drop in the share of college graduates in the Morongo Basin suggests that many college graduates may have left the area following the crisis for better economic opportunities.

COLLEGE GRADUATES: The Morongo Basin has the lowest college graduate rate across the studied geographies, although there is only a 2.5 percent difference between the Morongo Basin and San Bernardino County in ACS 2011-15. This low rate of college graduates likely reveals that Morongo Basin youth who graduate from college move away from the area in search of job opportunities, and do not return to the area. This is also consistent with data which shows that Morongo Basin 18-to-24 year-olds are less likely to enroll in college. Interviews with residents further support this claim.

The rate of college graduate residents in the Morongo Basin increased by .9 percentage points from ACS 2006-10 to 2007-11, which is the largest increase for any of the three areas across this time period. However, the Morongo Basin is also the only area that experienced any decline in the percentage of college graduates over the time periods studied; the rate fell from 17.5 percent in ACS 2007-11 to 17.1 in 2008-12 to 15.9 percent in 2009-13. Consequently, there is a .1 percent increase in the percentage

[FIGURE 20] PROPORTION OF HIGH SCHOOL DROP-OUTS—INDIVIDUALS 25 YEARS AND OLDER (%)



Source: American Community Survey

of college graduates across the ACS 2006-10 to ACS 2011-15 time periods, while the state experienced a 1.4 percent increase over this same timeframe.

NO HIGH SCHOOL DIPLOMA: The percentage of individuals ages 25 and older who did not receive a high school diploma in the Morongo Basin is lower than in other parts of San Bernardino County and California. Although the overall trend is similar for each examined geography over time, the rate of high school drop-outs in the Morongo Basin is consistently lower than in San Bernardino County (a 7.8 percent difference in ACS 2011-15) and California (a 4.6 percent gap in ACS 2011-15). Based on other maps on employment and poverty (detailed later), a high school degree appears to be sufficient for most of the local employment opportunities in the area—provided that there are enough jobs to employ the high school graduates that stay in the area.

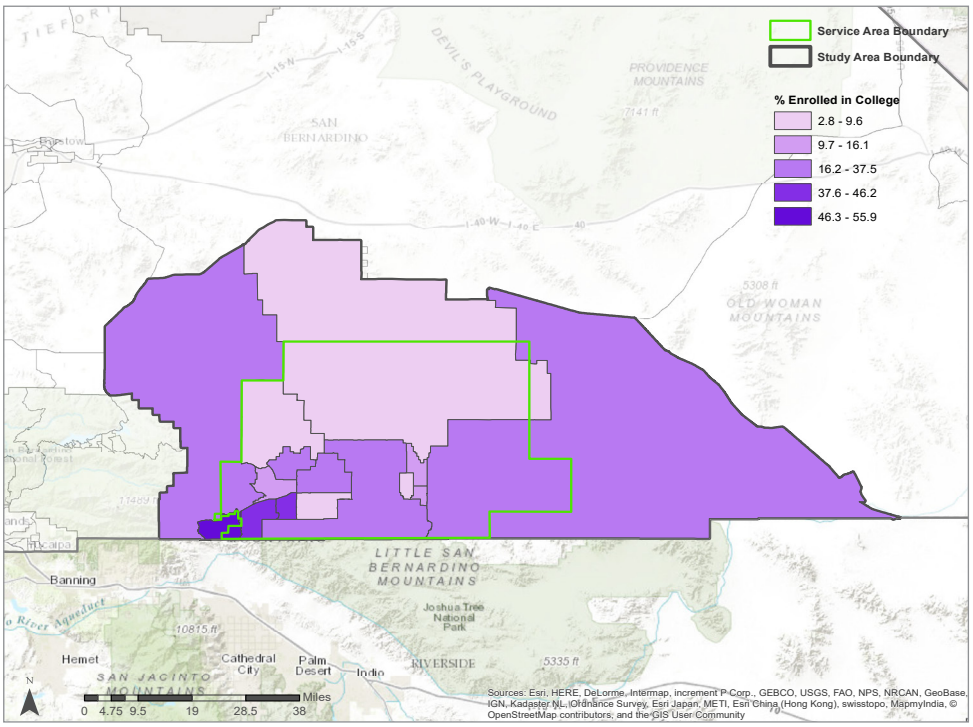
Comparison across Neighborhoods

Map 15 to Map 17 shows the geographical distribution of the three education indicators—share of (1) college enrollment (2) college graduates and (3) high school dropouts—which are available at the census tract level. The census tract with the Twentynine Palms Marine Corps base has the highest percentages of high school dropouts, and the lowest percentage of college enrollees and graduates. Despite the concentration of individuals with low educational attainment, this tract also has the highest labor force participation rate in the Morongo Basin (Map 13) which likely reflects a large employed but not college-educated active-duty and retired military population.

The Morongo Unified School District understands its unique role, which extends beyond education in the Morongo Basin, and functions in a broad capacity across multiple dimensions

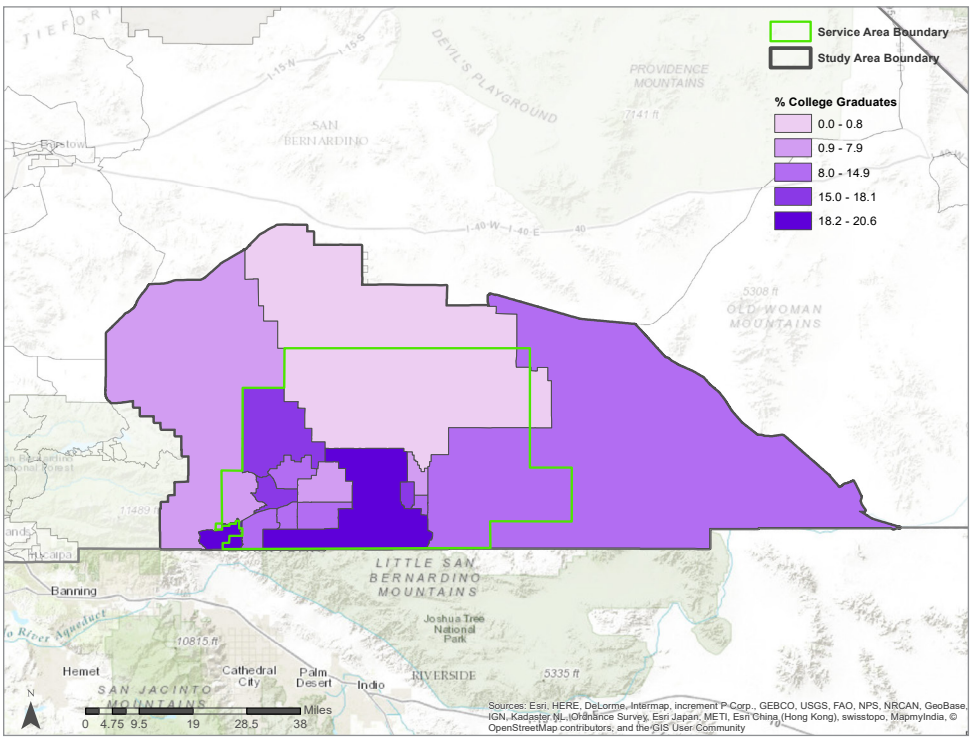
Schools play an important function as a "hub of the community" in rural areas. Respondents noted that while schools in the Morongo Basin maintain an explicit educational mission, they acknowledge and work to confront the multifaceted community issues that find their way into the classroom, and which influence kids across multiple dimensions. As one respondent described, "nothing is an outside-of-school issue... it is pretty sobering to realize that you are more than an educational institution. [The question becomes] what can we do to help them be successful in the classroom?" This is an especially difficult task due to the high need across much of the population, where some students have no shoes, live in homes without utilities, and travel four to five hours to school each day on a bus, yet learn in the same classroom as children from wealthy families.

[MAP 15] POPULATION IN THE MORONGO BASIN ENROLLED IN COLLEGE (%)



Source: American Community Survey (2011-15)

[MAP 16] PROPORTION OF COLLEGE GRADUATES IN THE MORONGO BASIN (%)

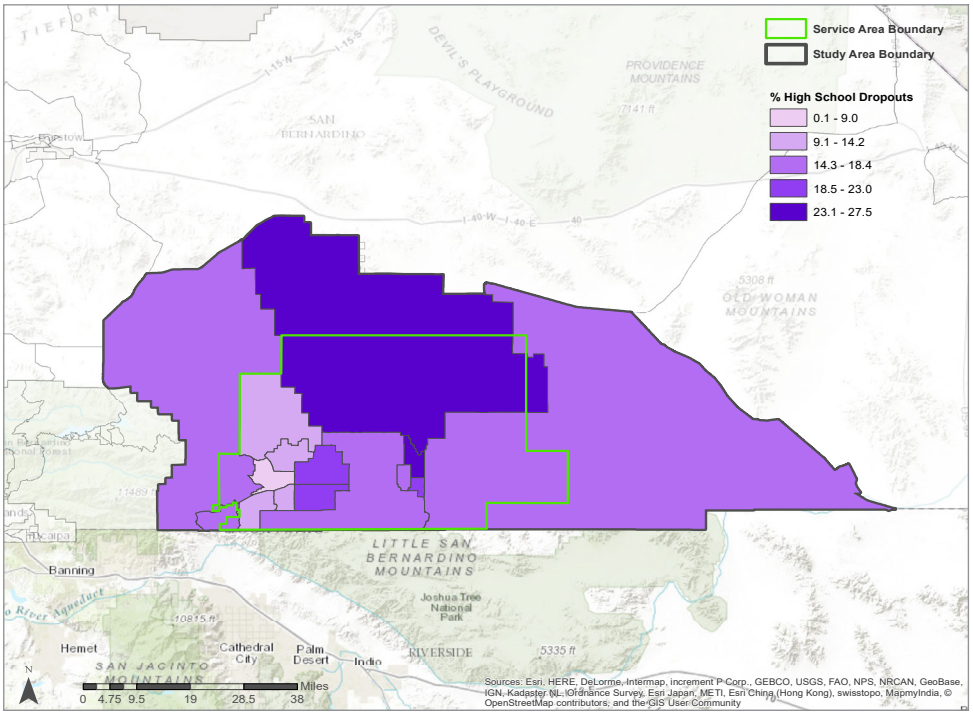


Source: American Community Survey (2011-15)

In recognition of their expansive role, schools have adjusted their functioning to accommodate the needs of the population, including to address the intersectionality of health and education, since "children need health to access their educational journey." For example, the schools provide summer meals to children at more than 10 sites across the Morongo Basin, and all the children have to do is come get the food—in recognition that schools play a crucial role in children's health, including reducing food insecurity for youth. Throughout, the school district emphasizes student retention and deep involvement, and their approach seeks to eliminate, to the extent possible, the multitude of factors that contribute to low school performance and student dropout—including factors that extend far beyond the classroom.

However, the Morongo Basin jurisdictions and service providers must confront the challenge that state and local policies often overlook the unique circumstances faced by rural service areas and populations, including the school district. To provide one example, a respondent described the challenge of accommodating a new state policy that required students to get additional immunizations over the summer, before they could attend classes the following year. In the Morongo Basin, accommodating such a policy prior to the school year

[MAP 17] PROPORTION OF HIGH SCHOOL DROPOUTS IN THE MORONGO BASIN (%)



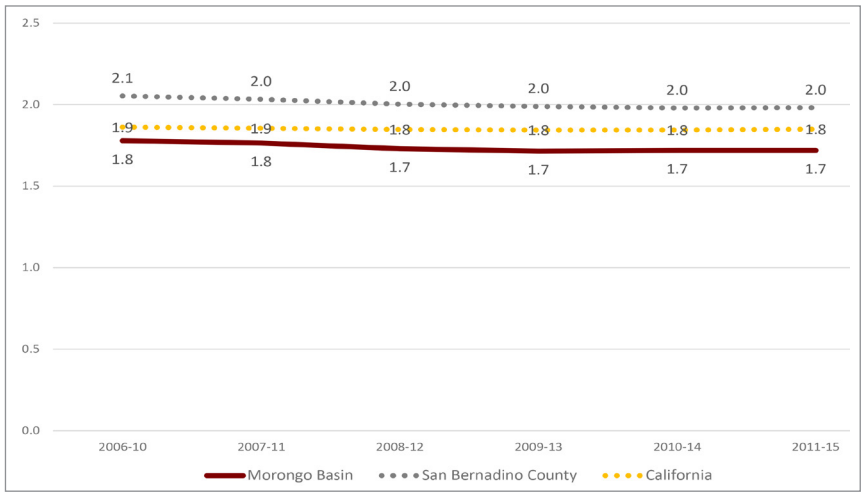
Source: American Community Survey (2011-15)

beginning is particularly challenging, since information dissemination can occur slowly for a rural population with limited mobility, and students have a hard time getting a ride to a school site for a shot without the availability of school buses. Since some kids live miles from a bus stop, the requirement of coming to a school site to get a shot constituted a significant, and potentially insurmountable, burden. However, the looming concern existed that students would not receive the necessary shot and therefore be unable to attend classes for the first weeks of the school year, and possibly fall behind. In order to accommodate the state mandate and ensure that all students were able to attend school, school officials had to go to students' homes to ensure that the shots were administered. This is only one example of the unique challenges facing a rural school district, and the additional resources required to accommodate physically, and often socially, isolated populations. The lack of resources affects students across multiple dimensions; since the area lies just outside the Air Quality District, the Morongo Unified School District generally receives the oldest buses that fail emissions tests. The 2016-2017 school year was reportedly the first year in which local school buses had air conditioning.

"If there's one common thread, it's that parents want a better life for their kids"

The Morongo Unified School District is also working with the local community college, Copper Mountain College, to provide limited technical programs. These programs include a dental assistance and a registered nursing (RN) program. There is reportedly a strong commitment to developing additional programs to ensure that local high school graduates have the skills to access the limited local jobs that exist. However, respondents widely reported that they saw a need for additional technical and vocational programs, including programs to enable youth to access health-related jobs. Respondents noted that the school district actively pursues partnerships with Copper Mountain College, to ensure that students are directly linked to vocational programs, to achieve their goal of having high school graduates secure gainful employment before high school graduation. Further evidence of the strides made by the school district is the fact that 8th grade test scores of students in the Morongo Basin have risen to the level of students in the rest of San Bernardino County.

[FIGURE 21] AVERAGE NUMBER OF VEHICLES PER HOUSEHOLD

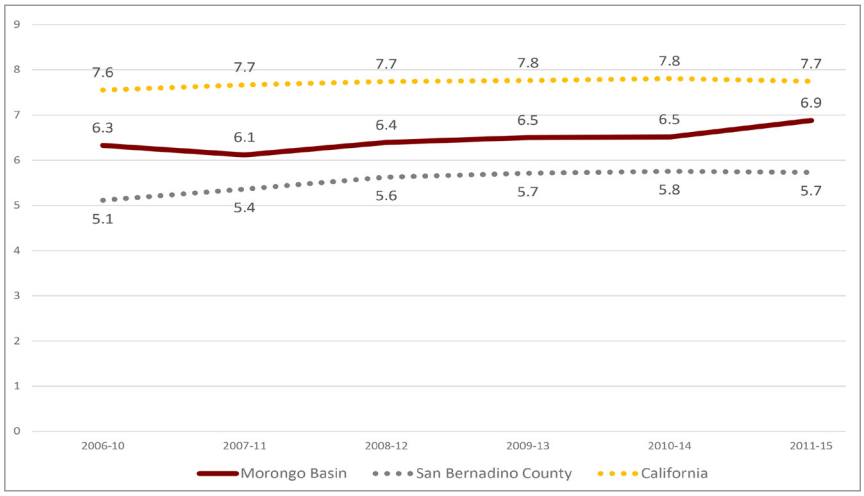


Source: American Community Survey

TRANSPORTATION

Transportation critically influences an individual's quality of life. Although existing research indicates that social and economic factors are significant indicators of health, there is also increasing evidence that our 'built environment', such as transportation systems, can also contribute to an abundance or lack of healthy living opportunities (Farhang & Bhatia, 2005). Transportation affects an individual's ability to access destinations, like jobs, which in turn can influence their health (U.S. Department of Transportation, 2015; ITE, 2017). The accessibility of destinations positively impacts health, and transportation is particularly important to enable residents to access daily necessities (Transportation, 2015). In the section below, factors that connect transportation access to job accessibility and general mobility across the Morongo Basin are analyzed.

[FIGURE 22] HOUSEHOLDS WITH NO VEHICLES (%)

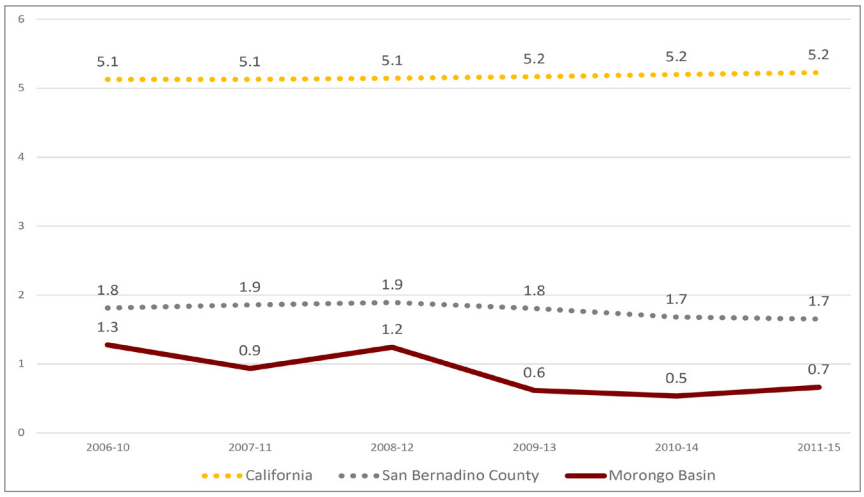


Source: American Community Survey

Comparison across Time and Region

VEHICLE OWNERSHIP: The average number of vehicles per household in the Morongo Basin is slightly lower than the averages in San Bernardino County and California. From ACS 2008-12 to 2011-15, the Morongo Basin has maintained a consistent rate of 1.7 vehicles per household, which is slightly lower than the average number of vehicles reported in the region from ACS 2006-10 to 2007-11 (Figure 21). Additionally, the percentage of Morongo Basin households with no vehicle fell after ACS 2006-10 to 6.1 percent but rose steadily the remaining four periods, finishing at 6.9 percent (Figure 22). In the most recent ACS, the percentage of households with no vehicle in the Morongo Basin was about 6.9 percent; this is 1.2 percentage points higher than across San Bernardino County and 0.7 percentage points lower than across California. The fact that the percentage of Morongo Basin households with no vehicles has increased during a period when there has not been significant change in transit ridership is an area of concern.

[FIGURE 23] PUBLIC TRANSIT RIDERS (%)



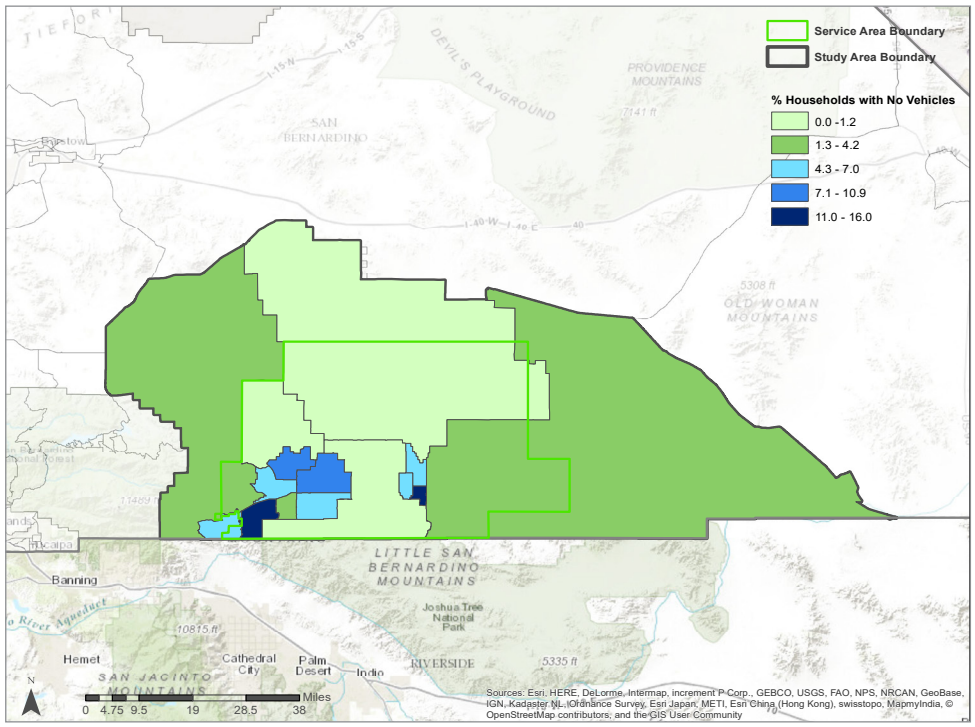
Source: American Community Survey

% USING PUBLIC TRANSIT TO WORK: Among the three regions, the Morongo Basin has the lowest percentage of workers using public transit to travel to work. Less than 1 percent of Morongo Basin residents use public transit to go to work (Figure 23). This rate is 1 percentage lower than in San Bernardino County and 4.5 percentage lower than in California. Furthermore, compared to the share of households with no vehicles, the share of public transit users is quite low. The low rate of public transit riders reflects the lack of transportation systems in the Morongo Basin, including in relation to job accessibility.

Comparison across Neighborhoods

Map 18 show the geographical distribution share of households with no vehicles. The census tracts with a greater share of households without vehicles are concentrated in or near the two cities. These census tracts also mostly overlap with high poverty census tracts. The Morongo Basin has a very low percentage of public transit riders. While most of the region's residents do not use public transit to get to work, there are a few census tracts in Yucca Valley and Twentynine Palms with a relatively higher proportion of public transit users (Map 18). Although people living in these census tracts are more likely to use public transit, the shares of transit users in all neighborhoods are less than 4 percent, while some neighborhoods have over 15 percent of households without vehicles. Again, these rates reflect a limited transportation system in the Morongo Basin, as well as high poverty.

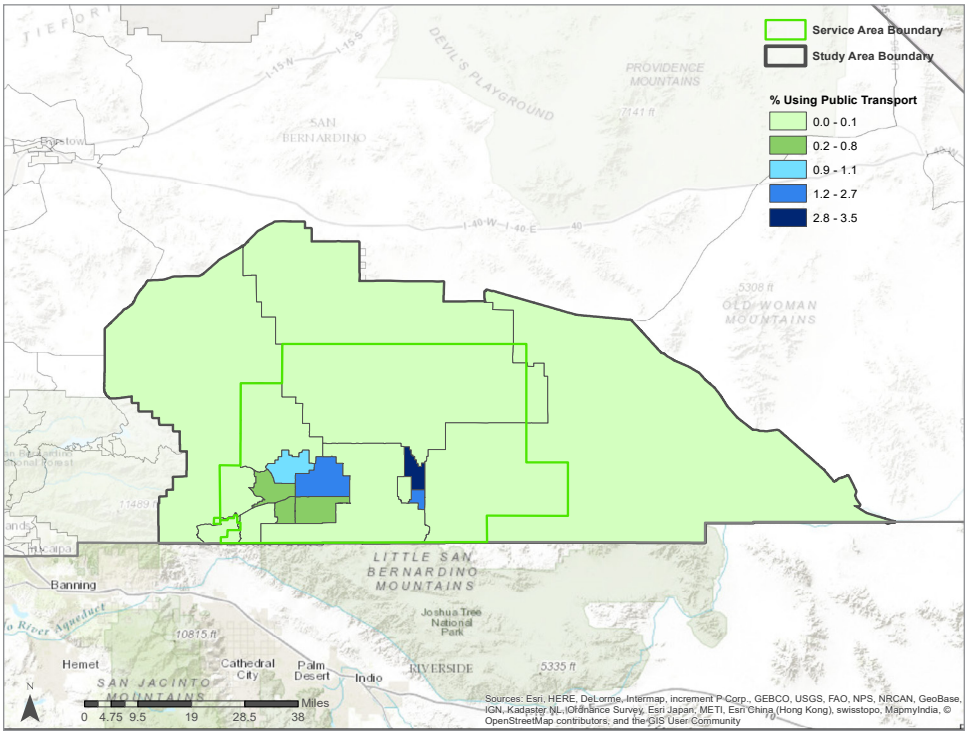
[MAP 18] PROPORTION OF HOUSEHOLDS IN THE MORONGO BASIN WITH NO VEHICLES (%)



Source: American Community Survey (2011-15)

Interview respondents decisively maintained that insufficient

[MAP 19] PROPORTION USING PUBLIC TRANSPORTATION IN THE MORONGO BASIN (%)



Source: American Community Survey (2011-15)

transportation access, including not having access to a car and the infrequent and limited public transportation system, critically influences resident mobility, with important consequences for their ability to access opportunities, resources and services. Beyond car ownership, whether residents can afford maintenance and gas determines whether they can use their car frequently and reliably to improve their mobility. Public transportation across the Morongo Basin, provided by the Morongo Basin Transit Authority (MBTA), is minimal and infrequent, and does not connect directly to health institutions outside of the Morongo Basin (MBTA, 2014). As it stands, as one medical professional described, "people cannot rely on public transportation to seek healthcare" and therefore improving resident health across the population will require "better, more frequent" public transportation to access a wide range of services and opportunities, both within and beyond the Morongo Basin. The public transportation system also does not deviate from the main roads, which requires residents to walk far distances through the desert to reach the closest bus stop, or seek a ride from others—if their health and circumstances permit.

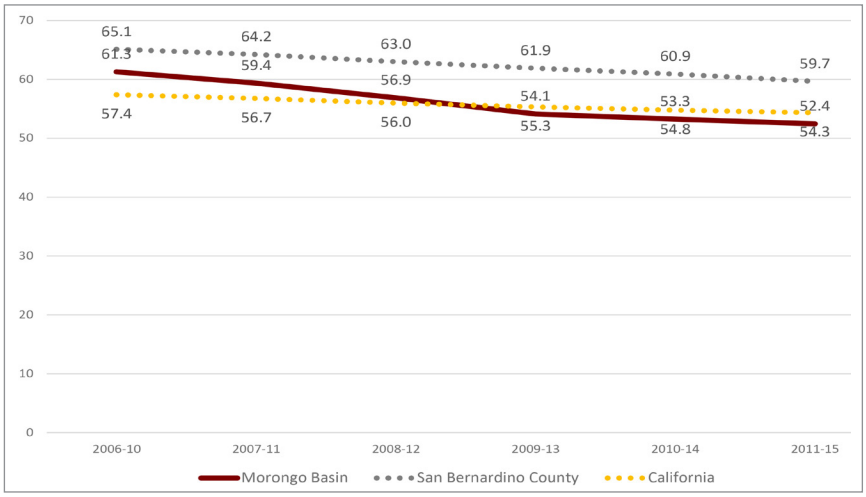
As one resident simply stated, "if you don't have a car, you're really stuck."

Some services have emerged to fill this need. The Department of Veteran's Affairs (VA) provides a weekday van for veterans to Loma Linda VA Hospital. The Morongo Basin Healthcare District also offers free transportation to medical appointments in the Morongo Basin. However, respondents held that the area desperately needs additional transportation options for both health and non-health-related trips. The Healthcare District's transportation is viewed as particularly essential, because drivers are trained to go into patient houses and help them into vehicles in whatever condition the patient is found.

Even with these services, poor transportation access and limited mobility for impoverished and elderly residents across the Morongo Basin influences health across multiple dimensions, by preventing individuals from taking trips to access resources, services and maintain social connections. In this way, poor transportation contributes to a dangerous "feedback loop of isolation," as one resident described, where individuals become increasingly isolated, and consequently withdrawn

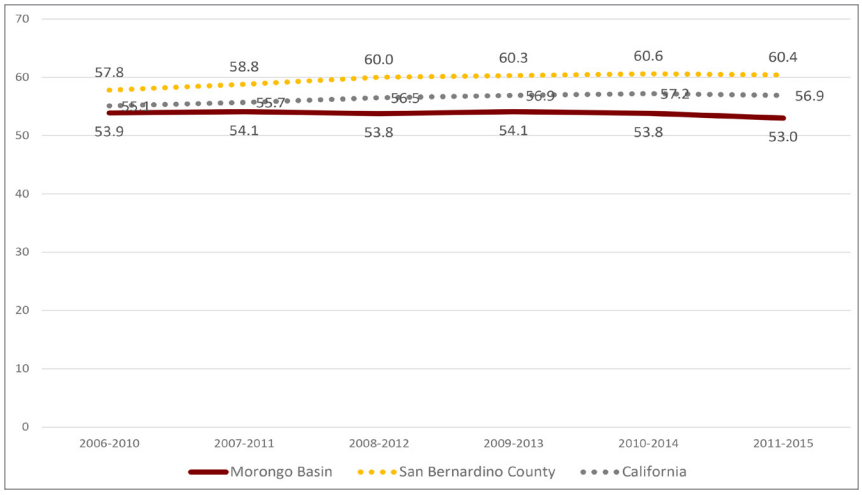
and hopeless. This state, in turn, further impacts residents' physical and mental health. Because of transportation, people are forced to make dire choices: between services that they can access with limited rides, or foregoing some needed trips entirely. Oftentimes, isolated and elderly individuals let health issues go too far, and do not seek treatment until they desperately need it, as a result of limited transportation and mobility.

[FIGURE 24] HOMEOWNERSHIP RATE (%)



Source: American Community Survey

[FIGURE 25] RENT BURDEN: PROPORTION OF HOUSEHOLDS PAYING MORE THAN 30 PERCENT OF INCOME ON RENT



Source: American Community Survey

HOUSING AND REAL ESTATE

The quality and accessibility of housing affects a wide range of health outcomes, including respiratory infections, asthma, lead poisoning, injuries, and mental health (Krieger & Higgins, 2002). While overall housing quality in the US has improved significantly over the past 100 years, access to homeownership and rental affordability is still a major challenge in the US housing market. Since housing accounts for the greatest proportion of most households' budget, if housing affordability is guaranteed, households can have more resources to pay for healthcare and healthy food, which can lead to better health outcomes. Stable and affordable housing also can alleviate stress that arises due to financial pressures and frequent moves, and thereby support mental health (Maqbool & Higgings, 2015).

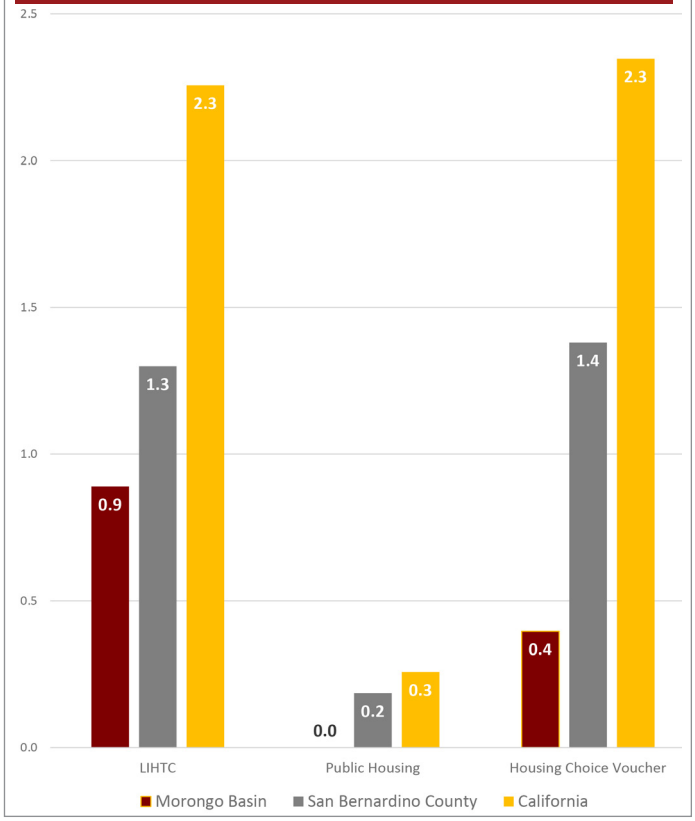
Comparison across Time and Region

HOMEOWNERSHIP RATE:

Homeownership rates are often associated with greater levels of residential and neighborhood stability. Of particular concern, homeownership rates in the Morongo Basin have fallen from 61.3 percent in ACS 2006-10 to 52.4 percent in ACS 2011-15. Among the three regions, the homeownership rate in the Morongo Basin has dropped the most over the past decade, falling below both San Bernardino County and California rates in the most recent survey period. This is in line with the continuous income decline and significant increase in unemployment in the Morongo Basin following the housing market crisis. Considering that a greater proportion of older age households are,

[FIGURE 26]

SHARE OF SUBSIDIZED HOUSING PER HOUSEHOLD — 2015 (%)



Source: USDA Food Access Atlas

on average, homeowners, the low homeownership rate in the Morongo Basin (despite the higher share of elderly residents) reflects the particularly acute financial struggle faced by the residents.

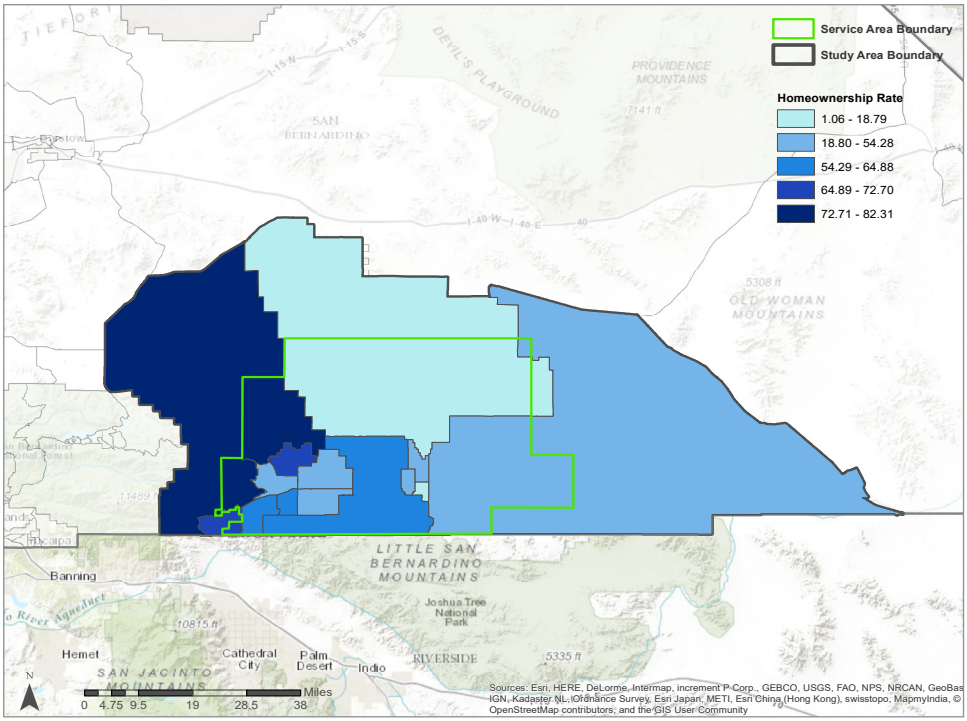
RENT BURDEN: According to the US Housing & Urban Development Department, renters are defined to be facing rent burden if they pay more than 30 percent of their income on rent. Compared to California and San Bernardino County, the Morongo Basin has a lower share of households facing rent burden. As the income is significantly lower in this area, the lower share of rent burden households indicates that rent is relatively inexpensive in the Morongo Basin. Indeed, according to interview respondents, many residents move to the Morongo Basin for exactly this reason. However, due to their low incomes and high poverty rates, many households in the Morongo Basin may have scant resources left after making their monthly rent, and little wealth to cover any unexpected expenses that may arise.

SUBSIDIZED HOUSING: To enhance affordability, the US government offers various housing subsidies. The three largest programs are the Low-Income Housing Tax Credit (LIHTC), Public Housing, and the Housing Choice Voucher (HCV). Figure 26 notes that, of the three geographies examined, the Morongo Basin and San Bernardino County lag behind the state of California in the share of units provided by all three programs, although the aggregate share is still below 5 percent. In the Morongo Basin, the lack of subsidized housing is particularly prominent. In 2015, LIHTC accounted for only 0.9 percent of the total housing units in the Morongo Basin. There were no public housing units in the Morongo Basin, and households with HCVs made up only 0.4 percent of the total housing units. The lack of subsidized housing available to Morongo Basin residents is worth noting because the poverty levels indicate higher need than availability.

Residents express growing pressure from the local real estate market

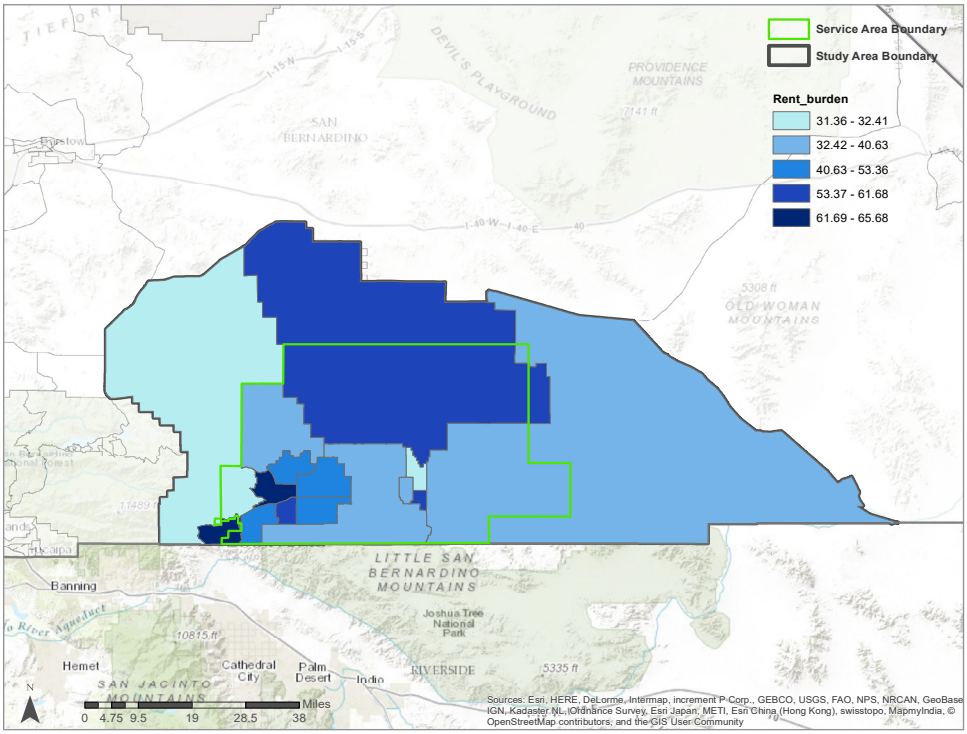
In interviews, respondents noted that tourism to the Joshua Tree area has exacerbated a relatively-new problem with short-term rentals (such as Airbnb properties) in the Morongo Basin, a problem that similarly exists throughout the nation. As one resident said, “everyone wants to have a 92252 zip code.” The county estimates the number of short-term rentals between 500 to 800 in the Joshua tree area alone, which is a considerable amount given the low population throughout the Morongo Basin. While the county is working to regulate the rentals, many respondents noted that this heightened demand, with income-generating opportunities, has put pressure on the local housing stock and increased local housing costs. In addition to pressures from growing demand, respondents reported that many people live in substandard housing

[MAP 20] HOMEOWNERSHIP RATE IN THE MORNGO BASIN (%)



Source: American Community Survey (2011-15)

[MAP 21] RENT BURDEN IN THE MORONGO BASIN (%)



Source: American Community Survey (2011-15)

due to their inability to afford higher quality housing. As one individual stated, "often it's their home, but it's not really shelter."

Comparison across Neighborhoods

The homeownership rate is significantly higher in the western part of the Morongo Basin (Refer to Map 20). The census tract in the far west has over 80 percent homeownership. On the other hand, the homeownership rate for the census tract located east of it (the north central census tract) is only 1.1 percent. This is closely related to the age and racial composition of these neighborhoods. In particular, the low homeownership rate in the northern census tract, which houses the Marine Corps base, reflects the fact that many of these young renters likely work at the marine base, are stationed in the area for a limited time, live in on-base rented housing and may choose not to purchase a home due to their life circumstances. Rent burden ranges between 31.3 to 65.7 percent across neighborhoods in the Morongo Basin, showing that some neighborhoods face higher rent burden than others. (Refer to Map 21)

ASSET MAPPING

[TABLE 5] LIST OF COMMUNITY ASSETS

CATEGORY NAME	TOTAL
HEALTHCARE SERVICES	
Mental Healthcare Services	15
General Healthcare Services	177
FOOD SYSTEM ASSETS	
Farmer's Market	1
Grocery Stores	10
Healthy Food Stores	2
SNAP-Accepting Institutions	50
Convenience Stores	19
Fast Food Joints	40
Liquor Stores	9
FINANCIAL AND BUSINESS SERVICES	
Banks	8
Credit Unions	1
SOCIAL & CULTURAL ASSETS	
Churches	65
Community Centers	2
Libraries	3
Non-Profit Organizations	19
Schools	32
Senior Citizen Centers	6
Veteran & Military Organizations	2
Youth Centers	3
RECREATIONAL ASSETS	
Bowling & Golf Centers	6
Fitness Centers	8
Museums	4
Parks	12
Theaters	6

Source: ReferenceUSA-U. S. Business Database (2016)

ASSET MAPPING

Asset mapping for the Morongo Basin focused on institutional assets like healthcare services, cultural and recreational assets, food system assets, etc. and on some civic assets like non-profit and grassroots organizations and churches[7]. Each category has sub-categories, which have direct and indirect impacts on the health of individuals and the community. Access to these assets enhances community life and contributes toward a healthier community.

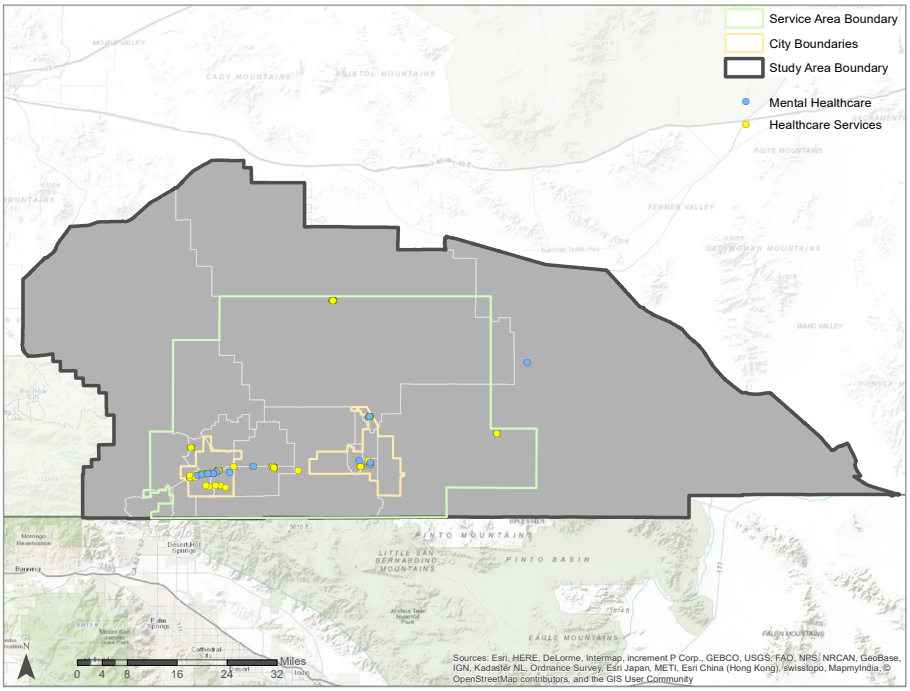
It is important to note that active and retired military personnel and military dependents have access to on-base services that civilian residents cannot use, including a hospital, and on-base shopping and dining options. In this way, the base is somewhat "independent and self-sufficient," and although the services are not accessible to all residents, respondents perceived the base, and the jobs it brings, as a community asset and "something to be proud of."

Healthcare Services

The assets in this category form the largest share of the total number of assets in the study area. Similar to the Financial and Business Services category, healthcare services are concentrated in the incorporated town of Yucca Valley, followed by the city of Twentynine Palms. The remaining healthcare services are located on the commercial corridor connecting the two cities. There are barely any healthcare facilities located near or beyond the Service Area Boundary. General healthcare services are higher in number than the mental healthcare services, are also more widely spatially distributed.

[7] *For asset definitions, refer to page 59*

[MAP 22] GENERAL AND MENTAL HEALTHCARE SERVICES

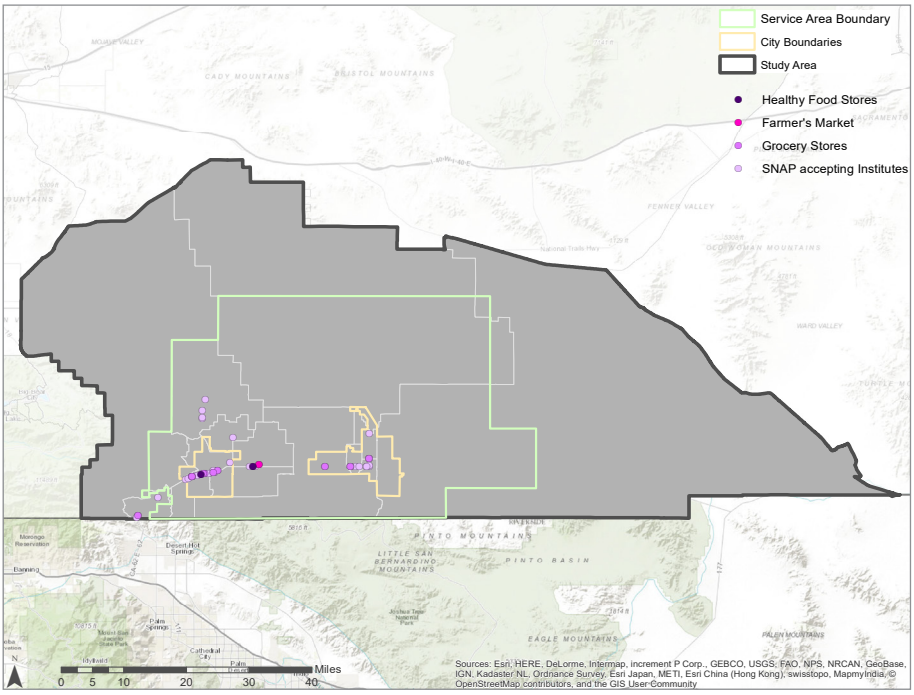


Source: American Community Survey (2011-15)

Residents argue that the Morongo Basin needs more health-related assets

Respondents strongly argued that the Morongo Basin lacks sufficient health-related assets, including shelters, affordable indoor exercise opportunities, and medical facilities. They also expressed a need for additional health-related services, including education related to healthy eating and nutrition and childcare services, particularly in the summer. Multiple individuals argued that, in order to overcome transportation as a barrier to health access and help residents cope with accessibility issues, the Morongo Basin needs additional mobile health services.

[MAP 23] HEALTHY FOOD OPTIONS



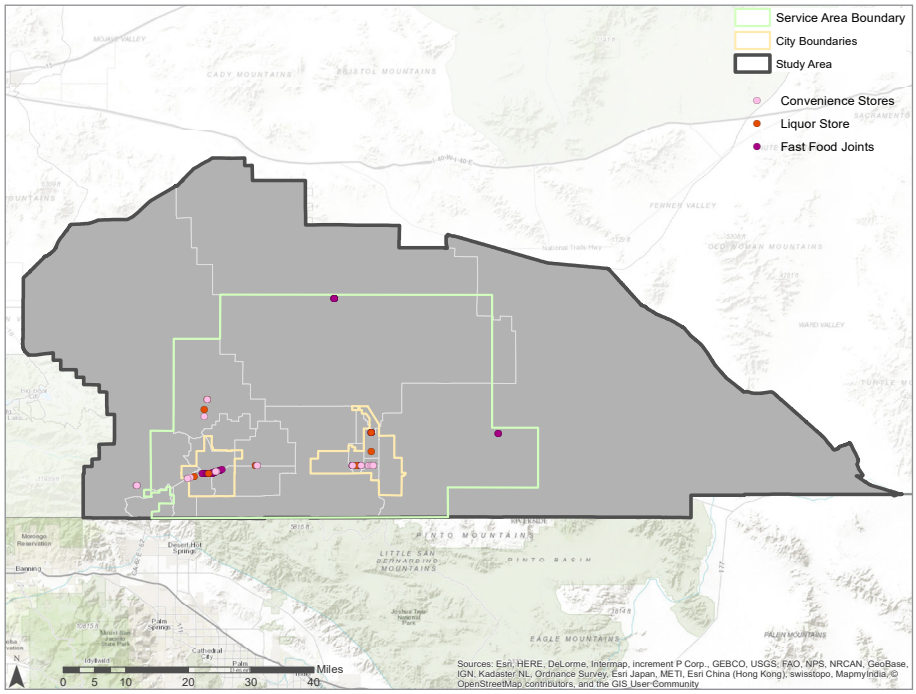
Source: American Community Survey (2011-15)

Food System Assets

As previously outlined, access to affordable and high-quality food is crucial to ensuring overall health. The food systems asset map compiles all available food retailers, to understand the food options that are currently available to residents in the Morongo Basin.

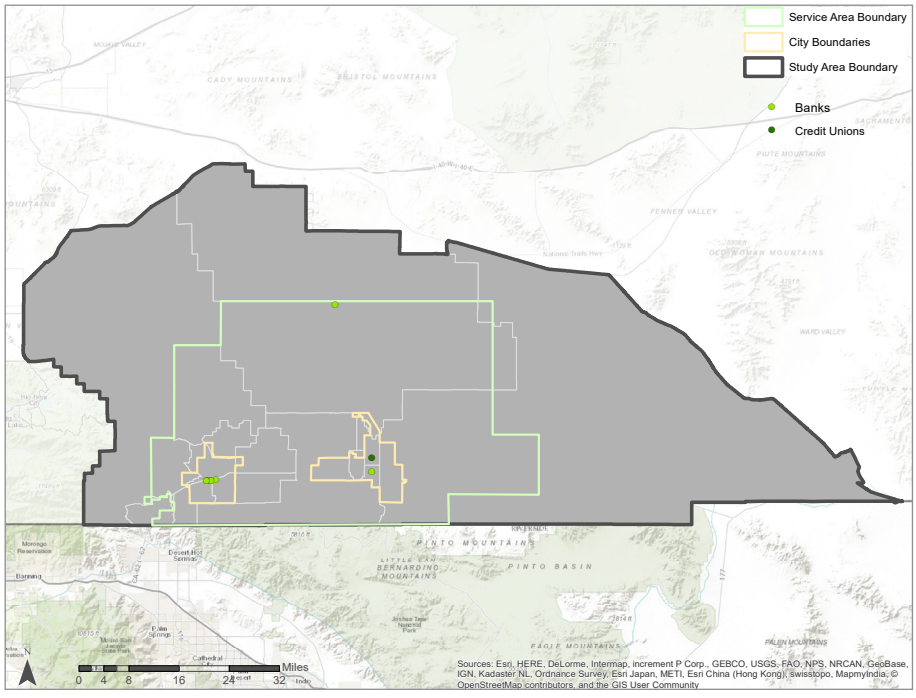
The map and analysis in the food security section illustrate the unequal distribution of food system assets. The majority of these resources are also concentrated in two cities, similar to assets in other categories, making it inaccessible for many residents. In addition, the options available in the study area are frequently unhealthy options. To understand the proportion and distribution of healthy and unhealthy food options, the category was split into two sub-categories. The first category included healthy food stores, farmer's markets, grocery stores and SNAP-accepting institutions, while the second category included convenience stores, liquor stores and fast food restaurants. The table illustrates

[MAP 24] UNHEALTHY FOOD OPTIONS



Source: American Community Survey (2011-15)

[MAP 25] FINANCIAL SERVICES



Source: American Community Survey (2011-15)

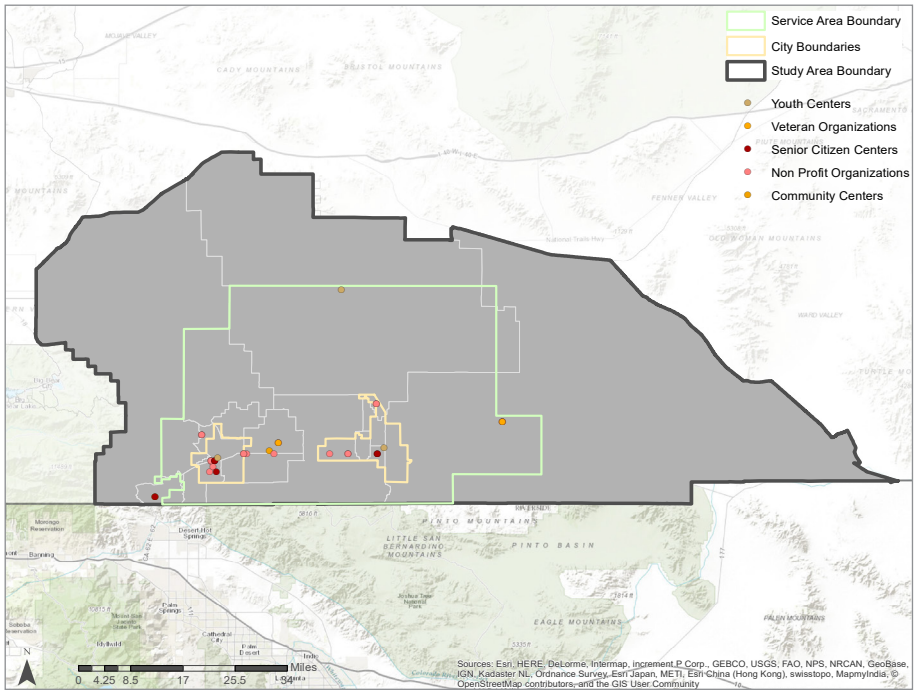
that there are fewer healthy food options than unhealthy ones. The largest portion in the first category is the SNAP-accepting institutions, which are a mix of healthy and unhealthy options, reducing the proportion of healthy food options even more. The number of grocery stores in the Morongo Basin is similar to the number of liquor stores available in the area, which further emphasizes the concern for healthy food options. In other words, out of the limited food options available, the majority are unhealthy and unequally distributed across the area.

Financial & Business Services

Traditional banks often avoid communities where they do not anticipate making a profit (Mathieu Despard, 2017). An absence of these banks can result in a reduction of small business and mortgage loans, and often exacerbates residents' reliance on alternative and more expensive banking options like check cashing and payday lending (Mathieu Despard, 2017). Residents that accumulate fees from alternative banking services may have to make changes to their daily budget in areas that directly influence their health, including food.

There is only one credit union in the Morongo Basin and few banks, most of which are located within the Town of Yucca Valley. This category has the least number of assets among

[MAP 26] SOCIAL SERVICES AND ORGANIZATIONS



Source: American Community Survey (2011-15)

all categories, and all are located within the service area boundary. The lack of financial and business services indicates limited investment and resources in the area, though multiple interview respondents noted that, from their perspective, the area possesses a high number of banking institutions.

Social & Cultural Assets

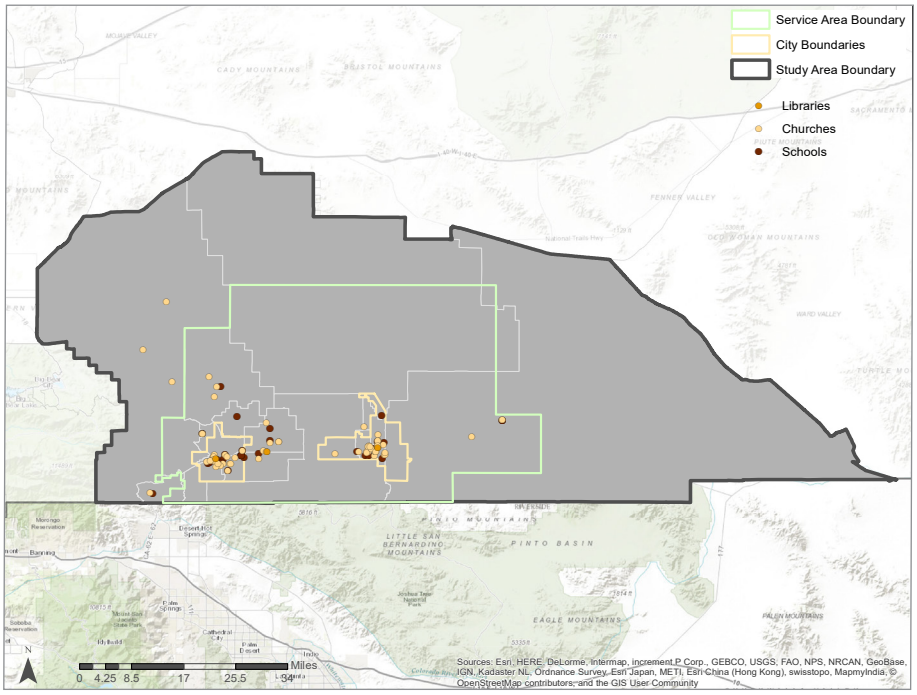
Cataloging social and cultural assets in the Morongo Basin shows the community's level of civic engagement, which establishes social networking and trust—key components in advancing overall community health (Anita Chandra, 2016).

The assets in this category were split into Map 26: Social Services and Organizations and Map 27: Social Services; Map 26 includes institutions engaged in social services, and Map 27 depicts institutions engaged in grassroots work and community engagement. Both sub-categories reveal similar trends to the above categories, with the exception of churches and schools being located outside the service area boundary. Churches form the largest share of assets in the category, followed by schools. The other sub category contains non-profit organizations, organizations for veterans, community centers, senior citizen centers and youth centers. These assets are fewer in number and concentrated in the cities and the commercial corridor.

Even though the Morongo Basin is small and residents express high civic engagement, connectedness and communication remains a huge issue

In part due to the social isolation of many residents, respondents noted that communication is a major barrier to health information dissemination in the Morongo Basin, even though it is a small community. Many reported that individuals access information about their community through the local newspaper, radio and online, as well as through word-of-mouth, but even these methods of

[MAP 27] SOCIAL SERVICES



Source: American Community Survey (2011-15)

information dissemination systematically exclude the most isolated residents. Some argued that the best means to connect to residents is through the churches and civic organizations, as well as through schools. Residents noted that civic organizations and participation is particularly strong in the Morongo Basin, and particularly cited groups such as the Rotary Club, Kiwanis Club, Elks Lodge, and local churches. For this reason, engagement with these organizations offers a means of information dissemination and outreach. However, most argued that, without additional community hubs, accessible and used by a large portion of the population, communication likely will remain a barrier to information dissemination and resource use.

Recreational Assets

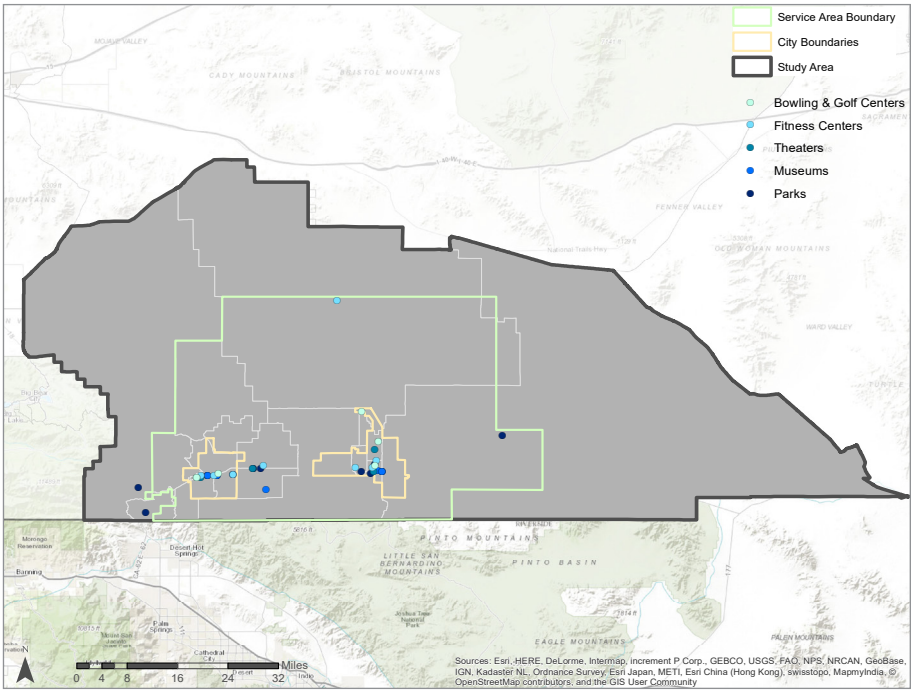
Research notes that it is essential to provide residents with opportunities to engage in leisure and active recreation. Physical activity is positively correlated with healthier outcomes, including a decrease in the risk of heart disease and breast cancer (Gungaphul, 2012).

There are very few assets in each sub-category which are all concentrated in the cities. This is the only category where the agglomeration of resources in Twentynine Palms is larger than in the Town of Yucca Valley. There are a few parks and a golf course near the service area boundary. Possibly due to the high population of elderly individuals, there are a relatively larger number of social assets like churches and libraries than the number of all cultural and recreational assets together.

Residents feel that the Morongo Basin lacks activities, amenities and assets for recreation

When asked to discuss community assets, respondents frequently cited environmental characteristics rather than physical assets. Rather, most respondents noted that positive local assets are few and far between, and therefore the focus across all conversations rested on the multitude of factors undermining health outcomes in the Morongo Basin and the assets that could exist in the area. As one resident described it, there are not enough services and assets across "the full circle of life," including education, employment and recreation across generations. These investments would serve as a way to enable elderly residents to be more integrated into society and to keep youth engaged.

[MAP 28] RECREATIONAL SERVICES



Source: American Community Survey (2011-15)

In particular, many residents felt that the Morongo Basin lacks amenities and assets for teens and non-elderly adults. More amenities exist for younger children and the elderly, but even those were considered limited. Residents expressed a pressing need and hope for significant investment across all facets of life and across all populations. Youth take advantage of the parks, recreational centers and sports programs, which are reportedly widely used. Libraries were considered to be "not robust." Seniors also do not have enough activity options. While the senior center appears well recognized, many reported that the facilities are dated, and the center is under-utilized due to insufficient money for staffing. Therefore, the center offers "limited" services including bingo and affordable lunches. Many noted that the high school pool in Yucca Valley is only open to the public during the summer, and widely used by children, which dissuades older residents from utilizing the asset.

"Everyone is doing the maximum they can, we just don't have enough resources."

When asked to describe assets that they believed could improve their community and resident health, some residents argued that the area would benefit from a multi-generational, year-round facility to promote exercise and serve as a community hub. While the Center for Healthy Generations is widely perceived as a highly-utilized community asset, many noted that the pool is small and used for therapy, is not used by young people, and is unable to meet demand. The Center for Healthy Generations also offers low-cost health classes such as Zumba, but despite the low relatively cost of the classes, many still cannot afford nor get a ride to the classes they offer. Overall, the area lacks healthy living facilities and gyms to facilitate affordable exercise year-round across the different age groups, which makes exercise challenging, particularly in the warm summer months. What amenities do exist are fairly inaccessible for much of the population, who cannot afford exercise memberships and classes, and often lack the transportation to even get to the gym or nearby parks.

Furthermore, many respondents argued for improvements to the built environment, to enhance mobility and enable greater activity and engagement across populations. For example, many respondents noted that the climate and built environment made even walking as a pedestrian difficult, with limited sidewalks

in even the most populated areas of Yucca Valley. Local leaders are working to build bike trails, which will meet an immediate need for better transportation and recreation options, but more can be done to accommodate resident need and pedestrian access through changes to the built environment.

Joshua Tree National Park is an asset—for those who can access it

Respondents widely expressed that they view Joshua Tree National Park as a valuable amenity, an important environmental resource, and a generator of essential economic spillovers into the local economy. While the area attracts a substantial number of tourists precisely due to its natural amenities, Joshua Tree National Park is seen as "mostly for tourists" since the park entrance is far from home, and the hiking trails are even farther away. In short, the park is difficult to access for those without a car.

However, the park has sought to improve access to local residents through programs such as the "Take a Hike" program, in which residents can get a written prescription from the Hi-Desert Family Health Clinics to gain free entry into the park for themselves and as many as five other people in their same vehicle. The park also has programs with the local schools to ensure that every child gains access to the park at least once during their school years, with educational programs held by park rangers. One respondent summarized the school programs, stating "The goal is to bring real science to the students; it's one thing to learn something from a textbook but it's another thing to learn it in the park; it's an active, participatory, experiential learning exercise."

CONCLUSION

This report has detailed the unique community health conditions and the variety of social determinants of health that exist for Morongo Basin residents. The analysis suggests that the physical and mental health conditions of residents are inferior to those of residents in the remainder of San Bernardino County. This is likely related to the higher poverty levels and higher age of residents in the Morongo Basin. Additional challenges to community health include the lack of access to healthy food and transportation. The sparse population over large geographies provides additional challenges to providing sufficient health clinics and other services and also increases the feelings of isolation in the Morongo Basin.

Positive indicators for the Morongo Basin include higher levels of affordable housing in the private market, good environmental quality, and a solid K-12 educational infrastructure. In addition, the proximity of Twentynine Palms and Joshua Tree provide opportunities for leveraging economic growth. However, there remain challenges in the job market for those that obtain college diplomas as most jobs currently in the Morongo Basin do not require them. The data note that the percentage of college graduates has not increased in the Morongo Basin despite levels increasing in the rest of San Bernardino County. Because higher levels of education are a strong social determinant of health, the lack of jobs for those with these skills presents a long-term challenge for the region.

There are many potential next steps for the leaders in not only the healthcare sector, but other social sectors. Of chief concern in the health sector are the high prevalence rates of residents facing mental health issues. Addressing these issues likely requires additional resources for providers, but also requires collective action by all community leaders. Discovering ways to decrease social isolation and improve job opportunities would augment investments in reducing incidents of mental health treatment for residents in the Morongo Basin.

ASSET DEFINITIONS

Mental Healthcare Services: Includes Clinics, Counseling Services, Drug Abuse and Addiction Treatment Centers, Psychologists, Psychotherapists, Mental Health Services and Marriage & Family Counseling General

Healthcare Services: Includes Healthcare Services and Facilities, Clinics, Chiropractic Clinics, Children's Hospitals, Cancer Treatment Centers, Dialysis centers, Emergency Clinics, Physicians & Surgeons, Hospitals, Medical Centers, Nursing Homes and specialists

Food System Assets: Black line denotes a contrast between healthy and non-healthy assets in the region.

Farmers Market: Includes Farmers Markets and Agricultural Products

Grocery Stores: Includes Grocery Stores, Food Markets, Food Products (Wholesale) and Department Stores

Healthy Food Stores: Includes Grocers—Health Foods, Health & Diet Foods, Healthy Food Products and Juice Bars

SNAP-Accepting Institutions: Includes Convenience Stores, Grocery Stores, Supermarkets, Combination Grocery Stores, Bakery Specialty, etc.

Convenience Stores: Includes Convenience Stores, Department Stores, Variety Stores and Liquor Stores

Fast Food Joints: Includes Foods- Carry Outs, Ice-Cream Parlors, Pizza places, Doughnuts & Bagels Places, Bakery and Restaurants

Banks: Includes Banks and Financial Advisory Services. Source: ReferenceUSA Business Database (accessed in June 2017)

Credit Unions: Includes Credit Unions, Federally Chartered Credit Unions and Credit Unions Not Federally Chartered

Churches: Includes Churches, Convents & Monasteries, Mosques, Synagogues Jewish, Temples- Sikh & Buddhists, Religious & Spiritual Organizations

Community Centers: Includes Community Centers, Community Action Agencies, Community Organizations and Community Services

Libraries: Includes Libraries-Institutional, Libraries- Public and Special Interest Libraries

Non-Profit Organizations: Includes Non-profit Organizations, Human Services Organizations, Associations, Charitable Institutes, Community Services, Social Service & Welfare Organizations and Labor Organizations

Schools: Includes Schools, Kindergartens and Pre-Schools

Senior Citizen Centers: Includes Senior Citizen Services, Senior Citizen Services organizations, Senior Citizen Housing, Retirement Communities & Homes and Senior Citizen Clubs

Veteran & Military organizations: Includes Veterans' & Military Organizations and Veterans & Military Information/Services

Youth Centers: Includes Youth Organizations & Centers, Girl Scouts, Youth Clubs and Educational Services

Bowling & Golf Centers: Includes Bowling Centers and Golf Courses

Fitness Centers: Includes Fitness Centers, Gymnasiums, Gymnastic Instructions, Health Clubs Studios & Gymnasiums, Martial Arts Instructions, Yoga Centers and Yoga Instructions

Museums: Includes only Museums

Parks: Includes Parks, Recreation Centers, Water Parks, Zoos and Government Offices-City, Village & Twp.

Theaters: Includes Theaters—Live, Theaters- Movie, Music Shows, Performing Arts, Drive-In Motion Picture Theaters, Concert Venues and Halls & Auditoriums

REFERENCES

Allen, J. (2015, October 23). *Yucca Valley Near Top of County Homeless List*. Retrieved from Hi-Desert Star: http://www.hidesertstar.com/news/article_572d4970-79f7-11e5-928c-b7e87dd9f12c.html

Anita Chandra, C. E. (2016). Drivers Of Health As A Shared Value: Mindset, Expectations, Sense Of Community, And Civic Engagement. *Health Affairs* , 1959–1963.

Berg, B.L. (1998). Qualitative Research Methods for the Social Sciences. Boston: Allyn and Bacon.

CalEnviroScreen. (2017). *Update to the California Communities Environmental Health Screening Tool*. CalEnviroScreen.

CCMC. (2004). CCMC- *Commission for Case Manager Certification*. Retrieved from About CCMC: https://ccmcertification.org/about-ccmc/case-management/scope-practice-overview

Center for Disease Control and Prevention. (2015, March). *Invest in Your Community*. Retrieved from http://www.cdc.gov/chinav/docs/chi_nav_infographic.pdf

Center for Disease Control and Prevention. (2011). *Health Disparities and Inequalities Report—United States*. Retrieved from http://www.cdc.gov/minorityhealth/chdir/2011/executivesummary.pdf

CMSA. (2015). CMSA: *Case Management Society of America*. Retrieved from What is Case Management?

Cotterill, R. W., & Franklin, A. W. (1995). The Urban Store Gap. *Food Marketing Policy Issue Papers, University of Connecticut*.

Dahlheimer, Z. (2017, June 07). *Rescue Mission Numbers Rise as Roy's Closure Nears*. Retrieved from News Channel 3; CBS Local 2: http://www.kesq.com/news/rescue-mission-numbers-rise-as-roys-in-the-desert-closure-nears/531345413

Ellen, I, Mijanovich, T, & Dillman, K (2001). Neighborhood Effects on Health: Exploring the Links and Assessing the Evidence. *Journal of Urban Affairs*, 23(3-4), 391–408.

Farhang, L., & Bhatia, R. (2005). Transportation for Health. Race, *Poverty & the Environment*, 12(1), 43-44.

Hayward, M., Hummer, R., & Sasson, I. (2015). Trends and Group Differences in the Association Between Educational Attainment and US Adult Mortality: Implications for Understanding Education's Causal Influence. *Social Sciences & Medicine*, 127, 8-18.

Hendrickson, D., Smith, C., & Eikenberry, N. (2006). Fruit and Vegetable Access in Four Low-income Food Deserts Communities in Minnesota. *Agriculture and Human Values*, 23(3), 371-383.

Hill, T, Ross, C., & Angel, R. (2005). Neighborhood Disorder, Psychophysiological Distress, and Health. *Journal of Health and Social Behavior*, 46(2), 170–186.

Krieger, J., & Higgins, D. (2002). Housing and Health: Time Again for Public Health Action. *American Journal of Public Helath*, 95(5), 758-768.

Land, G. (2015, January 09). *Joshua Tree National Park Sees Record Visitation in 2014*. Retrieved from National Park Service: https://www.nps.gov/jotr/learn/news/joshuatreerecordvisitation.htm

Linn, M., Sandifer, R., & Stein, S. (1985). Effects of Unemployment on Mental and Physical Health. *American Journal of Public Health*, 75(5) , 502-506.

M. Gungaphul, H. K. (2012). Promoting Recreation and Leisure in the Workplace. *African Journal for Physical, Health Education, Recreation and Dance* (AJPHERD), 86-94.

Maqbool, N., & Higgings, D. (2015). The Impacts of Affordable Housing on Health: A Research Summary.

Marine Air Ground Task Force Training Command (2016). *Community Impact Report 2016*. Twentynine Palms, California: Marine Corps Air Ground Combat Center.

Marmot, M. (2002). The Influence of Income on Health: Views of an Epidemiologist. *Health Affairs*, 21(2), 31- 46.

Marmot, M (2005). Social Determinants of Health Inqualities. *Lancet*, 265, 1099-1104.

Masters, R., Hummer, R., & Powers, D. (2012). Educational Differences in U.S. Adult Mortality: A cohort Perspective. *American Sociology Review*, 77(4), 548-572.

Mathieu Despard, T. F. (2017). *A Geographic Investigation of Financial Services Availability*. Lawrence, KS: University of Kansas, Center on Assets, Education, & Inclusion (AEDI).

MBTA. (2014, July). *MBTA System Map*. Retrieved from Morongo Basin Transit Authority: http://www.mbtabus.com/SYSMAP.pdf

Model, T. P. (1993). *The Promotora Model*. Retrieved from Latino Health Access: http://www.latinohealthaccess.org/the-promotora-model/#

Mouw, T. K., Wright, M., Blank, M., Moore, S., Hollenbeck, A., & Schatzkin, A. (2008). Education and Risk of Cancer in a large cohort of men and women in the U.S. *Plus One*, 3(11).

Paul, K., & Moser, K. (2006). Incongruence as an Explanation for the Negative Mental Health Effects of Unemployment: Meta-analytic evidence. *Journal of Occupational and Organizational Psychology*, 595-621.

Prüss-Ustün, A., Wolf, J., Corvalán, C., Bos, R., & Neira, M. (2016). *Preventing Disease Through Healthy Environments:A global assessment of the burden of disease from environmental risks*. WHO.

Remoundou, K., & Koundouri, P. (2009). Environmental Effects on Public Health: An Economic Perspective. *International Journal of Environmental Research and Public Health*, 2160-2178.

Robert Wood Johnson Foundation. (2014). "Health Policy Brief: The Relative Contribution of Multiple Determinants to Health Outcomes. *Health Affairs*. Retrieved from http://www.rwjf.org/content/dam/farm/reports/issue_briefs/2014/rwjf415185

Robinson, S., Crozier, S., Borland, S., Hammond, J., & al., e. (2004). Impact of Educational Attainment on the Quality of Young Women's Diets. *European Journal of Critical Nutrition*, 1174-80.

Rose, D.J. et al. (2009). Deserts in New Orleans? Illustration of Urban Food Access and Implications for Policy? Ann Arbor, MI: University of Michigan National Poverty Center/USDA Economic Research Service.

Ross, C. E., & Mirowsky, J. (2001). Neighborhood Disadvantage, Disorder, and Health. *Journal of Health and Social Behavior*, 42(3), 258–276.

Schiller, J., Lucas, J., & Peregoy, J. (2012). Summary Health Statistics for U.S. Adults: National Health Interview Survey. *Vital and Health Statistics,* 10(256), 1-27.

Transportation, U. D. (2015). *U.S. Department of Transportation: Connectivity*. Retrieved from U.S. Department of Transportation: https://www.transportation.gov/mission/health/connectivity

Walker, R. E., Keane, C. R., & Burke, J. G. (2010). Disparities and Access to Healthy Food in the United States: A Review of Food Deserts Literature. *Health & Place*, 16(5), 876-884.

Woolf, S., Aron, L., Dubay, L., Simon, S., Zimmerman, E., & Luk, K. (2015). *How are Income and Wealth Linked to Health and Longetivity*. Urban Institute & Center on Society and Health.

World Health Organization. (2016). "Social Determinants of Health." Retrieved from http://www.who.int/social_determinants/en/

Zhang, X., Holt, J. B., Lu, H., Wheaton, A. G., Ford, E. S., Greenlund, K. J., & Croft, J. B. (2014). Multilevel Regression and Poststratification for Small-Area Estimation of Population Health Outcomes: a Case Study of Chronic Obstructive Pulmonary Disease Prevalence Using the Behavioral Risk Factor Surveillance System. *American Journal of Epidemiology*, 179(8), 1025-1033.

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