

Data Dictionary and Processing

2013 Community Health Needs Assessments

Conducted by Valley Vision, Inc.

Important Note: The following data dictionary and processing methodology was used to conduct community health needs assessments for participating Dignity Health, Kaiser Permanente, Sutter Health Sacramento Sierra Region, and UC Davis Health System hospitals. This document refers to all data collected and analyzed over the course of conducting multiple health needs assessments for multiple hospitals. However, some data referred to in this document were not used consistently across each individual hospital health assessment, and some data discussed below do not appear on the Healthy Living Map website. However, for those that do, the general processing steps outlined below apply.

Introduction

The secondary data supporting the 2013 Community Health Needs Assessment was collected from a variety of sources, and was processed in multiple stages before it was used for analysis. This document details those various stages. It begins with a description of the approaches used to define ZIP code boundaries, and the approaches that were used to integrate records reported for PO boxes into the analysis. General data sources are then listed, followed by a description of the basic processing steps applied to most variables. It concludes by detailing additional specific processing steps used to generate a subset of more complicated indicators.

ZIP Code Definitions

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

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

In order to incorporate these patients into the analysis, the point location (latitude and longitude) of all ZIP codes in California (Datasheer, L.L.C., 2012) were compared to the 2010 ZCTA boundaries (U.S. Census Bureau, 2011). All ZIP

codes (whether PO Box or unique ZIP code) that were not included in the ZCTA dataset were identified. These ZIP codes were then assigned to either ZCTA that they fell inside of, or in the case of rural areas that are not completely covered by ZCTAs, the ZCTA to which they were closest. Health outcome information associated with these PO Box or unique ZIP codes were then assigned added to the ZCTAs to which they were assigned.

For example, 95609 is a PO Box located in Carmichael. 95609 is not represented by a ZCTA, but it does have patient data reported as outcome variables. Through the process identified above, it was found that 95609 is located within 95608, which does have an associated ZCTA. Health outcome data for ZIP codes 95608 and 95609 were therefore assigned to ZCTA 95608, and used to calculate rates.

Data Sources

Secondary data were collected in three main categories: demographic information, health outcome data, and behavioral and environmental data. Table B1 below lists demographic variables collected from the US Census Bureau, and lists the geographic level at which they were collected. These demographic variables were collected at the Census block, tract, ZCTA, and state levels. Census blocks are roughly equivalent to city blocks in urban areas, and tracts are roughly equivalent to neighborhoods. Table B2 lists demographic variables at the ZIP code level obtained from Dignity Health (2011).

Table B1. Demographic Variables Collected from the US Census Bureau (U.S. Census Bureau, 2013a; U.S. Census Bureau, 2013b)

Variable Name	Definition	Geographic Level	Source
Asian Population	Hispanic or Latino and Race, Not Hispanic or Latino, Asian alone	Tract	2010 American Community Survey 5 Year Estimates Table DP05
Black Population	Hispanic or Latino and Race, Not Hispanic or Latino, Black or African American alone	Tract	2010 American Community Survey 5 Year Estimates Table DP05
Hispanic Population	Hispanic or Latino and Race, Hispanic or Latino (of any race)	Tract	2010 American Community Survey 5 Year Estimates Table DP05
Native American Population	Hispanic or Latino and Race, Not Hispanic or Latino, American Indian and Alaska Native alone	Tract	2010 American Community Survey 5 Year Estimates Table DP05
Pacific Islander Population	Hispanic or Latino and Race, Not Hispanic or Latino, Native Hawaiian and Other Pacific Islander alone	Tract	2010 American Community Survey 5 Year Estimates Table DP05
White Population	Hispanic or Latino and Race, Not Hispanic or Latino, White alone	Tract	2010 American Community Survey 5 Year Estimates Table DP05
Total Households	Total Households	Tract	2010 American Community Survey 5 Year Estimates Table S1101
Married Households	Married-couple family household	Tract	2010 American Community Survey 5 Year Estimates Table S1101
Single Female Headed Households	Female householder, no husband present, family household	Tract	2010 American Community Survey 5 Year Estimates Table S1101

Variable Name	Definition	Geographic Level	Source
Single Male Headed	Male householder, no wife present, family household	Tract	2010 American Community Survey 5 Year Estimates Table S1101
Non-Family Households	Nonfamily household	Tract	2010 American Community Survey 5 Year Estimates Table S1101
Population in Poverty (Under 100% Federal Poverty Level)	Total poverty under .50; .50 to .99	Tract	2010 American Community Survey 5 Year Estimates Table C17002
Population in Poverty (Under 125% Federal Poverty Level)	Total poverty under .50; .50 to .99; 1.00 to 1.24	Tract	2010 American Community Survey 5 Year Estimates Table C17002
Population in Poverty (Under 200% Federal Poverty Level)	Total poverty under .50; .50 to .99; 1.00 to 1.24; 1.25 to 1.49; 1.50 to 1.84; 1.85 to 1.99	Tract	2010 American Community Survey 5 Year Estimates Table C17002
Population by Age Group: 0-4, 5-14, 15-24, 25-34, 45-54, 55-64, 65-74, 75-84, and 85 and over	Total Population by Age Group	Tract	2010 American Community Survey 5 Year Estimates Table DP05
Total Population	Total Population	Tract	2010 American Community Survey 5 Year Estimates Table DP05
Total Population	Total Population	Block	2010 Census Summary File 1 Table P1
Asian/Pacific Islander Population	Total Population, One Race, Asian, Not Hispanic or Latino; Total Population, One Race, Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino	ZCTA, State	2010 Census Summary File 1 Table QTP14
Black Population	Total Population, One Race, Black or African American, Not Hispanic or Latino	ZCTA, State	2010 Census Summary File 1 Table QTP14
Hispanic Population	Total Population, Hispanic or Latino (of any race)	ZCTA, State	2010 Census Summary File 1 Table QTP3
Native American Population	Total Population, One Race, American Indian and Alaska Native, Non Hispanic or Latino	ZCTA, State	2010 Census Summary File 1 Table QTP14
White Population	Total Population, One Race, White, Not Hispanic or Latino	ZCTA, State	2010 Census Summary File 1 Table QTP14
Male Population	Total Male Population	ZCTA, State	2010 Census Summary File 1 Table PCT12
Female Population	Total Female Population	ZCTA, State	2010 Census Summary File 1 Table PCT12
Population by Age Group: Under 1, 1-4, 5-14, 15-24, 25-34, 45-54, 55-64, 65-74, 75-84, and 85 and over	Total Male and Female Population by Age Group	ZCTA, State	2010 Census Summary File 1 Table PCT12

Variable Name	Definition	Geographic Level	Source
Total Population	Total Population	ZCTA, State	2010 Census Summary File 1 Table PCT12

Table B2. ZIP Demographic Information (Dignity Health, 2011)

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

Collected health outcome data included the number of emergency department (ED) discharges, hospital (H) discharges, and mortalities associated with a number of conditions. ED and H discharge data for 2011 were obtained from the Office of Statewide Healthy Planning and Development (OSHPD). Table B3 lists the specific variables collected by ZIP code. These values report the total number of ED or H discharges that listed the corresponding ICD9 code as either a primary or any secondary diagnosis, or a principle or other E-code, as the case may be. In addition to reporting the total number of discharges associated with the specified codes per ZIP code, this data was also broken down by sex (male and female), age (under 1 year, 1 to 4 years, 5 to 14 years, 15 to 24 years, 25 to 34 years, 35 to 44 years, 45 to 54 years, 55 to 64 years, 65 to 74 years, 75 to 84 years, and 85 years or older), and normalized race and ethnicity (Hispanic of any race, non-Hispanic White, non-Hispanic Black, non-Hispanic Asian or Pacific Islander, non-Hispanic Native American).

Table B3. 2011 OSHPD Hospitalization and Emergency Department Discharge Data by ZIP code

Category	Variable Name	ICD9/E-Codes
Chronic Disease	Diabetes	250
	Heart Disease	410-417, 428, 440, 443, 444, 445, 452
	Hypertension	401-405
	Stroke	430-436, 438
Respiratory	Asthma	493-494
	Chronic Obstructive Pulmonary Disease (COPD)	490-496
Mental Health	Mental Health	290, 293-298, 301-302, 310-311
	Mental Health, Substance Abuse	291-292, 303-305
Injuries ¹	Unintentional Injury	E800-E869, E880-E929
	Assault	E960-E969, E999.1
	Self Inflicted Injury	E950-E959
	Accidents	E814, E826
Cancer	Breast Cancer	174, 175
	Colorectal Cancer	153, 154

¹ ICD9 code definitions for the Unintentional Injury, Self Inflicted Injury, and Assault variables were based on definitions given by the Centers for Disease Control and Prevention (CDC, 2011)

	Lung Cancer	162, 163
	Prostate Cancer	185
Other Indicators	Hip Fractures	820
	Tuberculosis	010-018, 137
	HIV	042-044
	STDs	042-044, 090-099, 054.1, 079.4
	Oral cavity/dental	520-529
	West Nile Virus	066.4
	Acute Respiratory Infections	460-466
	Urinary Tract Infections (UTI)	599.0
	Complications related to pregnancy	640-649

Mortality data, along with the total number of live births, for each ZIP code in 2010 were collected from the California Department of Public Health (CDPH). The specific variables collected are defined in Table B4. The majority of these variables were used to calculate specific rates of mortality for 2010. A smaller number of them were used to calculate more complex indicators of wellbeing. To increase the stability of these more complex measures, rates were calculated using values from 2006 to 2010. These variables include the total number of live births, total number of infant deaths (ages under 1 year), and all cause mortality by age. Table B4 consequently also lists the years for which each variable was collected.

Table B4. CDPH Birth and Mortality Data by ZIP Code

Variable Name	ICD10 Code	Years Collected
Total Deaths		2010
Male Deaths		2010
Female Deaths		2010
Population by Age Group: Under 1, 1-4, 5-14, 15-24, 25-34, 45-54, 55-64, 65-74, 75-84, and 85 and over		2006-2010
Diseases of the Heart	I00-I09, I11, I13, I20-I51	2010
Malignant Neoplasms (Cancer)	C00-C97	2010
Cerebrovascular Disease (Stroke)	I60-I69	2010
Chronic Lower Respiratory Disease	J40-J47	2010
Alzheimer's Disease	G30	2010
Unintentional Injuries (Accidents)	V01-X59, Y85-Y86	2010
Diabetes Mellitus	E10-E14	2010
Influenza and Pneumonia	J09-J18	2010
Chronic Liver Disease and Cirrhosis	K70, K73-K74	2010
Intentional Self Harm (Suicide)	U03, X60-X84, Y87.0	2010
Essential Hypertension & Hypertensive Renal Disease	I10, I12, I15	2010
Nephritis, Nephrotic Syndrome and Nephrosis	N00-N07, N17-N19, N25-N27	2010
All Other Causes	Residual Codes	2010
Total Births		2006-2010

Births with Infant Birthweight
Under 1500 Grams, 1500-2499
Grams

2006-2010

Behavioral and environmental data were collected from a variety of sources, and at various geographic levels. Table B5 lists the sources of these variables, and lists the geographic level at which they were reported.

Table B5. Behavioral and Environmental Variable Sources

Category	Variable	Year	Definition	Reporting Unit	Data Source
Healthy Eating/ Active Living	Overweight and Obese	2003-2005	Percent of population with self-reported height and weight corresponding to overweight or obese BMIs (BMI greater than 25)	ZIP Code	Healthy Cities/CHIS
	No 5 a day Fruit and Vegetable Consumption	2003-2005	Percent of population age 5 and over not consuming five servings of fruit and vegetables a day	ZIP Code	Healthy Cities/CHIS
	Modified Retail Food Environment Index (mRFEI)	2011	Represents the percentage of all food outlets in an area that are considered healthy	Tract	Kaiser Permanente CHNA Data Platform/ Centers for Disease Control and Prevention: Division of Nutrition, Physical Activity, and Obesity
	Food Deserts	2011	USDA Defined food desert tracts	Tract	Kaiser Permanente CHNA Data Platform/ US Department of Agriculture
	Certified Farmers Markets	2012	Physical location of certified farmers markets	Location	http://www.cafarmersmarkets.com/
	Parks	2010	U.S. Parks, includes local, county, regional, state, and national parks and forests		Esri
Safe Physical Environments	Crime	2010	Major Crimes (Homicide, Forcible Rape, Robbery, Aggravated Assault, Burglary, Motor Vehicle theft, Larceny, Arson)	Municipality/ Jurisdiction	State of California Department of Justice, Office of the Attorney General (http://oag.ca.gov/crime/cjs-c-stats/2010/table11)
	Traffic Accidents Resulting in Fatalities	2010	Locations of traffic accidents resulting in fatalities	Location	National Highway Transportation Safety Administration

Category	Variable	Year	Definition	Reporting Unit	Data Source
Indicators	Shortage Areas (Primary Care)		professional shortage areas, which may be defined based on geographic areas or distributions of people in specific demographic groups		Data Platform/ Bureau of Health Professions
	Alcohol Availability	2012	Number of Active Off-Sale Retail Liquor Licenses	ZIP Code	California Department of Alcoholic Beverage Control

General Processing Steps

Rate Smoothing

All OSHPD, as well as all single-year CDPH, variables were collected for all ZIP codes in California. The CDPH datasets included separate categories that included either patients who did not report any ZIP code, or patients from ZIP codes whose number of cases fell below a minimum level. These patients were removed from the analysis. As described above, patient records in ZIP codes not represented by ZCTAs were added to those ZIP codes corresponding to the ZCTAs that they fell inside or were closest to. The next step in the analysis process was to calculate rates for each of these variables. However, rather than calculating raw rates, empirical bayes smoothed rates (EBR) were created for all variables possible (Anselin, 2003). Smoothed rates are considered preferable to raw rates for two main reasons. First, the small population of many ZCTAs, particularly those in rural areas, meant that the rates calculated for these areas would be unstable. This problem is sometimes referred to as the small number problem. Empirical bayes smoothing seeks to address this issue by adjusting the calculated rate for areas with small populations so that they more closely resemble the mean rate for the entire study area. The amount of this adjustment is greater in areas with smaller populations, and less in areas with larger populations.

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

EBR were calculated for each variable using the appropriate base population figure reported for ZCTAs in the 2010 census: overall EBR for ZCTAs were calculated using total population; and sex, age, and normalized race/ethnicity EBR were calculated using the appropriate corresponding population stratification. EBR were calculated for every overall variable, but could not be calculated for certain of the stratified variables. In these cases, raw rates were used instead. The final rates in either case for H, ED, and the basic mortality variables were then multiplied by 10,000, so that the final rates represent H or ED discharges, or deaths, per 10,000 people.

Age Adjustment

The additional step of age adjustment (Klein & Schoenborn, 2001) was performed on the all-cause mortality variable as well as four OSHPD reported ED and H conditions: diabetes, heart disease, hypertension, and stroke. Because the occurrence of these conditions varies as a function of the age of the population, differences in the age structure between ZCTAs could obscure the true nature of the variation in their patterns. For example, it would not be unusual for a ZCTA with an older population to have a higher rate of ED visits for stroke than a ZCTA with a younger population. In order to accurately compare the experience of ED visits for stroke between these two populations, the age profile of the ZCTA needs to be accounted for. Age adjusting the rates allows this to occur.

To age adjust these variables, we first calculated age stratified rates by dividing the number of occurrences for each age category by the population for that category in each ZCTA. Age stratified EBR were used whenever possible. Each age stratified rate was then multiplied by a coefficient that gives the proportion of California’s total population that was

made up by that age group as reported in the 2010 Census. The resulting values are then summed and multiplied by 10,000 to create age adjusted rates per 10,000 people.

OSHPD Benchmark Rates

A final step was to obtain or generate benchmark rates to compare the ZCTA level rates to. Benchmarks for all OSHPD variables were calculated at the HSA, county, and state levels by: first, assigning given ZIP codes to each level of analysis (HSA, county, or state); second, summing the total number of cases and relevant population for all ZCTAs for each HSA, county, or the state; and finally, dividing the total number of cases by the relevant population.

Benchmarks for CDPH variables were obtained from two sources. County and state rates were found in the County Health Status Profiles 2010 (California Department of Public Health, 2012). Healthy People 2020 rates (U.S. Department of Health and Human Services, 2012) were also used as benchmarks for mortality data.

Additional Well Being Variables

Further processing was also required for the two additional mortality based well-being variables, infant mortality rate and life expectancy at birth. To develop more stable estimates of the true value of these variables, their calculation was based on data reported by CDPH for the years from 2006-2010. Because both ZIP code and ZCTAs can vary through time, the first step in this analysis was to determine which ZIP codes and ZCTAs endured through the entire time period, and which were either newly added or removed. This was done by first comparing ZIP code boundaries from 2007 (GeoLytics, Inc., 2008) to 2010 ZCTA boundaries. The boundaries of ZIP codes/ZCTAs that existed in both time periods were compared. While minor to more substantial changes in boundaries did occur with some areas, values reported in various years for a given ZIP code/ZCTA were taken as comparable. In a few instances, ZIP codes/ZCTAs that were included in the 2010 ZCTA dataset were not included in the 2007 ZIP code list, or vice versa. The creation date for these ZIP codes were confirmed using an online resource (Datashere, L.L.C., 2013), and if these were created part way through the 2006 – 2010 time period, the ZIP code/ZCTA from which the new ZIP codes were created were identified. The values for these newly created ZIP codes were then added to the values of the ZIP code from which they were created. This meant that in the end, rates were only calculated for those ZIP codes/ZCTAs that existed throughout the entire time period, and that values reported for patients in newly created ZIP codes contributed to the rates for the Zip Code/ZCTA from which their ZIP codes were created.

Processing for Specific Variables

Additional processing was needed to create the tract vulnerability index, the Community Health Vulnerability Index (CHVI), the additional well being variables, and some of the behavioral and environmental variables.

Tract Vulnerability Index (used in individual hospital reports)

The tract vulnerability index was calculated using five tract level demographic variables calculated from the 2010 American Community Survey 5 Year Estimates data: the percent non-White or Hispanic population, percent single parent households, percent of population below 125% of the Federal Poverty Level, the percent population younger than 5 years, and the percent population 65 years or older.

These variables were selected because of their theoretical and observed relationships to conditions related to poor health. The percent non-White or Hispanic population was included because this group is traditionally considered to experience greater problems in accessing health services, and experiences a disproportionate burden of negative health outcomes. The percent of households headed by single parents was included as the structure of households in this

group leads to a greater risk of poverty and other health instability issues. The percent of population below 125% of the federal poverty level was included because this is a standard level used for qualification for many state and federally funded health and social support programs. Age groups under 5 years old and 65 and older were included because these groups are considered to be at a higher risk for varying negative health outcomes. The population under 5 years group includes those at higher risk for infant mortality and unintentional injuries. The 65 and over group experiences higher risk for conditions positively correlated with age, most of which include the conditions examined in this assessment: heart disease, stroke, diabetes, and hypertension, among others.

Each input variable was scaled so that it ranged from 0 to 1 (the tract with the lowest value on a given variable received a value of 0, and the tract with the highest value received a 1; tracts with values between the minimum and maximum received some corresponding value less than 1). The values for these variables were then added together to create the final index. This meant that final index values could potentially range from 0 to 5, with higher index values representing areas that had higher proportions of each population group.

Community Health Vulnerability Index (displayed on Healthy Living Map)

The Community Health Vulnerability Index (CHVI) was based largely on the Community Need Index (CNI) created by Dignity Health and Thomson Reuters². The CNI (and the CHVI) is based on nine socio-economic/demographic variables. These variables correspond with conditions that are broadly recognized in the public health literature as contributing to poor health outcomes. The variables are shown in the table below:

Percentage of households below poverty line, with the head of household age 65 or more	Percentage of population over age 5 that speaks English poorly or not at all
Percentage of families with children under 18 below poverty line	Percentage of population in the labor force, ages 16 or more, without employment
Percentage of single female-headed families with children under 18 below poverty line	Percentage of population without health insurance
Percentage of population over 25 without a high school diploma	Percentage of households renting their home
Percentage of population that is minority (including Hispanic ethnicity)	

To create the CHVI, each of these variables was re-scaled so that the maximum value in the study area equaled 1 and the minimum equaled 0. The variables were then summed with equal weights. A higher number ranking reflects those areas with the least modeled barriers, or less vulnerability. A lower number ranking indicates the areas with more modeled barriers, or higher vulnerability.

Well Being Variables

Infant Mortality Rate

Infant mortality rate reports the number of infant deaths per 1,000 live births. It was calculated by dividing the number of deaths for those with ages below 1 from 2006-2010 by the total number of live births for the same time period (smoothed to EBR), and multiplying the result by 1,000.

² Roth, R. and Barsi, E. 2005. The "Community Need Index." *Health Progress*. 86(4):32-38

Life Expectancy at Birth

Life expectancy at birth values are reported in years, and were derived from period life tables created in the statistical software program R (R Development Core Team, 2009) using the Human Ecology, Evolution, and Health Lab's (2009) example period life table function. This function was modified to calculate life tables for each ZCTA, and to allow the life table to be calculated from submitted age stratified mortality rates. The age stratified mortality rates were calculated for each ZIP code by dividing the total number of deaths in a given age category from 2006-2010 by five times the ZCTA population for that age group in 2010 (smoothed to EBR). The age group population was multiplied by five to match the five years of mortality data that were used to derive the rates. Multiple years were used to increase the stability of the estimates. In contexts such as these, the population for the central year (in this case, 2008) is usually used as the denominator. 2010 populations were used because they were actual Census counts, as opposed to the estimates that were available for 2008. It was felt that the dramatic changes in the housing market that occurred during this time period reduced the reliability of 2008 population estimates, and so the 2010 population figures were preferred.

Environmental and Behavioral Variables

The majority of environmental and behavioral variables were obtained from existing credible sources. The reader is encouraged to review the documentation for those variables, available from their sources, for their particulars. Two variables, however, were created specifically for this analysis: alcohol availability, and park access.

Alcohol Availability

The alcohol availability variable gives the number of active off-sale liquor licenses per 10,000 residents in each ZCTA. The number of liquor licenses per ZCTA was obtained from the California Department of Alcoholic Beverage Control. This value was divided by the 2010 ZCTA population, and multiplied by 10,000 to create the final rate.

Park Access

The park access variable reports the percent of the population residing in each Census tract that lives in a Census block that is within ½ mile of a park. ESRI's U.S. Parks data set (Esri, 2009) which includes the location of local, county, regional, state, and national parks and forests, was used to determine park locations. Blocks within ½ mile of parks were identified, and the percentage of population residing in these blocks for each tract was determined.

References

- Anselin, L. (2003). *Rate Maps and Smoothing*. Retrieved February 16, 2013, from http://www.dpi.inpe.br/gilberto/tutorials/software/geoda/tutorials/w6_rates_slides.pdf
- California Department of Public Health. (2012). *Individual County Data Sheets*. Retrieved February 18, 2013, from County Health Status Profiles 2012: <http://www.cdph.ca.gov/programs/ohir/Pages/CHSPCountySheets.aspx>
- CDC. (2011). *Matrix of E-code Groupings*. Retrieved March 4, 2013, from Injury Prevention & Control: Data & Statistics(WISQARS): http://www.cdc.gov/injury/wisqars/ecode_matrix.html
- Datasheer, L.L.C. (2012, March 3). *ZIP Code Database STANDARD*. Retrieved from Zip-Codes.com: <http://www.Zip-Codes.com>

Datasheer, L.L.C. (2013). *Zip-Codes.com*. Retrieved February 16, 2013, from <http://www.zip-codes.com/>

Dignity Health. (2011). Community Need Index.

Esri. (2009, May 1). parks.sdc. Redlands, CA.

GeoLytics, Inc. (2008). Estimates of 2001 - 2007. E. Brunswick, NJ, USA.

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

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

R Development Core Team. (2009). R: A language and environment for statistical computing. Vienna, Austria: R Foundation for Statistical Computing, Vienna, Austria. ISBN 3-900051-07-0, URL <http://www.R-project.org>.

U.S. Census Bureau. (2013a). *2010 American Community Survey 5-year estimates*. Retrieved February 14, 2013, from American Fact Finder: <http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>

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

U.S. Census Bureau. (2011). *2010 TIGER/Line(R) Shapefiles*. Retrieved August 31, 2011, from <http://www.census.gov/cgi-bin/geo/shapefiles2010/main>

U.S. Department of Health and Human Services. (2012). *Office of Disease Prevention and Health Promotion. Healthy People 2020. Washington, DC*. Retrieved February 18, 2013, from <http://www.healthypeople.gov/2020/topicsobjectives2020/pdfs/HP2020objectives.pdf>