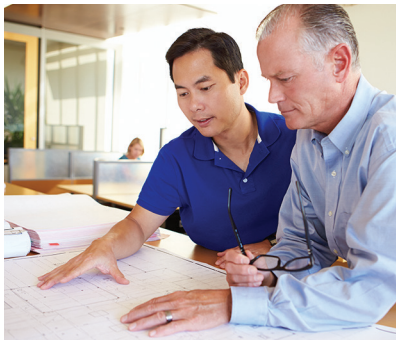

Healthy Communities Data and Indicators Project:

HOW-TO MANUAL AND ILLUSTRATIVE GUIDE

OCTOBER 2014

California Department of Public Health

and

The Institute for Health & Aging
University of California, San Francisco

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INTRODUCTION

Purpose of the How-To Manual

This manual explains how to use data from the *Healthy Community Data and Indicators Project* (HCDIP) to describe a community's physical, social, and economic environment and its link to community health. Our aim is educate and empower users through data. These data can add value to the planning and decision-making process so that when plans, projects, programs, or policies are being considered for a neighborhood, town, county, or region, the health implications can also be better understood. We have developed this manual so that a person moderately skilled in Excel will be able to tell the story of their community with appealing graphs, tables, and maps. City planners, transportation planners and employees in public works, members of community-based organizations, elected officials, staff of local health departments, developers, community advocates, business people, social marketers, and informed members of the public are among the potential users of these data.

The first section of this manual discusses the general background of HCDIP and how the indicators were developed. The second section presents examples from different organizations on how they have used or plan to use the indicators. The third section includes step-by-step instructions of how to turn the data in the free Excel files into graphs and maps that can be woven into reports or web content for your organization. The final section provides information on how to interpret your results and appreciate the strengths and limitations of the data.

The Healthy Communities Data and Indicators Project

The Healthy Community Data and Indicators Project (HCDIP) was started in 2012 with seed money from the Strategic Growth Council, a state agency supporting efforts to promote sustainability in California. The goal is to provide a standardized set of statistical measures (indicators), data files, and tools for planning healthy communities and evaluating the impact of plans, projects, policy, and environmental changes on community health. The indicators were based on the Healthy Community Framework (Figure 1) developed by the Health in All Policies (HiAP) Task Force of the Strategic Growth Council with input from community stakeholders and public health organizations.[1] The Healthy Community Framework identifies 20 key attributes of a healthy community through all stages of life, clustered in five broad categories:

- basic needs of all (housing, transportation, nutrition, health care, livable communities, physical activity)
- quality and sustainability of environment
- adequate levels of economic and social development
- health and social equity
- social relationships that are supportive and respectful

FIGURE 1: Healthy Community Framework

What is a Healthy Community?

A Healthy Community provides for the following through all stages of life:

MEETS BASIC NEEDS OF ALL

- Safe, sustainable, accessible, and affordable transportation options
- Affordable, accessible and nutritious foods, and safe drinkable water
- Affordable, high quality, socially integrated, and location-efficient housing
- Affordable, accessible and high quality health care
- Complete and livable communities including quality schools, parks and recreational facilities, child care, libraries, financial services and other daily needs
- Access to affordable and safe opportunities for physical activity
- Able to adapt to changing environments, resilient, and prepared for emergencies
- Opportunities for engagement with arts, music and culture

QUALITY AND SUSTAINABILITY OF ENVIRONMENT

- Clean air, soil and water, and environments free of excessive noise
- Tobacco- and smoke-free
- Green and open spaces, including healthy tree canopy and agricultural lands
- Minimized toxics, green house gas emissions, and waste
- Affordable and sustainable energy use
- Aesthetically pleasing

ADEQUATE LEVELS OF ECONOMIC AND SOCIAL DEVELOPMENT

- Living wage, safe and healthy job opportunities for all, and a thriving economy
- Support for healthy development of children and adolescents
- Opportunities for high quality and accessible education

HEALTH AND SOCIAL EQUITY

SOCIAL RELATIONSHIPS THAT ARE SUPPORTIVE AND RESPECTFUL

- Robust social and civic engagement
- Socially cohesive and supportive relationships, families, homes and neighborhoods
- Safe communities, free of crime and violence

Source: Health in All Policies (HiAP) Task Force of the Strategic Growth Council

How Were the Indicators Chosen?

The staff of the California Department of Public Health conducted bibliographic reviews of numerous city, county, state, and national indicator projects and applied criteria (Table 1) to select indicators. More than 200 possible indicators were first matched to the content areas of aspirational goals in the *Healthy Community Framework*. Second, the indicators without detailed data at the level of census tract, town, or other small geography were filtered out. The remaining indicators were compared with indicators in state agency strategic plans for consistency. After taking into account feedback and comments of the HiAP Task Force, CDPH published a core list of 56 indicators in 2013 (Appendix).

How Were the Indicator Data Files and Templates Created?

To produce statewide data, HCDIP used automated methods to download data from scores of public websites and process the data into Excel files with standard formats. These methods rely on statistical packages and programming techniques that are documented in our technical manual.[2] The goal was to provide detailed data by:

- time period
- race/ethnicity, and
- geography

Depending on data availability, the data files have single years and/or three- to five-year aggregations between 2000 and 2010. The

TABLE 1: Criteria Used to Select Indicators

- Validity of the indicator
  - Indicator measures what it purports to measure
  - Evidence links indicator to health outcomes
- Technical feasibility and data properties of the indicator
  - Data source(s) are owned and collected by a recognized organization
  - Timeliness (time lag and frequency of updates)
  - Data quality (completeness, missing data, accuracy)
  - Geographic scale, census tract to region
  - Administrative accessibility (public vs. private, confidentiality, costs)
  - Current use and acceptability to stakeholders
  - Mechanics of data collection, aggregation, and reporting
- Indicator is understandable and valuable to users

Source: California Department of Public Health

race/ethnicity categories follow those of the U.S. Census: Latino, White, African American, Native Hawaiian/Pacific Islander, Asian, American Indian/Alaska Native, Multiple Race, and Other. For geographic detail, we included the California statewide average, 1,523 cities, 8,057 census tracts, 58 counties, and 14 transportation planning regions. An Excel data file for one indicator could have 20,000 or more rows covering multiple geographies, time periods, and race/ethnicity groups. For some indicators, data were not available at the census tract or by race/ethnicity.

The templates for graphs, maps, tables, and explanatory text illustrated in this manual were crafted by the HCDIP team in collaboration with current and potential users, who, as a part of focus groups, reviewed prototypes. The focus groups included urban and transportation planners, urban and rural county health departments, and community-based organizations. The feedback and advice reflected their experience of presenting similar data to groups in their own communities and information that is oriented to a nontechnical audience, including policy makers.

USE CASES

The Social Determinants of Health and Their Link to HCDIP

Chronic illness and injury account for more than 80 percent of deaths in California, and many Californians have multiple chronic conditions that lower their quality of life and disproportionately contribute to California's annual $230 billion health-care spending.[3] Major risk factors for obesity, diabetes, and other chronic illness and injury include poor nutrition, sedentary lifestyles, smoking, and alcohol use. Each of these risk behaviors is profoundly influenced by our social, physical, and economic environments, which are collectively called the "social determinants of health." Chronic illness and injury are also the key drivers of significant and persistent inequities in health outcomes, including substantial differences in life expectancy by income level and race/ethnicity (Box 1).

The Social Determinants of Health: How Social Factors Can Affect Health

Where we live, learn, work, and play has a greater impact on how long and how well we live than medical care. And although health care is critical, we must broaden our view and find ways to enable more people to lead healthy lives and avoid getting sick in the first place.

Communities. Health and health-related behaviors have been linked with a range of neighborhood features, including the concentration of poverty; the density of convenience stores, liquor stores, and fast-food restaurants relative to grocery stores selling fresh foods; access to transportation; the condition of buildings; and the presence of sidewalks and places to play or exercise.

Income. A family's income affects the health of both parents and children. More income increases access to nutritious food and other health-promoting goods and services, and can reduce stress by making it easier to cope with daily challenges. More income can buy the ability to live in a safe neighborhood with good public schools or to send children to private schools. These conditions can affect a child's ultimate educational attainment, which in turn shapes job prospects and thus income levels in adulthood.

Education. Higher educational attainment can increase people's knowledge, problem-solving, and coping skills, enabling them to make healthier choices. Education may also have powerful health effects by determining job prospects and thus earning potential. And education may also influence health through psychosocial pathways, by shaping people's social networks and perceptions of their own social status.

continued on page 7

BOX 1

Place Matters: Community in Focus, Alameda County

A White child from the Oakland Hills can expect to live to 85 years old, whereas an African-American child living in West Oakland—just a few miles away—can expect to live only to 70.

The child from West Oakland is:

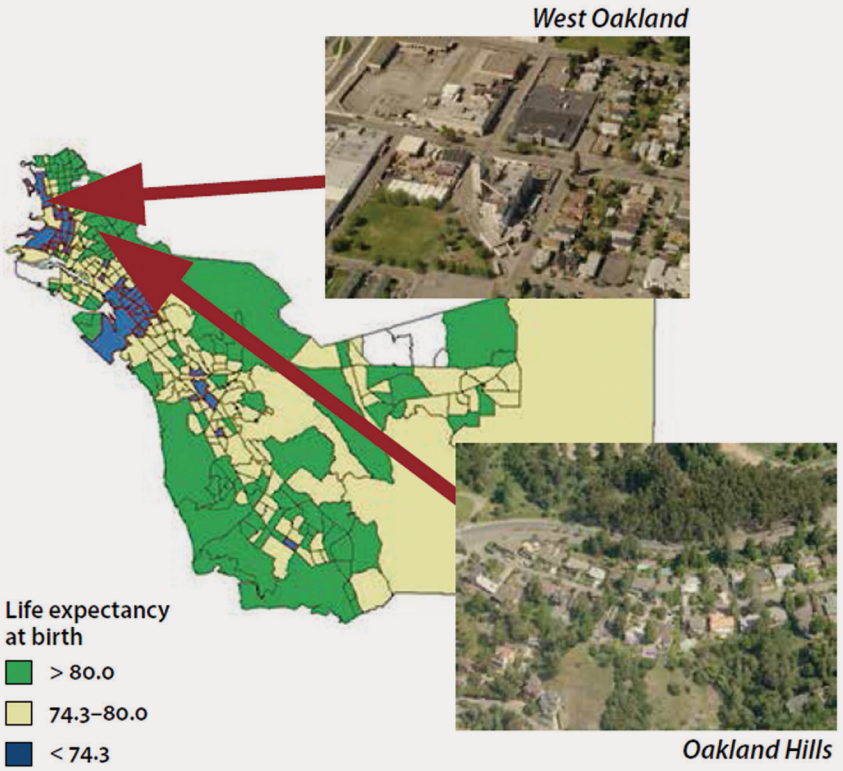
- 1.5 times more likely to be born prematurely
- 7 times more likely to be born into poverty
- 2 times as likely to live in a home that is rented
- 4 times more likely to have parents with only a high-school education
- 2.5 times more likely to be behind in childhood vaccinations
- 4 times less likely to read at grade level by fourth grade
- 4 times as likely to live in a neighborhood with double the density of liquor stores and fast food outlets
- 5.6 times more likely to drop out of school

As an adult, he or she is:

- 5 times more likely to be hospitalized for diabetes
- 2 times more likely to be hospitalized for heart disease
- 2 times more likely to die of heart disease
- 3 times more likely to die of stroke
- 2 times as likely to die of cancer

The map shows the dramatic social and environmental differences between living in West Oakland and Oakland Hills, California, and their link with life expectancy.

Life Expectancy by Census Tract, Alameda County, 2000



Percent	West Oakland	Oakland Hills
High school grads	65%	90%
Unemployment	12	4
Poverty	25	7
Home ownership	38	64
Non-White	89	49

Source: CDPH. California Burden of Disease and Injury Report, 2013.

The Social Determinants of Health and Their Link to HCDIP, *continued*.

Racial or ethnic group. Racial or ethnic differences in health can be explained in part by socioeconomic disadvantages that are the persistent legacy of discrimination. Chronic stress related to experiences of racial bias may also contribute to ill health—even without overt incidents of discrimination, and even among affluent and highly educated people of color.

Childhood experiences. Scientific advances have revealed that childhood experiences are particularly critical in shaping people's lifelong chances for good health. A range of biologic mechanisms, including responses to stress, are likely involved. Recent evidence indicates that physical and social conditions can influence whether particular genes are expressed or suppressed, making it clear that our genes alone do not determine our destiny (Commission to Build a Healthier America[4]).

Examples of HCDIP in Action

Healthy Communities Data and Indicators can be used to:

- describe the baseline community environment in which planning, projects, policies, and programs occur;
- track changes over time to measure the impact of an intervention or program;
- identify vulnerable populations, communities of concern, and "hot spots";
- describe how the social determinants of health vary by neighborhood, city, and county, and understand their health implications;
- identify communities to prioritize for health interventions based on need;
- provide feedback on whether policies, projects, and programs are proceeding as planned;
- identify high-performance communities whose practices might help establish benchmarks and highlight "best practices"; and
- provide data for grants and to meet reporting requirements.

The examples on the following pages illustrate current and planned uses of the Healthy Communities Data and Indicators in different communities across California.

Examples of Uses of Healthy Communities Data and Indicators

Urban Planning

"Cities across California are using their ***General Plan* update** process to respond to the obesity epidemic. Some cities are including a separate health element in their general plan; others are adding health goals and policies in various general plan elements. Approximately 30 cities in California have added health goals and policies to their general plans. In Chula Vista, we are in the process of amending our General Plan and other planning documents to better emphasize access to healthy foods, walkability, pedestrian and bicycle safety, and a jobs-housing balance. The *Healthy Communities Data and Indicators Project* provides us with easy access to metrics on these types of topics and will help us help monitor our progress as we move forward."

— Brendan Reed, *City of Chula Vista*

Community Health Needs Assessment

"Napa County community members understand that improving the health of individuals, families, and communities requires a comprehensive understanding of health, one that considers all the conditions in which people are born, grow, live, work, and age, including the health system. The Live Healthy Napa County collaborative is a public-private partnership bringing together representatives from health and health-care organizations, business, public safety, education, government, and the general public to develop a shared understanding and vision of a healthier Napa County. Our *Community Health Assessment* report presents data that reflect an understanding that health extends beyond the medical setting. Thus, to improve health and well-being, the community strategies must consider the social, economic, behavioral, and structural factors that impact health. We were able to use the data files from the *Healthy Communities Data and Indicators Project* to build maps, graphs, and tables that appeared in our report."

— Dr. Jennifer Henn, *Napa County Public Health*

Public Information Requests

"Our public health department receives scores of requests from the public for data on the county. Some requests are from community groups who want to know about health, demographic, and socioeconomic issues in their communities. Other requests are from organizations that are applying for grants and need background information on community health. At times, these requests can be challenging for our staff, and we need a tool that the public can use to get this information on demand. We see the *Healthy Communities Data and Indicators Project* as a tool to help us meet the demand for public information about the health conditions in our communities. If there were such a tool, we would be able to refer many of our inquirers and know they would be getting the information they desire, allowing our staff to prioritize and follow up the most challenging requests."

— Matt Beyers, *Epidemiologist, Alameda County Public Health Department*

Regional Collaboration on Improving Health and Reducing Health Disparities

"The Public Health Alliance of Southern California is a collaboration of leaders from eight Southern California local health departments, who are responsible for the health of more than half of California's population. The Alliance addresses regional chronic disease prevention and reducing health disparities through policy, systems, and environmental change. Our current priority initiatives include multidisciplinary collaborations in transportation, food environments, and healthy community data indicators. In the transportation sector, we aim to advance health through improved transportation planning, using a coordinated regional approach that includes health metrics, performance-based measures, and cross sector data collection. Several indicators in the *Healthy Communities Data and Indicators Project* help us monitor active transport (walking and bicycling), transit access, and the targets in our regional transportation plan."

— Tracy Delaney, *Executive Director, Public Health Alliance of Southern California*

Informing Decision-Making in Local Government

"Our city council considers hundreds of issues of community interest throughout the year. Many times during our discussions and deliberations, we would like to bring up data and maps of neighborhoods on our mobile devices. This capability would add a dimension to our planning and decision-making process, and enable us to better consider how our decisions affect community health and contribute to a more efficient city government."

— Bay Area Elected Official

Accreditation

"Like many jurisdictions, Orange County is actively pursuing accreditation for our local health department. A key part of accreditation is the creation of a Community Health Assessment, which analyzes population health status and community public health issues to drive programs and interventions that are of high quality and performance, advance health equity, and efficiently use limited resources. We have expanded our Community Health Assessment to include an assortment of emerging indicators on the built environment and the socioeconomic conditions affecting health to reflect both best practices and our values as an agency. The *Healthy Communities Data and Indicators Project* provides a substantial number of these cutting-edge indicators in a manner that is reliable, comparable, and valid, which supports our analysis of statistical trends and disparities among our diverse communities. The project is a crucial resource as the Orange County Health Care Agency and our allied community partners seek to make informed choices in the planning and implementation of those comprehensive, multi-component public health approaches that are key to accreditation and vital to addressing the most important causes of preventable disease."

— Travers Ichinose, *Epidemiologist, Orange County Health Care Agency*

THE TOOL KIT

This manual describes the materials and procedures—a tool kit—that a person moderately skilled in Excel can use to create maps, graphs, tables, and explanatory text for indicators for their community or geographic area of interest. The tool kit includes:

- Excel data files available at www.cdph.ca.gov/programs/Pages/HealthyCommunityIndicators.aspx
- Templates for creating maps, graphs, tables, and explanatory text available as .pdf files at www.cdph.ca.gov/programs/Pages/HealthyCommunityIndicators.aspx
- Step-by-step instructions to combine data and templates into custom reports for your community
- A framework to help you interpret results

Before describing the tool kit, we will describe what we mean by an indicator.

What Is an Indicator?

An indicator is a number that describes the frequency of a characteristic in a population or geographic area. It is often a stand-in for a concept that is more complex or difficult to measure. For example, "the percentage of people who reside within a half mile of a park" is an indicator of geographical access to parks. It makes concrete a concept of access based on a reasonable walking distance of a half mile. Other measures of access to parks might include affordability (entrance fees), nearby transit stops or highway exits, personal safety, and hours and days of operation.

The actual values of indicators are specific to a place and time. An indicator can simply be thought of as what happened, to whom, when, and where. Many indicators of population frequency are a percentage or population rate (e.g., per 1,000 population).

$$\text{Indicator} = \frac{\text{What happened?}}{\text{To whom?}} \text{ and when and where?}$$

As a percentage, the denominator (“who”) is the number of people or households in the entire population of interest, and the numerator (“what”) are only those who experienced the event or situation. The indicator has a time period (“when”) and location (“where”) that the measurements were taken. For example, park access in Los Angeles County might be defined as:

$$\text{Percent of Los Angeles County residents living within half a mile of a park in 2010} = \frac{\text{Number of Los Angeles County residents living within half a mile of a park in 2010}}{\text{Number of Los Angeles County residents in 2010}} \times 100$$

In 2010, among the 6.4 million residents of Los Angeles, 3.4 million lived within a half mile of a park. Using this definition, 53 percent of county residents had access to a park within walking distance of their home.

$$53\% = \frac{3.4 \text{ million}}{6.4 \text{ million}} \times 100, \text{ Los Angeles, 2010}$$

Some indicators have numerators and denominators but are rates rather than percentages. For example, the number of serious bicycle injuries might be expressed in terms of the annual number of serious bicycle injuries per population*. In the San Francisco Bay Area, in 2009, there were 237 serious bicycle injuries in a population of 6.97 million people.

$$\text{Rate of serious bicycle injuries per million population in the Bay Area in 2009} = \frac{\text{Number of serious injuries in Bay Area bicyclists in 2009}}{\text{Bay Area population in 2009}} \times 1{,}000{,}000$$

$$34 \text{ per million} = \frac{237 \text{ injuries}}{6{,}972{,}980 \text{ population}} \times 1{,}000{,}000, \text{ Bay Area, 2009}$$

If the rate is a decimal number with many leading zeroes, the result is multiplied by some factor of 10 (1,000 or 10,000 or 100,000 or 1,000,000) to make the rate easier to read. So, 0.000034 serious bicycle injuries per person above is equivalent to 34 injuries per million population. Where the population sizes may be different or changing, a common denominator like injuries per million population facilitates comparisons.

Finally, some indicators are expressed as an average of repeated measurements. For example, the average air levels of ozone are based on measurements from air monitors that sample air every hour of the day (24 measurements) at a specific location. The 24 measurements can be averaged as a single number for that day and location. The 365 daily averages might then be averaged for an annual average.

*Because the same person can be injured in several different crashes, the measure of frequency is not a percentage.

Indicators and Comparisons

An indicator value by itself may not tell us whether the results are good or bad. Comparing the results to a meaningful reference value provides context. Several natural reference values involve time, geography, and population subgroups. There may not be one correct reference value. You can explore several options by asking:

1. How do my community's (or county's, region's, or state's) current results compare with:
   - our community's indicator measured over the past several years?
   - other communities in our county, region, or state average in the most current year?
   - other communities that have the same size and demographics?
   - a goal set by ourselves or a state or federal agency?
   - the best outcome observed in the state?
   - an ideal goal?
2. Are there differences in indicator values between neighborhoods, race/ethnicity groups, or other socioeconomic characteristics in the community (or county, region, or state)?
3. If there are differences, do they occur in just a few indicators, or is there a pattern involving many indicators?

HCDIP provides several geographic options for comparisons as well as time series for the same community. Many issues should be considered in interpreting indicator results by time periods or geography. These are highlighted in the section **Interpreting Results** on page page 47.

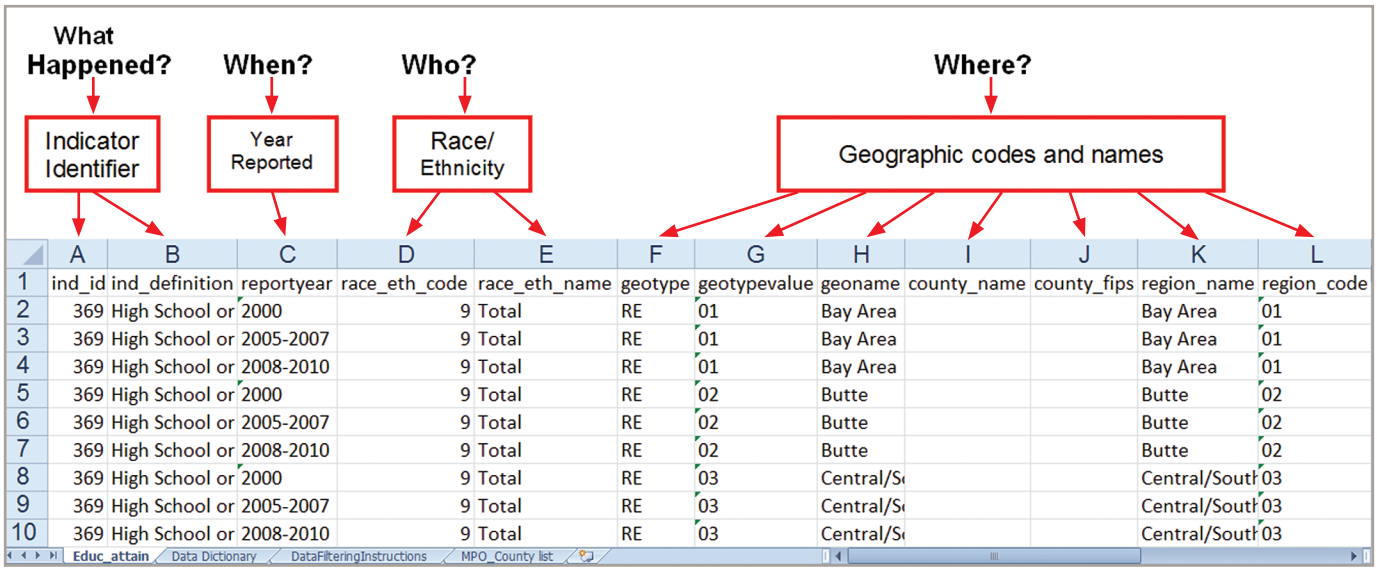
Data Files and Templates

The data source of an indicator's tables, graphs, and maps is located in an Excel data file. Templates or examples of tables, graphs, maps, and explanatory text are located in the PDF files. Both files can be downloaded from the HCDIP website: www.cdph.ca.gov/programs/Pages/HealthyCommunityIndicators.aspx.

Each Excel file follows a basic format, illustrated by the indicator for educational attainment (Figure 2). The first tab in the Excel worksheet contains the data for all available geographies, time periods, and races/ethnicities for the entire state of California. The second tab is a "data dictionary" that defines the column headers in the data file. Instructions to filter the data for time period, race/ethnicity group, and geography are in the third tab. The counties that compose the California regions in HCDIP are listed in the fourth tab.

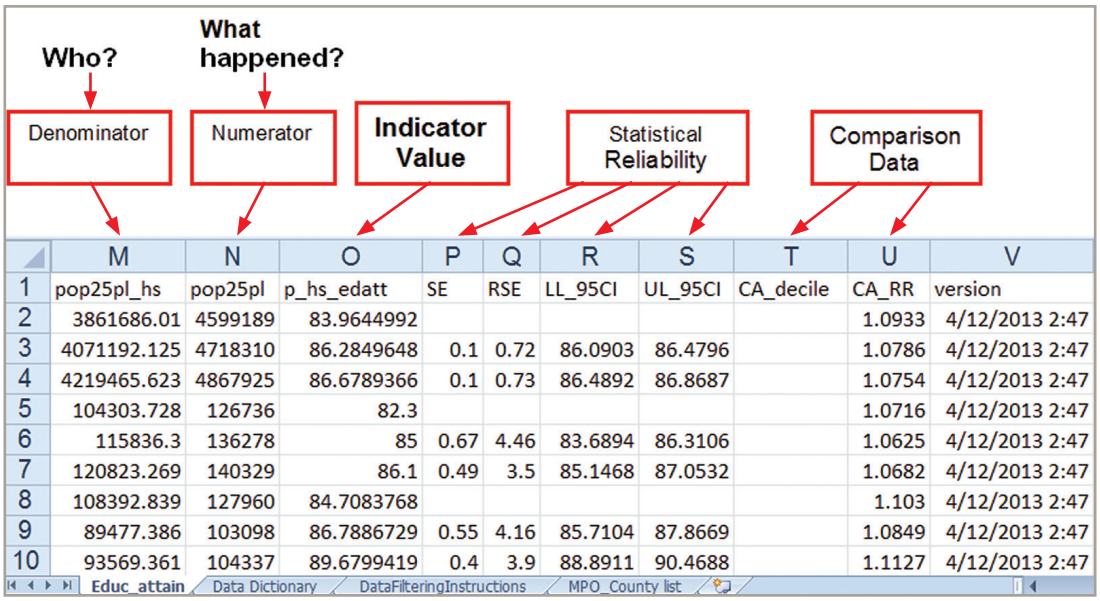
The first two columns (A,B) of the data file identify the indicator. Column C gives the year(s) the data were analyzed or reported in the data source. The next columns (D, E) are a code and name of the different races/ethnicities. The next seven columns (F through L) provide geographic information. The "geotype" field describes the level of geography for data in that row (RE=region, CT=census tract, PL=place/town/city, CO=county, etc.). Column M has the denominator of the indicator. Column N has the numerator, and column O is the indicator value. Columns P through S describe the statistical reliability of the indicator and have useful information for technically oriented users. Column T indicates the ranking of census tracts or cities across the entire state from highest to lowest in 10 groups (deciles).

FIGURE 2: Layout of an Indicator Data File in Excel



	A	B	C	D	E	F	G	H	I	J	K	L
1	ind_id	ind_definition	reportyear	race_eth_code	race_eth_name	geotype	geotypevalue	geoname	county_name	county_fips	region_name	region_code
2	369	High School or	2000	9	Total	RE	01	Bay Area			Bay Area	01
3	369	High School or	2005-2007	9	Total	RE	01	Bay Area			Bay Area	01
4	369	High School or	2008-2010	9	Total	RE	01	Bay Area			Bay Area	01
5	369	High School or	2000	9	Total	RE	02	Butte			Butte	02
6	369	High School or	2005-2007	9	Total	RE	02	Butte			Butte	02
7	369	High School or	2008-2010	9	Total	RE	02	Butte			Butte	02
8	369	High School or	2000	9	Total	RE	03	Central/S			Central/South	03
9	369	High School or	2005-2007	9	Total	RE	03	Central/S			Central/South	03
10	369	High School or	2008-2010	9	Total	RE	03	Central/S			Central/South	03

Educ_attain | Data Dictionary | DataFilteringInstructions | MPO_County list



	M	N	O	P	Q	R	S	T	U	V
1	pop25pl_hs	pop25pl	p_hs_edatt	SE	RSE	LL_95CI	UL_95CI	CA_decile	CA_RR	version
2	3861686.01	4599189	83.9644992						1.0933	4/12/2013 2:47
3	4071192.125	4718310	86.2849648	0.1	0.72	86.0903	86.4796		1.0786	4/12/2013 2:47
4	4219465.623	4867925	86.6789366	0.1	0.73	86.4892	86.8687		1.0754	4/12/2013 2:47
5	104303.728	126736	82.3						1.0716	4/12/2013 2:47
6	115836.3	136278	85	0.67	4.46	83.6894	86.3106		1.0625	4/12/2013 2:47
7	120823.269	140329	86.1	0.49	3.5	85.1468	87.0532		1.0682	4/12/2013 2:47
8	108392.839	127960	84.7083768						1.103	4/12/2013 2:47
9	89477.386	103098	86.7886729	0.55	4.16	85.7104	87.8669		1.0849	4/12/2013 2:47
10	93569.361	104337	89.6799419	0.4	3.9	88.8911	90.4688		1.1127	4/12/2013 2:47

Educ_attain | Data Dictionary | DataFilteringInstructions | MPO_County list

Column U is a ratio of the specific geography and time period to the state average for that time period. A value of 1 means the census tract, place, or county is equal to the state average. For educational attainment, a ratio greater than 1 means the geography has higher (better) attainment than the state average; a ratio of less than 1 means the census tract or city has an educational attainment less than that of the state average. The last column (V) has the date that the file was produced by the HCDIP and serves as a version reference. New versions will reflect corrections or additional years of data.

⚠ Of note, specific Excel files may have small variations in this basic layout, and some fields have missing data because data are not available or statistically reliable.

The following tables, graphs, and maps are based on templates we used for each indicator posted at the HCDIP website. In the section **Creating Your Own Tables, Graphs, Maps, and Narratives** beginning on page page 18, you will learn how to use these templates to generate your own graphs, maps, tables, and explanatory text.

Table 2 shows a table comparing indicators for two time periods among multiple locations. Figure 3 shows a bar chart, and Figure 4 shows a time-series chart. Figures 5 and 6 show maps of indicators by region and by the whole state.

TABLE 2: Table Comparing Two Time Periods and Geographies

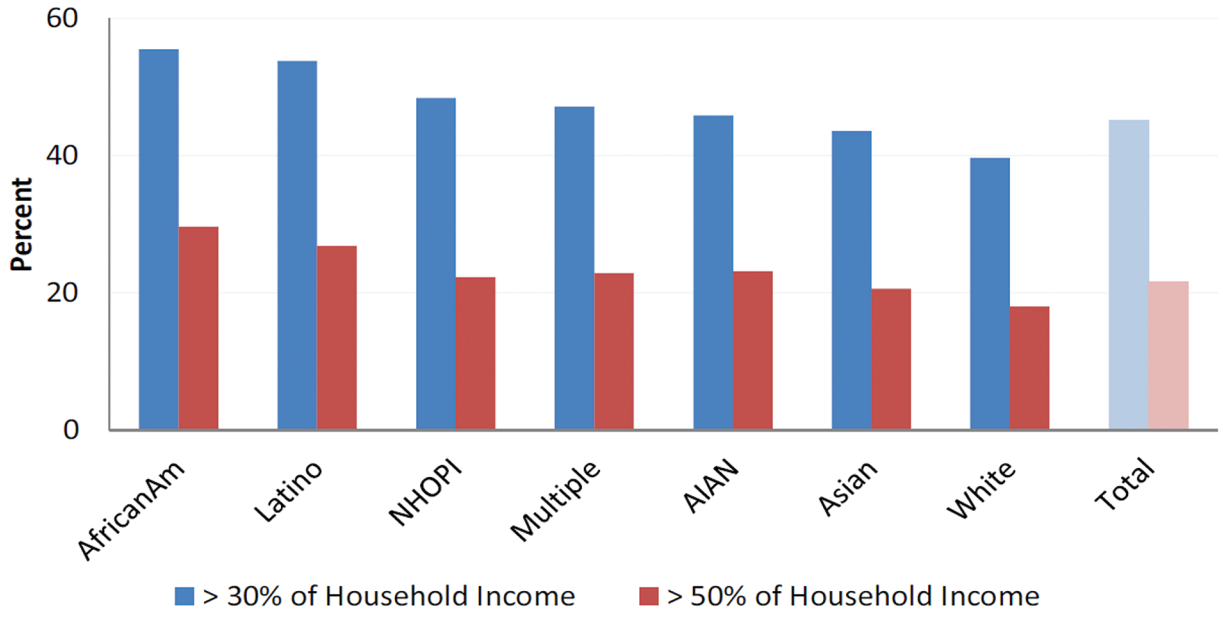
Percent of Workers 16 Years of Age or Older who Walk 10 Minutes/Day or More One Way from Home to Work, Regions of California, 2005–2007 and 2008–2010

	2005–2007			2008–2010		
Region name	Workers who walk ≥10 min/day	Total workers	Percent	Workers who walk ≥10 min/day	Total workers	Percent
Bay Area	70,287	3,122,743	2.25	81,737	3,202,761	2.55
Butte	1,266	85,042	1.49[a]	1,678	81,321	2.06[a]
Monterey Bay	6,440	285,184	2.26	6,003	280,810	2.14
North Coast	1,400	53,533	2.62[a]	1,200	54,903	2.19[a]
Sacramento Area	10,280	890,897	1.15	9,284	874,408	1.06
San Diego	16,887	1,301,157	1.30	18,754	1,336,412	1.40
San Joaquin Valley	11,307	1,364,814	0.83	11,186	1,370,009	0.82
San Luis Obispo	2,188	111,870	1.96	2,417	111,240	2.17
Santa Barbara	4,206	171,400	2.45	5,419	178,919	3.03
Shasta	-	-	-	610	62,467	0.98[a]
Southern California	104,144	7,482,486	1.39	110,717	7,521,289	1.47
California	**235,393**	**15,394,229**	**1.53**	**253,460**	**15,452,033**	**1.64**

Sources: American Community Survey 2005–2007 and 2008–2010, U.S. Census Bureau.
[a] Unstable data (relative standard error ≥30 percent); Data not available.

FIGURE 3. Bar Chart Comparing an Indicator by Race/Ethnicity

Percent of Households Paying > 30% (>50%) of Monthly Household Income on Housing Costs by Race/Ethnicity, California, 2006–2010*

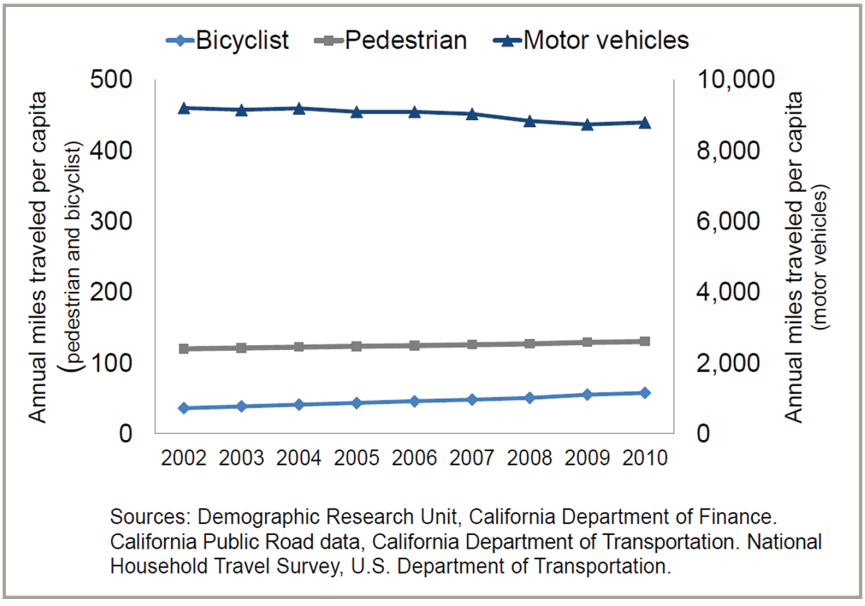


*Housing costs include monthly, gross rent (rent and utilities) or selected, housing costs (mortgage, utilities, property tax, insurance and, if applicable, home association fees). Households paying more than 30% of monthly household income on housing costs are regarded as cost burdened and more than 50% as severely cost burdened. Race/ethnicity abbreviations are AIAN=American Indian/Alaska Native, AfricanAm=African American, NHOPI=Native Hawaiian/Other Pacific Islander.

Source: U.S. Department of Housing and Urban Development, CHAS data, 2006-2010

FIGURE 4: Time Series Chart for Several Different Groups

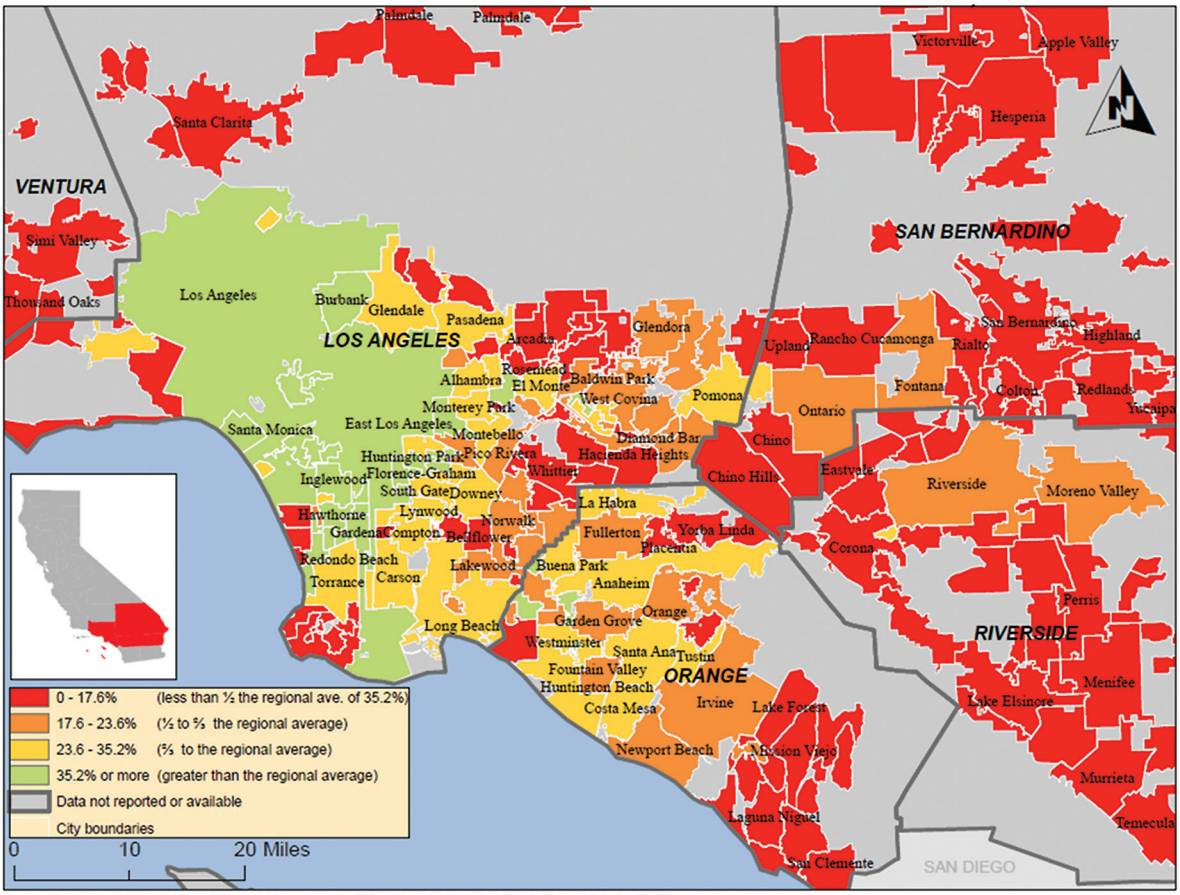
Annual Miles Traveled per Capita by Mode, California, 2002–2010



Sources: Demographic Research Unit, California Department of Finance. California Public Road data, California Department of Transportation. National Household Travel Survey, U.S. Department of Transportation.

FIGURE 5: Map of an Indicator at the Regional Scale

Percent of Residents within a Half-Mile of a Major Transit Stop*, Cities and Towns in Selected Southern California Counties in SCAG, 2012

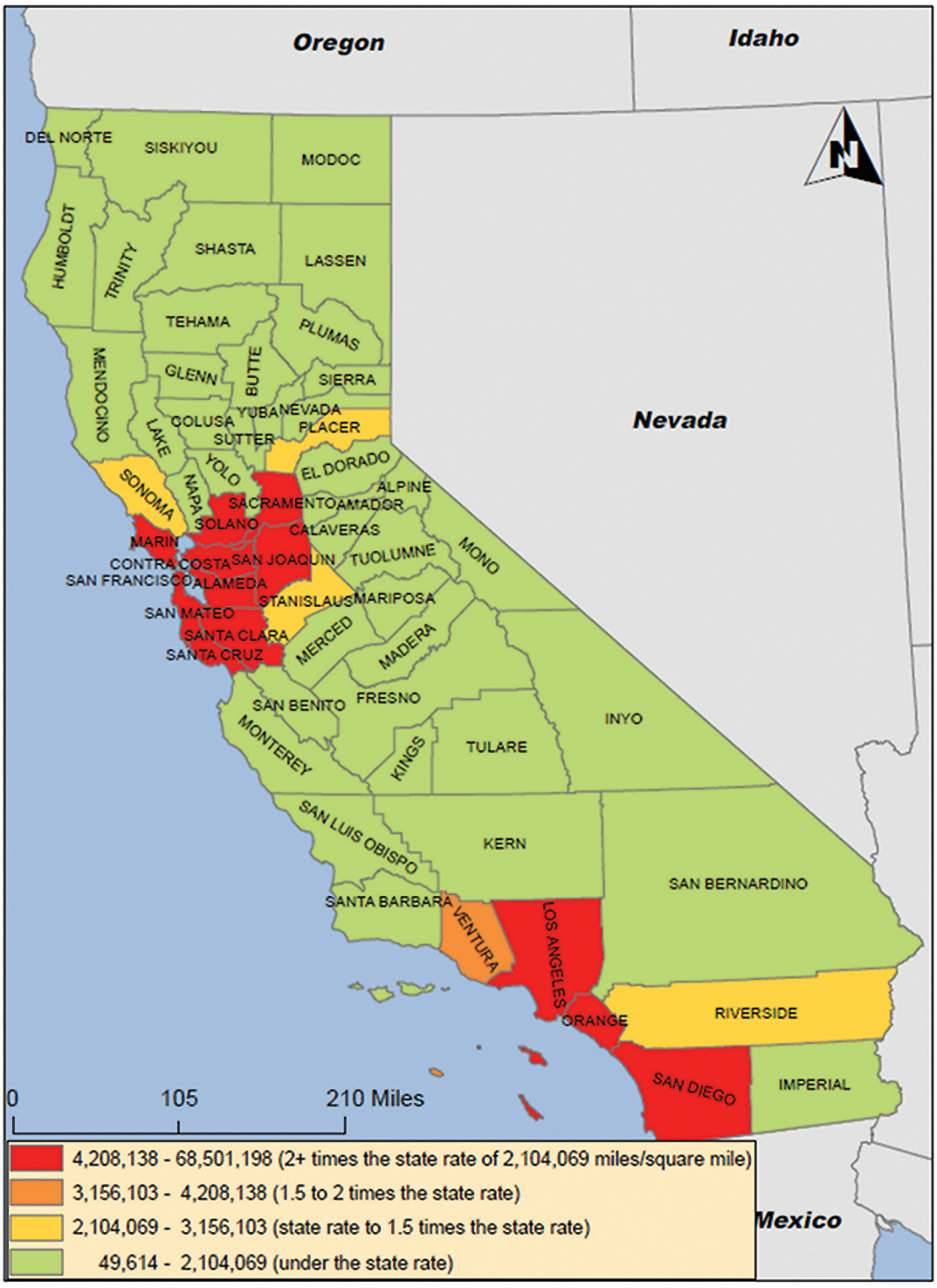


Source: Southern California Association of Governments, SCAG (transit stops) and U.S. Census blocks, 2010
* 15 minute or less headways during peak commute hours

Analysis by CDPH and UCSF

FIGURE 6: Map of an Indicator at the State Scale

Annual Vehicle Miles Traveled per Square Mile, Counties, California, 2010



Source:Public Roads Data, Department of Transportation. Annual vehicle miles traveled data includes incorporated and unincorporated places and other jurisdictions. 2010 Census Gazetter files, U.S. Census Bureau.

Analysis by CDPH and UCSF

CREATING YOUR OWN TABLES, GRAPHS, MAPS, AND NARRATIVES

Most users will be interested in two kinds of presentations of their community's indicators:

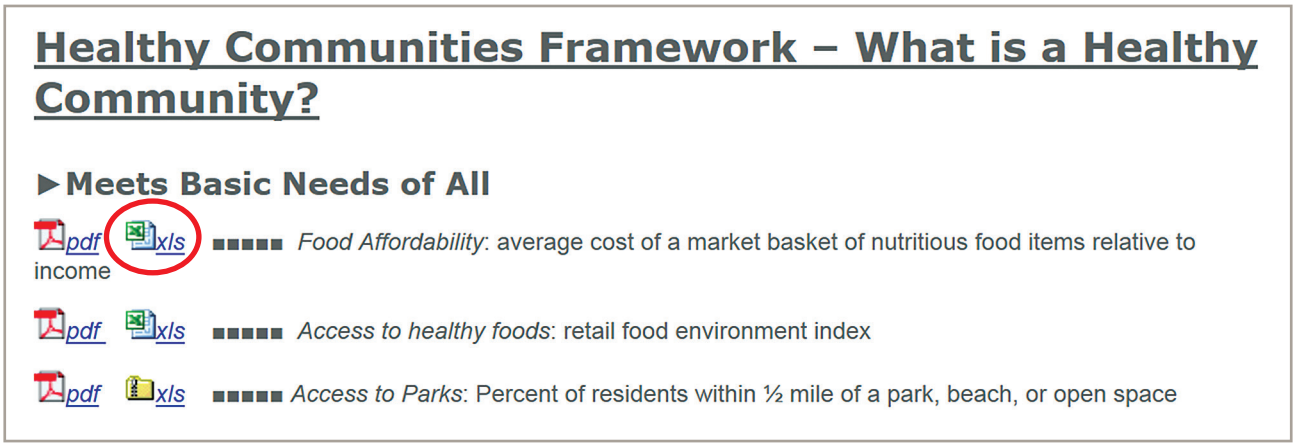
- a "drill down" of a single indicator for a specific geography, for one or more time periods, and for one or more races/ethnicities or other subgroups.
- a community report card of multiple indicators for a specific geography, the most current time period, and the total population (no subgroup breakdowns).

This manual has examples of both presentations. For each, the user must first download and filter data files for geography, time period, race/ethnicity, and possibly other criteria. Some data files do not have multiple time periods or race/ethnicity options, and will have data only on the most recent time period and total population.

This manual assumes that readers have a moderate proficiency in Excel. Depending on your skills, a single indicator report with narrative, graphs, maps, and tables may take several hours to create. A report card of multiple indicators will take more time. Online visualization tools are becoming increasingly available, and data in the HCDIP will be migrating to the State's Open Data Portal at https://chhs.data.ca.gov/.

Downloading Data

The first step is downloading one of the Excel files from the HCDIP website: www.cdph.ca.gov/programs/Pages/HealthyCommunityIndicators.aspx. Scroll down until you see the web page content below. To download a file, place your cursor on the *xls* and double-click. Depending on your computer or mobile device, you may get a security warning, and you must allow the download.



Some Excel files are small enough (<64,000 rows) to be downloadable as .xls files. Excel files with an .xlsx file format (Excel 2010) allow for bigger files, which have been compressed, and are noted by the symbol . You will have to use compression software (e.g., WinZip) to unpack the file and put it in an appropriate folder. Please note, some Excel files are large and may take a few minutes to download.

Filtering Data Files in Excel 2010

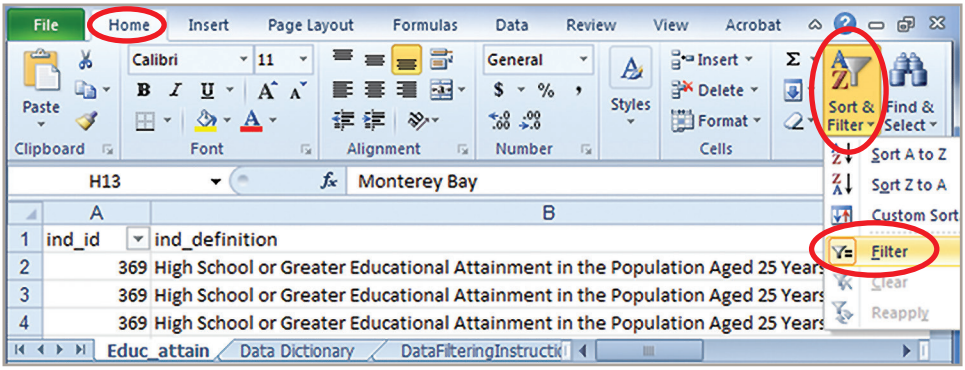
After downloading an Excel data file, you need to complete four steps in Excel to select the rows of data that are the input to any table, map, or chart based on your criteria of geography, time, race/ethnicity, or other subgroup:

1. Activate filtering.
2. Select a column to filter on (geography, time period, race/ethnicity, other).
3. Select the desired values by checking boxes in a checklist.
4. Repeat steps 2 and 3 in the same data file until all desired geographies, time periods, and subgroups are filtered.

ACTIVATE FILTERING

Downloaded Excel files in the HCDIP usually have four separate worksheets, whose names appear on the bottom of the workbook. The first tab has the data for the indicator ("Educ_attain" in Figure 2). Click on it so it is highlighted.

- To turn on the sort/filter function, click the "Sort & Filter" icon from the "Home" tab.
- Click the Filter icon.

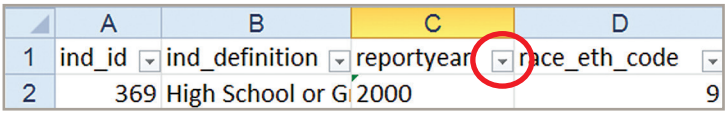


To clear filters, just click on the filter icon again.

SELECT A COLUMN

Filter icons (▼) will now appear to the right of each column heading.

- To filter by time period, click the “reportyear” filter icon.



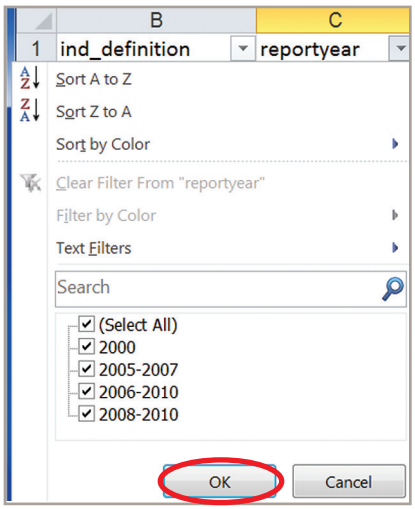
SELECT DESIRED VALUES

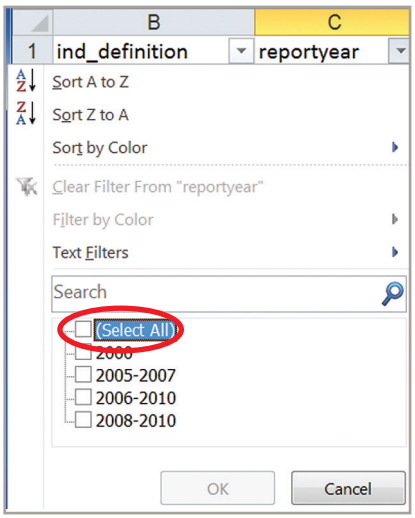
If you want multiple years:

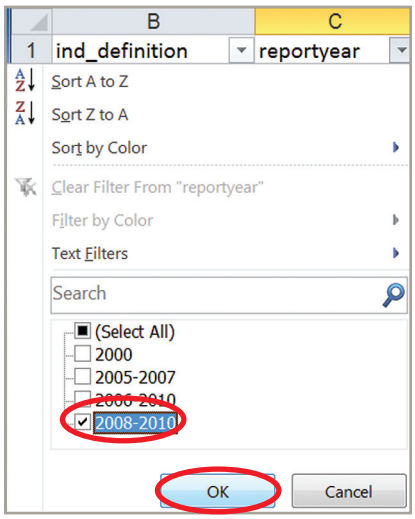
- Select All years available by clicking OK.

If you want single or specified years:

- Deselect all by clicking the Select All box.
- Click the box of the desired time period (e.g., 2008–2010).
- Click OK.

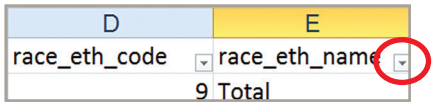






Once you have filtered on a column, the icon will change (▼) to indicate that the filter is active.

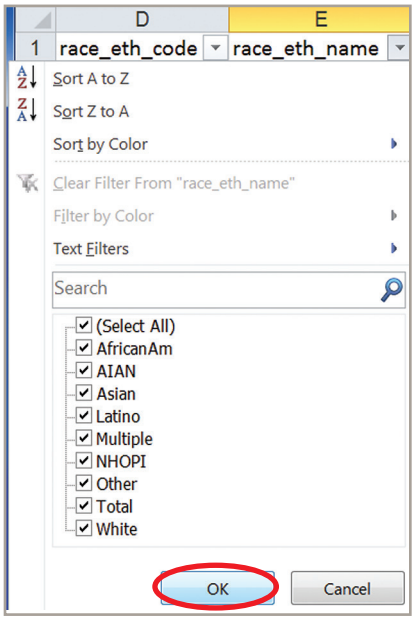
- To filter by race/ethnicity, click the “race_eth_name” filter icon.



PART IV

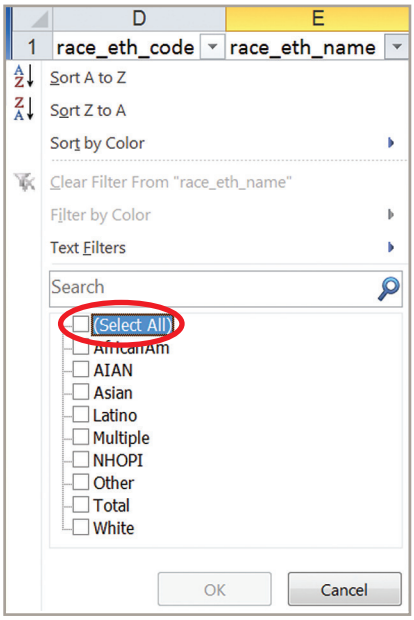
If you want Total and eight other races/ethnicities:

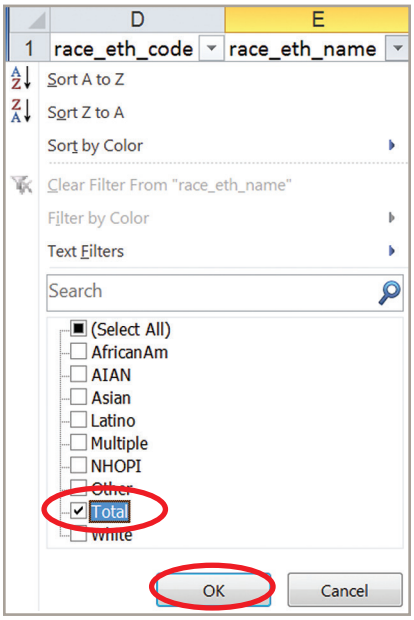
- Click OK.



If you want single or multiple races/ethnicities:

- Deselect all by clicking the Select All box.
- Click the box(es) of the desired group(s) (e.g., just Total).
- Click OK.



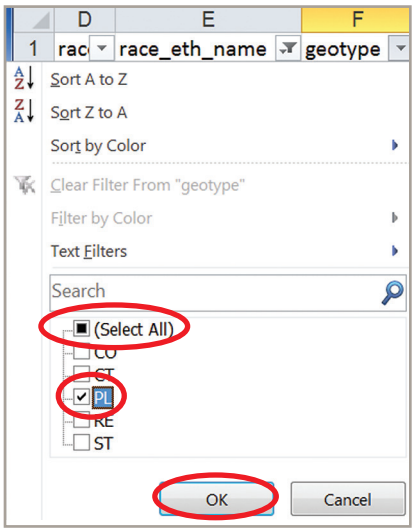


The Excel files have several different fields to help users select their geography of interest. You can use different filtering strategies to avoid scrolling through long checklists of census tracts (8,057), cities (1,523), and counties (58). To select a single geography, you can use the "geotype" column as the first filter followed by the "geoname" as the second filter. For example, to find the City of Los Angeles (as opposed to Los Angeles County):

1. Filter on geotype.

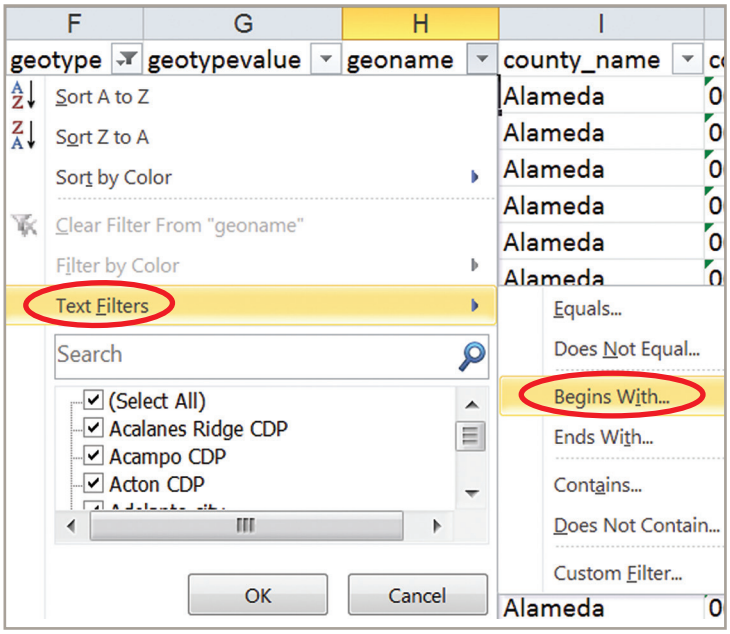
- Click Select All to clear.
- Click on PL (for places).
- Click OK.

You will then see only "PL" in the "geotype" column.



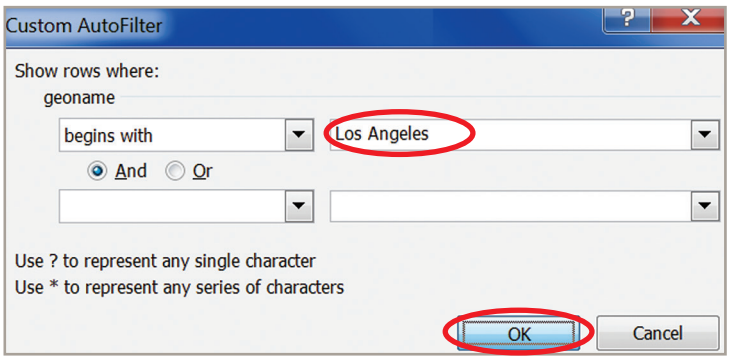
2. Filter on geoname.

- Pass the cursor over the dialog box to select "Text Filters" and click "Begins with."



- Enter "Los Angeles" into the custom filter box.
- Click OK.

You will then see only the rows for "Los Angeles city."



PART IV

To select all cities within a specific county, first apply the “County_name” filter and click the county of interest, then apply the “geotype” filter with “PL.” To select all census tracts within a county, first apply the “County_name” filter and select the county of interest, then apply the “geotype” filter with the “CT” box checked.

Selecting census tracts within a city is not straightforward because census tracts cross city boundaries. One approach is to find or create a list of all the census tracts within or touching a city’s boundaries, and then select each census tract in the checklist. Another approach is to select all census tracts within a county (of that city) and then create a county map in GIS software and overlay city boundaries.

FILTERING OTHER COLUMNS

Many HCDIP Excel files provide additional subgroups for filtering. For example, in transportation files, the “mode” column has selections for walk, bicycle, car, carpool, transit, and so forth. In the housing cost burden and household overcrowding files, users can filter on renters or homeowners and income level. In the poverty file, the “poverty” column provides results for overall poverty, child poverty (0–18 years old), and concentrated poverty. The same steps outlined above will allow you to filter the Excel files for your desired indicator, time period, geography, and population subgroup.

Visualizing Data in Excel 2010 and Other Software

The goal of filtering is to isolate the few rows and columns of indicator data. The starting point for any chart or map is a well-documented table. The content of tables can be presented by itself or be reference data for graphs and maps.

TABLES

The basic elements of a table are a title, row headings, column headings, cell contents and units, a reference source, and, if necessary, explanatory footnotes. It is often stated that a good table will be sufficiently explanatory to stand on its own. A good title will have the elements of “what happened, to whom, when, and where.” We will illustrate this procedure with data for three tables, which will also be used to create charts and maps. The tables are:

Table A The Percent of Children Living Below the Federal Poverty Line, California, 2000–2010

Table B The Percent of Children Living Below the Federal Poverty Line by Race/Ethnicity, California, 2006–2010

Table C The Percent of Children Living Below the Federal Poverty Line by County, California, 2000–2010

▸ Download the Excel data 'HCI_PovertyRate_754_CT_PL_CO_RE_CA_1-22-14.xlsx' from the HCDIP website.

▸ For Table A, apply filters for column headers and check the boxes:

- filter ***geotype*** (column F) and select the "CA" box
- filter ***race_eth_name*** (column E) and select the "Total" box
- filter ***poverty*** (column M) and select the "Child" box
- filter ***reportyear*** (column C) and check the boxes for 2000, 2005–2007, and 2008–2010

The results should be 3 rows of data. The columns in the filtered Excel file with Table A data are C (reportyear), O (denominator), P (percent).

To make a compact table, cut and paste the information in columns C, N, O, and P into a new Excel spreadsheet that looks like:

New Excel spreadsheet (Example_Tables_Graphs8-11-14.xlsx)

	A	B	C	D	E
1	Overall, Concentrated, and Child (0 to 18 years of age) Poverty Rate				
2	reportyear	TotalPop	NumPov	percent	
3	2000	9249829	1757467.51	19	
4	2005-2007	9402499	1692449.82	18	
5	2008-2010	9307653	1889453.56	20.3	

After editing the title and column headers, centering the column headers, right-justifying numbers and adding thousands separators (",") for the large numbers in column B and C, adjusting the number of decimal places (only 1) for the percent column, and putting in separator lines at the top and bottom of the table, we have the table below that is fully documented.

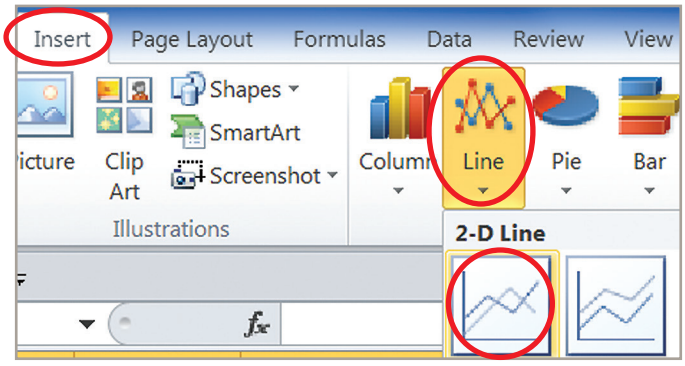
	A	B	C	D	E
1	Table A. Child (0 to 18 years of age) Poverty Rate, California, 2000-2010				
2	Year	Population	Living in Poverty	Percent	
3	2000	9,249,829	1,757,468	19.0	
4	2005-2007	9,402,499	1,692,450	18.0	
5	2008-2010	9,307,653	1,889,454	20.3	
6	Source: American Community Survey				

To identify the source, you will have to download and refer to the indicator narrative (.pdf file) for Poverty Rate at the HCDIP website. This table can now be cut and pasted into a report (e.g., Word document or pdf).

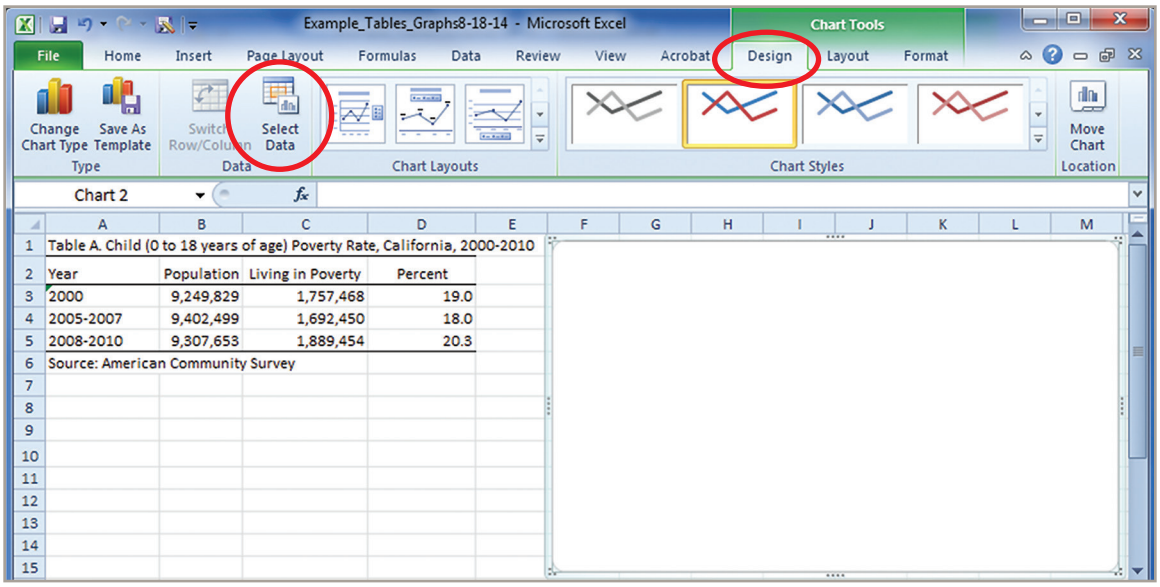
LINE GRAPH

Table A may be used to create a line graph to visualize how the childhood poverty rate may be changing over time.

- Click on the "Insert" tab on the Excel toolbar.
- Click "Line" in the Charts area.
- Click the first 2-D line chart type.

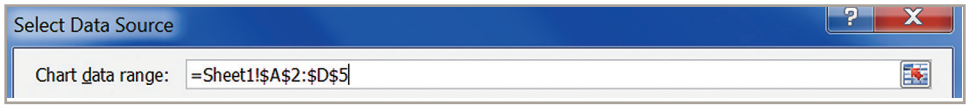


A blank chart will appear adjacent to the data table, and the Design tab is highlighted.



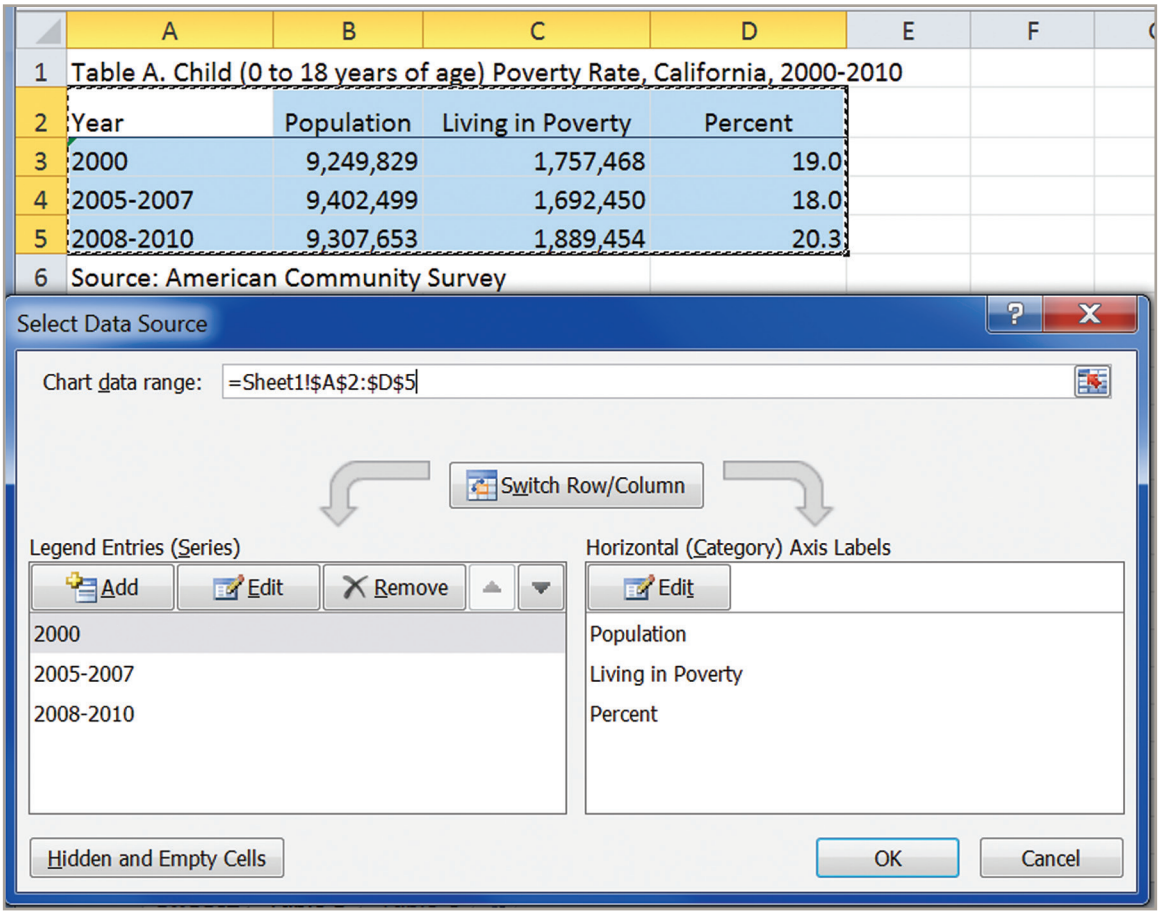
- Click the Select Data button

The "Select Data Source" dialog box will appear. Enter the row-column range of the data.

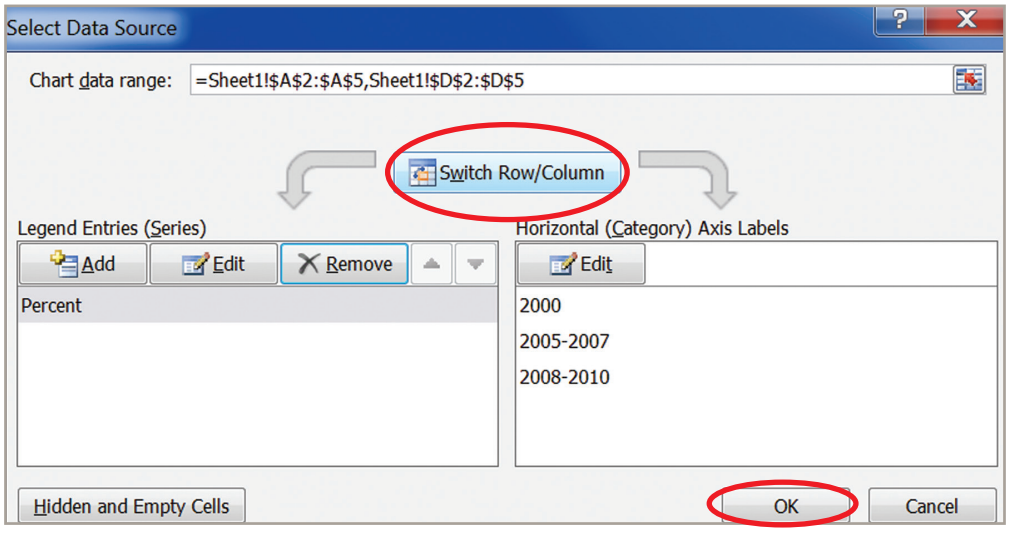


Manually type in the range of the entire table including the column header (e.g., A2:D5), but not the title. Another option is to select the rows and columns by clicking and highlighting the relevant cells.

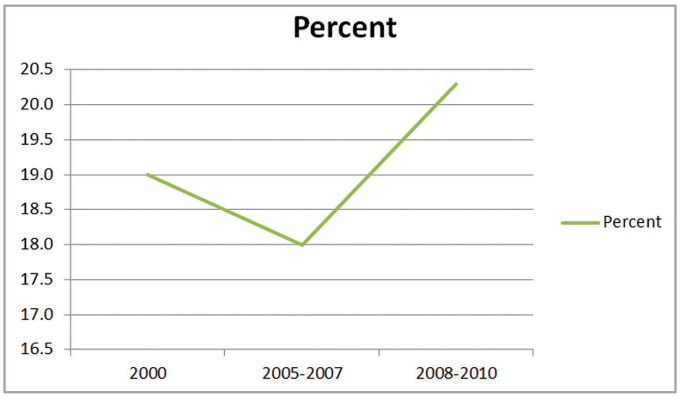
The Select Data Source dialog box should appear as below.



- Click the “Switch Row/Column” button, so that time is on the horizontal (x) axis.
- Click Remove for “Population” and for “Living in Poverty.”
- Click OK.



The graph should look like this:



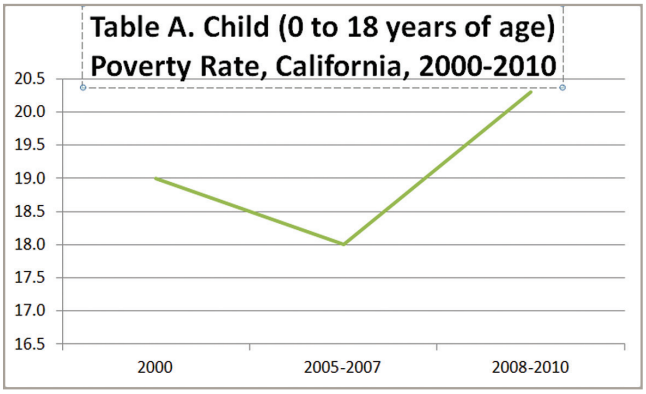
To create a fully documented graph, do the following:

Remove the legend.

- Highlight the legend Percent and press the Delete key.

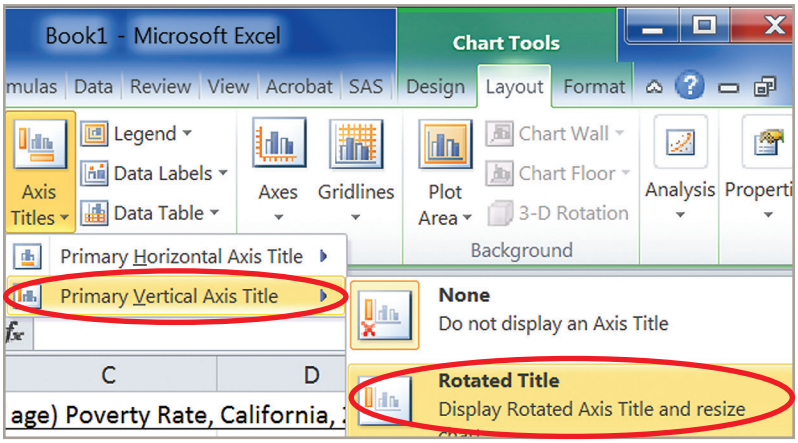
Change the title.

- Copy and paste the title in the table (cell A1) to the title of the graph.



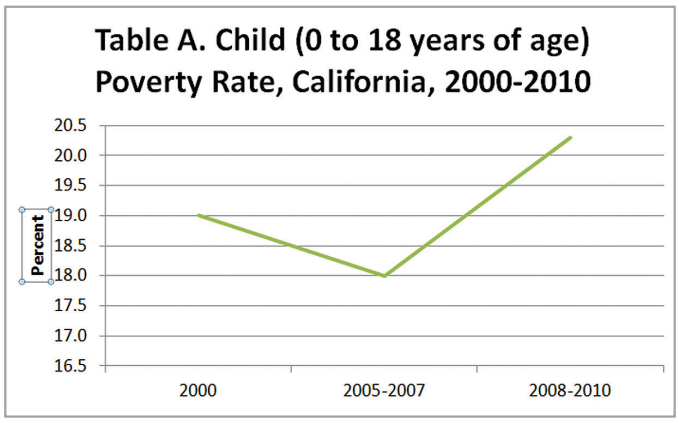
Add the Y-axis title "Percent."

- Click the Layout tab.
- Click on Axis Titles, "Primary Vertical Axis Title" and "Rotated Title."
- Type in "Percent."



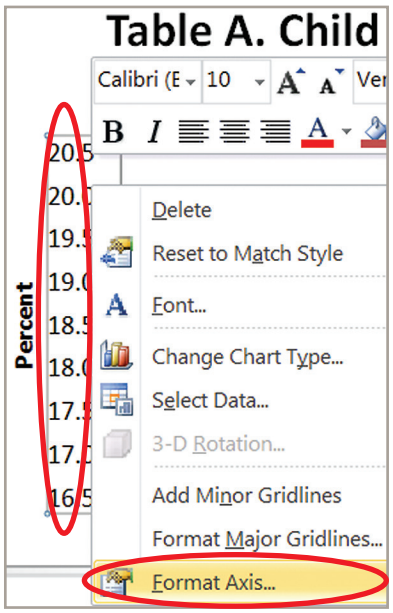
PART IV

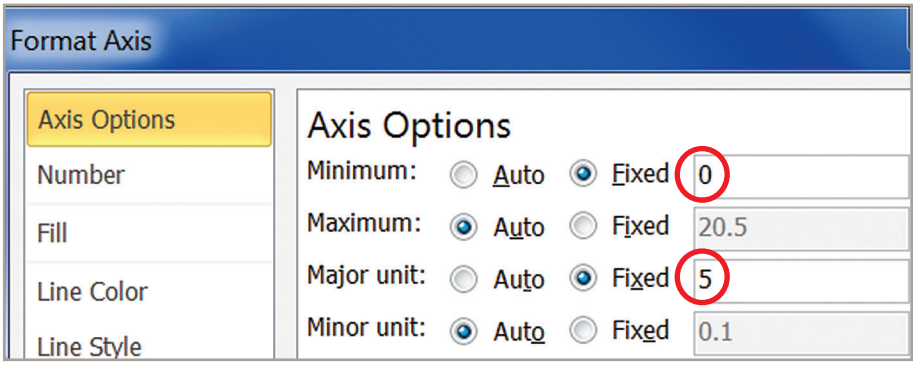
The graph should look like:



Change the Y-axis scale to go from 0 to the maximum value (20.5).

- Click to highlight the Y-axis values.
- Click Format Axis.
- Change the automatic setting to fixed settings for minimum and major unit.
- Click Close.





The graph should look like:

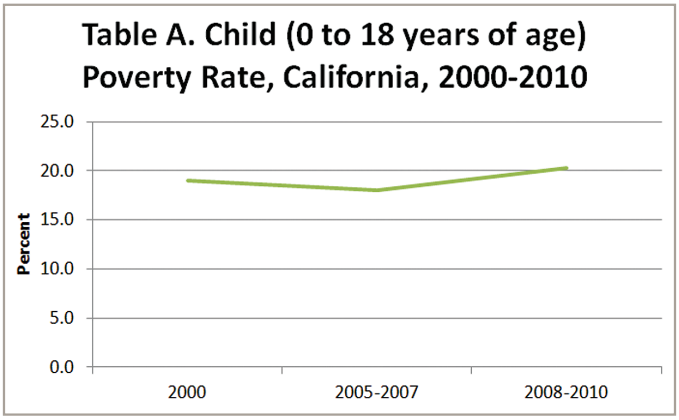


TABLE B AND BAR CHARTS

▸ For Table B, apply filters in 'HCI_PovertyRate_754_CT_PL_CO_RE_CA_1-22-14.xlsx' for column headers and check the boxes:

- filter ***geotype*** (column F) and select the "CA" box
- filter ***race_eth_name*** (column E) and select the "Select All" box
- filter ***poverty*** (column M) and select the "Child" box
- filter ***reportyear*** (column C) and check the boxes for 2006–2010
- sort ***percent*** from highest to lowest

The results should be nine rows of data. The columns in the filtered file with Table B data are E (race_eth_name), N (numerator), O (denominator), and P (percent).

To make a compact table, cut and paste the information in columns E, N, O, and P into a separate Excel spreadsheet that looks like:

New Excel spreadsheet

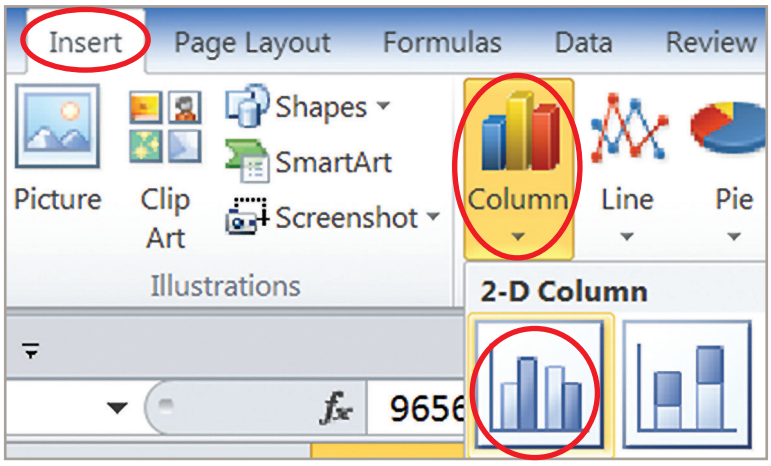
	A	B	C	D	E
1	Table B. The Percent of Children Living Below the Federal Poverty Line by Race/Ethnicity, California, 2006-2010				
2	race_eth_name	TotalPop	NumPov	percent	
3	AfricanAm	550121	159535	29	
4	Latino	4657607	1224951	26.3	
5	AIAN	34155	8572.91	25.1	
6	Total	9325329	1781138	19.1	
7	NHOPI	32209	5668.78	17.6	
8	Other	32853	5289.33	16.1	
9	Asian	965687	110088	11.4	
10	Multiple	377378	40379.4	10.7	
11	White	2675319	227402	8.5	

After editing, the fully documented table should look like this:

	A	B	C	D
1	Table B. The Percent of Children Living Below the Federal Poverty Line by Race/Ethnicity, California, 2006-2010			
2	Race/Ethnicity Group	Population	Living in Poverty	Percent
3	African Am.	550,121	159,535	29.0
4	Latino	4,657,607	1,224,951	26.3
5	AIAN	34,155	8,573	25.1
6	*Total*	*9,325,329*	*1,781,138*	*19.1*
7	NHOPI	32,209	5,669	17.6
8	Other	32,853	5,289	16.1
9	Asian	965,687	110,088	11.4
10	Multiple	377,378	40,379	10.7
11	White	2,675,319	227,402	8.5
12	AIAN, American Indian/Alaska Native; NHOPI, Native Hawaiian/Other Pacific Islander			
13	Source: American Community Survey			

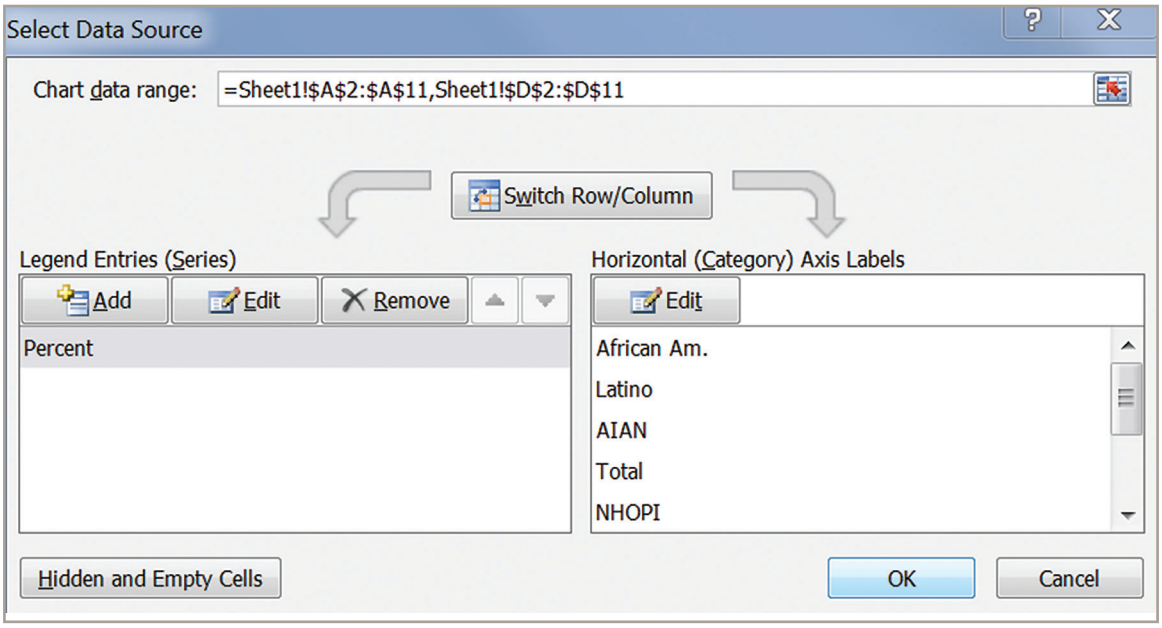
Table B may be used to create a bar graph to visualize how the childhood poverty rate varies by race/ethnicity.

- Click on the “Insert” tab on the Excel toolbar.
- Click “Column” in the Charts area.
- Click the first 2-D chart type.

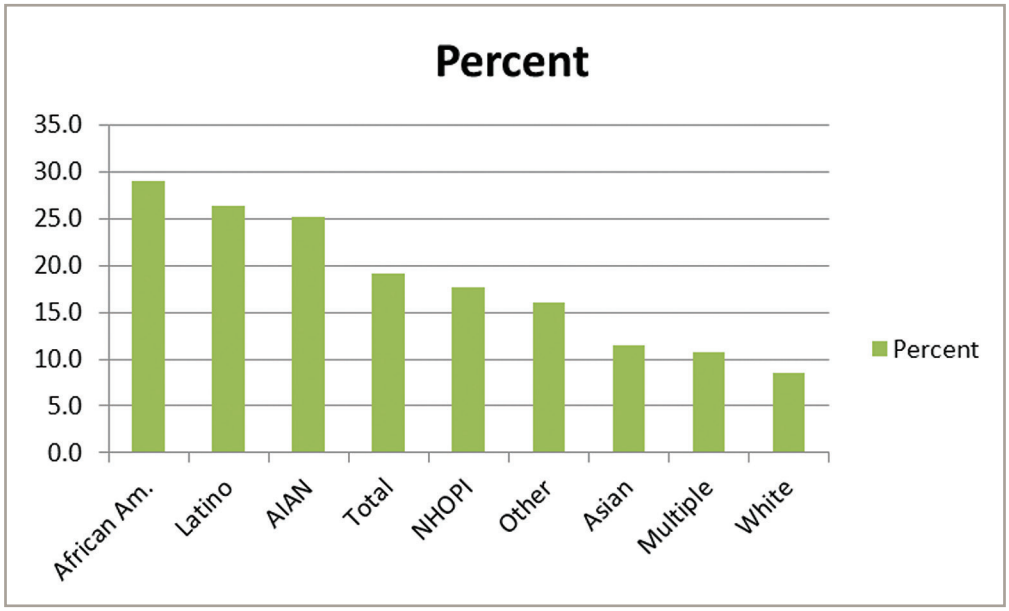


To select the data for the bar chart:

- Click the Select Data button.
- Input the data range (e.g., A2:D11) or highlight the cells in the Select Data Source dialog box.
- Do not switch rows and columns.
- Remove the “Population” and the “Living in Poverty” column.
- Click OK.



The results should look like this:



After editing the chart title, adding the Y-axis title, removing the legend, reformatting the Y-Axis numbers without decimals, formatting the Total bar with a lighter color, changing the grid line intervals to 10 percent, and removing the ticks from the horizontal axis, we have the following fully documented bar chart.

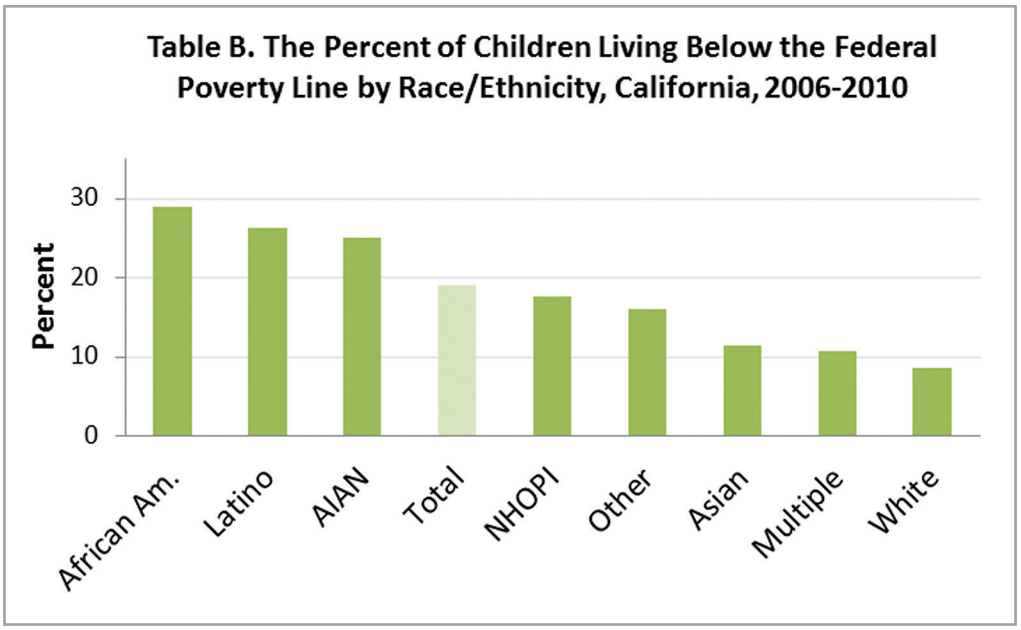


TABLE C AND MAPS

▸ For Table C, apply filters in 'HCI_PovertyRate_754_CT_PL_CO_RE_CA_1-22-14.xlsx' for column headers and check the boxes:

- filter ***geotype*** (column F) and select the "CO" box
- filter ***race_eth_name*** (column E) and select the "Total" box
- filter ***poverty*** (column M) and select the "Child" box
- filter ***reportyear*** (column C) and check the boxes for 2006–2010

The results should be 58 rows of data. The columns with Table C data are H (county_name), N (numerator), O (denominator), and P (percent).

To make a compact table, cut and paste the information in columns H, N, O, and P into a separate Excel spreadsheet. After editing the title and column headers, centering the column headers, right-justifying numbers and adding thousands separators (",") for the large numbers in column B and C, adjusting the number of decimal places (only 1) for the percent column, and putting in separator lines at the top and bottom of the table, we have the fully documented table below. The first few rows should look like this:

	A	B	C	D
1	Table C. The Percent of Children Living Below the Federal Poverty Line by County, California, 2006-2010			
2	County	Population	Living in Poverty	Percent
3	Alameda	338,918	48,804	14.4
4	Alpine	307	45	14.8
5	Amador	6,697	516	7.7

⚠ Note that many mapping software programs use the first row to indicate the names of the columns. Remove the title so that only the column headers are in the first row. Some mapping software limits the length of a field name to 10 or less characters. So, editing the field names may be necessary.

	A	B	C	D
1	County	Population	Living in Poverty	Percent

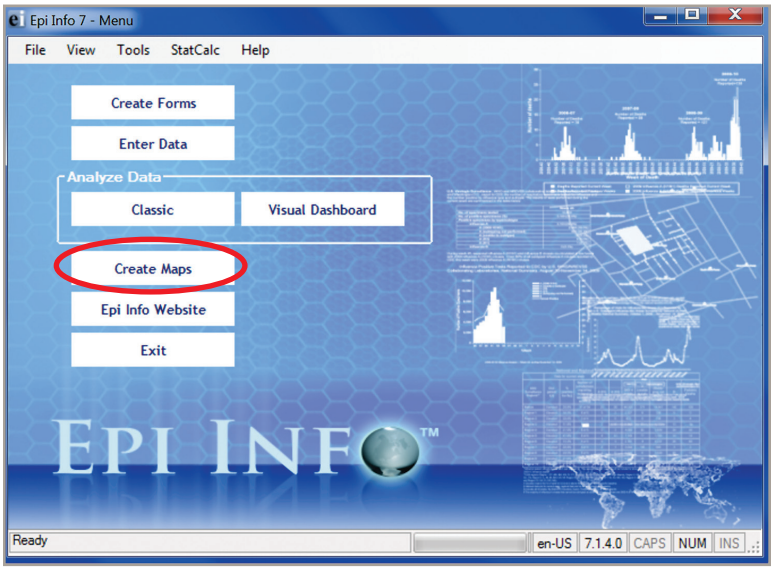
The next steps illustrate mapping using *Epi Info 7*, which is a statistical package that includes mapping and is available for free from the Centers for Disease Control (www.cdc.gov/epiinfo/html/downloads.htm). Most large governmental organizations have access to commercial software such as ArcMAP, MapInfo, Google MapMaker, etc. If you work in an organization with mapping software, you should seek assistance from your information technology department. Epi Info has basic mapping software and does not have many of the features of more sophisticated programs.

In addition to Table C (without the title in the first row), you will need files with the relevant boundaries for census tracts, places, counties, and regions. These files are called shape files (.shp file extension), and can be downloaded from the HCDIP website. We suggest that you download and place these files into a separate file folder.

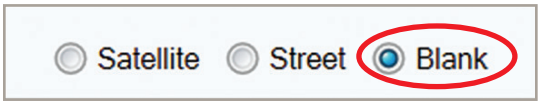
Once you install Epi Info 7, click the *Epi Info* icon.

From the main screen:

- Click on the "Create Maps" button.

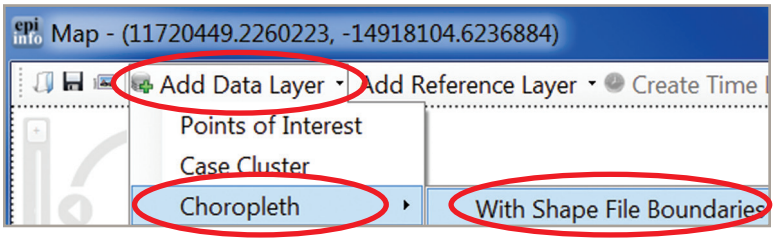


- Click the Blank view.



On the top toolbar:

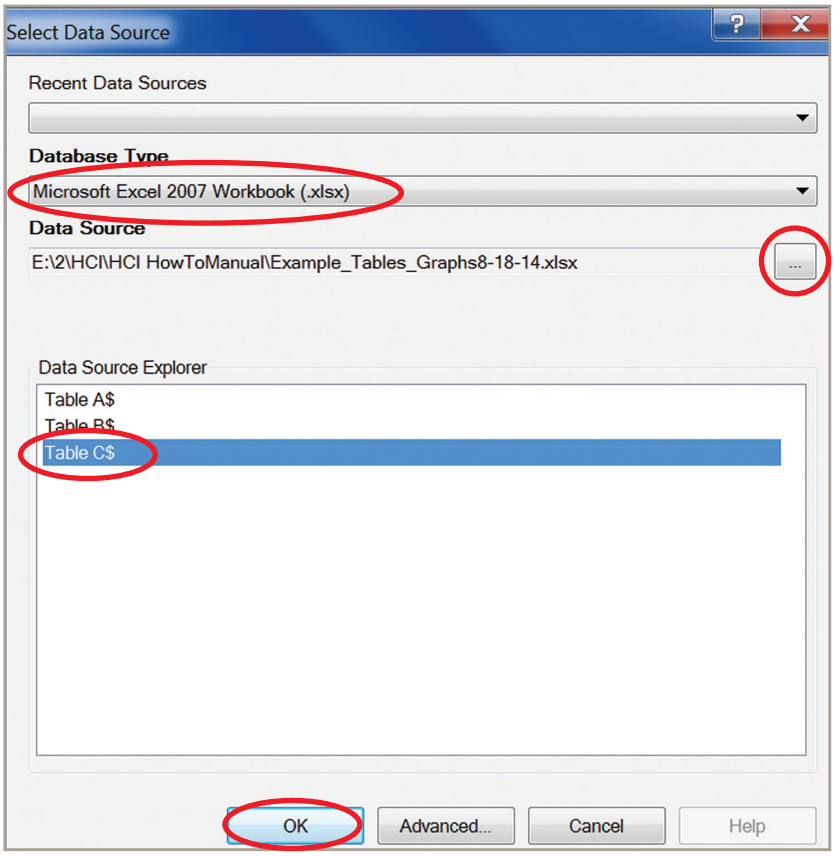
- Select "Add Data Layer."
- Select "Choropleth."
- Select "With Shape File Boundaries."



PART IV

In the “Select Data Source” dialog box:

- Select .xlsx (or .xls) as the database type.
- Click the search file button to search folders for the data file (Table C).
- Double-click the location of the worksheet with the data (in this example, “Table C”).
- Click OK.



The following dialog box will appear:

To link the data file to the shape files with the boundaries, you must enter the name of the column headers (key) that correspond between the two files (Table 3). In this example, we will be matching on county names by linking the key of the shape file (CA_counties2010) called “NAME” with the key in the data file (Table C) called “County.” “County” is the column header in Table C (originally derived from the “geoname” column in the downloaded HCDIP Excel file).

TABLE 3: Keys to Match Data Files with Shape Files

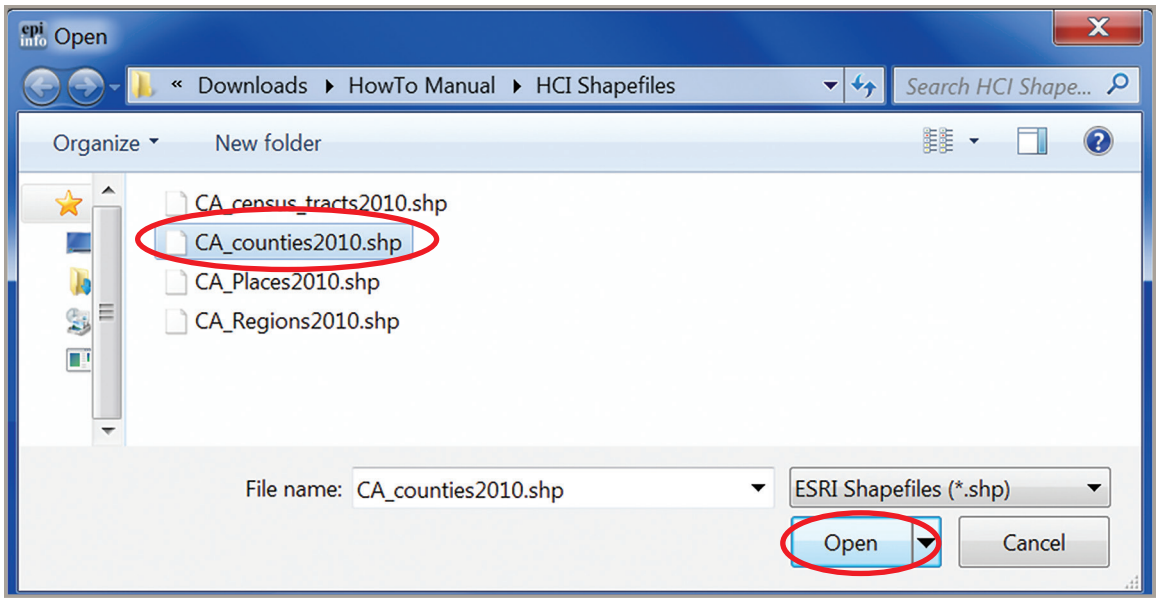
Geography	Shape File Name	HCI Geo-type	Link Field by Geography Name*		Link Field by Geography Code†	
			Shape File	HCI Data File Source	Shape File	HCI Datafile Source
Census tract	CA_census_tracts2010	CT	NA	NA	ct10	Geotypevalue
Place	CA_places2010	PL	NAME	geoname	PLACE	Geotypevalue
Counties	CA_counties2010	CO	NAME	geoname	COUNTYFIPS	Geotypevalue
Regions	CA_regions2010	RE	NAME	geoname	RegionCode	Geotypevalue

* e.g., Los Angeles, Sacramento, San Jose; † e.g., 06023000100, 00135, 06001, 01

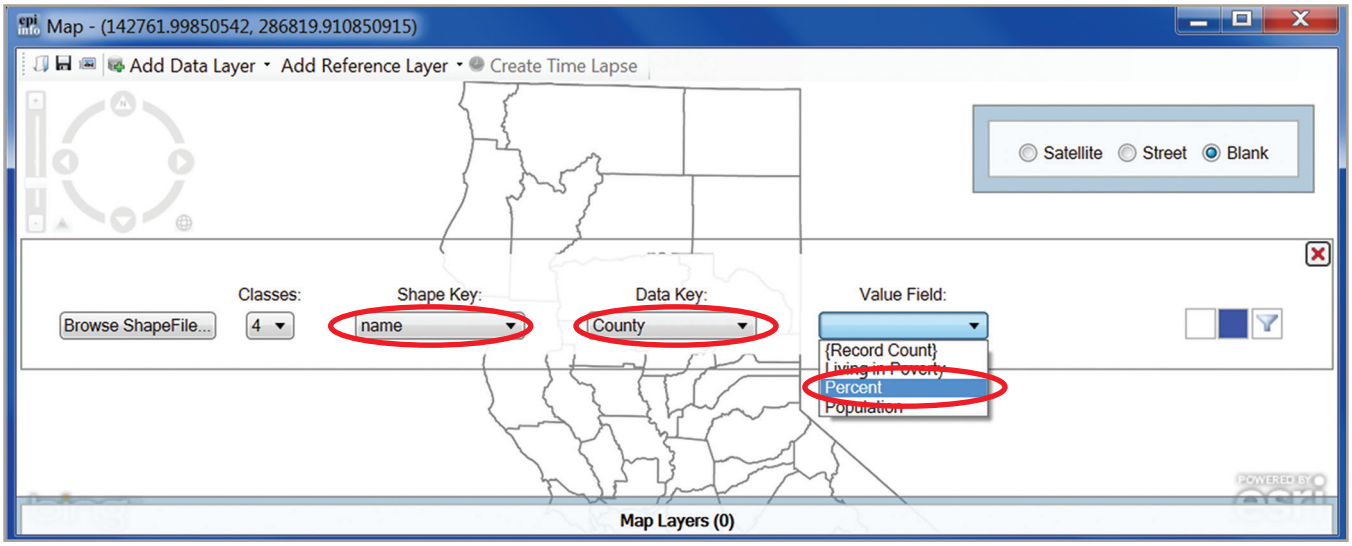
In the data box:

- Click the "Browse ShapeFile" button.

- Search your folders for the location of the County shape file (CA_Counties2010.shp).
- Double-click on the file name.
- Click the Open button.



A map of California counties will appear in the background.



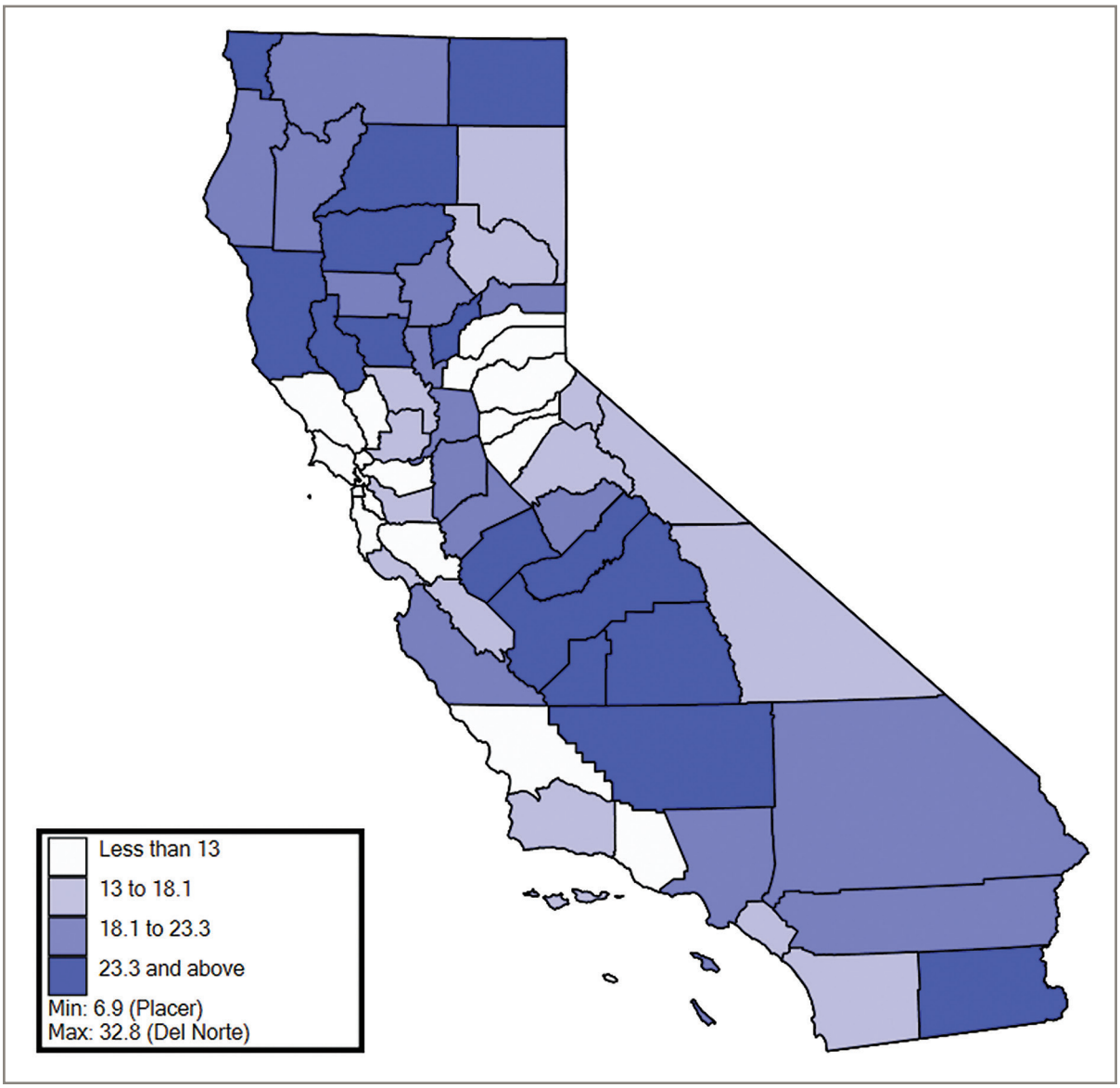
- Select “name” for the Shape Key.
- Select “County” for the Data Key.
- Select “Percent” for the Value Field.

“County” is the column header you created in your data table (Table C in this example) from the “geoname” column in the original HCDIP file.

By default, Epi Info Map displays the map with four colors as quartiles. This map was created by sorting the poverty rate among the 58 counties in Table C from smallest to largest, and then rank-ordering the sorted counties from 1 to 58. The counties were divided into four groups of 14 or 15 counties each, corresponding to ranks 1–14, 15–29, 30–43, and 44–58. The number of “Classes” may be changed (e.g., 3 for tertiles, or 5 for quintiles).

- Place the title on the map.

The Percent of Children Living Below the Federal Poverty Line by County, California, 2006-2010



On the top of the toolbar, there are tabs to save the map as an Epi Info Map .map file or as an image (.png) that can be edited in other software like Paint or Photoshop. Users should consult the Epi Info User's Manual for tips on adding labels and markers.

Narratives

Users are encouraged to copy, paste, and edit the explanatory text in the .pdf files that accompany the Excel data files at the HCDIP website. These narratives explain the link between the indicator and health outcomes, and summarize the scientific evidence, prevailing health inequities, methods for constructing the indicator from its data sources, and strengths and limitations of the data. In Adobe Acrobat Reader, users can highlight the text, select copy, and paste the text into Word or other documents, where they can further edit the text and later combine it with tables, graphs, and maps.

Creating a Community Report Card

The second type of presentation of HCDIP data is a table with embedded graphics displaying multiple indicators and reference data for comparison. An example in Excel, which can be downloaded from the HCDIP website, is shown in Figure 7. Note that at the bottom of the spreadsheet, there are two worksheets. The first is named "ReportCard," and the second is called "Data for ReportCard". There are two main tasks: 1) downloading data for the report card, and 2) populating the report card with the data.

DOWNLOADING DATA FOR COMMUNITY REPORT CARD

1. Open a new Excel spreadsheet and create two worksheets named "ReportCard" and "Data for ReportCard" as shown in Figures 7 and 8.
2. Go to the HCDIP website, and select and download a data file for an indicator.
3. Filter the rows of the indicator data file for:
   - geography (***geoname***), select your geography of interest
   - time period (***reportyear***), select the 2006–2010 box or other recent year
   - race/ethnicity (***race_eth_name***), select the Total box for all race/ethnicity groups
   - other population subgroup (e.g., ***mode***)
4. Cut and paste the resulting two rows of the HCDIP file, including the header row, into the "Data for ReportCard" worksheet.
5. Repeat steps 2–4 until you have downloaded every indicator you want to include in your report card.

Your worksheet "Data for ReportCard" should look similar to Figure 8.

The general structure of the report card is:

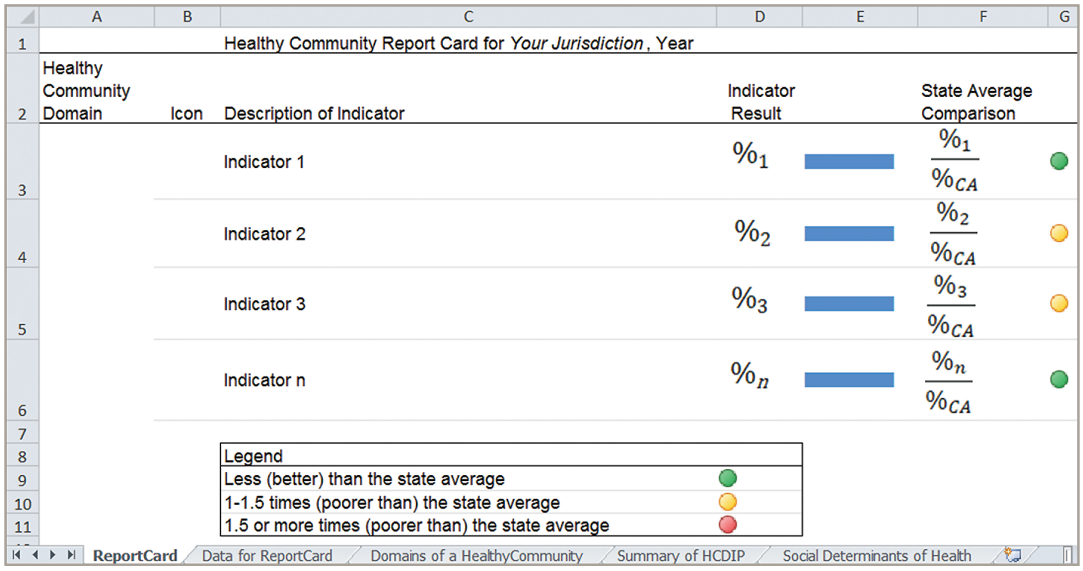


FIGURE 7: Community Report Card

	A	B	C	D	E	F
1			Community Report Card for "Bridgewater", California, 2010			
2	Healthy Community Domain	Icon	Description of Indicator	Indicator Result*		State Average Comparison
3	Meets Basic Needs of All		Food affordability for female-headed household with children under 18 years	29		
4			Modified retail food environment index	12		
5			Percent of Population within ½ Mile of Park, Beach, Open Space, or Coastline	82		
6			Percent of population within 1/2 mile of major transit stop#	38		
7			Annual number of fatal road traffic injuries per 100,000 population	5		
8			Percent of residents taking public transportation to work	7		
9			Percent of population aged ≥ 16 years whose commute to work includes ≥ 10 minutes of daily walking	3		
10			Percent of households spending more than 30% of monthly household income on monthly gross rent or selected housing costs	43		
11			Percent of household overcrowding (> 1.0 person per room)	7		
12	Quality and Sustainability of Environment		Average annual number of unhealthy days of ozone	14		
13			Average Ambient PM2.5 concentration (microgram/m3)	13		
14			Percent of the population served by community water systems not meeting regulations of the Safe Drinking Water Act, Total violations	0		
15	Adequate Levels of Economic and Social Development		High School or Greater Educational Attainment in the Population Aged 25 Years and Older	83		
16			Child (0 to 18 years of age) poverty rate	16		
17			Percent of single mothers with two children earning less than the living wage	78		
18			Unemployment rate	8		
19	Health and Social Equity		Income inequality using the Gini coefficient	0.50		
20	Social Relationships that are Supportive and Respectful		Number of Violent Crimes per 1000 Population, 2010	0		
21			Percent of adults aged ≥ 18 years who voted/registered	58		
22			Percent of Population within 1/4 Mile of Alcohol Outlets (All Types of Establishments)	57		
23			* Indicator results are percent of population or households, except for PM2.5 and ozone which are annual averages and Gini Coefficient income inequality, which ranges from 0 to 1.			
24			# Percent of the population within 1/2 mile of a major transit stop uses a regional average for comparison			
25						
26			Legend			
27			Less (better) than the state average			
28			1-1.5 times (poorer than) the state average			
29			1.5 or more times (poorer than) the state average			

Each row presents the indicator name, its value (as a percent, rate, or average), a bar representing the value, and an icon that shows whether the jurisdiction has a better or poorer performance than the state average for that indicator. The comparison is made as a ratio of the jurisdiction's results to the state average. We present cut points at the state average (1.0) and 1.5 times or more than the state average. These cut points create three groups: 0 to 1, 1 to 1.5, and 1.5 or greater. For example, in an indicator where a higher value indicates a poorer results, a ratio of 1.27 means that the jurisdiction performance is 27 percent higher than the state average and will get a yellow icon. For some indicators, a higher value is a better performance, and the cut points are 1 and 0.67 (the reciprocal of 1.5). We have translated higher and lower performance into better or worse performance using the colors red (poorest), yellow, and green (best). Excel offers several alternative types of icons using arrows or other symbols.

Data in the Excel worksheet "Data for ReportCard" are now used to populate the indicator name (column B), the indicator results (Column C), and the ratio of the jurisdiction to state performance (E). The bar in Column D is generated from the indicator value.

FIGURE 8: Data for the Report Card

	A	B	C	D	E	F	G	H
1	ind_id	ind_definition	reportyear	race_eth_code	race_eth_name	geotype	geotypevalue	geoname
2	757	Food affordability for female-headed household with children under 18 years	2006-2010	9	Total	PL	24681	Bridgewater city
3								
4	ind_id	ind_definition	reportyear	race_eth_name	race_eth_code	geotype	geotypevalue	geoname
5	75	Modified retail food environment index	2009	Total	9	PL	24681	Bridgewater city
6								
7	ind_id	ind_definition	reportyear	race_eth_code	race_eth_name	geotype	geotypevalue	geoname
8	469	Percent of Population within ½ Mile of Park, Beach, Open Space, or Coastline	2010	9	Total	PL	24681	Bridgewater city

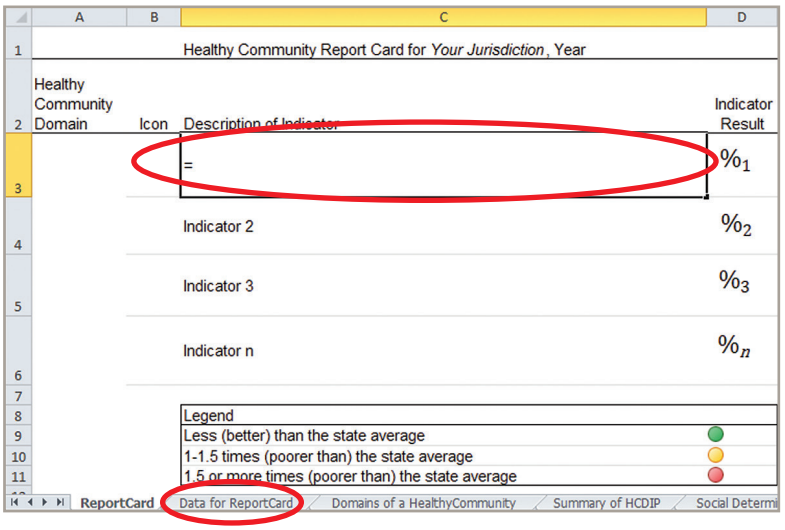
ReportCard | Data for ReportCard | Domains of a HealthyCommunity | Summary of HCDIP | Social Determinants of Health

POPULATING THE REPORT CARD WITH YOUR DOWNLOADED DATA

Populating the Report Card requires you to cut and paste or link cells in the worksheet “Data for ReportCard” with cells in the worksheet “ReportCard.” For some indicators, you will have to edit the cell to make the contents more readable or scale properly.

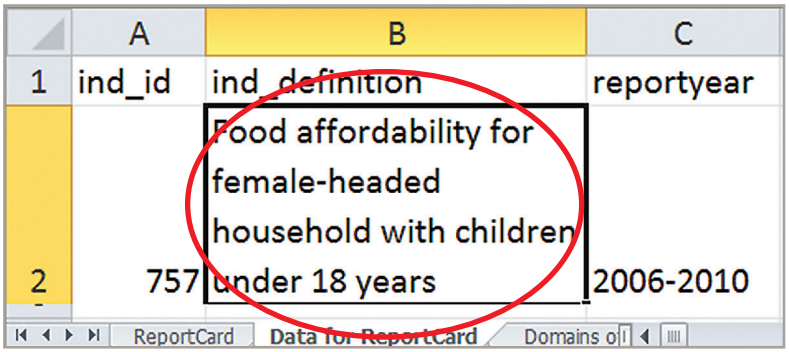
For the indicator name in the “Report Card” Worksheet:

- Place the cursor in cell C3.
- Enter “=.”
- Click the ”Data for ReportCard” worksheet tab.



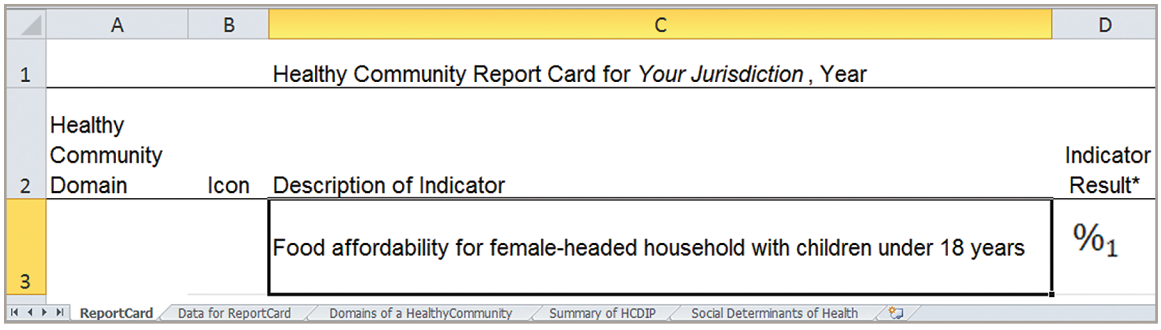
In the “Data for ReportCard” worksheet:

- Place the cursor in cell B2.
- Press the enter key.



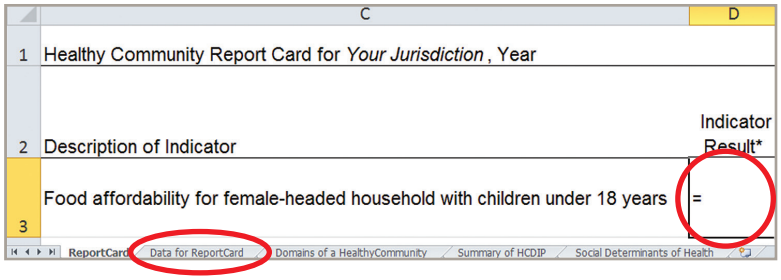
- Click ”Data for ReportCard” worksheet tab.

Excel will return you the “ReportCard” tab with the cell populated with the title.



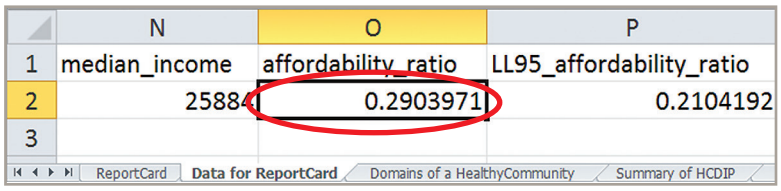
For the indicator result:

- Place the cursor in cell D3.
- Enter "=."
- Click "Data for ReportCard" worksheet tab.

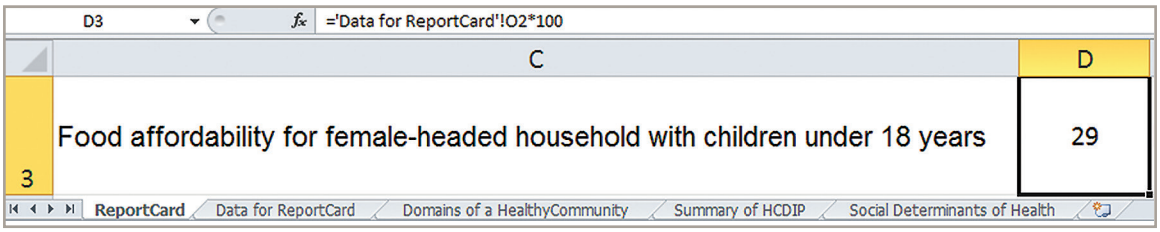


In the "Data for ReportCard" worksheet:

- Place the cursor in cell O2.
- Press the enter key.

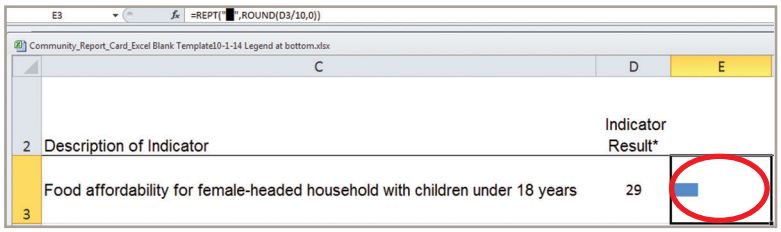


Excel will return you the "ReportCard" tab with the cell populated with the indicator result. To rescale the value from a proportion to a percent, multiply by 100 in cell D3.



To create a scaled bar:

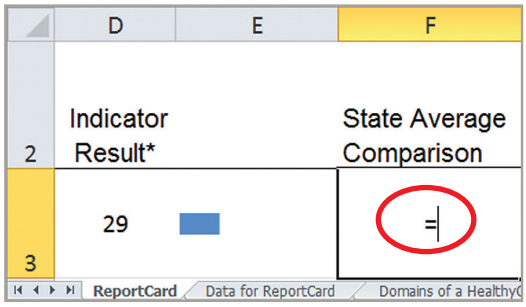
- Place the cursor in E3.
- Key enter "=REPT("■",ROUND(D3/10,0))"



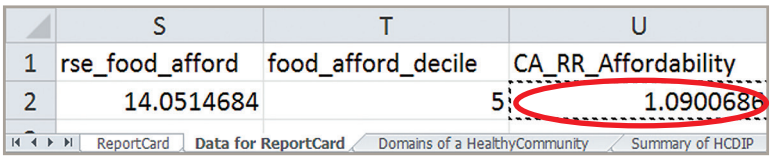
The indicator bar is created using the repeat character command (REPT), whose argument is a rectangle "■" (ASCII Code 219). The percent value is scaled to fit the space by dividing by 10 and rounded to the nearest whole number. The color of the bar can be changed using the font color icon in the main toolbar (A).

For statewide comparison data:

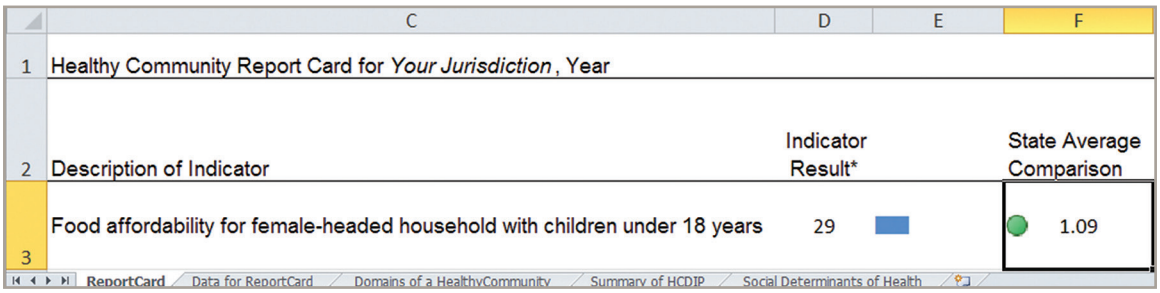
- Place the cursor in cell F3.
- Key enter "="



- Click ”Data for ReportCard” worksheet tab.
- Place the cursor in cell U2 under the column header RR_CA, and press the Enter key.

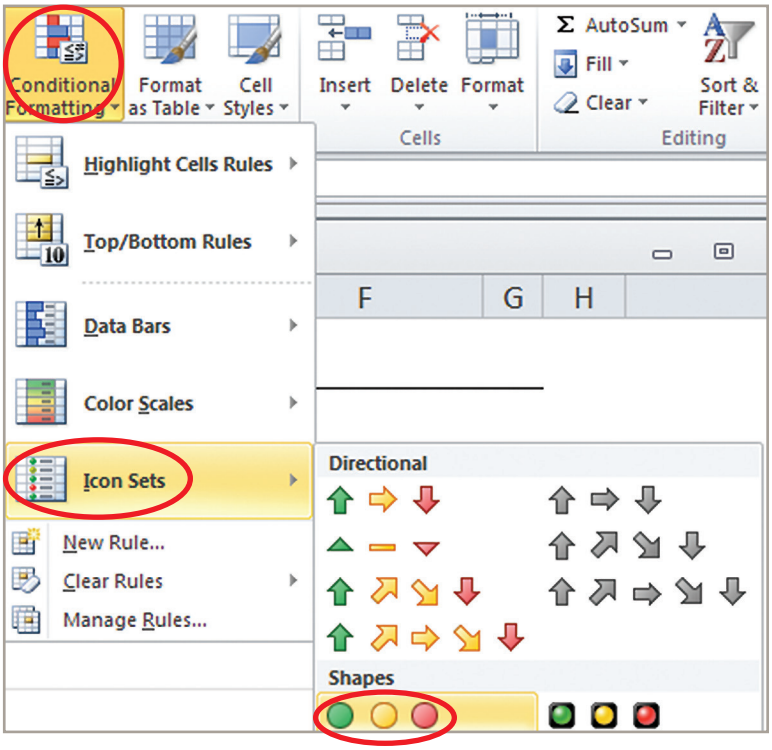


Worksheet “ReportCard” should look like this:



To turn the value into an icon:

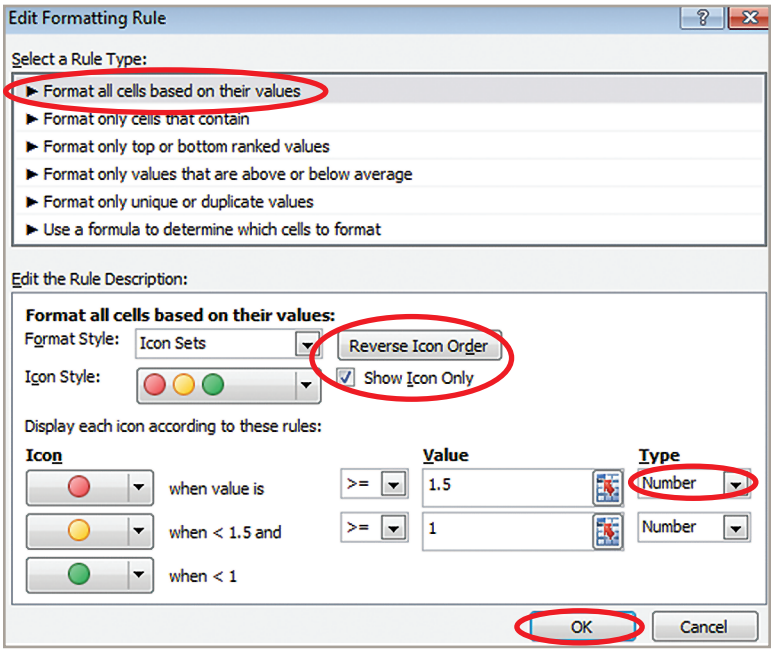
- Select “Conditional Formatting” from the main toolbar.
- Select “Icon sets.”
- Click on 3-color traffic light.
- Click OK.



PART IV

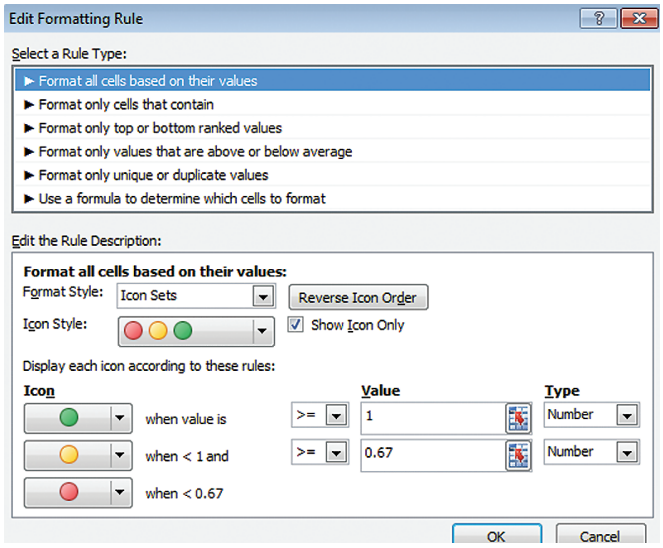
To align the colors with the cut point criteria,

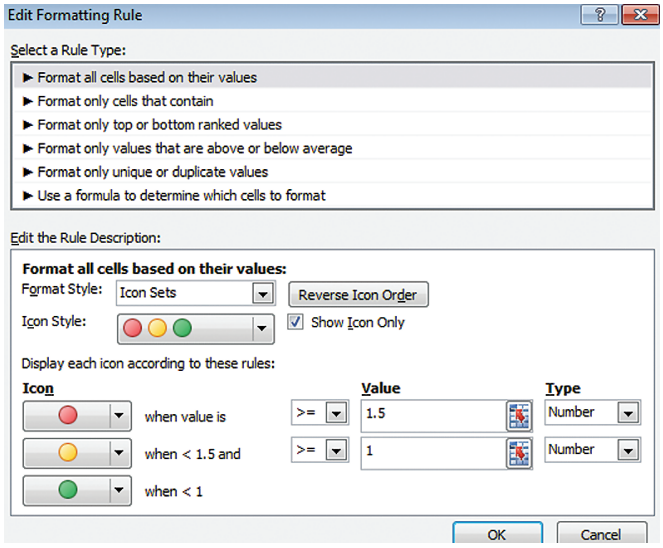
- Select the “Conditional Formatting” tab.
- Select “Manage Rules . . . ”
- Select “Edit Rule . . . ”
- Select “Format all cells based on their values.”
- Reverse the icon order, if necessary.
- Check the box next to "Show Icon Only".
- Change the type to a number.
- Enter the cut points.
- Click OK.



⚠ Follow the edits of the report card fields in Table 4 to make the icons have a consistent meaning. Repeat these steps for populating the report card with downloaded data for each indicator.

TABLE 4: Settings for Aligning Icons to Better/Worse Performance





Do not reverse colors			Colors reversed	
Cut points 1 and 0.67			Cut points 1.5 and 1	
Higher indicator result is better performance			Higher indicator result is worse performance	
Indicator	**Edit Title (Column B)**	**Edit Value (Column C)**	**Indicator**	**Edit Title (Column B)**
Access to parks		*100	Commute to work (car alone)	Mode
Commute to work (walk/ bicycle/transit/carpool)	Mode		Crime rate	
Educational attainment		*100	Drinking water quality	Contaminant
Miles traveled (walk, bicycle)	Mode		PM2.5	
Minutes of walking/bicycling	Walk/ bicycle		Food affordability	
Modified retail food environ.			Gini index	
Transit access		*100	Housing cost burden	Tenure, income
			Household crowding	Tenure, income
			Living wage	Family type
			Miles traveled (car, truck)	Mode
			Poverty rate	Type
			Road traffic injuries	Severity, Mode
			Unhealthy ozone days	

INTERPRETING RESULTS

This section provides an overview of the issues that analysts should consider before accepting the results of an indicator. Numerous technical issues that affect indicators are beyond the scope of this manual. Many of these technical issues have been highlighted in the limitations section of the .pdf files that accompany the HCDIP indicators posted at the CDPH HCDIP website. Users are encouraged to consult the *General Reading and Resources* at the end of this section and seek out experts in subject matter and analytic methods.

How Do Validity, Precision, and Bias Affect Indicators?

Indicators should be a valid measurement of what they purport to measure, precise and free from biases. Bias is defined as the systematic difference between a measured value and its true value. The proverbial "thumb on the scale" or a poorly calibrated gas pump that always comes up short of the gallon mark are examples of systematic bias that overstate or understate the true value.

Bias is not the natural variation or random fluctuation that we might expect from taking a random sample of the population rather than measuring everyone or every household. For many indicators, it is impossible to measure everyone in the population, so we take random samples that are meant to be representative of the population. If we could take numerous samples from the same population, the results of an indicator would vary somewhat from sample to sample. The amount of variability depends on the sample size. We have more confidence in results when the sample is large and based on thousands of observations, rather than when the sample has only a few observations, for example, less than 10. Samples with fewer observations, which commonly occur in small geographies such as a census tract, will be more variable and less reliable. This pattern does not mean that the results are biased. If we could take many small samples, their average would be the same as the true value, and the differences between the average and the samples would follow a random rather than a systematic pattern. HCDIP files have statistical information for advanced users (standard errors, 95 percent confidence intervals, relative standard error) to describe this variability.

Biases can occur in each component of "what happened, to whom, where, and when."

To Whom (Denominator)

Some indicators include individuals or households in the population who are not capable of experiencing the event in the numerator. These individuals should be excluded from the denominator. For example, prisoners, felons, and undocumented residents may not be eligible to vote and should be excluded from the denominator of the voter participation indicator. In some geographies, people living in group quarters or institutions (colleges, nursing homes, prisons, etc.) may have a disproportional impact on an indicator. For example, a high concentration of college students, who are still dependents or are not employed while studying, can skew poverty statistics and are

generally excluded from the poverty indicator. Likewise, some people or households may be eligible for inclusion in the denominator but were undercounted in the sample. For example, undocumented immigrants may have been undercounted by the Census. Some transportation indicators have a denominator of residential population, but a numerator (road traffic injuries or miles traveled) that may include both residents and nonresidents. This mismatch may be particularly pronounced at small geographies but relatively unimportant at the regional or state level. Data suppression is a formal decision by some data-gathering organizations, like the U.S. Census, to protect confidentiality, especially at small geographies (census tracts or blocks). This factor sometimes creates a reporting bias by race/ethnicity that favors more information on racially or ethnically segregated areas.

What Happened (Numerator)

Biases may occur if the events in the numerator are undercounted or overcounted. For example, it is known that fatal motor vehicle injuries reported by police fall short of the count based on death certificates. Some underreporting is due to delayed deaths that occur more than 30 days after the traffic collision was initially reported. Although undercounting is a concern, as long as the level of undercounting remains constant over time, it still may be possible to observe valid trends over time within the same jurisdiction.

When (Time)

Many indicators are based on a sample of the population at one point in time. When an indicator is compared over two time periods for the same jurisdiction, few people or households are likely to have been in both samples. In fact, the population in the geographical area may have experienced significant in- or out-migration due to community succession, displacement, or gentrification. In these situations, changes in the indicator may not reflect a change in living conditions in the same residents but rather a change in the residential population.

Definitions of indicators or the sampling methods may change over time, which may produce changes in indicators that are not real. Data sources often publish tables on data comparability and make recommendations for the series of years that have comparable data.

It is ideal to compare indicators in nonoverlapping time periods. However, some indicators may be based on moving averages of several years (e.g., 2005–2007, 2006–2008, 2007–2009). Independent samples from mutually exclusive time periods reduce a “dilution” bias.

Changes in an indicator may occur at the same time as other changes in the community environment. Some changes in indicators may be part of long-term trends, and programs implemented on a backdrop of progressively improving (or declining) performance may be taking credit (or blame) for inevitable changes.

Causation vs. Correlation

Several aspects of the community environment, including other indicators, may appear to have an influence on each other. One explanation is that two indicators tracking together is a chance event. Someone might observe that two indicators—for example, access to public transit and

drinking water quality—appear to be related or have a statistical correlation. Transit access tends to be lower in rural areas, and rural areas have a higher prevalence of drinking water problems. But this occurrence does not mean that low public transit access is a cause of poor drinking water quality. There is no evidence that bus and rail traffic influences the presence of coliform, nitrates, arsenic, or other major contaminants found in drinking water. Yet, it is possible for these two factors to be statistically related but not causally linked.

Variation in indicator results by geography or population subgroups may appear to be influenced by several competing factors. It is well documented that voter participation is strongly influenced by age, with older persons voting at higher rates than younger persons. We may observe that voter participation rates are higher in some census tracts than others. Could the census tracts with higher voter participation rates also have a higher proportion of older residents? This may be a plausible explanation for the variation of voter participation by census tract. This possibility could be confirmed or eliminated if we could compare voter participation rates by age group in each census tract. This type of indirect causal relationship between three variables—census tract, age, and voter participation—is called confounding and could explain some results.

Comparisons

As presented earlier in this manual, the results of an indicator require context for understanding and interpretation. How to regard the results often depends on the answer to the question, "Compared with what?" Several options for reference values include comparisons to state, regional, or county average; your position or rank in the entire distribution of results over all census tracts, zip codes, counties, cities, or other geography; and self-set goals based on historical trends, best observed values, peer jurisdiction average, or an aspirational goal. The difference between your observed performance and your goals is what drives the next steps.

Interpretation Framework

Observing differences between performance and comparison values allows us to evaluate how close we are to achieving the aspirational goals in the *Healthy Communities Framework* (Figure 1). The following sequence of questions can help guide follow-up activities:

- Are the differences between your performance measurement and goal(s) real?
- Does the size of the differences have any practical importance?
- Are there differences in population subgroups that are avoidable and unfair?
- What are the causes of the differences?
- What are potential solutions to close the performance gap?
- What can we do as a community, stakeholders, policy makers, and individuals to improve outcomes?

The first question raises technical issues that were discussed in the **Validity, Precision, and Bias** section beginning on page 47. One additional technical issue is whether differences between geographies, population

subgroups, or reference values are due to random variability in sampling. The statistical methods to answer this question are outside the scope of this manual*,and readers should consult a subject matter expert and the references at the end of this section, including the HCDIP *Technical Manual*[2]. If the potential biases and confounding do not appear to play an important role and one can rule out chance variation due to sampling error and random yearly fluctuation, then it is likely that the performance gap is real.

The size of the differences that matters can be informed by some indicator and comparison data. For example, the number of people affected is given by the numerator of the indicator, and this information is available in the HCDIP data files. Other factors such as the severity of the outcome, its economic impact, and availability, feasibility, and cost of solutions are other considerations. Those affected, policy makers, and stakeholders in the community should engage each other on this question.

Some differences in indicator values may be due to factors that are unavoidable such as aging of the population. However, many differences may have complex roots in history and the social determinants of health in which population subgroups have experienced discrimination or unequal treatment. Again, it is up to the people who are affected, policy makers, and stakeholders in the community to engage on this topic.

Indicators describe “what happened, to whom, when, and where,” but not “why.” Other means are needed to explain "why.” Scientific inquiry that has a formal process to weigh evidence is one path to explain the causes of the differences. Personal and community experience are another path to discover the causes of differences in performance. Each of these approaches is complementary and is part of a community dialogue to identify strategies to improve outcomes. Experiences of communities that have been successful in implementing improvements or achieving high levels of performance may provide examples of best practices. A systematic evaluation of scientific research can also play a role in identifying strategies that may be beneficial. Stakeholders should take advantage of the information in the indicators to inform actions that will make their communities a healthier place to live, learn, work, and play.

*As an approximation, when the difference between the local result and the state average divided by the standard error of the local result is greater than 1.96, the difference is beyond what we would expect by sampling or random error $\left(\frac{abs\ (\%_{local} - \%_{CA})}{se_{local}} > 1.96\ at\ p < 0.05 \right)$. Statisticians call this "statistical significance,” but this term also applies to differences that may be small and not of practical importance.

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1. Rudolph L, Sisson A, Caplan J, et al. *Health in All Policies Task Force Report to the Strategic Growth Council*. Sacramento, CA: California Department of Public Health; 2010. www.cdph.ca.gov/programs/CCDPHP/Documents/HiAP_Final_Report_12%203%2010.pdf.
2. Bustamante-Zamora DM, Maizlish N, Tran D. *Healthy Communities Data and Indicators Project: Technical Manual*. Richmond, CA: Office of Health Equity, California Department of Public Health; 2014. www.cdph.ca.gov/programs/pages/healthycommunityindicators.aspx.
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GENERAL READING AND RESOURCES

Policy, Planning, and Health

Stair P, Wooten H, Raimi M. *How to Create and Implement Healthy General Plans*. Oakland, CA and Berkeley, CA: Changelab Solutions and Raimi Associates; 2012. http://changelabsolutions.org/sites/default/files/Healthy_General_Plans_Toolkit_Updated_20120517_0.pdf.

Rudolph L, Caplan J, Ben-Moshe K, Dillon L. *Health in All Policies: A Guide for State and Local Governments*. Washington, DC and Oakland, CA: American Public Health Association and Public Health Institute; 2013. www.apha.org/~/media/files/pdf/fact%20sheets/healthinallpoliciesguide169pages.ashx.

University of Wisconsin Population Health Institute. *County Health Rankings and Road Maps. What Works for Health*. Princeton, NJ: Robert Wood Johnson Foundation; 2014. www.countyhealthrankings.org/roadmaps/what-works-for-health.

Epidemiology and Biostatistics

Bonita R, Beaglehole R, Kjellström T. *Basic Epidemiology*. Second Edition. Geneva: World Health Organization, 2006. http://whqlibdoc.who.int/publications/2006/9241547073_eng.pdf.

Health and Related Data

American Community Survey: socioeconomic, housing, and transportation data
www.census.gov/acs/www/
www.census.gov/acs/www/guidance_for_data_users/comparing_data/
www.census.gov/acs/www/Downloads/data_documentation/Statistical_Testing/2010StatisticalTesting3and5year.pdf

California Health Interview Survey: health behaviors
http://healthpolicy.ucla.edu/chis/Pages/default.aspx

Office of Statewide Health and Planning Development: hospital discharge/emergency room data
www.oshpd.ca.gov/

California Department of Public Health Vital Statistics: birth and death records
www.apps.cdph.ca.gov/vsq/

APPENDIX

WHAT IS A HEALTHY COMMUNITY AND ITS INDICATORS?

Aspirational Goal/Domain	Indicators
Meets basic needs of all	
Safe, sustainable, accessible, and affordable transportation options*	✓ Annual number of fatal and severe road traffic injuries per population and per miles traveled by transport mode
	✓ Annual miles traveled by occurrence and by mode
	✓ Percent of residents aged 16 years and older mode of transportation to work
	✓ Percent of population residing within ½ mile of a major transit stop
	● Percent of household income spent on transportation
	✓ Percent of population aged 16 years or older whose commute to work is 10 minutes/day or more by walking or biking
Affordable, accessible, and nutritious foods	✓ Average cost of a market basket of nutritious food items relative to income
	● Percent of population within ½ mile of a full-service grocery store, fresh produce market, or store with fresh produce
	● Percent of adults who consume ≥5 servings of fruits and vegetables a day
	✓ Modified retail food environment index (mRFEI)
Affordable, high-quality, socially integrated, and location-efficient housing	✓ Percent of households paying more than 30% (or 50%) of monthly household income towards housing costs
	✓ Percent of household overcrowding (>1.0 persons per room) and severe overcrowding (>1.5 persons per room)
	● Household by type of family and head of household
	● Neighborhood Completeness Index (<½ mile radius for 7 out of 9 common public services and 9 of 12 common retail services)
	● Housing to jobs ratio
	● Jobs to housing match (e.g., percent of adult working population who could find jobs that matches their general occupational qualifications within a specified travel radius of their residence)
	● Neighborhood change: 5-year change in number of households by income and race/ethnicity
	● Residential racial segregation: isolation index
Affordable, accessible, and high-quality health care	● Percent of adults aged 18–64 years without health insurance
	● Patient satisfaction rating by medical group

✓ = available at www.cdph.ca.gov/programs/Pages/HealthyCommunityIndicators.aspx, October 31, 2014

APPENDIX

WHAT IS A HEALTHY COMMUNITY AND ITS INDICATORS?

Aspirational Goal/Domain	Indicators
Meets basic needs of all	
Complete and livable communities	● Neighborhood Completeness Index (<½ mile radius for 7 out of 9 common public services and 9 of 12 common retail services)
Access to affordable and safe opportunities for physical activity	● Percent of adults getting moderate/vigorous daily exercise
	● Percent of children scoring 6 of 6 on Fitnessgram
Able to adapt to changing environments, resilient, and prepared for emergencies	● Cities and counties with adopted climate action plans and FEMA-approved local hazard mitigation plans
	● Environmental resilience index (index composed of places with climate action and hazard mitigation plans and other Healthy Community Indicators (unemployment, lacking health insurance, educational attainment, income inequality, and registered voters)
Opportunities for engagement with arts, music, and culture	● Per capita revenue in nonprofit arts organizations
	● Percent of workers employed in artistic occupations
Quality and sustainability of environment	
Clean air, soil and water, and environments free of excessive noise	✓ Annual average number of unhealthy days of ozone air pollution
	✓ Annual mean ambient concentration of fine particulate matter (PM2.5)
	● Percent of households/population near busy roadways
	● Average daily water use per capita
	✓ Percent of the population served by community water systems not meeting regulations of the Safe Drinking Water Act
	● Average daytime and nighttime outdoor noise levels
Tobacco and smoke free	● Prevalence of smoking in adults and youth
Green and open spaces, including agricultural lands	✓ Percent of population within ½ mile of park, beach, open space, or coastline
	● Acres of parkland per 1,000 residents
	● Acres of cropland converted to developed land
	● Tree canopy coverage (urban areas)
Minimized toxins, GHG emissions, and waste	● Pounds of toxic chemicals released by reporting facility per capita/geographic area
	● Reported pesticide use
	● Annual per capita greenhouse gas (GHG) emissions
	● Total waste diversion (per capita disposal rate)
Affordable and sustainable energy us	● Energy costs relative to household income
	● Percent of electricity from renewable sources

APPENDIX

WHAT IS A HEALTHY COMMUNITY AND ITS INDICATORS?

Aspirational Goal/Domain	Indicators
Adequate levels of economic, social development	
Living wage, safe, and healthy job opportunities for all	✓ Unemployment rate: percent of the population in the labor force who are unemployed
	✓ Overall, concentrated, and child (0 to 18 years of age) poverty rate
	● Number and rate of fatal and nonfatal occupational injuries by industry
	✓ Living wage and percent of families with incomes below the living wage
Support for healthy development of children and adolescents	● Percent of children who are kindergarten ready
	● Percent of resilient high school students
	● Number of licensed daycare center slots per 1,000 children aged 0-5 years
Opportunities for high-quality and accessible education	● Mean score of Academic Performance Index (API)
	✓ High school or greater educational attainment in the population aged 25 years and older
Health and social equity	
	● Race/ethnicity equity score as a composite of multiple core indicators, including median income
	✓ Distribution of household income relative to the number of households, expressed on a 0 to 1 scale (Gini Index)
	● Place-based equity score as a composite of multiple core indicators calculated for census tracts
Social relationships that are supportive and respectful	
Robust social and civic engagement	✓ Percent of adults (18 years or older) who are registered voters; percent of adults who voted in general elections
Socially cohesive and supportive relationships, families, homes, and neighborhoods	● Number of forcible rapes per 100,000 population
	● Percent of children (<18 years) reported with neglect or physical or sexual abuse
Safe communities, free from crime and violence	✓ Number of violent crimes per 1,000 population
	✓ Percent of the population within ¼ mile of alcohol outlets by type of establishment sales

✓ = available at www.cdph.ca.gov/programs/Pages/HealthyCommunityIndicators.aspx, October 31, 2014

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