Exercise 6.1

Final Report Tableau Public:

The following link is to the Tableau storyboard that summarizes the main points and findings of this exploratory analysis. Human health is a difficult and complex topic to make definitive conclusions about, however more analysis can give direction to possible issues and suggest solutions that can lead to higher quality of living.

https://public.tableau.com/app/profile/katie.kulp/viz/Exercise_6_7/Story1?publish=yes

Data Source:

This dataset comes from the California Environmental Protection Agency and is an in depth assessment of California communities in demographic and environmental information. Each data value has its own methods section describing how it was collected in the full report. I chose this data set as it seems like it will be an interesting insight into how different demographic characteristics are related to environmental issues, and it contains information on health indicators in these areas and it will be interesting to see relationships between these factors.

https://data.ca.gov/dataset/calenviroscreen-3-0-results

Limitations and ethics:

The data contains some missing data that could affect the results of the analysis. For the human health information, any personal identifiers are not included to protect confidentiality. The missing data and data gaps could lead to limitations when it comes to scores for individual census tracts, but should not have a large effect on analyzing the relationship between variables.

Questions to Explore:

1. Do areas with higher air pollutants (ozone, PM2.5, Diesel PM) have higher rates of asthma, low birth rate, or cardiovascular disease?
2. How does traffic affect air pollution?
3. How does poverty and education relate to health (asthma, low birth rate, or cardiovascular disease)?
4. How does environmental hazards (Pesticides, traffic, cleanup site ect.) relate to health and poverty?
5. What are the biggest risk factors for high cardiovascular disease?

Exercise 6.1

Data:

Col.Name	Description
Census Tract	Area ID, the name of the census tract area
Total Population	Population of the census tract
California County	County the tract is within
ZIP	ZIP code of tract
Longitude	Longitude of tract
Latitude	Latitude of tract
Ozone	Mean of summer months (May-October) of the daily maximum 8-hour ozone concentration (ppm), averaged over three years (2012 to 2014)
PM2.5	Particle matter pollution that have a diameter of 2.5 micrometers or less. Annual mean concentration of PM2.5 (average of quarterly means, µg/m3), over three years (2012 to 2014).
Diesel PM	Diesel particulate matter (diesel PM). Spatial distribution of gridded diesel PM emissions from on-road and non-road sources for a 2012 summer day in July (kg/day).
Drinking Water	Drinking water contaminant index for selected contaminants (see chart in report for details)
Pesticides	Total pounds of selected active pesticide ingredients (filtered for hazard and volatility) used in production-agriculture per square mile, averaged over three years (2012 to 2014)
Tox. Release	Toxicity-weighted concentrations of modeled chemical releases to air from facility emissions and off-site incineration (averaged over 2011 to 2013).
Traffic	Traffic density – Sum of traffic volumes adjusted by road segment length (vehicle-kilometers per hour) divided by total road length (kilometers) within 150 meters of the census tract boundary (2013

Exercise 6.1

Cleanup Sites	Sites undergoing cleanup actions by governmental authorities or by property owners have suffered environmental degradation due to the presence of hazardous substances: Sum of weighted sites within each census tract. (Data downloaded December 2016)
Groundwater Threats	Threats to groundwater can be found in detail in the report but include, sotrage and disposal of hazardous material. Sum of weighted scores for sites within each census tract. (Data downloaded December 2016
Haz. Waste	Sum of weighted permitted hazardous waste facilities and hazardous waste generators within each census tract
Imp. Water Bodies	Summed number of pollutants across all water bodies designated as impaired within the area (2012)
Solid Waste	Sum of weighted solid waste sites and facilities (as of December 2016)
Asthma	Spatially modeled, age-adjusted rate of emergency department (ED) visits for asthma per 10,000 (averaged over 2011-2013)
Low Birth Weight	Percent low birth weight, (averaged over 2006-2012)
Cardiovascular Disease	Spatially modeled, age-adjusted rate of emergency department (ED) visits for AMI per 10,000 (averaged over 2011-2013)
Education	Percent of the population over age 25 with less than a high school education (5-year estimate, 2011-2015)
Linguistic Isolation	Percent limited English-speaking households, (2011-2015)
Poverty	Percent of the population living below two times the federal poverty level (5-year estimate, 2011-2015)
Unemployment	Percent of the population over the age of 16 that is unemployed and eligible for the labor force. Excludes retirees, students, homemakers, institutionalized persons except prisoners, those not looking for work, and military personnel on active duty (5-year estimate, 2011-2015)

Exercise 6.1

| Housing Burden | Housing Burdened Low Income Households. Percent of households in a census tract that are both low income (making less than 80% of the HUD Area Median Family Income) and severely burdened by housing costs (paying greater than 50% of their income to housing costs). (5-year estimates, 2009-2013) |