Solar Panel Power Consumption Offset Estimates
An Exploratory analysis of google sunroof project

1. Problem:

As the price of installing solar has gotten less expensive, more homeowners are turning to it as a possible option for decreasing their energy bill. The solar panels not only generate energy on the roof, they can also generate cash in your pocket. There are many companies want to make installing solar panels easy and understandable for anyone such as google's sunroof project. The problem that I would like to answer throughout this project is if it worth to install solar panel to your home and how many panels to install. In addition to calculate the best solar plan for homeowners throughout the country.

2. Target client:

The client of this project is someone planning to install solar panels to their home and start saving their bill. Also, some real estate database website like Zillow can use this analysis to provide the potential probabilities of solar panel installations to their customers.

3. Data Acquisition:

Data files for this project can be downloaded from different websites.

1) Solar data by google sunroof project.
   https://www.google.com/get/sunroof/data-explorer/
2) Cartographic Boundary shapefiles by states
   https://www.census.gov/geo/maps-data/data/cbf/cbf_state.html
3) U.S. utility rate database
   https://openei.org/apps/USURDB/

4. Methodology

The modeling approach has not been decided yet but the idea is to analyze the data to dig out the energy that the solar panel generate based on location and weather and calculate the breakeven point according to the utility rate for different area.

5. Deliverables

The source code will be shared to public on Github and with a final report explaining the problem modelling approach and discuss the final result.