

Population Density and Greenhouse Gas Emissions per Household

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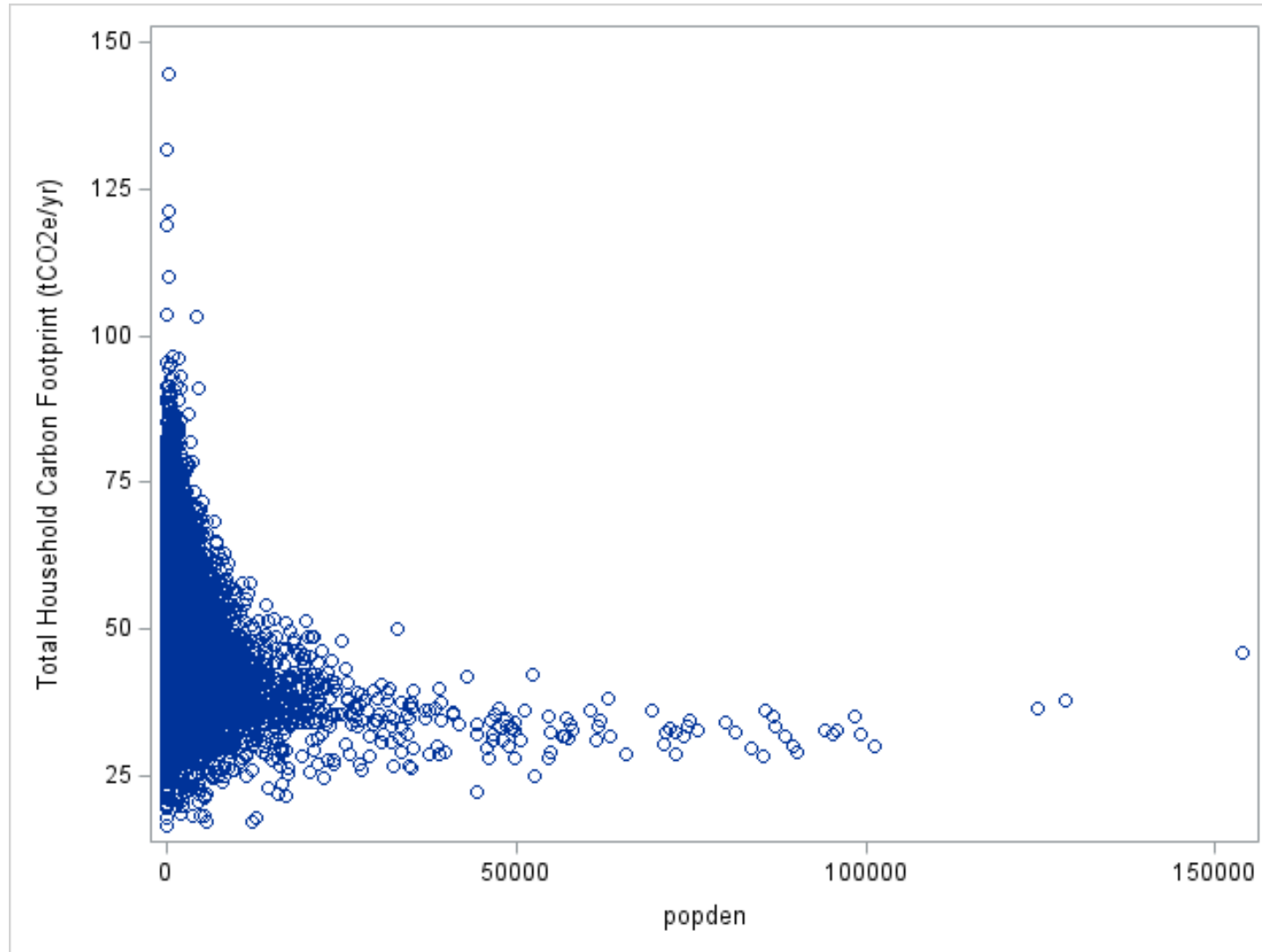
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Details

- Researchers at Univ. California at Berkeley have published studies on greenhouse gas emissions per household in the U.S.
- They maintain a Website at <https://coolclimate.berkeley.edu>.
- Coolclimate maps show that the inner city areas of big cities have the lowest greenhouse gas emissions per household, owing to lower energy consumption & shorter/fewer motor vehicle trips.
- In their analysis of the U.S. by zip code, the researchers found lower emissions per household in denser areas, but the relationship was weak ($R^2 = 0.04$).

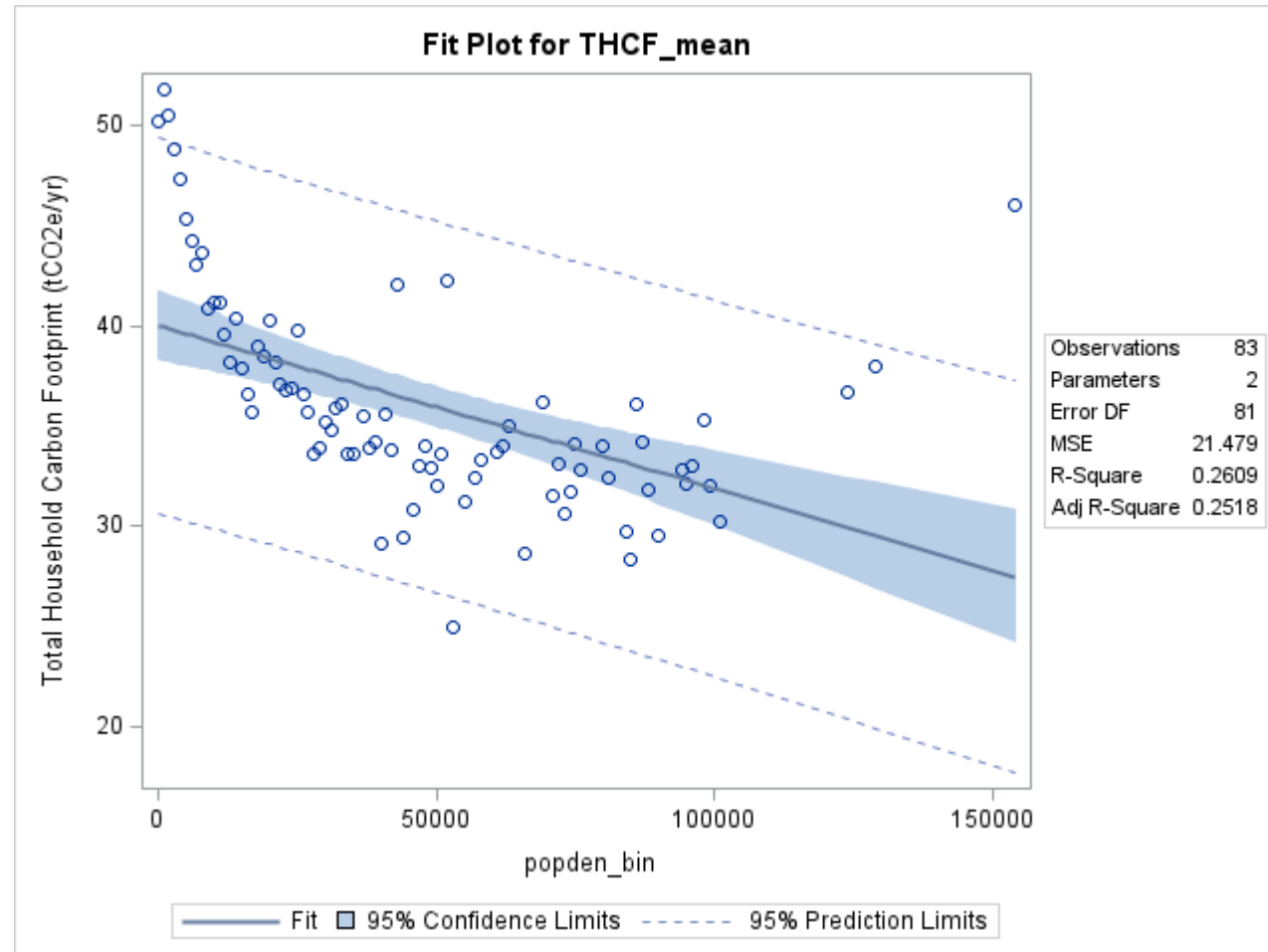
Emissions / Household vs Zip Code Population Density



Problem

- As the graph shows there is a wide range of emission rates at low population densities. This is because there are many small towns where trips may be shorter and consumption lower so emissions are low, whereas there are also many suburbs with low density but lots of driving and high consumption with high emissions.
- I downloaded the data and averaged the zipcodes with similar densities and got better results.
- I selected the zip codes in the Austin 5-county MSA and also got better results.

Emissions / Household vs Zip Code Population Density bins at 10,000 person increments



($R^2 = 0.26$)

Emissions / Household vs Zip Code Population Density 80 Austin MSA Zip Codes

($R^2 = 0.39$)

($R^2 = 0.34$), excluding UT West Campus

