**What Factors Drive Energy Use?**

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1. *How does household energy consumption vary by geographic location?*

Figure 1 demonstrates that our data is representative of about half of North Carolina, a third of South Carolina and half of Florida. Highest energy consumption (red) is observed in the urban areas, particularly Raleigh/Durham, Orlando and Tampa.

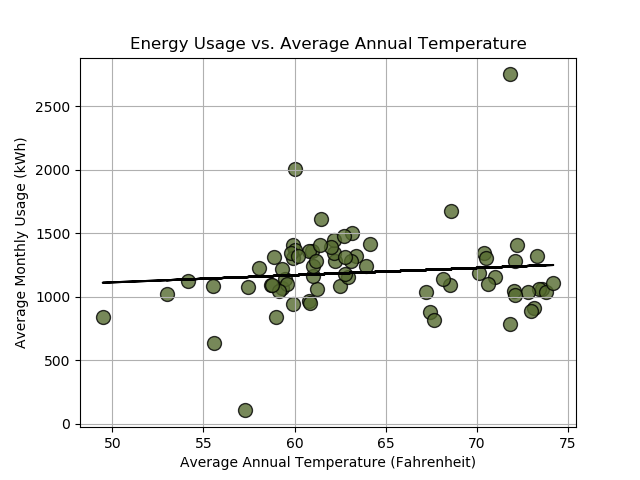
**Figure 1**



***How does energy use vary by average temperature?***

Energy consumption increases slightly with temperature as shown in Figure 2. For every 10 degree increase in temperature, a roughly 100 kWh increase is observed. This trend may be diminished due to the historic weather data being limited to only cities with weather stations. Additionally, the climate of the three states are not vastly different. The trend may be more obviously if colder or hotter climates were included or if we could look at seasonal energy costs.

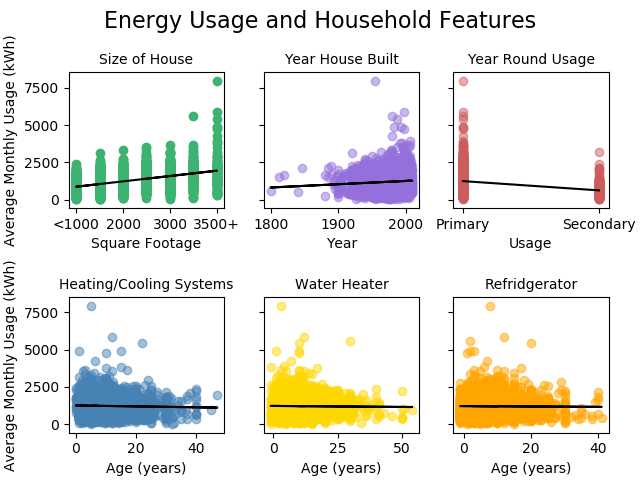
**Figure 2**



***What structural household features are related to energy consumption?***

Figure 3 shows various household features increase average monthly energy usage, most notably higher square footage and primary residences. No relationship is observed for the year the house was built, the average age of the heating/cooling systems, the age of the water heater and the age of the refrigerator. This may be in part due to limited data at the extremes (i.e. very few houses were built in the 1800s) or that it is a combination of these factors.

**Figure 3**

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***What relationships can we observe among different energy-related attitudes?***

The table in figure 4 shows, on a scale of -1 to 1, to what degree our three examined attitudes are associated with one another among the people surveyed. Here we see:

* The Greenness and Conserver attitudes show a moderately positive correlation.
* The Greenness and First Adopter attitudes show a weakly positive correlation.
* The Conserver and First Adopter attitudes show essentially no correlation, positive or negative.
* None of the three attitudes is negatively correlated with another.

**Figure 4**

A screenshot of a cell phone

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***What is the relationship between energy consumption and attitudes?***

This chart goes to the heart of our overall question of how the three attitudes relate to energy usage. The y-axis shows the strength of the attitudes on a Likert scale of 1–10 and the x-axis shows average monthly energy use in kilowatt hours, grouped in 500 kWh bins (the last group includes all kWh values over 3000). This shows that with increasing energy usage, we see a slight but steady decrease in the Greenness and Conserver attitudes among those surveyed, up until the high energy-use ranges. The reverse is seen with the First Adopter attitude—First Adopters tend to be higher energy users.

The chart may be less predictive in the two highest energy usage levels on the far right because of the small sample sizes in those ranges.

**Figure 5**

A picture containing screenshot

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***How does income affect energy attitudes?***

Here we see how annual household income affects the strengths of our three attitudes. Here we see a steady decrease in the Greenness and Conserver attitudes as income rises, and a steady increase in the First Adopter attitude as income rises.

**Figure 6**

A screenshot of a cell phone

Description automatically generated

***How does education affect energy attitudes?***

This chart shows that First Adopter attitude rises toward the higher education levels. However, lower education levels have stronger Greenness and Conserver attitudes. Both this chart and the last chart on Income puzzled our group; we felt it might be expected that lower income and education levels would be associated with lower Greenness strength, but this is not what the data shows. (On this chart the sample size is small for the lowest education level, Grade School).

**Figure 7**

A close up of a device

Description automatically generated

***How do Attitudes Vary with Age?***

The Conserver attitude rises slightly, but steadily with age, appearing to level off after age 65. The Greenness attitude is steady across all ages except for the 18-24 group, where it is slightly lower. The First Adopter attitude peaks with those age 25-34 (millennials), and steadily decreases with age.

**Figure 8**

A screenshot of a cell phone

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