Research Task: To estimate a model of price and Carat of diamonds and test if there is a statistically significant effect.

Data Features: There are one response variable and one explanatory variables. Both response and explanatory variables are quantitative. The log of data has a linear correlation.

Analysis Strengths: There is an obvious linear trend. It is straightforward to show the correlation. It also has large sample.

Analysis Weaknesses: Sample is only drawn from a certain area. It would be harder to make estimations for other locations. The model dose not explain causation.

Alternative Example:

Life Expectancy and Old Age Savings

Rich people tend to live longer. Old age savings has a statistical significance effect on life expectancy. They have more resources to keep themselves away from potential death causes.

The response variable is life expectancy, the explanatory variable is the old age savings. Both variables are quantitative.

The link is below:

<https://fraser.stlouisfed.org/title/5285/item/533804>