Overview of project:

This project will discuss the relationship between Natural Gas Price Versus Heating Degree Day(HDD) by creating an accurate model using computer science concepts. This experience is relevant to building models that are utilized to predict real world metrics, such as oil future prices. The student will data gathered online to build a model to predict the two metrics, and perform a metanalysis on how accurate the model is.

Definitions:

Natural Gas Price – Natural gas prices are commonly measured in units like dollars per million British thermal units (MMBtu). This measurement represents the cost of one million British thermal units of natural gas.

Heating Degree Day(HDD) –Measurement used in climatology and energy consumption analysis to estimate the amount energy required for heating. Calculated based on the difference between the outdoor temperature and a standard temperature, typically 65°F (18.3°C), which is considered a baseline comfortable indoor temperature for many buildings.

Oil Future Prices – Oil futures prices represent the agreed-upon price for the delivery of oil at a specified future date. These prices are determined through trading on futures exchanges and serve as a benchmark for the anticipated future value of oil.

“The Henry Hub pipeline is the pricing point for natural gas futures on the New York Mercantile Exchange. The NYMEX contract for deliveries at Henry Hub began trading in 1990 and is deliverable 18 months in the future. The settlement prices at Henry Hub are used as benchmarks for the entire North American natural gas market and parts of the global liquid natural gas (LNG) market. “ (Investopedia)

Technologies Used:

Python – programing language

Pandas – data organization

Matplotlib—graph generation

Numpy – data manipulation/correlation input

Data Sets Used:

Natural Gas Price (reported Daily): wherehttps://datahub.io/core/natural-gas#resource-daily

Monthly HDD <https://www.eia.gov/totalenergy/data/browser/index.php?tbl=T01.10#/?f=M&start=197301&end=202307&charted=32-10>

Oil Future Prices (Henry Hub Natural Gas Spot Price)

<https://www.eia.gov/dnav/ng/hist/rngwhhdm.htm>