Particulate Matter VS Respiratory Death Rate

The t-statistic of -3.726758973266543 and p-value of 0.00036540618964292287 indicate that there is a statistically significant difference between the means of the two groups being compared. Specifically, the negative t-value suggests that higher levels of particulate matter are associated with a lower respiratory death rate.

The correlation coefficient (R) of 0.7232314334998892 indicates a moderately strong positive correlation between the two variables. This means that as levels of particulate matter increase, respiratory death rate tends to increase as well. The correlation does not necessarily imply causation, and there may be other factors at play that could be contributing to the observed relationship.

Taken together, the t-statistic, p-value, and correlation coefficient suggest that there is a significant relationship between particulate matter and respiratory death rate, with higher levels of particulate matter associated with higher respiratory death rates. However, further research is needed to determine the direction and causality of this relationship, as well as to identify other potential contributing factors.

Speaker Notes

Renewables VS Non-Renewables

Slide 1

* Country energy overall
* Percentage of overall energy use from Renewables vs non
* Ranged years from 2010-2019
* 40 Countries
* Dropped the other values such as emissions and etc into a dataframe dedicated to renewables and non renewable use
  + Avg\_Energy\_DF = energy\_sum\_df.groupby('Country Name').mean()
* Non-Renewables are more popular here

Slide2

* New dataframe with just Renewables, sorted that with the top 5 values in mind
* Iceland uses almost 100 percent of their energy from Renewables.
* Same with Norway
* The remainder percentage relates to the nonrenewables use.

Slide 3

* New Dataframe with Non-Renewables. Top 5
* Ranges from 85 to 95% use. The US would have been 6th place with a value of 85%.

Analysis

* According to the University of Pennsylvania: Policy and legislation can affect the type of energy use. Some countries making coal more costly and less competitive due to taxation on it. Whereas other countries may have legislation to prohibit emissions of certain chemicals.
* In speaking about the overall market, coal is relatively cheaper than its substitutes. Especially because it can be sourced domestically. They are also more widely distributed around the world than gas or oil resources.
* Together these affect an countrie’s choice of energy use. What is cheaper and what would prevent a nation to rely on another country for. Domestic use would be cheapest.

<https://kleinmanenergy.upenn.edu/research/publications/the-long-goodbye-why-some-nations-cant-kick-the-coal-habit/>

Particulate Matter VS Respiratory Death Rate

Slide 1

* According to the Department of Health and Environment: Particulate matter (PM) is made of solid particles and liquid droplets in the air. PM can come from many places. In general, any type of burning or any dust-generating activities are sources of PM. Here are some examples: https://scdhec.gov/environment/your-air/most-common-air-pollutants/particulate-matter/what-particulate-matter#:~:text=Particulate%20matter%20(PM)%20is%20made,vehicles%20and%20industrial%20plant%20smokestacks)
* According to the National Library of Medicine:Pneumonia, lung cancer and chronic obstructive pulmonary disease (COPD), remain a leading cause of disability and death worldwide.Respiratory symptoms are important indicators of these diseases, and recording of respiratory symptoms is a cheap and easy screening method.
* Overall Country particulate matter and deathrate
  + particulate matter of a diameter equal or smaller than 10 μm (PM10) or equal or smaller than 2.5 μm (PM2.5) which aim at representing an average for the city or town as a whole.
  + Death rate represents per 100,000 population
* Made A new dataframe with these values and mean function
* India being at the highest with both of the values
* The rest sitting around similar values

Slide 2

* Made a dataframe with countries and particulate matter, sorted and listed the top 5
* India being at the highest
* The rest sitting around 20-24

Slide 3

* Dataframe with countries and death rate, sorted and listed top 5
* India at the highest at 128
* The US being 2nd place while the rest around 35-37

Slide Analysis

T Statistic: -3.726758973266543

Negative value meaning high particulate matter = lower death rate

P value: 0.00036540618964292287

Significant correlation, null hypothesis is rejected

R: 0.7232314334998892

Strong Linear Relationship

High particulate matter = high death rate

There could still be other factors involved