***Investigation 1: Electricity Usage***

***Introduction:***

Gráfico

Descripción generada automáticamente

Electricity is an essential part of modern life and important to the U.S. economy. People use electricity for lighting, heating, cooling, and refrigeration and for operating appliances, computers, electronics, machinery, and public transportation systems. Total U.S. electricity consumption in 2020 was about 3.8 trillion kWh and 13 times greater than electricity use in 1950.

Total electricity consumption includes retail sales of electricity to consumers and direct use electricity. Direct use electricity is both produced by and used by the consumer. The industrial sector accounts for the majority of direct use electricity. In 2020, retail sales of electricity were about 3.66 trillion kWh, equal to 96% of total electricity consumption. Direct use of electricity by all end-use sectors was about 0.14 trillion kWh, or about 4% of total electricity consumption.

Total annual U.S. electricity consumption increased in all but 11 years between 1950 and 2020, and 8 of the years with year-over-year decreases occurred after 2007. The highest level of total annual electricity consumption occurred in 2018 at about 4 trillion kWh, when a relatively warm summer and cold winter in most regions of the country contributed to record-high residential electricity use of nearly 1.5 trillion kWh.

Interfaz de usuario gráfica, Gráfico

Descripción generada automáticamente

Total U.S. electricity consumption in 2020 was about 4% lower than in 2019, with decreases in the commercial and industrial sectors. Electricity retail sales to the industrial sector in 2020 were about 14% lower than in 2000, the peak year of U.S. retail sales to the industrial sector. The industrial sector’s share of total U.S. electricity retail sales dropped from 31% in 2000 to 25% in 2020. Residential retail sales increased about 2% in 2020.

**MATLAB**

***Gráfico, Gráfico de líneas

Descripción generada automáticamente***

1. Electricity data is stored in a file named electricity.mat. Load that MAT-file into MATLAB. Then enter usage in the script to see the matrix.

Interfaz de usuario gráfica, Aplicación

Descripción generada automáticamente con confianza media

Interfaz de usuario gráfica, Texto

Descripción generada automáticamente

1. One of the elements in the usage variable has a value of NaN. Replace this value with the value 2.74.

Interfaz de usuario gráfica

Descripción generada automáticamente con confianza baja

Interfaz de usuario gráfica, Texto

Descripción generada automáticamente con confianza media

1. The residential data is stored in the first column. Create a variable res that contains the first column of usage.

Patrón de fondo, Tabla

Descripción generada automáticamente

Texto

Descripción generada automáticamente con confianza media

1. The commercial data and industrial data are stored in the second and third column, respectively. Create variables comm and ind that contain the second and third columns of usage.

Patrón de fondo, Tabla

Descripción generada automáticamente

Interfaz de usuario gráfica, Texto, Aplicación

Descripción generada automáticamente

1. Create a vector named yrs that represents the years starting at 1991 and ending with 2013.

Patrón de fondo

Descripción generada automáticamente

Texto

Descripción generada automáticamente con confianza media

1. Create a plot with all three columns. Use yrs as the x-data. Use this order and these plot specifications:

res: blue (b) dashed line (--)

comm: black (k) dotted line (:)

ind: magenta (m) dash-dot line (-.)

(Line specification options)

Interfaz de usuario gráfica, Aplicación, Word

Descripción generada automáticamente

Texto

Descripción generada automáticamente

1. Add the title "July Electricity Usage" to the existing plot. Create a legend with the values "res", "comm", and "ind".

Interfaz de usuario gráfica, Texto, Aplicación

Descripción generada automáticamente

Texto

Descripción generada automáticamente

Interfaz de usuario gráfica, Aplicación

Descripción generada automáticamente

Several codes could be learned through the project annexed above, the project in matlab dealt with the use of electricity in the United States.