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Forecasting Binghamton University's Future Electricity Consumption Using Building Classifications and Historical Weather Data as Inputs into a Machine Learning Model

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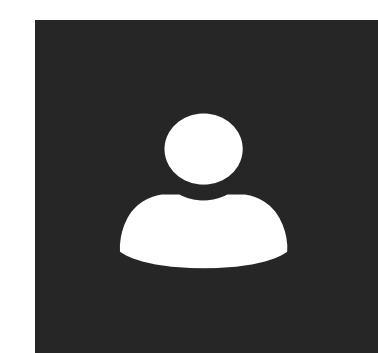
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Title: Energy Consumption Forecasting for Binghamton University



PRESENTER:
Aaliya Jakir

BACKGROUND:

Who cares? Energy Consumption Forecasting allows organizations to identify their energy wastage to reduce carbon emissions, help energy financial teams budget, and minimize energy expenses. American Universities typically have poor carbon footprint performances, according to Helmer et. al so this research aims to reverse that trend.

METHODS

1. Collected Historical Energy Data, Weather Data, and Holiday Data
2. Used Multiple Regression technique with various dependent variables to predict future energy usage

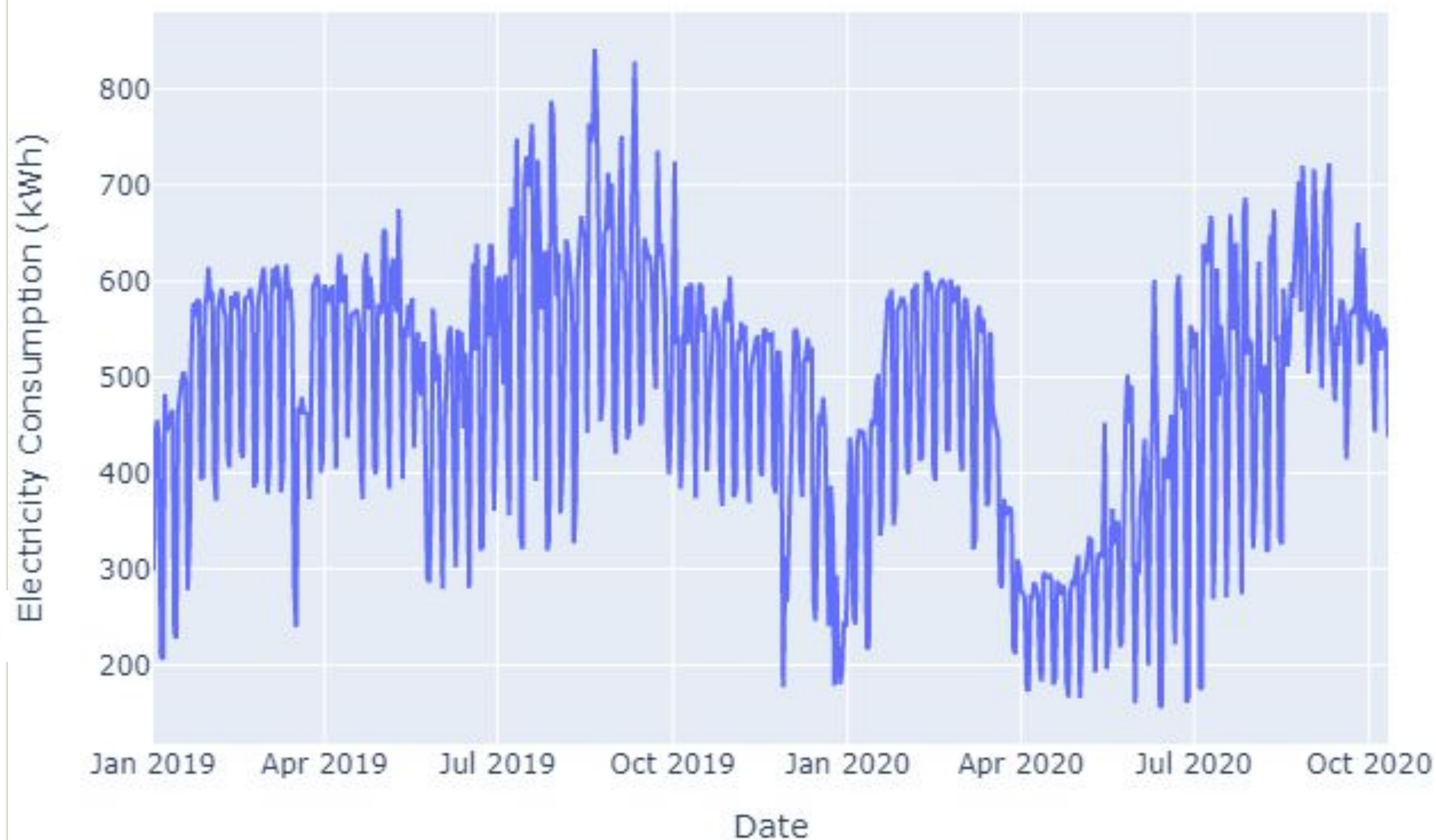
$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_i X_i$$

RESULTS

- Electricity Consumption in American Universities are mainly due to factors such as **occupancy**, and **academic calendar, holidays**.

Implementing a Multiple Regression Model for Forecasting Future Energy Consumption in Binghamton University has the potential to reduce carbon emissions

University Union Electricity Consumption (2019-2020)



Finding the Gap

In the domain sphere of energy research, there exists a variety of methodologies and approaches through mathematical algorithms, statistical models, and computational simulations to forecast energy consumption [4]. However, the majority of these papers focus on forecasting energy consumption for residential buildings, while my research specifically targets universities.

Achieving Sustainability

Forecasting future electricity usage would enable energy management teams to optimize their consumption of energy, leading to a decreased usage of electricity from the grid; this would in turn decrease carbon emissions since electricity from the electric grid has a high carbon factor [1].

REFERENCES

Amber, Gavurova, IEA, Verwiebe, ... (Scan QR Code for More References)



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