# Mini Project 2

Australian Energy Consumption Prediction

# GOAL

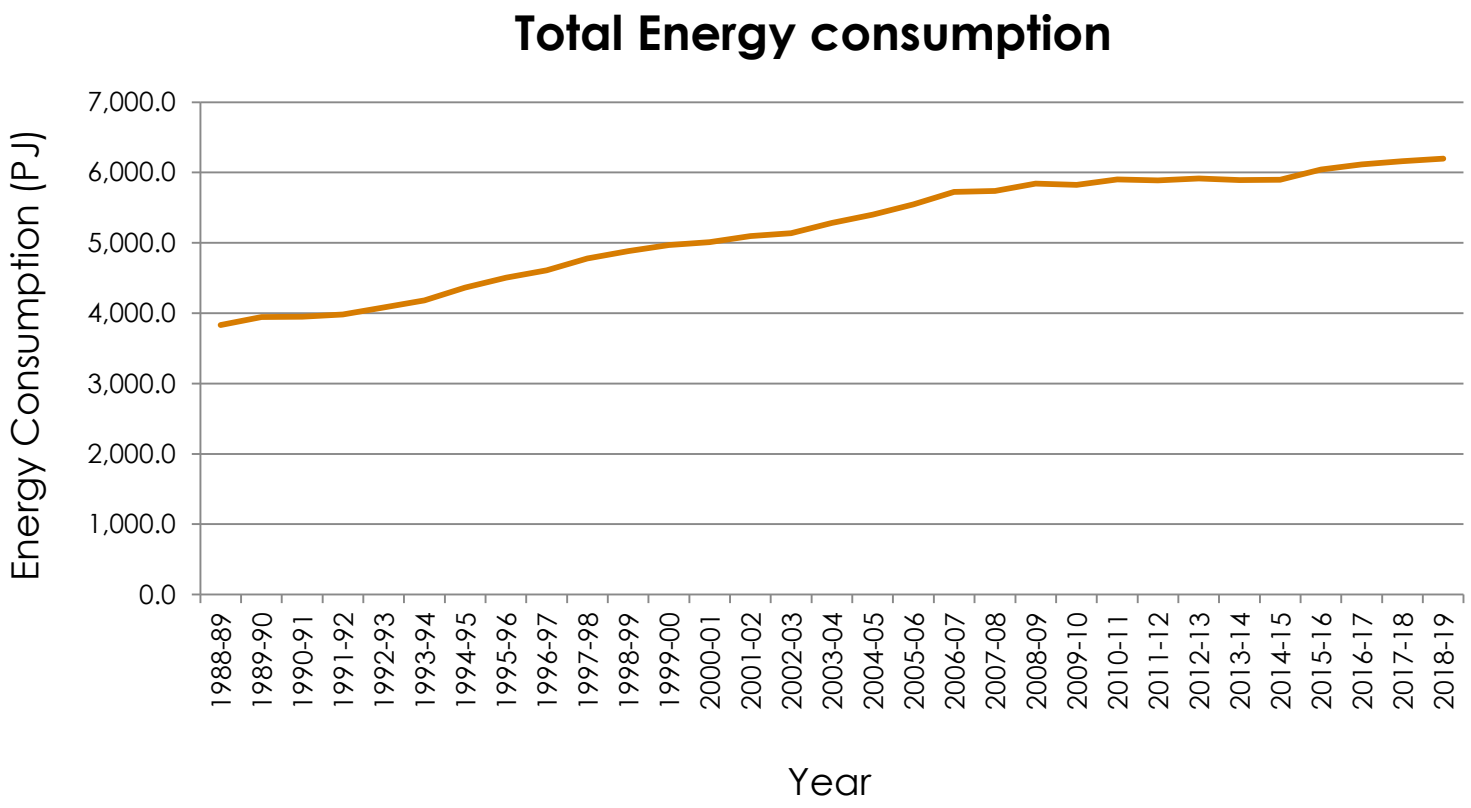
- Predict annual Total Energy Consumption
- Predict annual Energy Consumption per industry

# DATA

Australian Energy Statistics 2020
Population in largest city
Rural population

Source: Department of Industry, Science, Energy and Resources
The World Bank

# Energy Consumption Growth



# Machine Learning Models

- Linear Regression
- Ridge Regression
- SVM

# Features for prediction

Population:

- Total Population
- Population in largest cities
- Rural population

Economy:

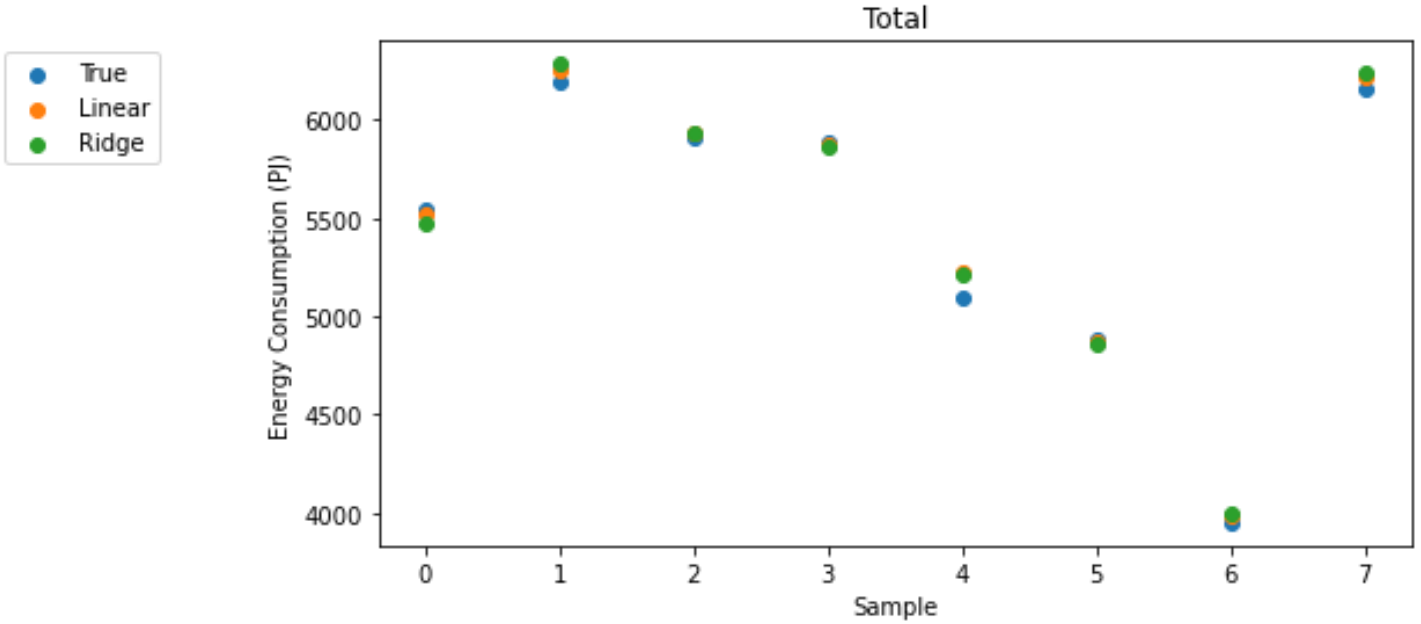
- GDP

# Targets

- Total Annual Energy Consumption
- Annual Energy Consumption in
  - Manufacturing
  - Electricity Generation
  - Transport

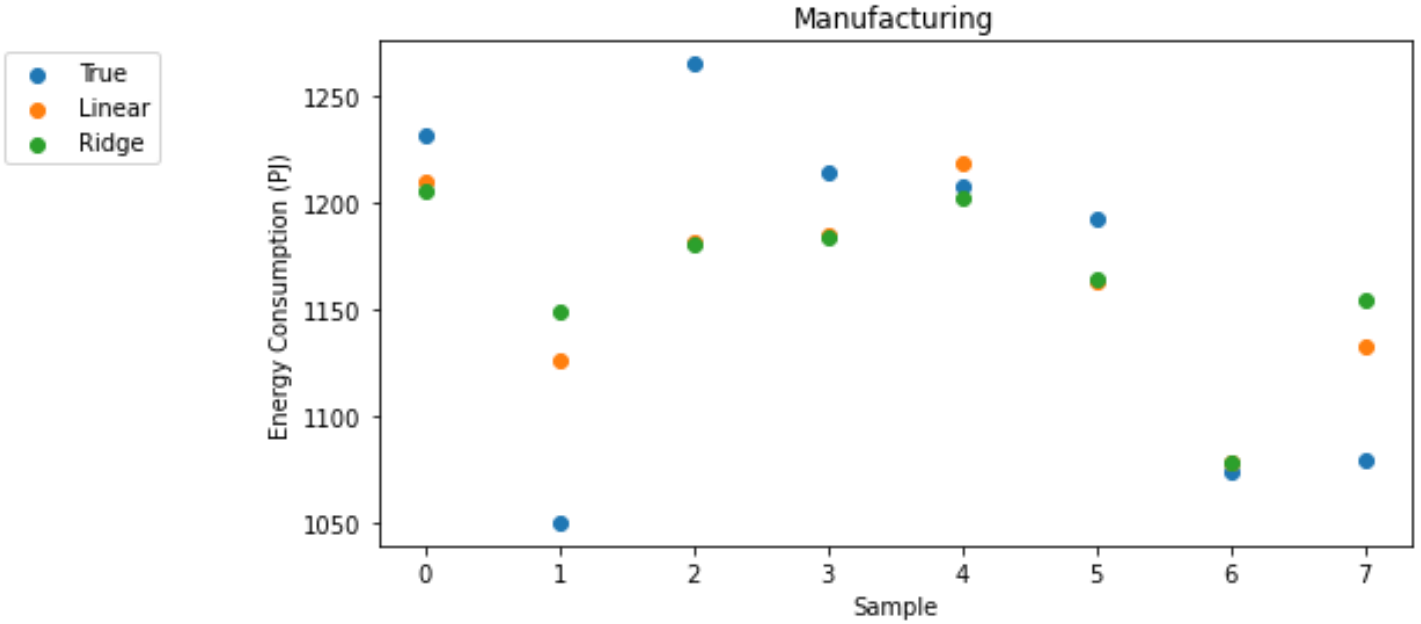
# Total Annual Energy Consumption

| Model | Average $R^2$ Score |
|---|---|
| Linear Regression | 96.76% |
| Ridge Regression | 96.88% |
| SVM | -3.30% |



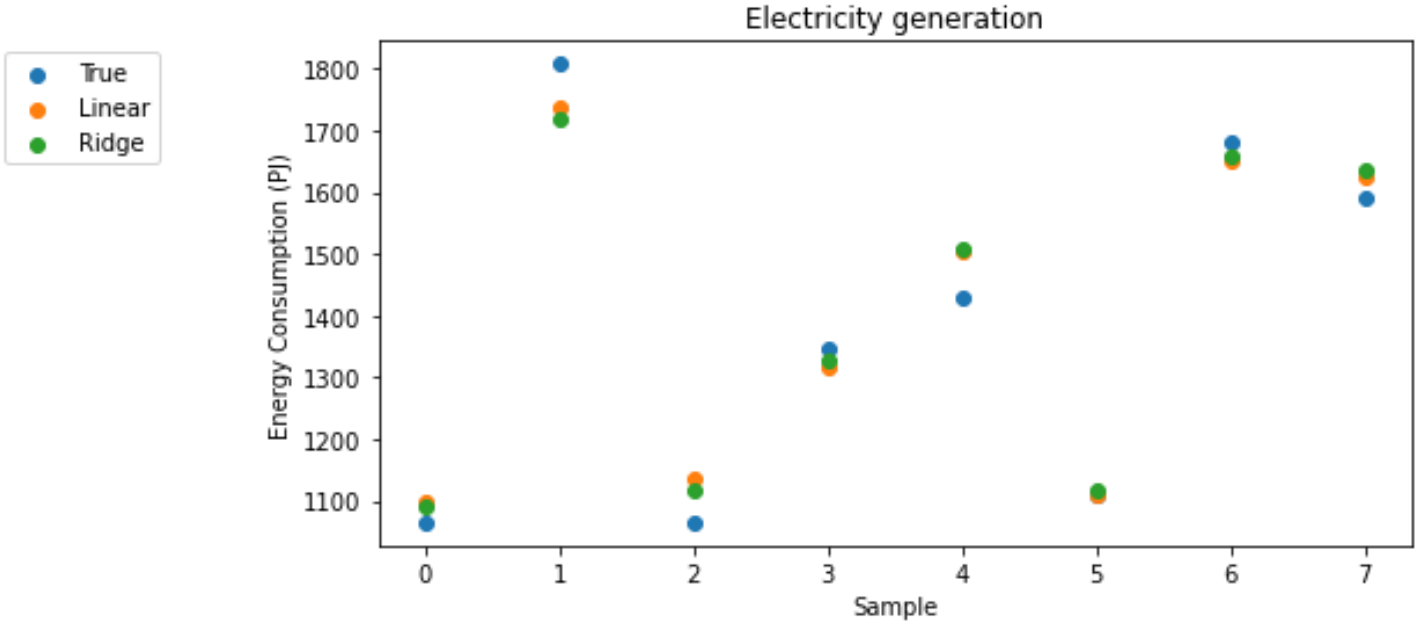
# Manufacturing

| Model | Average $R^2$ Score |
|---|---|
| Linear Regression | 30.65% |
| Ridge Regression | 27.83% |
| SVM | -10.38% |



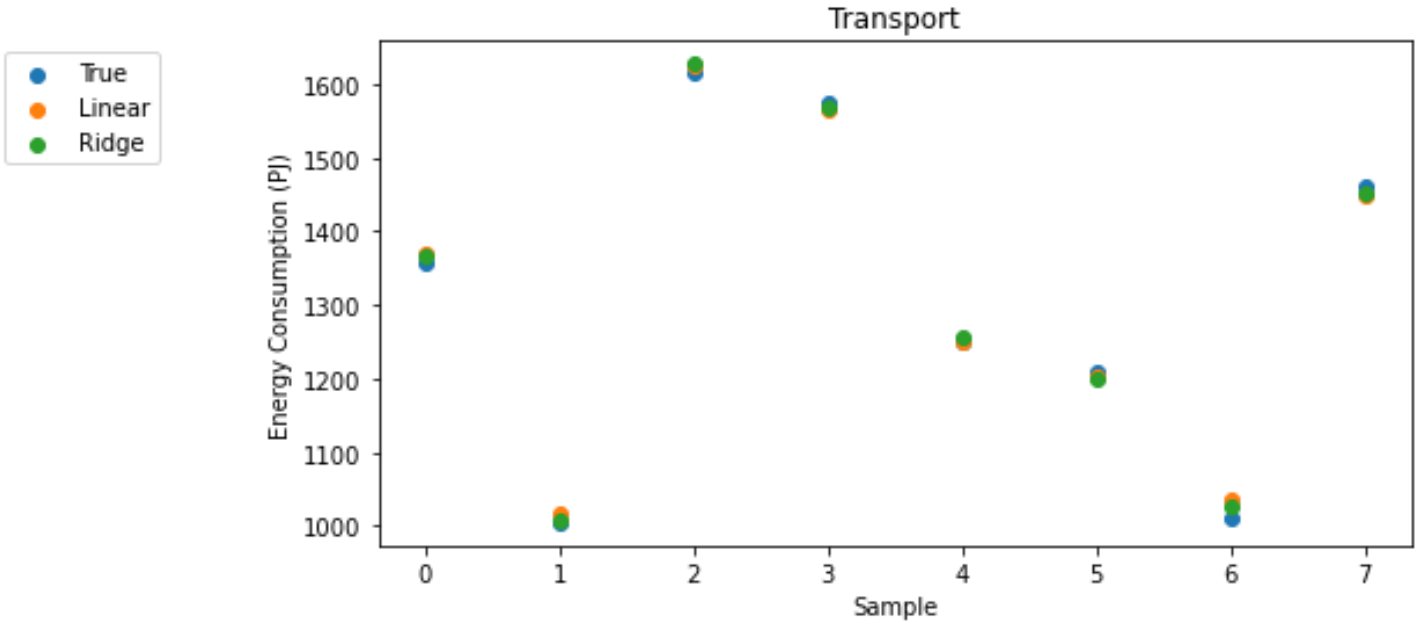
# Electricity Generation

| Model | Average $R^2$ Score |
|---|---|
| Linear Regression | 88.71% |
| Ridge Regression | 88.87% |
| SVM | 8.66% |



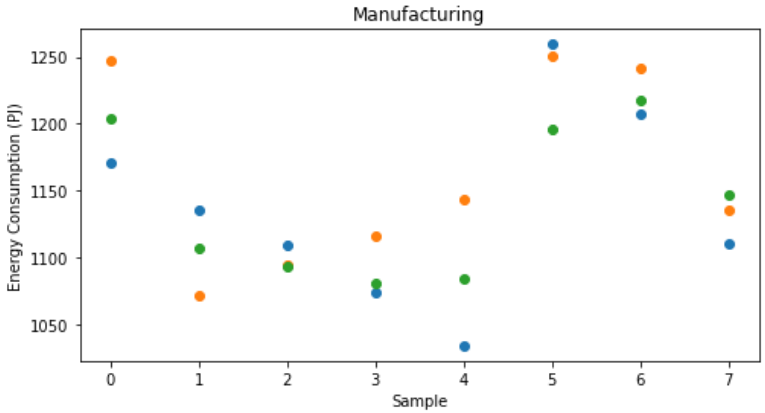
# Transport

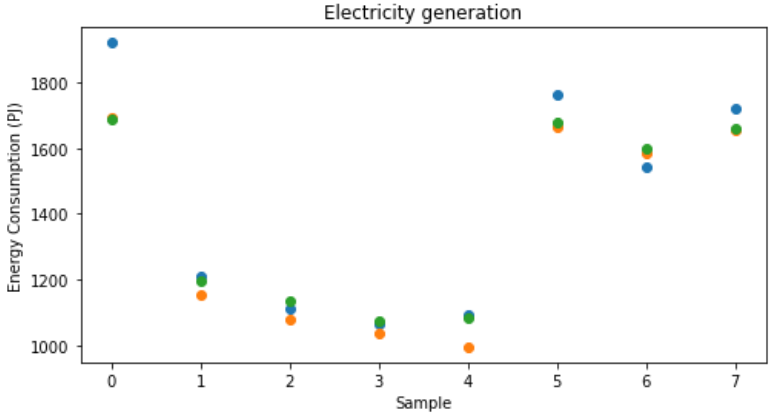
| Model | Average $R^2$ Score |
|---|---|
| Linear Regression | 98.82% |
| Ridge Regression | 98.92% |
| SVM | 34.19% |

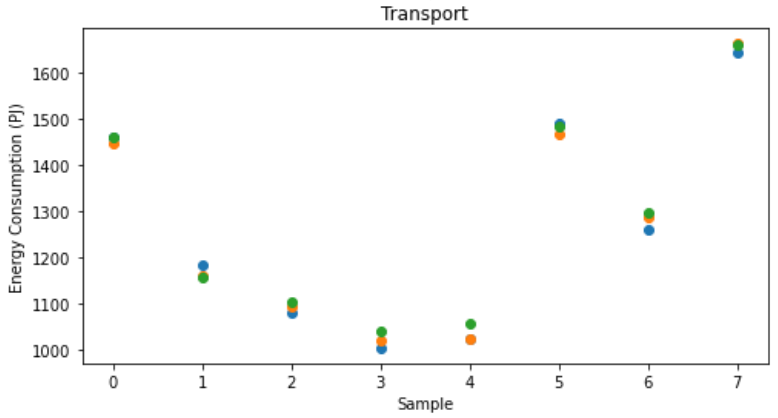


# All At Once

| Model | Average $R^2$ Score |
|---|---|
| Linear Regression | 78.84% |
| Ridge Regression | 80.42% |
| SVM | 52.77% |



# Conclusions

- Both **Linear** and **Ridge Regression** performed well in predicting total annual energy consumption

- **Population** and **GDP** are good indicators to predict the energy consumption of industries like **Transport** and **Electricity Generation**, but not **Manufacturing**.

# Q & A

# THE END