



# Chevron: Predicting Renewable Energy Investments

Logan Patterson, Sarah Nash, Joshua Ingram

# Data Collection + Munging

- Given data converted to wide format
  - Each state has its own row for each year
  - Each MSN code has its own column
- Data Added
  - Employment Data - [FRED.gov](https://fred.stlouisfed.org/)
  - GDP Data - [bea.gov](https://www.bea.gov/)
  - Political Data - [bioguide.congress.gov](https://bioguide.congress.gov/)
  - Census Data - [census.gov](https://www.census.gov/)
  - Photovoltaic Shipment Data - [eia.gov](https://www.eia.gov/)
  - Columns containing NA removed



# Model Selection + Variables

## Multiple linear regression

- Residual assumptions not met
- Inaccurate

## Time series -

- Data too shallow
- Ill-equipped smoothing

## Perceptron

- Single Layer too Restrictive
- Multi-Layer too complex

## **Stochastic SNN**

- Quantitatively Predictive
- Easily Parameterized



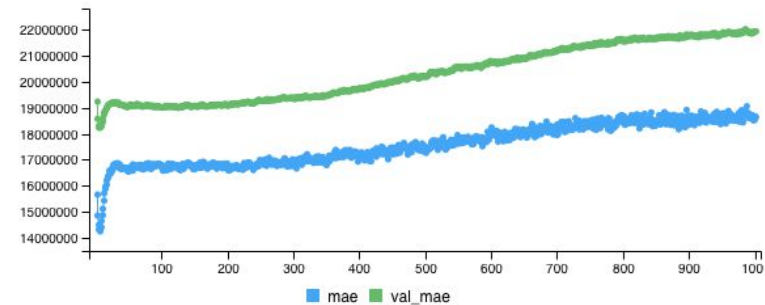
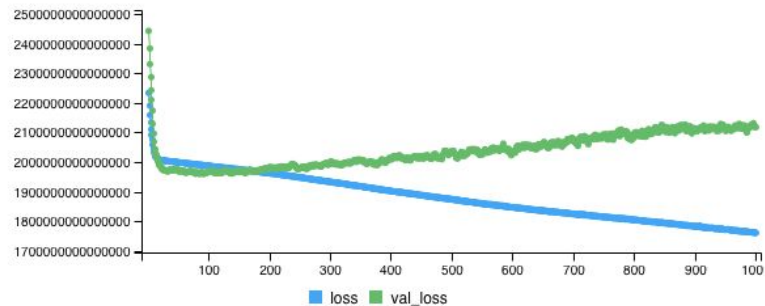
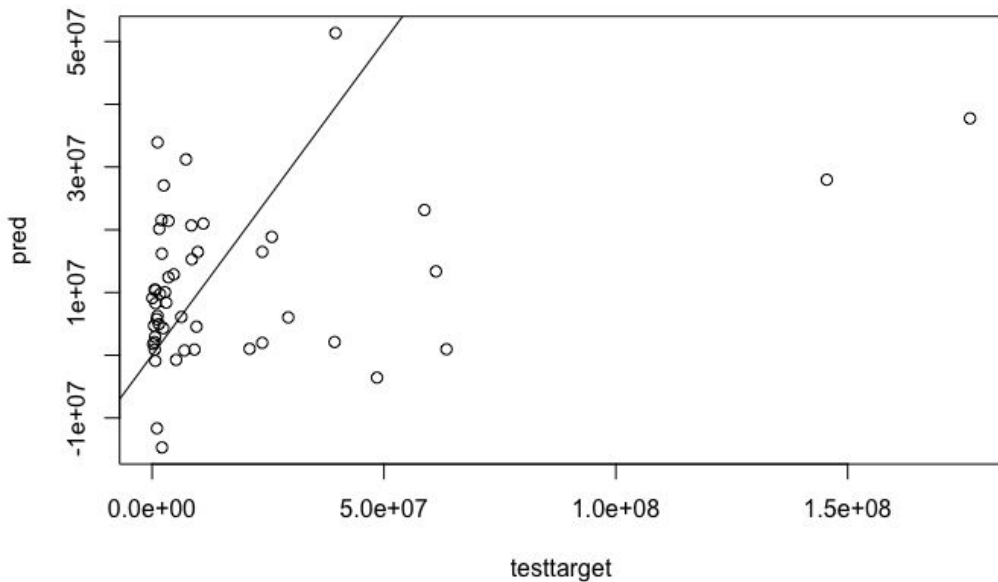
# Decided Model Neural Net

- Developed a Single Layer Neural Network using neuralnetwork, tensorflow, and keras packages in R for our predictions.
- The hidden layer of this Neural Network contains **6 neurons** on **97 variables**.
- Final calculated RMSE of **32063309**.



# Outcomes

Predicted vs Target totalAmountofAssistance



Loss and MAE Values

# Thank you!

[https://github.com/Joshuaingram/Rice\\_Datathon\\_Chevron](https://github.com/Joshuaingram/Rice_Datathon_Chevron)

