Tornado Event Analysis

# About Me

* Experience
  + Retired Army Signal Officer (23 Years)
  + Former Microsoft ITSM Consultant (3 Years)
* Education
  + MSCS (Security Concentration), Colorado Technical University
  + BA Sociology, University of New Mexico
  + Korean Linguist, Defense Language Institute
* Certifications
  + ITIL v3 Expert (IT Service Management)
  + Certified Knowledge Manager
  + Microsoft Power BI Data Analyst

# Situation (FEMA Budget)

* Problem Statement: Predict budgetary categories associated with tornado events in order to improve the quality and efficiency of FEMA budget planning and forecasting.
* Solution: Use ML on historical data to predict budget categories associated with specific tornados based on information collected in the immediate aftermath of an event.

# Data Science Framework

* Obtain (Python in JupyterLab )
* Scrub (Python in JupyterLab )
* Explore (Power Query/DAX/Visuals in Power BI Desktop)
* Model (Automated ML in Microsoft Azure Machine Learning Studio)
* Interpret (Train/Test Results in Microsoft Azure Machine Learning Studio)

# Obtain

* Source: National Oceanic and Atmospheric Administration website
* Data Profile
  + 73 Compressed Files
  + 1.7M Rows and 51 Columns
  + Years: 1950 to 2022

# Scrub

* Python
* Power Query

# Explore

* Power Query
* DAX
* Power BI Visuals

# Model

* Automated Machine Learning
* Train/Test Machine Learning Model

# Interpret

* Train Results
* Test Results

# Post Implementation Review

* Pain Points
  + Problem Statement
  + Factor Analysis
  + ML Results Interpretation
* Lessons Learned
  + Quality Dataset
  + Domain Expertise