**Fish Weight Prediction with Regularization Models**

**Project Overview**

In this data analysis project, I aimed to create a robust and optimized model for predicting the weight of fish using the FishWeight.csv dataset. The dataset comprises 159 observations and 6 variables, including various length and width measurements.

**Dataset Variables**

Independent Variables:

- Length1: Vertical length in cm

- Length2: Diagonal length in cm

- Length3: Cross length in cm

- Height: Height in cm

- Width: Diagonal width in cm

**Dependent Variable:**

- Weight: Weight of the fish in grams (g)

**Methodology**

1. Data Preprocessing:

- Utilized Tukey's method to identify and remove outliers from the dataset.

**2. Model Development:**

- Created Regularization models, including LASSO, Ridge, and Elastic Net, using Python and Jupyter Notebook.

**3. Presentation Slides:**

- Cover Page:

- Title: Fish Weight Prediction with Regularization Models

- Name: [Your Full Name]

- Student Number: [Your Student Number]

- Rational Statement:

- Provided a summary of the problem addressed in the presentation.

**4. Optimized Regularization Model Evaluation:**

- Presented outputs and insights from the key metrics (Adjusted R-squared, MAE, RMSE) for LASSO, Ridge, and Elastic Net.

- Explained three key insights for each model, totaling nine insights.

**5. Model Recommendation:**

- Identified and justified one model (LASSO, Ridge, or Elastic Net) suitable for implementation by Mr. John Hughes.

**6. Next Steps for Model Usability Enhancement:**

- Proposed and justified two next steps to enhance the usability of the chosen model.

**Data Analyst Project Description**

**Project Objective**

The goal of this data analysis project is to develop an optimized model for predicting the weight of fish based on various length and width measurements. The insights derived from this analysis will provide valuable information for decision-making in the fisheries domain.

**Methodology**

The analysis includes the application of Regularization techniques (LASSO, Ridge, Elastic Net) to improve the model's predictive performance. Outliers have been addressed using Tukey's method to ensure the robustness of the results.

**Impact**

This project aims to contribute to the field of fisheries by providing a reliable model for estimating fish weight, aiding in resource management and decision-making processes.

**Deliverables**

The deliverables include a comprehensive presentation with insights from the model evaluation and recommendations for model implementation and improvement.

This data analysis project demonstrates my expertise in statistical modeling and provides actionable insights for practical applications in the fisheries industry.