# Objective

A macro to perform multiple linear regression using ordinary least squares (OLS) estimation from first principles. The implementation avoids using built-in linear regression function, focusing instead on coding the mathematical computations for regression.



# Function Overview: %ols\_reg

The %ols\_reg macro performs multiple linear regression and outputs:

1. Parameter estimates for predictors.
2. Standard errors of estimates.
3. R-squared and adjusted R-squared statistics.
4. Optional ANOVA results, including F-statistic and p-values.

# Parameters

* data: The input dataset containing the outcome and predictor variables.
* outcome: The dependent (outcome) variable.
* predictor: A space-separated list of independent (predictor) variables.
* miss: The value that indicates missing data in the dataset (default: .).
* reg: Controls whether ANOVA results are included. Default is Y (include ANOVA).
* format: Specifies the output format:
* P: PDF
* R: RTF



# How to Use %ols\_reg

Set Path: Specify the directory containing the macro and dataset:

eg: *%let path = /home/u63980097/sasuser.v94/SAS\_Thanwi/BS803; libname BS803 "&path.";*

*%include "&path./ols-reg.sas";*

1. Prepare the Dataset: Ensure your dataset is accessible in the specified library.
2. Run the Macro: Call the macro with the required parameters as shown in the example above.
3. Locate the Output: Check the specified directory for the output file (\_ols\_results.pdf or \_ols\_results.rtf).

**Syntax :**

*%ols\_reg(data=dataset, outcome=dependent\_variable, predictor= list of variables, miss=missing\_value\_code, reg=Y\_or\_N, format=output\_format);*



# Example Run and Comparison

*%ols\_reg(data=bs803.framdat2, outcome=DTH, predictor=AGE SEX CHD SPF GLI CSM FVC, format=P);*

