

MATH221, Week 7
Explanatory and Response Variables

Explanatory Variable

The explanatory variable is a variable that is used to predict, approximate, or explain the value of another variable. It is an independent variable, usually represented by x and measured on the horizontal axis of a graph.

Response Variable

The response variable is a variable that is predicted, approximated, or explained by the explanatory variable. Its value is dependent on the value of the explanatory variable. Therefore, it is a dependent variable. It is usually represented by y and measured on the vertical axis of a graph.

Example

A nutritionist wants to determine whether the amounts of water consumed each day by persons of the same height and weight on the same diet can be used to predict individual weight loss. What are the explanatory and response variables?

Explanatory variable – Amount of water consumed. The nutritionist wants to use it to explain weight loss.

Response Variable – Weight loss – The amount of weight loss is dependent on amount of water consumed.

Note: Height, Weight, and Diet type are control variables. They are used to ensure that all subjects in the study are the same so that the only variable that can impact weight loss is water consumption. They neither explain nor are explained by anything.