What is Ordinary Least Squares Regression and how is it used in Mplus?

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June 29, 2024

Ordinary Least Squares (OLS) Regression is a statistical method used to analyze the relationship between a dependent variable and one or more independent variables. It is commonly used in Mplus, a statistical software program, to estimate the parameters of a linear regression model. OLS Regression works by minimizing the sum of squared residuals, which are the differences between the actual values of the dependent variable and the predicted values from the regression model. This method is used to determine the best fitting line or curve that represents the relationship between the variables. OLS Regression in Mplus is useful for analyzing data and making predictions in various fields such as social sciences, economics, and psychology. It allows researchers to identify significant predictors and determine the strength and direction of their effects on the dependent variable. Overall, OLS Regression is a powerful tool for analyzing and understanding the relationships between variables in a dataset.

Ordinary Least Squares Regression | Mplus Annotated Output

This page was created using Mplus 5.1.

Below is an example of ordinary least squares (OLS) regression with footnotes explaining the output. To summarize the output, both predictors in this model, x1 and x3, are significantly related to the outcome variable, y1.

Here is the same example illustrated in Mplus based on the ex3.1.dat data file.

TITLE:
this is an example of a simple linear

regression for a continuous observed dependent variable with two covariates

DATA:

FILE IS ex3.1.dat;

VARIABLE:

NAMES ARE y1 x1 x3;

MODEL:

y1 ON x1 x3;

SUMMARY OF ANALYSIS

Number of groups 1

Number of observations 500

Number of dependent variables 1

Number of independent variables 2

Number of continuous latent variables 0

<output omitted>

TESTS OF MODEL FIT

Chi-Square Test of Model Fita

Value 0.000

Degrees of Freedom 0

P-Value 0.0000

Chi-Square Test of Model Fit for the Baseline Modelb

Value 469.585
Degrees of Freedom 2
P-Value 0.0000

CFI/TLIa

CFI 1.000
TLI 1.000

Loglikelihoodc

H0 Value -2124.388
H1 Value -2124.388

Information Criteriad

Number of Free Parameters 4
Akaike (AIC) 4256.776
Bayesian (BIC) 4273.634
Sample-Size Adjusted BIC 4260.938
(n* = (n + 2) / 24)

RMSEA (Root Mean Square Error Of Approximation)a

Estimate 0.000

90 Percent C.I. 0.000 0.000

Probability RMSEA <= .05 0.000

SRMR (Standardized Root Mean Square Residual)a

Value 0.000

Model Results

MODEL RESULTS

Two-Tailed

Estimatef S.E.g Est./S.E.h P-Valuei

Y1e ON

X1 0.969 0.042 23.357 0.000

X3 0.649 0.044 14.626 0.000

Interceptsj

Y1 0.511 0.043 11.765 0.000

Residual Variancesk

Y1 0.941 0.060 15.811 0.000