National College of Ireland

Configuration Manual

M.Sc. Research Project

Data Analytics

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MSc Project Submission Sheet

School of Computing

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Programme: M.Sc. in Data Analytics **Year:**2023-2024

Module: M.Sc. Research Project

Supervisor: Dr. Arghir Nicolae Moldovan

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Project Title: A STATISTICAL STUDY ON ANTHROPOMETRIC DATA OF CHILDREN

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Date: 14 DECEMBER 2023

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Introduction

Statistical analysis plays a crucial role in drawing meaningful insights from data, aiding in decision-making processes, and supporting research findings. In this document, we will focus on the statistical software IBM SPSS Statistics version 29 for data analysis. The system configuration, including software and hardware specifications, will be outlined, followed by steps for data generation. Finally, we will delve into the procedures for conducting various statistical tests, such as T-test, ANOVA, MANCOVA, Regression, Correlation, and Descriptive Summary.

System Configuration

2.1 Software Specification

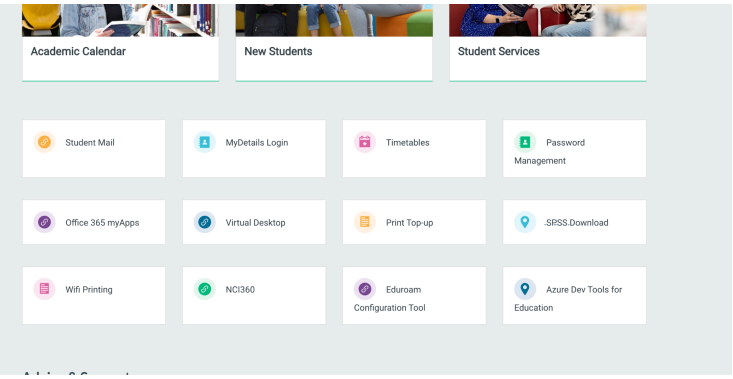
SPSS Statistics 29 is a widely used statistical software that facilitates data analysis and interpretation. To install SPSS 29, follow these steps:

Open your web browser and go to your preferred search engine.

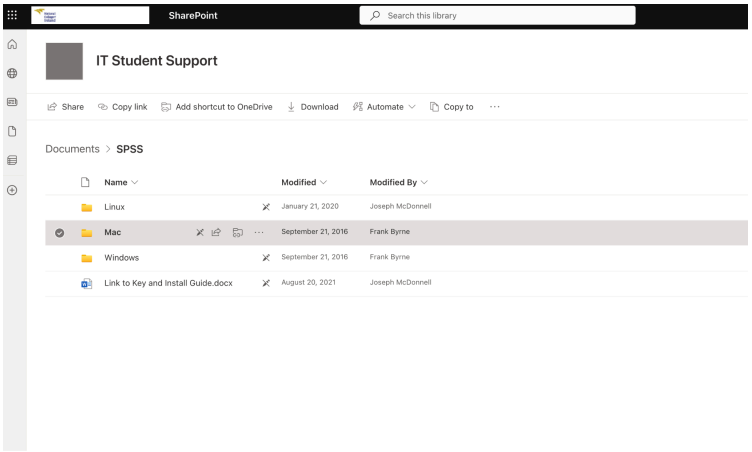
and using this link open the NCI moodle page to download the SPSS.

Step 1:-

https://www.ncirl.ie/Students/Current-Students-Hu



Step 2:-



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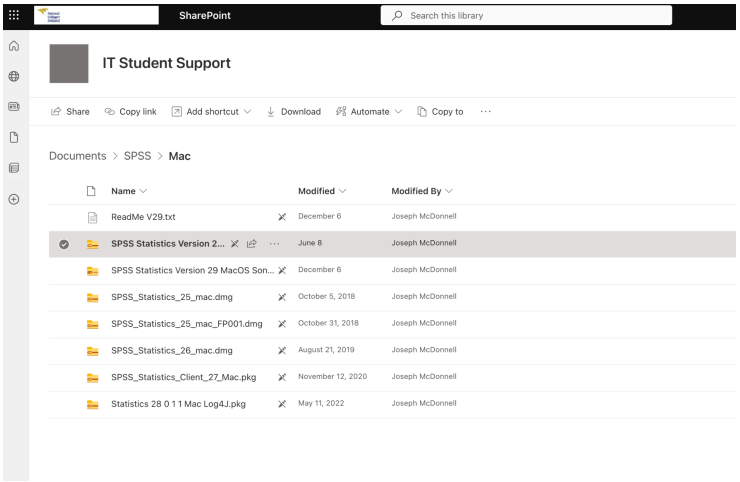


2.2 Hardware Specification for SPSS 29.0.1.0

2.2.1 macOS

Operating System: macOS SONOMA

Processor: M2 Pro

RAM: 16 GB RAM Hard Disk: At least 4 GB free space for installation, with additional space for temporary files during analysis.

Screen Resolution: 3024 × 1964

3.1 How to load the .sav files with datasets and output

Loading a .sav file:

1. Open SPSS:

- Launch the SPSS software on your computer.

2. Open or Create a New Syntax or Data File:

  - You can either open an existing data file or create a new one.

3. Import Data:

  - To import data, go to `File > Open > Data...`.

  - Choose the .sav file you want to load and click "Open."

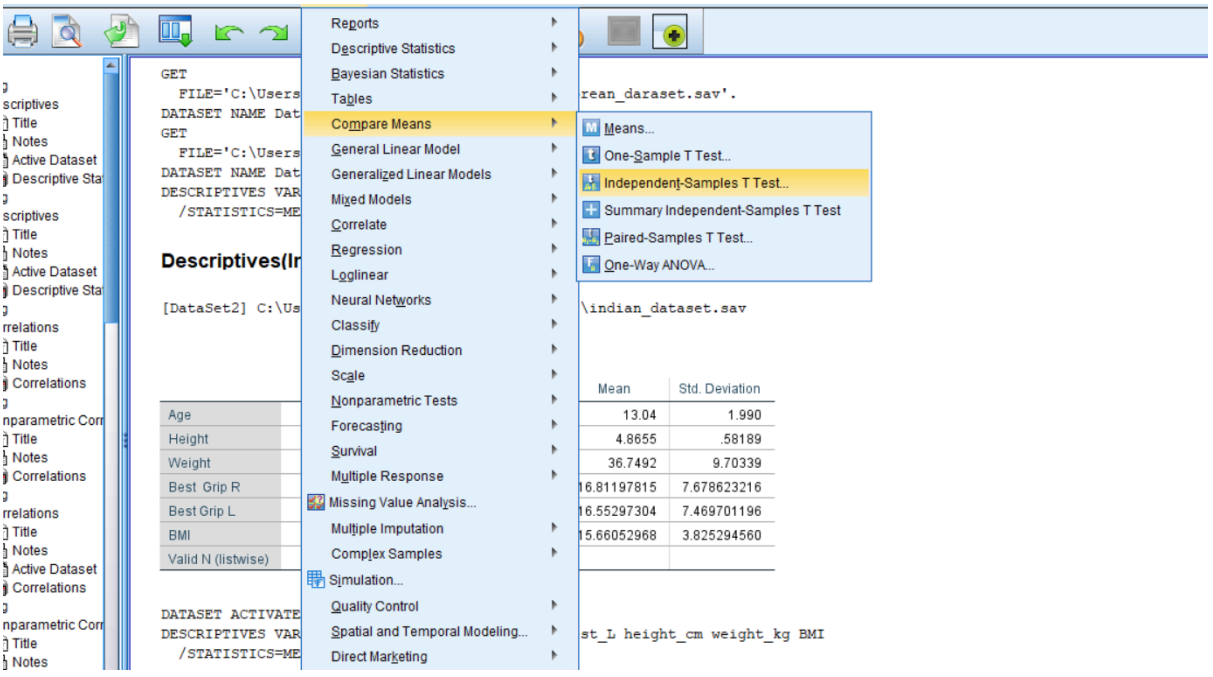
4. Explore the Data:

  - Once the data is loaded, you can explore it in the Data View or Variable View tabs.

3.2 Data Generation Steps

Statistical Analysis Procedures

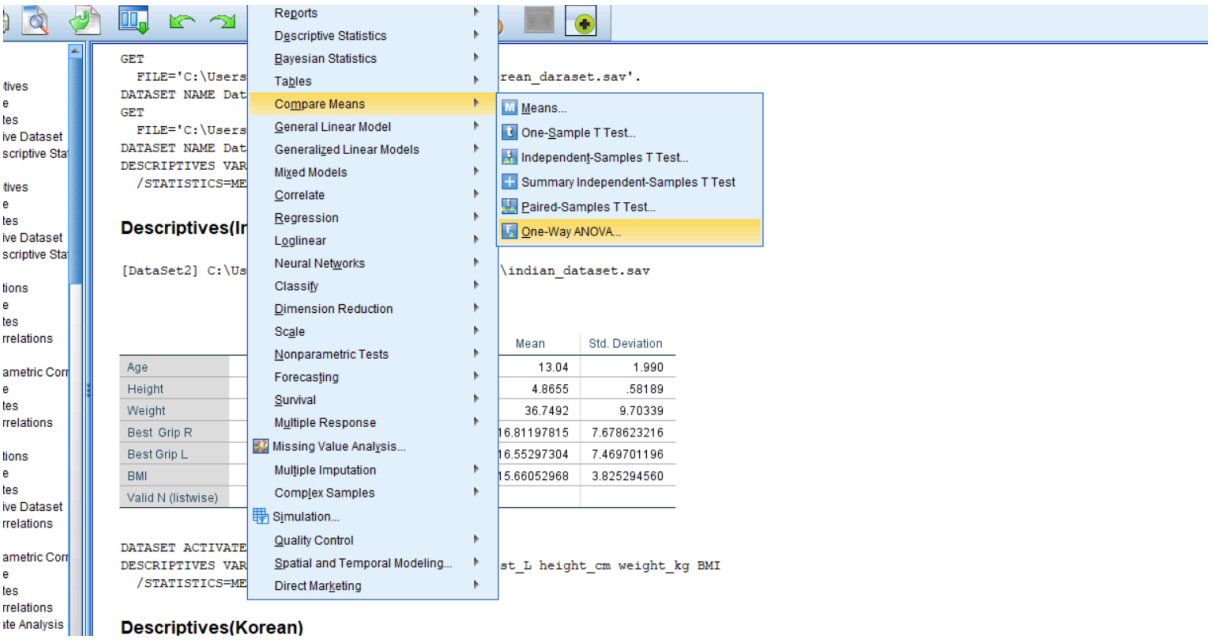
T-test



- The t-test is used to compare the means between two groups. To perform a t-test in SPSS 26:
- Select Analyze > Compare Means > Independent Samples T-Test for two independent groups or Paired-Samples T-Test for dependent groups.
- Choose the variables of interest and set the grouping variable.

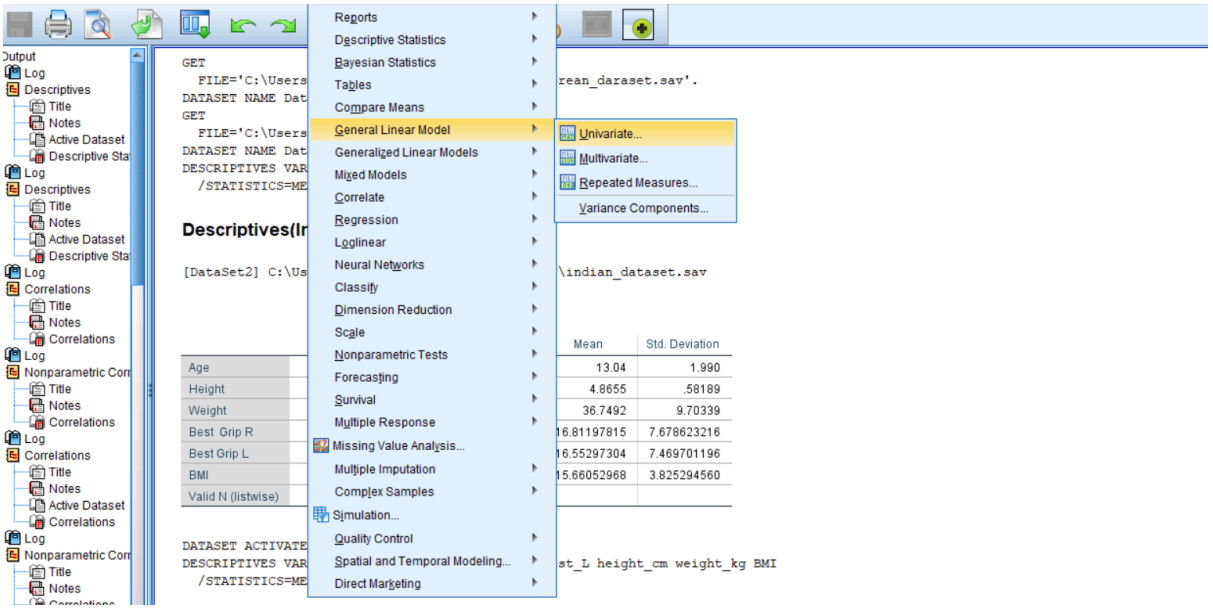
- Review the output for statistical significance.

ANOVA (Analysis of Variance)



- ANOVA is employed when comparing means across more than two groups. To conduct ANOVA in SPSS:
- Navigate to Analyze > Compare Means > One-Way ANOVA.
- Specify the dependent variable and factor variable.
- Examine the ANOVA table for significance.

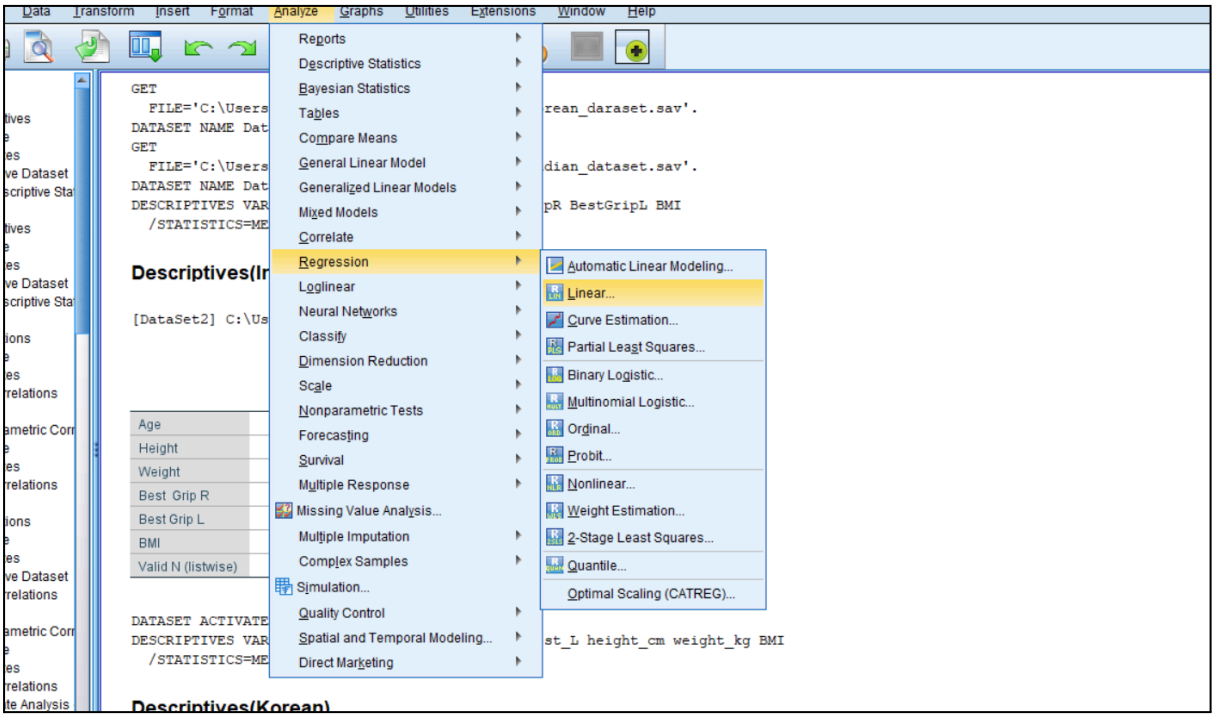
MANCOVA (Multivariate Analysis of Covariance)



- MANCOVA is an extension of ANOVA that considers multiple dependent variables. To perform MANCOVA:
- Go to Analyze > General Linear Model > Multivariate.

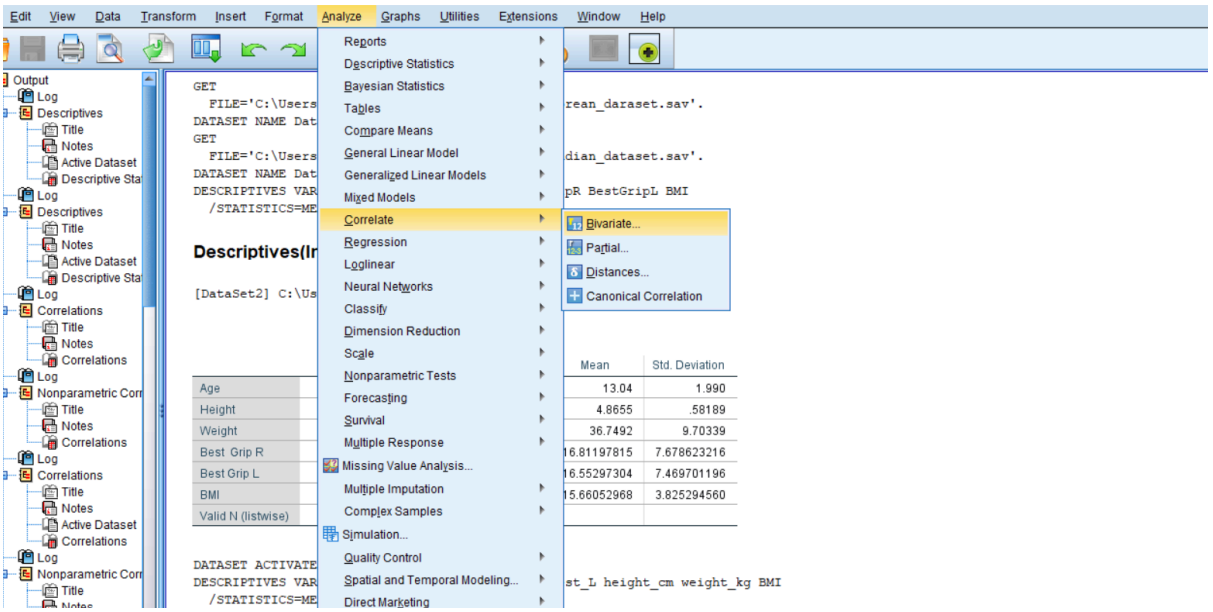
- Select the dependent variables and covariate(s).
- Review the Pillai's Trace or other multivariate tests for significance.

Regression



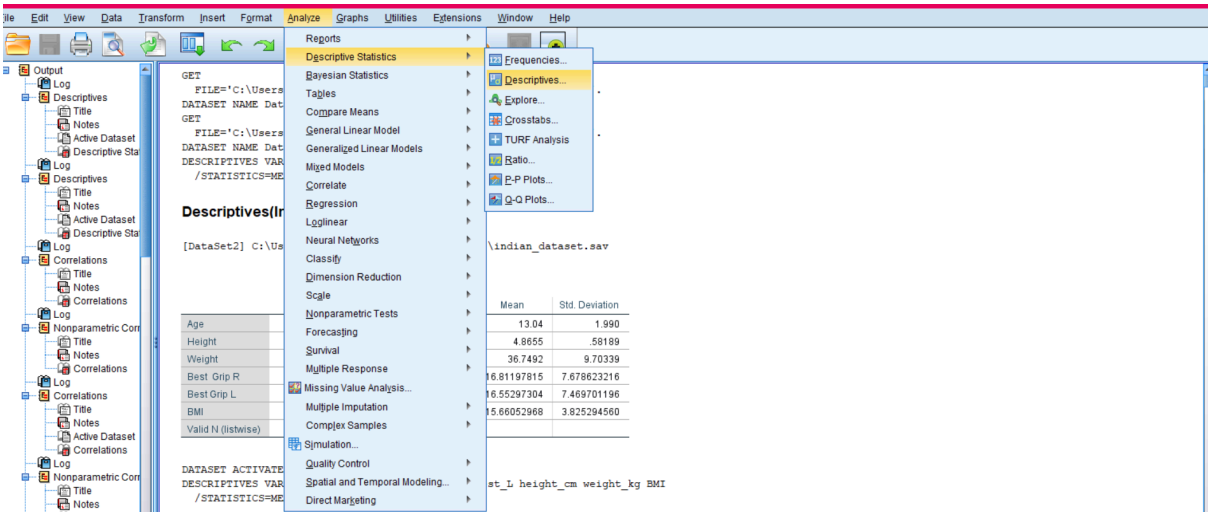
- Regression analysis assesses the relationship between a dependent variable and one or more independent variables. To conduct regression in SPSS:
- Choose Analyze > Regression > Linear.
- Specify the dependent and independent variables.
- Interpret the regression coefficients and significance levels.

Correlation



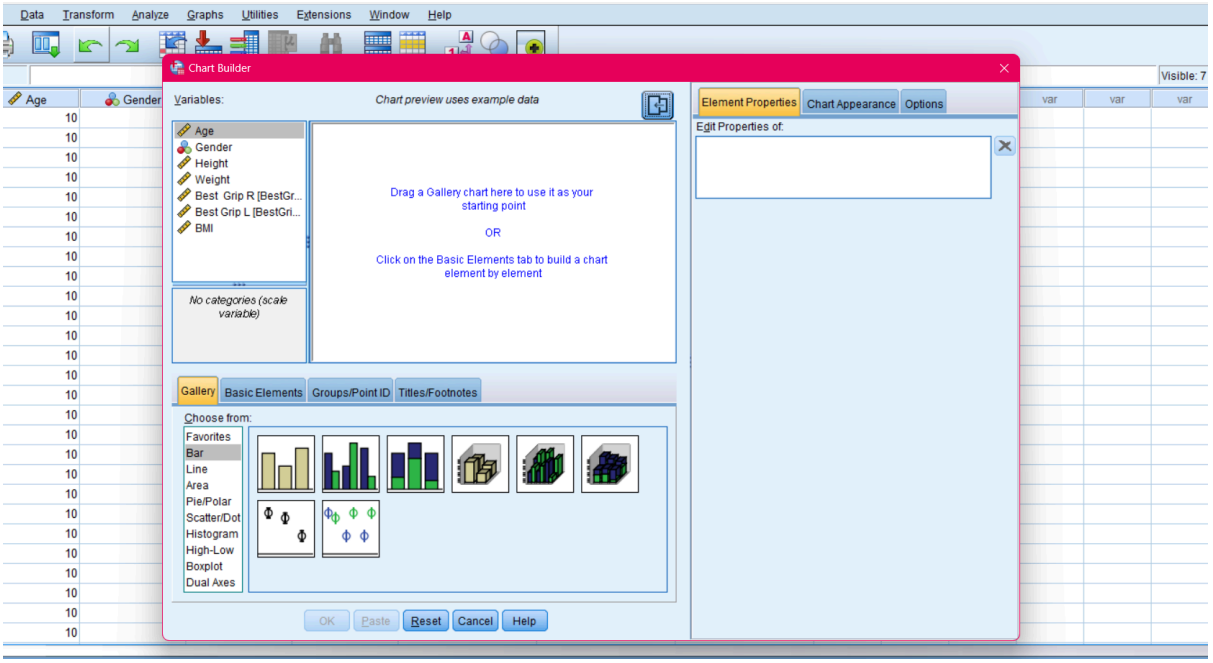
- Correlation examines the strength and direction of relationships between two continuous variables. To perform correlation analysis:
- Navigate to Analyze > Correlate > Bivariate.
- Select the variables of interest.
- Examine the correlation matrix for significance.

Descriptive Summary



- Descriptive statistics provide a summary of key characteristics of a dataset. To generate descriptive statistics in SPSS:
- Choose Analyze > Descriptive Statistics > Descriptives.
- Select the variables to analyse.
- Review the output for measures such as mean, standard deviation, and skewness.

Histogram and Line Chart



- Navigate to Graphs > Histogram.

- Choose the variable for which you want to create the histogram.
- Go to Graphs > Line.
- Choose Line and then Multiple