

Quantitative Data Analysis Methods

After you have made the decision that you want to collect quantitative data and you know how you will [collect](#) it, it is time to decide how you will analyze it.

Let's follow a simple step process to make decisions regarding this:

- (1) Identify **variables**, level of data, and research questions
- (2) Select your **type** of analysis
- (3) Select your analysis **software**

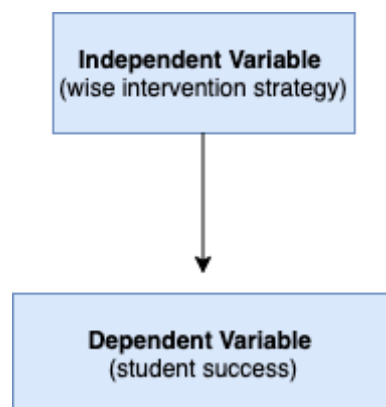
1. Before selecting your type of statistical analysis, ensure you can specify:

Variables

What are the independent and dependent variables? Are there other variables that you might want to capture (i.e., demographic variables)? Remember, your variables are that which you are studying - we want to understand how these elements “vary”. We need to identify these specifically and the type of relationship we are testing between them. For further information, please see here.

Example:

How does the wise intervention strategy impact student success on assignments at the graduate level?



Level of Data

After identifying your variables, consider the type of data you are collecting.

Quantitative Data Analysis Methods

Categorical Data:

Nominal: This type of data has no rank or order (gender, zip codes, ethnicities). This is referred to as categorical data, since the variables do not differ numerically, but rather by description or name.

Ordinal: This type of data refers to data that is ordered numerically, but only by its position in a series. While this type of data may still represent a category, there is at least an implied sequence (socioeconomic status, education level, military rank...)

Numerical Data:

Interval: This type of data is measured along a numerical scale with each point on the scale being equidistant from each other point (temperature, test scores, ...). In interval scales, it is important to remember that there is no “true zero point”; for example, while you can have a temperature reading of zero, that does not mean there is no temperature.

Ratio: This type of data is the same as interval, but with a true zero (there are no negative values in a ratio scale). Examples of ratio scales are physical measurements (weight, volume) and ages (0-100+).

Research Question(s)

Ensure you know why you are collecting the data. What do you want to know or find out? What relationships are you exploring?

2. Use this information to determine your analysis type.

First, you should consider the type of data you are using - this will help limit the options to consider (ex: if you are using nominal data, you cannot run a correlation; ratio scales allow for a broader range of descriptive statistics than interval data). Then, as you review literature on the variables you are studying, it is important to note the analyses that other researchers applied - one of the best ways to select the most appropriate analyses is to see how studies with similar variables or research questions structure designed their analyses.

The Most Common Types of Analysis to Consider:

- ❖ Chi Squared
- ❖ Correlation
- ❖ T-test
- ❖ ANOVA
- ❖ Regression (Linear or Multiple)

Quantitative Data Analysis Methods

Resources

There are also a number of resources available - The best resource I have found to determine analysis and what will work for your study can be found [here](#). Follow the flow charts to determine what type of analysis could work for you! (“Office of Planning, Assessment, Research, and Quality, n.d.).

You may also want to check out a copy of Creswell’s (2018) book on research design.

Creswell, J. W., & Creswell, J. D. (2018). *Research design: qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE.

3. Select your analysis software

Common Choices

SPSS (Statistical Package for the Social Sciences)

There are graduate student discounts that can be found [here](#).

SAS (Statistical Analysis System)

STATA (Name is a Combo of Data and Statistics)