More About Quantitative Analyses!

Quantitative research is an approach to research that uses numerical data and statistical analysis to answer research questions. It involves collecting data through structured methods, such as surveys or experiments, and then analyzing that data using statistical methods to identify patterns, relationships, or differences between groups. The goal of quantitative research is often to make generalizations about a population based on a sample of that population.

Two Types of Statistics

Descriptive Statistics—
Summarize the data using percentages, frequencies, means, medians, standard deviations, etc. Useful for overviews of the data.

- *57% of respondents said they are satisfied with shuttle hours.*

- *Respondents reported using the shuttle hall an average of 10.2 times per semester.*

Inferential Statistics — Test for a **statistically significant effect;** allow you to analyze data for differences, relationships, and predictors.

- *Domestic students reported significantly more satisfaction with the shuttle compared to international students.*

💡 A **statistically significant effect** is a result that is so unusual or different that it is unlikely due to random chance. We can feel relatively confident that the effect is really there and not a coincidence.

➡️ **Links for More Information**

[YouTube Series: StatQuest](#)
[PennStat: STAT 500](#)

- *Shuttle usage was significantly predicted by reported mental health, where worse mental health predicted students using the shuttle less frequently per week.*

✏️ **Types of Variables**

Nominal/Categorical- Mutually exclusive categories without an inherent order or hierarchy (race, gender, academic discipline).

Ordinal- Categories that have an order but the distance between those categories is not know or is not consistent (Low income/middle income/high income, education level).

Continuous- Variables that have consistent distance between the units (age, as the time between 18-19 is the same as the time between 19-20).

Summary of Common Inferential Statistics Used in Survey Research

Type of Test	Usage of Test	Data Needed	Sample Research Question
T Test	Is there a difference between exactly two groups or two time points?	One categorical variable with two options and one continuous variable	Do domestic and international students differ in satisfaction with the shuttle schedule?
Analysis of Variance (ANOVA)	Is there a difference between more that two groups or time points?	One categorical variable with more than two options and one continuous variable	Are there differences in satisfaction with shuttle usage between STEM, Social Science, and Humanities students?
Chi Square	Are proportions of certain characteristics equally distributed in the sample?	Two categorical variables	Do LGBTQ* students and cisgender/heterosexual students report using the

			shuttle over breaks at a similar rate?
Correlation	Are two variables related to each other?	Two continuous variables	Is satisfaction with the shuttle related to overall satisfaction with Clark University?
Regression	Does a variable (or multiple variables) predict another variable?	One or more predictor variables and one continuous outcome	Does living on-campus and mental health wellbeing predict shuttle usage?

Identifying the statistical analyses we want to use ahead of time is useful to ensure you have the types of data you need to perform those analyses.