Types of Data

Categorical/-Nominal	Do not hold numerical meaning (arbitrary)
Ordinal	Rank ordering, differences not equal
Interval	Intervals between points on a scale are equal and the same, zero is arbitrary
Ratio	Zero is NOT arbitrary (an absence)

Experimental Designs

Balanced	each cell (each combination of factors) contain the same number of replications (how many measurements
Complete	every level of one factor combined with every level of the other factor(s)
Incomplete	Lots of factors or many measurements (nested/block design best)
Single subject/r-epeated measures	Subject acts as their own control

Ceiling effects: Test is too easy (100%)
Floor effects: Test is too hard (0%)
Learning effects: subjects improve with more trials
Order effects: test order may have effect on outcome

Characteristics of Data Sets

Data Shape	Frequency distributions are a common way to describe data shape (range of scores)
Location	finding central tendency or middle of data
Spread	Variance -> range, SD and IQR
Outliers	
Clustering	e.g. bimodal distribution

Characteristics of Data Sets (cont)

Granularity	Data only takes on certain values (e.g. discrete data + rounded continuous)
	(e.g. discrete data + rounded continuous)

Types of Sampling

Random	Increased ability to generalise to population
Systematic	Choosing subjects from a population at a regular interval (choosing every second item)
Cluster	Randomly select a few schools in your sample and have all students as participants
Convenience	Sample used because it is accessible rather than representative of a population

Central Limit Theorem

• draw a large enough sample from the population and plot all of those sample means, our sampling distribution will approach normal
• Sampling distribution uses sample means
• Population mean: mean of all sample means

Standard Error
- SD of sampling distribution
95% CI = sample mean +- 1.96 x SE

Pearson's Correlation (r)

Strength	Positive	Negative
Strong	.8 to 1	-.8 to -1
Moderate	.5 to .7	-.5 to -.7
Weak	0 to .4	0 to -.4

ANOVA Variance

DF	Sum of Squares	Mean Sqaure

ANOVA Variance (cont)

Between Groups	no. groups -1	How much data varies between different groups (variance)	Average variance between groups
Within Groups	no. data points - no. of groups	How much data varies within each group (variance)	Average variance within groups
Total	no. data points - 1		

Types of ANOVAs

One-way	1 factor/independent variable (categorical)
Two-way	2+ factors/IVs (categorical), interactions
Repeated Measures	Measure the same outcome variable on the same population twice
	Each subject is now a *random factor* (rather than fixed factors)

T-test Types

Test	Description	DF
1-sample (single)	Compares your experimental group with a hypothesised or known value	n-1
2-sample (independent)	Compares the means for two independent samples	(n1-1) + (n2-1)
Paired	measuring something for the same group of people	n-1

One tailed: Directionless -> one group is different from the other group (in pos or neg direction)
Two tailed: Directional -> one group if larger or smaller than the other

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Linear Regression

Beta	degree of change in the outcome variable for every 1 unit of change in the predictor variable
R-Sqaured	Fit of the model and represents how much variance in the DV can be accounted for by the IV
Analysis of Variance	Adj SS (adjusted sum of squares) -> total variance of data
	- The error SS is what is left over -> variance that cannot be explained by other factors or variance in the model

Predicting

CI: If we repeated our experiment many times an degenerated a confidence interval each time, 95% of those confidence interval will contain the true population value
Prediction Interval: Predicting future observ-ations from the regression equation

Assumptions of Parametric Tests

1. Normally distributed data
2. Homogeneity of variance
3. Interval/ratio data
4. Independence

This means that you may have to use non-parametric tests when...

• your data is better represented by the median (e.g. skewed data like salary or house prices), or
• you have a very small sample size, or
• you have ordinal (e.g. rating scales, some questionnaire results) or categorical data

Parametric and Non-Parametric Equivalent Tests

Parametric	Non-Parametric
1-sample AND paired t-test	Sign test or Wilcoxon signed-rank test
2-sample t-test	Mann-Whitney test

Parametric and Non-Parametric Equivalent Tests (cont)

One-way ANOVA	Kruskal-Wallis test
Multifactor ANOVA (two-way + repeated measures)	N/A
N/A	Chi-square test

Types of Qualitative Data

Transcripts (e.g. interview)	Allows the researcher to ask about specific things and probe deeply
Observ-ation	ethnographic studies
Pictures	Pictures could be photos that the researcher has taken (drawings, rooms etc)
Documents	Many types (e.g. progress notes)
Web content	Publicly available (e.g. social media)

Sampling for a Qualitative Study

Typical Case	Average case
Extreme case	Unusual, unique or distinct case
Maximum Variation	Looking for the biggest range of perspectives
Homogenous Group	Minimum variation sampling + Focus on in-depth area of interest
Stratified Purpose	Selected cases from identified subgroups (e.g. 5 people from 4 age groups)
Theoretical	Start data collection -> analyse results -> form therapy -> continue sampling
Snow Ball	One respondent is asked to suggest others.
Convinience	Recruiting anyone who is at hand

Qualitative Evidence

Tangibly (concrete)	Intangibly
Guidelines, protocols	understanding what clients want from their clinicians
practice recomm-endations based on qual research	broaden knowledge and change behaviours

Setting up a Qualitative Analysis

Deductive (top-down)	Inductive (bottom-up)
coding will be influenced by the framework you're using	coding will be purely based on what the participant has said, without trying to fit it into a framework.

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