Psych 2260 Cheat Sheet

by jagglepop via cheatography.com/212492/cs/46171/

Ch. 3

Correlation Coefficient: # that tells degree of correlation **(r)**	*Strength:* small **±.10** med **±.30** large **±.50** **$r=[\Sigma(z_x)(z_y)]/N-1$**

Linear Correlation: Line indicating relation is roughly a straight line

Curvilinear correlation: Not Straight

Cross-product: Multiplying a score on one variable by a score on another	*Cross-product Z score: Using z-scores instead*

Variables: predictor is x and criterion is y

Prediction Model: Using z-scores to make predict	**$Z_y= (\beta)(Z_x)$**
Raw Score Predict:	*Form 1:* **Predicted Y=a+(b)(x)** *Form 2:* **Predicted Y= (SD_y)(Predicted Z_x)+M_y**

Correlation Matrix: Table of correlations that's set up so each variable is listed down the left and across the top ex.

Multiple Regression: Making predictions w/ multi correlations	**$Z_y=(\beta_1)(Z_{x1})+(\beta_2)(Z_{x2})+(\beta_3)(Z_{x3})$...**

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Ch. 10

Chi-Square Tests: For when the variable of interest is a nominal vari. The scores they achieve represent frequencies

Frequencies: How many ppl/observations fall into diff categories

Chi-Square Test for Goodness of Fit: Chi-Square test involving levels of a single nom vari

Goodness of Fit: **X2=∑(O-E)2/E**	***O- Observed Frequency E- Expected Frequency*

df for X2 test: **df=NCategories-1**

Chi-Square T for Independence: Chi-Square test involving 2 variables each w/ several categories

Independence: Refers to a lack of a relation between 2 nom vari

Ind Means X2 Expected frequencies: Makes # that rep cell **E=(R/N)(C)**

Figuring X2 for Ind: It is the same as goodness of fit but uses scores from each cell of the contingency table

df for X2 for Ind: **df=(NColumns-1)(NRows-1)**

For cutoff scores: use **table A4** to find cutoff scores

Phi Coefficient(): Measure of association between to dichotomous nom vari. Effect size for a X2 for Ind w/ a 2x2 contingency table	**=√X2/N**

Ch. 10 (cont)

Cramer's Phi: Extension of Phi, used when the contingency table is larger than 2x2 AKA Cramer's V and denoted as **C** or **Vc**	**C=√X2/(N)(df-Smaller)**

Data Transformation: Math proc used on each score is a samp, usuall done to make samp dist closer to norm

Square-Root Transformation: Taking the √ of each score in a sample to make the distribution closer to normal

Log Transformation: Taking a logarithm of each score to make the samp dist closer to norm

Rank-Order Transformation: Changing the set of scores to ranks so that the lowest score is 1, next lowest is 2... so on	*Rank-Order Test:* Hyp Test proc that uses rank-ordered scores. Sometimes called dist-free tests/non-parametric tests

Rank-Order Tests Corresponding to Parametric Tests:

Mann-Whitney U: Rank-order test **U1=[(N1)(N2)]+[-N1(N1+1)/2)-∑R1** // **U2=[(N1)(N2)]+[N2(N2+1)/2)-∑R2**	*Where:* U1/U2- U1 Stat N1/N2- Sample size of each group ∑R1/R2- Sum of rank orders for each condition

: √ σ μ ∑

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Ch. 4

Inferential Statistics: Conclusions that go beyond the particular group of research participants studied

Normal curve/dis: Variables follow a unimodal, roughly symmetrical, bell-shaped dist

Central Limit Theorem: Principle that the distribution of the sums/means of scores taken at random from any dist. of indiv. will tend to form norm curve

Haphazard Selection: Picking for convenience (Ie, whoever happens to be available)

Population Parameters: M, SD2 and SD of a pop

Sample Stats: M, SD2 and SD figured for scores in a sample

Relative Freq: # of times smt happens relative to # it could happen	*Probability:* **p=Possible successful outcomes/All possible outcomes**

Response rate: Proportion of individuals approached for the study who actually participated in the study

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Ch. 5

Theory: Set of priciples that attempt to explain 1+ facts/relationships/events

Hypothesis testing process:	Step 1- Restate Question (research/null hypotheses?) Step 2- Determine chara of comparison distribution Step 3- Determine cutoff sample score Step 4- Determine samples score on the comparison distribution Step 5- Decide whether or not to accept/reject the null hypothesis

Comparison Distribution: Represents the population situation if the null hypothesis is true

Meta-analysis: Combo of results from multiple diff studies

Directional Hypothesis: Study that focuses on a specific direction of effect

Decision Errors: Correct procedures leading to faulty results

Type I Error: Conclude the study supports research hypothesis when it is actually is false

Type II Error: Extreme p-value that leads to rejecting a null hypothesis that should actually be accepted

Not Significant: NS

Ch. 8

T test for independent means: using scores obtained from 2 sep groups that're indep of each other

Distribution between means: comp dist used in a t test for ind M. We are not using diff scores and are instead comp 1 groups M to the other groups M

Weighted Avg: An average weighted by the amount of info that each sample provides	*Pooled estimate of pop SD2:* **S2Pooled=[(df1/dftotal)(S12)]+[(df2/dftotal)(S22)]**

SD2 of dist of diff between Ms: For pop1: **SM12=S2Pooled/N1** For pop2: **SM22=S2Pooled/N2**

SD2 of dist of diff between Ms: S2Difference	**S2Difference=SM12+SM22**
SD of the dist of diff between Ms: SDifference	**SDifference=√S2Difference**

Df for ttest for for ind M: **dftotal=df1+df2**

ttest for ind M: **t=(M1-M2)/SDiffference**

Hyp Test Proc: **Find S12+S22->S2Pooled->SM12+SM22->S2Difference->SDifference->Cutoff->M1+M2->t**

Effect Size for IndM T: **Est Eff Size=(M1-M2)/SPooled**

Harmonic M: Gives equivalent sample size to groups that have equal group sizes (used for est eff size when group sizes aren't even) **Harmonic M=[(2)(N1)(N2)]/(N1+N2)**

Ch. 8 (cont)

t test shown in research: t(dftotal)=(tscore), p<.01

: √ σ μ ∑

Ch. 6

*Distribution of Means **(DoM)**:* The distribution of the means of each of many samples of = size and all randomly selected from the same population	*3 Chara of DoM:* 1. Its M 2. Its spread (SD2+SD) 3. Its shape

Rules: Rule 1- PopMm (M of DoM)=PopM (M of pop) Rule 2a- **Pop SD2M=SD2/N** Rule 2b- Pop SDM=√SD2M Rule 3- The shape of a DoM is approx norm if either a) Each sample has 30+ part b) The dist of the pop of indiv is norm

Z Test: The Z score that is checked against the normal curve

Effect Size: The amount that pops (exp and non exp) are separated/don't overlap	*Cohen's d:* d=(μ1 **(M of exp group)**-μ2**(M of known pop)**)/σ **(SD of known pop)**

d effect size: **small** 0<d<0.2 **med** 0.2<d<0.8 **large** d>0.8

Type I Error: Rejecting the null hypothesis when the null hypothesis is actually true

Type II Error: Accepting the null hypothesis when the null hypothesis is false, aka beta error

Type III Error: Concluding that there is a sig diff in one direction when the true effect is in the other direction

Ch. 6 (cont)

Statistical Power: Likelihood that a study will correctly detect a real treatment effect. In other words, the stat pow is the likelihood that the study will correctly reject a null hypothesis

Hypothesis testing steps: **Step 1-** Develop Hypothesis ie- H0: μ1≤μ2 H1: μ>μ2 **Step 2-** Determine chara of comp pop σM=σ/√N **Step 3-** Determine cutoff score **Step 4-** Determine samples score on the comp dist Z=(M-μM)/σM **Step 5:** Decide whether to reject or accept the null hypothesis

Power Distribution Steps: **Step 1:** Turn Z cutoff score into raw score M=(Z)(-σM)+μM **Step 2:** Figure the zscore for the cuttoff M, Z=(M-μM)/(σM) **Step 3:** Use Table A-1 to determine prob of getting the resulting score from step 2 Power=1-beta

˙ √ σ μ

Ch. 7

T Tests: Hyp test procedures where pop SD2 is unknown(Aka students t)

1 sample t test: scores from one sample where the comp pop has a known M but unknown SD2

Ch. 7 (cont)

1 samp t hyp test: In **step 2** we have to find the unbiased estimate of the pop SD2 **S2=[∑(X-M)2]/df**, in **step 3** we use table A-2 instead and for **step 4** we need to calculate a t-score **t=(M-Pop M)/SM** to compare against our cutoff score	*Degrees of Freedom:**df=n-1***

Repeated-Measures design: Research situation where 2 scores are taken from each person in the sample (within-subjects design)

t test for dependent means: Each person has 2 scores, we use diff scores for the participants (1 score-the other) and we assume pop M is 0	*For the t test for dep M, calculate diff scores before doing hyp test*

Est. Effect Size (for t test w dep M): Mean of diff scores/sd of pop of diff scores **Est Eff Size=M/S**

˙ √ σ μ ∑

Ch. 9

ANOVA: Stat procedurefor testing SD2 among the Ms of >2 groups	*The null hyp for anova is that the several pops being compared have the same M*

Ch. 9 (cont)

Within-group est of the pop SD2: Avging pop SD2 est from each sample into a single pooled est. Gives an avg of est figured entirely from the scores within each of the samp

Between-group est of the pop SD2: Est of the SD2 in each pop from the SD2 among the Ms of the samples

Treatment effect: Diff treatment received by the groups causes the groups to have diff Ms

F Ratio: The between-groups est divided by the within-groups est

F Distribution: Math defined curve that is the comp dist used in an ANOVA

Before testing, find M and S2 for each group of part

Within-groups SD2 est: **S2Within=(S12+S22+...Slast2)/NGroups**

Grand M: The overall M of all our scores **GM=∑M/NGroups**

Est of SD2 of the Dist of Ms: **SM2=[∑(M-GM)2]/dfbetween**

Comparison of fig the SD2 of a dist of Ms from the SD2 of a dist of indiv: from dist of indiv->dist of M - **S2M=S2/N** dist of M->Dist of indiv - **S2Between=(S2M)(N)**

F Ratio: Ratio of between-group est of pop SD2 to the within-group est of pop SD2 **F=S2Between/S2Within** and use **table A-3** for comp

Between-groups df: Numerator df **dfBetween=NGroups-1**

Within-groups df: Denominator df **dfWithin=df1+df2+...dfLast**

Hyp Test Proc: **Find S2 + M for each group->S2Within->GM->dfBetween->dfWithin->S2M->S2Between->F**

Ch. 9 (cont)

Effect size for ANOVA: **R2**	**R2=[(S2Between)(dfBetween)]/[(S2Between)(dfBetween)]+[(S2Within)(dfWithin)]**

R2 Power Meaning: **small** .01 **med** .06 **large** .14

Factorial ANOVA: ANOVA for factorial research design

Interaction Effect: X = interaction (effect of one variable impacts the results on the other)

Two-way ANOVA: Considers the effect of 2 variables that separate groups

Grouping Variables/Ind Variables: Variables that separate groups

One-Way ANOVA: Consider the effect of only one grouping

Diff ANOVA Means: **Cell Ms-** M of scores in each cell **Marginal Ms-** M of 1 grouping variable (vertical/horizontal grouping)

Dependent Variable: Represents the effect of the exper proc

One-Way ANOVA in Research: **Ftest(dfBetween, dfWithin)=F ratio score, p<.01**

˙ √ σ μ ∑