NATIVE AMERICAN RESEARCH CENTERS FOR HEALTH

Quantitative Workshop
Janet Gordon, Ed. D.
Adjunct Faculty, MSU
Independent Research & Program Evaluation
PART ONE - AGENDA

- Introduction to quantitative analysis
- AIHEC NARCH Cohort 1 example
- Types of study questions
- How to analyze each type of study question
- Small Group Activities
- 10 MINUTE BREAK
“TELLING THE STORIES IN THE DATA”
TELLING THE STORY OF THE JOURNEY
From where we started...(PRE)

To where we ended (POST program outcomes)
AND WHAT HAPPENED IN-BETWEEN (PROXIMAL OUTCOMES)
THE BATTLES FOUGHT ALONG THE WAY...
WHERE ARE YOU AT IN YOUR CURRENT NARCH RESEARCH PROJECT?

✓ WRITTEN STUDY QUESTIONS
✓ FIGURING OUT HOW TO GET DATA NEEDED
✓ DEVELOPED DATA COLLECTION INSTRUMENTS (SURVEY)
✓ CURRENTLY COLLECTING DATA
✓ FINISHED COLLECTING DATA
✓ ENTERED DATA INTO SPREADSHEETS
✓ READY TO ANALYZE DATA
✓ DONE WRITING RESULTS
✓ WANT TO DO MORE ANALYSIS
Oglala Lakota College Behavioral Health Research Project

Principal investigators: Josephine Chase PhD and Susanne Auer MA

- **Goal 1:** Train students and faculty in behavioral health issues and research
- **Goal 2:** Conduct a community-based participatory behavioral health needs assessment
- **Goal 3:** Develop behavioral health curriculum based on the findings of the needs assessment
- **Goal 4:** Conduct on-going community-based participatory health research
SOME WAYS TO USE QUANTITATIVE DATA IN YOUR STUDY

• Describe the situation
• Show a relationship
• Measure the magnitude of influence (small, medium, large)
• Show changes over time
• Be used for predictions
• Test our assumptions
What do you want to know?

Your study questions should align with the programs’ goals and objectives.

The results of the quantitative analysis will help inform the qualitative approach to further answer your study questions – “mixed methods”
As shown on the student survey, what are the primary mental/behavior health issues of OLC students?
Stress issues-80%, Grief-30%, Depression-25%, PTSD-20%

Use descriptives to really get to know your dataset.
Survey Respondents - Female students: 79%  
Male students: 17%, No response: 4%

Data suggests that the girls are stressed out. Program implications: counseling and services will look different to meet female students’ needs.
MEASURES OF CENTRAL TENDENCIES ARE DESCRIPTIVES

Mean
Median
Mode
Standard deviation
Skewness
Minimum
maximum
DISAGGREGATED DESCRIPTION

How do mental health issues vary by center?

Needs By College Center: (hypothetical)

Cheyenne River- 50% grief/50% stress
Eagle Nest – 20% grief/20% stress
East Wakpamni – 20% grief/30% stress
He Sapa – 50% grief/40% stress
How do mental health needs change when substance abuse is involved?

Is there a correlation between the number of behavioral health issues and age?
SMALL GROUP ACTIVITY #1

1. Please look at the list of data elements from the OLC study or your own study.

2. Talk together and write down 4 study questions that look for a relationship or correlation.
What effect does receiving mental health services have on student persistence and retention?
SMALL GROUP ACTIVITY #2

1. Please look at the list of data elements from the OLC study or your own study.

2. Talk together and write down 4 study questions that look for a cause/effect (or prediction).
OUR RESEARCH GOAL – TO ACCOUNT FOR ALTERNATIVE EXPLANATIONS FOR PROGRAM OUTCOMES

Maintain High Internal validity

Qualitative—Respondent validation, inter-rater reliability, triangulation, thick description.

Quantitative—Triangulation, mixed methods, explain away or control for alternative explanations, make sure differences between 2 sets of data are not by chance - “statistical significance.”
WHAT ARE THE CHANCES OR PROBABILITY THAT YOUR RESEARCH OUTCOMES WEREN’T FROM THE PROGRAM INTERVENTION?

p-value
High quality research “controls” for other explanations and reduces the possibility that the outcomes are by chance.

You can do this in your study design by:
- using mixed methods (qual and quant)
- triangulating data (at least 3 sources)
- using a quasi-experimental design to collect at least 2 groups of data (ex. treatment and control group, time series)
- maintaining high validity/reliability
STUDY DESIGN – SOME OPTIONS

• experimental – random assignment
• quasi-experimental – non-random
• treatment and control groups (baseline equivalence)
• post-test only
• time series
• cohort designs
• regression discontinuity (cutoff level of intervention compare results close to cutoff)
SMALL GROUP ACTIVITY

What might be some alternative explanations for someone having improved mental health other than seeing a counselor at school?

How can you “control” for them using certain aspects in your study design?
The goal of significance testing is to be able to say that the difference between groups is not due by chance but due to the intervention.
SIGNIFICANCE TESTING – DRIVEN BY TYPE OF DATA

Parametric Normally Distributed Data:
- 1-sample (independent) t-test
- 2-sample (paired) t-test
- One-way Analysis of Variance (ANOVA)
- Factorial w/1 factor & 1 blocking factor

Non-Parametric Skewed Data:
- 1-sample (independent) Wilcoxon test
- 2-sample (paired) Mann-Whitney
- Kruskal-Wallis Mood’s median test
- Friedman test
HOWEVER, PARAMETRIC TESTS CAN WORK WITH SKEWED & NON-PARAMETRIC DATA (SURVEY) WITH MODIFICATIONS TO YOUR STUDY DESIGN:

Sample Size Guidelines:
- If there are > 20 in the sample...
- If there are > 15 in each sample (2+)
- If there are > 15 in each group (2-9 groups); >20 (10+ groups)

You can use:
- 1-sample t-test
- 2-sample t-test
- One-way ANOVA
What is the relationship between the number of behavioral health issues and age?
Correlation Analysis (Pearson’s Coefficient)

To what extent do other factors predict mental health outcomes? Linear Regression (IV=factors, DV=outcomes)
What effect does receiving mental health services have on student retention? T-test for 2 groups (trtmt receives service, ctl does not) with 1 factor of interest (IV = mental health services, DV = retention)

What effect does receiving spiritual guidance along with other mental health services have on student retention? Analysis of Variance (ANOVA) techniques for > 2 groups (IV=spiritual guidance + other mental health services, DV = retention)
10 MINUTE BREAK –

PLEASE POST YOUR QUESTIONS ON THE LARGE POST-IT NOTE ON WALL.

Thank-you