Community Based Participatory Research and Quantitative Methods

Darren Lubbers, Ph.D.
Spirit
Guiding Questions

Spirit

• SPIRIT – “What spirit (emotion, tone, sentiment, context) do you want to communicate as a researcher?”
This document is intended for use by researchers, both non-Native and Native, working with Native American peoples and their respective communities.

In response to past injustices, research to promote individual, family, and community health requires attention to issues of social justice and the distribution of resources.
Guiding Principles

- Principle 1: Native Centered
- Principle 2: Respect
- Principle 3: Self-Reflection and Cultural Humility
- Principle 4: Authentic Relationships
- Principle 5: Honor Community Time Frames
- Principle 6: Build on Strengths
- Principle 7: Co-learning and Ownership
- Principle 8: Continual Dialogue
- Principle 9: Transparency and Accountability
- Principle 10: Integrity
- Principle 11: Community Relevance
Guiding Principles for Engaging in Research with Native American Communities

- Build Community Partnerships/Relationship
- Feedback, Presentations, Sustainability Plans
- Identify a Project & Tribal Approval
- Accountable & Transparent
- Continual Dialogues
- Build on Strengths
- Native Centered
- Respect
- Integrity
- Community Relevance
- Self Reflection & Cultural Humility
- Co-Learning & Ownership
- Honor Community Time Frames
- Authentic Relationships
- Final Reports and Dissemination
- Data Analysis and Findings
- Study Implementation
- Apply for a Grant, MOUs, Contract, IRB, Approval

- Manuscript, Publications, Conference Presentations
SPIRIT – “What spirit (emotion, tone, sentiment, context) do you want to communicate as a researcher?”
Guiding Questions

Science

SCIENCE – “What are some ways that you can integrate Western Quantitative perspectives into a Native American worldview?”
**Community-Based Participatory Research (CBPR)** - “a partnership approach to research that equitably involves, for example, community members, organizational representatives, and researchers in all aspects of the research process” (Israel et al., 2003)
But, first we need to know the history …

- 1940s – Action research (Kurt Lewin) as well as other European social scientists
  - Behavior occurs within a historical/social context
  - Behavior is determined by the totality of an individual’s situation
  - Individuals interact in inter-connected groups as actors as well as authors of their own reality
  - A fundamental premise of community-based action research is that it commences with an interest in the problems of a group, a community, or an organization. Its purpose is to assist people in extending their understanding of their situation and thus resolving problems that confront them…. (Stringer, 1999)
Traditional Research and Community Based Participatory Research - Parallels

**Traditional Research**
- Community is a passive subject of study
- Research Design – done a priory by academic institution
- Needs assessment, data collection, implementation, and evaluation – academic institution’s responsibility
- Usually sustainability plan is not included

**CBPR**
- Involves the community being studied in the research
- Research Design – done with representatives from community & academic institution
- Needs assessment, data collection, implementation, & evaluation – everyone’s responsibility
- Sustainability is priority that begins at program’s inception
Helicopter Research

Consider the following scenario:

A researcher is invited into a community and begins to gather information for a study. No one else from the community is involved as a researcher. After a short period, the researcher leaves the community to analyze the collected information. Some time later, the researcher publishes a report and most community members are unaware of the results of the study.

What concerns would you have about helicopter research being done in the communities you work with?
For the communities you work with, what might be considered inappropriate research practices?

a. Taking too much time
b. Not following cultural protocols
c. Not seeking appropriate community approvals
d. Not including local people in the process
e. Lack of communication
f. Other
Two Research Paradigms in Social Science

• Qualitative
  – Purpose: to understand and interpret social interactions
  – Type of data collected: words, images, or objects
  – Objectives: to explore, discover, or construct

• Quantitative
  – Purpose: to test hypothesis, look at cause-and-effect, and make predictions
  – Type of data collected: numbers and statistics
  – Objectives: to describe, explain, or predict

Which of the following types of data collection have you used in your Community Based Participatory Research?

a. Interviews
b. Surveys
c. Focus groups
d. Field notes
e. Other
Community Based Participatory Research

Why is it effective?

• The research process may involve shared leadership and decision-making responsibilities.
• It emphasizes the participation, influence, and control of non-academic researchers in the process of creating knowledge and change.
An Example of Community Based Participatory Research

A cross-section of community members (stakeholders) are concerned about the rise in substance abuse among local youth. These stakeholders want to create and implement a culture-based, community-wide program, to reduce and prevent youth substance abuse. Stakeholders collect key information using a mixed-method approach, hold ongoing community meetings and gain input to formulate program goals and objectives based on data, and work to secure funding to implement the program.
Community Based Participatory Research

Why is it effective? (cont.)

• It can strengthen relationships within a local community.
• It can involve everyone in the community.
• It can provide participation structures and procedures needed to establish and maintain equitable partnerships.
Which of the following is your current focus with Community Based Participatory Research?

a. Building community partnerships
b. Identification of research problems
c. Collectively designing a research methodology
d. Collaborating to analyze and give meaning to data
e. Changing community policy or systems
f. Publications
Guiding Questions

**Science**

- SCIENCE – “What are some ways that you can integrate Western Quantitative perspectives into a Native American worldview?”
Action
Guiding Questions

Action

- ACTIONS – “What are 3 specific actions you can do as a result of this session...?”
Graphical Display to Depict Misperceptions

Self (Actual) versus Friend (Perceived Use)

Past 30 Days Alcohol
r = .484 sig. = .000
Graphical Display to Demonstrate Campaign Awareness

Students who have you seen a drug free poster/message in the past year

- 82.4% in 08-09
- 79.0% in 09-10
- 76.1% in 10-11
- 72.2% in 11-12
- 38.1% in 12-13
- 36.0% in 13-14
- 65.7% in 08-09
- 67.4% in 09-10
- 53.9% in 10-11
- 59.3% in 11-12
- 83.4% in 12-13

No Funding from Federal Grant

Grade:
- 9th Grade
- 10th Grade
- 11th Grade
- 12th Grade

School Year:
- 08-09
- 09-10
- 10-11
- 11-12
- 12-13
- 13-14
Graphical Display to Depict Community Change Over Time

Students who have drank alcohol in the past 30 days

- 55.7% in 08-09
- 40.2% in 09-10
- 28.7% in 10-11
- 16.5% in 11-12
- 16.2% in 12-13
- 6.9% in 13-14

No Funding from Federal Grant

Grade
- 9th Grade
- 10th Grade
- 11th Grade
- 12th Grade
Comparing to National Benchmarks

Student who have drank alcohol in the past 30 days

- **No Funding from Federal Grant**
- **Birmingham Bloomfield**
- **National YRBS**

School Year:
- 08-09: 41.8%
- 09-10: 38.7%
- 10-11: 36.7%
- 11-12: 38.7%
- 12-13: 34.9%
- 13-14: 23.7%
SWOT

• Based on where you are currently at with your Community Based Participatory Research, what are some of the specific strengths, weaknesses, opportunities, or threats to using Community Based Participatory in the communities you work with?
Odds Ratio Definition

• A measure of association between an exposure and outcome
  – i.e. the odds that a teen drinks alcohol given that his/her parents allow teen drinking at home compared to the odds of a teen drinking alcohol given that his/her parents do not allow teen drinking at home.

• Effect size measure, measures the magnitude of a relationship
Research Question: Is there an association between teen alcohol use and marijuana use?

<table>
<thead>
<tr>
<th>How often do you use alcohol?</th>
<th>How often do you use marijuana?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than Monthly</td>
<td>Less than Monthly</td>
</tr>
<tr>
<td>3,730</td>
<td>128</td>
</tr>
<tr>
<td>Monthly or more</td>
<td></td>
</tr>
<tr>
<td>350</td>
<td>186</td>
</tr>
</tbody>
</table>

Odds Ratio Calculation

General Calculation
OR = \( \frac{a \times d}{b \times c} \)

\[
\begin{array}{|c|c|}
\hline
a & b \\
\hline
\hline
c & d \\
\hline
\end{array}
\]

\[
\begin{align*}
OR &= \frac{(3730 \times 186)}{(128 \times 350)} \\
OR &= \frac{693,780}{44,800} \\
OR &= 15.5
\end{align*}
\]
Odds Ratio Interpretation

Students who do NOT drink monthly or more often are 15.5 times LESS LIKELY to also use marijuana monthly or more often.
Protective Ratio

- Alcohol Use (Q16e)
- Drinking alcohol is never a good thing for anyone my age to do (Q6a)

- Students who agree with the statement: “Drinking alcohol is never a good thing for anyone my age to do” are 22.3 times LESS LIKELY to drink monthly than students who do NOT agree with the statement.
Risk Ratio

- Alcohol Use (Q16e)

- Do your parents allow you and your friends to drink alcohol at your home? (Q22)

- Students who report their parents allow them and friends to drink alcohol at home are 11.8 times MORE LIKELY to drink monthly compared to students who reported their parents do NOT allow them and friends to drink alcohol at home.
Odds Ratio and Logistic Regression
Top Alcohol Influences

- **Friends Perceived Binge Drinking.** Students who thought their friends binge drank in the past 30 days are **25.3** times more likely to have had at least one alcoholic beverage in the past 30 days.

- **Perception of Underage Drinking.** Students who perceive underage drinking as not wrong are **7.9** times more likely to have had at least one alcoholic beverage in the past 30 days.

- **Perceived Typical Student Binge Drinking.** Students who thought the typical student binge drank in the past 30 days are **4.9** times more likely to have had at least one alcoholic beverage in the past 30 days.

- **Perception of Harm.** Students who perceive the risk of harm as no risk or slight risk are **3.3** times more likely to have had at least one alcoholic beverage in the past 30 days compared to those who perceived the risk to be moderate or great.
Odds Ratio and Logistic Regression
Drinking and Driving: Top Influences

- **Binge Drank in the Past 2 Weeks.** Students who binge drank in the past 2 weeks were 22.8 times more likely to drink and drive than those that did not binge drink in the past 2 weeks.

- **Parent Perception of Alcohol Use.** Students who think their parents' perception of alcohol is not wrong or only a little wrong are 5 times more likely to drink and drive compared to those who think their parents' perception is wrong or very wrong.

- **Perceived Typical Student Perception of Underage Drinking.** Students who think the typical student perceives underage drinking as not wrong are 3.6 times more likely to drink and drive.

- **Perceived Friends Past 30 Day Binge Drinking.** Students who think their friends binge drank in the past 30 days are 3.1 times more likely to drink and drive than those who did not think their friends binge drank in the past 30 days.
Depicting Data to Showcase Successful Community Interventions
Depicting Data to Showcase Successful Community Interventions

Students who drove a car or other vehicle when they had used marijuana (past 30 days)

Percentage

No Funding from Federal Grant

Grade
- 9th Grade
- 10th Grade
- 11th Grade
- 12th Grade

School Year
- 08-09
- 09-10
- 10-11
- 11-12
- 12-13
- 13-14

23.7 %
15.8 %
15.6 %
16.6 %
13.8 %

23.2 %
8.1 %
6.7 %

4.5 %
2.9 %
2.3 %
Correlation and Path Models

RAASI Antisocial Behavior

DTCQ Refusal Self-Efficacy

AEQ-A Scale 2 Alcohol can enhance or impede social behavior

ADI Total Score

AEQ D

DTCQ D
Correlation and Path Models

Diagram showing relationships between variables such as DTCQ Refusal Self-Efficacy, Gender, AEQ-A Scale 2 Alcohol can enhance or impede social behavior, RAASI Antisocial Behavior, ADI Total Score, Binge Drinking, ADI_D, and BD_D.
Survival Curves

Survival Curves for Small, Moderate, and Large Effect Sizes

- Small
- Moderate
- Large

- 50% Probability
- 75% Probability
Using Statistical Process Control (SPC) to Monitor Change Over Time

- Red and yellow dots, called run violations, indicate that this process lacks control.

- Identify assignable cause
  - New Policy
  - Waiting List Implementation
SPC and Assignable Cause Identified
Geo-Maps to Detect Service Needs

SA Intensive Outpatient Program Medicaid Providers

Legend
- Rural County Providers
- Urban County Providers
- 30 Mile Service Radius
- 45 Mile Service Radius
- Catchment Counties
- North Carolina
- Surrounding States

County provider classification based on NC Department of Health & Human Services designations for Rural & Urban Counties
Guiding Questions

**Action**

- ACTIONS – “What are 3 specific actions you can do as a result of this session...?”
Return
RETURN – “What are the ways that you can utilize Community Based Participatory Research and quantitative methods to return hope and healing to the people you serve?”
Contact Information:

DrDarrenLubbers@gmail.com