



# EVALUATING UNDERGRADUATE RESEARCH EXPERIENCES IN THE MOUNTAIN WEST CONSORTIUM

*Christiane Herber-Valdez, Ed.D.*

*Evaluation Director, NM INBRE*

*New Mexico State University*

*[cherber@nmsu.edu](mailto:cherber@nmsu.edu)*



# What is the Mountain West Consortium?



- ◎ Consortium of IDeA Programs in the Mountain West Region:
  - Alaska, Hawaii, Idaho, Montana, Nevada, New Mexico, and Wyoming
  - Collaboration with University of New Mexico CTSC
- ◎ Mission
  - To form a vibrant consortium that strengthens research activities throughout the Mountain West by leveraging each other's activities.
- ◎ Strategic Objectives
  - Create an effective and efficient governance structure for the Mountain West Consortium
    - All Western INBRE PIs represented on Steering Committee
  - Provide training opportunities in translational research that capitalize on the research strengths of the universities in the MWC
  - Establish research infrastructure support mechanisms that leverage the core facilities and research support structures among members
  - Develop collaborative research initiatives in areas of excellence among members
- ◎ [www.mountainwestconsortium.org](http://www.mountainwestconsortium.org)

# MWC Evaluation Sub-committee

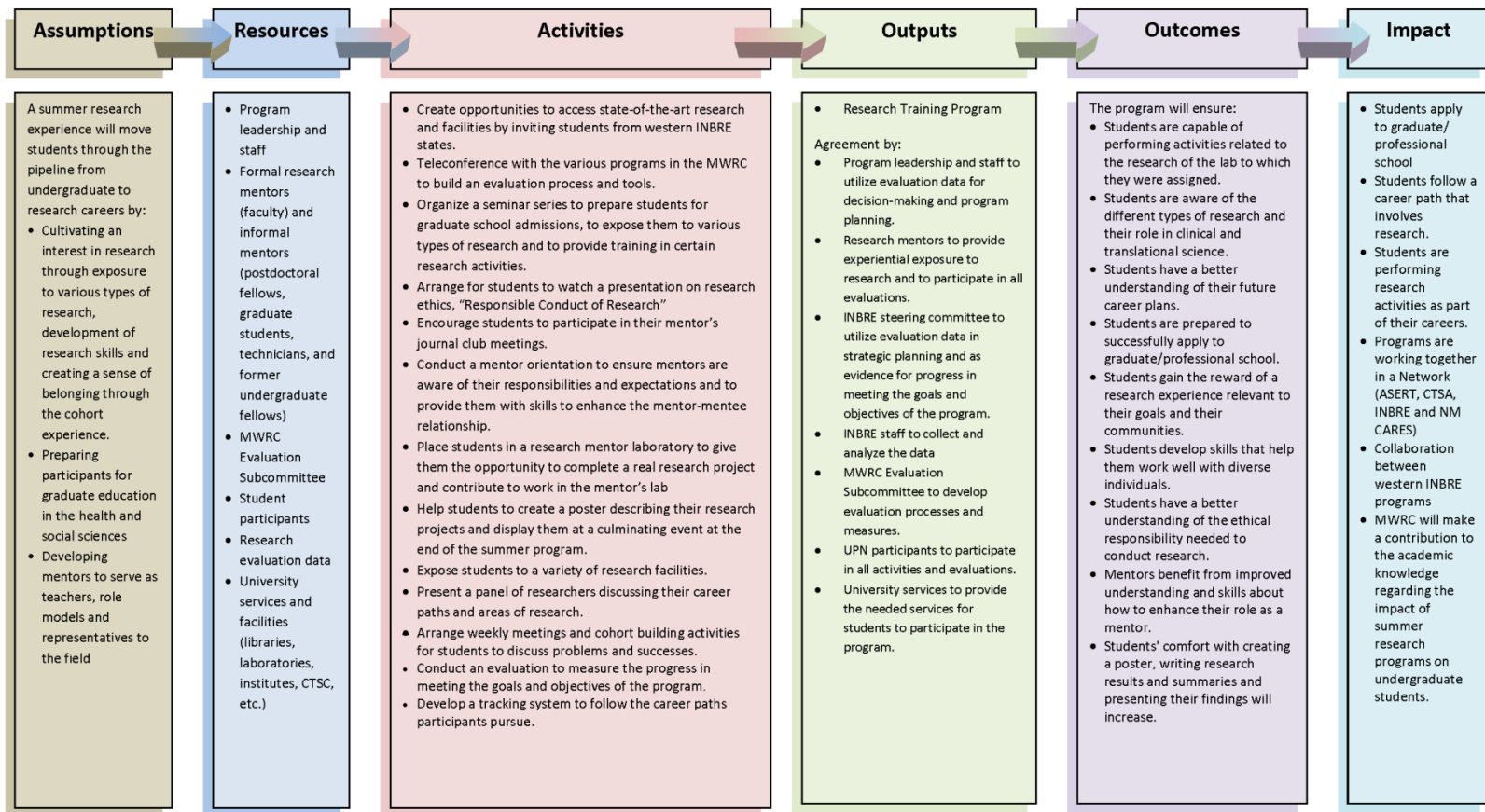
- ⦿ Established October 2010
- ⦿ Participants:
  - Alaska: Sue Hills
  - Idaho: Carolyn Bohach, Linda Liou, Leslie Thompson
  - Montana: Andrij Holian, Allen Harmsen, Laurie Howell, Valerie Holznagel
  - Nevada: James Kenyon, Carl Reiber
  - New Mexico: Deborah Helitzer, Natalie Bruner, Christiane Herber-Valdez
  - Wyoming: Scott Seville, Jennifer Harris Forrester
- ⦿ Goal
  - To cultivate successful undergraduate summer research programs
  - To streamline assessment and standardize evaluation procedures

# Where do you start??

- ① Describe individual summer research experiences
  - Share successes and challenges
  - Share ideas for program structure and delivery
- ② Identify common program goals and characteristics
- ③ Construct a Program Logic Model
  - Make sure the logic model addresses *your* program's goals and objectives
  - Make sure the logic model fits *all* programs

# MWC Summer Research Experience Logic Model

**Program Goal:** Move students through the pipeline from undergraduates into research careers



# Planning the Evaluation

- ⦿ Task: To develop a formal **Evaluation Plan and Matrix**
- ⦿ Define and agree on *common evaluation goals*
  - To determine program fidelity
  - To assess effectiveness
  - To determine participant satisfaction
  - To assess outcomes
  - To identify areas in need of improvement
  - To assess long term impact
- ⦿ Which **questions** do you need to ask about your program?
  - Ask questions based on goals
  - Use logic model to formulate detailed, specific questions
- ⦿ Determine **data collection procedures** (e.g. review of records, surveys, interviews, focus groups?)
  - Surveys: easy to administer tool for everyone
  - Some states used additional collection procedures (NM: seminar surveys, mentor orientation survey, focus groups)
  - Develop instruments to deliver the evaluation questions

# Student Surveys

## ● Pre- and Post-Program Surveys

- Based on existing surveys:
  1. Interest in Research Questionnaire (Bishop & Bieschke, 1994)
  2. Research Self-Efficacy Scale (Greeley et al., 1989)
- Modified to fit MWC evaluation goals
  - items to collect demographic data
  - items to ask program-specific questions
    - Quantitative (rating scales)
    - Qualitative (open-ended questions)
- Survey Focus Areas:
  - Demographic data
  - Academic/career goals
  - Interest in science/research training and graduate education
  - Preparedness for pursuing graduate education
  - Program expectations/perceived benefits
  - Interest in conducting research
  - Level of comfort with research activities
  - General program feedback

# Mentor Survey

- ⦿ Post-Program Survey
  - ⦿ Quantitative and qualitative questions
- ⦿ Survey Focus Areas:
  - Mentoring relationship
  - Perception of mentor's experience with program
  - Perception of students' ability to pursue graduate education
  - Perception of program benefits for students (improve understanding, skills, etc. ?)
  - Other outcomes, highlights, obstacles, professional development benefits?
- ⦿ Online Survey Tool: SurveyMonkey
  - Easy survey administration
  - Data delivered in various formats (SPSSx, Excel)

# Data Analysis and Preliminary Results

## ⦿ Challenges

- Program delivery varies from state to state
- Variation within states
- Low participant numbers ( $N < 30$ )

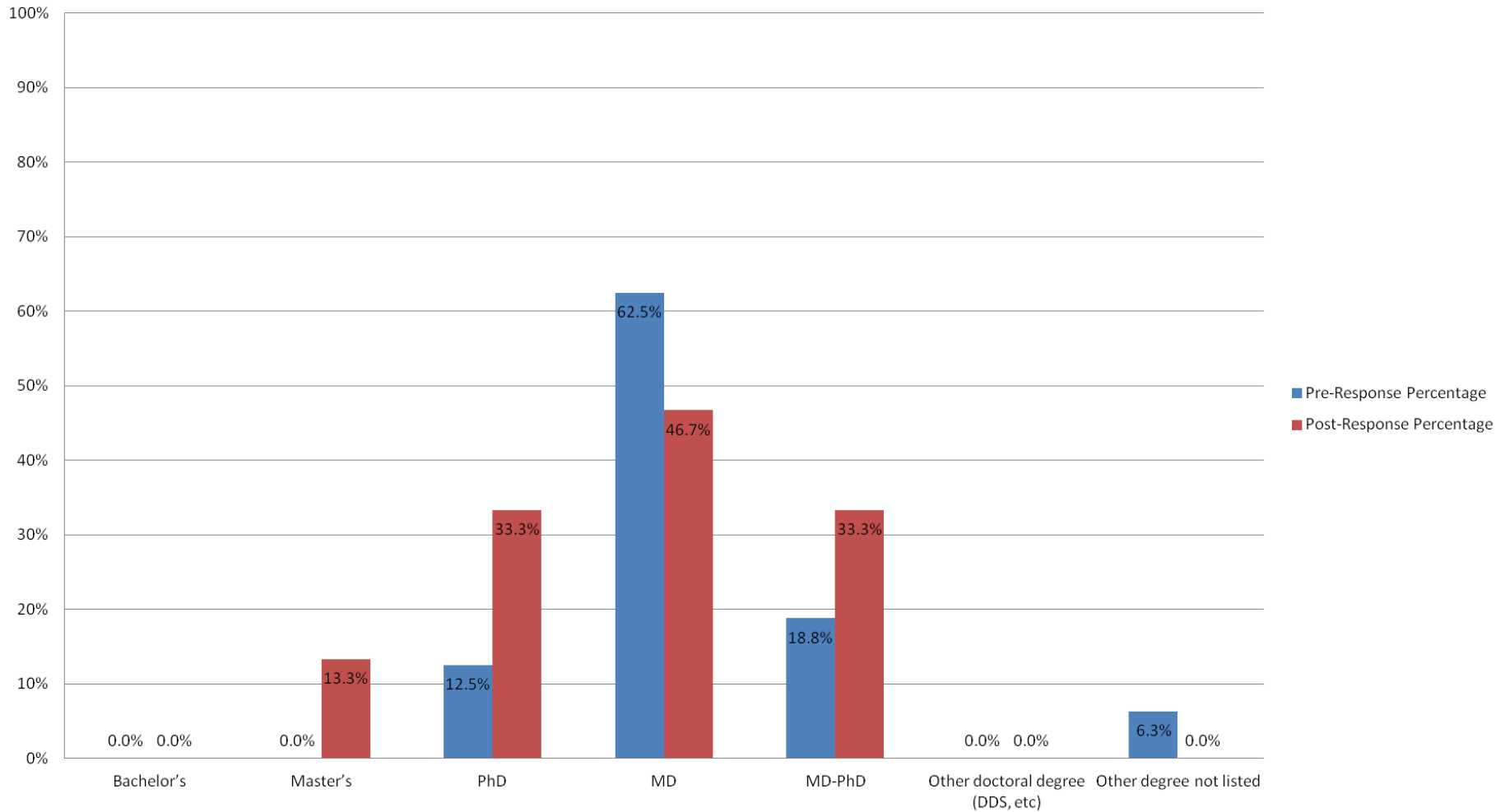
## ⦿ Limitations

- Cannot generalize beyond each site
- Focus on descriptive statistics
- Looking for trends in data

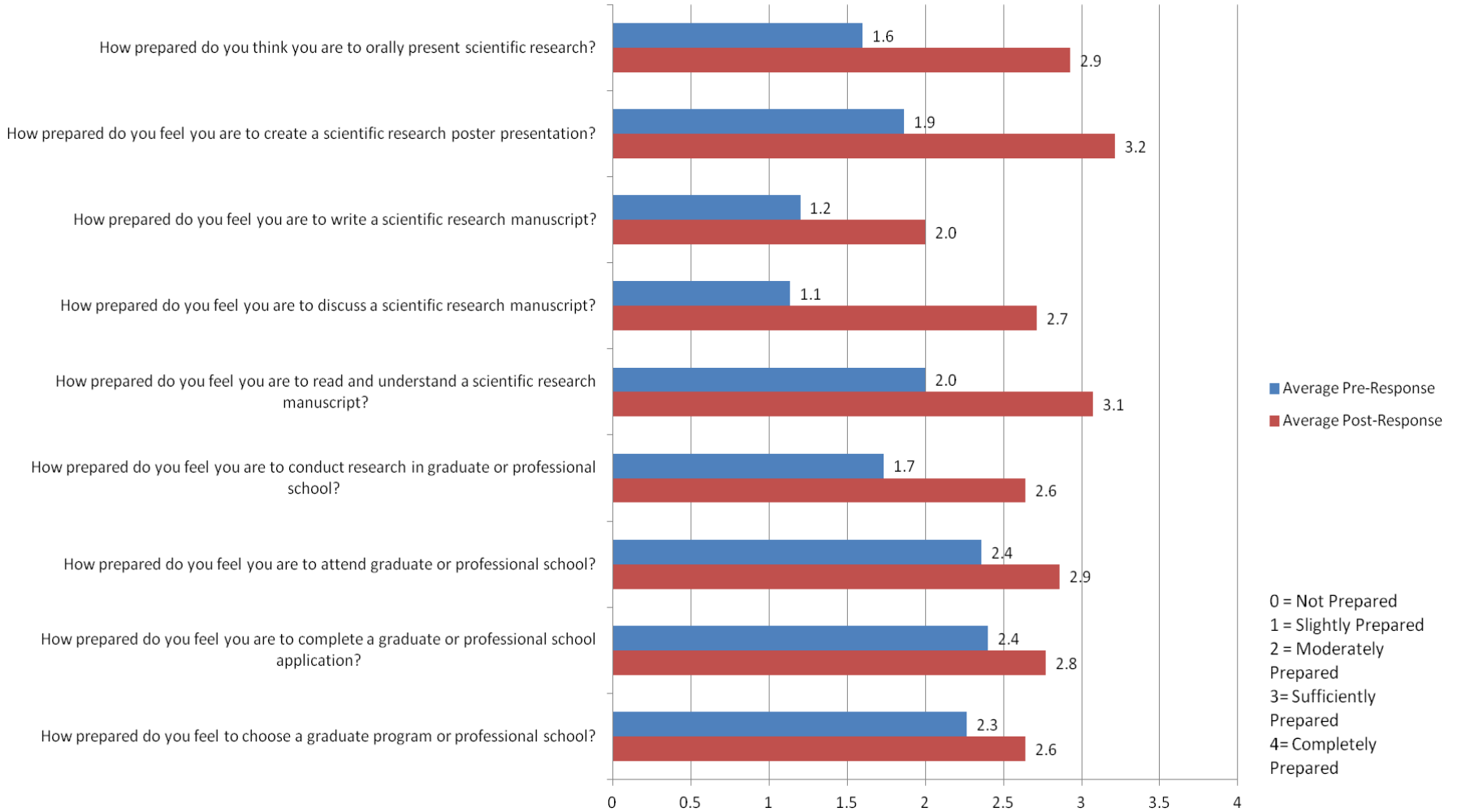
## ⦿ Preliminary Data Results for NM

- Pre-Survey  $N=16$ , Post-Survey  $N=15$

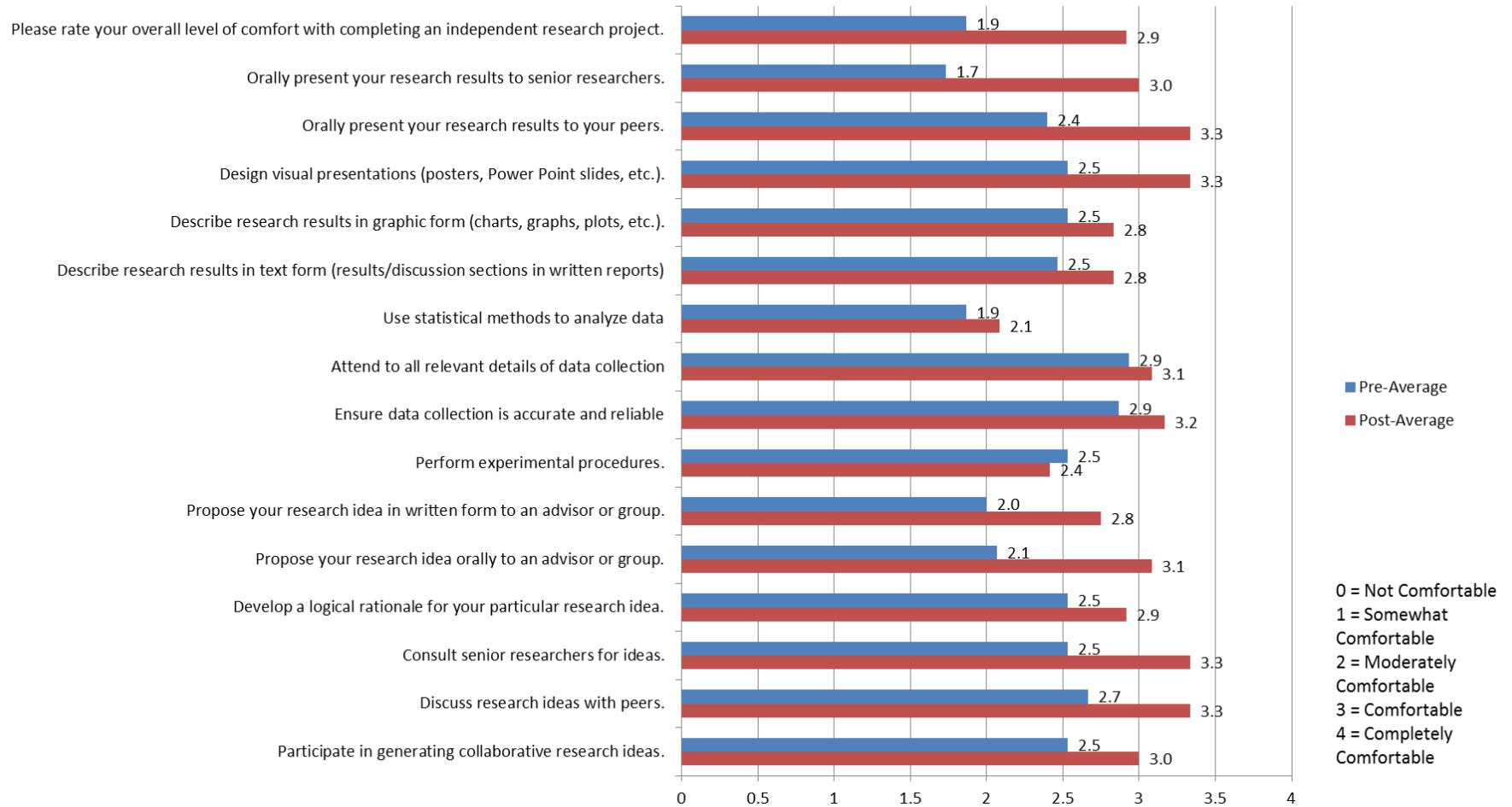
## What is the highest degree you eventually hope to earn?



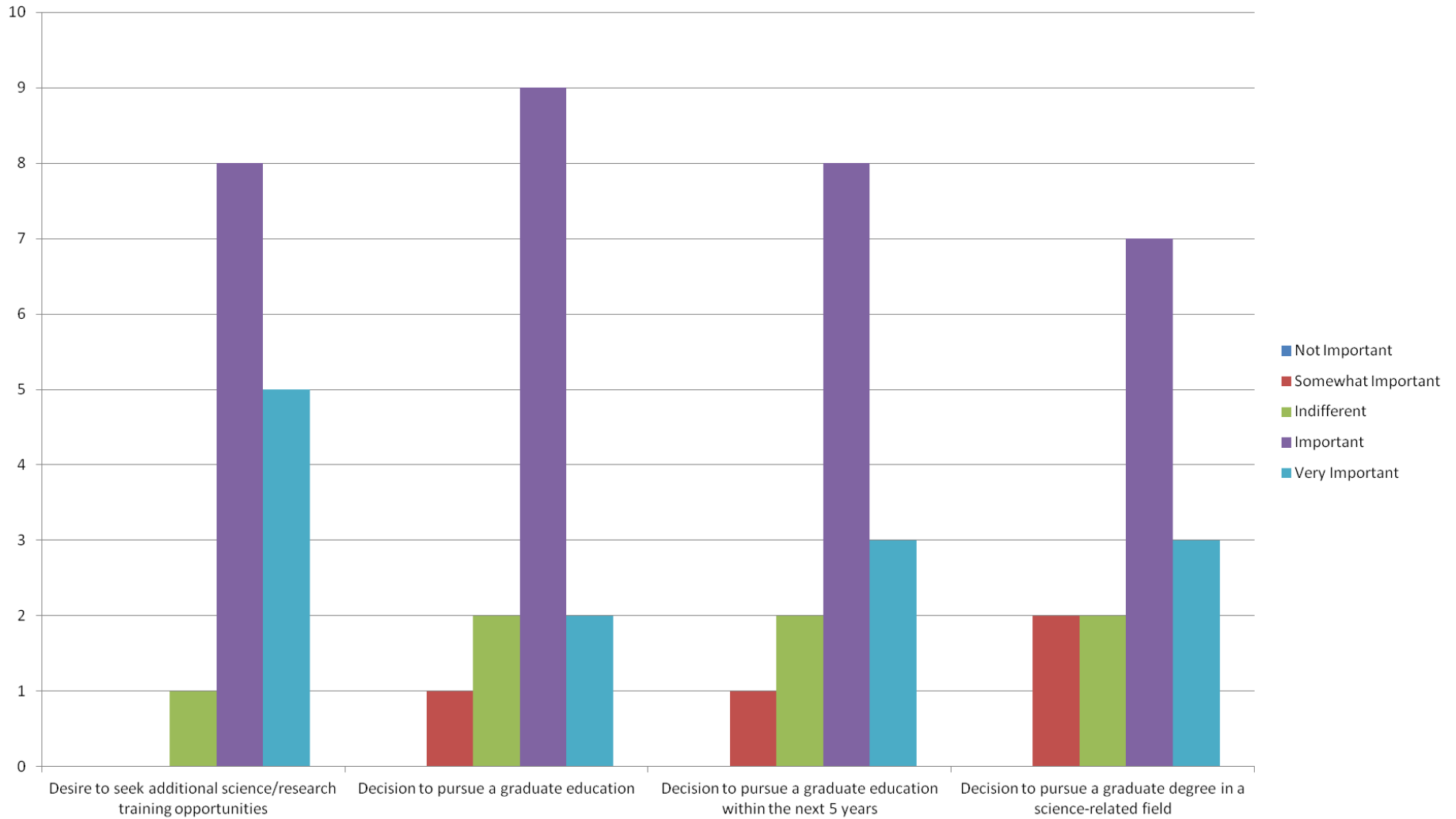
## Degree of preparedness to pursue a graduate education



## Level of comfort in performing research activities



## The importance of this summer's research experience on the following:



# Overall Summer Research Experience

- Majority of students were either satisfied (18%) or very satisfied (73%) with the overall research experience
- *“This summer program has given me invaluable experience with patient contact and the field of clinical research. Because of my participation in the Summer Research Experience, I feel more comfortable applying to graduate and professional schools, and more secure with my ability to perform research and learn in a professional setting.”*
- *“It [the research experience] has provided me laboratory training that will prepare me for a career in the biomedical sciences, whether I go into medicine or academia. It has helped me develop critical thinking skills, and working full time, I have developed a newfound autonomy when devising experiments and working in the lab.*

# Wyoming INBRE Assessment



INBRE Principal Investigators and Program Coordinators Meeting  
Hilton Washington DC/Rockville Executive Meeting Center,  
Rockville, Maryland  
October 4, 2011

PI Jun Ren, MD/PhD School of Pharmacy  
PC R. Scott Seville, PhD Zoology and Physiology  
University of Wyoming





# Wyoming INBRE Assessment

- Assessment of research infrastructure enhancement programs-
- Assessment of undergraduate programs-two components-
  - One-time event post-assessment
  - Undergraduate research experience assessment.
    - Twenty-six pre/post assessments were completed by participants of summer WY INBRE and EPSCoR programs.



# Preliminary Analysis

- student participants plan to pursue a graduate degree after completing their bachelors.
- unable to determine if these plans are a direct result of the summer INBRE experience.
- follow-up interviews will be conducted with participants to tease out this information.
- INBRE participants will also be tracked over the next 4 years in order to determine if they do end up pursuing a graduate degree.



# Preliminary Analysis

- Student participants (n=12) in the summer INBRE experience from UW/CC and LCCC completed the Field Experience Science Self-Efficacy Survey (FES<sup>2</sup>ES).
- Assesses the impact of student participation in both lab and field-based research experiences on science self-efficacy.
- Mentoring relationships have a positive impact on students' science self-efficacy and the likelihood that students want to continue with undergraduate research.
- Focus interviews with faculty and students to document the power of the mentoring relationship.



# What else did we learn from this process?

## ◎ **We can overcome technical issues**

- Umbrella IRB
  - IRB application submitted and approved at the “hub” (University of New Mexico)
  - Reciprocal IRB agreements at participating institutions in the MWC
- ◎ Regularly scheduled phone conferences and deadlines keep everyone on task!
- ◎ We have enhanced regional collaboration for undergraduate programs and assessment
  - We share the same goals
  - Everyone is looking for ideas
  - We can be each other’s consultants
- ◎ Process allowed freedom for local variation and adaption
- ◎ Thank you!