



# Identifying and Breaking Down Barriers to Participation in Undergraduate Research

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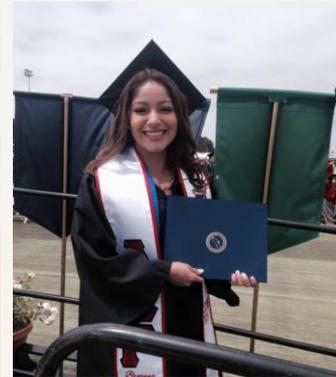
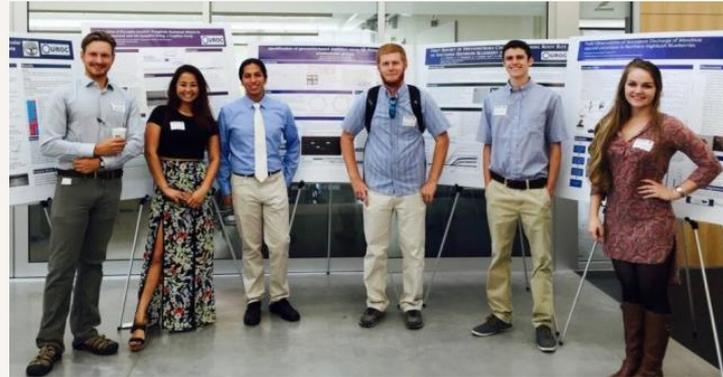
# Abstract

Despite the demonstrated benefits of undergraduate research for new majority students (students who are from traditionally underrepresented ethnicities, first-generation college students, students from lower-income families, or transfer students), they are still less likely to participate in or stay in research experiences. We conducted a mixed methods study to determine who has access to undergraduate research and what barriers to participation exist for new majority students. Findings demonstrate several types of barriers that students face in acquiring mentored research experiences in college. We present these findings along with strategies to creating more inclusive research environments.



# Agenda

- Full Inclusion
- Barriers to full inclusion
  - Research
- Game of Undergraduate Research
- Strategies to move towards more inclusive environments



# Full Inclusion

- Diversity vs. Full Inclusion
  - What would that look like?
  - Why don't we have it?



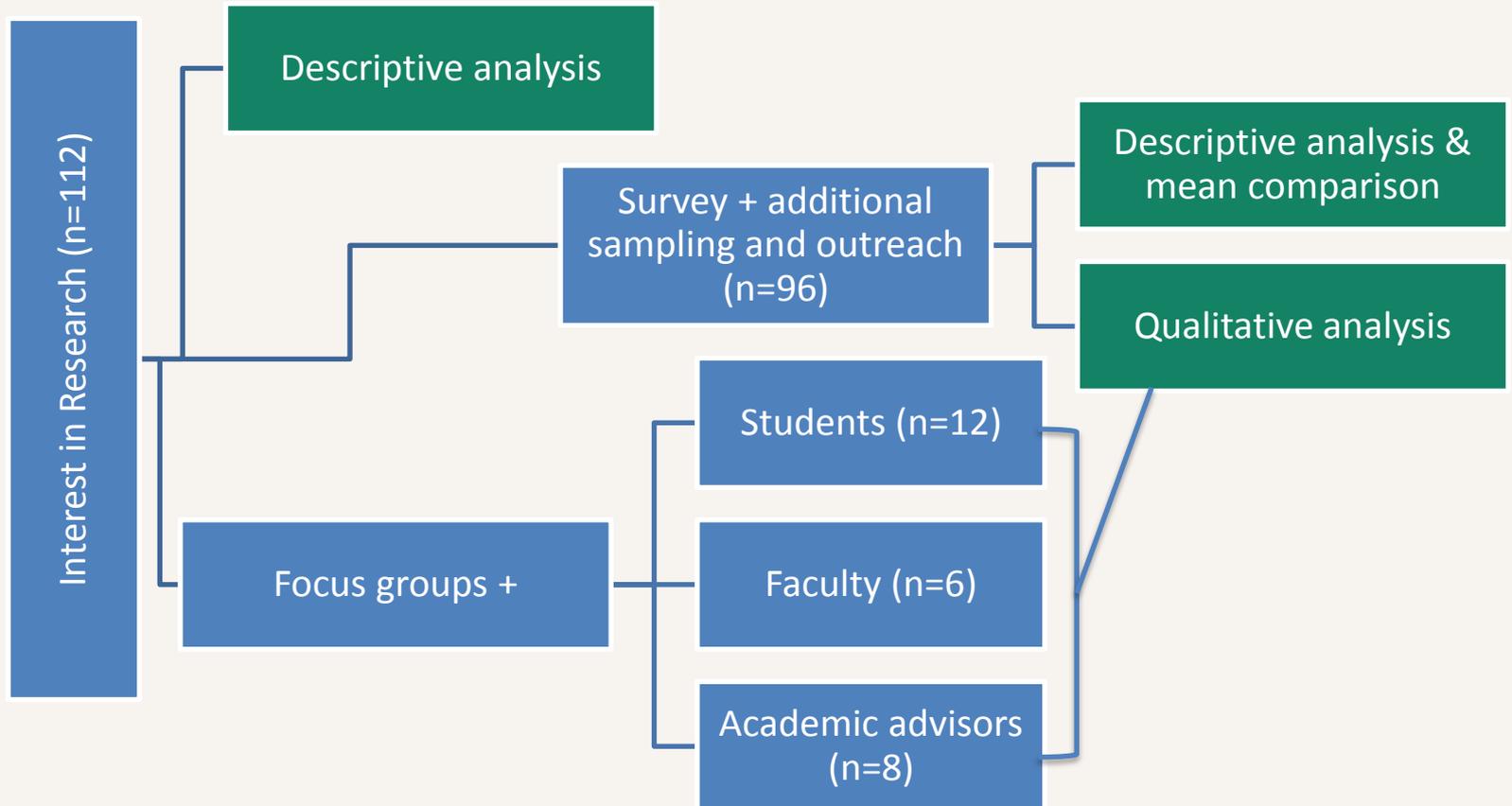
# Research on Barriers to Inclusion

- To understand barriers to participating in undergraduate research, a team of UROC staff and student researchers conducted a study
  - 2016-2018
  - Mixed Methods



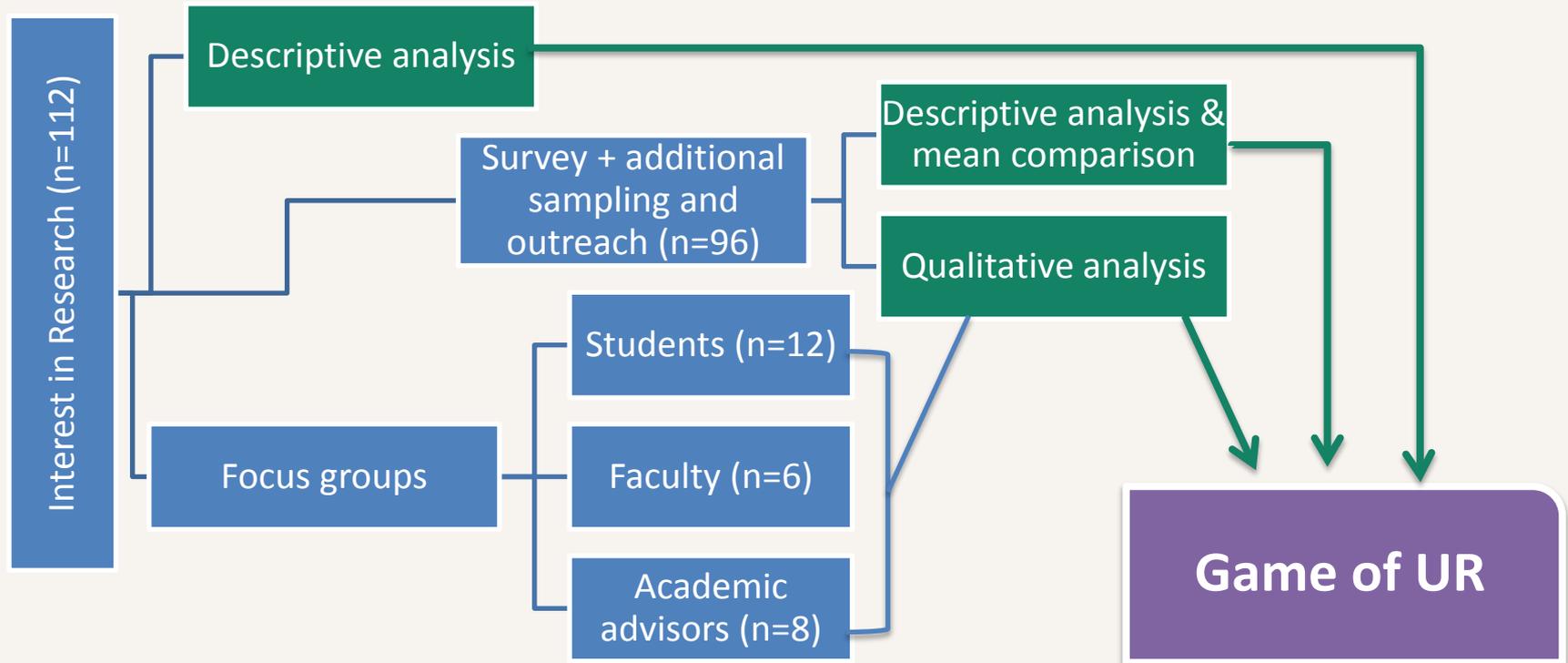
# Mixed Methods

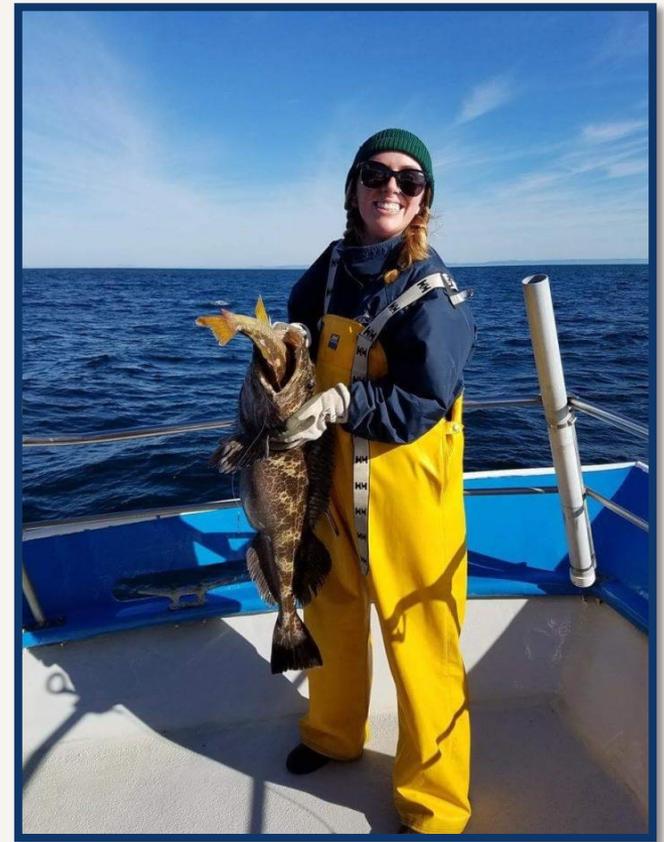
Utilized multiple sources of data collected in 2016-2018



# Mixed Methods

Utilized multiple sources of data collected in 2016-2018





Let's play a game based on some of our findings

# GAME OF UNDERGRADUATE RESEARCH



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# Game of UR

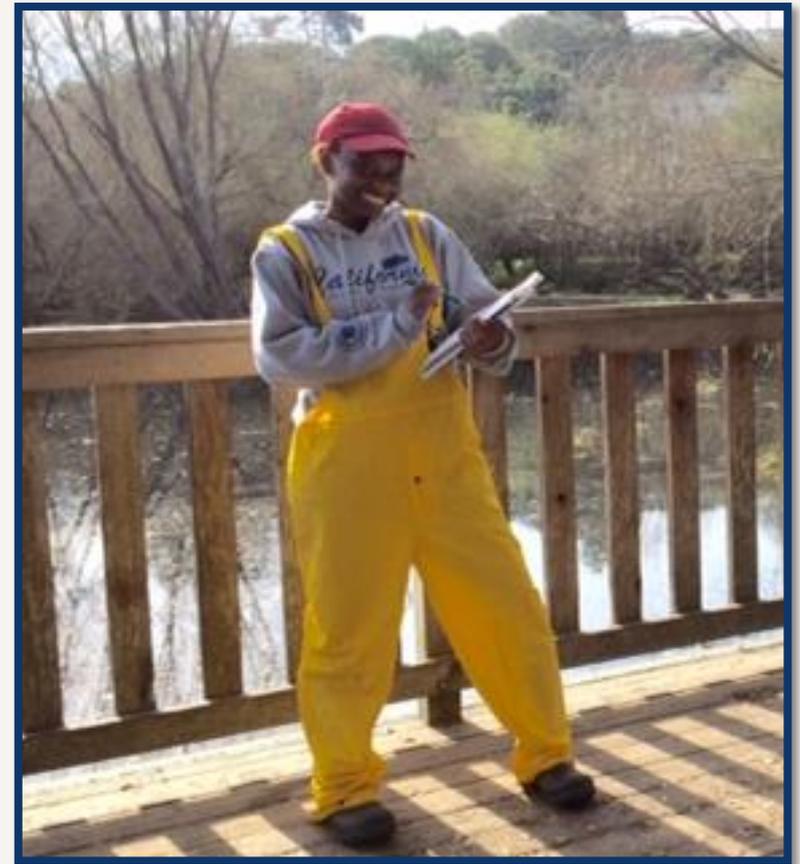
- Designed to walk you through scenarios that allow the exploration of the potential student experience within undergraduate research
- Your goal as a student is to obtain an undergraduate research experience and prepare for your future
- How to play:
  - Facilitator reads the scenario
  - Each player rolls to find out their outcome and read that outcome to the group
  - Record your outcome after each round (play at least 2 rounds in 10 minutes)



# Game of UR

- What did you notice while you were playing?
- How did your student do? How did that feel?
- How do you see this relating to students at your institution or not?





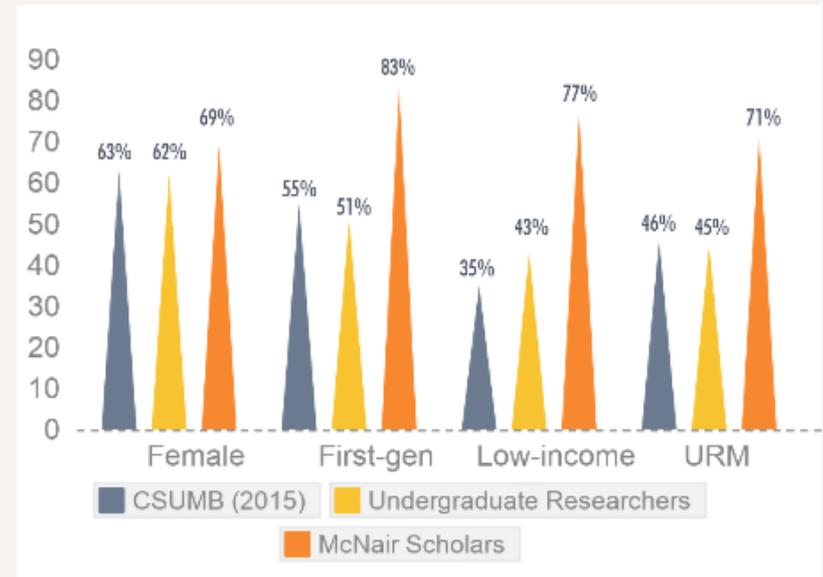
# BARRIERS RESEARCH RESULTS



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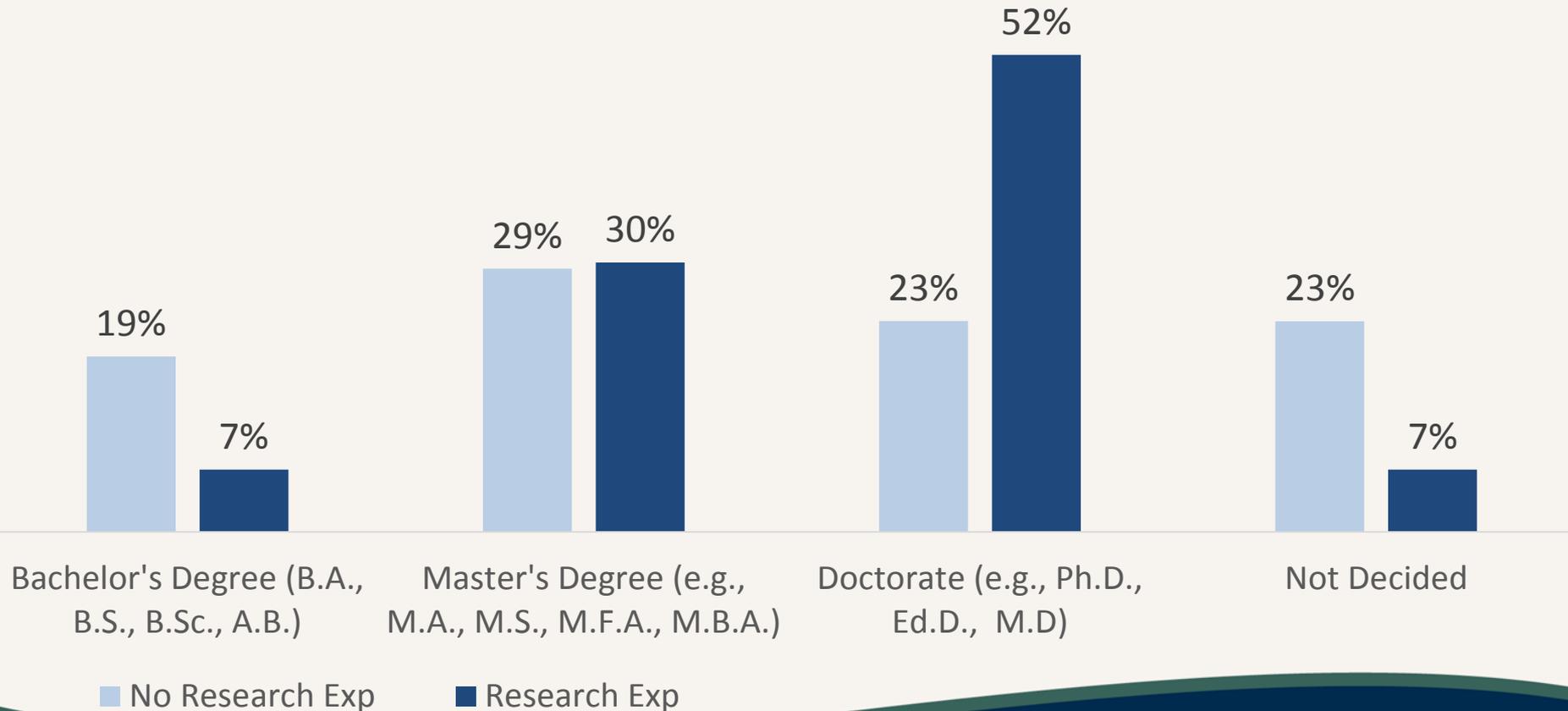
# Participation Results

- No significant or substantial differences in students who did not participate in undergraduate research in terms of:
  - Parental education
  - Race/Ethnicity
  - Gender
  - Pell eligibility
- Significantly more:
  - Upper division
  - Higher GPA students
  - STEM majors



# Educational Aspirations

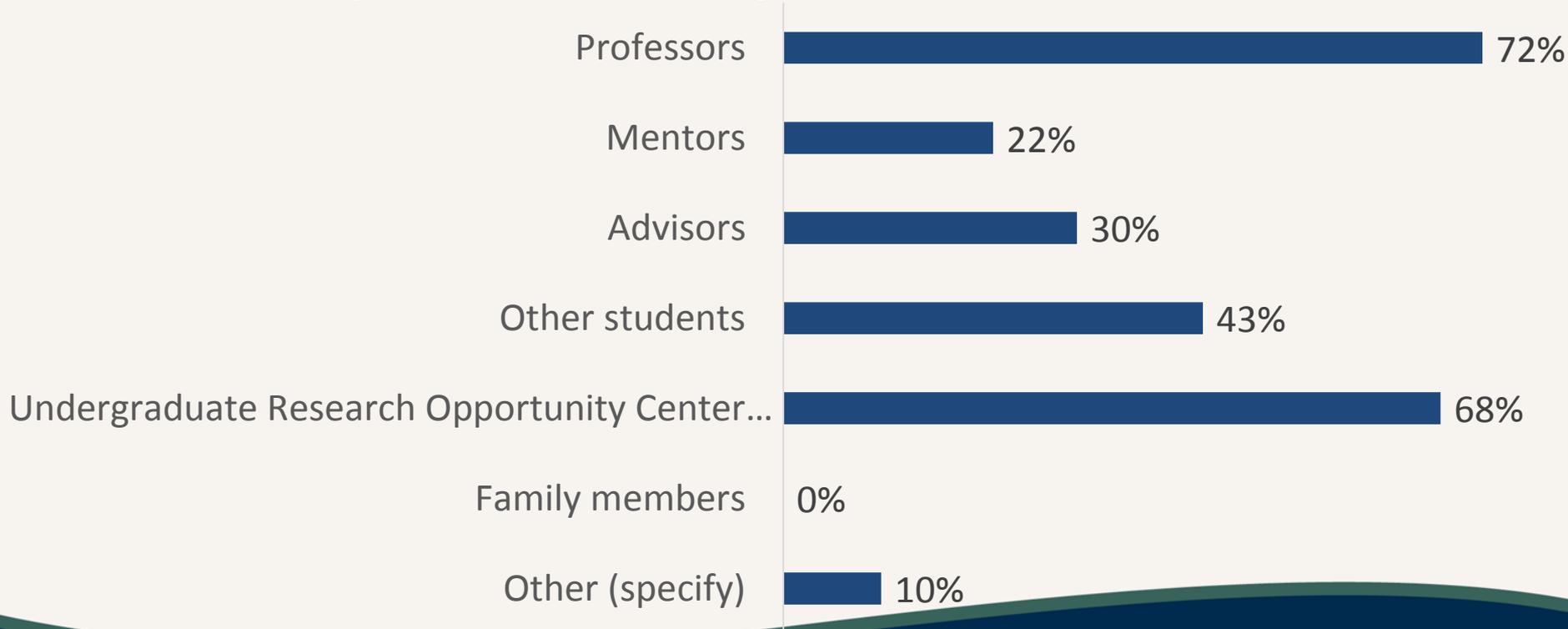
- Students who have research experience are significantly more likely to aspire to go to graduate school, especially at the doctoral level



# Learning about UR

- 76% have heard about UR

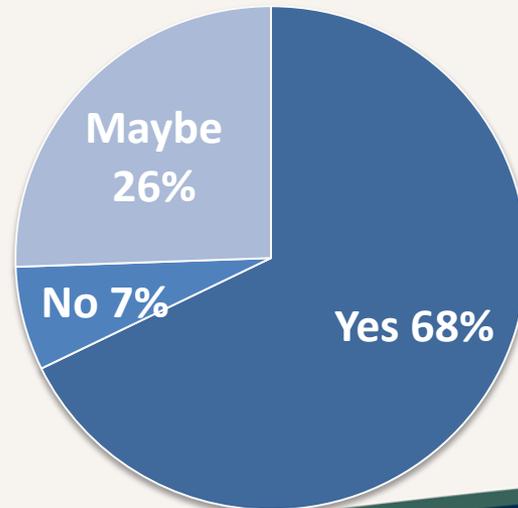
**Where did you hear about undergraduate research? Mark all that apply.**



# Aspirations

- The large majority believe that UR would be helpful in their future goals
- More education on why UR is helpful may be needed for students who are unsure

**Will UR be Helpful in Future Goals?**



# National Picture

- Though CSUMB's efforts to recruit and support more new majority students in research appears to be bringing us closer to full inclusion, nationally, patterns of unequal participation still persist
- Lower rates of participation in UR
  - First-generation
  - Low-income
  - Transfer
  - Adult learners
  - Students of color are all less likely to participate in UR (even at MSIs)
  - Pell eligible students



# Barriers to UR Qualitative Results

- Logistics
  - Timing, money, transfer students, application, not finding opportunities
  - Finding a mentor
- Exclusive environment
  - Feeling intimidated or like they don't belong
  - Research is just for students who:
    - In STEM majors
    - “Have their life figured out...”
- Cultural knowledge
  - Not knowing what research is, what opportunities exist, or its value
  - Changing goals and majors
  - Unsure of future goals and aspirations



# Faculty and Advisor Perspective

Faculty and staff's **beliefs about barriers to student** participation

- Students feeling as if they are not capable
- First generation
  - “First-gen students don’t know what research is or why it’s beneficial to them. Too esoteric to them”
- Quiet and reserved students aren’t asked to do research by professors
- STEM bias
  - “Social sciences and humanities don’t see how they fit in UROC. Think it doesn’t really apply to them”
  - “From a personal experience the current system feels like it is catered more to students who do have the privilege of coming from some sort of scientific background”





Breaking down the barriers

# MOVING TOWARD FULL INCLUSION



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# CSUMB Inclusion Interventions

- Found generally positive patterns of inclusion at CSUMB which are likely due to the campus diversity and programmatic interventions including:
  - Outreach
    - Partnerships on campus (TRiO, EOP)
    - [Transfer programs](#)
  - [Scaffolded support](#) for researchers
    - Funding for research
    - [Peer support](#)
    - [Writing Support](#)
  - Mentor [support and coordination](#)
    - Mentor matching



# Inclusive Strategies

- Connection to research
  - Foster sense of belonging
  - Building community in and out of the program
- Being explicit about [micro-aggressions](#)
  - Accept being called out
  - Understand others experiences
- Self-reflection
  - [Personally and programmatically](#)
- Equitable practices
  - Common application
  - Coalition for access
  - Course-based Undergraduate Research



# Moving Towards Inclusion

- Identify the barriers that you think are most relevant to your institution?
- What interventions do you already have that you could expand or improve?
- What new interventions could you explore?



# Discussion

- What barriers do want to address?
- How?



# Questions

