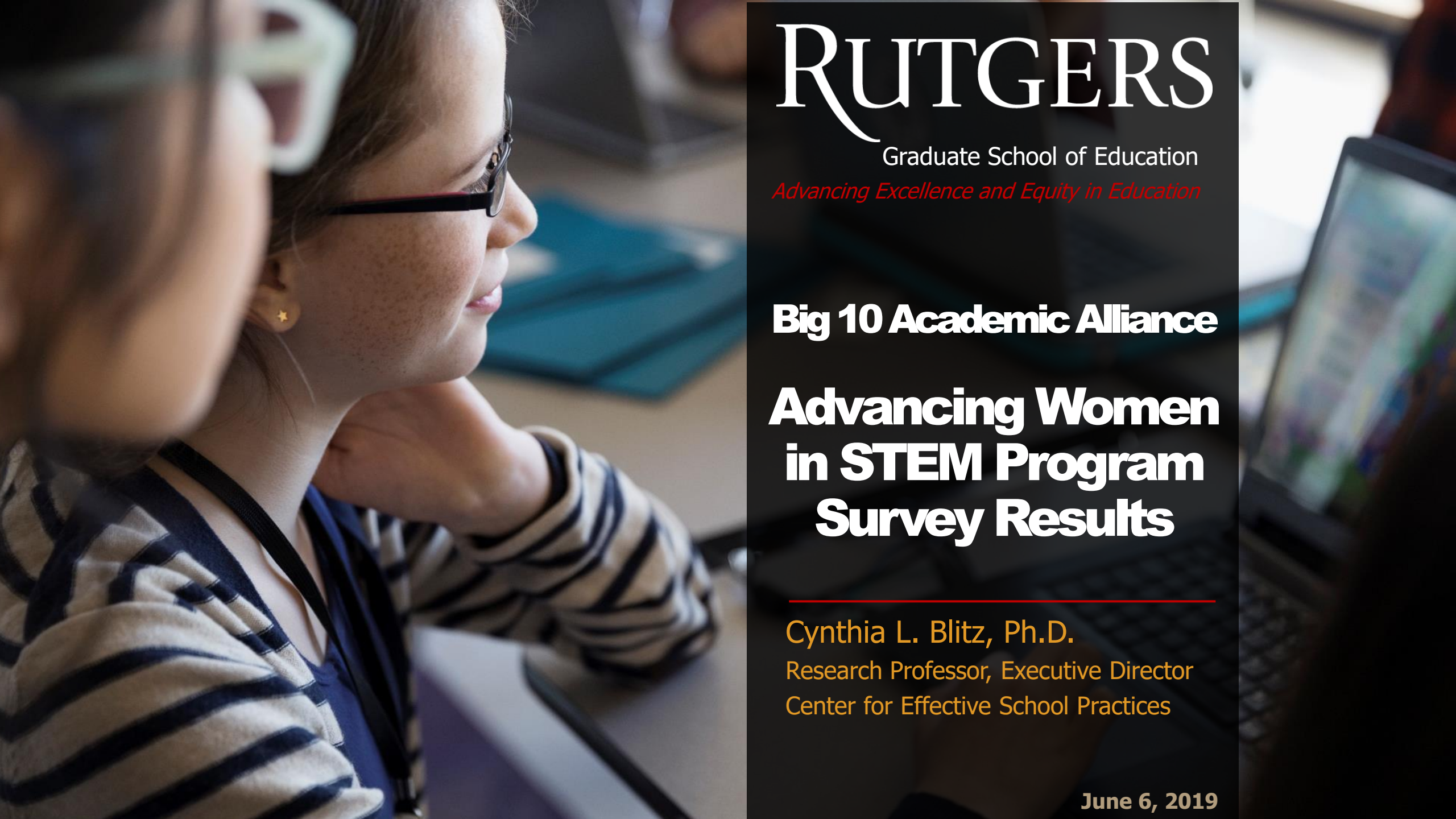

RUTGERS

Graduate School of Education

*Advancing Excellence and Equity in Education*

## Big 10 Academic Alliance

# Advancing Women in STEM Program Survey Results


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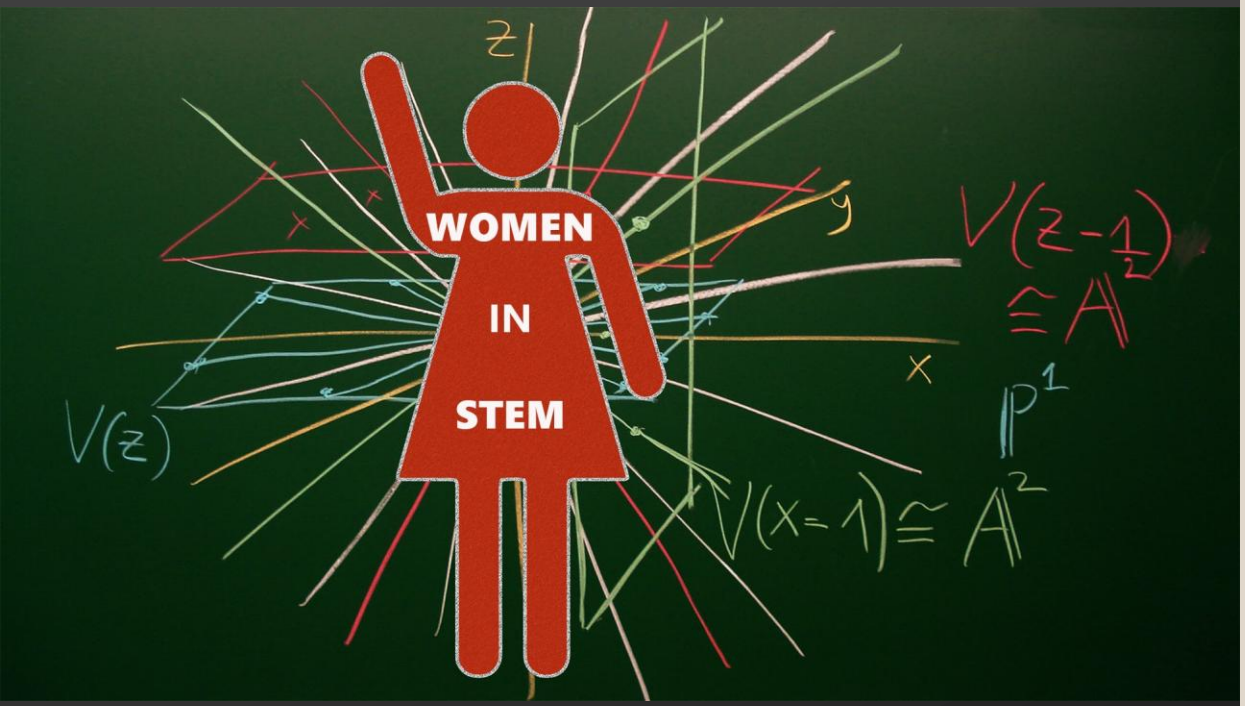
# Survey Discussion Goals

- Map the current landscape of survey respondents' undergraduate program offerings
- Focus on data from programs for UG
- Summarize recruitment and retention strategies
- Summarize other key program practices
- Identify common barriers and challenges reported by programs
- Generate thinking about program success and evidence-based practices

# During This Presentation Ask Yourselves …

1. What practices discussed in the earlier sessions are reflected in the survey responses?
2. How does my program information compare to the survey responses and to the practices discussed earlier?
3. What does a "successful" program mean to me?




# Survey Methodology

- Online survey (Spring 2019)
- 7 of 12 universities completed survey for minimum of 1 UG program
  - Received responses from 29 of the 35 (82%) programs *we* identified
- About half of respondents were admins (staff and faculty accounted for other half)
- Information was collected on
  - Survey respondents
  - Program background and gov structure
  - Program goals, participants and outreach
  - Program activities, strategies, outcomes
  - Program resources, expenditures, sustainability
- Data analysis was limited to frequency counts given small sample size
  (not able to estimate group differences)

# Mapping the Landscape

## What Programs Are Out There?

# Responses Indicate Diverse Program Configurations

- Many approaches to broadening participation in STEM and ways to characterize programs
  - Level of administration (e.g., university, college/school, department)
  - Discipline area of focus (e.g., computer science, engineering chemistry, etc.)
  - Primary goal (e.g., recruitment, retention, both)
  - Key strategies (e.g., research experiences, internships)

- Programs also vary in size, funding levels, governance structures, and history

# Program Size and Staffing

## Number of Participants Involved With the Program (*N = 29)*

| # of Participants | 2017-2018 | 2018-2019 |
|---|---|---|
| 25 or fewer | 24% | 24% |
| 26-50 | 14% | 07% |
| 51-100 | 10% | 17% |
| 101-150 | 14% | 17% |
| More than 150 | 38% | 34% |

*2 programs reported increased size from 2017-2018 to 2018-2019; 1 reported a decrease; 26 reported no change

## Number of participants involved with the program (*N = 29)*

- ✓ About 90% of UG programs reported having 1 to 2 faculty and 1 to 2 professional staff involved
- ✓ 96% of UG programs reported having 3 to 4 students involved

# Program Governance Structure and Duration

Where program administered within university (*N = 29)*

- ✓ University level (STEM) 14%
- ✓ College/school level 59%
- ✓ Department level 27%

How long has the program been operational (*N = 29)*

- ✓ 1 to 2 years 03%
- ✓ 3 to 5 years 17%
- ✓ More than 5 years 80%

- ✓ 42% (13) have an executive advisory board and an additional 16% (5) are creating one
- ✓ 67% (21) are affiliated with one or more student organizations on campus
- ✓ 54% (19) say they collaborate with the university's office serving underrepresented populations

# Overall Annual Operational Budget

| Program Annual Budget | Percent of Programs (*N = 29*) |
|---|---|
| Up to $50,000 | 14% |
| $50,000 to $100,000 | 03% |
| $100,000 to $250,000 | 17% |
| $250,000 to 500,000 | 21% |
| $500,000 to $750,000 | 10% |
| Don’t Know, Prefer not to answer | 35% |

# Primary and Secondary Funding Sources

University Funds

28%

2nd, 31%


Grant Support

28%

2nd, 10%

Gifts/ Sponsorships

17%

2nd, 21%


Student Fees

14%

Endowments

07%

2nd, 07%

*Other 6%, primary
*03%, N/A for secondary source of funding
*28%, Other for secondary source of funding

# Program Goals

Main goal of program by target audience (*N = 29)*

**Undergraduate Students, Focus of Program/Goal**

- ✓ Recruitment 14%
- ✓ Retention 34%
- ✓ Both 28%

**Other Students (Undergrads Plus*), Focus of Program/Goal**

- ✓ Recruitment 07%
- ✓ Retention 00%
- ✓ Both 17%

*Undergrads plus refers to programs that focused on undergraduate students along with other students – either graduate or high school

# Pause for Reflection …

**What conclusions can we draw about the programs from these data so far?**

- ✓ Variety of programs
- ✓ Been in operation long time
- ✓ Substantial funding, internal & external
- ✓ Focused on women and women of color
- ✓ Substantial focus on UGs
- ✓ Seem to be broadening participation

# Recruitment, Retention, Engagement, Support

## What's happening in these programs?

# Undergraduate Programs, Advancing Women and Women of Color in STEM

Primary high impact program practice (*N = 29)*

| | |
|---|---|
| ✓ Social support/peer support | 24% |
| ✓ Living-learning community | 21% |
| ✓ Research experience | 17% |
| ✓ Mentoring/faculty advising | 07% |
| ✓ Internships | 07% |
| ✓ Academic-related | 07% |
| ✓ Other | 10% |

Second most important activity used in program to support participants

| | |
|---|---|
| ✓ Mentoring/advising | 34% |
| ✓ Professional development | 28% |
| ✓ Social support/peer support | 21% |

# Recruitment Activities

Most Effective Recruitment Tool (*N = 29*)

| | |
|---|---|
| ✓ Outreach within own university/unit | 59% |
| ✓ Referral (other colleagues/programs) | 13% |
| ✓ Mailing lists / social media | 10% |
| ✓ Outreach to area high schools | 10% |
| ✓ Peer-to-peer | 07% |

Recruitment Plan for Students from Underrepresented Populations

- ✓ Outreach to university programs/organizations that serve underrepresented populations
- ✓ Cross-departmental collaborations (e.g., on-campus events, outreach to program directors)
- ✓ Outreach to local high schools and pre-college programs
- ✓ Social media

# Recruitment Challenges

"We need to find more effective ways to bring women and especially women of color into engineering both as native students and as transfer students"

Recruitment expansion

"We would like to increase the number of applications. Need strong marketing university-wide"

Marketing/outreach

"Need to discuss how to use these programs nationally to broaden participation rather than just competing each year for the same students

# Candidate Selection Criteria

Criteria used to select candidates (open-ended)

- ✓ Academic credentials
- ✓ Interest in STEM
- ✓ Faculty recommendation
- ✓ Membership in underrepresented groups

Some programs require a student to apply and/or express interest, others might be automatic enrollment and/or specific outreach to students that faculty and others think might be a fit for the program.

Some specific examples of items stated within survey: (a) Demographics and academic interest (appeared numerous times); (b) Academic credentials; (c) Faculty review (either incoming or internal); (d) Have to have a faculty mentor lined up; (e) Faculty as an advocate

# Program Monitoring and Evaluation

Does program collect and analyze data for evaluation (*N = 29)*

| | |
|---|---|
| ✓ **Yes** | **83%** |
| ✓ No | 10% |
| ✓ Working on it | 03% |
| ✓ Don’t know | 03% |

# Share Out

- What issues and practices discussed in the earlier sessions are reflected in the survey responses?
- How does my program information compare to the survey responses and to the issues and practices discussed earlier?

# Challenges and Barriers

## What are Programs Up Against?

# Challenges and Barriers

Major challenges/barriers program has been experiencing
(multiple-response, N=41)

| | |
|---|---|
| ✓ Insufficient funding | 31% (9) |
| ✓ Insufficient data collection and/or program monitoring | 21% (6) |
| ✓ Lack of institutional support | 14% (4) |
| ✓ Lack of leadership support | 14% (4) |
| ✓ Lack of faculty interest | 14% (4) |
| ✓ Lack of space for program activities | 10% (3) |
| ✓ Lack of time for program activities | 07% (2) |
| ✓ Insufficient publicity | 07% (2) |
| ✓ Lack of student interest | 03% (1) |
| ✓ Lack of postdoctoral fellow interest | 03% (1) |
| ✓ Inadequate material resources | 03% (1) |
| ✓ Inadequate professional development | 03% (1) |
| ✓ Other: systematic integration within the university | 10% (3) |

# Quotes re Challenges

> Institutionalized programs, additional funding, additional staffing, faculty involvement

Institutionalization, funding

> Summer research programs across the country serve the same small population of students. We're exchanging students with other schools each summer, not sure this is the best approach to broadening participation.

Better coordination of efforts

> Attempting to promote real systemic change, rather than working around the edges

Systemic change

# More Quotes on Challenges

"One of the most fundamental challenges we face is how to make our program more welcoming to women of color and students in the `.GTBQ community

Program culture

"We need a stable source of funding.

Stable funding

"Our program is primarily focused on 1st-year students. Once they leave our rich and supportive community, they are sort of on their own. It would be nice to find ways to support women in STEM (programmatically) for their full time here

Student support beyond freshman year

# Desired Supports for Program Growth

## Kind of support that would be most helpful to grow the program

- ✓ Continuous financial support (mentioned the most)
- ✓ Dedicated faculty and staff members
- ✓ More coordinated efforts across Big 10 and nationally to attract students (as opposed to competing)
- ✓ Extending support to students through their entire academic year

## Highest #s of responses focused on increased need for continued and/or increased institutional support, specifically

- ✓ Financial support for increasing # of students, for increasing personnel, for additional resources including space, student travel, program marketing (need a stable funding base)
- ✓ To be more valued from all levels of the institution including faculty (interest and involvement)
- ✓ To reach more students within university

- Practices are consistent with those considered to be "high impact" in literature
- Many stated challenges are linked to how well the program has been institutionalized
- Connection between understanding the mechanisms of program impacts, improving and growing program, and advocating for program support
- Potential value in thinking collectively about shared metrics and data-based practices

# Summary

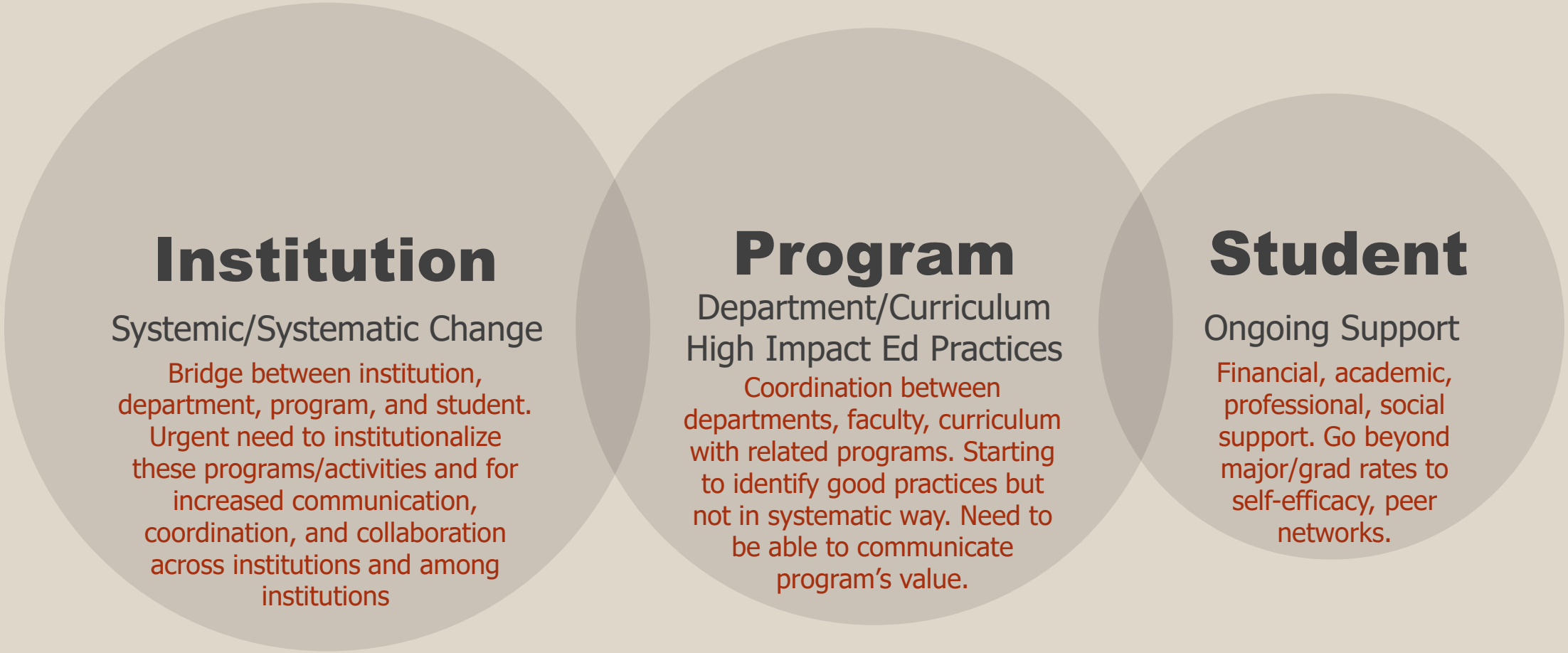
Key Findings and Future Directions

# Moving Forward

## Broadening Participation and Having Impact

# Complexity of Broadening Participation in STEM

Communication, Coordination, and Collaboration Key to Effort vs. Silos that Often Exist



# Complexity of Broadening Participation in STEM

Communication, Coordination, and Collaboration Key to Effort vs. Silos that Often Exist

## Institution

Systemic/Systematic Change

Bridge between institution, department, program, and student. Urgent need to institutionalize these programs/activities and for increased communication, coordination, and collaboration across institutions and among institutions

## Program

Department/Curriculum
High Impact Ed Practices

Coordination between departments, faculty, curriculum with related programs. Starting to identify good practices but not in systematic way. Need to be able to communicate program's value.

## Student

Ongoing Support

Financial, academic, professional, social support. Go beyond major/grad rates to self-efficacy, peer networks.

# What Has Been Happening in the Field?

## What Do We Know? What Should We Consider?

### Institution

- STEM as institutional imperative (vs departmental)[1]
- Institutional accountability[2]
- Keck/PKAL model for institutional system change[1]
- CIC WISE Initiative[3]
- Institutions are "sitting on piles of data" – need to make good use of those data to improve practice

### Program

- High impact educational practices (w/i each must systematically assess impact)
- Research, learning communities, service learning, internships, writing-intensive courses, common intellectual experiences[5]
- TIDES – cultural sensitivity and advanced pedagogy[5]
- AAU – pedagogical reform, scaffolding, culture change

### Student

- Financial, academic, professional, and social support – there are SIPs that address one, more, or all of these[6]
- Enhance knowledge & tech skills, facilitate networks, navigate transitions, academically integrated[6]
- Consider academic success goals, psychosocial goals[7]

1. Elrod & Kezar (2017); 2. Estrada et al (2016); 3. Bowcock (2000); 4. Banta, Suskie, Walvoord (2015); 5. Mack et al. (2015); 6. Dyer-Bar (2014); 7. Ashley et al. (2017)

# Final Pause for Reflection
# What Does Success Mean For You?

- What does success mean for you?
- How will you know it when you see it?
- What can this group do to help?

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# Thank You

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