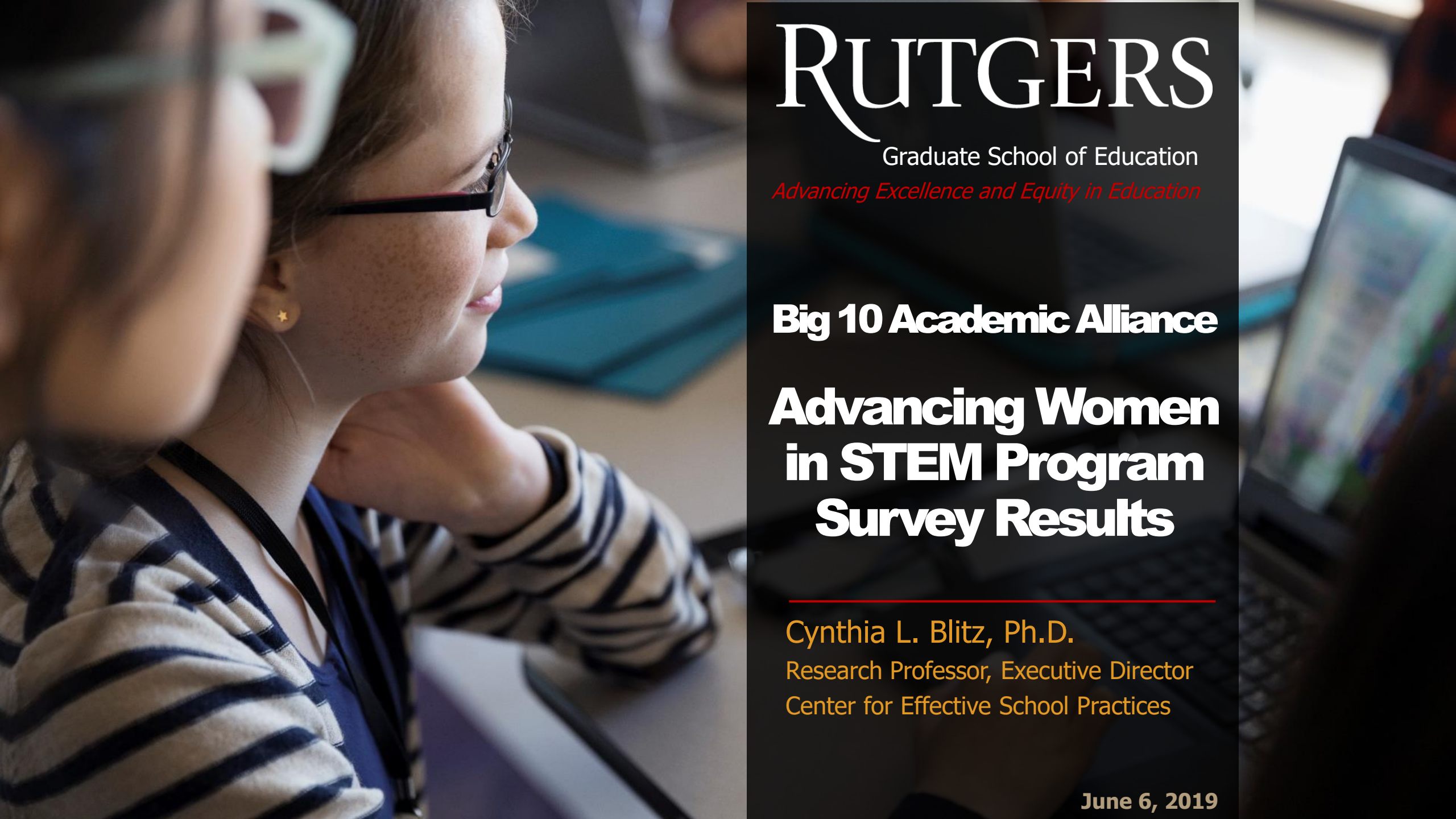




RUTGERS

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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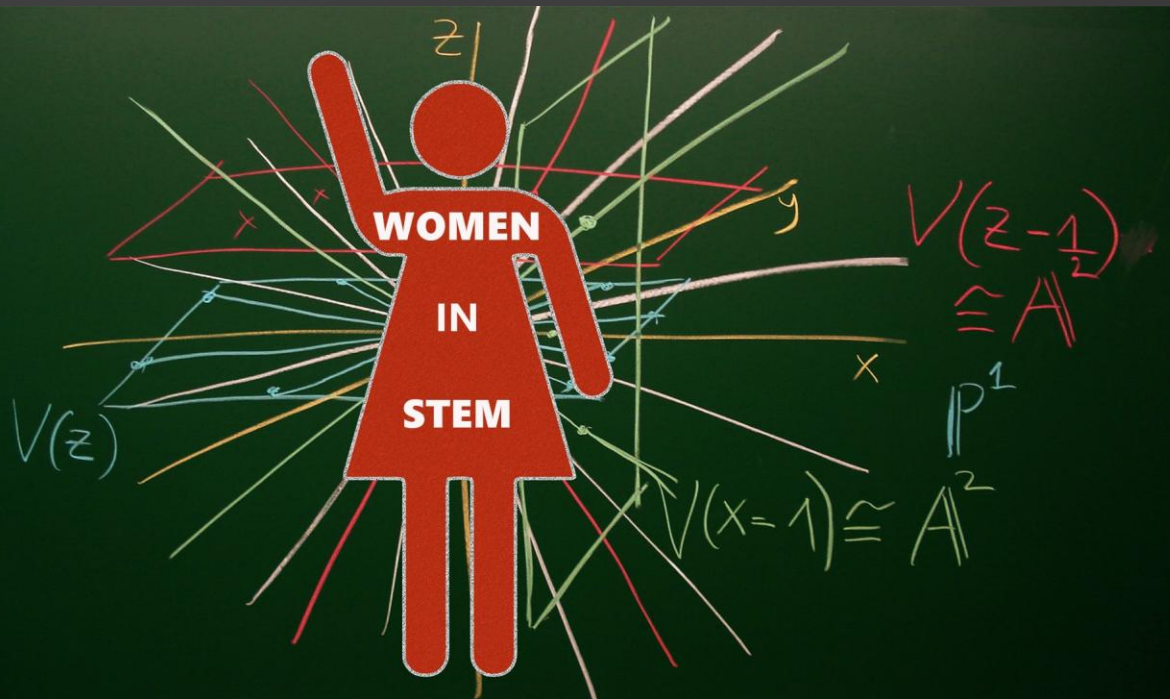
Survey Discussion Goals

- 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 Yourself ...

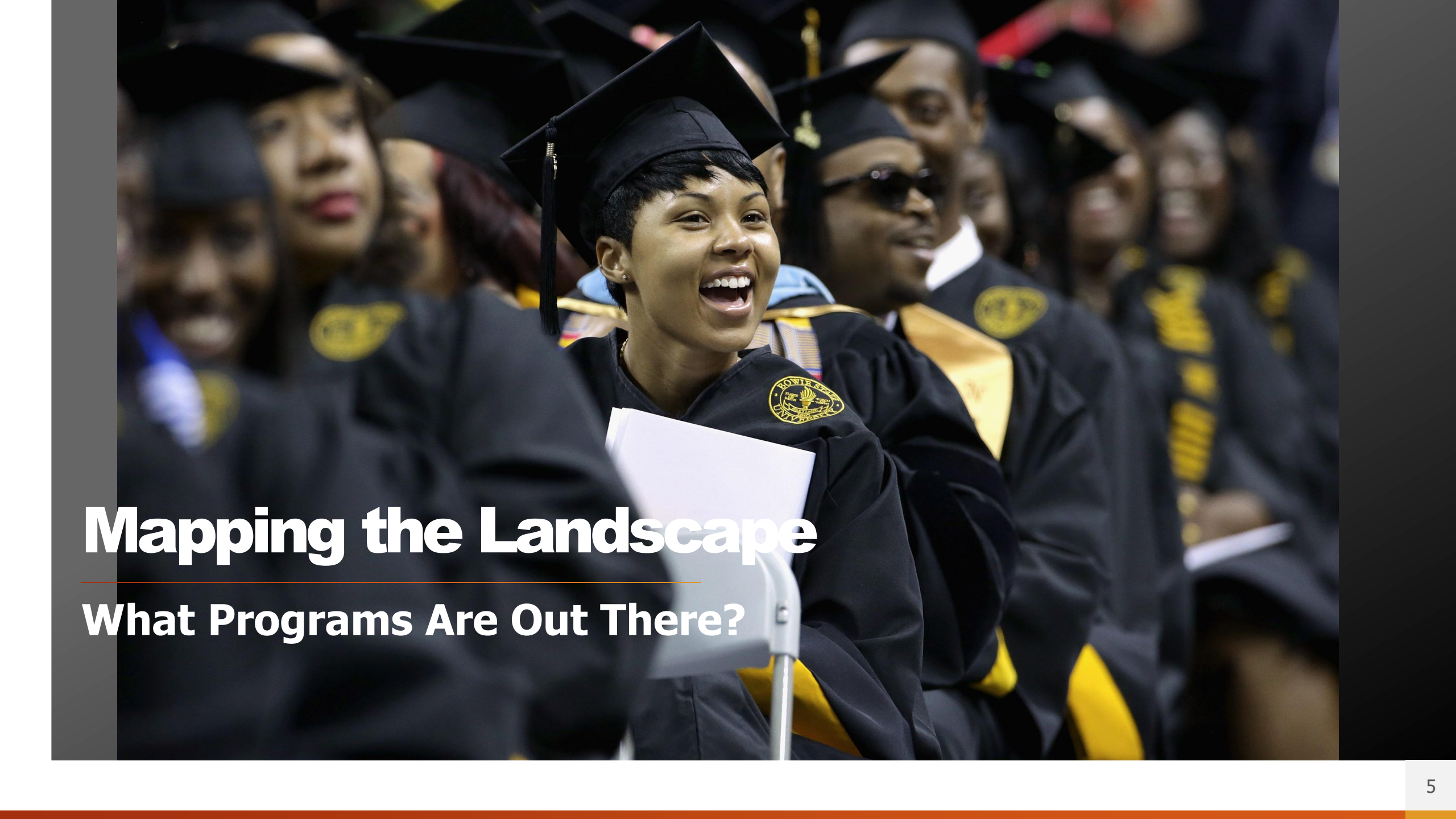
- 1. What practices discussed in the earlier sessions are reflected in the survey responses?**
- 2. How does my program information compare to the survey responses and to the practices discussed earlier?**
- 3. What does a “successful” program mean to me?**





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 (<i>N</i> = 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

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.

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What Has Been Happening in the Field?

What Do We Know? What Should We Consider?

Institution

- STEM as institutional imperative (vs departmental)¹
- Institutional accountability²
- Keck/PKAL model for institutional system change¹
- CIC WISE Initiative³
- 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 experiences⁵
- TIDES – cultural sensitivity and advanced pedagogy⁵
- AAU – pedagogical reform, scaffolding, culture change

Student

- Financial, academic, professional, and social support – there are SIPs that address one, more, or all of these⁶
- Enhance knowledge & tech skills, facilitate networks, navigate transitions, academically integrated⁶
- Consider academic success goals, psychosocial goals⁷

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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