NPRLG Common Assessment 2021 Workshop - History, Update, Next Steps
History
History - 2016 - In-person workshop

Pre-workshop survey

Check ideas of interest to you, and please add others ideas you may have to this list.

- Common application deadlines: 20 (60.6%)
- Common applications: 13 (39.4%)
- Common assessment instruments: 23 (69.7%)
- Common professional development tools/resources: 23 (69.7%)
- Option 5: 0 (0%)
- Other: 6 (18.2%)
History - 2016 - In-person workshop

- Session on (common) assessment practices + Discussions
- Workshop outcomes:
  - Agreed motivation to do common assessment:
    - Reduce administrative load on site organizers
    - Provide NSF collective data about REU site impact on students
  - Committee to explore common assessment tools and platforms
History - 2017 - Subcommittee work

Explored

Tool (questions):
Researched available surveys and gathered NPRLG input

Platform (online portal):
Researched existing options and possibility of building one
Evaluation Tools: Undergraduate Research Student Self-Assessment (URSSA)

URSSA is an online survey instrument for use in evaluating student outcomes of undergraduate research experiences in the sciences. The URSSA survey items have been thoroughly tested and URSSA is now available for returning and new users!

To learn more about URSSA, read the FAQs.
## Section 1 - Base

### Research Participant Information and Consent Form

## Section 2 - Base

### Thinking and Working Like a Scientist

**Q1**

How much did you GAIN in the following areas as a result of your most recent research experience?

<table>
<thead>
<tr>
<th></th>
<th>no gains</th>
<th>a little gain</th>
<th>moderate gain</th>
<th>good gain</th>
<th>great gain</th>
<th>not applicable</th>
</tr>
</thead>
</table>

2.1 Analyzing data for patterns

2.2 Figuring out the next step in a research project
History - 2018 - Trial run

- 12 REU sites
- URSSA questions (post-program Mentees and Mentors)
- CIMER platform

Generally positive experience with CIMER and URSSA, but substantial technical issues

Feedback provided to CIMER
History - 2019/2020 - Implementation

2019:

- Gap year (no funding obtained)

2020:

- APS grant proposal to NSF obtained (in-person workshop + CIMER use)
- Funding for all NPRLG sites that opt in, all three years of the grant
- Switched first CIMER run to 2021 due to reduced programs (COVID)
2021 - First URSSA/CIMER run

31 sites signed up

Pre-program survey:

Demographics (+ Custom questions for each site)
Mentees (n=77) and Mentors (n=26)

Post-program survey:

Demographics + URSSA questions (+ Custom questions for each site)
Mentees (n=184) and Mentors (n=71)
2021 Results
Post-program survey - Mentees

Previous experience - Summer

Number of times participated in Summer research:

- None: 20%
- 1: 40%
- 2: 25%
- 3 or more: 5%
Post-program survey - Mentees

Race

- **White**: 65.8%
- **Hispanic/Latino**: 77.4%
- **Not Hispanic/Latino**: 1.7%
- **Prefer not to report**: 4.7%
- **Asian**: 14.0%
- **Black**: 9.8%
- **Native American**: 1.6%
- **Other**: 4.1%
- **Prefer not to report**: 4.1%
Post-program survey - Mentees

Sex/Gender

- Prefer not to report: 1.1%
- Non-binary: 0.5%
- Transgender: 1.1%
- Male: 46.9%
- Female: 50.3%
Post-program survey - Mentees

Survey sections

1. Thinking and Working Like a Scientist
2. Personal Gains Related to Research Work
3. Skills
4. Attitudes and Behaviors Towards Research
5. Satisfaction

Overall positive outcomes in 5 categories, with some nuances
Post-program survey - Mentees

Thinking and Working Like a Scientist
Post-program survey - Mentees

Thinking and Working Like a Scientist

Percent of respondents

Ability to think and work like a scientist

Before REU  After REU

None  A little  Moderate  Good  Great
## Post-program survey - Mentees

### Thinking and Working Like a Scientist

2. How much did you GAIN in the following areas as a result of your most recent research experience?

<table>
<thead>
<tr>
<th></th>
<th>1: no gains</th>
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<th>4: good gain</th>
<th>5: great gain</th>
<th>6: not applicable</th>
<th>Mean</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1. Analyzing data for patterns</td>
<td>2.8%</td>
<td>9.9%</td>
<td>16.0%</td>
<td>24.9%</td>
<td>43.1%</td>
<td>3.3%</td>
<td>4.1</td>
<td>181</td>
</tr>
<tr>
<td>2.2. Figuring out the next step in a research project</td>
<td>0.0%</td>
<td>7.2%</td>
<td>12.2%</td>
<td>35.4%</td>
<td>44.2%</td>
<td>1.1%</td>
<td>4.2</td>
<td>181</td>
</tr>
<tr>
<td>2.3. Problem solving in general</td>
<td>0.6%</td>
<td>6.6%</td>
<td>11.6%</td>
<td>31.5%</td>
<td>48.1%</td>
<td>1.7%</td>
<td>4.2</td>
<td>181</td>
</tr>
<tr>
<td>2.4. Formulating a research question that could be answered with data</td>
<td>3.9%</td>
<td>9.9%</td>
<td>22.7%</td>
<td>33.1%</td>
<td>25.4%</td>
<td>5.0%</td>
<td>3.8</td>
<td>181</td>
</tr>
</tbody>
</table>

Similar for the 4 other items not shown
# Post-program survey - Mentees

## Thinking and Working Like a Scientist

2. How much did you GAIN in the following areas as a result of your most recent research experience?

<table>
<thead>
<tr>
<th>Area</th>
<th>1: no gains</th>
<th>2: a little gain</th>
<th>3: moderate gain</th>
<th>4: good gain</th>
<th>5: great gain</th>
<th>6: not applicable</th>
<th>Mean</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyzing data for patterns</td>
<td>2.8%</td>
<td>9.9%</td>
<td>16.0%</td>
<td>24.9%</td>
<td>43.1%</td>
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<td>4.1</td>
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<td>0.0%</td>
<td>7.2%</td>
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<td>1.1%</td>
<td>4.2</td>
<td>181</td>
</tr>
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<td>Problem solving in general</td>
<td>0.6%</td>
<td>6.6%</td>
<td>11.6%</td>
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<td>1.7%</td>
<td>4.2</td>
<td>181</td>
</tr>
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<td>9.9%</td>
<td>22.7%</td>
<td>33.1%</td>
<td>25.4%</td>
<td>5.0%</td>
<td>3.8</td>
<td>181</td>
</tr>
</tbody>
</table>

Similar for the 4 other items not shown
## Personal Gains Related to Research Work

### Rate your overall mindset towards research (Before REU and After REU)

<table>
<thead>
<tr>
<th>Not favorable</th>
<th>A little favorable</th>
<th>Moderately favorable</th>
<th>Favorable</th>
<th>Greatly favorable</th>
</tr>
</thead>
</table>

## Skills

### Rate your overall research skills (Before REU and After REU)

<table>
<thead>
<tr>
<th>None</th>
<th>A little</th>
<th>Moderate</th>
<th>Good</th>
<th>Great</th>
</tr>
</thead>
</table>

## Attitudes and behaviors as a researcher

### Rate our attitudes and behaviors towards research (Before REU and After REU)

<table>
<thead>
<tr>
<th>Very negative</th>
<th>Negative</th>
<th>Neutral</th>
<th>Positive</th>
<th>Very positive</th>
</tr>
</thead>
</table>
### Post-program survey - Mentees

#### Personal Gains Related to Research Work

5. How much did you GAIN in the following areas as a result of your most recent research experience?

<table>
<thead>
<tr>
<th>Area</th>
<th>1: no gains</th>
<th>2: a little gain</th>
<th>3: moderate gain</th>
<th>4: good gain</th>
<th>5: great gain</th>
<th>6: not applicable</th>
<th>Mean</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1. Confidence in my ability to do research</td>
<td>1.7%</td>
<td>7.8%</td>
<td>10.0%</td>
<td>27.2%</td>
<td>53.3%</td>
<td>0.0%</td>
<td>4.2</td>
<td>180</td>
</tr>
<tr>
<td>5.2. Confidence in my ability to contribute to science</td>
<td>0.6%</td>
<td>10.0%</td>
<td>13.3%</td>
<td>24.4%</td>
<td>51.7%</td>
<td>0.0%</td>
<td>4.2</td>
<td>180</td>
</tr>
<tr>
<td>5.3. Comfort in discussing scientific concepts with others</td>
<td>1.1%</td>
<td>6.1%</td>
<td>13.9%</td>
<td>36.1%</td>
<td>42.8%</td>
<td>0.0%</td>
<td>4.1</td>
<td>180</td>
</tr>
<tr>
<td>5.4. Comfort in working collaboratively with others</td>
<td>3.3%</td>
<td>6.7%</td>
<td>20.0%</td>
<td>28.3%</td>
<td>38.9%</td>
<td>2.8%</td>
<td>4.0</td>
<td>180</td>
</tr>
</tbody>
</table>

Similar for the 5 other items not shown
# Post-program survey - Mentees

## Skills

8. How much did you GAIN in the following areas as a result of your most recent research experience?

<table>
<thead>
<tr>
<th>Area</th>
<th>1: no gains</th>
<th>2: a little gain</th>
<th>3: moderate gain</th>
<th>4: good gain</th>
<th>5: great gain</th>
<th>6: not applicable</th>
<th>Mean</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1. Writing scientific reports or papers</td>
<td>5.6%</td>
<td>15.7%</td>
<td>15.2%</td>
<td>34.8%</td>
<td>20.2%</td>
<td>8.4%</td>
<td>3.7</td>
<td>178</td>
</tr>
<tr>
<td>8.2. Making oral presentations</td>
<td>1.1%</td>
<td>9.0%</td>
<td>18.0%</td>
<td>29.8%</td>
<td>41.6%</td>
<td>0.6%</td>
<td>4.0</td>
<td>178</td>
</tr>
<tr>
<td>8.3. Defending an argument when asked questions</td>
<td>3.9%</td>
<td>16.9%</td>
<td>27.5%</td>
<td>30.9%</td>
<td>18.0%</td>
<td>2.8%</td>
<td>3.5</td>
<td>178</td>
</tr>
<tr>
<td>8.4. Explaining my project to people outside my field</td>
<td>1.1%</td>
<td>6.8%</td>
<td>15.3%</td>
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<td>44.6%</td>
<td>0.6%</td>
<td>4.1</td>
<td>177</td>
</tr>
<tr>
<td>8.5. Preparing a scientific poster</td>
<td>12.9%</td>
<td>7.3%</td>
<td>9.0%</td>
<td>10.7%</td>
<td>34.3%</td>
<td>25.8%</td>
<td>4.2</td>
<td>178</td>
</tr>
</tbody>
</table>

Similar for the 8 other items not shown
### Post-program survey - Mentees

#### Skills

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<td>4.1</td>
<td>177</td>
</tr>
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<td>12.9%</td>
<td>7.3%</td>
<td>9.0%</td>
<td>10.7%</td>
<td>34.3%</td>
<td>25.8%</td>
<td>4.2</td>
<td>178</td>
</tr>
</tbody>
</table>

Similar for the 8 other items not shown
### Post-program survey - Mentees

**Attitudes and Behaviors as a Researcher**

11. During your research experiences HOW MUCH did you:

<table>
<thead>
<tr>
<th>Item</th>
<th>1: none</th>
<th>2: a little</th>
<th>3: some</th>
<th>4: a fair amount</th>
<th>5: a great deal</th>
<th>6: not applicable</th>
<th>Mean</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.1. Engage in real-world science research</td>
<td>0.6%</td>
<td>5.6%</td>
<td>8.9%</td>
<td>26.3%</td>
<td>58.1%</td>
<td>0.6%</td>
<td>4.4</td>
<td>179</td>
</tr>
<tr>
<td>11.2. Feel like a scientist</td>
<td>4.5%</td>
<td>7.8%</td>
<td>11.2%</td>
<td>33.5%</td>
<td>41.9%</td>
<td>1.1%</td>
<td>4.0</td>
<td>179</td>
</tr>
<tr>
<td>11.3. Think creatively about the project</td>
<td>2.8%</td>
<td>5.1%</td>
<td>24.7%</td>
<td>27.0%</td>
<td>40.4%</td>
<td>0.0%</td>
<td>4.0</td>
<td>178</td>
</tr>
<tr>
<td>11.4. Try out new ideas or procedures on your own</td>
<td>4.5%</td>
<td>14.0%</td>
<td>15.6%</td>
<td>27.4%</td>
<td>37.4%</td>
<td>1.1%</td>
<td>3.8</td>
<td>179</td>
</tr>
<tr>
<td>11.5. Feel responsible for the project</td>
<td>2.2%</td>
<td>5.0%</td>
<td>12.8%</td>
<td>27.9%</td>
<td>50.8%</td>
<td>1.1%</td>
<td>4.2</td>
<td>179</td>
</tr>
</tbody>
</table>

Similar for the 3 other items not shown
### Post-program survey - Mentees

#### Satisfaction

14. Please rate the following:

<table>
<thead>
<tr>
<th>Item</th>
<th>1: poor</th>
<th>2: fair</th>
<th>3: good</th>
<th>4: excellent</th>
<th>Mean</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1. My working relationship with my research mentor</td>
<td>1.8%</td>
<td>2.4%</td>
<td>31.9%</td>
<td>63.9%</td>
<td>3.6</td>
<td>166</td>
</tr>
<tr>
<td>14.2. My working relationship with research group members</td>
<td>1.2%</td>
<td>7.2%</td>
<td>36.7%</td>
<td>54.8%</td>
<td>3.5</td>
<td>166</td>
</tr>
<tr>
<td>14.3. The amount of time I spent doing meaningful research</td>
<td>1.8%</td>
<td>12.1%</td>
<td>47.3%</td>
<td>38.8%</td>
<td>3.2</td>
<td>165</td>
</tr>
<tr>
<td>14.4. The amount of time I spent with my research mentor</td>
<td>6.6%</td>
<td>15.7%</td>
<td>41.0%</td>
<td>36.7%</td>
<td>3.1</td>
<td>166</td>
</tr>
</tbody>
</table>

Similar for the 3 other items not shown
## Post-program survey - Mentees

### Satisfaction

14. Please rate the following:

<table>
<thead>
<tr>
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<th>4: excellent</th>
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<th>N</th>
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<td>36.7%</td>
<td>3.1</td>
<td>166</td>
</tr>
</tbody>
</table>

Similar for the 3 other items not shown
## Post-program survey - Mentees

### Research Communication (Products)

15. As part of my most recent research experience:

<table>
<thead>
<tr>
<th>Item</th>
<th>1: Yes</th>
<th>2: No</th>
<th>Mean</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.1. I presented a talk or poster to other students or faculty</td>
<td>95.0%</td>
<td>5.0%</td>
<td>1.0</td>
<td>181</td>
</tr>
<tr>
<td>15.2. I presented a talk or poster at a professional conference</td>
<td>15.0%</td>
<td>85.0%</td>
<td>1.9</td>
<td>180</td>
</tr>
<tr>
<td>15.3. I attended a conference</td>
<td>26.5%</td>
<td>73.5%</td>
<td>1.7</td>
<td>181</td>
</tr>
<tr>
<td>15.4. I wrote or co-wrote a paper that was published in an academic journal</td>
<td>5.0%</td>
<td>95.0%</td>
<td>2.0</td>
<td>180</td>
</tr>
<tr>
<td>15.5. I wrote or co-wrote a paper that was published in an undergraduate research journal</td>
<td>6.6%</td>
<td>93.4%</td>
<td>1.9</td>
<td>181</td>
</tr>
</tbody>
</table>

5 other items not shown (which refer to the ones above, but after summer)
### Post-program survey - Mentees

#### Career Outlook

16. Rate how much you agree with the following statements.

<table>
<thead>
<tr>
<th>Statement</th>
<th>1: strongly disagree</th>
<th>2: disagree</th>
<th>3: agree</th>
<th>4: strongly agree</th>
<th>Mean</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.1. Doing my research confirmed my interest in my field of study</td>
<td>1.1%</td>
<td>8.9%</td>
<td>48.9%</td>
<td>41.1%</td>
<td>3.3</td>
<td>180</td>
</tr>
<tr>
<td>16.2. Doing research clarified for me which field of study I want to pursue</td>
<td>1.1%</td>
<td>12.4%</td>
<td>53.4%</td>
<td>33.1%</td>
<td>3.2</td>
<td>178</td>
</tr>
<tr>
<td>16.3. My research experience has prepared me for graduate school</td>
<td>0.6%</td>
<td>5.6%</td>
<td>44.4%</td>
<td>49.4%</td>
<td>3.4</td>
<td>178</td>
</tr>
<tr>
<td>16.4. My research experience has prepared me for a job</td>
<td>0.6%</td>
<td>9.4%</td>
<td>62.8%</td>
<td>27.2%</td>
<td>3.2</td>
<td>180</td>
</tr>
</tbody>
</table>
Post-program survey - Mentors

### Previous Experience

<table>
<thead>
<tr>
<th>1: none</th>
<th>2: 1</th>
<th>3: 2</th>
<th>4: 3</th>
<th>5: 4</th>
<th>6: 5</th>
<th>7: 6-8</th>
<th>8: 9-10</th>
<th>9: 11-15</th>
<th>10: 16-20</th>
<th>11: 21 or more</th>
<th>Mean</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.3%</td>
<td>2.9%</td>
<td>7.1%</td>
<td>0.0%</td>
<td>2.9%</td>
<td>2.9%</td>
<td>20.0%</td>
<td>5.7%</td>
<td>12.9%</td>
<td>5.7%</td>
<td>35.7%</td>
<td>8.1</td>
<td>70</td>
</tr>
</tbody>
</table>

15. How many undergraduate mentees have you previously mentored?
### Post-program survey - Mentors

#### Previous Experience - Mentor Training

<table>
<thead>
<tr>
<th>Question</th>
<th>1: Yes</th>
<th>2: No</th>
<th>Mean</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>18. Have you ever participated in any formal research mentor training?</td>
<td>31.0%</td>
<td>69.0%</td>
<td>1.7</td>
<td>71</td>
</tr>
</tbody>
</table>
Post-program survey - Mentors

Position

- Professor: 68.1%
- Research Sci.: 13.3%
- Grad Student: 9.3%
- Lecturer: 4.0%
- Postdoc: 5.3%
Post-program survey - Mentors

Race

- Prefer not to report: 9.2%
- Other: 6.6%
- Asian: 18.4%
- Black: 6.6%
- White: 59.2%
- Hispanic/Latino: 82.4%
- Not Hispanic/Latino: 7.4%
- Prefer not to report: 10.3%
Post-program survey - Mentors

Sex/Gender

- Prefer not to report: 6.7%
- Other: 6.7%
- Transgender: 10.0%
- Non-binary: 10.0%
- Female: 17.8%
- Male: 48.9%
Post-program survey - Mentees

1. Thinking and Working Like a Scientist
2. Personal Gains Related to Research Work
3. Skills
4. Attitudes and Behaviors Towards Research
5. Satisfaction

Similar outcomes that align with Mentee results for all 5 categories
Post-program survey - Mentors

Thinking and Working Like a Scientist

Mentee's ability to think and work like a scientist

- Before REU
- After REU

Percent of respondents

Mentee's ability to think and work like a scientist:
- None
- A little
- Moderate
- Good
- Great
### Post-program survey - Mentors

#### Thinking and Working Like a Scientist

2. How much did your mentee GAIN in the following areas as a result of his or her most recent research experience?

<table>
<thead>
<tr>
<th>Area</th>
<th>1: no gains</th>
<th>2: a little gain</th>
<th>3: moderate gain</th>
<th>4: good gain</th>
<th>5: great gain</th>
<th>6: not applicable</th>
<th>Mean</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyzing data for patterns</td>
<td>1.5%</td>
<td>9.0%</td>
<td>11.9%</td>
<td>32.8%</td>
<td>40.3%</td>
<td>4.5%</td>
<td>4.1</td>
<td>67</td>
</tr>
<tr>
<td>Figuring out the next step in a research project</td>
<td>0.0%</td>
<td>6.0%</td>
<td>14.9%</td>
<td>38.8%</td>
<td>40.3%</td>
<td>0.0%</td>
<td>4.1</td>
<td>67</td>
</tr>
<tr>
<td>Problem solving in general</td>
<td>0.0%</td>
<td>6.0%</td>
<td>13.4%</td>
<td>35.8%</td>
<td>43.3%</td>
<td>1.5%</td>
<td>4.2</td>
<td>67</td>
</tr>
<tr>
<td>Formulating a research question that could be answered with data</td>
<td>3.0%</td>
<td>7.5%</td>
<td>29.9%</td>
<td>28.4%</td>
<td>26.9%</td>
<td>4.5%</td>
<td>3.8</td>
<td>67</td>
</tr>
</tbody>
</table>

Similar for the 4 other items not shown
Next Steps
Next steps

CIMER

+ Platform for data collection across programs
+ Customizable surveys
+ Tech support; open to feedback
- $ (sustainability)

URSSA

+ Validated questions
+ Funded by NSF to fit NSF’s reporting interests
- Not Physics-specific
- Results hard to translate to action
Next steps

1. **Send results to NSF Program Officer (initial goal of this initiative)**
2. **Collective analysis of 2021 results?**
   a. gain insight and develop program recommendations
   b. assess value of URSSA questions, need to update/enhance them?
3. **Develop common questions in addition to URSSA that are more Physics-relevant and/or give more pragmatic feedback for program improvement?**
4. **Use Common Assessment as a launching point for research study on Physics REU impact?**
5. **Transition efforts to longitudinal impact assessment?**
Next steps

1. Send results to NSF Program Officer (initial goal of this initiative)
2. Joint analysis of 2021 results?
   a. gain insight and develop program recommendations
   b. assess value of URSSA questions, need to update/enhance them?
3. Develop common questions in addition to URSSA that are more Physics-relevant and/or give more pragmatic feedback for program improvement?
4. Use Common Assessment as a launching point for research study on Physics REU impact?
5. Transition efforts to longitudinal impact assessment?
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4. Use Common Assessment as a launching point for research study on Physics REU impact?
5. Transition efforts to longitudinal impact assessment?
Discussion
Extra slides below
Pre-program survey - Mentees

Race

- Prefer not to report: 3.6%
- Other: 7.1%
- Native American: 2.4%
- Asian: 19.0%
- Black: 17.9%
- White: 50.0%

- Hispanic/Latino: 23.7%
- Not Hispanic/Latino: 75.0%
- Prefer not to report: 1.3%
Pre-program survey - Mentees

Sex/Gender

- Female: 54.3%
- Male: 38.3%
- Non-binary: 4.9%
- Transgender: 2.5%
Pre-program survey - Mentors

Position

- Professor: 60.0%
- Research Sci.: 16.0%
- Lecturer: 8.0%
- Grad Student: 12.0%
- Postdoc: 4.0%
Pre-program survey - Mentors

Research Focus

- Computational: 33.3%
- Lab-based: 26.2%
- Theoretical: 23.8%
- Educational: 4.8%
- Field/Applied: 7.1%
- Other: 2.4%
Pre-program survey - Mentors

Race

- Prefer not to report: 11.1%
- Other: 7.4%
- Asian: 11.1%
- Black: 11.1%
- White: 59.3%
- Hispanic/Latino: 76%
- Not Hispanic/Latino: 12%
- Prefer not to report: 12%
Pre-program survey - Mentors

Sex/Gender

- Male: 57.7%
- Female: 30.8%
- Prefer not to report: 3.8%
- Non-binary: 7.7%
Post-program survey - Mentees

Previous Experience - Fall/Spring

<table>
<thead>
<tr>
<th># of times participated in Semester/Quarter research</th>
<th>Percent of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>30%</td>
</tr>
<tr>
<td>1</td>
<td>10%</td>
</tr>
<tr>
<td>2</td>
<td>20%</td>
</tr>
<tr>
<td>3</td>
<td>10%</td>
</tr>
<tr>
<td>4 or more</td>
<td>30%</td>
</tr>
</tbody>
</table>
Post-program survey - Mentees

Personal Gains Related to Research Work

Overall mindset towards research

Percent of respondents

- Not favorable
- A little favorable
- Moderately favorable
- Favorable
- Greatly favorable

Before REU

After REU
Post-program survey - Mentees

Skills

Overall research skills

Percent of respondents

Before REU

After REU

None
A little
Moderate
Good
Great
Post-program survey - Mentees

Attitudes and Behaviors as a Researcher

Percent of respondents

Before REU  After REU

Very negative  Negative  Neutral  Positive  Very positive

Attitudes and behaviors towards research
### Previous Experience - Summer

<table>
<thead>
<tr>
<th></th>
<th>1: none</th>
<th>2: 1</th>
<th>3: 2</th>
<th>4: 3</th>
<th>5: 4</th>
<th>6: 5</th>
<th>7: 6-8</th>
<th>8: 9-10</th>
<th>9: 11 or more</th>
<th>Mean</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>16. How many times have you mentored an undergraduate engaged in SUMMER research?</strong></td>
<td>9.9%</td>
<td>4.2%</td>
<td>5.6%</td>
<td>4.2%</td>
<td>9.9%</td>
<td>2.8%</td>
<td>16.9%</td>
<td>8.5%</td>
<td>38.0%</td>
<td>6.5</td>
<td>71</td>
</tr>
</tbody>
</table>