UCSC STUDENTS’ PARTICIPATION IN RESEARCH AND CREATIVE PROJECTS
UNDER FACULTY SUPERVISION
2020 UC Undergraduate Experience Survey (UCUES)

This report contains results from the UC Undergraduate Experience Survey about participation in research or creative projects, based on responses of seniors who were about to graduate when they took the survey in spring or summer 2020.

Results include comparisons between UCSC and other UC campuses combined, as well as based on students’ major and background characteristics.

A research project refers to original projects in any discipline or field of study and may include critical analysis of primary or secondary sources, scientific investigations, and developing and testing systems/tools. A creative project refers to original projects in any discipline or field of study and may include design of various media forms, performance arts, marketing campaign, and curating an exhibit.

KEY FINDINGS

Overall, 42% of UC Santa Cruz seniors have engaged in research/creative projects under faculty supervision during their studies at UCSC in one or more of the following ways:

- Assisted faculty in conducting research
- Assisted faculty with their creative project
- Conducted own research or creative project outside of regular coursework under the guidance or supervision of a faculty member.

Figure 1.
Overall participation at UCSC vs other UCs

- Across other UC campuses combined, 46% of graduating seniors have participated in research/creative projects, more than seniors at UCSC (42%). This difference is due to (1) the higher rates among UC students who started as frosh and (2) the higher rates of assisting faculty in research at other UCs (see the results below).

Participation of students who started as frosh vs. transfer students

- Rates of participation among seniors who started as frosh (44%) were significantly lower at UCSC than among their peers at other UCs combined (49%). Rates of participation among seniors who started as transfer students were the same at UCSC and other UC campuses (39%).
- The difference in participation rates of transfer students (39%) and seniors who started as frosh at UCSC (44%) is statistically significant.

Academic majors (divisions) at UCSC

- Graduating seniors in the PBSci division had the highest rate of overall participation in research or creative projects under faculty supervision: 59%. This rate is largely based on 54% of PBSci seniors having assisted faculty in research, the highest rate on campus.
- Seniors majoring in the Arts division (43%) and Social Sciences (39%) were more likely to have participated in research or creative projects than BSOE students (28%).

Gender differences

- Women at UCSC were just as likely as women at other UCs to have participated in research or creative work (46%).
- Men at UCSC (38%) were less likely than men at other UCs (44%) to have participated.
- Only in the Arts Division, women (51%) were more likely to have participated overall in research or creative work than were men (32%). No gender differences were found in other divisions.
- Among students with double majors in different divisions, women (58%) were more likely to have participated overall in research or creative work than were men (35%).

Students from underrepresented communities

Students from underrepresented communities include African American, Hispanic/Latinx, Native American, and Pacific Islander students. Students who are not from underrepresented communities include white non-Hispanic, Asian American, international students, and with unknown ethnicity.

- Rates of participation among UCSC students who come from underrepresented communities (42%) were similar to their peers at other UCs (40%).

First-generation students and Pell Grant recipients

- There were no differences in participation between first-generation students at UCSC and other UCs, as well as between Pell Grant recipients at UCSC and Pell Grant recipients at other UCs.
- There were no differences in participation based on first-generation status and Pell Grant status and other students at UCSC (overall and within divisions).

Conducting, presenting and publishing own research or creative work

- One in four (25%) graduating seniors at UCSC conducted their own research or creative project outside of regular coursework under the guidance or supervision of a faculty member.
- Among UCSC seniors who conducted their own research or creative projects with or without faculty supervision, 65% have presented their results, primarily on campus.
- Among UCSC seniors who conducted their own research or creative project, 35% have published their results, primarily in an electronic forum or other public arena.
PARTICIPATION IN RESEARCH OR CREATIVE PROJECTS

Overall participation in research or creative projects

Overall, 42% of UC Santa Cruz seniors have engaged in research/creative projects under faculty supervision during their studies at UCSC in one or more of the following ways:

- Assisted faculty in conducting research
- Assisted faculty with their creative project
- Conducted own research or creative project outside of regular coursework under the guidance or supervision of a faculty member.

Participation by major (academic divisions) at UCSC

Students’ participation in research or creative projects varied depending on their major. We conducted comparative analyses of differences across academic divisions.\(^1\) Graduating seniors’ overall participation in research or creative projects under faculty supervision was:

- Significantly higher in PBSci (59%) than in all other divisions.
- Similar in the Arts division (43%) and Social Sciences (39%) but higher than in BSOE (28%).
- Significantly higher for students with majors in multiple divisions (52%) than students with a major or majors in Social Sciences, Humanities, and BSOE.

Figure 2. Overall participation in research and/or creative work under faculty supervision, by division at UCSC

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\(^1\) Rates of participation at UCSC and other UC campuses or among subpopulations at UCSC were compared using chi-squared tests. We ensured that the results for combined UC campuses were representative relative to the size of each campus’ undergraduate population by weighting data to correct for the differences in response rates.
PARTICIPATION IN RESEARCH OR CREATIVE PROJECTS BY STUDENT CHARACTERISTICS

UCSC compared with other UC campuses

By the time they were graduating seniors, UCSC students were less likely (42%) to have participated in research or creative work than students who started as frosh at other UC campuses (46%).

Students’ rates of participation in research or creative work under faculty supervision include:

- Rates of participation among seniors who started as frosh were significantly lower at UCSC (44%) than among their peers at other UCs combined (49%).
- Rates of participation among seniors who started as transfer students were the same at UCSC and other UC campuses (both 39%).
- Women at UCSC were just as likely as women at other UCs to have participated in research or creative work (both 46%).
- Men at UCSC (38%) were less likely than men at other UCs (44%) to have participated in research or creative work.
- Rates of participation among UCSC students who come from underrepresented communities (42%) – African American, Hispanic/Latinx, Native American, and Pacific Islander students, in this analysis – were similar to students at other UCs who come from underrepresented communities (40%).

Table 1. Graduating seniors’ overall participation (%) in research and/or creative work under faculty supervision by student background

<table>
<thead>
<tr>
<th></th>
<th>Started as Frosh</th>
<th>Transfer students</th>
<th>Women</th>
<th>Men</th>
<th>Underrepresented</th>
<th>First Generation</th>
<th>Pell Grant</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>UCSC</td>
<td>44%</td>
<td>39%</td>
<td>46%</td>
<td>38%</td>
<td>42%</td>
<td>41%</td>
<td>42%</td>
<td>42%</td>
</tr>
<tr>
<td>Other UCs</td>
<td>49%</td>
<td>39%</td>
<td>46%</td>
<td>44%</td>
<td>40%</td>
<td>39%</td>
<td>41%</td>
<td>46%</td>
</tr>
</tbody>
</table>

Note: Orange marks show when UCSC is significantly lower than other UC campuses (p<.05).

Within UCSC

- Transfer students (39%) were less likely to participate in research/creative work than were seniors who started as frosh (49%).
- Women (46%) were more likely than men (38%) to participate in research/creative work.
- Students who come from underrepresented communities (42%) were similarly likely to participate in research/creative work as were other students (43%).
- First-generation students and Pell grant recipients were as likely to have participated in research/creative projects as their peers.
Within each academic division at UCSC

Within academic divisions at UCSC, participation by gender included:

- Within the Arts division, women (51%) were more likely to have participated in research or creative work than were men (32%).
- In Humanities, Social Sciences, PBSci, and BSOE, there were no significant differences by gender.
- Among students with majors in multiple divisions, women (58%) were also more likely to have participated in research or creative work than were men (32%).

Within divisions, differences based on other characteristics were not statistically significant. See Table 2.

Table 2. UCSC graduating seniors’ overall participation (%) in research and/or creative work under faculty supervision by student background, by academic division

<table>
<thead>
<tr>
<th>UCSC divisions:</th>
<th>Frosh Admit</th>
<th>Transfer Admit</th>
<th>Women</th>
<th>Men</th>
<th>Underrepresented</th>
<th>First Generation</th>
<th>Pell Grant</th>
<th>Overall division</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts</td>
<td>46%</td>
<td>38%</td>
<td>51%</td>
<td>32%</td>
<td>43%</td>
<td>52%</td>
<td>45%</td>
<td>43%</td>
</tr>
<tr>
<td>Humanities</td>
<td>26%</td>
<td>38%</td>
<td>31%</td>
<td>32%</td>
<td>27%</td>
<td>33%</td>
<td>35%</td>
<td>32%</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>41%</td>
<td>36%</td>
<td>40%</td>
<td>36%</td>
<td>38%</td>
<td>36%</td>
<td>38%</td>
<td>39%</td>
</tr>
<tr>
<td>PBSci</td>
<td>60%</td>
<td>57%</td>
<td>59%</td>
<td>59%</td>
<td>56%</td>
<td>50%</td>
<td>58%</td>
<td>59%</td>
</tr>
<tr>
<td>BSOE</td>
<td>30%</td>
<td>23%</td>
<td>34%</td>
<td>26%</td>
<td>28%</td>
<td>26%</td>
<td>27%</td>
<td>28%</td>
</tr>
<tr>
<td>Multiple divisions</td>
<td>50%</td>
<td>69%</td>
<td>58%</td>
<td>35%</td>
<td>46%</td>
<td>62%</td>
<td>50%</td>
<td>52%</td>
</tr>
</tbody>
</table>
SPECIFIC ACTIVITIES IN RESEARCH OR CREATIVE PROJECTS

Assisting faculty in conducting research

Across the UC system, relatively more students assist faculty in conducting research that assist with creative projects or conduct their own research or creative projects under faculty supervision.

- UCSC graduating seniors assist faculty in research at significantly lower rates (31%) than do seniors at other UC campuses (37%).

Rates of assisting faculty in conducting research at UCSC were:

- Higher in PBSci (54%) than in all other divisions and among students with majors in different divisions.
- Higher for students with double majors in multiple divisions (35%) than in BSOE, Humanities, and Arts.
- Higher in BSOE (23%) than in Humanities and Arts.
- Similar in Social Sciences and BSOE.
- Similar in Arts and Humanities.

Figure 3. Experience assisting faculty in research, by division at UCSC

Assisting faculty with a creative project

UCSC students and their UC peers had similar rates of assisting faculty with a creative project (10-11%).

At UCSC student rates of assisting faculty with a creative project were:

- Higher in the Arts division (20%) and among students with majors in multiple divisions (17%) than in PBSci, BSOE, Humanities, and Social Sciences (8-11%).
Conducting own research or creative project under faculty supervision

One in four (25%) graduating seniors at UCSC and other UCs conducted their own research or creative project outside of regular coursework under the guidance or supervision of a faculty member.

At UCSC, rates of conducting own research or creative project under the guidance of faculty were:
- Higher in the Arts division (34%) and in PBSci (33%) than in Social Sciences (22%) and BSOE (14%).
- BSOE students reported the lowest rates of conducting their own research or creative project.

Table 3. Types of participation in research and/or creative work under faculty supervision BY major (division)

<table>
<thead>
<tr>
<th></th>
<th>Arts (n=128)</th>
<th>Humanities (n=119)</th>
<th>Social Sciences (n=547)</th>
<th>PBSci (n=399)</th>
<th>BSOE (n=317)</th>
<th>Multiple divisions (n=121)</th>
<th>Overall at UCSC (n = 1633)</th>
<th>Overall at other UCs (n=14544)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall participation</td>
<td>43%</td>
<td>32%</td>
<td>39%</td>
<td>59%</td>
<td>28%</td>
<td>52%</td>
<td>42%</td>
<td>46%</td>
</tr>
<tr>
<td>Assisted in research</td>
<td>7%</td>
<td>12%</td>
<td>28%</td>
<td>54%</td>
<td>23%</td>
<td>35%</td>
<td>31%</td>
<td>37%</td>
</tr>
<tr>
<td>Assisted with creative projects</td>
<td>20%</td>
<td>8%</td>
<td>8%</td>
<td>11%</td>
<td>8%</td>
<td>17%</td>
<td>10%</td>
<td>11%</td>
</tr>
<tr>
<td>Conducted own under supervision</td>
<td>34%</td>
<td>26%</td>
<td>22%</td>
<td>33%</td>
<td>14%</td>
<td>26%</td>
<td>25%</td>
<td>25%</td>
</tr>
</tbody>
</table>

Note: Blue marks show when UCSC is significantly higher at than other UC campuses, and orange - when UCSC is significantly lower (p<.05).

Conducting own research or creative project without faculty supervision

In addition, students reported whether they have conducted their own research or creative project outside of regular coursework without the guidance or supervision of a faculty member. UCSC students have done such projects at significantly higher rates (28%) than graduating seniors at other UCs (20%).

Graduating seniors' rates of conducting their own research or creative project without the guidance of faculty were particularly high in the Arts division (63%) and Humanities (40%). They were:
- Higher in the Arts division than in all other divisions.
- Higher in Humanities (40%) than in BSOE, PBSci, and Social Sciences.
- Higher in BSOE (30%) than in PBSci and Social Sciences.

See Table 4.
Table 4. Research and/or creative work WITHOUT faculty supervision BY major (division)

<table>
<thead>
<tr>
<th></th>
<th>Arts (n=128)</th>
<th>Humanities (n=119)</th>
<th>Social Sciences (n=108)</th>
<th>PBSci (n=396)</th>
<th>BSOE (n=317)</th>
<th>Multiple divisions (n=121)</th>
<th>Overall at UCSC (n=1626)</th>
<th>Overall at other UCs (n=14509)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conducted own without supervision</td>
<td>63%</td>
<td>40%</td>
<td>20%</td>
<td>21%</td>
<td>30%</td>
<td>31%</td>
<td>28%</td>
<td>20%</td>
</tr>
</tbody>
</table>

Note: Blue marks show when UCSC is significantly higher than other UC campuses (p<.05).

RECEIVING COURSE CREDIT OR PAY WHEN ASSISTING FACULTY

Students reported different ways in which they were rewarded for their participation in faculty’s projects. When assisting faculty with research, UCSC students were less likely to receive course credit without pay than were students at other UC campuses, but were more likely to receive course credit with pay.

Table 5. Types of reward students received for assistance with research conducted by faculty

<table>
<thead>
<tr>
<th></th>
<th>UCSC (n=498)</th>
<th>Other UCs (n=5198)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course credit without pay</td>
<td>60%</td>
<td>68%</td>
</tr>
<tr>
<td>Course credit with pay</td>
<td>10%</td>
<td>6%</td>
</tr>
<tr>
<td>Pay without course credit</td>
<td>21%</td>
<td>22%</td>
</tr>
<tr>
<td>Volunteer without course credit or pay</td>
<td>47%</td>
<td>42%</td>
</tr>
</tbody>
</table>

Note: Blue marks show when UCSC is significantly higher than other UC campuses (p<.05), green when UCSC is marginally higher (p<.10), and orange when UCSC is significantly lower (p<.05).

When assisting faculty with creative projects, UCSC students were less likely to receive course credit without pay than were students at other UC campuses.

Table 6. Types of reward students received for assistance with creative projects conducted by faculty

<table>
<thead>
<tr>
<th></th>
<th>UCSC (n=161)</th>
<th>Other UCs (n=1572)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course credit without pay</td>
<td>50%</td>
<td>58%</td>
</tr>
<tr>
<td>Course credit with pay</td>
<td>9%</td>
<td>6%</td>
</tr>
<tr>
<td>Pay without course credit</td>
<td>17%</td>
<td>12%</td>
</tr>
<tr>
<td>Volunteer without course credit or pay</td>
<td>40%</td>
<td>40%</td>
</tr>
</tbody>
</table>

Note: Orange marks show when UCSC is significantly lower than other UC campuses (p<.05).
PRESENTATION OF RESEARCH OR CREATIVE WORK

Students reported whether they presented their work if they had conducted their own research or creative project outside of their regular coursework (with or without faculty supervision).

UCUES question: "If you communicated or shared the results of your research or creative project, please indicate how you did this [select all that apply] Through presenting/ exhibiting/ performing it on campus" and/or [...] outside of campus, such as at a regional, national and/or international conference or competition".

Presenting own results in any location (on-campus or off-campus)

Among UCSC seniors who conducted their own research or creative projects with or without faculty supervision, 65% have presented their results, primarily on campus.

Division-specific rates of students presenting their results (in any location, whether on or off campus) were:

- Similar in PBSci (71%), Social Sciences (65%) and the Arts division (63%) but higher than in BSOE (40%).
- Higher among students with majors in multiple divisions (78%) than in Humanities and BSOE.

Figure 4. Proportion of students who presented results of own research or creative project (either on or off campus) among those who engaged in such projects
Presenting own results on campus or off campus

Rates of presenting own results on campus were:
- Similar in PBSci (64%), Social Sciences (57%), and the Arts division (54%) but higher than in BSOE (40%).
- Higher among students with majors in two or more divisions (70%) than in BSOE (40%).

Rates of presenting results off campus were:
- Higher in PBSci (26%) than in Arts, Social Sciences, BSOE, and Humanities.

Table 7. Proportion of students who presented own research or creative work on or off campus among those who engaged in such projects

<table>
<thead>
<tr>
<th></th>
<th>Arts  (n=81)</th>
<th>Humanities  (n=39)</th>
<th>Social Sciences  (n=150)</th>
<th>PBSci  (n=140)</th>
<th>BSOE  (n=77)</th>
<th>Multiple divisions  (n=41)</th>
<th>Overall at UCSC  (n=529)</th>
<th>Overall at other UCs  (n=4274)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall (combined)</td>
<td>63%</td>
<td>56%</td>
<td>65%</td>
<td>71%</td>
<td>40%</td>
<td>78%</td>
<td>65%</td>
<td>63%</td>
</tr>
<tr>
<td>On campus</td>
<td>54%</td>
<td>50%</td>
<td>57%</td>
<td>64%</td>
<td>33%</td>
<td>70%</td>
<td>55%</td>
<td>56%</td>
</tr>
<tr>
<td>Off campus</td>
<td>12%</td>
<td>5%</td>
<td>12%</td>
<td>26%</td>
<td>9%</td>
<td>15%</td>
<td>15%</td>
<td>19%</td>
</tr>
</tbody>
</table>

Note: Orange marks show when UCSC is significantly lower at than other UC campuses (p<.05).
PUBLICATION OF RESEARCH OR CREATIVE WORK

Students reported whether they published their work if they had engaged in their own research or creative project (with or without faculty supervision).

Among students who conducted their own research or creative project, 35% published their results in various formats.

Graduating seniors at UCSC vs UC:

- UCSC students were less likely than students at other UC campuses to publish in a peer-reviewed journal. On the other hand, UCSC students were similarly likely as students at other UC campuses to publish results in other ways.

Among graduating seniors at UCSC, differences by division included:
  - For overall publishing: Arts Division students (50%) were more likely than Social Sciences and PBSci students.
  - For publishing in a peer-reviewed journal: PBSci (11%) and Social Sciences (11%) students had the highest rates on campus.
  - For publishing in a campus or student journal: Humanities students (16%) were more likely than PBSci students. Also, Arts Division students (9%) were more likely than BSOE.
  - For publishing in an electronic forum or other public arena: Arts Division students (44%) and BSOE (33%) had the highest rates on campus; Arts students were more likely than Social Sciences, Humanities, or PBSci students.

Table 8. Proportion of students who published their research or creative work among those who engaged in such projects

<table>
<thead>
<tr>
<th></th>
<th>Arts</th>
<th>Humanities</th>
<th>Social Sciences</th>
<th>PBSci</th>
<th>BSOE</th>
<th>Multiple divisions</th>
<th>Overall at UCSC</th>
<th>Overall at other UCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall (combined)</td>
<td>50%</td>
<td>31%</td>
<td>34%</td>
<td>26%</td>
<td>38%</td>
<td>36%</td>
<td>35%</td>
<td>37%</td>
</tr>
<tr>
<td>in a peer-reviewed professional journal</td>
<td>5%</td>
<td>3%</td>
<td>11%</td>
<td>11%</td>
<td>6%</td>
<td>0%</td>
<td>8%</td>
<td>12%</td>
</tr>
<tr>
<td>in a campus or student journal</td>
<td>9%</td>
<td>16%</td>
<td>6%</td>
<td>4%</td>
<td>0%</td>
<td>12%</td>
<td>6%</td>
<td>9%</td>
</tr>
<tr>
<td>in an electronic forum or other public arena</td>
<td>44%</td>
<td>19%</td>
<td>22%</td>
<td>15%</td>
<td>33%</td>
<td>24%</td>
<td>22%</td>
<td>23%</td>
</tr>
</tbody>
</table>

Note: Orange marks show when UCSC is significantly lower than other UC campuses (p<.05).