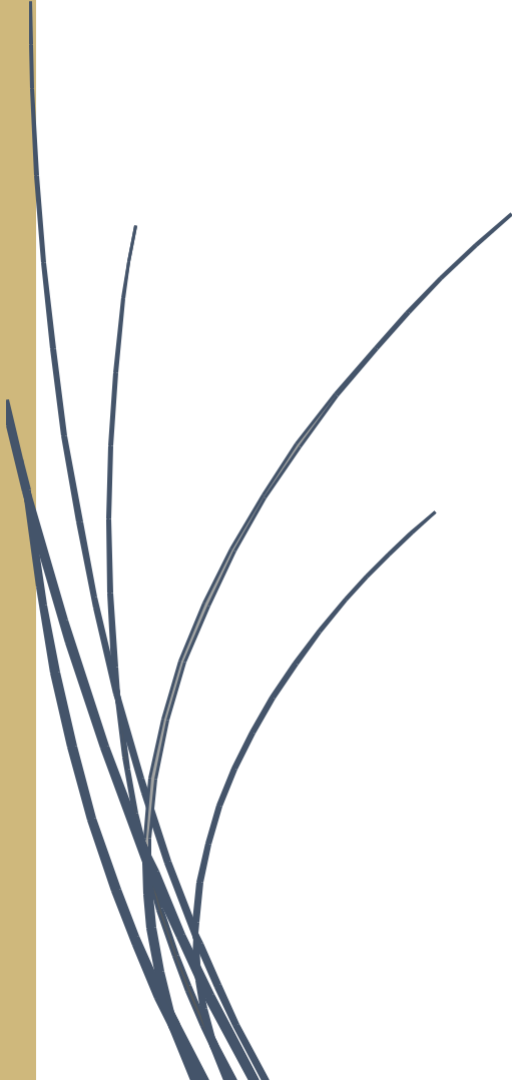


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The Center for Student Research and Undergraduate Research Academy

Summary Report 2021

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Center for Student Research and Undergraduate Research Academy

The Center for Student Research

The UCCS Center for Student Research (CSR) was founded in 2019. The mission of the CSR is to prepare and support undergraduate and graduate student researchers as well as their faculty mentors across disciplines. To this end, the CSR emphasizes establishing an apprentice model of student-faculty collaboration, an aspirational peer mentoring model with a graduate peer mentor, and fostering a campus community of student researchers and their mentors. While the CSR is dedicated to catalyzing research career paths for all students, we are acutely aware of the stark underrepresentation of first-generation and minoritized/marginalized students participating in mentored experiences on campus. We therefore have the specific goal of increasing and supporting first-generation, underrepresented minorities, and other at-risk student groups in participating in research and creative works mentored by faculty.

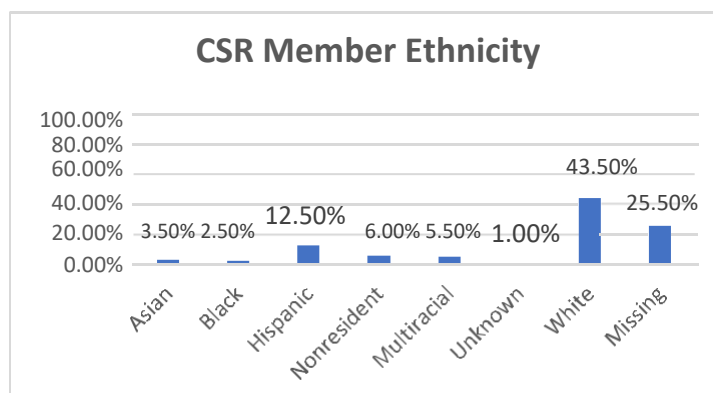
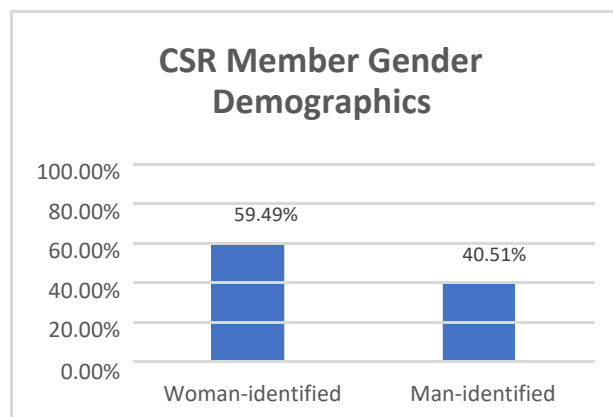
Student and Faculty Workshops:

Over the past year, the CSR has worked with other campus centers and personnel to host a variety of informational events and workshops for faculty and students, all provided virtually. These included:

- Publication Workshop for graduate students and advanced undergraduates
- Pre-Registration of Research and Open Science Basics
- Using Mentor Agreements to keep mentoring relationships and research progress on track
- Best practices for presenting research in a virtual setting
- How to promote professional development of mentees

Member Data:

As of July 2021, the CSR has 162 student members and 39 faculty affiliates. Of the student members, 90 are current undergraduate students and 60 are graduate students. Of the CSR members with available data, we find that they represent greater diversity than expected among our campus demographics with ethnicity make up of 43.5% white, 12.5% Hispanic/Latinx, 3.5% Asian, and 2.5% Black/African American. The remaining members indicated they were a non-resident international student, indicated two or more ethnicities, or did not report their ethnicity. These data on ethnicity should be interpreted with caution as they represent only 74.5% of the CSR membership data with 25.5% of the data missing.

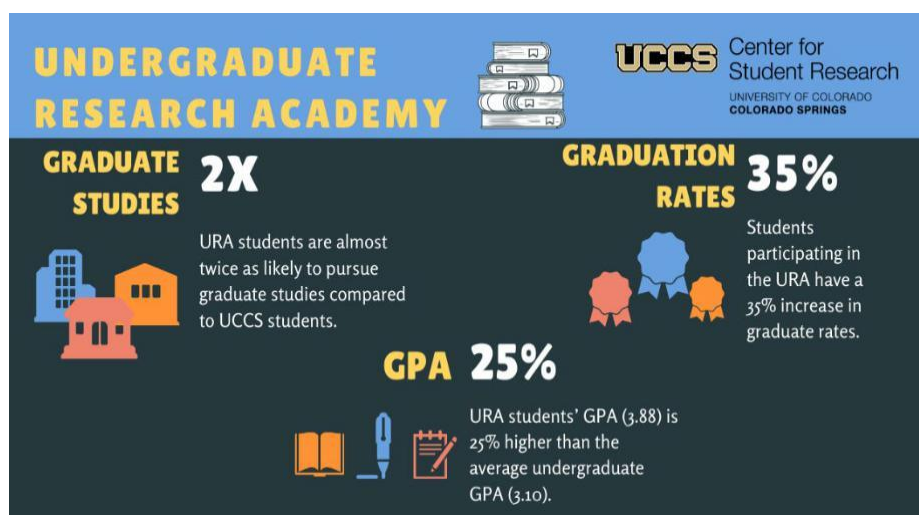


Undergraduate Research Academy

While the CSR's mission is to support all student-faculty collaborations, we also oversee the **Undergraduate Research Academy**, which encourages students to expand their education beyond the classroom through participation in research and creative projects mentored by UCCS faculty. This opportunity includes a \$3,500 summer stipend and an intensive summer workshop series for improving research skills and establishing a researcher identity. Several of these trainings are built on the evidence-based strategies developed by the Center for the Improvement of Mentored Experiences in Research (CIMER) at the University of Wisconsin - Madison (Branchaw, Butz, and Smith, 2019). The Director of the URA and CSR, Jennifer Poe, became a trained Entering Research Facilitator for CIMER in Madison, WI in February of 2020 and has leveraged her skills developed there to provide in-depth research training to the most recent cohort of URA students. The primary focus of the URA summer workshops is to guide student's growth in the areas of researcher identity, independence, communication skills, and inclusion and equity awareness in research settings.

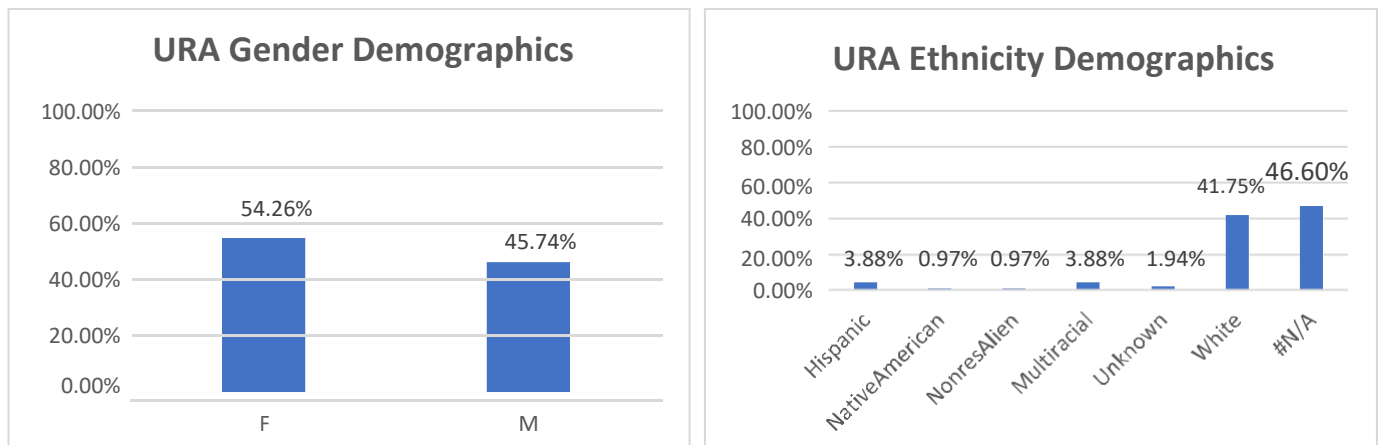
Academy Member Data:

The URA began in 2013 and has successfully **funded and trained 103 Academy students**. The 2021 cohort was recently selected in April and marks our **largest single cohort yet with 28 student-faculty pairs** thanks in part to special funding from President Kennedy for



cybersecurity- related projects. Outcome tracking from UCCS Institutional Research (IR) shows these URA students earn higher GPAs than their non-researching peers by 25% with an overall average of 3.88. These students also have a 35% higher graduation rate than their non-URA peers, and they are almost twice as likely to pursue graduate studies (Undergraduate Research Academy Impact Data, 2020). These outcomes point to the power of undergraduate research in aiding in student persistence – a key driver of our campus budget. However, in looking at our outcome data and the demographics of our URA members, one issue is clear: the URA lacks diversity. Among the students in our 8 cohorts that have completed their training, over 78% reported that they are white. These data, however, should be interpreted with caution, as they represent only 53% of the overall URA membership. Due to issues with missing data, particularly for the earliest cohorts, ethnicity of our members has not been effectively tracked. Additionally, other key demographic variables have not been readily collected (e.g. military status, disability status, sexual orientation, or first-generation status). The ability to track these important demographics and outcomes with our partnership with IR is a crucial step in identifying portions of the student body that might be getting let out of these meaningful summer research experiences. We are currently working on strategies to ensure we collect all relevant data for both the

CSR and URA members in an efficient and useful manner. Further details on this are provided later in this report.



URA Success Stories

While the numbers indicate our URA students are performing well here at UCCS and attending graduate school at a higher rate than their non-URA peers, it is helpful to consider individual student successes as well to get a full contextualized picture of how these meaningful experiences impact them.



Ella Taylor Chilcote (URA 2020) and her work with Dr. Gia Barboza was recently featured in the [UCCS Communique](#). Their funded project is one of the first to examine the long-term impacts of the Indian Child Welfare Act (ICWA) of 1978. This act was intended to help stem the widespread placement of Native American children into non-Native foster homes. As an eighth-generation indigenous person herself, this research topic is deeply personal for Ella.

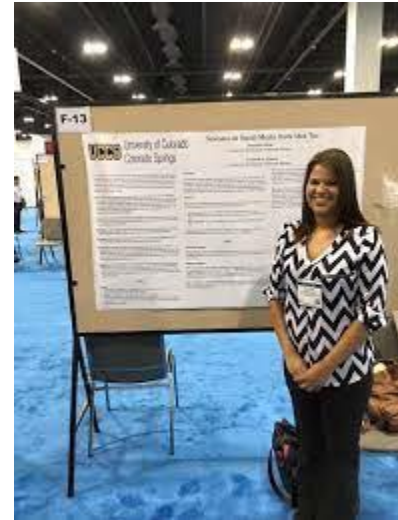
Her research with Dr. Barboza offers an important and unique synthesis of data from multiple sources, including the Harvard Law School's Caselaw Access Project, the Office of Housing and Urban Development, the U.S. Census Bureau and the Substance Abuse and Mental Health Services Administration. By linking case law decisions with epidemiological data using advanced statistical analysis and machine learning, Ella and Dr. Barboza have developed an extensive dataset that provides meaningful context to the effectiveness – or lack-there-of – of the ICWA.

Ella was recently accepted to law school and she will begin working to earn her juris doctorate in the Fall of 2021. Her long- term career goals include giving back to her community by providing legal aid and representation to Native Americans with limited access to such resources.

Alexandra Hood (URA 2015) recently reached out to Dr. Elizabeth Daniels, her former URA mentor, to share that she has committed to Texas A&M's Sociology Doctorate Program and was awarded the Dr. Aviles-Johnson Diversity Fellowship. This fellowship includes five years of funding for the program as well as a one-time start up stipend. She will also be presenting two projects at the American Society of Criminology Conference this fall.

In addition to graduating this May from Metro State Denver with her Master's degree, she also received the College of Health and Applied Sciences Outstanding Student Award and has been nominated for the Social Work Scholar Award.

Specifically, Alexandra has cited her work with Dr. Daniels in the URA as the catalyst for launching her successful research career. To bring this full circle, Alexandra wrote an excellent letter of support for one of this year's incoming URA students with whom she has worked.



URA of 2020:

The URA of 2020 faced considerable challenges given the COVID-19 pandemic, campus closures, and subsequent delays in their research. Due to these challenges, this cohort did not begin their work in earnest until the fall of 2020. While we are awaiting the most recent student outcome data from the 2020 cohort, below is some of what the most recent cohort has shared with us regarding their URA experience:

"THIS EXPERIENCE HELPED PREPARE ME FOR THE EXPECTATIONS OF A GRADUATE STUDENT PURSUING A MASTER'S DEGREE IN ECOLOGY AT UCCS. I GAINED VALUABLE EXPERIENCE IN DATA COLLECTION IN THE FIELD AND COMMUNICATION OF THE ANALYSIS OF THAT DATA TO OTHER MEMBERS OF THE SCIENTIFIC COMMUNITY. "

"I FEEL I LEARNED HOW TO BE A RESEARCHER, AS MUCH AS I LEARNED ABOUT THE PROJECT I WAS RESEARCHING. JUST HAVING THE OPPORTUNITY TO DO ACADEMIC RESEARCH GENUINELY HELPED MY CAREER AS A RESEARCHER."

"I THINK ONE OF THE MOST VALUABLE THINGS I LEARNED WAS HOW TO COLLABORATE WITH A MENTOR. I REALLY ENJOYED MY MENTORSHIP THROUGHOUT THIS PROGRAM AND IT REALLY BUILT MY CONFIDENCE ABOUT ASKING FOR HELP AND CLARIFICATION. IT SHOWED ME WHAT I CAN AND SHOULD EXPECT FROM A MENTOR AND HOW TO BE A GOOD MENTEE AS WELL. I THINK THIS IS REALLY IMPORTANT BECAUSE IN SCIENCE MENTORS WILL ALWAYS BE ONE OF THE BEST WAYS TO GROW SO I PLAN TO USE THESE SKILLS A LOT IN THE FUTURE."

Graduate Research Academy

Recently, we began developing the Graduate Research Academy in partnership with the UCCS Graduate School as a complement to the Undergraduate Research Academy. The current Academy is made up of first- or second-year graduate students that are nominated by a faculty member. They receive a \$5,000 fellowship as well as have access to an expanded travel and professional development award. To date, we have 49 GRA Academy members with plans to add any graduate student that has received funding for their graduate education or research. These members are invited to regular CSR programming as well as GRA-specific opportunities. This Spring, GRA members and other graduate students were invited to apply for special funding to attend the National Center for Faculty Development and Diversity's WriteNow Access Spring Session. WriteNow is a writing accountability platform that engages graduate students in writing communities to help them reach specific goals over the course of 12 weeks. With funding provided by the CSR and the Graduate School, we were able to support 25 students with WriteNow access.

Faculty Mentors

The Center for Student Research also hosts programming and materials to support our faculty mentors at UCCS. Through the 2020 -2021 academic year, the CSR hosted workshops on the open science practice of pre-registering research studies as well as utilizing mentoring agreements to align expectations between students and their mentors. All faculty mentors for the Undergraduate Research Academy were encouraged to utilize mentoring agreements with their URA students and the CSR directly shared the templates with them at the beginning of the funding period in 2020 and 2021.

The CSR also worked with individual faculty members to locate students interested in assisting on projects. Additionally, the CSR routinely directed students on appropriate ways of finding a faculty mentor to work with and pointed students to faculty working on projects of interest. Beyond the programming for faculty mentors from the CSR, we also directed faculty to the numerous events hosted by the Office of Research including the Responsible Conduct of Research trainings provided through each semester.

Missing Data and Tracking Student Researchers

In preparing this report, it became evident that the previous ways in which we had been collecting data on the URA, and initially for the CSR, left us with a great deal of missing data. Perhaps due to errors in student ID numbers or simple omission from student self-reports on their application and enrollment forms, large amounts of demographic data were not able to be linked from the IR databases. Additionally, UCCS does not currently have an easy system in place for actually tracking *how many* students are engaged in mentored research experiences in any given semester. Moving forward, to ensure we are gathering as much pertinent information about our students as possible, we are taking the following steps:

1. Beginning with the 2021 URA cohort, all incoming Academy members will complete a demographic survey which will gather key variables that may not be readily accessible with the IR databases including sexual orientation, first-generation status, and financial status.
2. All CSR members joining in the Spring of 2021 will be asked to complete a similar demographics survey so that we may track the student populations we are serving better.

3. We will still rely on the IR databases and plan to work with them each semester to link our URA and CSR student members with available data. In particular we will focus on culling GPA, graduation, and graduate school matriculation among our URA and CSR members.
4. In considering the campus as a whole beyond the CSR and URA, we have also worked to develop a new course listing INDS 9499 – Undergraduate Research and Creative Works Independent Research with the hope of better tracking student researchers working on projects with faculty. This course is available now for students to register for with their faculty's consent regardless of department and they can begin earning credit for their work in the Fall of 2021.

Summary

Undergraduate research experiences are important, high-impact practices that elevate student learning and potential. Providing our students with access to and encouraging their participation in research and creative work opportunities and training helps foster their problem-solving, creative thinking, self-confidence, and a whole host of field-specific skills. Research findings tell us that students engaged in mentored experiences with faculty are more likely to persist in their college major, more likely to graduate, and more likely to attend graduate school (e.g., Linn et al., 2015; McGee & Keller, 2007; Thoman et al. 2015). Our own pool of URA students bares out these findings as well. As UCCS navigates the post-pandemic academic landscape, it will be vital to recruit and retain a motivated and diverse student body. Encouraging these students to pursue research or creative works with a faculty mentor will remain a crucial piece in helping them persist to graduation and their overall academic success. And something about supporting our faculty mentors as well?

Looking Ahead

Graduate Peer Mentor

In the near future we hope to add a graduate student to the CSR to act as a peer-mentor for undergraduate students. This Graduate student will join the CSR to provide close-peer mentoring to our undergraduate and early-career graduate student members. The Graduate Peer Mentor (GPM) will receive training in mentoring best practices such as active listening, setting ground rules and trust building, implicit bias mitigation, and inclusive mentoring strategies. The GPM will be available in the CSR for meetings with CSR student members to share knowledge, answer questions, and discuss the working and learning culture at the university in general as well as discuss the norms about being a student researcher in particular. The primary role of the GPM is to engage with and listen to students and to provide them with informational and emotional support to better their experience with research and promote positive attitudes toward graduate school. The GPM will also champion networking activities and facilitate involvement with campus events among CSR student members. The GPM will serve as an aspirational role model to the undergraduate student members of the CSR.

Undergraduate Student Travel Awards

As we transition back to campus and various pandemic restrictions are lifted, we will once again be offering undergraduate travel awards to help students offset the cost of travel and/or registrations fees when attending academic conferences. Currently, these funds are still available for virtual

conference registration and other professional development activities, though helping students experience in-person conferences is an important piece in developing their identity as a member of the research community.

Humanities Undergraduate Research Assistant Training Program

During the Summer of 2020, the CSR in partnership with the Kraemer Family Library, developed the Humanities Undergraduate Research Assistant Training Program. Based on the nature of Humanities research, these projects are often large in scope and scale. Recent research suggests that student research assistants (RAs), with support from their institution's libraries, can have an important impact on faculty's research projects while, at the same time, developing useful skills that benefit the student in their academic and professional pursuits (Aenasoaie, L., Joque, J., Peters, A., & Broek, J., 2019). The goal of this pilot program is to offer UCCS Humanities faculty support for their research agenda in the form of a trained student research assistant. The student RA is an unpaid undergraduate student who typically signs up for credit (e.g., independent study such as 9499) but can also volunteer. This RA can help with a multitude of research tasks including: Completing online searches for primary sources; compiling annotated bibliographies; conducting digital humanities work; doing technological work (charts, PowerPoints, website updates); or transcribing interviews.

The Humanities Undergraduate Research Assistant Program will provide skills training to the student RAs through the Kraemer Family Library and access to resources and community through the Center for Student Research. The skills training for the RA can be tailored to the faculty mentor's research agenda to help reduce the training burden on the faculty member and enhance the efficiency of the research carried out by the RA. The direct benefit to faculty mentors working with an undergraduate research assistant is their productivity has increased as a result and their projects are able to move forward at a steady rate. The student research assistant also benefits by gaining hands-on experience in humanities work, marketable skills that translate to careers and/or graduate school, and typically receive high-quality letters of reference from their faculty mentors. Students also gain access to a community of other student researchers which is shown to increase persistence in a degree path.

Dedicated to Diverse Student Researcher Participation

Finally, we aim to increase the diversity of students engaged in funded research activities on campus. To this end, we applied for the Presidential Equity, Diversity, and Inclusion Grant and were awarded a \$25,000 grant in the Summer of 2021. This funding will be used to support two initiatives: **1) Directly and Immediately Increase the Diversity of the Undergraduate Research Academy** by funding six additional URA awards in the summer of 2022 specifically for underrepresented students and/or students working on projects related to diversity, equity, or inclusion issues; **2) Establishing Inclusive Support for non-URA Members with the Graduate Student Peer Mentor** by hiring a graduate student in the Student Affairs in Higher Education program to help the CSR develop the training and selection process of a graduate peer mentor that will meet with CSR students throughout the year.

More broadly, we will also seek to highlight the existing gaps in the number of underrepresented students currently engaged in research on campus through our enhanced student tracking measures. In highlighting the inequity in this formative undergraduate experience, we can help foster a broader dialogue among campus stakeholders about other strategies and funding sources to close this gap.

In closing - We need you! Hearing from campus stakeholders about what types of support our student and faculty researchers need to be successful. We welcome your insights, ideas, and engagement! Contact us at csr@uccs.edu or stop by and talk with Jennifer Poe in Main Hall 316!

