



2018

Assessment of Collegiate Residential Environments & Outcomes

Annual Report

Prepared by

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Welcome

The Assessment of Collegiate Residential Environments & Outcomes

In late summer, at colleges across the United States, residential campuses experience a flurry of activity as students fill their halls. For an increasing number of our students, their housing could be a place where the learning continues and is integrated with their living experience. Upon returning from a busy day, these students may practice their foreign language major on a culturally-themed floor, discuss their academic and professional goals with a residence-based peer advising group, plan a philanthropic event with their service-oriented community, or even use medieval recipes to prepare dinner with the history professor who lives down the hall. These integrative experiences, and the living environments in which they occur, are a lot of work – even when they are excellent examples of collaborations between myriad campus departments both in and out of student affairs. But the Assessment of Collegiate Residential Environments & Outcomes is agnostic about the administrative systems that create these living environments. Our focus, instead, is firmly on the students: ACREO is invested in increasing our understanding of the residential environment’s impact on student development and academic success.

We already understand a lot about living learning programs as a high-impact practice, thanks in no small part to Karen Kurossuchi Inkelas and Aaron Brower, who launched the National Study of Living Learning Programs (NSLLP) over a decade ago. However, as institutional priorities continue to shift regarding residential requirements and program development, it was important for this study to expand its scope to be inclusive of all living environments. We don’t believe that all residential environments should look the same; nor do we believe that certain programs or initiatives such as LLPs are a cure-all. Instead, we believe, as we know you do, that the powerful practice of living on campus can have a profound influence on our students. We’re hopeful that this report helps you understand how your good and hard work is positively influencing your students, and how you might alter that good and hard work to improve the impact of the residential experience on particular outcomes.

Sincerely,

Handwritten signature of Dr. Matthew Mayhew.

Dr. Matthew Mayhew, ACREO Principal Investigator
William Ray and Marie Adamson Flesher Professor of Educational Administration
The Ohio State University

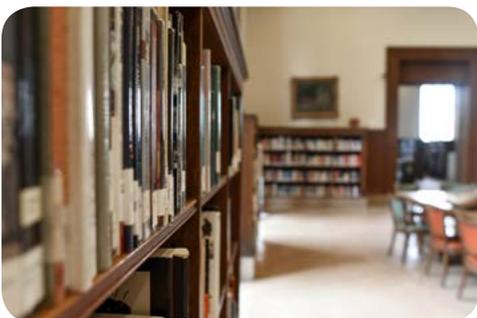
Executive Summary

This study explores how various residential environments and experiences influence student academic, intellectual, and social outcomes. By using multiple linear regression analysis, we found the most important residential experiences for student success include perception of major-related support, discussing sociocultural issues with peers, residential environment's influence on major, non-academic faculty interaction, co-curricular programming engagement, and perception of peer network. We also explored how students of diverse backgrounds differed in their responses to the outcomes. Discussion and implications for practitioners are included.



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Introduction

Report Overview



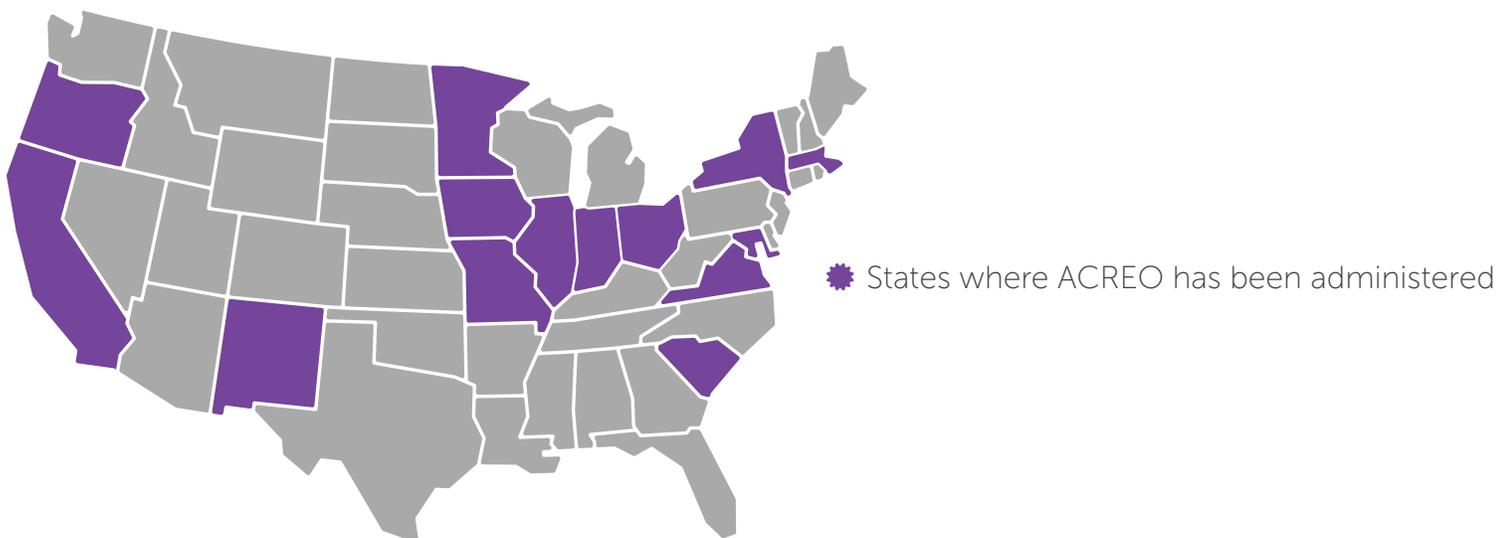
About ACREO

Overview of Study

Research has traditionally demonstrated that living on campus was one of the most significant contributors to a host of college outcomes. The most recent volume of *How College Affects Students* (Mayhew et al., 2016) highlighted many ways that living on campus has changed over the last three decades. Changes to student engagement on campus, especially in residence, reflect new and lasting ways that students connect with one another and campus resources. Students may not be as dependent upon their residential environments for social or academic connections as they once were. Expanding social networks influence how students choose to engage with their living environment and subsequently calls into question many traditional methods of programming within residence halls. As campus leaders design new residence halls and develop residential priorities, they must seek to understand how changes in student experiences impact student outcomes. While living on campus still “contributes to greater retention and graduation” (Mayhew et al., 2016, p. 545), individual campus environments play their own role in impacting student’s innovation, persistence, and sense of belonging.

The Assessment of Collegiate Residential Environments and Outcomes (ACREO), led by Dr. Matthew J. Mayhew, furthers the conversation by assessing the influence of the varied residential environments on the academic, intellectual, and social development of college students. Drawing from the knowledge of seasoned residential life and housing professionals as well as scholars of student learning and development, its primary purpose is to help institutions understand how their residential programs shape students’ learning and development while providing multi-institutional data.

The study has been, and will continue to be, administered to a diverse and representative sample of colleges and universities, which allows for national benchmarking. Our 2015 pilot year had nearly 1,500 responses from students at seven institutions, public and private, urban and rural, from New York to New Mexico. We added four institutions for the 2016 study, six institutions in 2017, and three in 2018 bringing the total number of students represented to over 75,000. The research collected on this data will inform the conversation about effective residential practices in higher education for years to come.



Research and Assessment Questions

ACREO is designed firstly as an assessment tool - our goal is to help practitioners identify meaningful data around their students' experience by measuring what students gain through distinct facets of their residential programs. However, this project also continues and improves upon previous research by providing current insight into how student outcomes vary by college residential arrangements. Three primary questions guide our thinking for this project:

- 1. How do student experiences differ by residential environment?** Answers to this question can help practitioners understand if students in various residential programs have different experiences in the ways they expect based on programmatic designs and intentions.
- 2. How do student outcomes differ by residential environment?** Answers to this question can help practitioners know that their programs are achieving their intended learning outcomes and objectives.
- 3. Which experiences influence which outcomes?** Answers to this questions can help practitioners understand which practices to implement if they want their students to achieve intended outcomes.

Theoretical Framework

Using Astin's (1984) Input-Environment-Outcome college impact model, shown in Figure 1, we've developed a framework to conceptualize the influence of residential experiences on student outcomes. As Inkelas et al. (2008) described, in Astin's model, outcomes (student characteristics after exposure to college) are influenced by both inputs (demographic and precollege characteristics, beliefs, and expectations) and environments (the various programs, policies, relationships with faculty and peers, and other educational experiences in which students are engaged).

We consider several different inputs and the influence of integrated residential environments - including academic experiences, campus climate, and social experiences - on the development of specific academic and social outcomes. See Figure 2 for the specific inputs, environmental aspects, and outcomes measured in ACREO.



Figure 1: Astin's I-E-O model (1984)

Measures of Experiences and Outcomes

This study seeks to understand the influence of residential environments on the academic, intellectual, career, and social development of college students. ACREO measures the following residential experiences and student outcomes, briefly summarized below:

Residential Experiences

- **Perception of Major-Related Support System:** Students report on the extent to which they have access to peer role models and professional mentors who are supporting them in their major as well as the extent to which they feel supported in their major by parents and friends.
- **Discussed Learning Experiences with Peers:** Students report the frequency of discussions about something learned in class with other students outside of class.
- **Discussed Sociocultural Issues with Peers:** Students report the frequency of discussions about diversity and major social issues as well as discussions with students who have different values and/or hold different religious worldviews.
- **Residential Environment's Influence on Major:** Students report on the extent to which interactions with peers, faculty, and staff in their residential environment encourages or discourages them in their pursuit of their major.
- **Campus Climate by Demographic:** Students of color, LGBTQ students, students holding historically underrepresented religious worldviews, international students, and students who identify as a gender other than cisgender man report on the campus climate for their population, including perceived faculty attitudes, perceived interactions between students from particular populations and the "majority" group students, general campus commitment to support their student populations, etc.
- **Faculty Interaction:** Students report the frequency of discussions with faculty about personal problems, career ambitions, and other non-course-related topics as well as assignments or extra assistance regarding course content. Students who indicated there were faculty affiliated with their residential environment were asked about interaction with both the residential faculty and faculty generally.
- **Residence Hall Resource Engagement:** Students report the frequency with which they utilized access to computer labs, academic advisors, peer counselors, professional staff, and faculty in their residential environment. Only students in residence halls were asked this question.
- **Co-curricular Engagement:** On-campus students report the frequency of participation in events associated with their residential environment, including multicultural programming, cultural outings, and career workshops. All students were asked about their co-curricular programming engagement during their general college experience.
- **Peer Network:** Students were asked to describe the relationships they have with other students in their residential environments, including if they have friends with whom they can study, have intellectual discussions, and who are from diverse backgrounds.
- **Supportive Residential Environment:** Students report their perceptions of how other students in the residential environment support each other both socially and academically as well as general satisfaction with the environment.

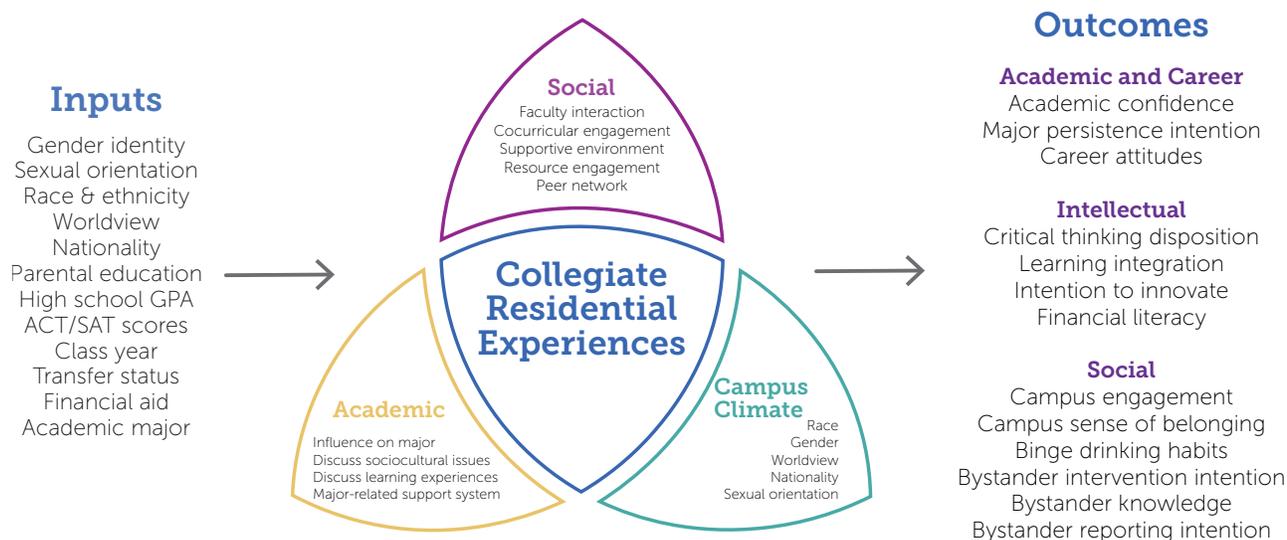


Figure 2: ACREO Conceptual Framework

Student Outcomes

- **Academic Confidence:** Students report their confidence in their ability to persist in their major, excel in their major, complete their major with a B average, persist to graduation despite various obstacles, reach academic goals (e.g. overall B average; graduation with honors), and stay at their current institution.
- **Major Persistence Intention:** Students report their plans to persist in their major and commitment to graduating from their major.
- **Career Attitudes:** Students report their confidence in their ability to get a job as well as their perception of how graduating will influence landing a job, getting a good salary, doing meaningful or satisfying or exciting work, and doing work that utilizes skills from their major.
- **Self-Reported Critical Thinking Disposition:** Students report their attitudes toward critical thinking habits of mind, such as questioning a professor, disagreeing with texts, arguing with people, exploring new ideas, and critically analyzing different points of view.
- **Learning Integration:** Students report the extent to which they integrate what they're learning by applying it to the real world, reflecting on how they're learning it, putting it in context, connecting it with a personal experience, and extrapolating abstract ideas from concrete observations. This outcome is new for 2018.
- **Intention to Innovate:** Students indicate how effective they think they are in identifying new opportunities, developing a strategy to direct their and others' efforts in the direction of realizing new opportunities, acquiring resources necessary to realize a new opportunity, and creating a new entity to take advantage of new opportunities.
- **Financial Literacy:** Students answer three questions on interest rates, inflation, and stocks and mutual funds. These questions have correct responses and the factor was calculated by adding the number of correct responses. This outcome is also new for 2018.
- **Campus Engagement:** Students report the extent to which they are involved with some kind of community, including volunteering for the community and working to make the community better; students also report on self-efficacy in terms of their impact on community.

- **Campus Sense of Belonging:** Students report the extent to which they feel comfortable in, are a part of, are committed to, are supported in, and are accepted on campus.
- **Binge Drinking Habits:** Students report how many times they had five or more drinks in a typical 2-week period. This is the only outcome in which a lower response is more desirable.
- **Bystander Intervention Intentions:** Students respond to different scenarios by describing in which instances they would intervene and in what ways they would intervene. If the student respondents would not intervene, they are asked to explain why.
 - » **At a Party:** A male and female student are leaving a party together and the female student is drunk. Instances include being friends with the male student, being friends with the female student, and not knowing either person well.
 - » **In Residence:** A student couple are audibly fighting in an adjoining apartment and the respondent doesn't know either person well.
- **Bystander Intervention Knowledge:** Students are asked to indicate their familiarity with sexual assault and bullying prevention strategies and resources.
- **Bystander Intention to Report:** Students indicate how likely they are to report sexual misconduct or bullying if they or a peer are the victim.

All measures were initially tested using the pilot data from 2015 and retested again using the most current data. We've determined that all of our scales are reliable, with Cronbach's alphas for the factors in the range of 0.85 to 0.95. Only one of the factors - perception of major-related support system - has a Cronbach's alpha below 0.80.

In addition to the measures above, ACREO also reports on several additional experiences and outcomes, including self-reported current GPA, peer connections (how and in what contexts they have connected with new people on campus), and institutional retention intention (whether students plan to return to the same college/university next year). Lastly, we ask students several questions about the level of faculty and staff involvement in their residential environment, why they chose their particular residential environment, and the reasons they would, or would not, attend an event organized by faculty and staff associated with a residence hall.



Instrument and Data Collection

Survey Design

The ACREO survey was adapted from the 2007 National Study of Living Learning Programs (NSLLP) and was designed to focus more on assessment and less on research. The length of survey was reduced in 2016 after robust analysis from the 2015 pilot study to make it more manageable for students to complete. However, we update the survey every year so that it continues to measure current topics of interest.

Students who take the survey are asked to self-report their demographics first, before being asked about their current residential environment and experiences. Although several of the questions ask students to consider their particular residential environment when answering, all students see the same battery of questions in the 2017 and 2018 surveys regardless of their reported residential environment, except for residential resource engagement.

We understand that living environments, specifically residence halls or LLPs/Residential Colleges/Honors Colleges, look different depending on the institution. Additionally, we understand that students are not always aware of their placement in a residential environment, or sometimes think they live in a certain community when they actually do not. Therefore, we ask students to self-describe their residential environment to best capture what the perception of their environment looks like.

Likert-Type Scales Used

ACREO measures student residential experiences and outcomes using Likert-type scales, described below. Scale ranges are indicated next to measure title in all tables.

Scales ranging from 1-5 are used when students are asked to rate:

- Confidence (1=Not at all confident; 5=Confident)
- How much they agree or disagree (1=Strongly disagree; 5=Strongly agree)
- Level of encouragement (1=Greatly discouraged; 5=Greatly encouraged)
- How likely they would be to perform an action (1=Very unlikely; 5=Very likely)
- How effective they are in performing a task (1=Extremely ineffective; 5=Extremely effective)

We use a 0-4 scale when measuring how often students participate in activities such as discussing learning with peers and engaging with resources or co-curricular programs (0=Never, 4=Always (Daily)), if they are available. For housing decisions, we use a 1-4 scale (1=Didn't even consider; 4=Very important). Lastly, the financial literacy questions are coded as incorrect (0) or correct (1).

Timeline

Over 21,000 students at seven institutions were invited to take the ACREO pilot survey between March and April of 2015. The 2016 study invited over 16,500 students at four institutions between March and May of 2016. Last year, 46,471 students at one of seven institutions received invitations to participate in the study, whereas this year, 12,890 students at three institutions were asked to participate. Students had an average of 3 to 4 weeks to complete the survey in 2017 and 2018.

Participating Institutions

The ACREO pilot was administered across a diverse and representative sample of seven colleges and universities, including public and private schools in urban and rural places from New York to New Mexico. Of these seven institutions, six are classified as a Doctoral University: Highest Research Activity and one is classified as a Master's Colleges & Universities: Larger Programs. The number of living learning programs at each institution range from four to 40; only two have residential or honors colleges.

The 2016 administration occurred at four public and private universities across the United States. Three are classified as Doctoral Universities: Highest Research Activity while one is classified as a Doctoral University: Moderate Research Activity. The number of living learning programs at these institutions also range from few to many, while none have designated residential or honors colleges.

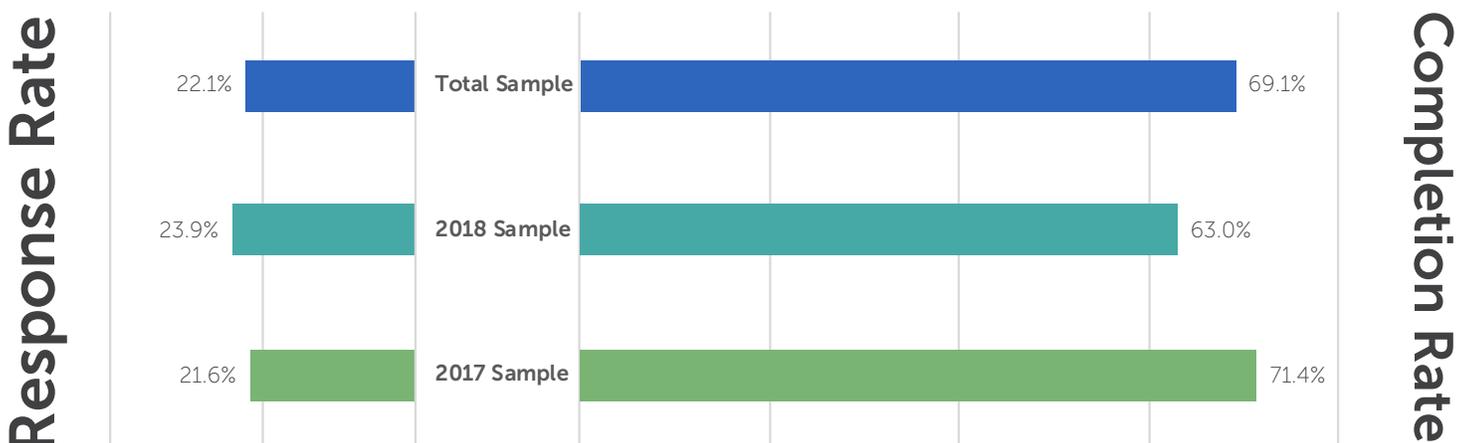
Last year, ACREO was administered at seven U.S. public and private colleges and universities. Six are considered Doctoral Universities: Highest Research Activity and one is classified as a Doctoral University: Higher Research Activity. The average number of living learning programs at each institution was about 15. Additionally, several operated designated residential and honors colleges.

During the spring of 2018, three U.S. public doctoral universities participated in ACREO. Two of these universities participated in 2017, whereas the third was new to ACREO this year.

Because the survey changed from 2015 to 2016, we do not include results from 2015's pilot study in this analysis. Additionally, due to the ever-changing demographics of college and university students, we also did not include the results from the 2016 study in this analysis. Please refer to those reports for information on past survey administrations.

Response Rates

In the past two years, 59,364 students were invited to take the ACREO survey. A total of 13,119 students responded, while usable data for students who completed at least 80% of the survey was obtained for 9,066 respondents, yielding a response rate of 22.1% and a usable data rate of 69.1%, respectively.



Using This Report

A Word of Caution

The findings presented in this report should be considered as part of a larger whole. No single percentage or mean can capture the essence of a college or university, not to mention the dedicated work of its staff. Rather than place tremendous weight on any particular numerical result, these findings are best viewed as pieces of a larger picture explaining how students broadly experience campus. After considering how these results complement and contradict campus stakeholders' perceptions, findings can serve as the basis for discussion that may lead to a more comprehensive understanding of students' residential environments. In short, the intent of this report is to assist campus leaders in building an empirical basis for future actions.

Report Sections

This report is divided into three chapters: Chapter 1 provides an overview of the sample's demographic characteristics, Chapter 2 focuses on understanding how the residential experiences described above influence the student outcomes we measured, and Chapter 3 is dedicated to providing some discussion and recommendations for improving these programs.

Throughout the report you'll notice fewer tables and more figures and text. We hope this approach will help you make the most meaning of these results and assist in future action. However, you'll find the large tables in the appendices, including demographic information.

Important Terminology

In our attempt to make this report as practitioner-friendly as possible, below are some of the terms we use to compare between and within your institution. Appendix A provides more information on how to read the tables and charts used in the report.

- **Factor Score:** A factor score is a measure comprised of related survey items confirmed by a statistical technique known as factor analysis and is used to represent a concept that cannot be measured with one or two questions. We calculate the factor score by weighting each of the items before summing them and dividing by the smallest value. This process provides a more accurate measure of the factor while also keeping the score within the range of the items' scale. For example, if the items asked a student to respond on a 1 to 5 Likert scale, the factor score will range from 1 to 5.
- **Significance:** Statistical significance indicates whether or not there is a statistical difference between groups. The null hypothesis always assumes there is no statistical difference, though significance values (often referred to as p -values) allow researchers to reject the null hypothesis and suggest a difference does exist ($p < 0.05$). Put simply, a p -value less than 0.05 means there is a 95% chance the difference found between groups is not simply due to chance. Differences found to be statistically significant at the 95% level are labeled within each table.

It is important to note that while a given difference might be statistically significant, it may not be practically significant. For example, a study comparing grade point averages among male and female students may find that female students have statistically significant GPA differences, with female students averaging a 3.16 and male students averaging a 3.01. Practically, however, each of these GPA values represent a B average on a standard 4.0 grading scale. In these cases, it is useful to consider practical significance by using effect sizes.

- **Effect size:** We use effect sizes to measure the practical difference found between groups, although ultimately each institution must determine whether or not the differences identified (significant or not) are of practical value. Effect sizes differ from the previously-discussed significance levels in that significance testing determines whether or not statistical differences between groups exist, whereas effect sizing attempts to quantify the magnitude of such difference.

Although there are a number of different measures for effect size, we rely on Cohen's *d* since it's a standardized measure of the distance between two means (Cohen, 1988). Cohen suggested effect size measures greater than 0.8 should be classified as large, values between 0.5 and 0.8 should be classified as medium, values between 0.2 and 0.5 should be classified as small, and values less than 0.2 should be classified as trivial. We make use of these suggested labels when comparing means in the report yet caution against blanket application of these effect size values, as Cohen does. Readers are encouraged to consider effect size differences in light of specific campus and cultural contexts.

Acknowledgments

Many thanks to the members of the ACREO Advisory board for their input as we updated and improved the survey.

References

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Chapter One

Student Demographics

Equity-Minded Considerations

As college and university populations become more diverse, it's essential to consider their characteristics as we measure their experiences and outcomes. While inferences about students based on demographics are beyond the scope of this study, we wanted to present general information on your student sample's characteristics.

We included this chapter to help lay the groundwork for the following chapters by providing you with an idea of who responded to the survey, but this sample may not be representative of all students on your campus. We suggest you compare the demographics of these students to those on your campus before making generalized conclusions based on this report. Appendix B provides more detailed information on the student demographics and characteristics.

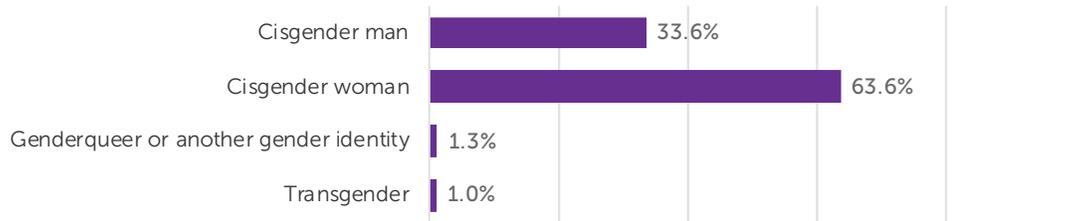
Lastly, our goal with this study is to help institutions produce equity-minded solutions to issues students may experience in residential programs. To that end, we recommend you consider what institutional structures hinder the experiences of traditionally underserved students and how your staff can work toward removing them so all students feel supported in your residential programs.

Social Identities

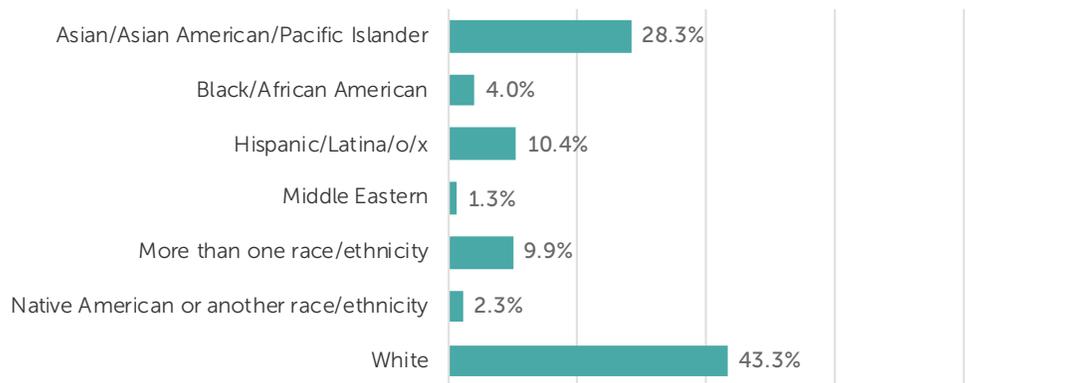
We consider gender identity, sexual orientation, race, worldview, and nationality as student social identities. Students are able to select more than one option per identity, so any percentages presented here may differ from those in the dataset. Please note, we attempted to demonstrate all possible identities in the graphic below. Options are listed in alphabetical order.



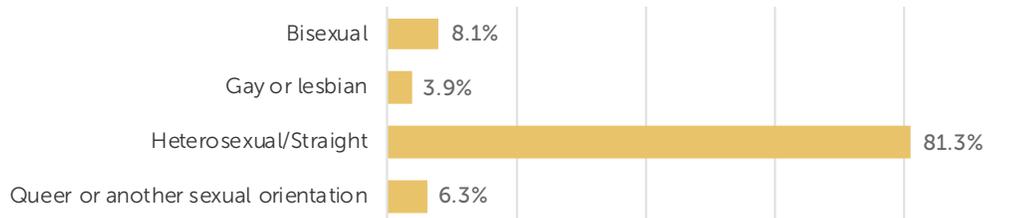
Gender Identity



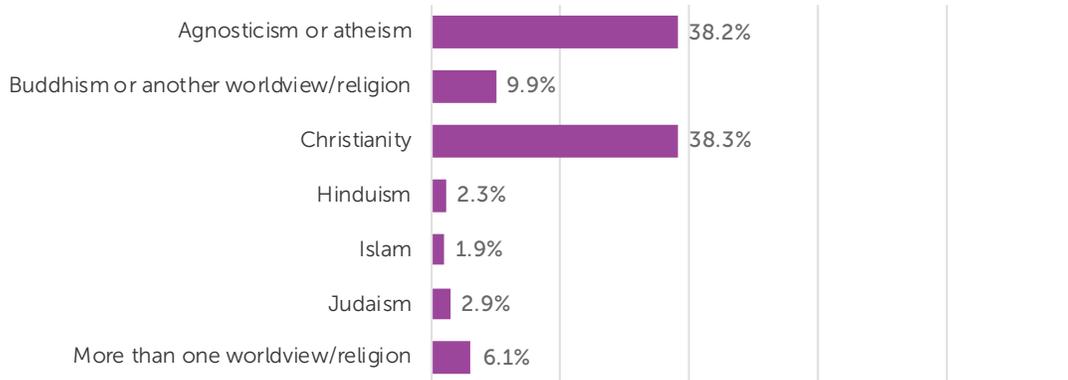
Race/Ethnicity



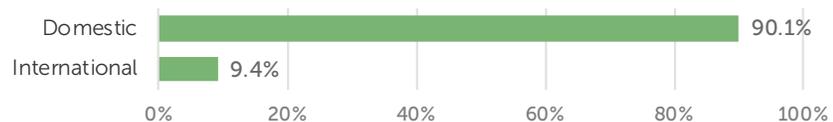
Sexual Orientation



Worldview/Religion



Nationality



0% 20% 40% 60% 80% 100%

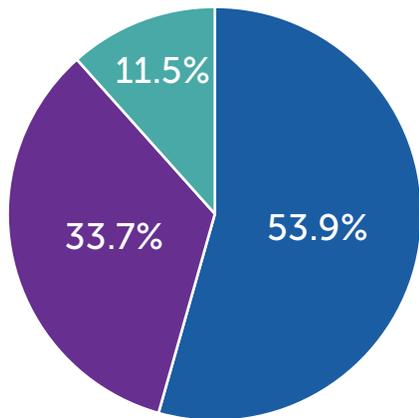
Student Socio-Academic Background

Socio-academic background characteristics include the student's highest level of parental education, self-reported average high school grades, and financial aid. Many students did not report SAT/ACT scores, so we do not include them in the chapter, but they are available in the appendix.

Most student respondents come from families with parents who have at least a bachelor's degree.

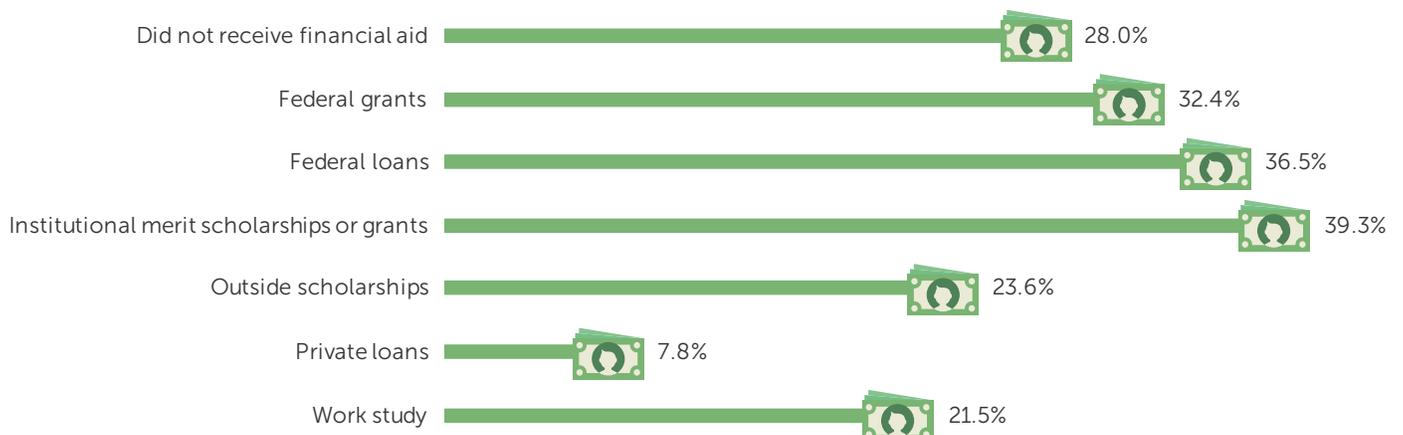


Student respondents earned mostly A's and B's in high school.



Average high school grades of A+ or A
 Average high school grades of A- or B+
 Average high school grades of B or lower

60.8% of student respondents said they received federal loans as financial support.



Collegiate Academic Characteristics

Academic class year, major category, and self-reported GPA are reported as collegiate academic characteristics. Additionally, we include the number of students who said they transferred colleges and switched majors.

The most common majors for student respondents are in the STEM fields.

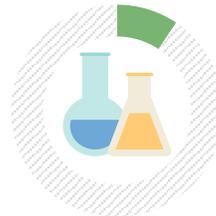
Arts & Humanities
13.9%



Business Admin.
9.6%



Health Professions
9.4%



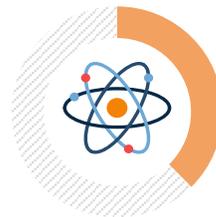
No Major Selected
8.9%



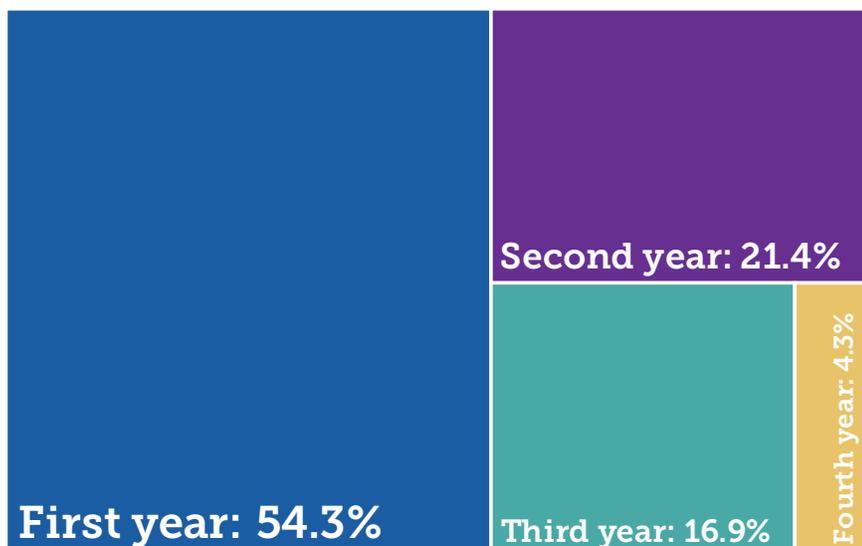
Social Sciences
20.1%



STEM Fields
37.6%



Most student respondents are in their first year.



12.0% ↗

of student respondents transferred from another college

19.2% ↔

of student respondents changed their major

3.44 🔥

average self-reported collegiate GPA among student respondents

Chapter Two

Impact Analysis



Impact Analysis

Measuring Residential Experiences and Student Outcomes

Students experience their residential environments in an integrated way. They don't always make a distinction between learning with their peers or with a faculty/staff member, yet knowing when, where, and with whom a student is learning or is supported can be valuable as practitioners implement programs. Therefore our goal with ACREO is to understand how students perceive the different aspects of their residential environment by exploring their academic experiences and social experiences separately. In this chapter, we consider findings across the following types of residential experiences:

- **Academic Experiences:** We focus on aspects related to students' academic experiences in a number of ways on the survey. We measure students attitudes toward their perceived major-related support system, the level to which they discuss learning experiences and sociocultural issues with peers, and their residential environment's influence on their major. Together these measures demonstrate how students interact with their environment and pinpoint the ones with the most influence.
- **Social Experiences:** Social experiences on campus and in the residence halls are just as important to assess as academic ones. We consider aspects of the student experience such as interactions with faculty unrelated to courses, engagement with residence hall resources, engagement with co-curricular programming, and perception of how supportive the residence hall environment is when discussing social experiences.

Student outcomes across both academic and social domains are the characteristics students develop through participation in their residential environment. We measured student outcomes to determine whether or not students achieve the results we think they should by living in certain residential environments. Most on-campus residential programs have an academic component, which is why we measured outcomes such as academic confidence, major persistence, and career attitudes, as well as self-reported critical thinking disposition and learning integration. We also assessed social outcomes through questions related to sense of belonging, campus engagement, high-risk binge drinking, and bystander intervention tendencies. We present findings for the following academic, intellectual, and social outcomes:

- **Academic Confidence, Major Persistence, and Career Attitudes:** To measure academic confidence, we asked students to rate their perceived confidence to remain enrolled, excel, and complete the upper level required courses with an overall grade point average of B or better in their intended major. We also included measures of students' intent to persist in their major by asking about their plans to remain enrolled in their intended major, thoughts about whether earning a bachelor's degree in their intended major is a realistic goal, and commitment to getting a college degree in their intended major. We measure career attitudes by asking students to rate their confidence in their ability to get a job as well as the extent to which they think that graduating with an undergraduate degree will allow them to get a good job (or graduate school) offer, do work that they would find satisfying, and apply skills developed in their major to their job.
- **Critical Thinking, Intention to Innovate, Financial Literacy, and Learning Integration:** The intellectual outcomes we measured include self-reported critical thinking disposition, intention to innovate, financial literacy, and learning integration. These outcomes are associated with academic and intellectual development, but aren't directly related to students' major choice and career attitudes.

- **Sense of Belonging, Campus Engagement, Binge-drinking, and Bystander Actions:** When we measured sense of belonging, we asked students questions related to their comfort, commitment, support, and acceptance on campus. Campus engagement, however, is measured by asking students to indicate the importance of playing an active role in their community, their belief that their work has a greater purpose for the larger community, and how much they work with others to make their community a better place. We assessed high-risk binge drinking by requesting students to state how often during a two week period they had 5 or more drinks. To measure bystander intervention, we provided students with hypothetical sexual assault situations and asking them to rate their likelihood to intervene based on their relationship with the parties involved. We also inquire about students' bystander reporting knowledge and intention after an event occurs.

Overview of Methods

The purpose of this chapter is to provide an analysis of which residential experiences have the largest role in the student academic and social outcomes measured by ACREO. We also present some semi-conditional results by student demographic characteristics. Our hope is that this chapter will provide practitioners with additional and valuable information useful for making programming and policy decisions.

With the theoretical framework - based on Astin's (1983) I-E-O model - in mind, we conducted a series of multiple linear regression analyses to determine which student characteristics and residential experiences were significantly correlated with the outcomes. Each finding represents the association between the stated experience (e.g., major-related support) and the outcome after accounting for background characteristics and all of the other experiences measured by ACREO.

Instead of focusing solely on providing a table of regression coefficients (which is found in the appendices), we include two matrices that communicates whether an experience is significantly correlated with the outcome, the direction (positive or negative), and the correlation strength. We use one sign to indicate a weak - yet still statistically significant - correlation, two signs to indicate a moderate correlation, and three signs to indicate strong correlation. The strength of the correlations is based on the p -values found in the analysis. However, a weak correlation is still significant, just not at the same level as a strong correlation. Also, a plus sign communicates a positive correlation (i.e., as the score in the experience increases, the score in the outcome also increases) and a minus sign communicates a negative correlation (i.e., as the score in the experience increases, the outcome decreases). We also note that all continuous variables were standardized before running the analysis; as such, the advanced reader can interpret those coefficients as effect sizes.

Interpreting Results

We suggest you read this table in a variety of ways. You can, for instance, look down the column of any outcome your department would like to improve, and know to focus resources on those experiences which have significant influence. For high performance areas, you may want to reflect on what practices or environments led to such positive student input and consider ways to maximize or expand those practices. This matrix is also useful if you are interested in knowing what outcomes a signature program is most likely to improve (or not).

Regression Results

Key Findings: Experiences and Outcomes

- **Importance of social influences on academic and career outcomes:** Although we understand that residence life staffs have very little influence on the interactions students have with their family and friends, it seems that a student's perceived support in their major is very important to academic success. Students with high support in their major have more academic confidence, stronger intentions to persist in their major, higher career attitudes, and higher innovation disposition on average, than students with weak major-related social support. Unsurprisingly, non-academic faculty interaction also strongly influences career attitudes and intention to innovate. In practice, we suggest finding ways to combine these major support systems, family, friends, and faculty members. All levels of staff can be mindful of these positive outcomes achieved by social interactions outside of the classroom when engaging in one to one dialogue with students or developing co-curricular programming, especially with faculty.
- **Importance of an academic residential environment:** Although a residential environment's level of influence on the major is associated with several of the academic, career, and intellectual outcomes (as we had hoped), it also influences many of the social outcomes, particularly sense of belonging and campus engagement. It seems as though students in more academically supportive residential environments have stronger connections to the campus, on average, which could in turn, influence their binge drinking behavior and bystander knowledge and intervention disposition. This result reveals that academic residential environments are just as important for social success as they are for academic success.
- **Influence of residential engagement:** We were very surprised to see the negative association that engaging with residence hall resources and residential co-curricular programming has on several of the outcomes. Students who often engage with residential co-curricular programming have weaker critical thinking and innovation disposition, academic confidence, major persistence intentions, and campus sense of belonging, on average. As mentioned above, an academically focused residential environment is positively associated with a number of academic and social outcomes; conversely, engaging socially in the residential environment seems to negatively associate with academic and career outcomes across the board. It is not safe to assume that any residential programming or engagement is related to positive academic and career outcomes. Interestingly, while residential co-curricular programming has a negative association with campus sense of belonging, a supportive residential environment is strongly, positively associated with sense of belonging. It seems that students are expressing a distinction between programming within residence and support within residence. This again highlights how in-hall programming is not necessarily a catch-all for supporting students' various needs. We suggest investigating how programming models or requirements might be affecting staff engagement with students on other, more personal intentional levels, and if those programs truly achieve the desired outcomes.



Exhibit 1

Matrix of Residential Experiences and Academic, Career, and Intellectual Outcomes

	Academic Confidence	Major Persistence Intention	Career Attitudes	Critical Thinking Disposition	Learning Integration	Intention to Innovate	Financial Literacy
Academic Experiences							
Perception of major-related support system	+++	+++	+++		+	+++	
Discussed learning experiences with peers		+		--			
Discussed sociocultural issues with peers		++	-	+++	+		+
Residential environment's influence on major	+++	++	++	++		+++	
Social Experiences							
General non-academic faculty interaction			+++	+		+++	
Residential resource engagement							--
Residential co-curricular programming engagement	---	---	-	--	-	---	-
General co-curricular programming engagement		+	+	+++	+	+++	+
Perception of peer network	+			++		+	
Supportive residential environment							

Small (+/-): $p < 0.05$, Medium (++/-): $p < 0.01$, Large (+++/-): $p < 0.001$

Exhibit 2

Matrix of Residential Experiences and Social Outcomes

	Campus Engagement	Campus Sense of Belonging	High-risk Binge Drinking	Bystander Intervention at a Party	Bystander Intervention in Residence	Bystander Knowledge	Bystander Reporting Intention
Academic Experiences							
Perception of major-related support system	+++	+++		+	+	++	+++
Discussed learning experiences with peers						-	-
Discussed sociocultural issues with peers	++	-		++	++	+	
Residential environment's influence on major	++	++	--			++	+
Social Experiences							
General non-academic faculty interaction	+				++		++
Residential resource engagement	--			-			
Residential co-curricular programming engagement	-	--					-
General co-curricular programming engagement	+++	+++		++		++	+
Perception of peer network	++	+++		+	+	+	++
Supportive residential environment		+++					

Small (+/-): $p < 0.05$, Medium (++/--): $p < 0.01$, Large (+++/---): $p < 0.001$

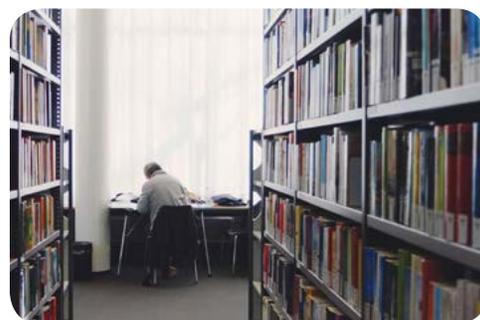
Outcomes by Student Demographics Results

Because we included student demographics as effect codes in the linear regression analysis, we have an idea of how students of various demographics differed in their responses to the outcomes compared to the rest of the student population when all other variables are considered equal. Although these results can be helpful in making equity-minded decisions about programming for underrepresented groups, we caution you to not make generalizations about any specific student identity group, especially since these results do not consider intersections of multiple identities. Below are these quasi-conditional results by student characteristics:

- **Cis-gender men and academic, career, and social outcomes:** Students who self-identify as cisgender men have significantly higher scores, on academic confidence and critical thinking disposition than students of other genders. It is important to note that, conversely, students who self-report as cisgender woman or genderqueer/another gender have significantly less academic confidence and critical thinking disposition on average. On the other hand, cisgender men are less likely to intervene as a bystander at a party when cisgender women are significantly more likely to intervene in similar situations.
- **Racial differences for academic, career, social outcomes:** Asian American, Native American, and Pacific Islander (AANAPI) students have significantly lower scores on all the academic, career, and intellectual outcomes compared to students of all other racial identities. White and Black/African American students, however, have significantly higher scores on academic confidence, on average, as well as career attitudes for White students, and intention to innovate for Black/African American students, when compared to students of all other racial identities. White students also have significantly higher bystander knowledge on average, but also, along with students identified as Latina/o/x/Hispanic, engage in high-risk binge drinking more often than other students. When considering social outcomes, AANAPI students engage in high-risk binge drinking less often than other students but feel as if they have significantly less bystander knowledge and are less likely to intervene in any of the bystander scenarios than other students.
- **Class year, major, and GPA:** Unsurprisingly, first-year students are, on average, less academically confident and less certain about their intention to persist in their major than other undergraduate students. However, first-years have a stronger belief in college's role in their career than other students. Third-year students, on the other hand, have more academic confidence and intention to persist in their major, but less perception of college's role in their career, than other undergraduates. When looking at sense of belonging, specifically, first-year students demonstrate the least sense of belonging by a significant degree. As students progress from first to fourth year, their sense of belonging, on average, increases to where fourth-year students indicate a significantly higher sense of belonging than other students. The same can be said, albeit to a smaller degree, regarding bystander reporting intention. Fourth-year students are the only class year that represented a positive intent to report regarding bystander situations. STEM majors have less academic confidence than students in other majors, yet, along with health and social sciences majors, demonstrate more intent to persist in their major. Students majoring in the humanities have higher self-reported critical thinking disposition and academic confidence, yet the lowest career attitudes. Students studying social science disciplines are the only major group to have significantly higher scores on the academic and intellectual outcomes; students who have yet to declare a major had significantly lower scores on these outcomes. Lastly, having a higher GPA is associated with higher academic, career, and intellectual outcomes as well as lower instances of high-risk binge drinking. Interestingly, though, students with high cumulative GPAs also indicated lower bystander reporting intention.

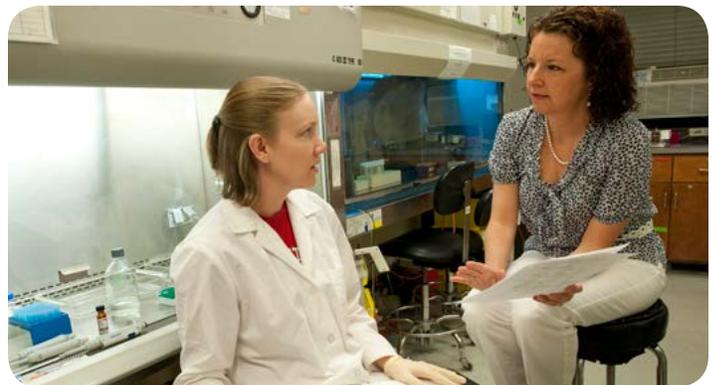
“Based on their **expertise in leadership**, co-curricular educators are in a **distinctive position** to assist the institution in realizing higher education’s **value and purpose** of educating students for **engaged citizenship**.”

(Mayhew et al., 2016, p. 599)



Chapter Three

Discussion & Implications



Discussion & Implications

Using these results on your campus

Staff and faculty can greatly benefit from engaging with the results that emerged in the 2018 implementation of the Assessment of Collegiate Residential Environments and Outcomes. In particular, the findings showed the influence that residential environments have on important student experiences and outcomes. Though professionals may perceive having more power over certain experiences (e.g., residential programming), we encourage them to examine how they can play a role in other influences that impact student outcomes. For example, students' support in their major garnered through family and friends was one experience that was significant for various academic and career outcomes. Knowing this, practitioners and resident assistants in residence halls can have intentional conversations with students about their major-related support systems to gauge if their residents are receiving this crucial assistance. Professionals can also consider implementing residential programs that focus on talking to communities back home about their major and collegiate experiences in the spirit of bridging this gap. Finally, part of this construct measures whether students feel they have an upper-class peer mentor's support in their major; fostering this kind of support system could absolutely be within the power of practitioners and resident assistants! In addition to major-related support systems, non-academic faculty interaction was also significant for academic and career outcomes (specifically, career attitudes and intention to innovate). With this knowledge, residential life staff can continue to think about how to increase interactions between students and faculty. By inviting faculty to programs or having them lead in-hall events themselves, residents can foster connections that are imperative to the success of students.

The regression results from the 2018 ACREO implementation also revealed the differential effects that residential environments and resources can have on experiences and outcomes. One example of this concerned how individuals reported their perception of residential environment's influence on their major. As mentioned in the key findings from the regression results, an academic residential environment had a significant relationship with numerous academic, career, intellectual, and social outcomes. These relationships signal to staff that it is imperative that residential environments are constructed to support students in their academic endeavors. This can take the form of offering opportunities for residents to connect with others in their majors (e.g., through study buddy programs or study tables) or collaborating with academic departments on campus.

Conversely, measures of accessing residence hall resources or engaging in residential co-curricular program surprisingly had negative associations with several outcomes. Comparing this to the results concerning residential environment's influence on major, it seems as though students may have more positive holistic perceptions of their halls than of the actual formalized programming. Therefore, we suggest to practitioners that resources and programs must not be implemented without strong intention. Noted previously, some of this work might require returning to and revising existing programming models. It may be that certain laudatory goals may be better reached by "converting" active/experiential programming into passive/environmental initiatives. By assessing the degree to which resources/programming are currently fulfilling learning outcomes, practitioners may notice gaps that exist, opening up potentially vital possibilities to positively impact student outcomes. Yet, as always, we encourage residence life departments to reflect on how certain environments may differentially affect student populations.

Also food for further thought are the outcomes of financial literacy and high-risk drinking. These two outcomes seem largely unmoored from any of the experiences we measured. In that sense, these two outcomes represent areas for practitioners to innovate; our typical residential environments

and experiences do not seem to influence the financial literacy or high-risk drinking of collegians. Reading Exhibits 1 and 2 horizontally, as it were, also reveals a surprising non-correlation: a supportive residential environment does not appear to be linked to any outcomes other than campus-level sense of belonging. Given that this construct partly measures so-called “general satisfaction”, it may be that residential life practitioners can, counter-intuitively, focus less energy on such non-academic environmental factors.

The findings from the regression analyses represent a chance to better comprehend how factors such as race, gender, and academic characteristics affect campus experiences and student outcomes. Discussed previously in the Student Demographics section of the report, ACREO strives to help staff and faculty think in equity-minded ways. We believe that the results from this past year’s implementation of the ACREO survey can help contribute to conversations about equity in residence life.

One significant finding that emerged was that cisgender men have higher scores on academic confidence and critical thinking disposition than students who identify as cisgender women or genderqueer/another gender. Though concerning, these results represent places where residential life can focus on intentionally. For example, by working with faculty and academic departments, residence halls can foster campus partnerships specifically geared toward getting women or genderqueer/another gender students to faculty office hours. By encouraging outside-the-hall programs such as these, residential life can offer support for individuals who may be feeling isolated in their academic spaces, which in turn affects their views of themselves.

Differences in student outcomes also appeared in relation to race. Asian American, Native American, and Pacific Islander (AANAPI) students, for example, scored consistently lower on the academic, career, and intellectual outcomes measured in the study. Residence life staff should then ask themselves whether or not they have support networks in place for AANAPI populations on their respective campuses. If available, staff members can help mitigate the issues that this population may face by creating original initiatives specific to this demographic or working with offices that may cater to AANAPI students. Additionally, the regression analyses found that racial populations varied in their high-risk drinking processes, bystander knowledge, and likeliness to intervene in bystander interventions. Rather than offer demographic-specific recommendations, these results serve as a crucial reminder that trainings around bystander intervention and high-risk drinking practices must consider how cultural backgrounds can play a role in these social outcomes.

Finally, outcomes differed by academic characteristics such as class year, major, and GPA. Whereas first-year students reported lower scores on their academic confidence and intent to persist in their major and higher scores on their belief in college’s role in career, third-year students indicated the opposite relationships. What is particularly troubling in these findings is that students appear to be declining in their view that college will help them to achieve their career goals. For residence halls that house upperclass students, this result reveals a need to focus on the career development of these students, which involves helping them understand how their collegiate experiences and majors will benefit them in their vocations. Other patterns emerged in students’ academic majors with differences existing across academic disciplines. Residence life staff should take note of these trends. Overall, these patterns may highlight the necessity to program specific to disciplines within the residence hall or to continue to center students’ academic experiences in conversations with professional staff and resident assistants.

Ultimately, we hope that these findings may be beneficial for residence life departments as they progressively strive to innovate in the resources and opportunities that they offer.

Appendix A

Regression Tables



Regression Tables

Below are the coefficients for the regression models referenced in this report. Note that effect coding was used with demographic variables, so inferences should be made between the selected group and the rest of the options for that characteristics (i.e., there is no single reference group; see Mayhew & Simonoff, 2015). Additionally, all continuous variables were standardized and can be interpreted as effect sizes.

Table 1

Regression Coefficients for Academic, Career, and Intellectual Outcomes

	Academic Confidence	Major Persistence Intention	Career Attitudes	Critical Thinking Disposition	Learning Integration	Intention to Innovate	Financial Literacy
Cisgender Man	0.172***	0.056	0.093*	0.186***	0.035	0.049	0.314*
Cisgender Woman	-0.014	0.019	0.056*	-0.038*	-0.017	0.010	-0.305*
Genderqueer/Another Gender	-0.158**	-0.075	-0.149*	-0.147**	-0.018	-0.059	-0.009
Bisexual	0.035	0.052*	-0.055	0.135**	0.131	0.053	0.022
Gay/Lesbian	-0.079	-0.081	0.098	-0.136*	-0.177	-0.023	-0.109
Heterosexual/Straight	0.061*	0.018	0.043	-0.089**	0.022	0.029	0.007
Queer/Another Sexual Orientation	-0.018	0.011	-0.086*	0.090	0.024	-0.058	0.080
Another Race/Ethnicity, including Native American and Middle Eastern	-0.081	0.025	-0.032	0.002	0.105	0.041	-0.074
Asian, Asian American & Pacific Islander	-0.259***	-0.141***	-0.204***	-0.203***	-0.134	-0.104**	0.042
Black/African American	0.114*	-0.028	0.066	0.054	-0.041	0.105*	-0.047
Latina/o/x/Hispanic	0.073	0.032	0.118	0.056	-0.069	-0.106	-0.116
More than One Race	0.069*	0.055	0.000	0.051*	0.087	0.049	0.075
White	0.084**	0.057	0.052*	0.040	0.051	0.015	0.120*
Another Worldview	0.015	-0.002	0.012	0.038	0.026	0.006	0.010
Nonreligious	-0.015	-0.02	-0.054	0.055**	-0.030*	-0.042*	0.026
Worldview Majority (Christianity)	-0.033*	-0.006	0.027	-0.094*	-0.050	-0.009	-0.024
Worldview Minority (Buddhism, Hinduism, Islam, & Judaism)	0.034	0.028	0.015	0.002	0.053	0.045	-0.012
First Year	-0.111***	-0.207***	0.055*	-0.062*	0.008	-0.025	-0.105*
Second Year	-0.024*	0.018	-0.029	0.013	0.005	-0.022	0.008
Third Year	0.099***	0.185***	-0.057*	-0.009	0.003	0.021	0.103
Fourth Year	0.036**	0.004	0.032*	0.059	-0.016	0.025	-0.006

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

	Academic Confidence	Major Persistence Intention	Career Attitudes	Critical Thinking Disposition	Learning Integration	Intention to Innovate	Financial Literacy
Arts & Humanities Major	0.149**	0.108*	-0.281***	0.225***	0.259	-0.019	-0.223
Business Major	0.040	0.093	0.069	-0.143***	-0.062	0.147***	0.336*
Health Sciences Major	-0.028	0.193**	0.222**	-0.247**	-0.101	-0.078	-0.122*
STEM Major	-0.158**	0.114**	0.085**	-0.021	-0.139	-0.058*	0.212*
Social Sciences Major	0.192***	0.152**	0.045	0.129***	0.127	0.088**	-0.095
No Major Selected	-0.195*	-0.660***	-0.139**	0.058	-0.085*	-0.080*	-0.108
Nationality (0=Domestic; 1=International)	0.070*	0.005	-0.129***	0.080	-0.103	-0.013	-0.054
Generational Status (0=Continuing-gen; 1=First-gen)	-0.062*	-0.023	-0.070	-0.073	0.010	0.000	-0.113
Transfer student	0.058	0.035	-0.046	0.140*	0.165*	0.027	0.000
Cumulative College GPA	0.321***	0.093**	0.063*	0.086***	0.046	0.023	0.094**
Perception of Major Support System	0.200***	0.227***	0.303***	0.036	0.116*	0.153***	-0.041
Discussed Learning Experiences with Peers	0.007	0.015*	0.000	-0.038**	0.026	-0.006	0.043
Discussed Sociocultural Issues with Peers	0.018	0.038**	-0.033*	0.212***	0.122*	0.044	0.088*
Residential Environment's Influence on Major	0.103***	0.081**	0.096**	0.056**	0.119	0.091***	-0.031
Non-academic Faculty Interaction	0.020	-0.013	0.063***	0.045*	0.055	0.087***	-0.009
Residential Resource Engagement	-0.016	-0.007	-0.004	-0.050	0.037	-0.015	-0.066**
Residential Co-curricular Programming	-0.123***	-0.155***	-0.066*	-0.174**	-0.118*	-0.119***	-0.145*
General Co-curricular Programming	0.053	0.030*	0.051*	0.188***	0.150*	0.160***	0.126*
Perception of Peer Network	0.048*	0.005	0.070	0.071**	0.070	0.072*	0.009
Supportive Residential Environment	0.035	0.042	0.028	0.027	-0.016	0.075	0.021
Observations	4922	4912	4927	4894	1459	4904	1488
R-squared	.32	.23	.26	.19	.17	.16	.21

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 2

Regression Coefficients for Social Outcomes

	Campus Engagement	Campus Sense of Belonging	High-risk Binge Drinking	Bystander Intervention at a Party	Bystander Intervention in Residence	Bystander Knowledge	Bystander Reporting Intention
Cisgender Man	-0.097**	0.019	0.049	-0.187***	-0.018	0.049	0.049
Cisgender Woman	0.093***	0.026	0.026	0.144**	-0.026	0.096*	0.102**
Genderqueer/Another Gender	0.004	-0.045	-0.075*	0.043	0.044	-0.146	-0.151*
Bisexual	-0.063**	-0.055	0.025	0.065*	0.107	0.026	0.010
Gay/Lesbian	0.068*	0.134**	0.061	-0.001	-0.119	-0.008	-0.042
Heterosexual/Straight	-0.045	-0.003	0.028	-0.125***	-0.003	0.025	0.025
Queer/Another Sexual Orientation	0.041	-0.077	-0.114*	0.061	0.014	-0.042	0.008
Another Race/Ethnicity, including Native American and Middle Eastern	0.068	0.031	-0.090	-0.070	0.097*	-0.052	-0.098
Asian, Asian American & Pacific Islander	-0.068*	-0.025	-0.146*	-0.167**	-0.119*	-0.198***	-0.052*
Black/African American	0.047	-0.085	-0.115	0.019	-0.031	0.074	0.091*
Latina/o/x/Hispanic	-0.045	0.048	0.111**	0.150*	0.057	-0.020	0.081
More than One Race	-0.007	-0.018	0.052	0.037	0.007	0.031	-0.055
White	0.005	0.048	0.188**	0.032	-0.011	0.166***	0.032
Another Worldview	0.002	-0.040	-0.036	-0.013	0.065**	0.006	-0.049
Nonreligious	-0.141***	-0.044	0.031	0.057*	0.048*	-0.023*	-0.002
Worldview Majority (Christianity)	0.049	-0.004	-0.039	-0.027	0.028	-0.062	-0.023
Worldview Minority (Buddhism, Hinduism, Islam, & Judaism)	0.090*	0.087	0.044	-0.017	-0.141***	0.078	0.074*
First Year	-0.008	-0.048**	-0.047	0.054*	0.061*	0.037	-0.067*
Second Year	-0.017	-0.025	-0.023	0.015	-0.012	-0.031	-0.022
Third Year	0.009	0.013	-0.005	0.007	0.002	-0.059	-0.017
Fourth Year	0.017	0.060**	0.075	-0.076	-0.051	0.053	0.106**
Arts & Humanities Major	-0.083*	-0.064	-0.129**	0.107*	0.045	0.033	0.051**
Business Major	-0.045	0.054	0.195*	-0.090*	-0.052	0.057	-0.066
Health Sciences Major	0.114*	0.008	-0.008	0.005	-0.002	0.005	0.009
STEM Major	0.017	-0.035	-0.130*	-0.052*	0.039	-0.053	-0.043
Social Sciences Major	0.095**	0.119**	0.039	0.073*	0.033	0.088	0.108**
No Major Selected	-0.098	-0.082**	0.033	-0.041	-0.063	-0.131**	-0.059

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

	Campus Engagement	Campus Sense of Belonging	High-risk Binge Drinking	Bystander Intervention at a Party	Bystander Intervention in Residence	Bystander Knowledge	Bystander Reporting Intention
Nationality (0=Domestic; 1=International)	-0.066	-0.061	-0.021	-0.137*	0.007	-0.237**	0.060
Generational Status (0=Continuing-gen; 1=First-gen)	-0.010	-0.093*	-0.090*	0.039	0.093	-0.041	0.020
Transfer student	0.072*	0.084	-0.002	0.064	-0.058*	-0.070	-0.073*
Cumulative College GPA	0.039***	0.033	-0.092***	-0.011	-0.024	-0.046	-0.038**
Perception of Major Support System	0.142***	0.197***	0.011	0.055*	0.053*	0.086**	0.092***
Discussed Learning Experiences with Peers	-0.021	0.006	0.033	-0.007	-0.011	-0.055*	-0.038*
Discussed Sociocultural Issues with Peers	0.045**	-0.044*	0.042	0.105**	0.083**	0.053*	0.004
Residential Environment's Influence on Major	0.081**	0.127***	-0.052**	0.062	0.056	0.090**	0.078*
General Non-academic Faculty Interaction	0.036*	0.022	0.026	0.016	0.060**	0.039	0.056**
Residential Resource Engagement	-0.057**	-0.021	-0.036	-0.072*	0.000	-0.037	0.009
Residential Co-curricular Programming	-0.064*	-0.096**	-0.009	-0.015	0.022	-0.055	-0.050*
General Co-curricular Programming	0.302***	0.187***	-0.007	0.115**	0.037	0.094**	0.056*
Perception of Peer Network	0.118**	0.155***	0.019	0.044*	0.041*	0.109*	0.084**
Supportive Residential Environment	0.034	0.296***	0.016	0.016	-0.020	0.016	0.003
Observations	4929	4900	4953	4771	4793	4723	4750
R-squared	.26	.42	.05	.13	.06	.12	.06

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$



Assessment of Collegiate Residential Environments & Outcomes

A project of the College Impact Laboratory (CoIL)
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