

# Student Perspectives on Sustainability at Iowa State University



## PREPARED BY :

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# 1. Executive Summary

This research project employed focus groups and a student body survey to understand Iowa State University (ISU) students' perspectives on how well the curriculum and extracurricular activities are preparing them to address the various social, economic, and ecological sustainability challenges that society faces. Our data showed that ISU students value sustainability education highly and would like the university to place more emphasis on integrating sustainability into coursework and extracurricular activities. Survey and focus group participants suggested many ways that ISU could incorporate sustainability learning into the ISU experience to better prepare students with the sustainability knowledge and skills needed to face present and future sustainability challenges.

## Who Participated?

- Twenty-one students from multiple colleges participated in focus group discussions between October 2021 and December 2021, and 1,206 students responded to a web-based survey of juniors and seniors conducted between April 18 and May 16, 2022. Our sample represents all colleges offering undergraduate degree programs at Iowa State University.

## What Did We Learn from the Survey?

- **Students care about sustainability.** Most respondents placed high importance on addressing environmental, economic, and social sustainability outcomes articulated in the UN sustainable development goals.
- **They are highly concerned about the future.** For example, 82% expressed concern that society is not on a sustainable path, and most agreed that climate change would negatively impact their future well-being and the well-being of future generations.
- **Students value sustainability knowledge and skills.** More than 80% agreed that everyone should learn more about sustainability regardless of field of study, and almost 70% agreed that sustainability-related knowledge and skills will be beneficial for their intended career path.
- **Many students feel empowered.** Seventy-one percent agreed that their courses have empowered them to make the world a better place, and 63% agreed that they have learned problem-solving skills that can be applied to sustainability issues.

- **But they want more emphasis on sustainability.** A strong majority, 76%, agreed that ISU should place more emphasis on teaching about sustainability, and 75% agreed that all ISU departments and colleges should actively incorporate and promote sustainability. More than one-third, 36%, expressed they were not satisfied with the sustainability-related skills and knowledge they had gained through their coursework. Only 37% agreed that sustainability themes had been integrated into required courses.
- **And more courses that integrate sustainability.** Almost 90% of students indicated that the ideal number of sustainability-related courses to take would be one or more, but almost half (46%) of students had not taken any sustainability-related courses at ISU.
- **ISU gets low marks among students for commitment to sustainability.** While 78% of respondents agreed that public universities should be leaders in sustainability, only 24% agreed that ISU is a leader in sustainability, and just 21% agreed that Iowa State prioritizes sustainability education.

In summary, the data showed that ISU students value sustainability education highly and would like the university to place more emphasis on integrating sustainability into coursework and extracurricular activities. Survey and focus group participants suggested many ways that ISU could incorporate sustainability learning into the ISU experience to better prepare students with the sustainability knowledge and skills needed to face present and future sustainability challenges. Recommendations include raising awareness of current sustainability-oriented classes and extracurricular activities, integrating sustainability into existing courses and majors, and striving to become a leader in sustainability among peer universities.



## 2. Introduction

Today's university students will face unprecedented environmental, economic, and societal sustainability challenges upon graduation. In 2010, the Association for the Advancement of Sustainability in Higher Education (AASHE) hosted a Summit on Sustainability in the Curriculum. A report from that summit, *Sustainability Curriculum in Higher Education: A Call to Action*, emphasized that the world's colleges and universities were failing to adequately prepare students to address climate change and numerous other sustainability issues (AASHE 2010). The report called for higher education institutions to greatly enhance the integration of sustainability into curricula across all disciplines. More recently, a report from the National Academies of Science, Engineering, and Medicine stressed the urgent need to incorporate sustainability into disciplinary and interdisciplinary curricula to prepare the next generations of students to work toward improving human well-being without destroying the ecosystems on which humans and non-humans depend (NAS 2020).

For decades, Iowa State University's strategic planning processes have noted the importance of sustainability. Sustainability was mentioned twice in the 2005-2010 strategic plan, with one of five stated goals in the Iowa Life section being "to promote the wise use of Iowa's resources and build a sustainable future" and one of nine University Life goals being "achieve a sustainable balance between responsibilities and resources that will allow the university to efficiently and effectively realize its vision" (ISU 2005). The 2010-2015 strategic plan placed sustainability in the mission statement, positing that "Iowa State will lead in developing more sustainable ways to produce and deliver safe and nutritious food, water, materials, and energy; integrate the protection of plant, animal, and human health; and care for our environment" (ISU 2010). Similarly, the 2017-2022 plan stated, "Iowa State presses forward on a mission to help make the world safe and sustainable for generations to come (ISU 2017). Most recently, the first pillar of the 2022-2031 strategic planning process states, "ISU will be recognized for its distinctive approach to environmental, social, economic and cultural sustainability and meeting the needs of society with integrity." Although these long-term, sustainability-oriented strategic planning efforts are important, it is not clear to what degree such efforts have translated into sustainability capacity building for students through curricular and extracurricular learning.

In spring 2021, the [Consortium for Cultivating Human And Naturally reGenerative Enterprises, or C-CHANGE](#), a sustainability-oriented interdisciplinary effort funded by an Iowa State University Presidential Interdisciplinary Research Initiative grant, initiated a project to examine whether Iowa State University is meeting students' expectations and needs around sustainability. The [Sustainability in Curriculum \(SiC-CHANGE\)](#) project's goal has been to better understand students' perspectives on how sustainability is currently being approached at ISU and how well the curriculum and extracurricular activities address the various social, economic, and ecological dimensions of sustainability.

The core SiC-CHANGE project team was composed of one ISU faculty member, a postdoctoral scholar, a graduate student, and three undergraduate students, supported by other faculty and students at various times during the project. The interdisciplinary team designed and implemented a mixed-method research approach that used focus groups to inform the development of a student “sustainability in the curriculum” survey. The survey was fielded in the spring of 2022 with ISU students of junior and senior standing. This report presents the tabulated data from the survey along with relevant quotes from the focus groups.

### **3. Methods**

To develop the survey, the research team first conducted a literature review to aggregate sustainability surveys administered to students at other institutions and conducted focus groups with ISU undergraduate students. The team collected survey instruments and/or reports from sustainability survey studies conducted at nearly 20 colleges and universities across the U.S.

The research team decided to conduct focus groups with students who were actively engaged in sustainability activities, as they were the population of students most likely to offer informed input regarding their experiences with sustainability at ISU. To recruit students for the focus groups, the research team contacted faculty and staff who work on sustainability issues at different ISU colleges and asked them to circulate an announcement among potential participants. The recruitment email explained that the purpose of the focus groups was to learn about curricular and extracurricular experiences related to sustainability education and capacity building at ISU to guide the development of a survey. The human subjects research effort was approved by ISU’s Institutional Review Board (ID: 21-204).

The focus groups were held between October 2021 and December 2021 with students from multiple ISU colleges. Five focus groups were conducted with undergraduates from three colleges: three with College of Agriculture and Life Sciences students, one with College of Engineering students, and one with College of Design students. In total, 21 undergraduate students participated in the five focus groups. Participation in focus groups was completely voluntary, and each participant received a \$25 gift certificate to ISU dining facilities as compensation for their time. All focus groups were guided by a protocol (Appendix 1), developed through multiple consultations with selected ISU faculty and students. The main objective of holding focus groups was to elicit students' perspectives on sustainability issues and the degree to which their curricular and extracurricular experiences with sustainability at ISU had met their expectations. Participants were asked a series of questions about their beliefs and attitudes regarding sustainability, their experiences at ISU with sustainability, and their motivation for pursuing their current majors.

All focus groups were conducted in person. One interviewer and one note-keeper moderated each focus group. The discussions averaged approximately one hour. The focus groups were recorded and transcribed using Rev.com. The SiC-CHANGE team members analyzed the transcripts and used the information to guide survey development. The focus group data also provided quotes that are incorporated into this report. The survey instrument (Appendix 2) was developed from a combination of the key focus group themes as well as the review of survey instruments from other institutions. The survey instrument in Appendix 2 is annotated to indicate which items were drawn from other surveys.

### 3.1 Survey Methods

The survey was conducted by the ISU Center for Survey Statistics and Methodology (CSSM). The CSSM obtained emails for all ISU students with junior or senior standing from the Registrar's Office, making the survey a census survey rather than a sample survey. The research team set the junior or senior selection criteria because those students would likely have had sufficient time at ISU to be able to provide meaningful feedback on their experiences with sustainability. The survey invitation was sent by email to 15,205 students on April 18, 2022. The invitation included a unique link to the web-based survey constructed using Qualtrics, web-based survey software (Qualtrics, Provo, UT), the elements of consent, and a statement about the drawing for an iPad mini. Reminder emails were sent to non-respondents on April 26, May 2, and May 9. The survey was left open until May 16, 2022.

Table 1 presents the response results. Twenty-seven email messages were undeliverable. Refusals were received from 23 people. There were 13,947 students from whom no response was received. A total of 1,109 completed surveys and 97 partially completed surveys were received. The partially completed surveys were kept and added to the data file for a total of 1,206 responses. Response rates are calculated as a ratio of the completed surveys to the eligible sample. The response rate was 7.9%.

**Table 1. Number of Students Sampled Cases by Outcome and Response Rate**

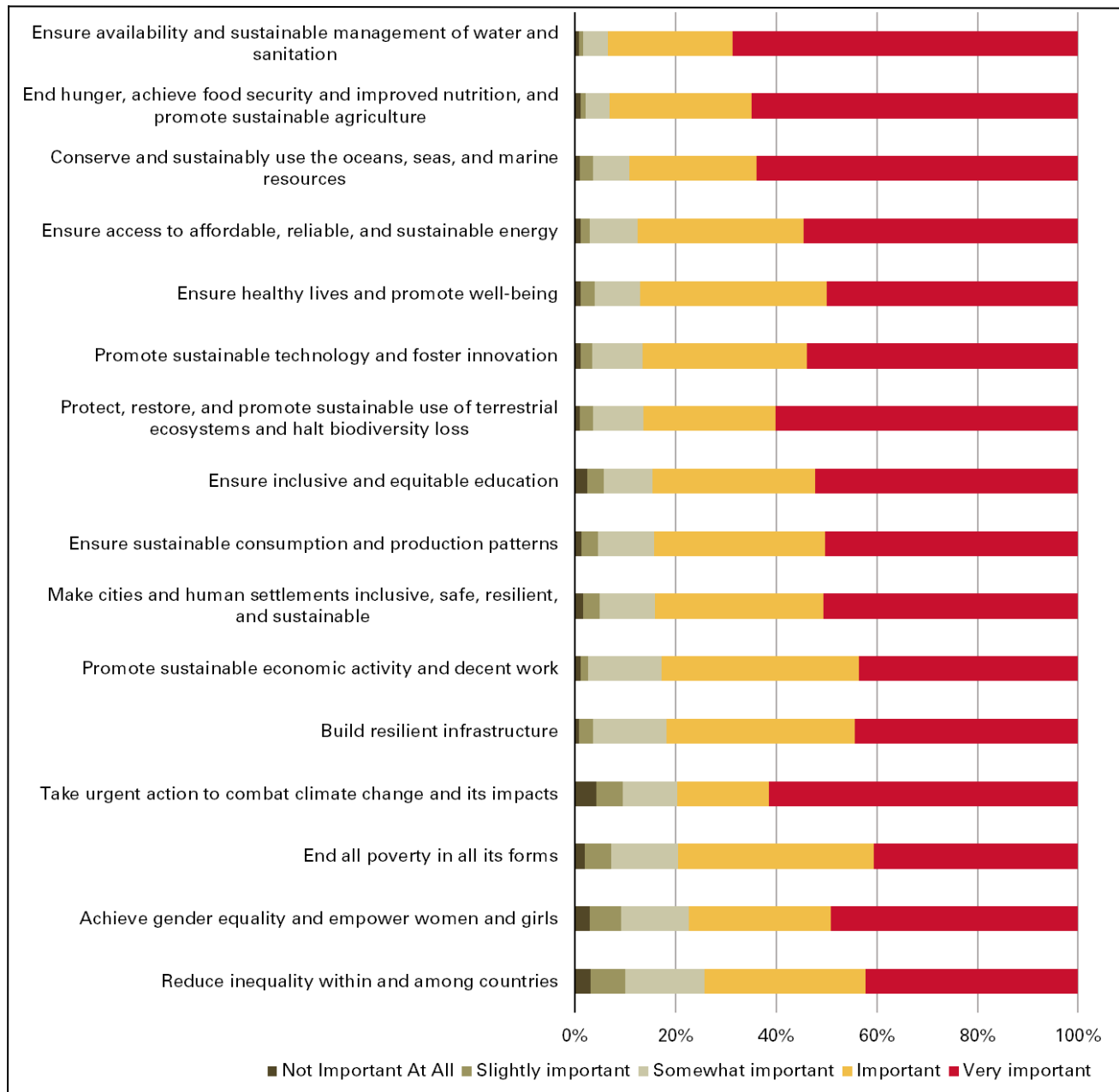
<b>Outcome Category</b>	
Initial sample	15,205
Undeliverable	27
Refused	23
No response	13,949
Eligible sample	15,178
Responses	1,206
Response rate	7.9%



## 4. Results

### 4.1 Perspectives on the UN Sustainable Development Goals (SDGs)

The objective of the first section of the survey was to gauge students' general orientations toward sustainability. To that end, 16 statements were adapted from the [United Nations \(UN\) Sustainable Development Goals \(SDGs\)](#), and survey participants were asked to rate each on a five-point scale ranging from, "Not important at all" (1) to "Very Important" (5).



**Figure 1. Iowa State University Students' Perspectives on the Importance of the United Nations Sustainable Development Goals**

As Figure 1 shows, most respondents rated all of the SDGs as important or very important. Over 90% rated "Ensure availability and sustainable management of water and sanitation" and "End hunger, achieve food security and improved nutrition, and promote sustainable agriculture" as either important or very important. On the low end of the spectrum, 77% of respondents rated "Achieve gender equality and empower women and girls" as important or very important, and 74% rated "Reduce inequality within and among countries" as such.

Most respondents were strongly supportive of the UN SDGs, indicating substantial alignment of viewpoints on major elements of sustainability. In particular, respondents tended to rate environmental and economic sustainability goals as most important and rated social sustainability goals as slightly less important.

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"I don't do much more because what I'm doing is the best that I can do right now." –ISU Agriculture and Life Sciences Student

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## **4.2 Sustainability Knowledge and Concerns**

This section of the survey assessed participants' understanding of the concept of sustainability and level of concern about key dimensions of sustainability. Survey participants were asked to rate each statement on a five-point agreement scale ranging from "Strongly disagree" (1) to "Strongly agree" (5). Four statements focused on what we term "present understanding of sustainability," measuring conceptual knowledge and how sustainability figures into their daily lives. Three statements measured concerns about current and future societal well-being.

Among the understanding items, "I fully understand the meaning of the term sustainability" received the highest level of agreement, with 90% of respondents selecting agree or strongly agree (Table 2). There was a substantial decline in agreement for the next item, with 63% agreeing with the statement, "I know how to determine whether a product or practice is sustainable" and 62% agreeing with the statement, "I often think about how to make certain products, practices, or processes more sustainable." The lowest-rated statement in this group was, "Sustainability factors into my everyday decisions about how I live my life," with 52% selecting "Agree" or "Strongly Agree."

Students generally expressed a strong concern for the future. The statement that garnered the highest agreement was, “I am concerned about how climate change will affect the well-being of future generations,” with 84% of respondents selecting agree (24%) or strongly agree (60%) (Table 2). Similarly, 82% of respondents agreed with the statement, “I am concerned that society is not on a sustainable path,” and 76% agreed with the item, “I am concerned about how climate change will affect my well-being in the future.”

**Table 2. Iowa State Students' Knowledge and Concerns Regarding Sustainability**

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
	Percentage				
Present Understanding					
I fully understand the meaning of the term sustainability	0.7	1.4	7.8	58.4	31.7
I know how to determine whether a product or practice is sustainable	0.7	8.7	27.9	48.7	14.0
I often think about how to make certain products or processes more sustainable	3.5	17.7	17.1	42.5	19.2
Sustainability factors into my everyday decisions about how I live my life	2.9	17.0	28.0	39.0	13.1
Concerns about the Future					
I am concerned about how climate change will affect the well-being of future generations	3.1	5.3	7.5	24.4	59.6
I am concerned that society is not on a sustainable path	1.9	5.6	10.4	33.6	48.4
I am concerned about how climate change will affect my well-being in the future	4.3	8.7	10.6	27.4	48.9

### 4.3 Expectations Regarding Sustainability at ISU

The third section of the survey focused on individual-level and institutional-level dimensions of sustainability. Individual-level statements focused on the utility of sustainability-related knowledge and skills in respondents’ personal and professional lives. Institutional-level items centered on expectations regarding how ISU as an institution should incorporate sustainability into curriculum and other student learning opportunities. The section was prefaced with the statement, “In this section of the survey, please reflect on your expectations about sustainability at Iowa State,” and respondents were asked to rate the statements on a five-point agreement scale.



Respondents were largely supportive of the five statements regarding the potential value of sustainability training in their personal and professional lives. The highest-rated item was “Sustainability-related knowledge and skills will be beneficial to my personal life,” with 79% agreeing or strongly agreeing (Table 3). Similarly, 78% and 68% of students agreed that they were “...interested in learning more about how to apply sustainability to [their] field of study” and, “Sustainability-related knowledge and skills will be beneficial to [their] intended career path,” respectively. Fifty-nine percent agreed they would consider the sustainability of a company’s operations when deciding on an employer. Finally, 54% agreed that “...employers are interested in hiring students with sustainability-related knowledge and skills,” although a relatively high proportion (30%) selected “Uncertain” in response to this item.

**Table 3. Individual-Level Value of Sustainability Knowledge and Skills**

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
	Percentage				
Sustainability-related knowledge and skills will be beneficial to my personal life	1.9	5.3	13.8	42.2	36.9
I am interested in learning more about how to apply sustainability to my field of study	2.8	7.0	12.4	41.5	36.4
Sustainability-related knowledge and skills will be beneficial to my intended career path	2.8	10.7	18.4	32.8	35.4
I would consider how sustainable a company's operations are when deciding where I want to work	4.4	13.7	22.7	37.4	21.8
I believe potential employers are interested in hiring students with sustainability-related knowledge and skills	3.8	12.3	30.1	31.9	22.0

“[My professor] says something along the lines of ‘the environment is changing. It’s going to be horrible, but I’ll die before that happens. So, it’s fine. You guys are the ones that’ll have to deal with it.’ And I’m like, okay, well then help us deal with it.” –ISU Agriculture and Life Sciences Student

Of the eight statements focused on institutional-level dimensions of sustainability, the highest-rated was, “Regardless of their field of study, everyone should learn about sustainability,” with 82% in agreement (Table 4). Only 7% of participants disagreed with that statement – the lowest percentage of disagreement in this set. Most students (78%) also agreed with the item, “Public universities should be leaders in sustainability,” and 76% agreed with the statements, “I would like ISU to place more emphasis on teaching about sustainability,” and “Iowa State should do more to engage students in sustainability decision-making.”

A strong majority of respondents (75%) agreed with the item, “Sustainability is something all ISU departments/colleges should actively incorporate and promote.” More than half of respondents (57%) also agreed with the statements, “ISU should have more majors related to sustainability,” and “Sustainability should be actively incorporated into all ISU courses.” Out of all the statements in this set, only one produced an agreement below 50%. The item, “There should be required sustainability credit for all students,” elicited 46% agreement, but also had the highest disagreement at 30%, and relatively high uncertainty (24%) (Table 4).

**Table 4. Iowa State Students’ Expectations Regarding Institutional-Level Commitment to Sustainability**

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
	Percentage				
Regardless of their field of study, everyone should learn about sustainability	2.5	4.4	11.1	43.1	39.0
Public universities should be leaders in sustainability	2.7	4.3	14.8	39.2	39.0
I would like ISU to place more emphasis on teaching about sustainability	3.1	5.6	15.1	41.8	34.4
Iowa State should do more to engage students in sustainability decision-making	3.2	4.2	16.6	43.0	33.0
Sustainability is something that all ISU departments/colleges should actively incorporate and promote	4.3	6.5	14.6	44.2	30.4
ISU should have more majors related to sustainability	3.7	7.0	32.6	35	21.8
Sustainability should be actively incorporated into all ISU courses	7.2	14.0	22.2	33	23.5
There should be a required sustainability credit for all students	13.4	16.5	23.7	26.7	19.7

"[My understanding has] drastically changed... I came here as an undeclared engineer and over time just kind of caught wind of all these things, and got into environmental engineering. And once I did, [I] realized there's a lot more going on that's being impacted, like the ocean acidification or the plastic... in our oceans. I didn't even know those existed. Nobody ever told me about them in high school." –ISU Engineering Student

## 4.4. Sustainability in the Curriculum

This section asked students to consider how sustainability might be integrated into the curriculum. The four-item question set was prefaced by the text, "Thinking about the curriculum at ISU, where would you like to see sustainability decision-making themes integrated? Sustainability themes should be integrated into...". Respondents were asked to rate their agreement with the items on a five-point scale. Elective courses were the most popular area, with 70% percent of students agreeing that they would like to see sustainability themes integrated into courses required to fulfill elective requirements (Table 5). Majorities of respondents also supported the integration of sustainability decision-making themes into courses required for their major (59%) and into courses required by their college or by the university (57%). The option that garnered the least agreement was courses required for a minor (45%).

**Table 5. Students' Perspectives on Integrating Sustainability into the ISU Curriculum**

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
<i>Sustainability themes should be integrated into...</i>	Percentage				
Courses used to fulfill elective requirements	4.5	8.5	17	43.2	26.8
Courses for my major(s)	8.3	14.5	18.4	34.7	24.1
Courses required by my college or ISU (outside of major and minor courses)	9.0	12.6	21.2	37.7	19.4
Courses required for a minor	8.0	18.2	28.8	32.4	12.6

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"Sustainability goes hand-in-hand with my planned career path." –ISU Agriculture and Life Sciences Student

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## 4.5 Experiences With Sustainability

The next question set moved from expectations and attitudes to experiences with sustainability at ISU. The set was preceded by the text, "The following section asks you to reflect on your actual experiences with sustainability at Iowa State. Reflecting on your ISU coursework and experience with other ISU activities, to what extent do you agree or disagree with the following statements?" Most of the items in the list that followed centered on coursework and other academic activities. The item with the highest level of agreement, at 50%, was "If I had more room in my course schedule, I would take/have taken more courses focused on sustainability" (Table 6). Twenty-eight percent disagreed with that statement. Nearly half agreed they had "learned about major sustainability challenges such as climate change" in their courses, although 39% disagreed.



Similarly, while 46% agreed they had learned about how sustainability applies to their field of study, 39% disagreed. About 43% agreed they were well-informed about sustainability offerings in coursework, versus 36% who disagreed (Table 6).

**Table 6. Student Experiences with Sustainability in their Coursework at Iowa State University**

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
	Percentage				
If I had more room in my course schedule, I would take/have taken more courses focused on sustainability	10.4	17.5	22.3	33.2	16.8
I have learned about major sustainability challenges such as climate change in my courses	11.5	27.5	13.2	32.2	15.6
In my courses I have learned how sustainability applies to my field of study	12.8	26.5	14.3	32.5	13.9
I am well informed about my options to enroll or participate in sustainability courses, minors, majors, and other educational offerings at ISU	5.4	30.2	21.0	31.2	12.2
In my courses, I have learned how I can make lifestyle changes to be more sustainable	12.2	29.6	18.0	31.1	9.2
I am satisfied with the sustainability-related skills and knowledge I have gained through my coursework	6.4	29.1	26.1	27.8	10.7
I feel sustainability themes have been integrated into courses I have taken to meet university and college requirements	10.9	31.7	20.8	29.1	7.5
The courses offered at ISU have adequately addressed my interest in sustainability	6.7	28.1	30.7	26.3	8.3
I actively seek sustainability-related courses when enrolling in classes	15.3	39.3	18.9	17.5	8.9

There were several items that garnered more disagreement than agreement or were closely distributed between agreement and disagreement. While 40% of respondents agreed that they had learned how to make sustainable lifestyle choices at ISU, 42% disagreed (Table 6). Slightly more students were satisfied with the sustainability-related skills and knowledge they had gained through their coursework (39%), versus 36% who disagreed. About 37% agreed that sustainability themes have been integrated into required courses, while 43% disagreed.

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"It'd just be nice if Iowa State University practiced what they preached about innovation, doing what's hard, etc." –ISU Agriculture and Life Sciences Student

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Responses to the item "The courses offered at ISU have adequately addressed my interest in sustainability" were equally distributed, with 35 percent in agreement and 35 percent disagreeing. Finally, 26% agreed with the statement, "I actively seek sustainability-related courses when enrolling in classes," versus 55% who disagreed. Considered together, the results of this question set indicate a mixed experience with sustainability learning.

ISU provides opportunities to get involved in sustainability-related activities outside of the classroom, so the survey also asked several questions about student experiences with extracurricular sustainability activities. Two items received more agreement than disagreement. Forty-seven percent of respondents agreed that they were aware of sustainability-related learning opportunities on campus, and 43% indicated that they do research on sustainability topics on their own outside of the classroom (Table 7). On the other hand, more than half (52%) disagreed with the statement, "I have had the opportunity to learn about sustainability through project-based or experiential learning," and 63% indicated they had not been involved in any extracurricular sustainability activities, compared to 26% who had.

**Table 7. Iowa State University Students' Experiences with Sustainability Outside of the Classroom**

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
	Percentage				
I am aware of sustainability-related programs, organizations, and other on-campus learning opportunities outside of coursework	4.8	27.6	20.6	35.7	11.2
I supplement my coursework with my own research about topics in sustainability	13.8	26.5	16.2	30.6	12.8
I have had the opportunity to learn about sustainability through project-based or experimental learning	15.9	35.7	17.8	21.9	8.7
I am involved with sustainability-related activities, such as student organizations, outside of my coursework	21.0	42.1	11.1	17.7	8.1

Four statements centered on potential impacts that students' experiences at ISU may have had on the way they think about sustainability and their capacity to work on sustainability issues. Seventy-one percent agreed that their coursework had empowered them "...to make the world a better place," and 63% agreed that their coursework taught them problem-solving skills they will be able to apply to sustainability issues (Table 8). However, fewer than half of respondents (44%) agreed with the statement, "My overall experiences at ISU have prepared me to address challenges in sustainability after graduating," and 29% disagreed. Forty-two percent agreed that their experiences at ISU had changed the way they think about sustainability.

**Table 8. Student Perspectives on Iowa State University's Impact on Their Sustainability Capacity**

	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
	Percentage				
My courses have empowered me to make the world a better place	3.0	8.2	18.1	47.5	23.2
My courses have taught me problem-solving skills that I can apply to sustainability issues	5.3	13.7	17.9	46.5	16.7
My overall experiences at ISU have prepared me to address challenges in sustainability after graduating	6.6	22.1	27.3	33.6	10.3
My experiences at ISU have changed the way I think about sustainability	8.1	24.8	25.6	31.7	9.8

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"It should be something that they should try to bake into the curriculum of more majors just to kind of help be more sustainable and create that awareness. Even though people could be like, "Oh, that's not really related to my major." But it will be your problem in a while if we don't change things." –ISU Engineering Student

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Four statements examined respondents' perspectives regarding ISU's engagement with sustainability issues. The item that received the highest level of agreement was, "Iowa State is committed to sustainability," at 35% (Table 9). On the other hand, 26% disagreed with that statement. The rest of the items received more disagreement than agreement. Thirty-eight percent disagreed with the statement, "I feel that Iowa State adequately involves students in sustainability decision-making," versus 24% who agreed.



Twenty-four percent agreed with the statement, “I view Iowa State as a leader in sustainability,” while 40% disagreed. Similarly, only 21% of respondents agreed that ISU prioritized sustainability education for its students, versus 45% who disagreed with that statement. These results indicate that many students feel that ISU does not place enough emphasis on sustainability.

**Table 9. Students' Evaluations of ISU's Performance and Engagement with Sustainability Issues**

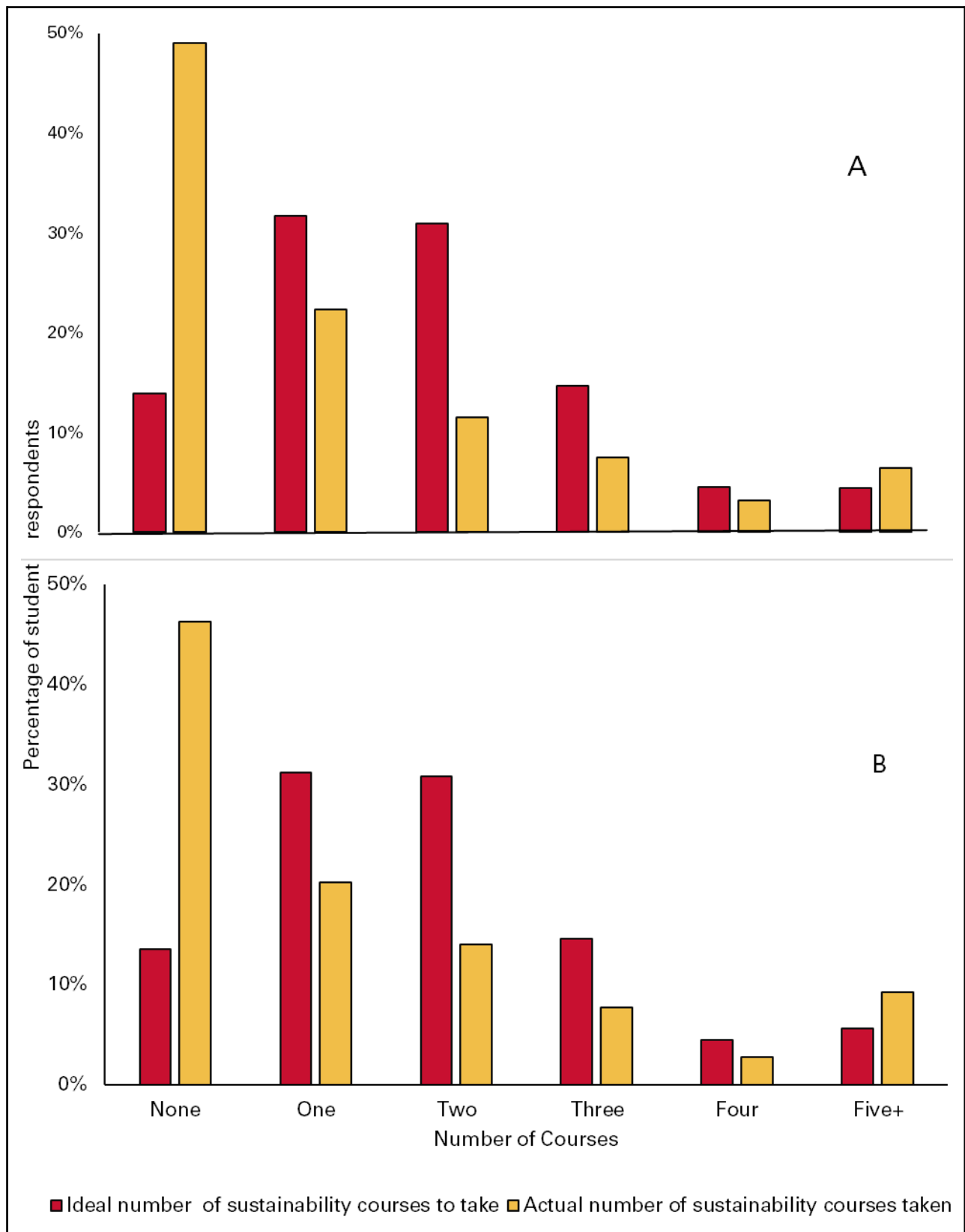
	Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree
	Percentage				
Iowa State is committed to sustainability	8.3	17.9	38.8	28.8	6.1
I feel that Iowa State adequately involves students in sustainability decision-making	10.9	26.9	37.8	19.2	5.2
I view Iowa State as a leader in sustainability	11.4	28.6	36.6	18.9	4.6
Iowa State prioritizes sustainability education for its students	12.6	31.9	35	16.4	4.1

"I would say as a student, I don't feel I have a lot of say in the sustainable choices that ISU makes. It's kind of like, you go here, these are what we provide and then that's what you're given." –ISU College of Design Student

## 4.6 Participation in Sustainability-Related Actions

Six questions assessed respondents’ ideal and actual participation in sustainability-related coursework and extracurricular activities and organizations. Respondents were first asked how many sustainability-related classes would be “ideal” to take as part of their undergraduate studies, then asked how many they had taken so far, with both questions providing six categories ranging from none to five or more. As Figure 2, panel A shows, the ideal number is higher than the actual number in all categories except for five or more. Because this could be due to students of junior status still having a year or more left in their programs of study, we conducted additional analysis for seniors only.

Figure 2, panel B shows that the disparity between the ideal and actual number of courses remained similarly wide when only seniors were considered. Strikingly, while nearly 90% of senior-level respondents indicated that taking at least one or more sustainability-related courses would be ideal, nearly half (46%) had not taken even one during their undergraduate studies. This result points to a major gap or mismatch between what students believe would be the ideal number of sustainability-related courses to take and their perceived capacity to take such courses.



**Figure 2. The Ideal Number of Sustainability-Related Courses that Students Would Like to Take Before Graduating (Red) Compared with the Number of Sustainability-Related Courses Taken (Yellow): A) All Respondents and B) Seniors Only.**

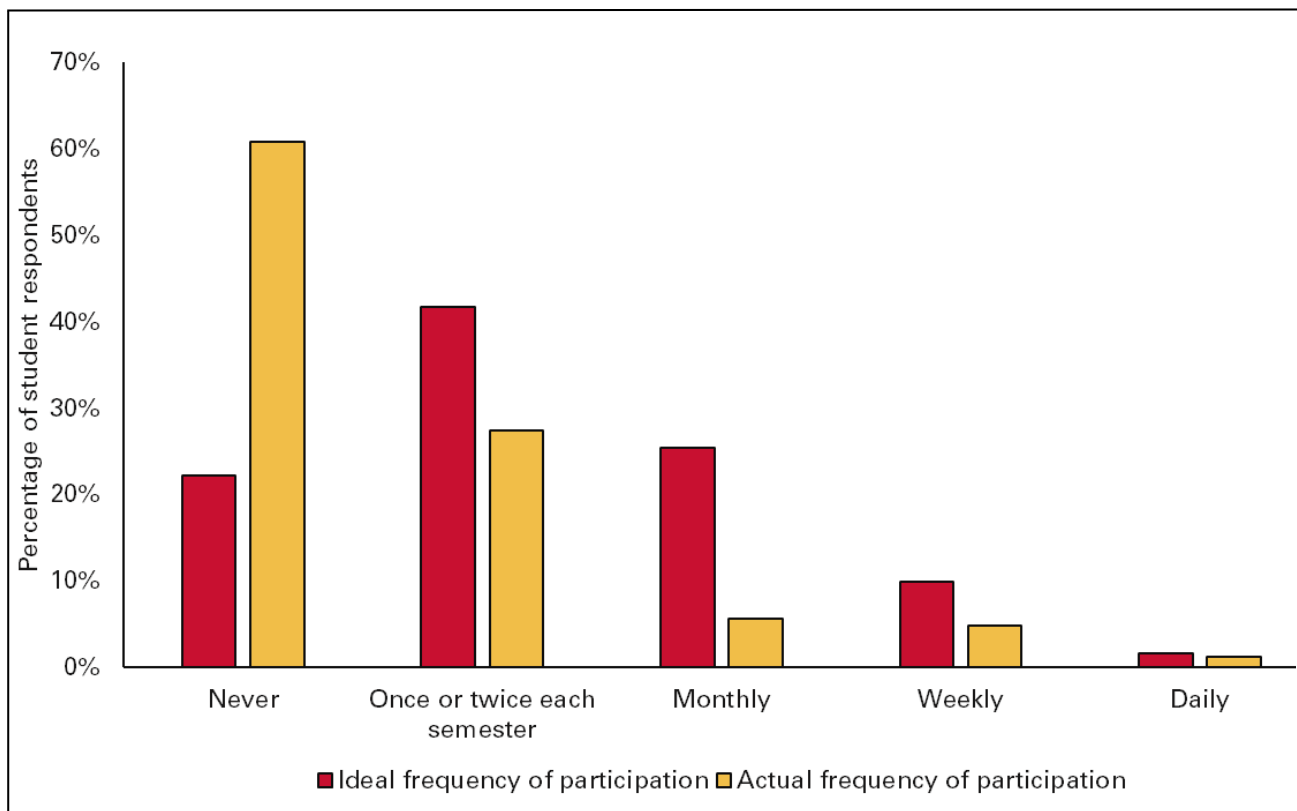
Another set of questions examined involvement in extracurricular activities related to sustainability. Respondents were asked how many sustainability-related organizations they had participated in while at ISU. Most students (72%) had not been involved with any such organizations, while 18% reported participation in one, 7% in two, and 3% in three or more.

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"It's our next generation that's going to face this and be living in an apocalypse, it's really that close." –ISU Agriculture and Life Sciences Student

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The survey also asked, "How often would you like to participate in sustainability related activities or organizations at ISU." Similar to the results comparing ideal and actual coursework, responses regarding desired and actual participation in extracurricular sustainability activities point to a misalignment. Nearly 80% of students indicated that they "would like to participate" in such activities, with 42% indicating that the ideal frequency would be once or twice per semester, 25% selecting monthly, and 12% weekly or daily (Figure 3). When asked about how often they participated in such activities, however, 27% responded they participated once or twice per semester, 6% indicated monthly, and 6% selected weekly or daily. The majority (61%) indicated that they never participated in sustainability related activities or organizations.



**Figure 3. Desired Frequency of Participation in Sustainability-Related Activities (Red) Compared to Actual Frequency (Yellow).**

As a point of comparison, survey respondents were asked how often they “participate in activities or organizations at ISU that are NOT sustainability-related.” More than 80% of respondents reported some participation in non-sustainability-related activities, with 42% reporting a participation frequency of once or twice a semester, 31% reporting weekly participation, and 14% daily activities.

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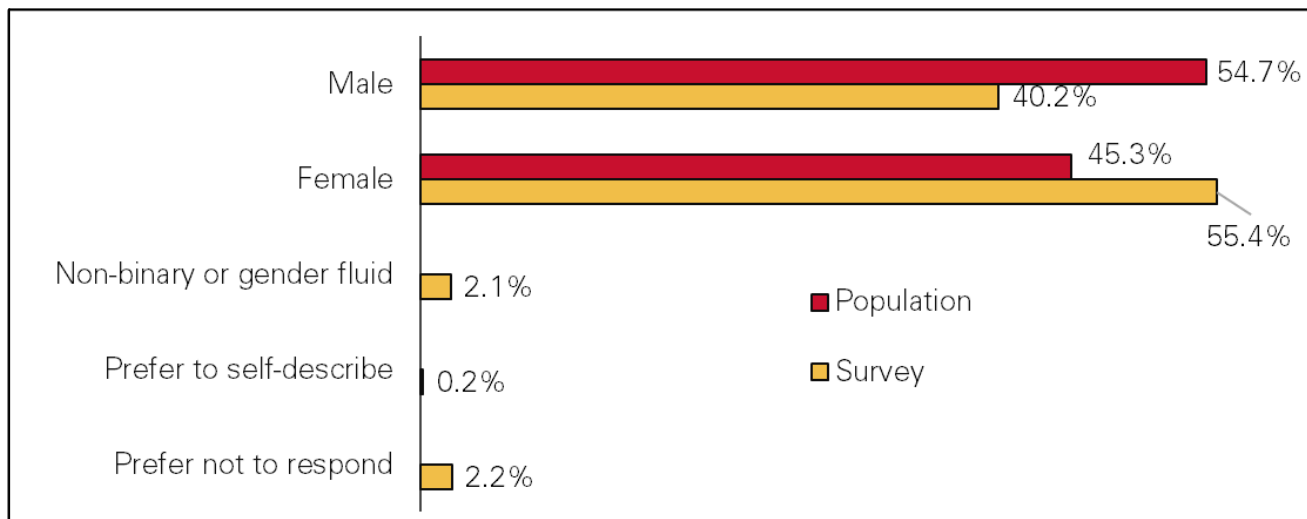
"So, I've learned a lot about sustainability outside of classes. It would be nice if we could learn a little bit more inside and how as an engineer, we can actively make a difference through sustainability." –ISU Engineering Student

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## 4.7 Demographic Characteristics of Respondents

A goal of survey research is to have respondents that are representative of some overall population. In a census survey such as this one, the goal is to have as many of the overall population as possible take the survey. In cases when response rates are low, as is the case with this survey, it is important to assess the degree to which the survey respondents differ from the overall population. Understanding the degree to which survey respondents are similar to or differ from the population helps researchers to think about potential sources of bias and limitations.

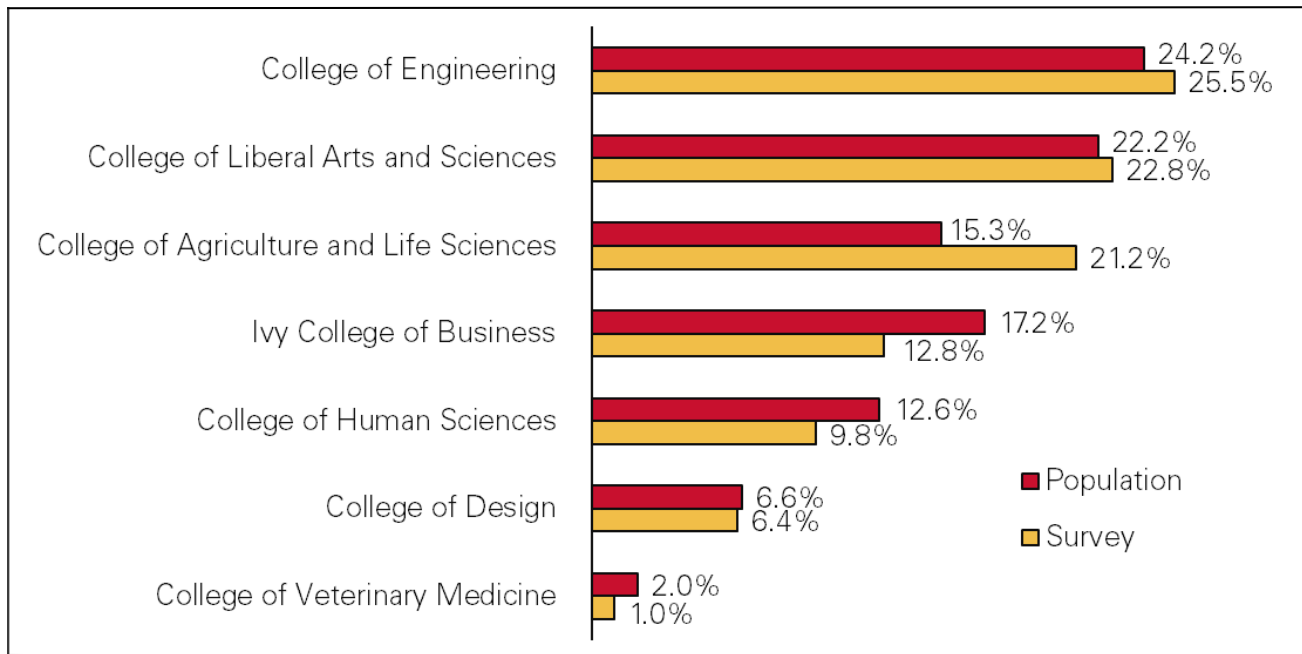
Our sample of 1,206 respondents with junior or senior standing represented 7.9% of the spring 2022 population of 15,757 juniors and seniors. A comparison of survey respondents to demographic data provided by the ISU registrar for students with junior or senior standing showed several differences. The survey sample had a higher proportion of female students (55%) compared to the overall junior and senior student body, which was 45% female (Figure 4). In terms of colleges, the majority of our survey respondents represented three colleges, the College of Engineering (26%), the College of Liberal Arts and Sciences (23%), and the College of Agriculture and Life Sciences (21%).



**Figure 4. Gender Comparison of Survey Respondents to the Overall Population of Juniors and Seniors at Iowa State University.**

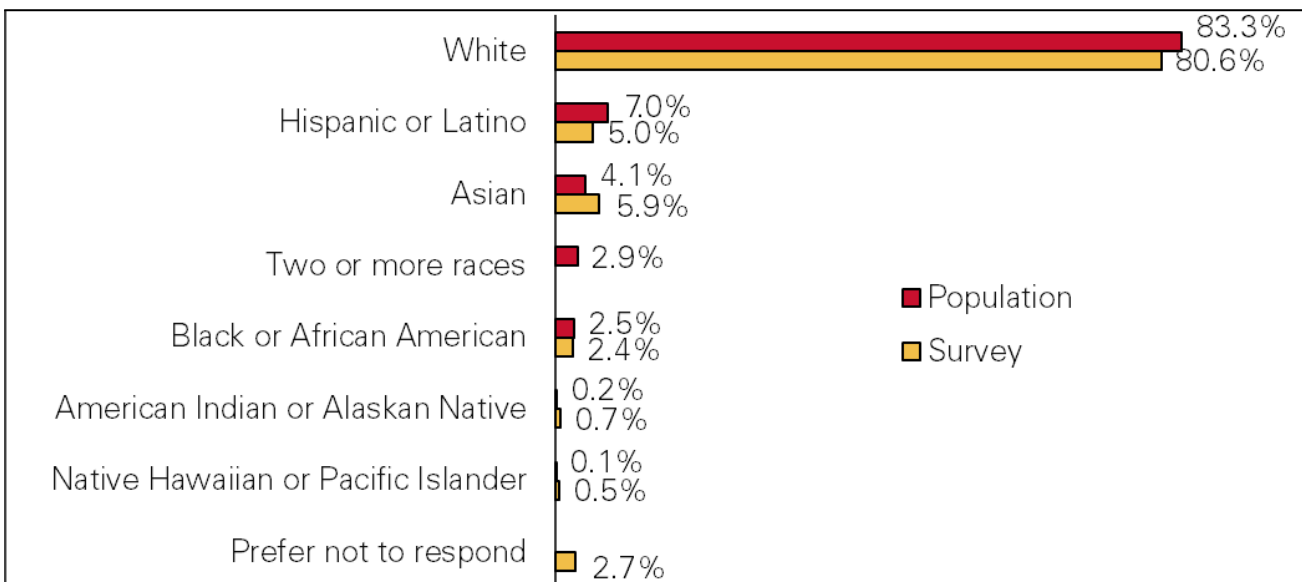
We also had substantial numbers of responses from the College of Business (13%), the College of Human Sciences (10%), and the College of Design (6%). As figure 5 shows, students from the College of Agriculture and Life Sciences were slightly over-represented, while students from the College of Business and College of Human Sciences were under-represented. Appendix 3 presents comparisons of mean responses for all questions by the college.





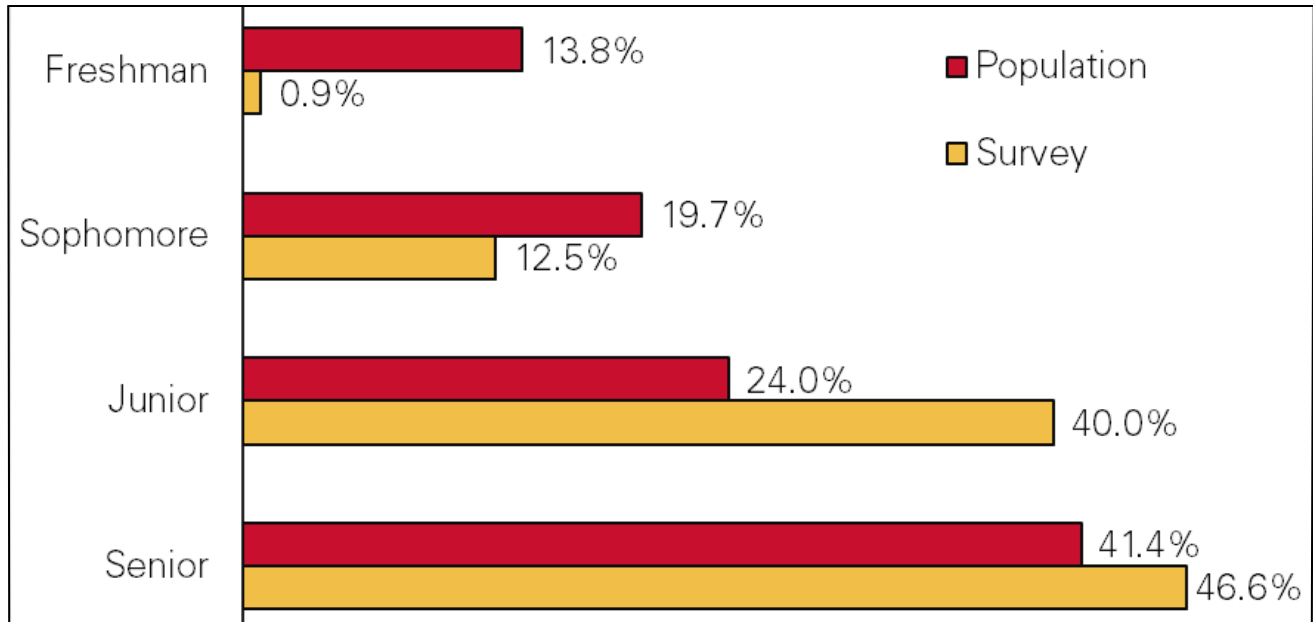
**Figure 5. Distribution of Survey Respondents and Iowa State's Undergraduate Population by the College.**

In terms of race and ethnicity, the majority of respondents identified as white (80.6%), with small percentages of students identifying as Asian (5.9%), Hispanic or Latino (5%), Black or African American (2.4%), American Indian or Alaskan Native (0.7%), or Native Hawaiian or Pacific Islander (0.5%). About 2.7% of our sample respondents preferred not to respond. Thus, the racial-ethnic composition of the sample was similar to that of ISU overall (Figure 6).



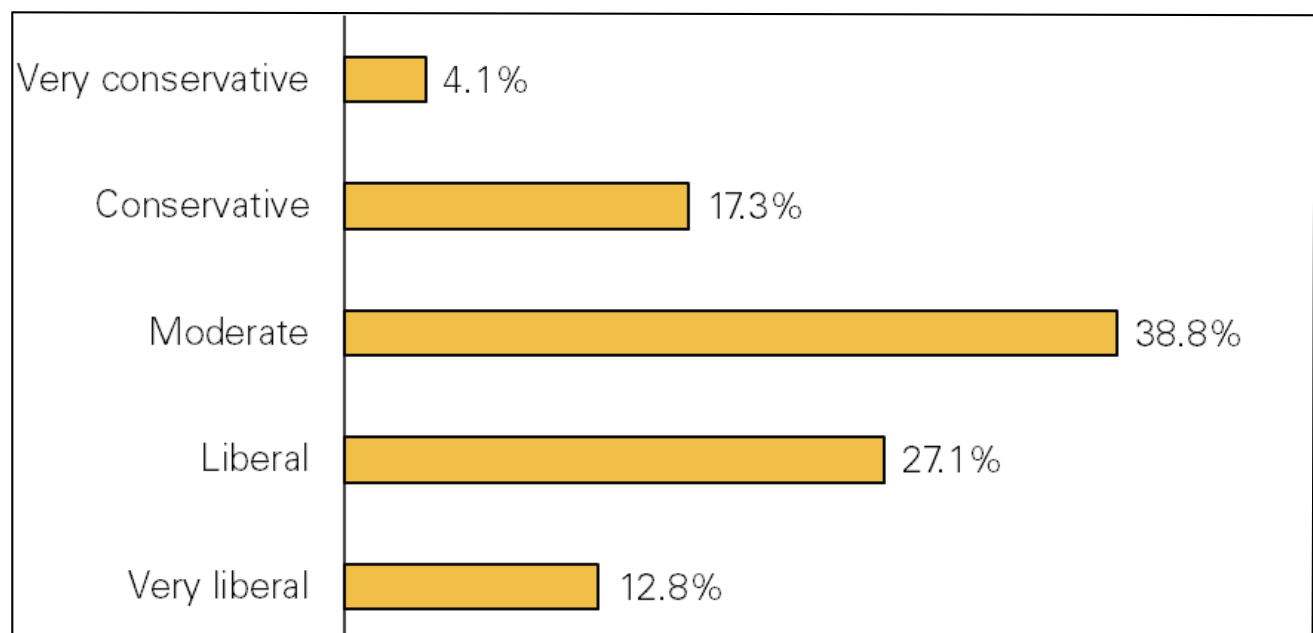
**Figure 6. Distribution of Iowa State University Undergraduate Population and Survey Respondents by Race and Ethnicity.**

Among surveyed respondents, 46.6% identified as seniors, and 40% identified as juniors. About 13% of our sample identified as sophomores, and 1% identified as freshmen (Figure 7). This inclusion of freshmen and sophomores in the survey was because even though they were classified as a higher class, they may have chosen freshmen or sophomores because they were first or second year at ISU.



**Figure 7. Distribution of Iowa State University Undergraduate Population and Survey Respondents by Class Level.**

The survey also asked, “What is your political orientation?” Among respondents, more than one third (39.9%) identified as liberal. Among them, 12.8% identified themselves as very liberal. Twenty-one percent of respondents identified as conservative and 38.8% identified as moderate (Figure 8).



**Figure 8. The Political Orientation of Survey Respondents.**

## 5. Discussion

The need for today's students to be trained in the art and science of sustainability is well established (AASHE, 2010), yet in general, universities have not risen to the challenge (NAS, 2020). Although ISU has incorporated sustainability language into strategic plans over the years, we are not aware of any systematic efforts to assess the adequacy of the university's efforts to build student knowledge and skills related to sustainability. This research project is a rigorous effort to learn from students about their interest in and their experiences with sustainability at ISU. This section discusses key findings under different major themes that merit further examination and emphasis. We also discuss potential limitations to our methods.

### Major Themes

#### ***Students Care About Sustainability***

Strong majorities of students placed high or very high importance on all of the UN sustainable development goals, spanning environmental, economic, and social sustainability outcomes. Further, most students were concerned that society is not on a sustainable path and feel that climate change will negatively impact their personal well-being in the future, as well as the well-being of future generations. Students agreed that sustainability-related knowledge and skills benefit their personal and professional lives and expressed that they would like to learn more about how sustainability learning can be applied in their field of study. Moreover, many students felt that ISU should place a greater emphasis on teaching about sustainability and that all courses should actively incorporate sustainability-related themes. Focus groups echoed these survey responses, with most students wanting more focus on sustainability. The data point to an underlying bedrock of support for sustainability-related topics among the student body at ISU, and students' desire for more sustainability-related material within course curricula. As such, it is likely that efforts to expand education about sustainability at ISU would be favorably received by the student body.

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"It's our next generation that's going to face this and be living in an apocalypse, it's really that close." –ISU Agriculture and Life Sciences Student

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#### ***Students would like ISU to Place More Emphasis on Sustainability Education and Experiences***

Most students believed that sustainability-related skills and knowledge are important. That said, student responses were mixed when asked about their experiences with sustainability at ISU.

Most students believed that sustainability-related skills and knowledge are important. That said, student responses were mixed when asked about their experiences with sustainability at ISU.

On the plus side, more than two-thirds of students felt their coursework had empowered them to make the world a better place, and a strong majority agreed they had learned problem-solving skills they can apply to sustainability issues. Nearly half agreed that they had learned about major sustainability challenges in their courses and their overall experiences at ISU had prepared them to address sustainability challenges post-graduation. A plurality indicated they were satisfied with the sustainability-related skills and knowledge their coursework had imparted.

On the contrary, nearly half of respondents did not agree that ISU prioritizes sustainability education for its students, almost one-third indicated they were not satisfied with the amount of sustainability-related education they had received at ISU, and many students did not feel that sustainability themes had been adequately integrated into their coursework. Similarly, more than a quarter did not feel they were adequately prepared to address sustainability-related challenges upon graduation. Many focus group participants echoed those concerns, saying the sustainability-related courses they had taken were often focused on teaching them information but not providing them with the skills or strategies they needed to act on sustainability challenges. Other focus group participants expressed concern that course offerings in sustainability were often big-picture, and they struggled to find ways to relate their sustainability coursework to their primary field of study. The mismatch between students' expectations about sustainability and their actual experiences with sustainability in the curriculum means there is an opportunity for ISU to better prepare students to address challenges in sustainability.

### ***Students Want ISU to be a Leader in Sustainability***

Although more than one-third of students agreed that ISU is committed to sustainability, many felt that the institution could do better. Four-fifths of respondents agreed that public universities should be leaders in sustainability, and three-quarters indicated that all ISU departments and colleges should actively incorporate sustainability. Similarly, focus group participants expressed their desire for ISU to take more meaningful steps to promote and encourage sustainability on campus, as well as provide students with opportunities to have a say in how sustainability is addressed on campus and in coursework. In short, many respondents would like ISU to be a recognized leader and innovator in the sustainability space.

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"It should be something that they should try to bake into the curriculum of more majors just to kind of help be more sustainable and create that awareness. Even though people could be like, 'Oh, that's not related to my major.' But it will be your problem in a while if we don't change things." –ISU Engineering Student

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## **Commonly Cited Barriers to Learning about Sustainability**

### ***Lack of Awareness***

Over half of the survey respondents disagreed or were uncertain about whether they felt well-informed about sustainability offerings at ISU. Additionally, more than half of students were unaware or uncertain of ISU's extracurricular programs and organizations that addressed sustainability. In focus group discussions, students were sometimes unsure of whether a given ISU organization was related to sustainability, and students who were in sustainability-related organizations often felt they had a difficult time finding a platform to discuss and promote their work. Similarly, there was little awareness of the Sustainability minor. These findings point to room for growth for ISU and its colleges and departments to better promote the sustainability-related courses and activities that are available.

### ***Lack of Courses***

A substantial proportion of students indicated that ISU courses had not adequately addressed their interest in sustainability. Many indicated they lacked the opportunity to learn about sustainability through project-based learning. A common refrain among students in focus group discussions was their inability to find or take courses that addressed their sustainability interests. Even though most survey respondents agreed that sustainability should be incorporated into all ISU courses, focus group participants felt that sustainability is currently not sufficiently integrated into curriculum and extracurricular activities in many departments. Consequently, students in many fields of study might not feel they have sufficient knowledge of sustainability themes within their disciplines and may ultimately feel insufficiently prepared to address sustainability challenges in their post-graduation employment.

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"So, I've learned a lot about sustainability outside of classes. It would be nice if we could learn a little bit more inside and how as an engineer, we can actively make a difference through sustainability." –ISU Engineering Student

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## ***Lack of Time***

Focus group participants expressed time and schedule constraints as limiting their ability to take additional courses in sustainability. They felt many disciplines have requirements that do not leave enough room for students to explore their interest in sustainability, especially since many sustainability-related courses might be offered outside of their major or department. Half of the survey respondents agreed they would have taken a course in sustainability if they had more room in their course schedule. Similarly, data showed a mismatch between the desired number of sustainability-related courses and the actual number taken. Considered together, these results suggest improved integration of sustainability into current coursework could be a potential solution to time constraint limitations on sustainability learning.

## **Moving Forward: Potential Areas for Improvement**

The results of this study suggest considerable room for improvement regarding the integration of sustainability into the curriculum and culture of ISU. The data point to several steps the university could take to better meet the expectations students have about sustainability education and to increase student satisfaction with the sustainability-related skills and knowledge they gain through education.

### ***Expand Awareness of Sustainability on Campus***

Most survey respondents were uncertain or did not feel well-informed about their options to enroll in coursework about sustainability or pursue sustainability-related extracurricular activities. ISU should increase efforts to expand awareness of its offerings in sustainability. For example, one focus group participant suggested the more frequent use of official university channels to highlight sustainability-related organizations or sustainability-oriented coursework, which would enable students interested in sustainability to make more educated course decisions and would foster a community at ISU geared toward addressing sustainability challenges, both on campus and beyond.

Similarly, considerable opportunities exist for Iowa State to join broader networks of schools and organizations committed to furthering sustainability in higher education. At the University of Connecticut, for example, the Environment Corps program exposes students to current issues in sustainability and allows them to engage in project-based learning with their local community to tackle sustainability challenges. There are a number of programs, such as the Midwest Climate Collaborative (which ISU joined as this report was in its final stages of development), and the University Climate Change Coalition, that help universities accelerate on-campus sustainability initiatives. ISU could engage with resources such as these to develop strategies for implementing comprehensive sustainability education and work with other universities toward collaborative solutions to sustainability challenges.



## ***Integrate Sustainability Themes into Pre-Existing Courses***

Most survey respondents agreed sustainability should be incorporated into all courses at ISU. Yet, focus group participants generally remarked that sustainability was not addressed in most of their coursework and felt they did not have enough time to pursue additional courses specifically geared toward sustainability. Instead, sustainability themes could be integrated into the syllabi of pre-existing coursework, reinforcing the interdisciplinary reality that sustainability applies to almost every field of study. By addressing sustainability in pre-existing courses, the university can expand its reach to students who might not have the time or resources to dedicate to additional coursework. Focus group participants suggested that even adding optional, extra credit assignments with relevance to sustainability could be a simple way for faculty to begin introducing sustainability into their course curricula. The university can also establish consistent messaging around sustainability among and within departments on campus and could use the opportunity to tie coursework with broader university values about sustainability.

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"My major is environmental science. And even in the classes that I'm taking... sustainability isn't even mentioned. They're just like, "So we need to improve on stuff," but they don't specify what to improve on." --ISU Agriculture and Life Sciences Student

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## ***Add More Sustainability-Centric Courses***

A majority of students agreed they would like sustainability themes integrated into elective courses, courses required for their major, and courses used to fulfill other college or university requirements. Students also agreed ISU should offer more majors related to sustainability. This widespread support suggests that ISU students would welcome additional courses in almost any area. Focus group participants particularly remarked that they would like to see more courses addressing social dimensions of sustainability and teaching students how to make equitable decisions about challenges in sustainability. Students also expressed a desire for sustainability courses to be more widely implemented at the university, beyond traditional sustainability-focused majors such as environmental science and environmental engineering.

## **Potential Limitations**

As with any research, this effort has limitations important to consider. One potential source of bias associated with this research is the relatively low response rate of 8%. Low response rates for surveys of university students are common, and response rates for studies we reviewed to inform the survey design for this project were as low as 1% (Speer et al., 2020) and as high as 16% (Horvath et al., 2013).

Although this study's response rate is comparable to those from surveys of students at other universities, it is important to recognize that our survey respondents may be different from the overall population of ISU juniors and seniors in ways that could bias the results. For example, it is possible and even perhaps likely that respondents were more interested in sustainability, and, thus more motivated to complete the survey, so the statistics could overestimate or underestimate actual student perspectives. Focus group participants were likely similarly motivated.

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"Thinking of Iowa State as an institution overall, I think... the average student isn't aware of a lot of the sustainability thinking, maybe if there was a way to help spread awareness of the problem that could be solved by sustainability so that everyday students are more aware of... things that are happening on Iowa State's campus." –ISU College of Design Student

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## **Conclusions**

This study was designed to assess students' perceptions of the integration of sustainability into their curriculum. We found that students value sustainability and view having a broad and career-specific understanding of sustainability as important. However, there is a disconnect between students' interest in learning about sustainability and their involvement in sustainability organizations and enrollment in sustainability-oriented courses. Our findings suggest opportunities for ISU to improve mechanisms used to help students engage in sustainability-related coursework and activities, and we recommend the university review its current framework on sustainability education. We suggest the development of programs to expand student awareness of sustainability initiatives on campus, incorporate sustainability ideas into already existing courses, and expand the offerings of sustainability courses at Iowa State. While these recommendations are certainly not the only way to improve students' education on sustainability, based on the data provided by ISU students, we expect they would be effective and appreciated across a broad range of disciplines and student interests.

# Appendix 1

## Focus Group Discussion Guide for Sustainability in the Curriculum

Intro:

- Hello and welcome to this focus group. We really appreciate your participation in this project.
  - Introduce all facilitators and observers in the room.
  - Talk about logistics, restrooms, etc.

Purpose:

- The purpose of this research is to learn the degree to which Iowa State University (ISU) integrates sustainability into course curricula, and the extent to which you feel you are being prepared to address challenges in sustainability.

Ground Rules:

- Informed consent: Your participation is completely voluntary, and you can skip any questions you do not feel comfortable answering. We will make an audio recording and transcription of the focus group, but your contributions will be kept confidential. We will also take some notes on the whiteboard, which will be erased after the discussion. Any identifying information will be deleted from the transcripts and no identifying information will ever be shared in any publication. To protect the confidentiality of your fellow focus group participants, we ask that you all commit to maintaining confidentiality about our discussion.
- We want to know what you think:
  - We are very interested in your opinions. The session is open to everyone. All your views are important. There is no right or wrong answer.
  - We ask that if you have a comment to make you wait until no one else is talking and that you speak as clearly as possible. It is very difficult to hear the answers when more than one person speaks.
  - We'd like to remind you that your participation in this study is voluntary. There is no penalty for not participating and you have the right to withdraw from the focus group at any time you wish.
  - We will start with introductions and continue onto the discussion questions. The survey will take approximately 60 minutes, and no longer than 90 minutes.
  - What questions do you have currently?
- Briefly get acquainted:
  - Participant names, majors, year of school

## **Focus Group Questions: Questions in Bold, Prompts Not Bolded**

### 1. Beliefs and attitudes regarding sustainability:

- When you think about sustainability, what words or ideas do you think of?
  - The note-taker will write keywords on white board
  - Why is sustainability important to you?
  - What are some of the sustainability challenges that you think about in your day-to-day life? (Top 3)
  - What kinds of things have you done to help prepare yourself to address sustainability challenges?
  - Have your views about sustainability changed over time?
  - What are some experiences you have had that have changed how you thought about sustainability?

### 2. Experiences at ISU and identifying strengths and shortcomings. Now, reflecting on your experiences as students at Iowa State:

- How well do you feel your experiences at Iowa State helped to prepare you to address sustainability challenges?
  - What is Iowa State doing well to prepare you to address sustainability challenges?
  - What could Iowa State do better to prepare you to address sustainability challenges?
- Why did you choose to pursue your current major?
  - Is there anything you wish you were learning about sustainability at ISU but aren't?
    - What are the most important skills that you have learned related to sustainability?
  - Could there be a question here to ask them to brainstorm potential solutions?

### 3. Closing thoughts

- Do you feel like ISU is committed to sustainability and sustainable development?
  - Follow up question: If no, why not? If yes, why?
- Do you feel that students have a say in how ISU approaches sustainability in the curriculum, utilities, dining, housing, etc.?
  - Follow up question: If no, why not? If yes, why?
- How do you think the average ISU student feels about sustainability?

## Outro

Thank you again for your participation. The information you have provided today has been extremely helpful. Your perspectives will help us develop a survey on these issues that will be distributed widely to faculty, students, and staff at Iowa State. If you have any further questions about the research, please feel free to do so currently.

## Appendix 2

In order to develop our survey, we developed most questions based on focus group discussions. We also adapted questions from surveys implemented in other universities. Alphabetic superscripts are used to indicate the sources for items.

### Sustainability in the Curriculum Survey

Thank you for taking part in this survey. The survey aims to examine Iowa State University students' perspectives on sustainability and their experiences with sustainability in their academic coursework at Iowa State. The survey should take about 5-10 minutes to complete. When you complete the survey, you will have the opportunity to enter a drawing for an iPad mini.

Your participation in this survey is entirely voluntary. You may refuse to participate or quit the survey at any time with no penalty to you, and you may also skip any questions that make you feel uncomfortable or do not wish to answer. Your answers to the survey will be anonymous, and the researchers will not have access to your name or other identifying information.

### Introduction

Sustainability is often defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs."

Sustainability is commonly considered to be composed of three interrelated dimensions: social sustainability, economic sustainability, and environmental sustainability. As you complete the survey, feel free to draw from these definitions of sustainability to help guide your answers.

## Perspectives on Sustainability in General

### 1. Please indicate how important you feel each item is to achieving a more sustainable future for all.

The following are dimensions of the United Nations Sustainable Development Goal (SDGs).

	Not important at all (1)	Slightly important (2)	Somewhat important (3)	Important (4)	Very important (5)
1. End poverty in all its forms					
2. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture					
3. Ensure healthy lives and promote well-being					
4. Ensure inclusive and equitable education					
5. Achieve gender equality and empower women and girls					
6. Ensure availability and sustainable management of water and sanitation					
7. Ensure access to affordable, reliable, and sustainable energy					
8. Promote sustainable economic activity and decent work					
9. Build resilient infrastructure					
10. Reduce inequality within and among countries					
11. Make cities and human settlements inclusive, safe, resilient, and sustainable					
12. Ensure sustainable consumption and production patterns					
13. Take urgent action to combat climate change and its impacts					
14. Conserve and sustainably use the oceans, seas, and marine resources					
15. Protect, restore and promote sustainable use of terrestrial ecosystems and halt biodiversity loss					
16. Promote sustainable technology and foster innovation					



## 2. Please indicate the extent that you agree or disagree with the statements.

	Strongly disagree (1)	Disagree (2)	Uncertain (3)	Agree (4)	Strongly Agree (5)
1. I fully understand the meaning of the term sustainability					
2. I know how to determine whether a product or practice is sustainable					
3. Sustainability factors into my everyday decisions about how I live my life					
4. I often think about how to make certain products, practices, or processes more sustainable					
5. I am concerned that society is not on a sustainable path					
6. I am concerned about how climate change will affect my well-being in the future <sup>a</sup>					
7. I am concerned about how climate change will affect the well-being of future generations					

## Perspectives on Sustainability at Iowa State

### 3. To what extent do you agree or disagree with the following statements?

	Strongly disagree (1)	Disagree (2)	Uncertain (3)	Agree (4)	Strongly Agree (5)
1. I would like ISU to place more emphasis on teaching about sustainability					
2. I am interested in learning more about how to apply sustainability to my field of study <sup>a</sup>					
3. Sustainability-related knowledge and skills will be beneficial to my personal life					
4. Sustainability-related knowledge and skills will be beneficial to my intended career path					
5. I believe potential employers are interested in hiring students with sustainability-related knowledge and skills <sup>b</sup>					
6. I would consider how sustainable a company's operations are when deciding where I want to work					
7. Regardless of their field of study, everyone should learn about sustainability					
8. Sustainability should be actively incorporated into all ISU courses <sup>a</sup>					

	Strongly disagree (1)	Disagree (2)	Uncertain (3)	Agree (4)	Strongly Agree (5)
9. Sustainability is something all ISU departments/colleges should actively incorporate and promote <sup>a</sup>					
10. There should be a required sustainability credit for all students					
11. ISU should have more majors related to sustainability					
12. Public universities should be leaders in sustainability					
13. Iowa State should do more to engage students in sustainability decision-making					

#### 4. Thinking about the curriculum at ISU, where would you like to see sustainability themes integrated?

In this section of the survey, please reflect on your expectations about sustainability at Iowa State.

	Strongly disagree (1)	Disagree (2)	Uncertain (3)	Agree (4)	Strongly agree (5)
1. Courses required for my major(s) <sup>b</sup>					
2. Courses required for a minor <sup>b</sup>					
3. Courses required by my college or ISU (outside of major and minor courses) <sup>b</sup>					
4. Courses used to fulfill elective requirements <sup>b</sup>					

## 5. Experiences with Sustainability at Iowa State

The following section asks you to reflect on your actual experiences with sustainability at Iowa State.

	Strongly disagree (1)	Disagree (2)	Uncertain (3)	Agree (4)	Strongly agree (5)
1. I am well-informed about my options to enroll or participate in sustainability courses, minors, majors, and other educational offerings at ISU <b>b</b>					
2. I am aware of sustainability-related programs, organizations, and other on-campus learning opportunities outside of coursework <b>b</b>					
3. I actively seek sustainability-related courses when enrolling in classes <b>b</b>					
4. In my courses, I have learned how I can make lifestyle changes to be more sustainable <b>a</b>					
5. I feel sustainability themes have been integrated into courses I have taken to meet university and college degree requirements <b>b</b>					
6. In my courses I have learned how sustainability applies to my field of study					
7. The courses offered at ISU have adequately addressed my interest in sustainability					
8. If I had more room in my course schedule, I would take/have taken more courses focused on sustainability					
9. I have learned about major sustainability challenges such as climate change in my courses					
10. I have had the opportunity to learn about sustainability through project-based or experimental learning <b>b</b>					
11. My courses have taught me problem-solving skills that I can apply to sustainability issues					
12. My courses have empowered me to make the world a better place <b>a</b>					
13. My overall experiences at ISU have prepared me to address challenges in sustainability after graduating					
14. I am satisfied with the sustainability-related skills and knowledge I have gained through my coursework					
15. I am involved with sustainability-related activities, such as student organizations, outside of my coursework					
16. I supplement my coursework with my own research about topics in sustainability					
17. Iowa State prioritizes sustainability education for its students <b>c</b>					
18. Iowa State is committed to sustainability					
19. I feel that Iowa State adequately involves students in sustainability decision-making					
20. I view Iowa State as a leader in sustainability					
21. My experiences at ISU have changed the way I think about sustainability					

**6. How many sustainability related courses would be the ideal number to take as part of your undergraduate studies?<sup>c</sup>**

None	One	Two	Three	Four	Five+
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**7. How many sustainability-related courses have you taken throughout your undergraduate studies?<sup>b</sup>**

None	One	Two	Three	Four	Five+
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**8. How many sustainability-related organizations have you participated in while at ISU?**

None	One	Two	Three	Four	Five+
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**9. How often do you participate in sustainability-related activities or organizations at ISU?**

None	One	Two	Three	Four	Five+
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**10. How often would you like to participate in sustainability-related activities or organizations at ISU?**

Never	Once or twice each semester	Monthly	Weekly	Daily
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**11. How often do you participate in activities or organizations at ISU that are NOT sustainability related?**

Never	Once or twice each semester	Monthly	Weekly	Daily
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**12. What is your class standing?**

Freshman	Sophomore	Junior	Senior
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**13. What college(s) are you in at ISU? (Select all that apply.)**

College of Agriculture and Life Sciences	
College of Design	
College of Engineering	
College of Human Sciences	
College of Liberal Arts and Sciences	
College of Veterinary Medicine	
Graduate College	
Ivy College of Business	

**14. What is your major(s)?**

Major 1	
Major 2	

**15. What is your minor(s)?**

Minor 1	
Minor 2	

**16. What is your gender?**

Male	Female	Non-binary or gender fluid	Prefer to self- describe	Prefer not to respond
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**17. With which race and ethnicity do you identify? (Select all that apply.)**

Asian	
Black or African American	
Hispanic or Latino	
Native Hawaiian or Pacific Islander	
White	
Prefer not to respond	

**18. What is your political orientation?**

Very Liberal	
Liberal	
Moderate	
Conservative	
Very Conservative	



**19. Please share any comments you have regarding sustainability at ISU.**

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**20. If you would like to be entered into the drawing for the iPad Mini, please provide your preferred email address. Your responses will not be connected to your email.**

Preferred email address	
Name	

**Adapted from**

**a**Students Organizing for Sustainability International. 2021. Students, sustainability, and education: Results from a survey of students in higher education around the world.

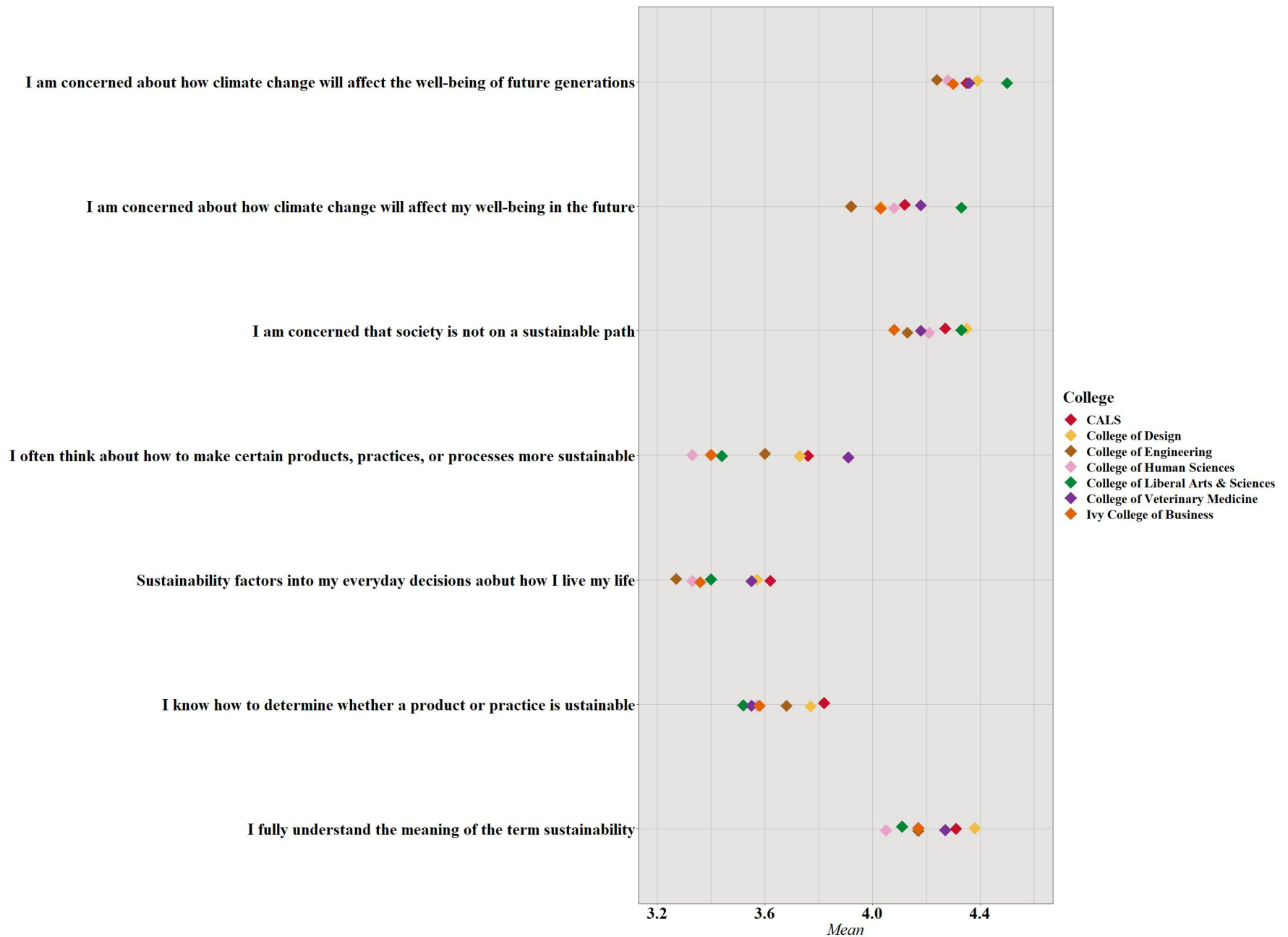
**b**Slagle, K. M. & Brooks, J. S. 2021. 2020 Campus Sustainability Survey: Curriculum. A Report by the Environmental and Social Sustainability Lab. The Ohio State University, School of Environment and Natural Resources.

**c**Walpole, E.H., Herziger, A., and Wilson, R.S. 2019. 2018 Campus Sustainability Survey: Results and Trends. A Report by the Environmental and Social Sustainability Lab. The Ohio State University, School of Environment and Natural Resources.

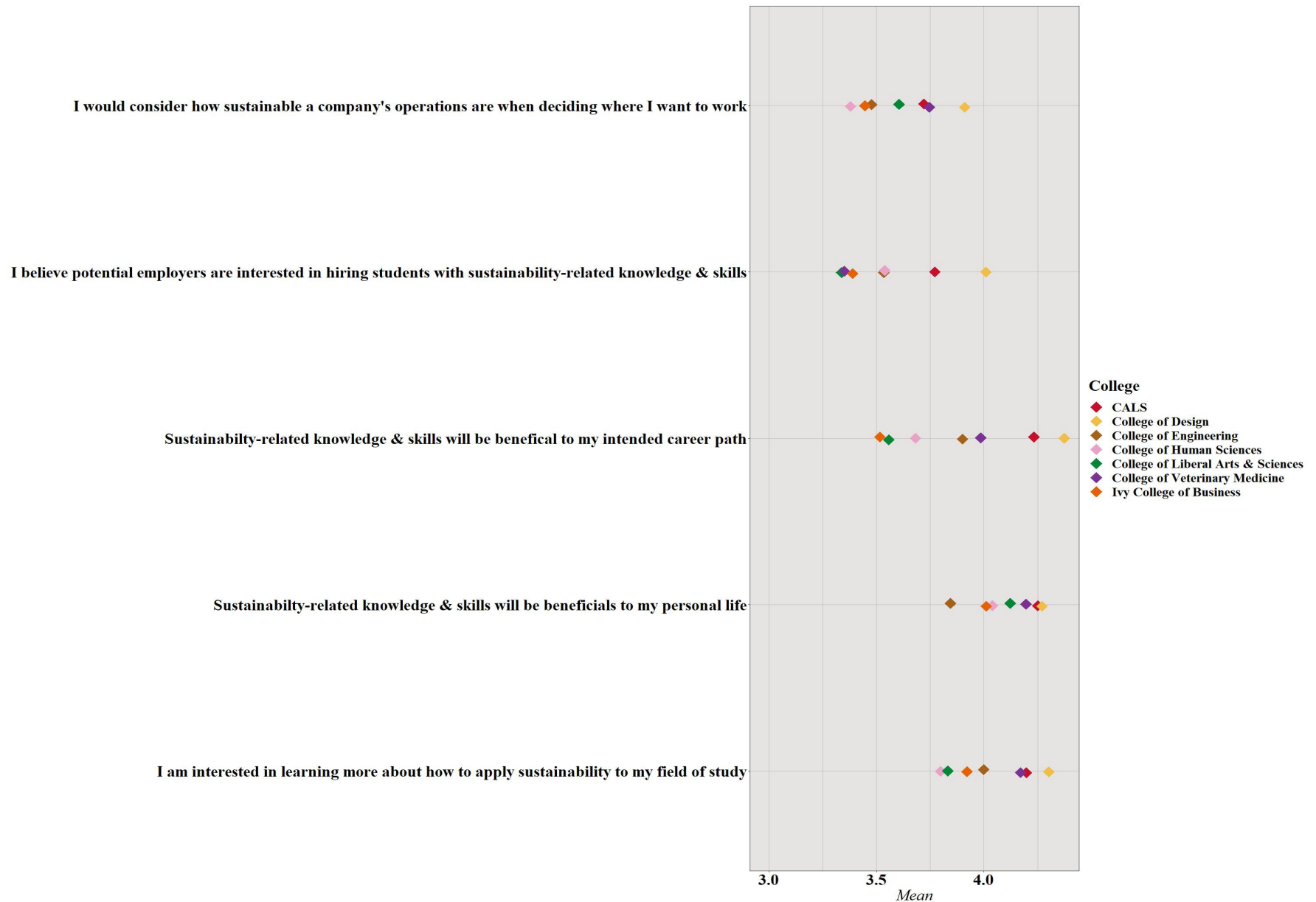
## Appendix 3



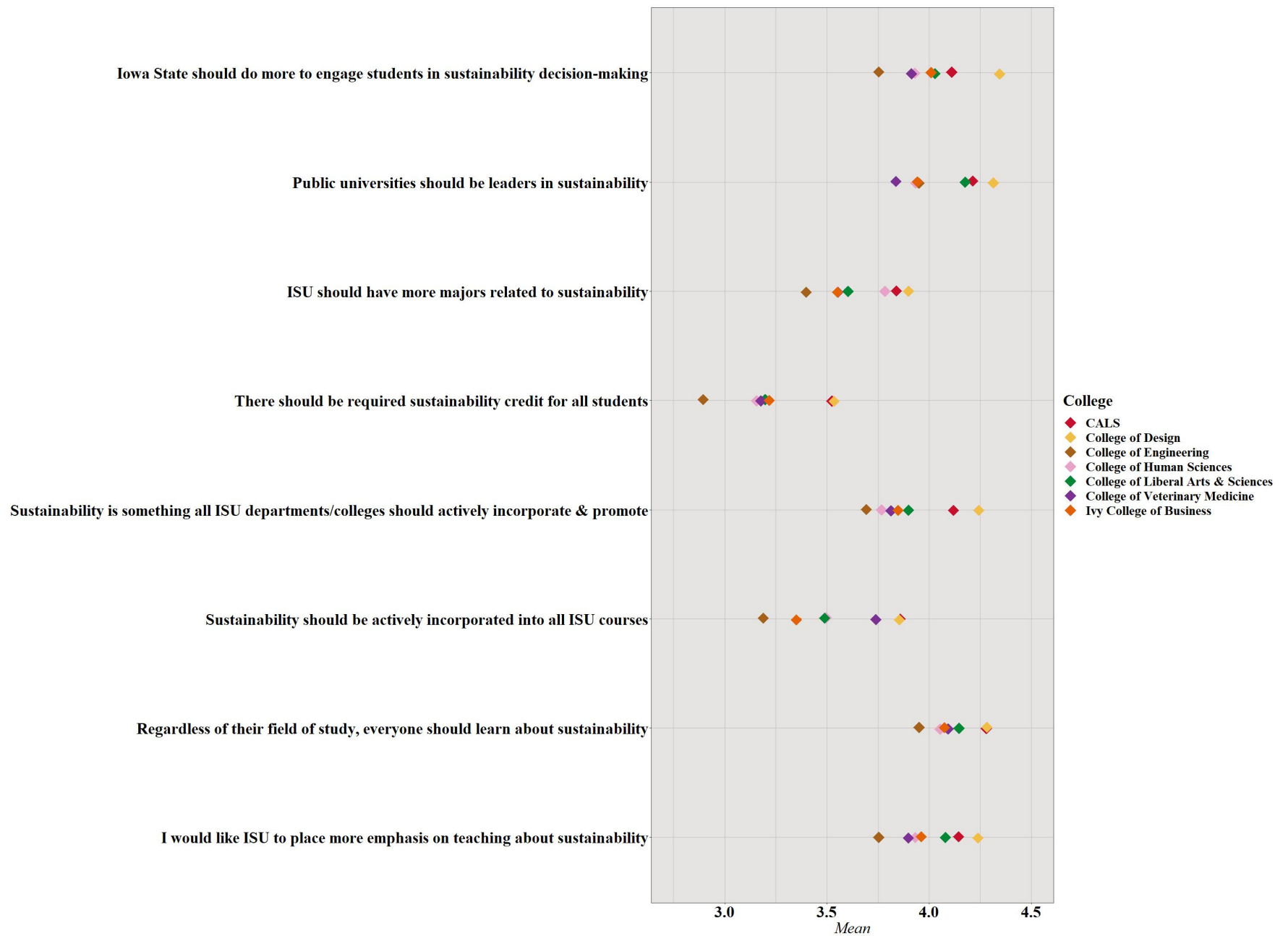
Appendix 3.1. Iowa State University Students from seven different colleges' perspectives on the Importance of the United Nations Sustainable Development Goals. The mean value is from the responses recorded in a five-point importance scale (1) Not Important, (2) Slightly Important, (3) Somewhat Important, (4) Important, (5) Very Important.



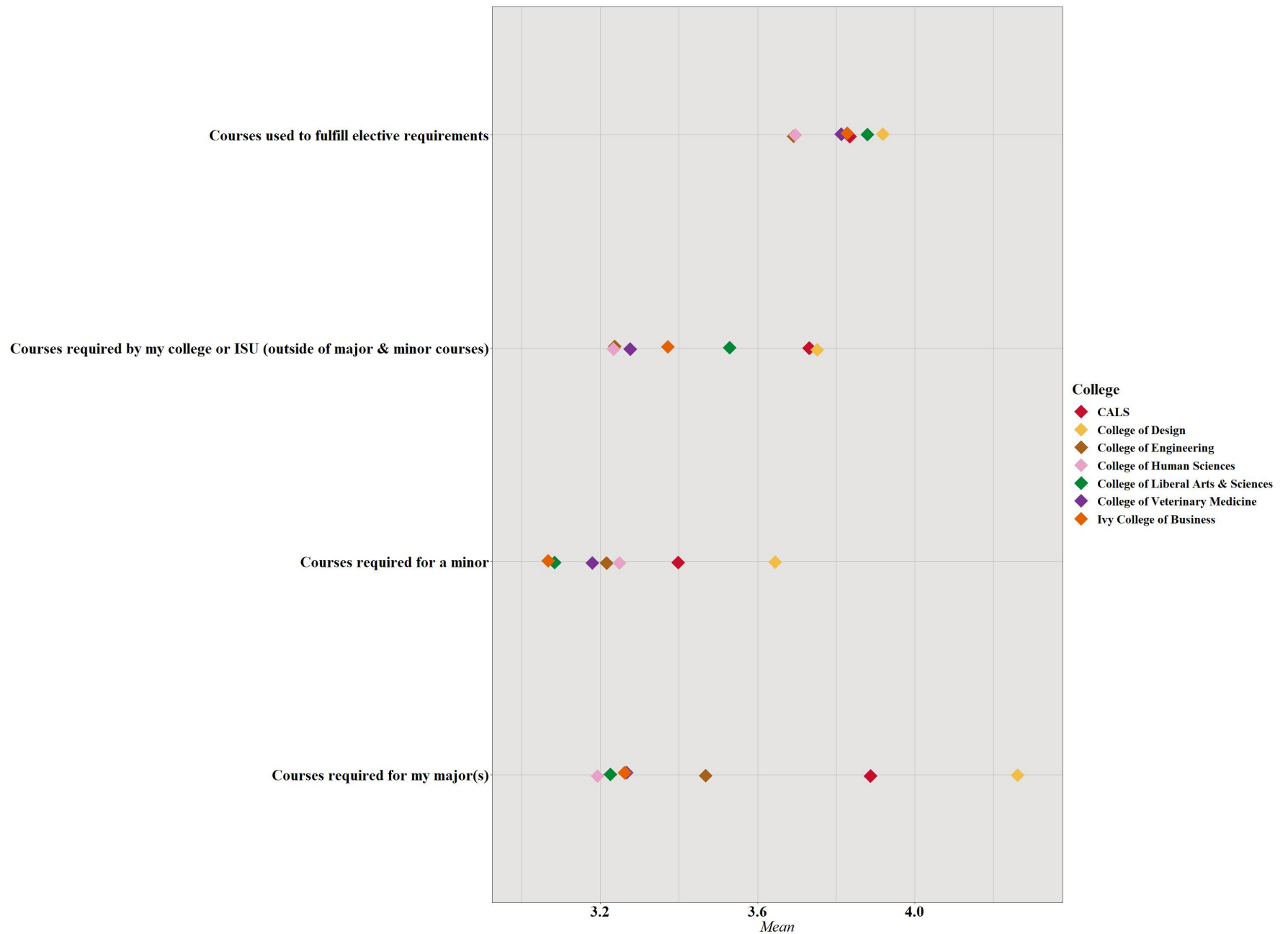
Appendix 3.2. Mean score of sustainability knowledge and concerns measured across seven different colleges. The responses were recorded in five-point agreement scale ranging from “Strongly disagree” (1) to “Strongly agree” (5).



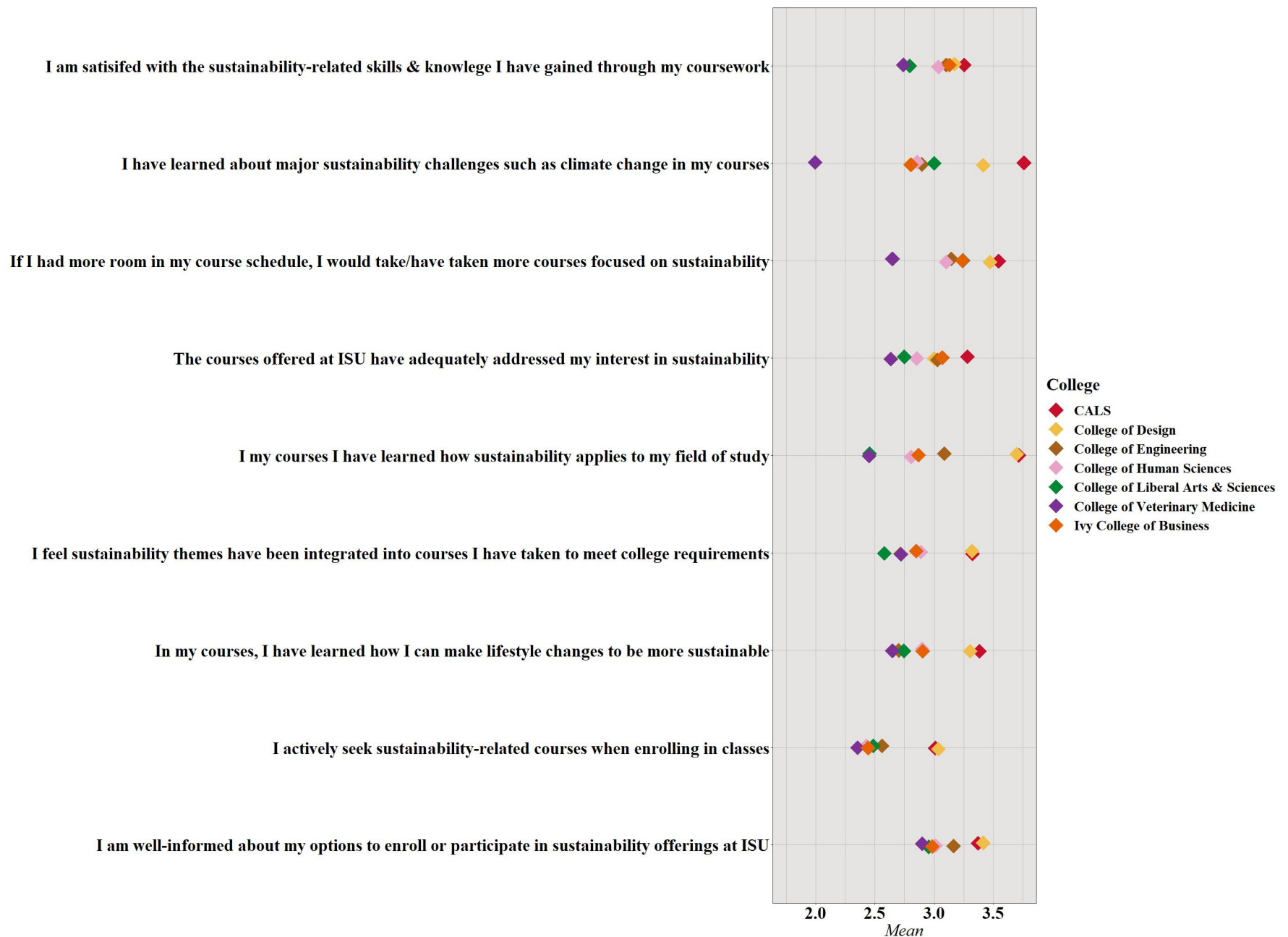
Appendix 3.3: Individual-level value of sustainability training in their personal lives. The response were measured in five-point agreement scale ranging from "Strongly disagree" (1) to "Strongly agree" (5).



Appendix 3.4: Respondents response to institutional-level dimensions of sustainability. The response were measured in five-point agreement scale ranging from “Strongly disagree” (1) to “Strongly agree” (5).

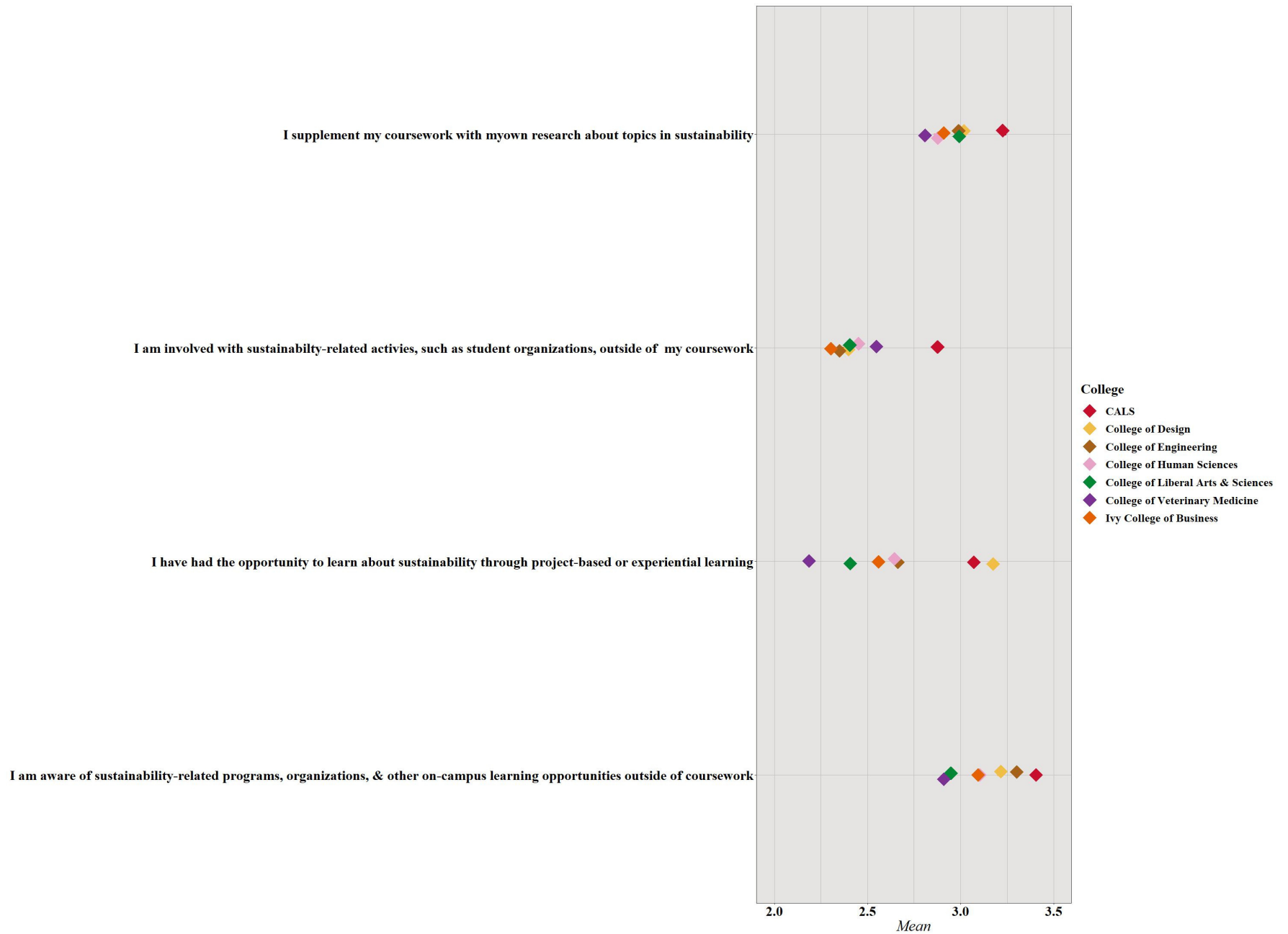


Appendix 3.5: The ways in which sustainability might be integrated into the curriculum. The responses were recorded in five-point agreement scale ranging from “Strongly disagree” (1) to “Strongly agree” (5).

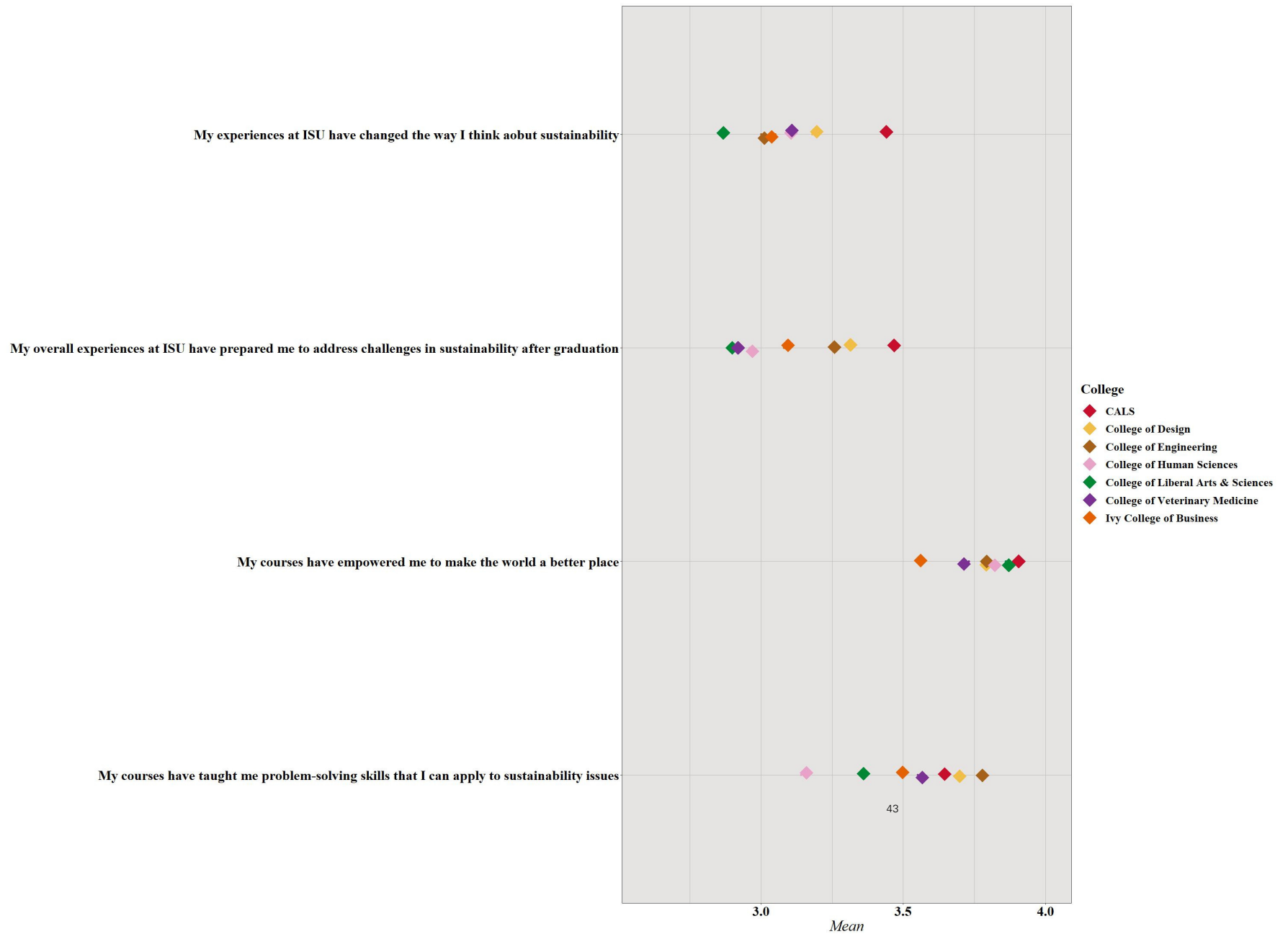


Appendix 3.6: Students experiences with sustainability in their coursework. five-point agreement scale ranging from "Strongly disagree" (1) to "Strongly agree" (5).

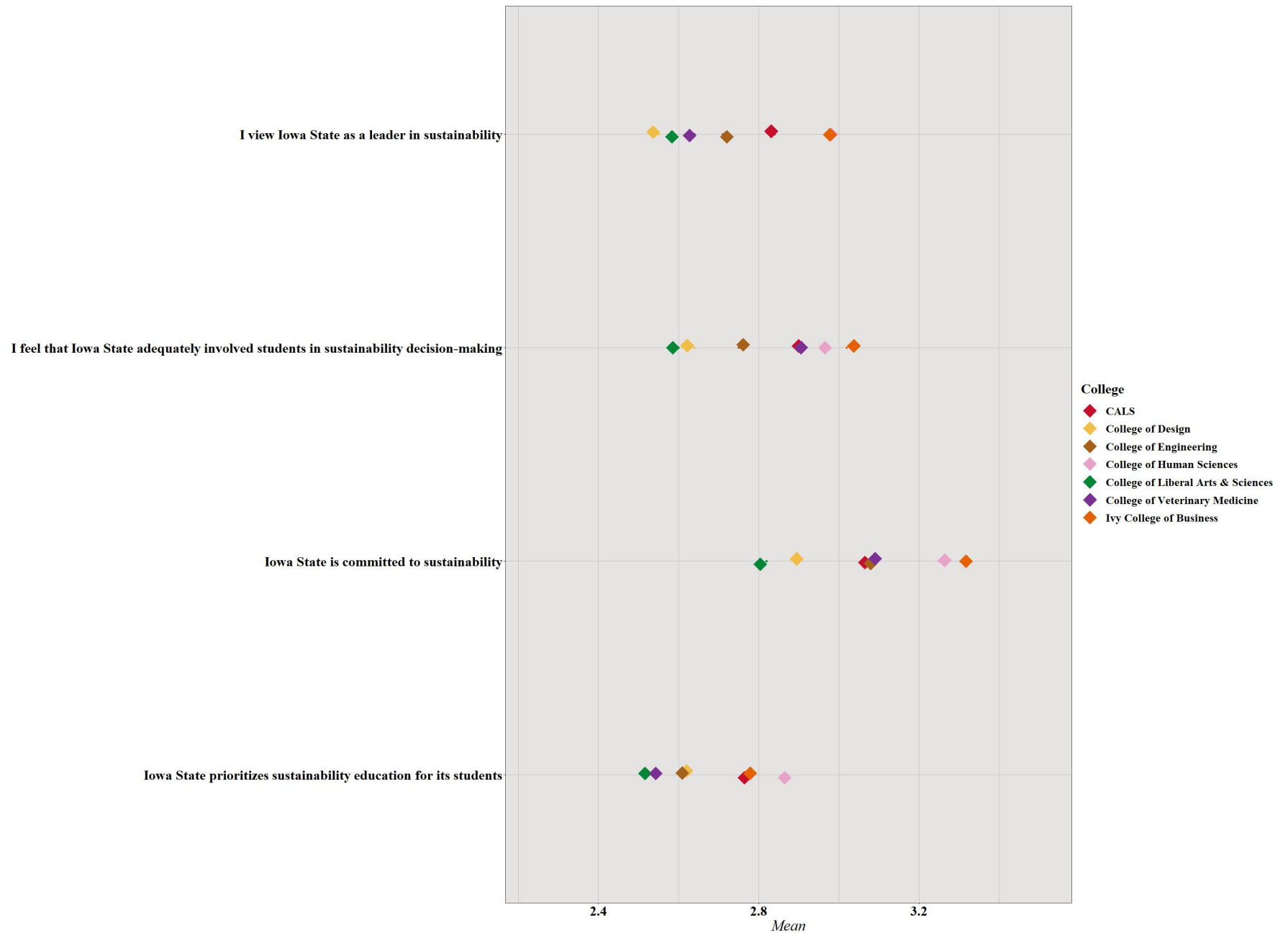




Appendix 3.7: Students experiences with sustainability outside of the classroom. The response were recorded in five-point agreement scale ranging from "Strongly disagree" (1) to "Strongly agree" (5).



Appendix 3.8: Potential impacts that students' experiences at ISU related to sustainability. The responses were recorded in five-point agreement scale ranging from "Strongly disagree" (1) to "Strongly agree" (5).



Appendix 3.9: Respondents' perspectives about ISU' engagement with sustainability issues. The responses were recorded in five-point agreement scale ranging from "Strongly disagree" (1) to "Strongly agree" (5).

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