

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES

2019 Campus Sustainability Survey: Curriculum

A Report from the Environmental and Social Sustainability Lab (2020)



THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

In Collaboration with the
Ohio State University
Sustainability Institute

About the Environmental and Social Sustainability Lab

The Environmental and Social Sustainability (ESS) Lab is a collaborative community of scholars working to build scientific understanding of environmental and social sustainability in an interdisciplinary context. Housed within the School of Environmental and Natural Resources within The College of Food, Agriculture, and Environmental Sciences, we are staffed by a core group of affiliated faculty members, students, and research staff representing a broad range of social science expertise. Our mission is to support a viable socio-ecological future through applied social science research, and to serve as a hub of sustainability research at Ohio State.

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Contents

Ohio State Sustainability Goals.....i

Executive Summary 1

Methodology and Design 3

Sample Characteristics 6

Section 1: Sustainability Curriculum
Development..... 8

Next Steps and Acknowledgements 20

References..... 21



OHIO STATE SUSTAINABILITY GOALS

Strategic Vision

Ohio State is a recognized leader in developing durable solutions to the pressing challenges of sustainability and in evolving a culture of sustainability through collaborative teaching, pioneering research, comprehensive outreach, and innovative operations, practices, and policies.

As progress is made toward realizing institutional sustainability aspirations, four overarching, foundational principles of the university must take hold to ensure that accountability and a culture of sustainability becomes pervasive throughout Ohio State's culture, practices and programs:

- Ensure a transformational approach by establishing a generational timeline to consider the impacts and trade-offs of decisions and economic, environmental, and social outcomes over many years and decades, instead of only the perspective of short-term economic returns.
- Utilize a council of internal and external stakeholders (i.e., students, staff, faculty, alumni/ae, companies, non-governmental organizations, agencies) to serve in an advisory capacity for the ongoing formulation, development, implementation, and assessment of goals, initiatives, and outcomes.
- Conduct research on our progress by developing and/or adapting research methodology to review and assess operational goals, and evaluate and publish the results with the aim of developing best practices and innovation for sustainability measurement.
- Incorporate relevant elements of sustainability into all college and support units' strategic plans, physical plans, and other university guiding documents.

Teaching and Learning

1. Deliver a Curriculum that provides Ohio State students at all stages of instruction – from General Education to professional and technical programs – with opportunities to understand sustainability holistically, framed by the environment, science, technology, society, the economy, history, culture, and politics.
2. Address the Complexities of Sustainability through a variety of learning formats, strategies, and occasions.

Research and Innovation

3. Reward Sustainability Scholarship, including the scholarship of engagement, by providing incentives for students, faculty and staff to make discoveries and stimulate creative efforts that promote and achieve sustainability.
4. Magnify Sustainability Scholarly Output and Impact to create new knowledge, solve real world problems, including for our own operations, and increase Ohio State's national/international reputation as a sustainability research leader.

Outreach and Engagement

5. Foster Campus-to-Community, Students-to-Alumni Culture of sustainability-oriented practices and educational and research experiences that students and alumni transfer into local and global communities.
6. Catalyze Engagement, Ownership, and Buy-In to Sustainability via engaged and inclusive partnerships, on and off campus, that support the long-term economic, social and environmental welfare of the campus, surrounding neighborhoods and the global community.

Resource Stewardship

7. Implement specific, "world-leading" university-wide operational goals to reduce resource consumption, neutralize carbon emissions and minimize waste, including:
 - a. Achieve carbon neutrality by 2050 per Presidents' Climate Leadership Commitment;
 - b. Reduce total campus building energy consumption by 25% by 2025;
 - c. Reduce potable water consumption by 5% per capita every five years, resetting baseline every five years;
 - d. Increase campus ecosystem services by 60%, by 2025;
 - e. Reduce carbon footprint of university fleet by 25% by 2025;
 - f. Achieve zero waste by 2025 by diverting 90% of waste away from landfills;
 - g. Increase production and purchase of locally and sustainably sourced food to 40% by 2025; and
 - h. Develop university-wide standards for targeted environmentally preferred products and fully implement preferable products and services by 2025.



Executive Summary

The Ohio State Campus Sustainability Survey represents a joint effort on the parts of numerous campus partners to measure current and longitudinal trends in undergraduate behaviors, beliefs, values, attitudes, and knowledge regarding sustainability at The Ohio State University. This report explores the results of that effort in 2019, through online survey responses from 3,276 Undergraduate students from the Columbus campus (out of 20,500 randomly selected students originally contacted; a response rate of approximately 16%). Please see the following sections for more details on our survey methods and student sample, as well as survey results in each of five major areas.

Student interest in sustainability curriculum

The 2019 survey contained several items developed in collaboration with the Sustainability Institute, the Office of Student Life, and OSU Facilities, Operations and Development. Some of these items provide insights on sustainability curriculum development for the Sustainability Education and Learning Committee (see OSU Sustainability goal #1). In the present report, we additionally separate this data by primary program of study, focusing on the 4 largest programs on campus: Arts & Sciences (UASC), Engineering (UENG), Business (UBUS), and Education & Human Ecology (UEHE), as well as two more sustainability-focused programs: Agriculture (UAGR) and Environment & Natural Resources (UENR).

Most respondents indicated that they had taken no classes related to sustainability or the environment at Ohio State (64.2%), with the clear exception of UENR students, who take more sustainability courses (Figure 1.2) and have greater interest than other students overall (Figure 1.6). There is a small trend of increasing interest in sustainability courses since 2018. In particular, **Figure 1.6 suggests that when compared to Agriculture students, Arts & Sciences and Business students report more interest in general education courses with a focus on sustainability.** Given the higher numbers of students in these programs, these students may be driving the increasing interest to some degree. However, students generally disagreed with the statement, “I actively seek sustainability-related courses when enrolling in classes,” a sentiment perhaps particularly driven by disagreement reported by Education & Human Ecology students (Figure 1.4).

On average, students agreed that employers are interested in students with sustainability-related knowledge and skills, and that they were aware and informed of opportunities to acquire such knowledge and skills. UENR and UAGR students felt

particularly well-informed of these opportunities compared to other students. When considering the interests of students on campus outside of CFAES, predictable patterns emerge that could be leveraged in outreach to students in other programs. For example, Business students preferred topics in Sustainability in Business, while Engineering students favored Clean & Renewable Energy. Less predictably, the popularity of global literacy as an important sustainability related skill was primarily driven by Arts & Sciences students, while interest in behavior change was driven by Education & Human Ecology students.

Recommendation: While a gap remains between interest and actual involvement in sustainability on campus among most students, Figure 1.8 suggests that this gap is particularly large among non-UENR students. Likewise, the finding that UAGR and UENR students feel well-informed of opportunities suggests efforts at awareness among these CFAES students have been effective, and either additional or alternative methods may be required to reach other students on campus. One approach to increasing interest and enrollment in sustainability-related courses might be to provide simple notations for courses that have officially integrated sustainability into their syllabi. Another may be to tailor outreach within buildings or online spaces to the unique interests of the students that are present and enrolled in other programs on campus. Sustainability contains a wide breadth of topics and points of engagement, and this should be leveraged to increase interest among a wider swath of students.

Future plans:

The ESS lab plans to continue using an annual survey and a panel of undergraduate students to measure changes in sustainability knowledge, attitudes, and values as well as engagement in sustainable behaviors. Such data is intended to help broadly inform and assess sustainability efforts taking place at Ohio State.

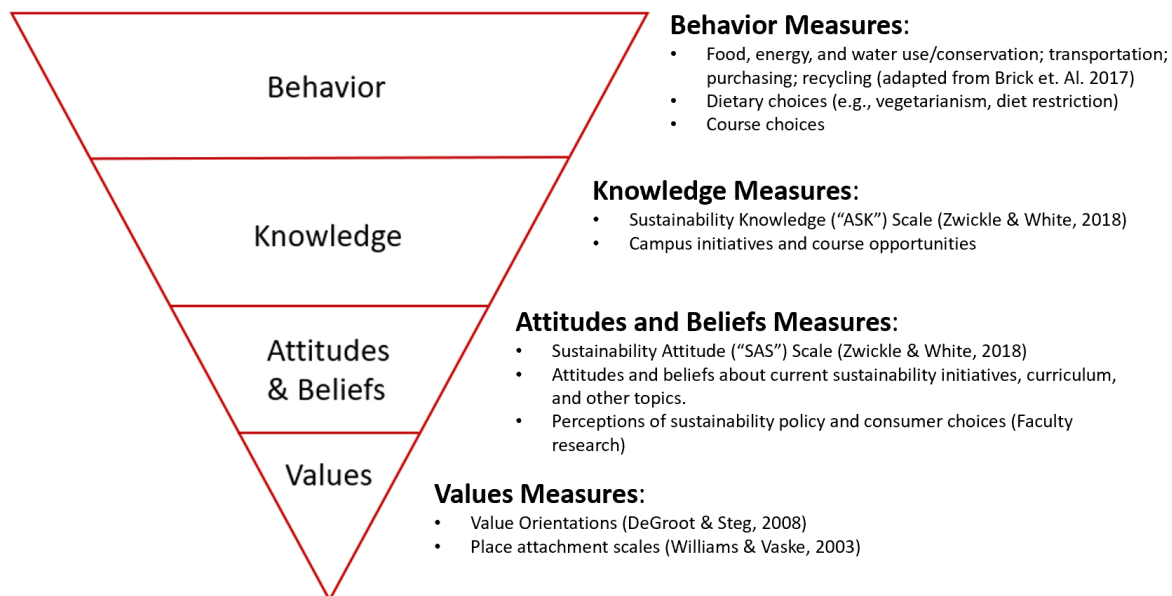
Methodology and Design

The 2019 Campus Sustainability Survey was organized and administered by members of the Environmental and Social Sustainability (ESS) Lab in the School of Environment and Natural Resources, in collaboration with the Ohio State Sustainability Institute, Facilities Operations and Development, the Office of Student Life, the Center for the Study of Student Life, and Ohio State Energy Partners.

Survey Design:

Items were based on established scales where possible and were designed to capture a full suite of sustainability-related constructs including values, attitudes, beliefs, knowledge, and behaviors. Figure 1 below provides a summary of this approach and the types of scales used. The figure takes the shape of an inverted pyramid to represent the idea that behaviors at the top of the pyramid are many and varied, while values at the bottom are few in number and foundational. If not otherwise noted, items were self-generated with input from ESS Faculty members and/or our campus partners. (For the citations noted in Figure 1 please see the “References” section at the end of the report).

Figure 1. Cognitive hierarchy



Overall, there were three types of survey items developed:

- 1) **Longitudinal items** (i.e. annually recurring): These items are intended to track changes in sustainability behaviors (adapted from Brick et.al. 2017), sustainability knowledge (“ASK” scale, Zwickle and Jones 2018), and sustainability attitudes (“SAS” scale, Zwickle and Jones 2018) over time. Some of these items can be compared to survey results from 2010 - 2014.
- 2) **One-time items**: These items address topics that are of interest to our campus partners, such as support for current and future sustainability initiatives and development of a sustainability curriculum.
- 3) **Faculty research items**: In 2019, faculty research items explored consumer behavior and wisdom (Drs. Brooks and Herziger of SENR), and research that assessed student perceptions of food, energy, agriculture and water policy (Dr. Jeff Bielicki of the College of Engineering). (Faculty research results will be developed into scholarly publications and are not included in this report). There is an open call for faculty research items each year. OSU faculty have the opportunity to request a limited number of items to be included in the survey and these requests are reviewed by the ESSL leadership committee.

Survey Implementation:

In order to maintain a panel and assess how individuals have changed over time, our sampling frame for 2019 included all students that responded to the 2018 survey and were still enrolled at OSU in 2019 (N = 2,554). These 2018 respondents were separated by rank, and each total was subtracted from 5,000 to determine the number of new students randomly sampled from each rank for the 2019 effort. As was done in 2018, we oversampled 5,500 first year students to account for sample attrition over time. In October of 2019, survey invitations were emailed to the full sample of 20,500 non-transfer undergraduate students from OSU’s Columbus campus via Qualtrics. In addition to an invitation, after one week, participants were emailed a reminder, and one week later they received a third and final reminder.

Table E. Sample sizes by rank and response N

Rank	Respondents from 2018	New contacts 2019	Overall Respondents 2019	Recontacted Respondents 2019
First year	0	5,500	1,040	0
Second year	1,214	3,786	756	173
Third year	695	4,305	714	238
Fourth year	645	4,355	648	322
Total	2,554	17,946	3,276	733

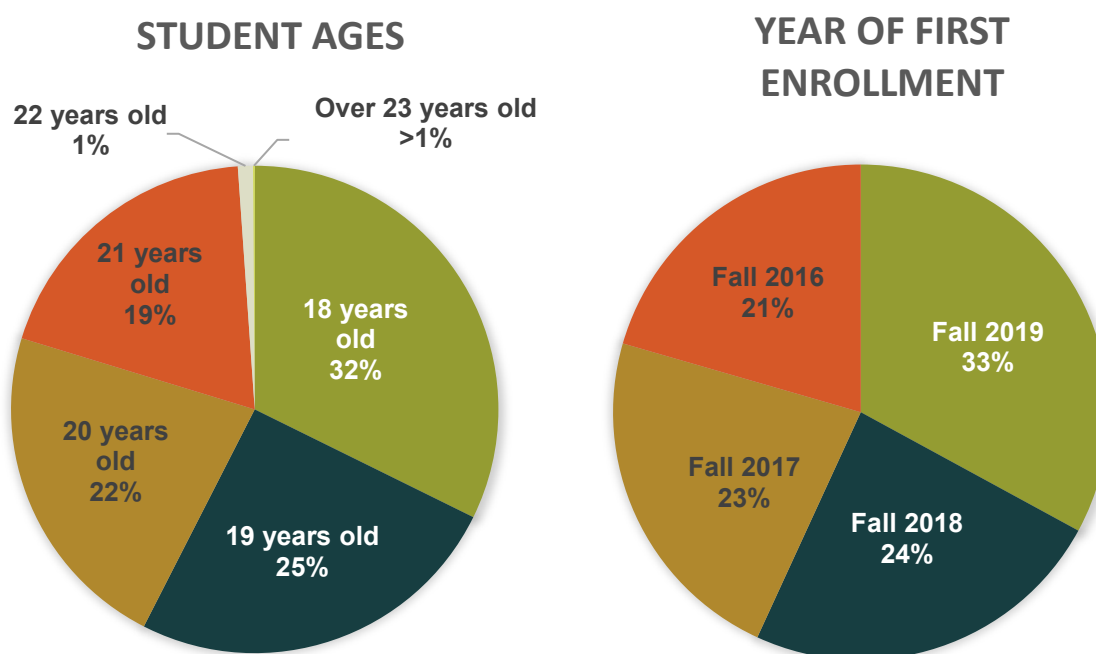
Of the 20,500 students contacted, 3,276 started the full survey and 2,636 completed it (13.0% completion rate). The final sample size used for this report (i.e. students who began the survey) was 3,276 students, for a final response rate of approximately 16%. Excluding outliers¹, the average completion time for the full survey was approximately 21 minutes (with a mode of 15 minutes).

¹ Outliers were identified using the box and whisker plot function in SPSS.

Sample Characteristics

Our sample consisted of 3,276 undergraduate students who began the survey. Where appropriate, we provide the [Fifteenth Day Enrollment](#) numbers for Autumn 2019. Respondents were more female than male (67.3% female; AU19: 51% female), with an average age of 19 years old (SD = 1.16). By design, participants were skewed towards first-year students at Ohio State: 1,040 (32.9%; AU19: 14.2%) were first-year freshmen, 756 (23.9%; AU19: 21.9%) were second years, 714 (22.6%; AU19: 23.3%) were third-years, and 648 (20.5%; AU19: 40.3%) were in their fourth year since first enrolling. Additionally, the average (non-zero) GPA of our participants was a 3.44 (SD = 0.51).

Figure SC.1. Distribution of respondent age and year of first enrollment.



In terms of race and ethnicity, the majority of students in our sample identified as white (71.0%; AU19: 65.5%), with a minority of students identifying themselves as Asian (8.0%; AU19: 7.7%), Hispanic (4.7%; AU19: 4.8%), Black or African American (3.0%; AU19: 6.7%), Native Hawaiian or Pacific Islander (0.1%; AU19: 0.1%), or two or more races (4.2%; AU19: 3.9%). In addition, 3.0% of our sample were international students studying at Ohio State (AU19: 8.4%).

In terms of living situation and financial independence, our participants most commonly live in student residence halls (52%), although a substantial minority live in a house or apartment with other students (35%), and a minority live on their own (6.9%) or with

family (5.1%). Students reported that, on average, 41.4% of their living expenses came from personal earnings or savings (with a standard deviation of 32.4%), meaning the average student in our sample had roughly 59% of their living expenses financed by others.

In terms of where students grew up and their political affiliations, the majority of our sample report growing up in a suburban setting (65.8%), 11.9% in an urban setting, 10.4% in a small town, and 8.3% in a rural or agricultural environment. In addition, 48.3% described themselves as Democrats, 14.5% as Republicans, 30.3% as independents, 3.9% as Libertarians, and 3.1% as other political affiliations.

Lastly, in terms of academic programs and exposure to sustainability coursework, students most commonly reported that they had taken no classes related to sustainability or the environment at Ohio State (64.2%), while 27.8% reported taking just one or two classes; only 4.4% of our sample had taken three or more such classes (see Figure 11 in Section 5. Please see Table 2 for a breakdown of programs of study (in major categories).

We do not associate these demographic variables with values, knowledge, or behavior in this report, and it remains an open opportunity for interested undergraduate or graduate students to ask questions and conduct analyses. We welcome and encourage student inquiries, which can be sent to essl@osu.edu.

Table SC.1. Response by program of study

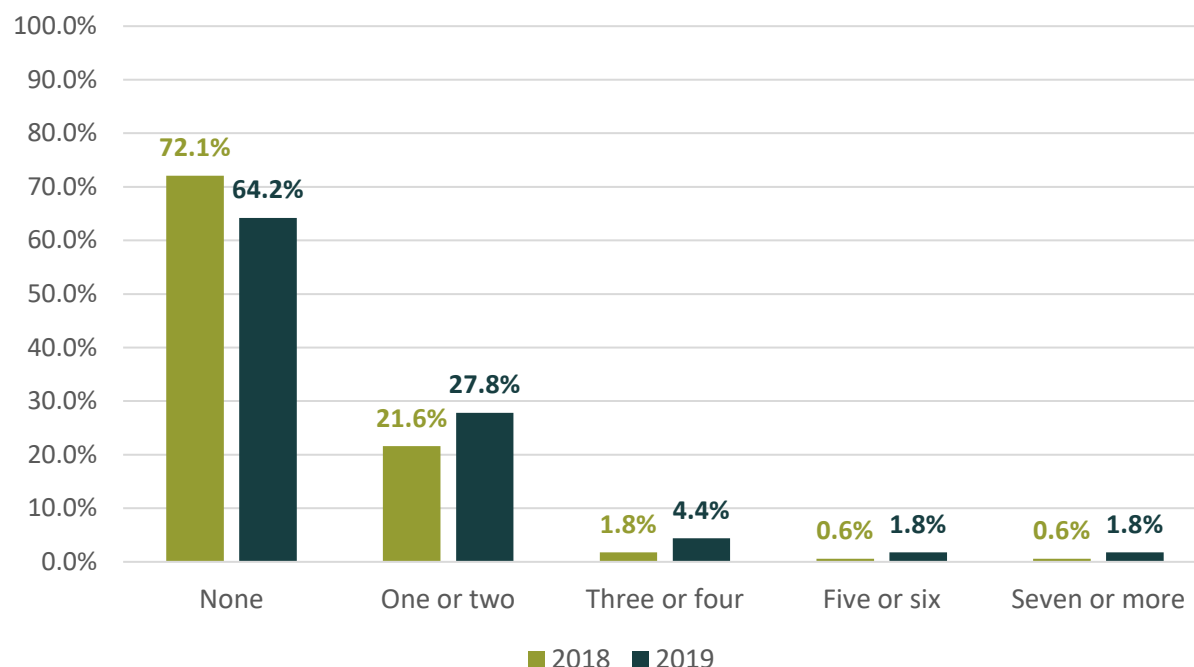
Program	Percent of respondents	Enrollment AU19
Arts and Sciences	37.4	37.5
Engineering	19.9	16.9
Business	13.0	15.2
Education and Human Ecology	5.1	6.6
Exploration Program (no declared major)	3.6	4.9
Health and Rehabilitation Sciences	4.8	4.2
Agriculture	4.0	3.3
Environment and Natural Resources	3.6	1.7
Nursing, Dental, and Medical	2.3	2.6
Pharmacy	1.5	1.0
Public Health	1.3	0.7
Architecture	1.3	1.2
John Glenn Public Affairs	1.0	0.7
Social Work	0.9	0.9
Undergraduate Non-Degree	0.03	n/a
Total N	3,158	46,818

Section 1: Sustainability Curriculum Development

The survey included items designed to inform sustainability curriculum development at Ohio State. These items included having students rate their interest in different kinds of sustainability courses and their current and desired involvement in sustainability-related learning opportunities. These items were largely self-generated, and we will review them section-by-section in the next pages.

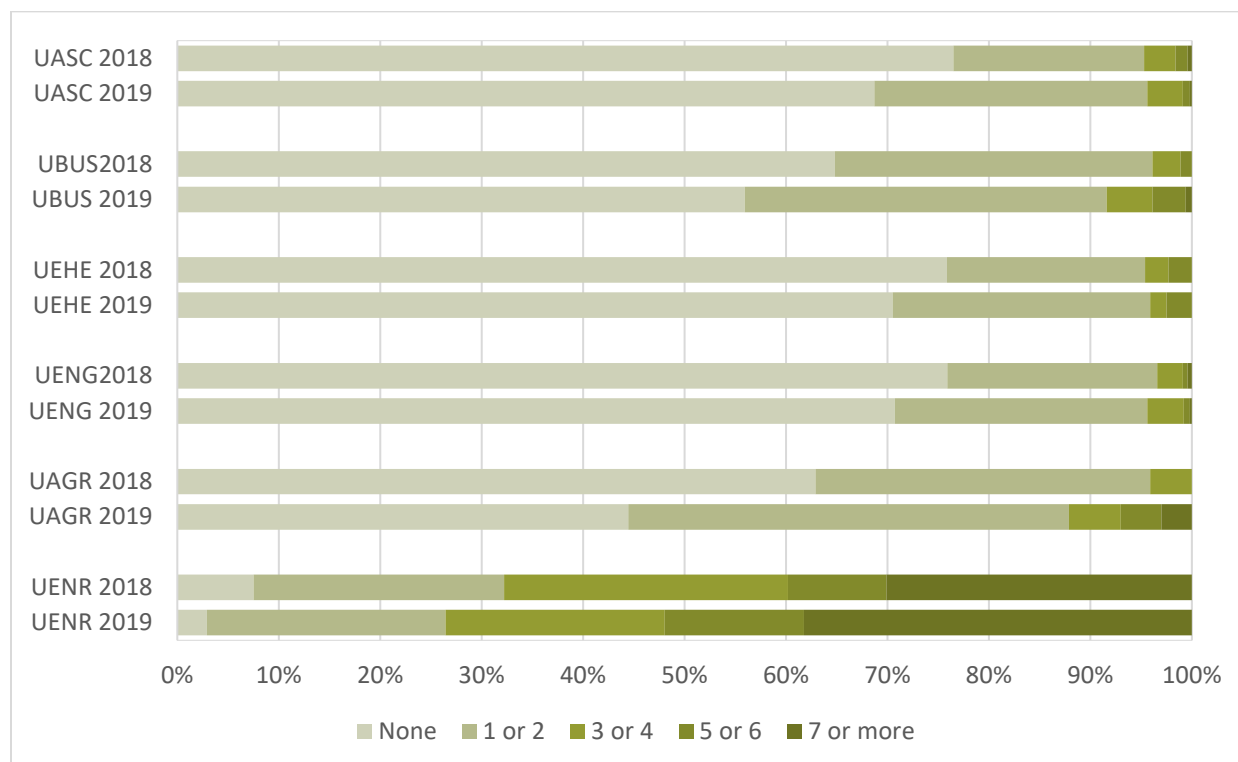
To begin, students were asked: “How many courses have you taken with a focus on sustainability at OSU?” (N = 2,609; Figure 9). Similar to 2018, the most common responses to this question in 2019 was “None” (64.2%; 2018 = 72.1%) or “One or two” courses (27.8%; 2018 = 21.6%). Of the students that answered this question in both 2018 and 2019 (N = 581), half had taken no sustainability courses in 2018, and reported the same in 2019, while 21% reported none in 2018, but reported having taken one or two in 2019.

Figure 1.1. Number of courses taken with a focus on sustainability at OSU.



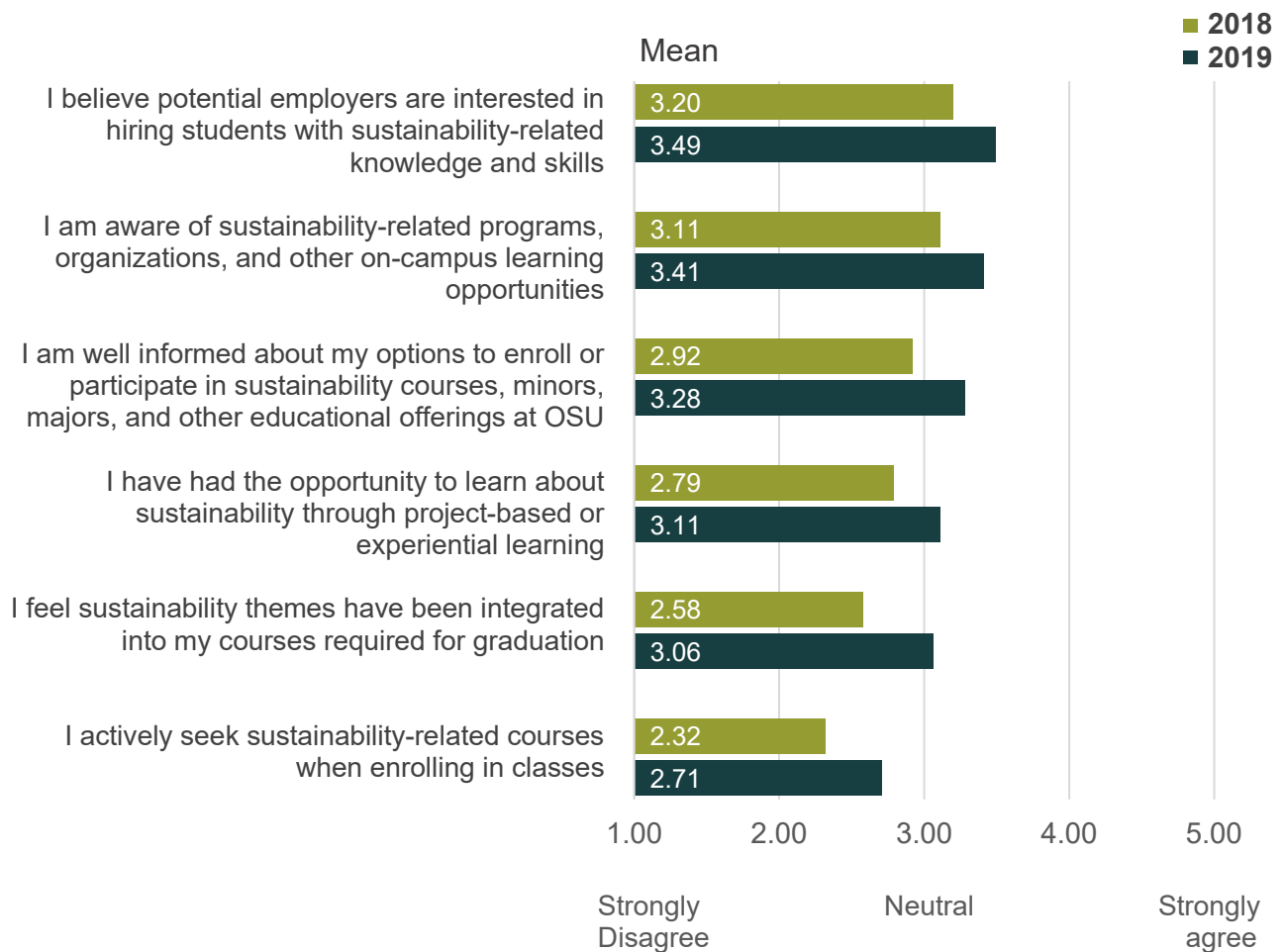
Below, we show the same question broken out by the 4 largest major programs, plus Agriculture (UAGR) and Environment & Natural Resources (UENR): Arts & Sciences (UASC), Engineering (UENG), Business (UBUS), Education & Human Ecology (UEHE; Figure 1.2). Unsurprisingly, UENR majors take the most sustainability classes of any major, but we see increases among all majors from 2018 to 2019.

Figure 1.2. Number of courses taken with a focus on sustainability at OSU by student's primary program.



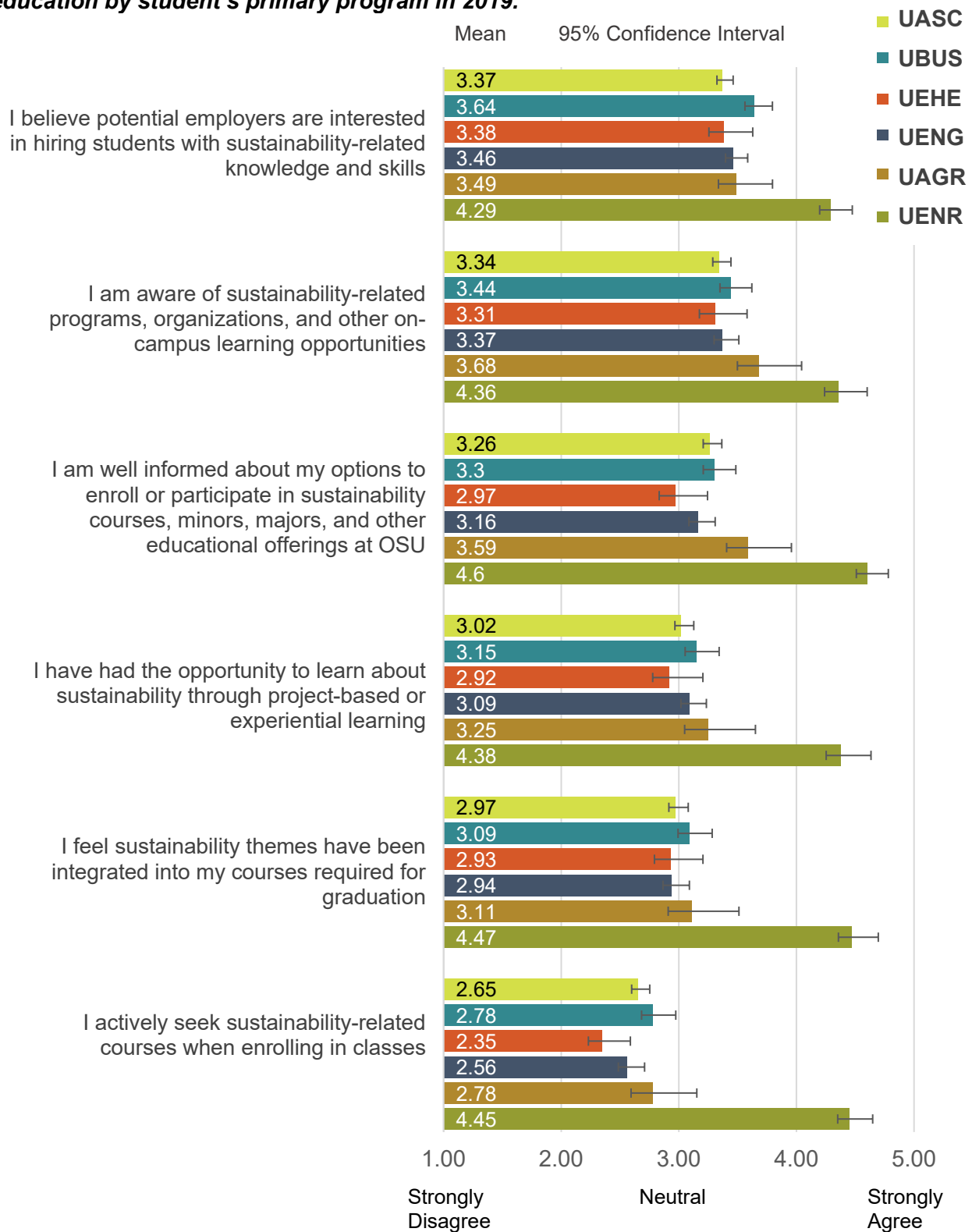
Students were then asked to rate their agreement with six different items related to sustainability education on a 1 – 5 “strongly disagree” to “strongly agree” scale (N = 1,428). See Figure 1.3 for average scores per item. Some notable trends in this data are how highly students agree that sustainability-related knowledge and skills are valued by potential employers, as well as their awareness of sustainability-related opportunities on campus. However, they generally do not actively seek sustainability-related courses to enroll in. There is a generally positive trend towards awareness of sustainability on campus and seeking of sustainability-related courses from 2018 to 2019.

Figure 1.3. Agreement with statements about beliefs and actions related to sustainability education.



Again, we show the same 6 questions below, with the data separated by primary major (Figure 1.4). UENR students report the highest levels of agreement with every statement, while UAGR students report higher levels of agreement than UEHE students for the statement, “I am well informed about my options to enroll or participate in sustainability courses, minors, majors, and other educational offerings at OSU.”

Figure 1.4. Agreement with statements about beliefs and actions related to sustainability education by student's primary program in 2019.



Next, students were asked to rate their interest with four different kinds of sustainability courses or content at Ohio State on a 1 – 5 “not at all interested” to “extremely interested” scale (N = 1,405 – 1,409). See Figure 1.5 below for average scores per item and Figure 1.6 for between program comparisons. There is a moderate amount of interest for general education courses and major-based courses overall, with a small trend of increasing interest in sustainability courses since 2018. **Figure 1.6 suggests more interest among UASC and UBUS students in general education courses with a focus on sustainability, particularly when compared to UAGR students.**

Figure 1.5. Average student interest in sustainability courses at OSU

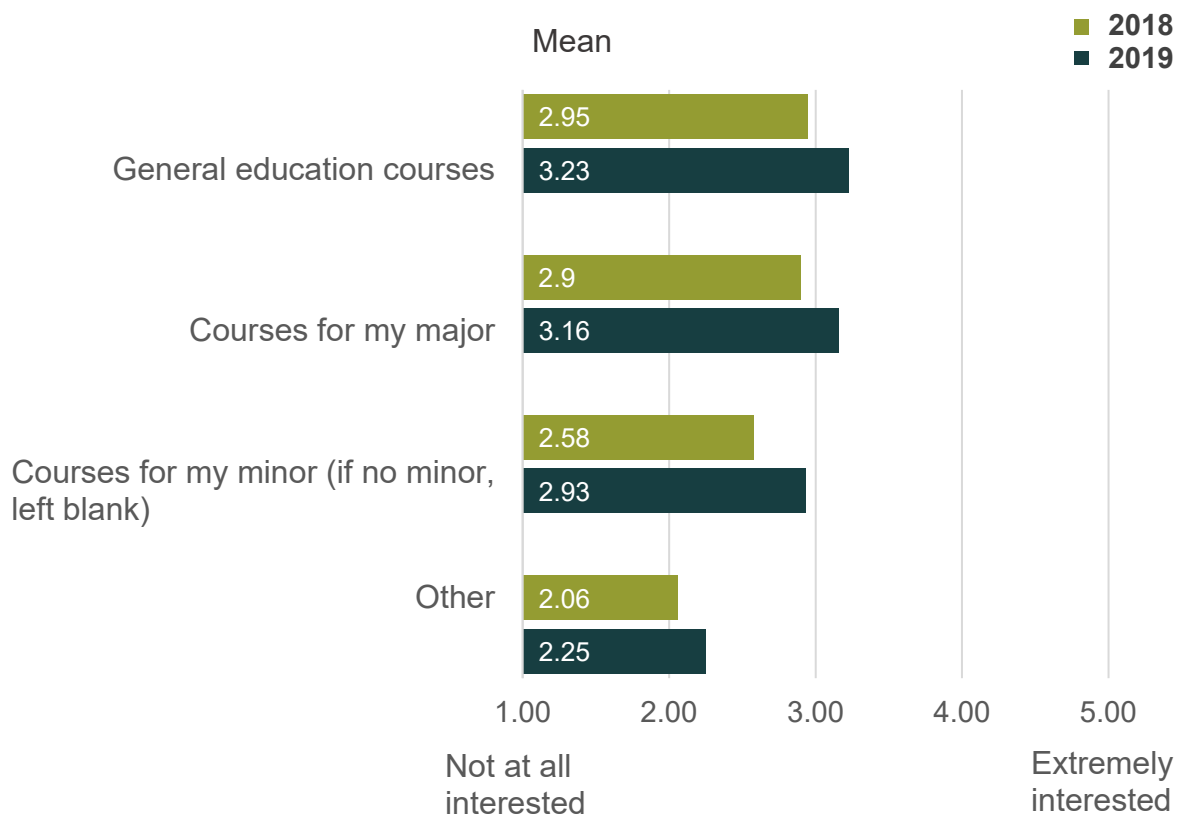
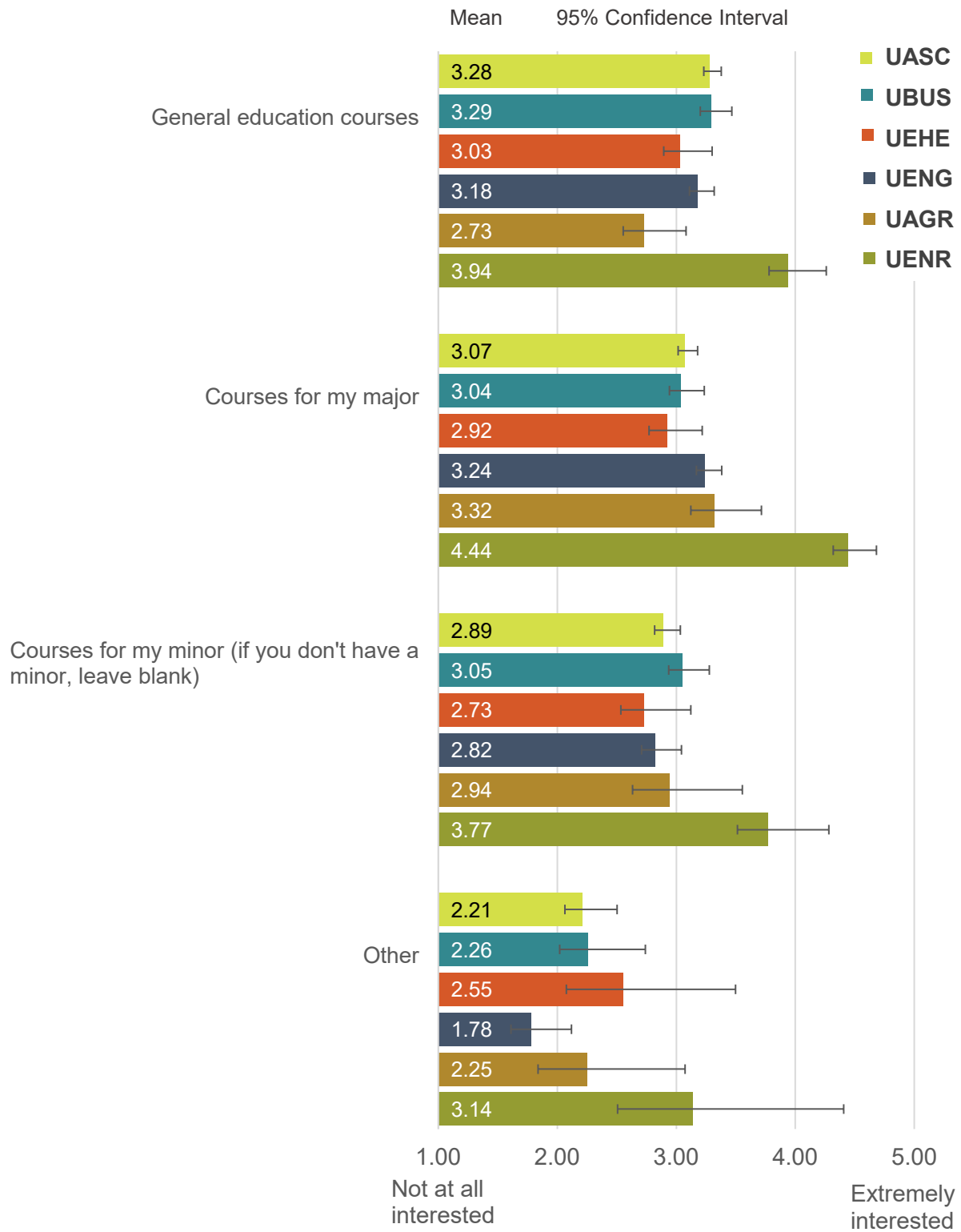
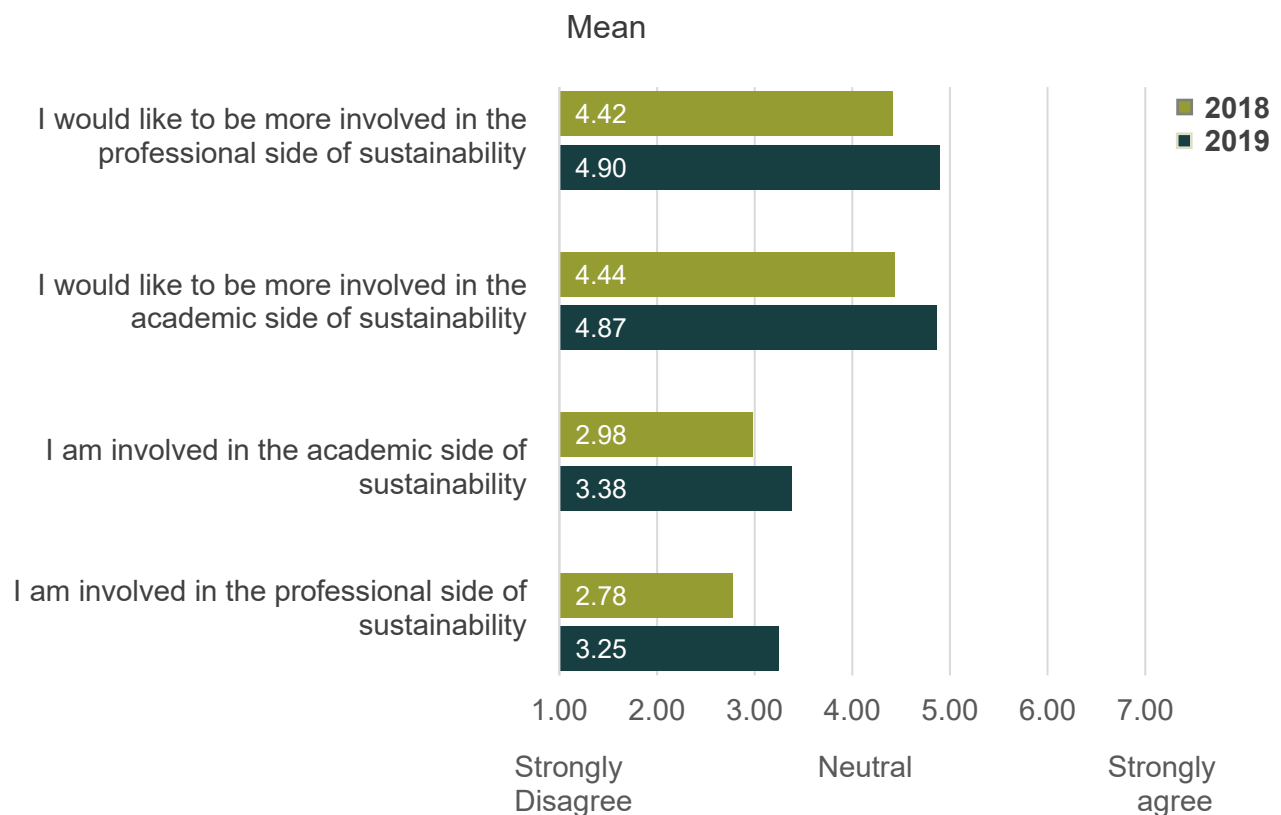


Figure 1.6. Average student interest in sustainability courses at OSU by student's primary program in 2019.



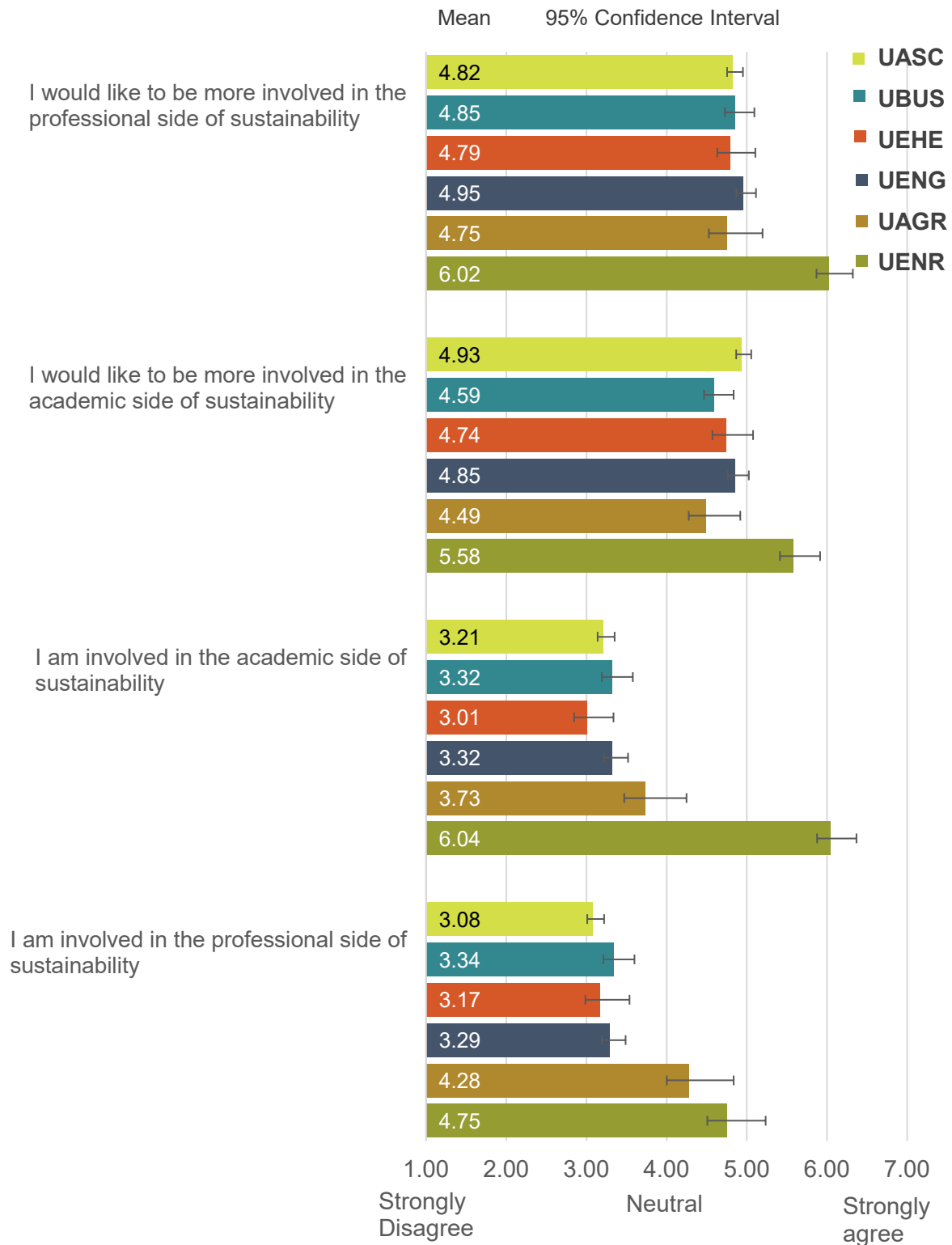
Additionally, students indicated their agreement with four items related to the amount of current and desired involvement in the academic (i.e. through taking sustainability courses and pursuing sustainability-related research opportunities) and professional sides of sustainability (i.e. pursuing sustainability-related internships, volunteer opportunities, and student organization involvement or leadership) on a 7-point scale of “strongly disagree” to “strongly agree” (N = 1,410). See Figure 1.7 for average scores per item.

Figure 1.7. Current and desired involvement in academic and professional aspects of sustainability.



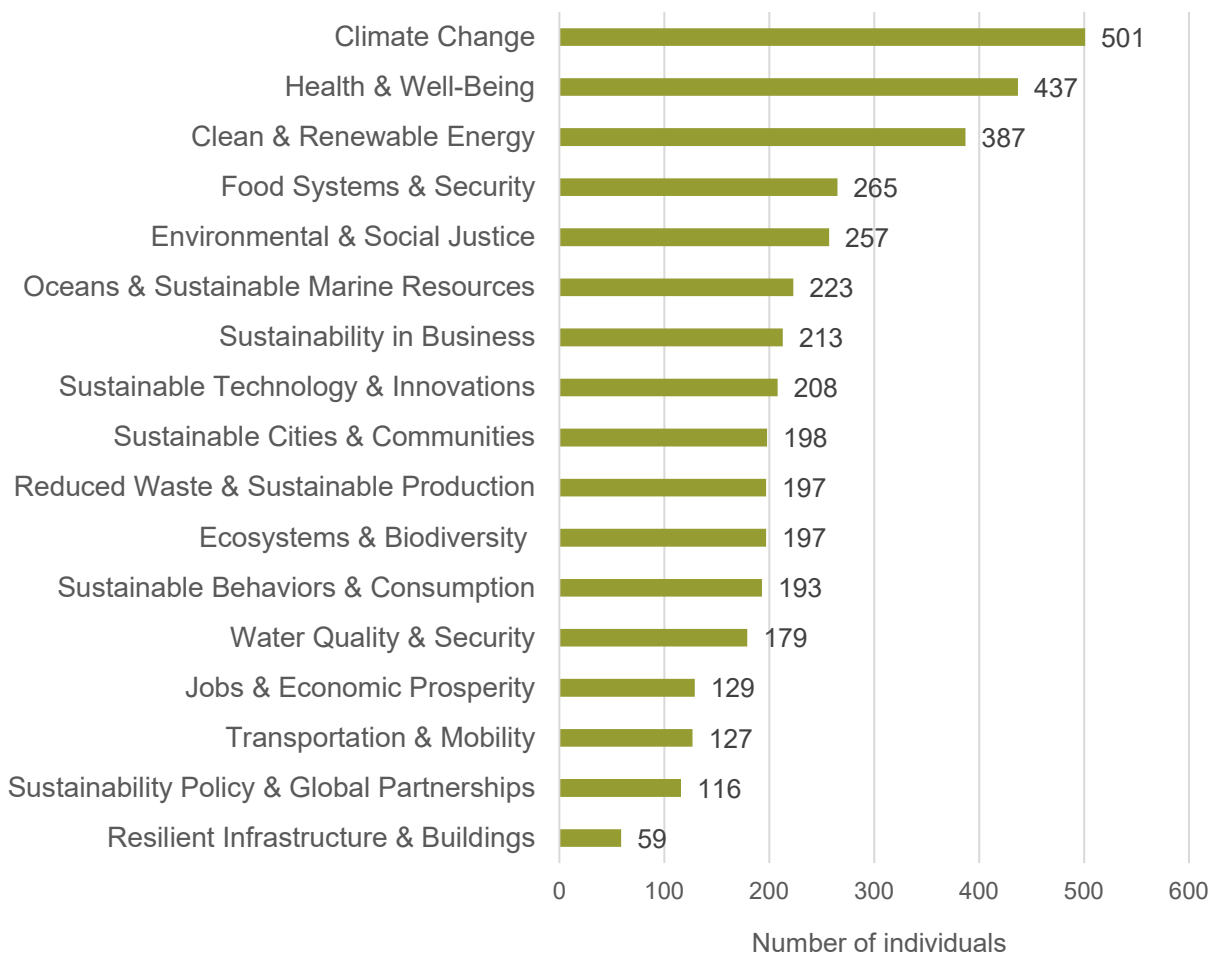
Overall, students seem to particularly agree with the statement that they would like to become more involved in the professional side of sustainability, and were equally as interested in becoming involved in the academic and research side of sustainability. Meanwhile, the majority of students disagreed that they were currently involved in academic or personally-related sustainability opportunities, pointing to **a potential gap and opportunity area: providing more numerous and easily available academic and professional opportunities for students related to sustainability at Ohio State.** Figure 1.8 suggests that this gap is particularly large among non-UENR majors, so future efforts might focus on more diverse programmatic interests that connect with sustainability topics and issues.

Figure 1.8. Current and desired involvement in academic and professional aspects of sustainability by student's primary program in 2019.



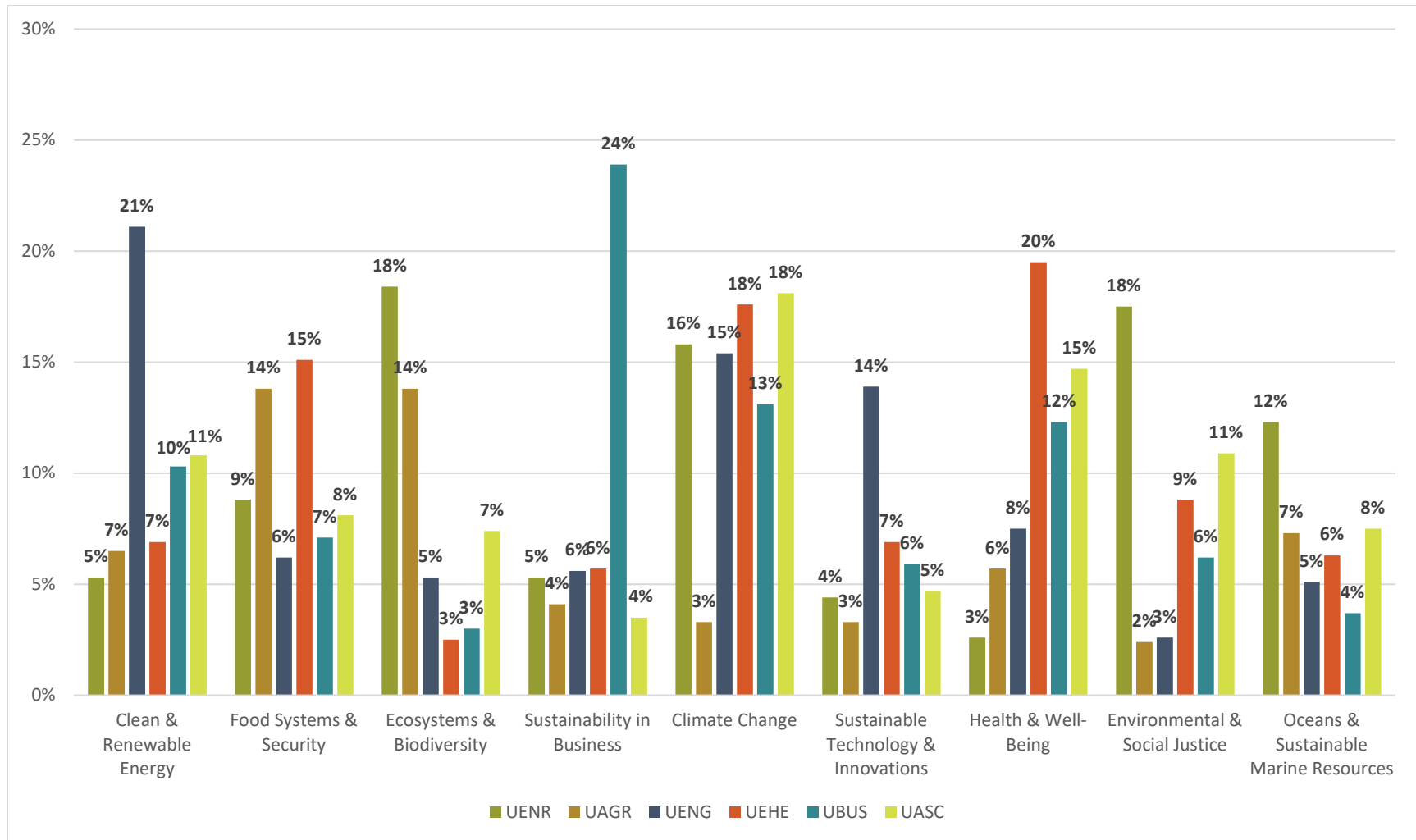
Students were also asked to choose three topics they would like to learn more about through taking sustainability-related courses at Ohio State (N = 1,410). As seen in Figure 1.9, Climate Change, Health & Well-being, and Clean & Renewable Energy are the most popular topics overall.

Figure 1.9. Total number of students that chose each preferred topic in sustainability related coursework.



When students are separated by program, clearer distinctions emerge for preferred topics. UBUS majors preferred topics in Sustainability in Business, while UENG majors favored Clean & Renewable Energy. UENR interests spanned several topics, from Environmental & Social Justice to Ecosystems & Biodiversity.

Figure 1.10. Percent of students in each program choosing each preferred topic in sustainability-related coursework.



Lastly, students were asked about sustainability-related skills they would be most interested in gaining by the time they graduate as part of their professional development (N = 1,410; Figure 1.11). They could choose up to three topics or indicate they weren't interested in any of the topics. The majority of students were interested in global literacy, followed by fluency in a second language, behavior change, and environmental justice. When separated by program below (Figure 1.12) the preference for global literacy appears driven by greater numbers of UASC students, while interest in behavior change is likely driven by UEHE students.

Figure 1.11. Number of students that chose each preferred sustainability-related skill for professional development

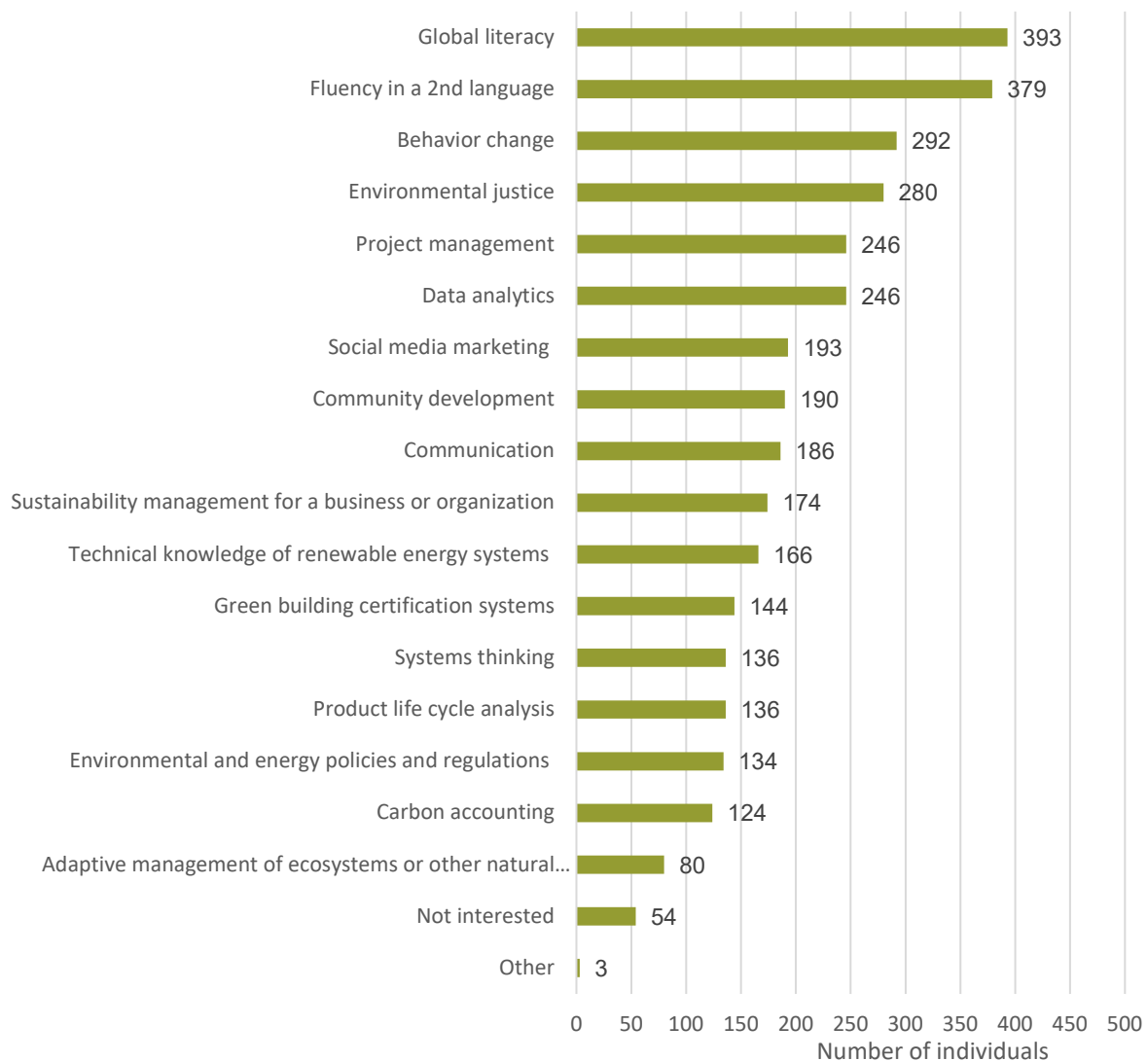
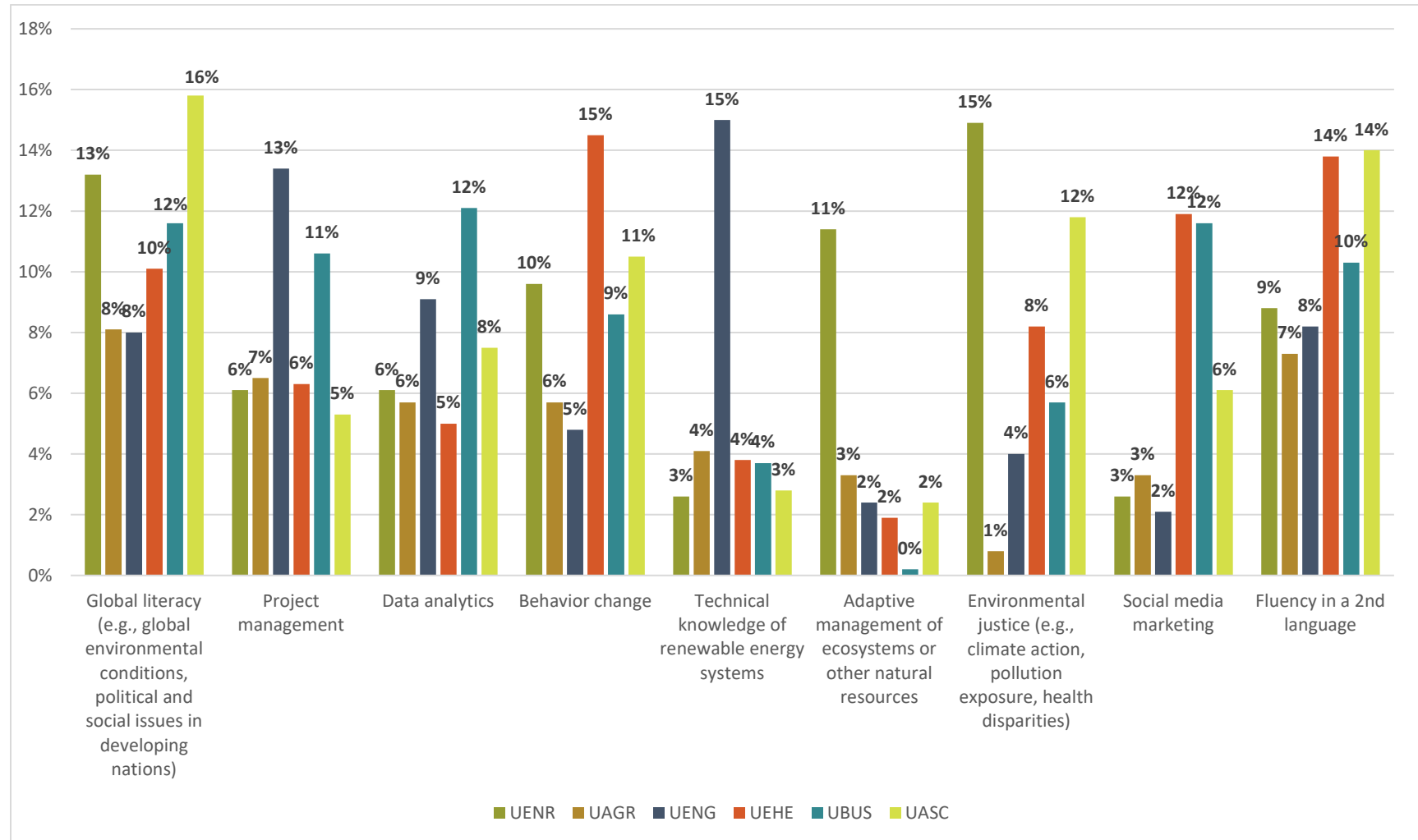


Figure 1.12. Percent of students in each program choosing each preferred sustainability-related skill for professional development.



Next Steps and Acknowledgements

Next steps: Currently plans are in place repeat the campus sustainability survey in 2020 and proceeding years, with the understanding that some adjustments may be necessary due to COVID-19. We plan to again replicate longitudinal items with a panel sample of Undergraduate students and adapt new sections for Faculty research and campus partner objectives.

The Environmental and Social Sustainability Lab continues to work with diverse campus partners to inform progress towards sustainability goals, and assess the results of related efforts on campus. Our goal is that this survey will continue to provide high-quality social scientific data of use to both academic researchers and the broader campus sustainability community for years to come.

Acknowledgements: We would like to thank the Sustainability Institute and the Office of Student Life for helping to fund this initiative through staff resources and survey incentives. We would also like to thank these and our other campus partners in Facilities Operations and Development, the Center for the Study of Student Life, and Ohio State Energy Partners for their consultation and participation in this survey effort.

Contact us: If you are interested in becoming involved in this effort at Ohio State, or are interested in using our data for educational or research purposes please contact us at ESSL@osu.edu. A report on these findings can be found on our website: <https://ess.osu.edu/campus-sustainability-survey/reports>.

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Environmental and Social Sustainability Lab

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