

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES

2021 Campus Sustainability Survey: Curriculum

A Report from the Environmental and Social Sustainability Lab (2022)



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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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. Increase the energy efficiency of the university per building square foot by 25% by 2025;
 - c. Reduce potable water consumption by 10% per capita every five years, resetting baseline every five years;
 - d. Increase Ecosystem Services Index score to 85% by 2025;
 - e. Reduce carbon footprint of university fleet per thousand miles traveled 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.



2/2/2021

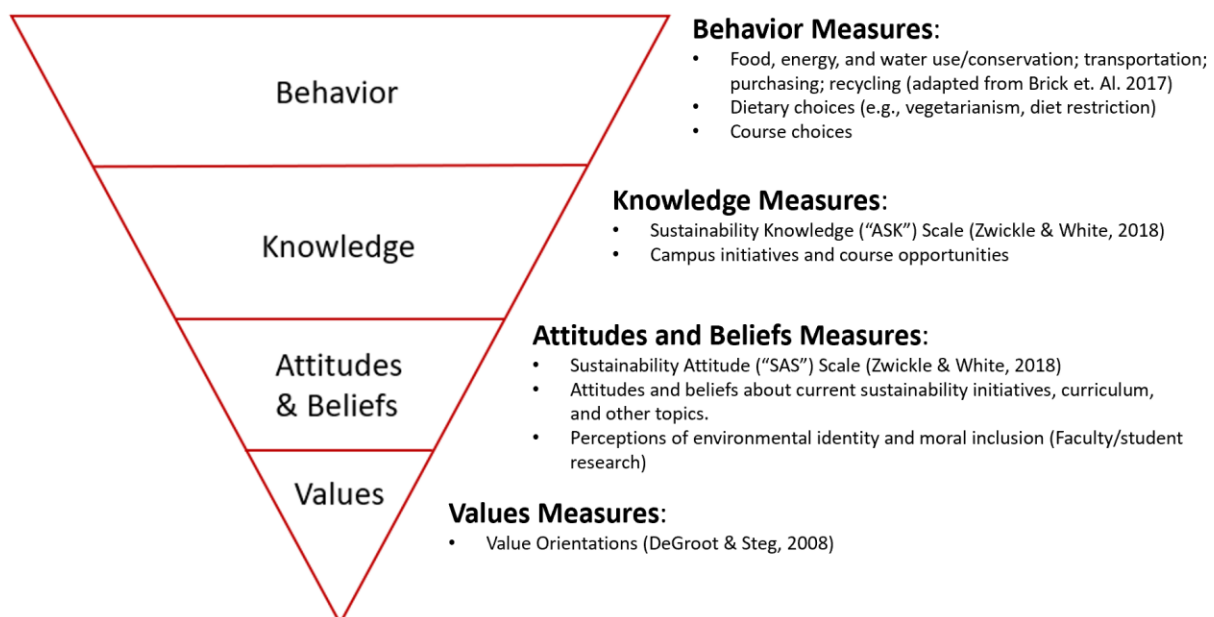
Methodology and Design

The 2021 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 and Facilities Operations and Development.

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 2021, the survey supported research from students, postdocs, and faculty in ESSL (Dr. Nicole Sintov, with graduate students Logan Hobbs and Naseem Dillman-Hasso; Dr. Robyn Wilson with postdoc, Dr. Carrie Shaffer-Morrison). (Faculty research results will be developed into scholarly publications and are not included in this report.)

Survey Implementation:

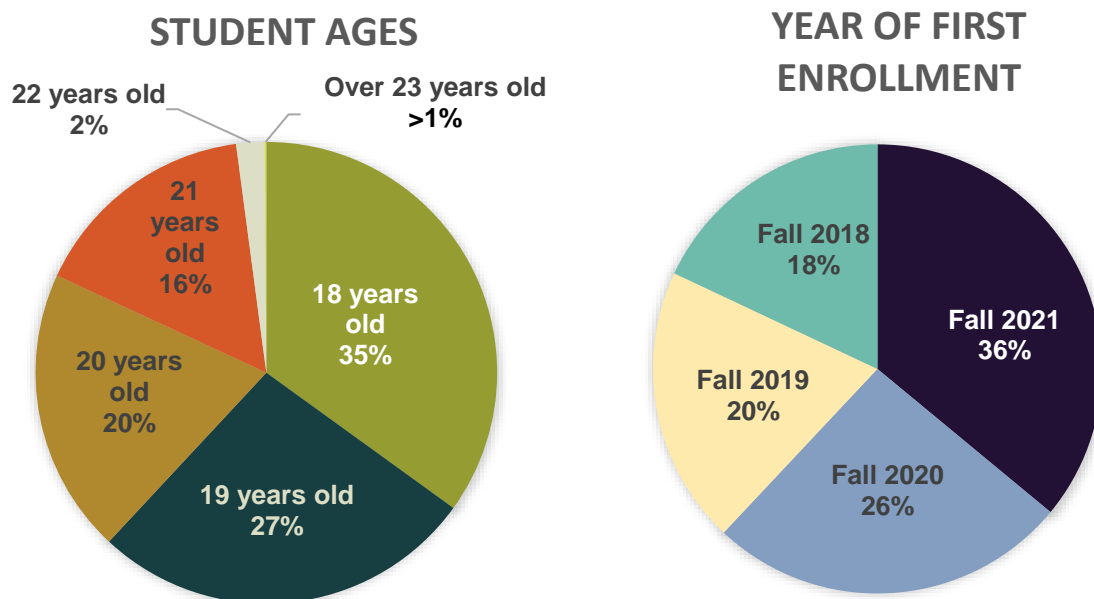
In order to maintain a panel and assess how individuals have changed over time, our sampling frame for 2021 included all students that responded to the 2020 survey and were still enrolled at OSU in 2021 (N = 2,909). These 2020 respondents were separated by rank, and each total was subtracted from 5,000 to determine the number of new students randomly sampled from each rank for the 2021 effort. As was done in 2018 - 2020, we oversampled 5,500 first year students to account for sample attrition over time. In October of 2021, 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.

Of the 20,500 students contacted, 2,600 started the survey and 1,846 completed it (9% completion rate). The final sample size used for this report (i.e. students who began the survey and answered at least one behavior question) was 2,374 students, for a final response rate of 11.6%. The median completion time for the survey was 21 minutes.

Sample Characteristics

Our sample consisted of 2,374 undergraduate students who began the survey. Where appropriate comparisons may be made, we provide the [15th Day Enrollment](#) numbers for Autumn 2021 (AU21). Respondents were more female than male (64.4% female; AU21: 51.5% female), with an average age of 19 years old (AU21: 20.7). By design, participants were skewed towards first-year students at Ohio State: 619 (24.6%; AU21: 15.8%) were first-year freshmen, 637 (25.3%; AU21: 21.6%) were second years, 529 (21.0%; AU21: 23.2%) were third-years, and 732 (29.1%; AU21: 39.2%) were in their fourth year since first enrolling. Additionally, the average (non-zero) GPA of our participants was a 3.51 (SD = 0.49).

Figure 2. 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 (65.5%; AU21: 64.3%), with a minority of students identifying themselves as Asian (9.7%; AU21: 8.6%), Hispanic (5.2%; AU21: 5.2%), Black/African American (5.0%; AU21: 7.2%), Native Hawaiian/Pacific Islander (0%; AU21: 0.1%), American Indian/Alaska Native (NA%; AU21: 0.1%) or two or more races (3.8%; AU21: 4.3%). In addition, 5.0% of our sample were international students studying at Ohio State (AU21: 6.7%).

Students reported that, on average, 41.9% of their living expenses came from personal earnings or savings (with a standard deviation of 32.8%), meaning the average student in our sample had roughly 58% 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 (63.6%), 12.7% in an urban setting, 11.9% in a small town, and 11.8% in a rural or agricultural environment. In addition, 49.6% described themselves as Democrats, 9.8% as Republicans, 30% as Independents, 4.0% as Libertarians, and 6.6% 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 (62.6%), while 28.3% reported taking just one or two classes; only 9.0% of our sample had taken three or more such classes

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 2. Response by program of study

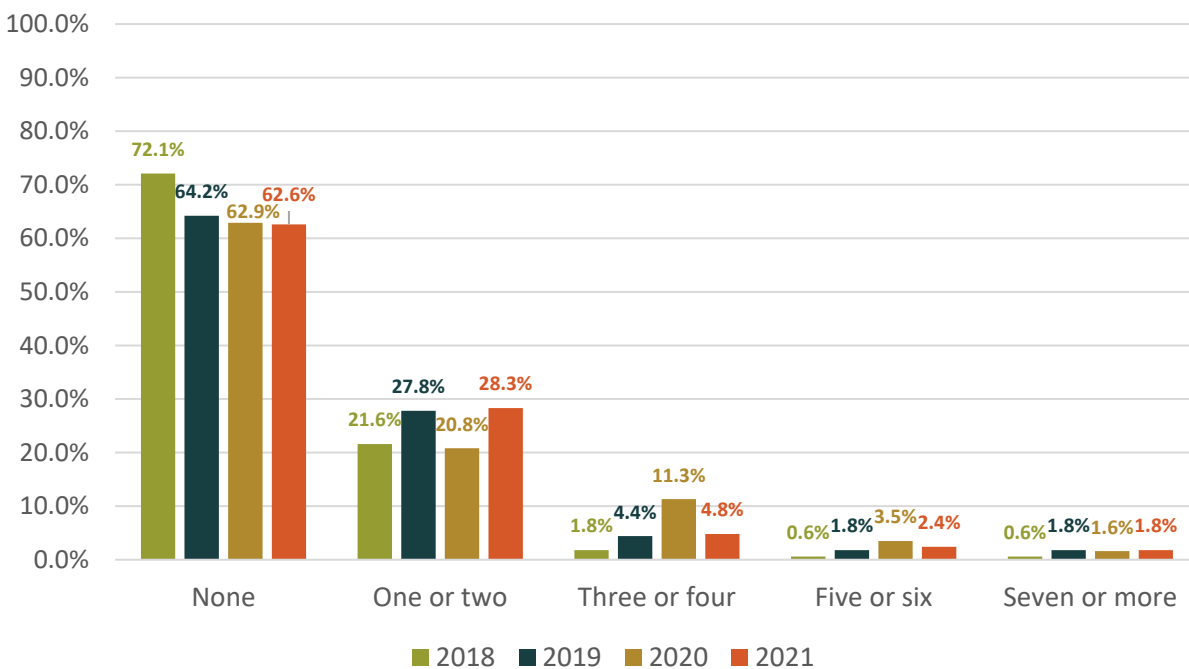
Program	Percent of respondents	Percent Enrollment AU21
Arts and Sciences	41.9	37.1
Engineering	18.9	16.5
Business	13.0	16.2
Education and Human Ecology	3.9	6.5
Exploration Program (no declared major)	3.9	4.7
Health and Rehabilitation Sciences	2.0	4.5
Agriculture	3.1	3.0
Environment and Natural Resources	4.1	1.9
Nursing, Dental, and Medical	3.3	2.8
Pharmacy	1.3	1.0
Public Health	0.9	0.7
Architecture	1.7	1.2
John Glenn Public Affairs	1.0	0.7
Social Work	1.1	0.9
Total N	2,466	47,106

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 in the next pages.

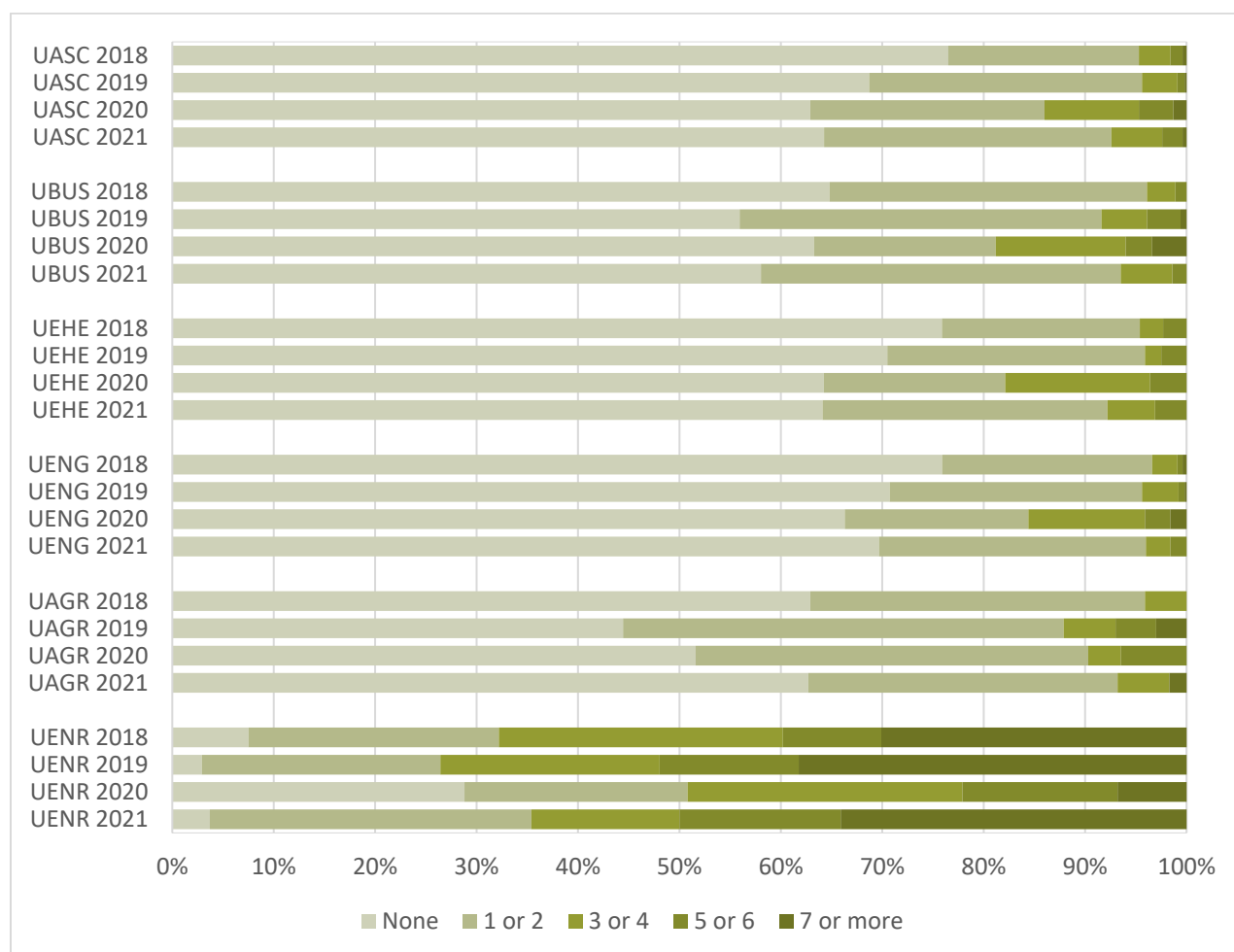
To begin, students were asked: “How many courses have you taken with a focus on sustainability at OSU?” (N = 1,843; Figure 1.1). Similar to 2020, the most common response to this question in 2021 was “None” (62.6%; 2019 = 64.2%) or “One or two” courses (28.3%; 2020 = 20.8%).

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 and Natural Resources (UENR): Arts and Sciences (UASC), Engineering (UENG), Business (UBUS), Education and Human Ecology (UEHE; Figure 1.2). Unsurprisingly, UENR majors take the most sustainability classes of any major. In 2020 there was a drop in sustainability courses taken among UENR, UBUS, and UAGR majors, a trend which is reversed in 2021 for UENR and UBUS but not UAGR majors.

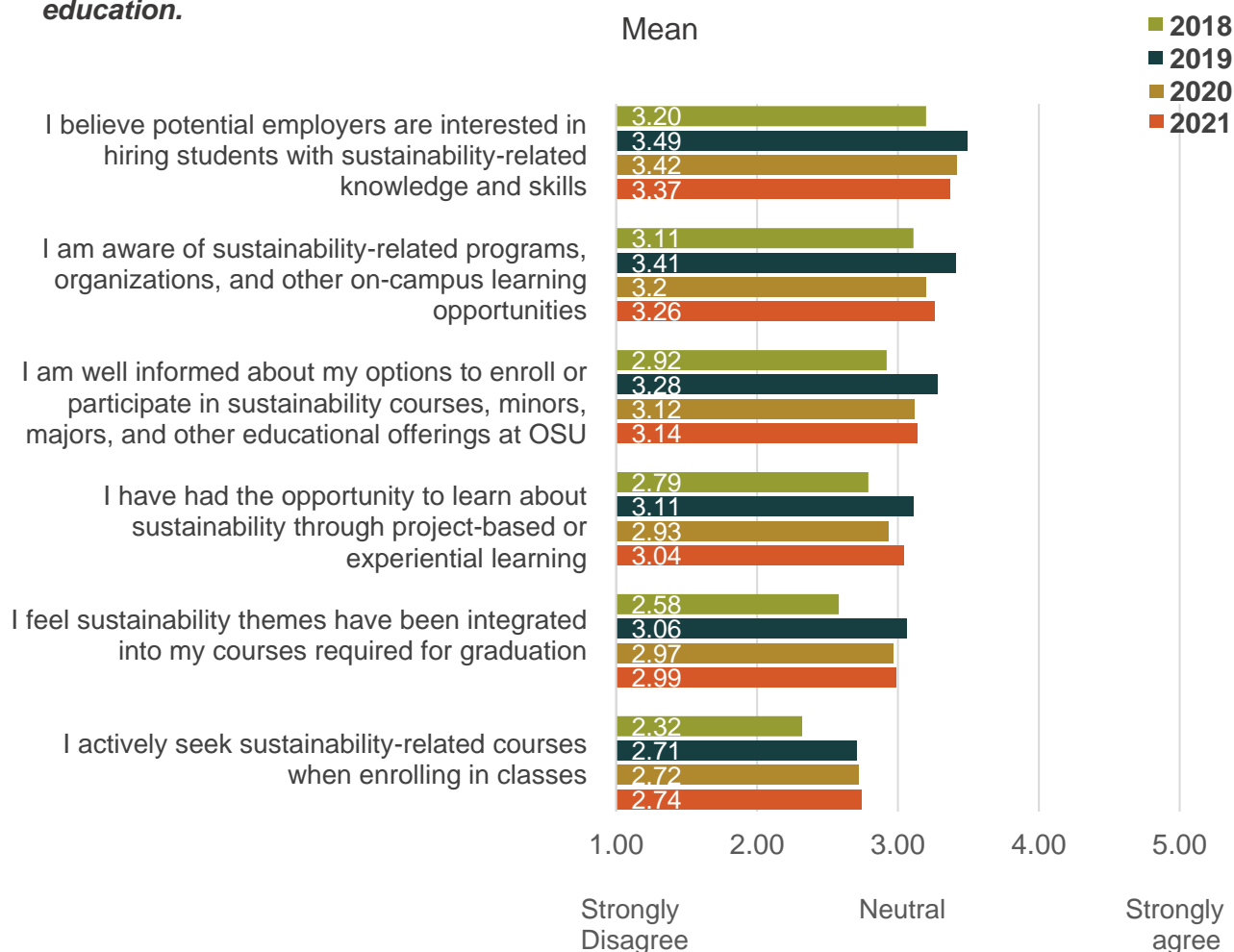
Figure 1.2. Number of courses taken with a focus on sustainability at OSU by student's primary program.



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 = 941). 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

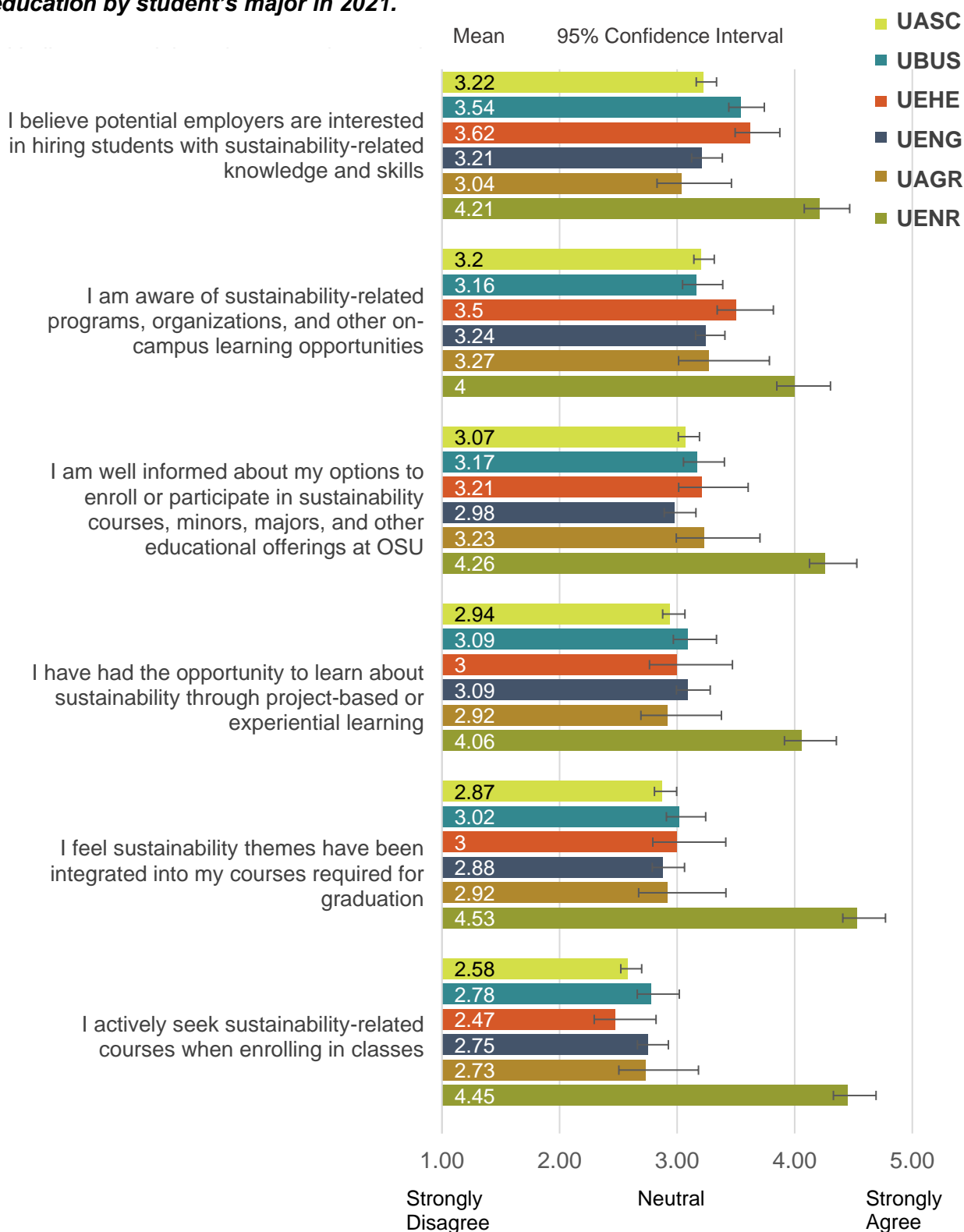
enroll in. There was a general bump in agreement across items from 2018 to 2019, with agreement staying relatively flat from 2019-2021.

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 UBUS and UEHE reported higher agreement than UASC or UENG with the item, “I believe that potential employers are interested in hiring students with sustainability-related knowledge and skills.”

Figure 1.4. Agreement with statements about beliefs and actions related to sustainability education by student's major in 2021.



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 = 152—944). See Figure 1.5 below for average scores per item and Figure 1.6 for between major comparisons. There seems to be 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 UENG students in major courses with a focus on sustainability, and the least interest among EHE students.**

Figure 1.5. Average student interest in sustainability courses at OSU

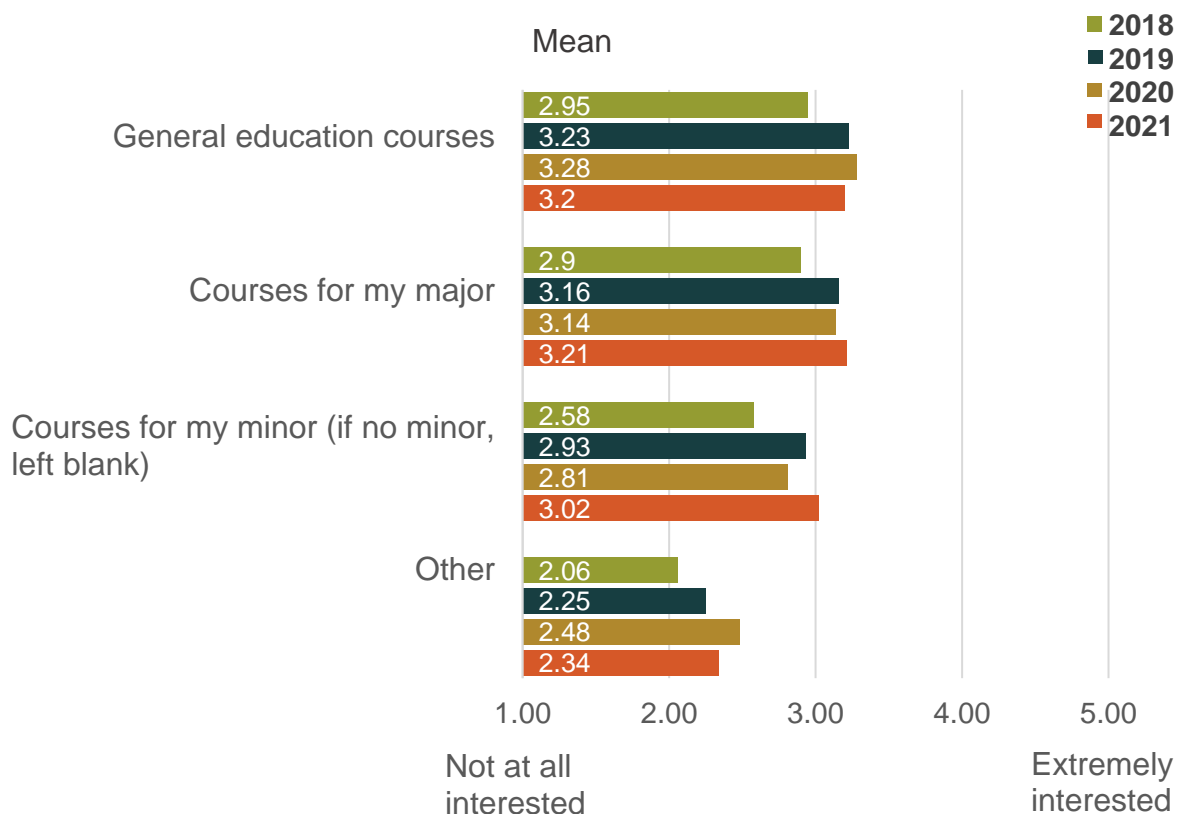
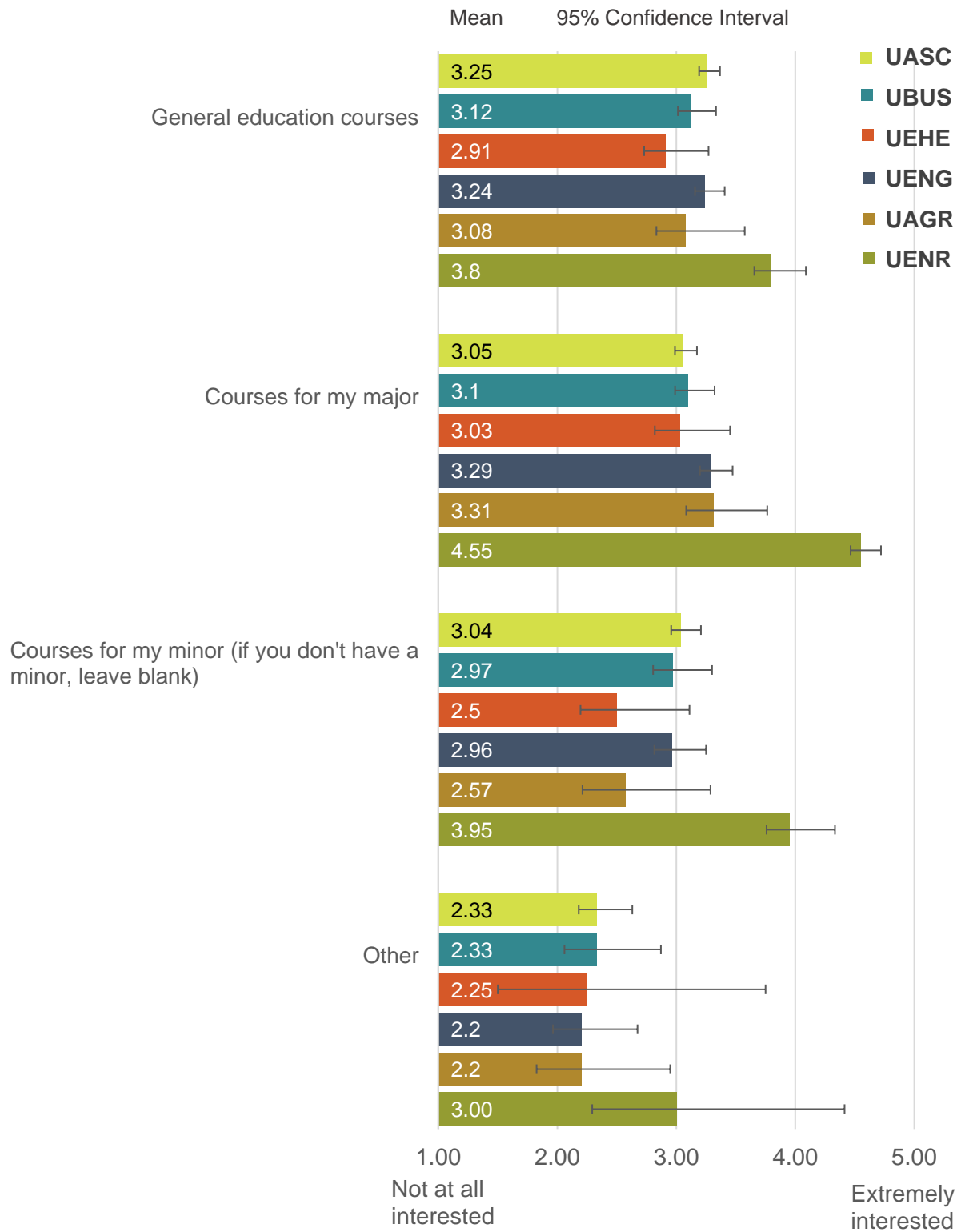
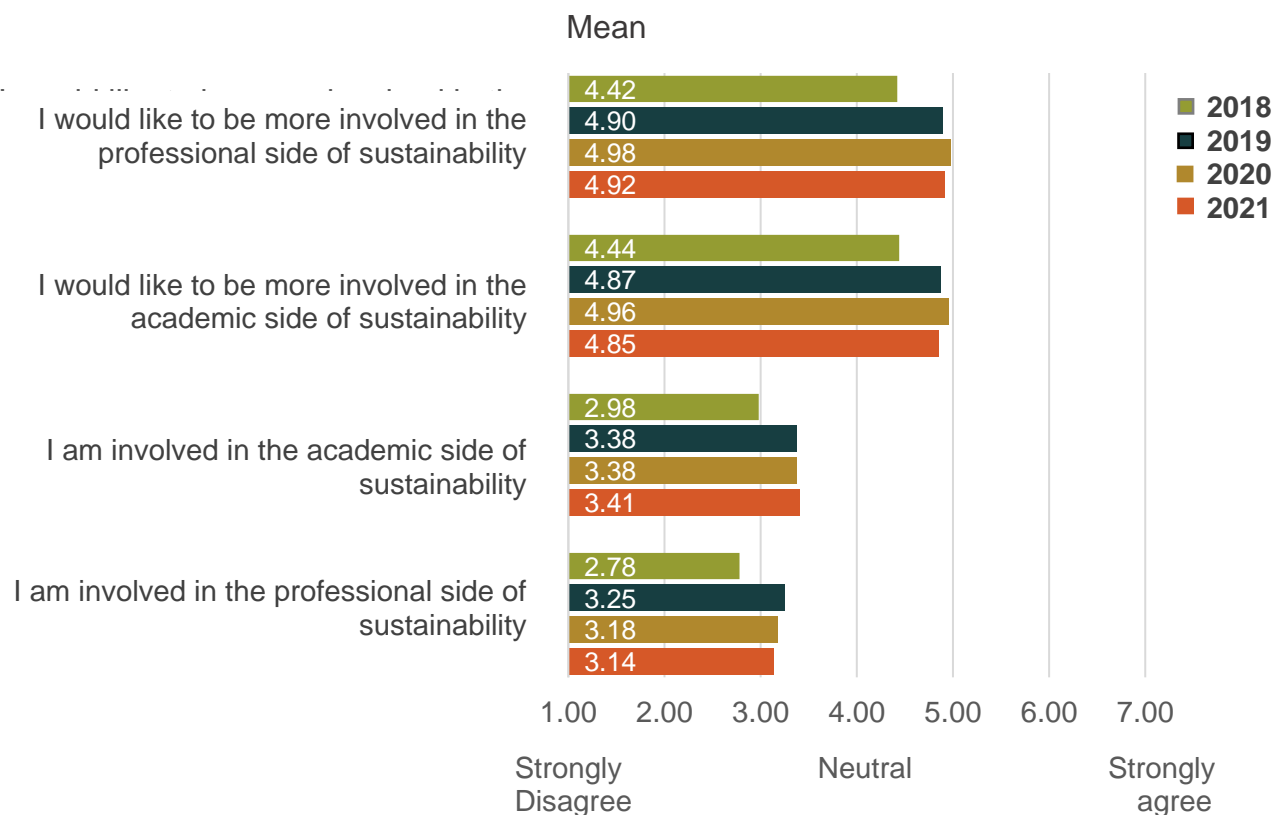


Figure 1.6. Average student interest in sustainability courses at OSU by student's primary program in 2021.



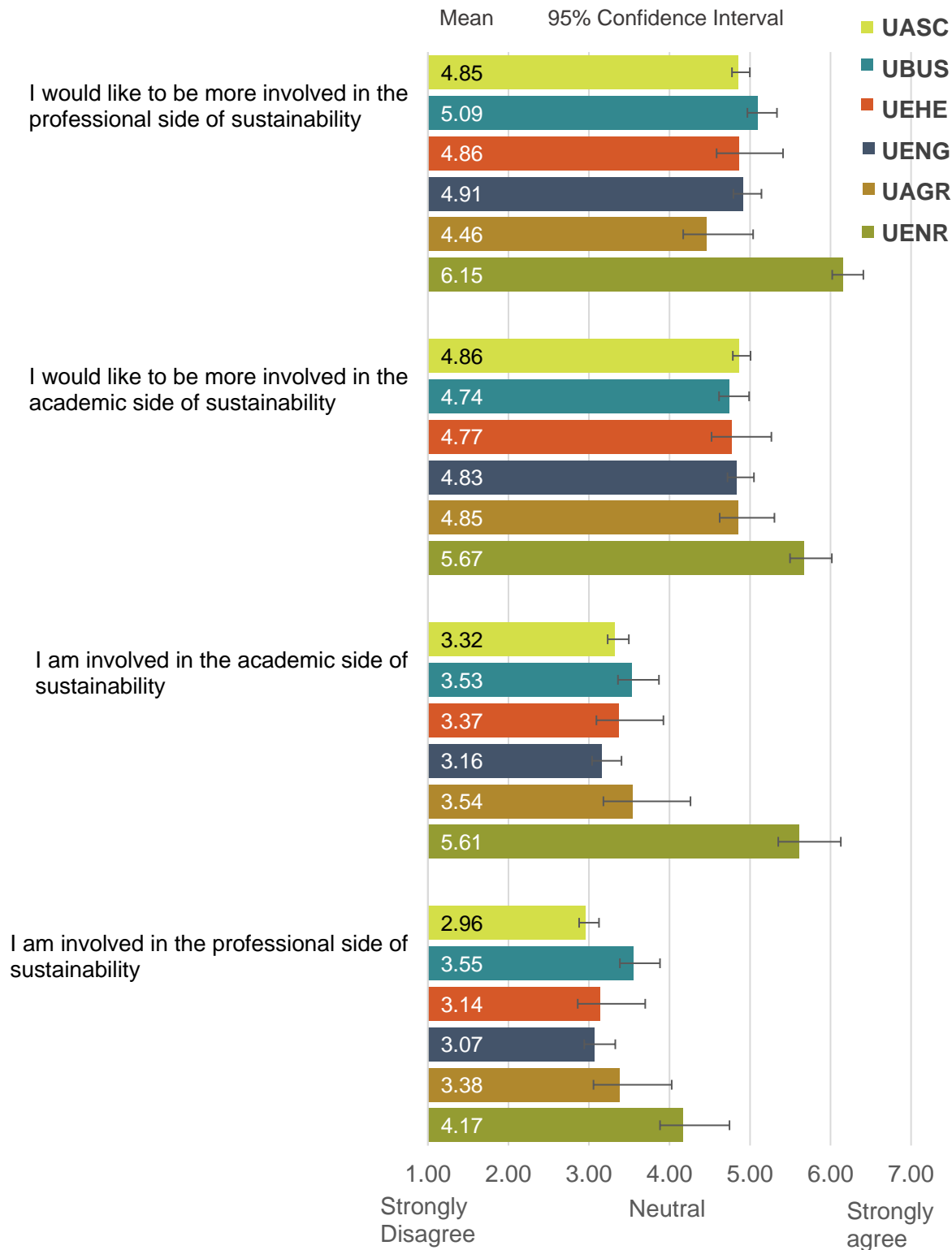
Additionally, students indicated their agreement with four items related to their amount of current and desired involvement in the academic (i.e. through taking sustainability courses and pursuing sustainability-related research opportunities) and professional sides of sustainability (i.e. pursuing sustainability-related internships, volunteer opportunities, and student organization involvement or leadership) on a 7-point scale of “strongly disagree” to “strongly agree” (N = 925—927). See Figure 1.7 for average scores per item.

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



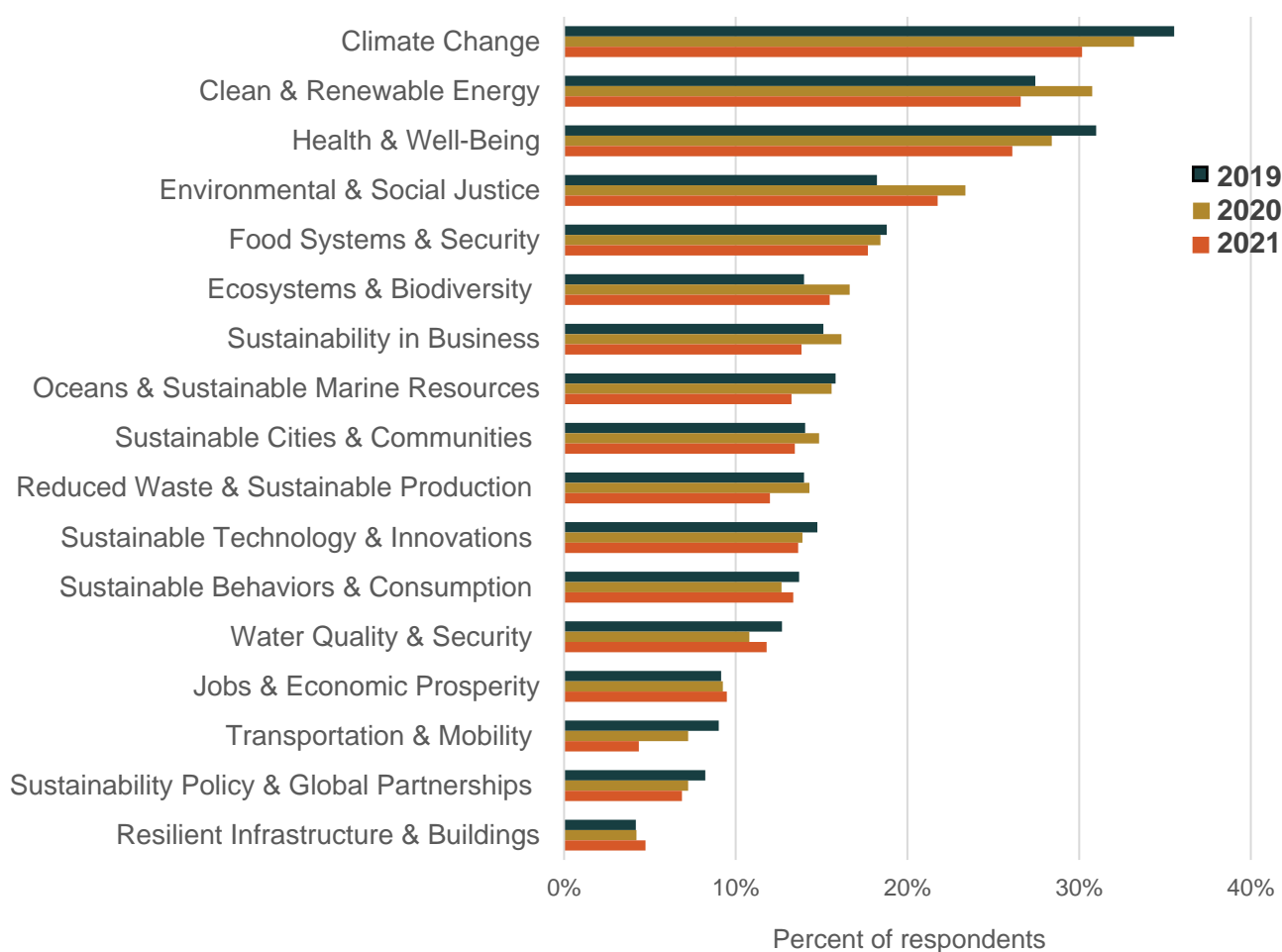
Overall, students seem to consistently agree with the statement that they would like to become more involved in both the professional and personal sides of sustainability. Meanwhile, as was also observed in 2020, again in 2021, **students generally disagree that they are currently involved in academic or personally-related sustainability opportunities**, pointing to a potential gap and opportunity area. Figure 1.8 suggests that this gap is particularly large among non-UENR majors. **However, UENR majors may continue to find COVID restrictions challenging, as a gap remained in 2021 on the professional side between preferred and actual involvement.** Academic preferences and actual involvement remained relatively even for UENR.

Figure 1.8. Current and desired involvement in academic and professional aspects of sustainability by student's primary program in 2021.



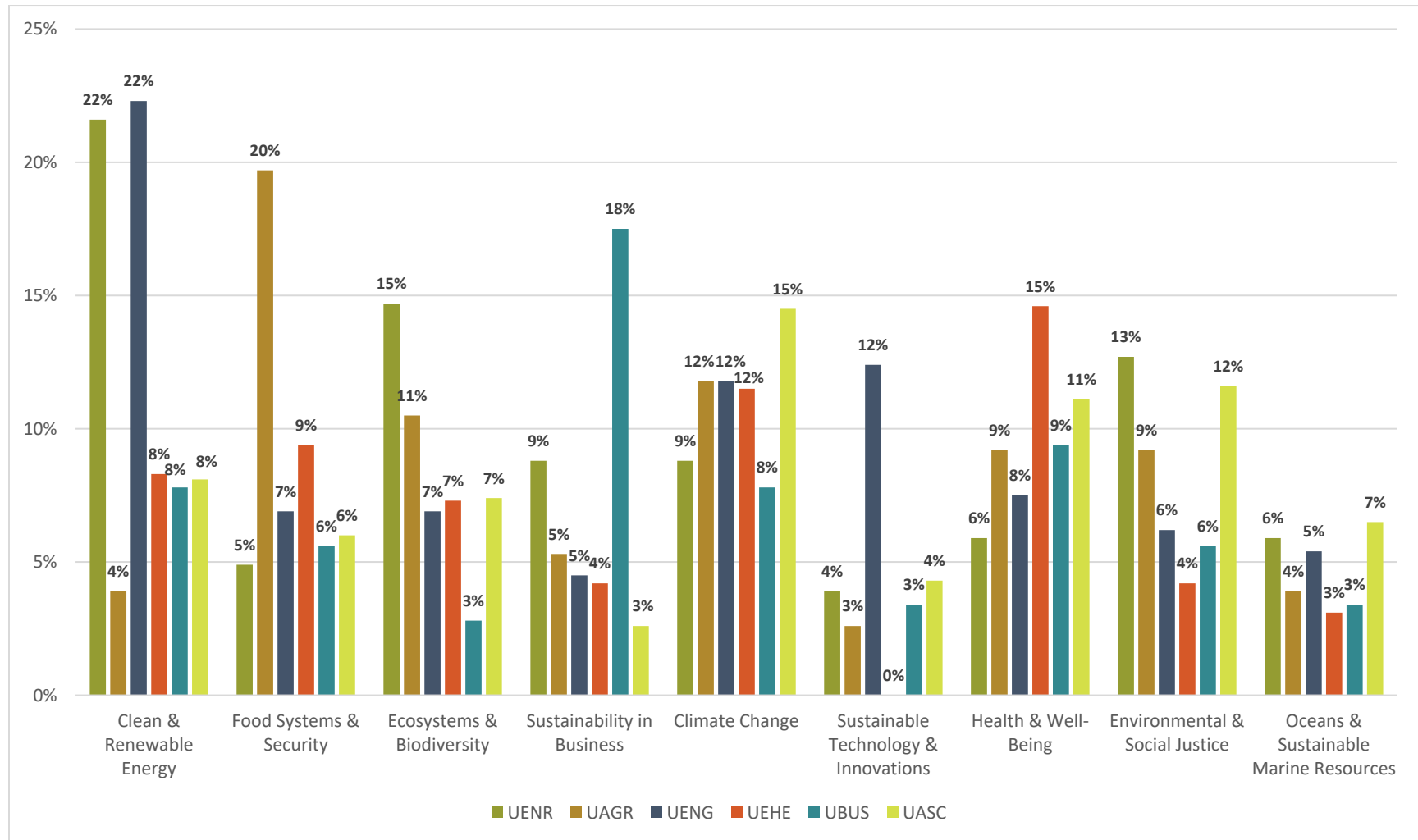
Students were also asked to choose three topics they would like to learn more about through taking sustainability-related courses at Ohio State (N = 1,034). As seen in Figure 1.9, climate change, health & wellbeing, and clean & renewable energy are still the most popular topics overall, and trends in 2021 largely followed 2020.

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 (Figure 1.10). UBUS majors preferred topics in Sustainability in Business, while UENG majors favored Clean & Renewable Energy in 2019, 2020, and 2021. UENR interests continue to span several topics in 2021, from Ecosystems & Biodiversity to Clean & Renewable Energy. UASC interests likewise spanned topics, from Climate Change to Health & Well-Being.

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 = 1,034; 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 remained interested in global literacy, and environmental justice and fluency in a 2nd language remained roughly even in their selection. **When separated by program below (Figure 1.12) the preference for environmental justice appears to be driven by UENR and UASC students.** Notably, UBUS students were less interested in behavior change in 2021 than they were in 2020.

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

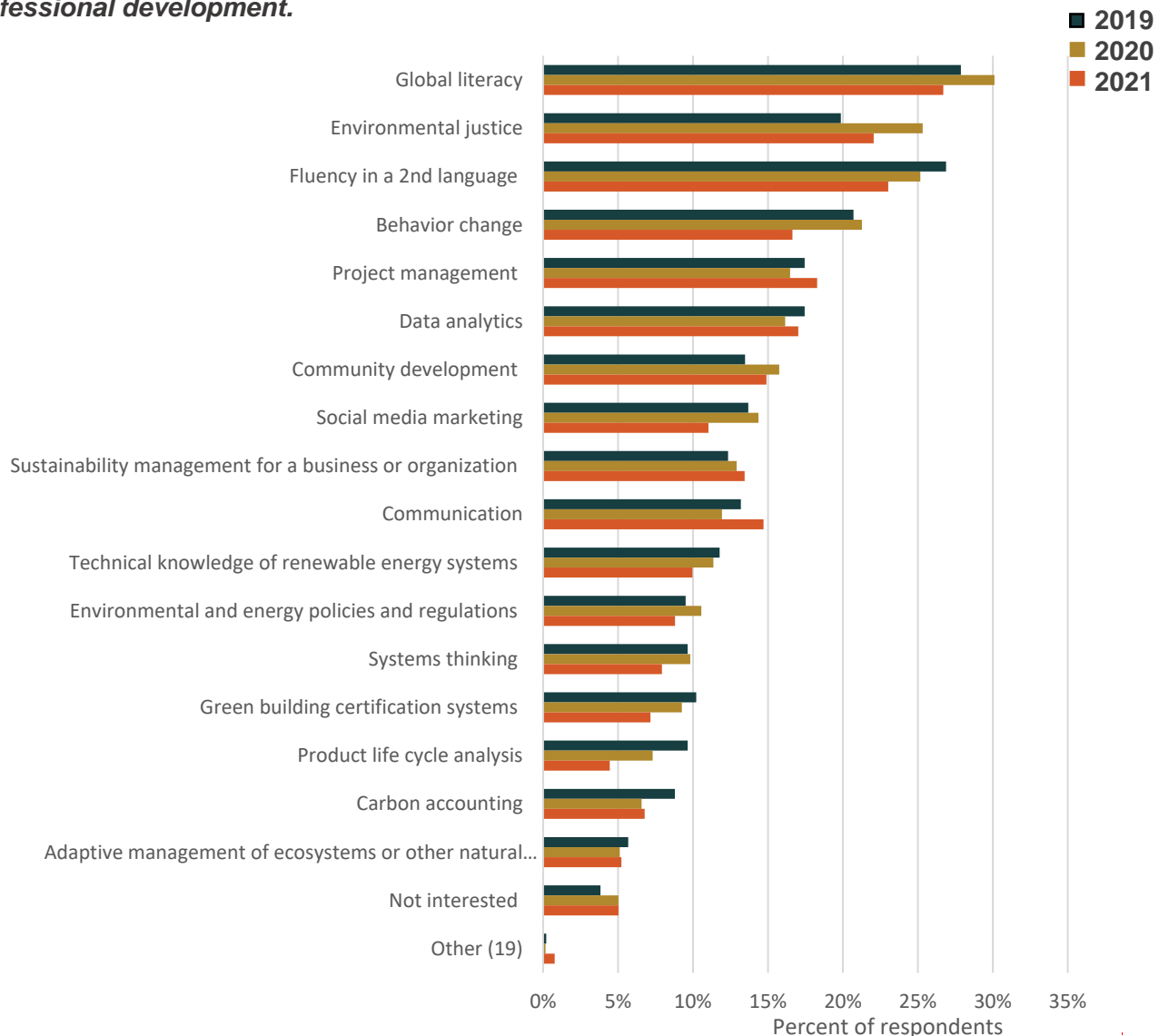
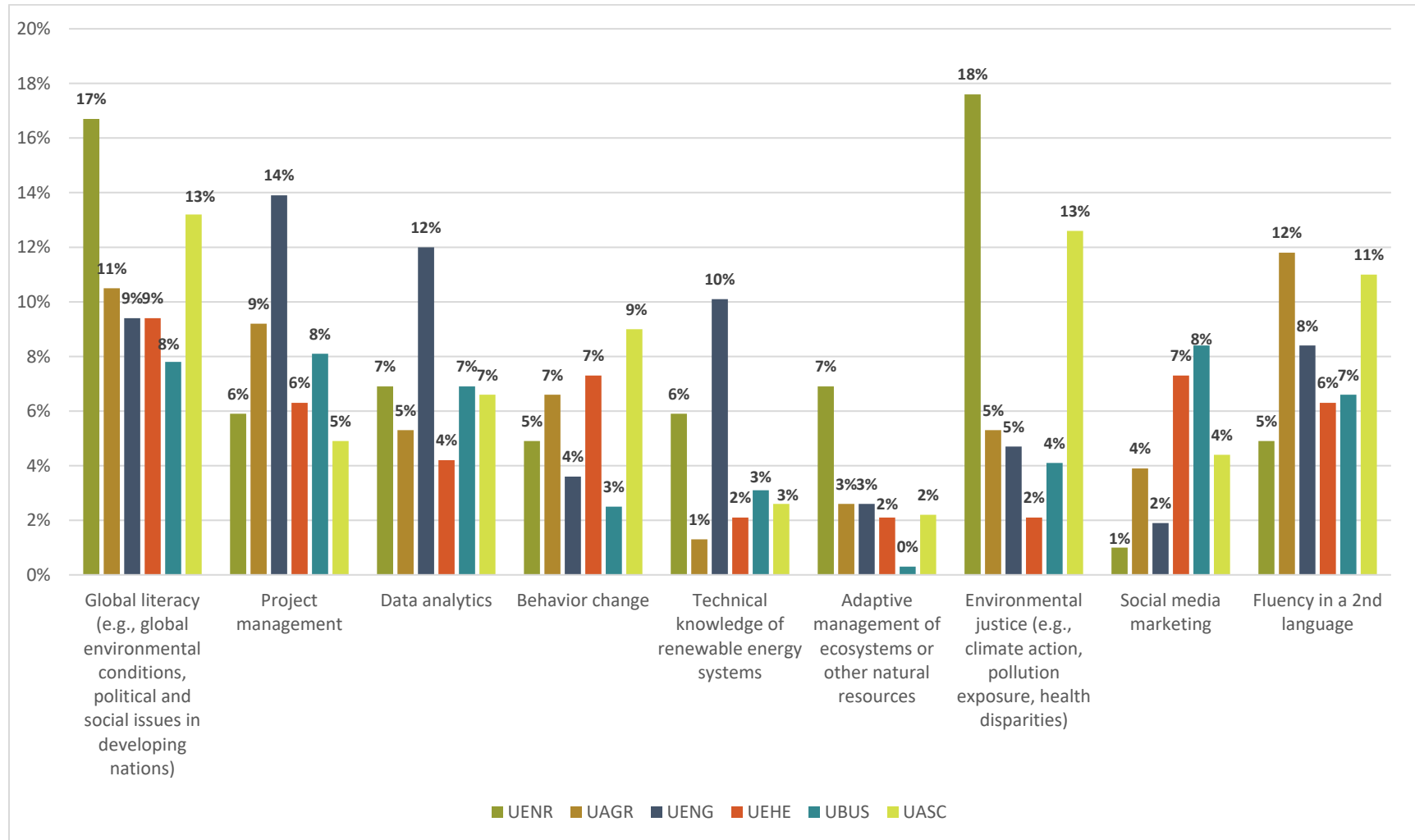


Figure 1.12. Percent of students in each program choosing each preferred sustainability-related skill for professional development.



Next Steps and Acknowledgements

Next steps: Currently plans are in place repeat the campus sustainability survey in 2022, with the understanding that some adjustments may be made to survey frequency in the future. 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 for helping to fund this initiative through staff resources. We would also like to thank these and our other campus partners in Facilities Operations and Development 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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