SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES

2020 Campus Sustainability Survey: Curriculum

A Report from the Environmental and Social Sustainability Lab (2021)

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. 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.

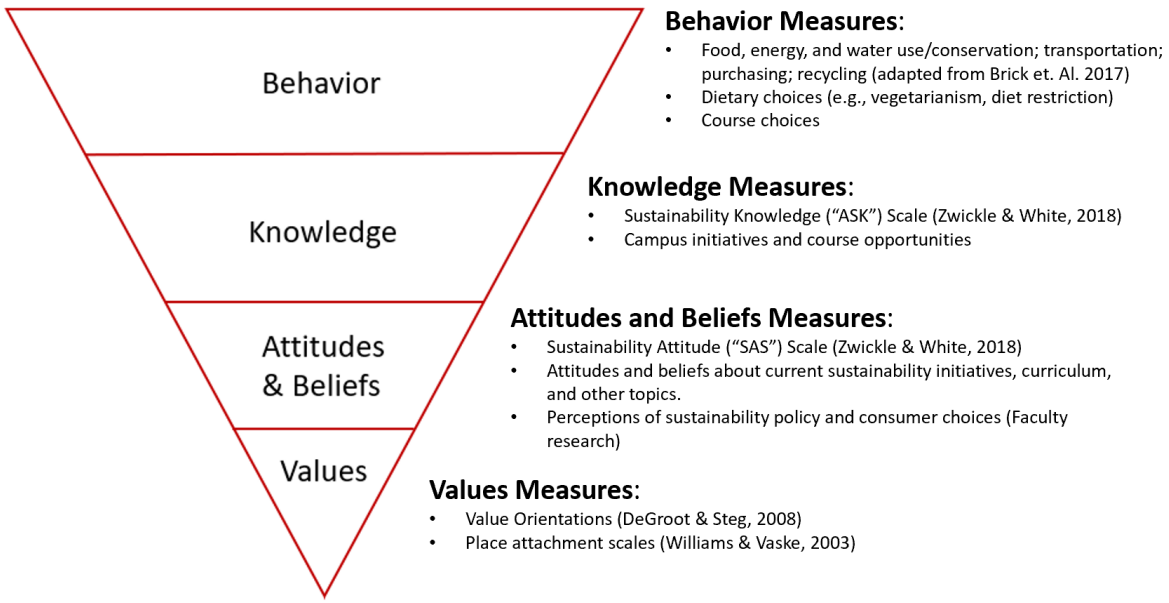
Methodology and Design

The 2020 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 2020, the survey supported research from students and faculty in Psychology (Jeremy Huang, Dr. Brittany Shoots-Reinhard, Tina Nguyen, Dr. Ken Fujita), as well as postdoctoral researchers with the Sustainability Institute (Dr. Atar Herziger) and the ESSL (Dr. Kristin Hurst). (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 2020 included all students that responded to the 2019 survey and were still enrolled at OSU in 2020 (N = 1,521). These 2019 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 2020 effort. As was done in 2018 and 2019, we oversampled 5,500 first year students to account for sample attrition over time. Due to a duplication error, respondents from 2019 were counted twice, and the actual sample sizes for second, third, and fourth year students were lower than anticipated (see Table 1). In October of 2020, survey invitations were emailed to the full sample of 18,979 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.

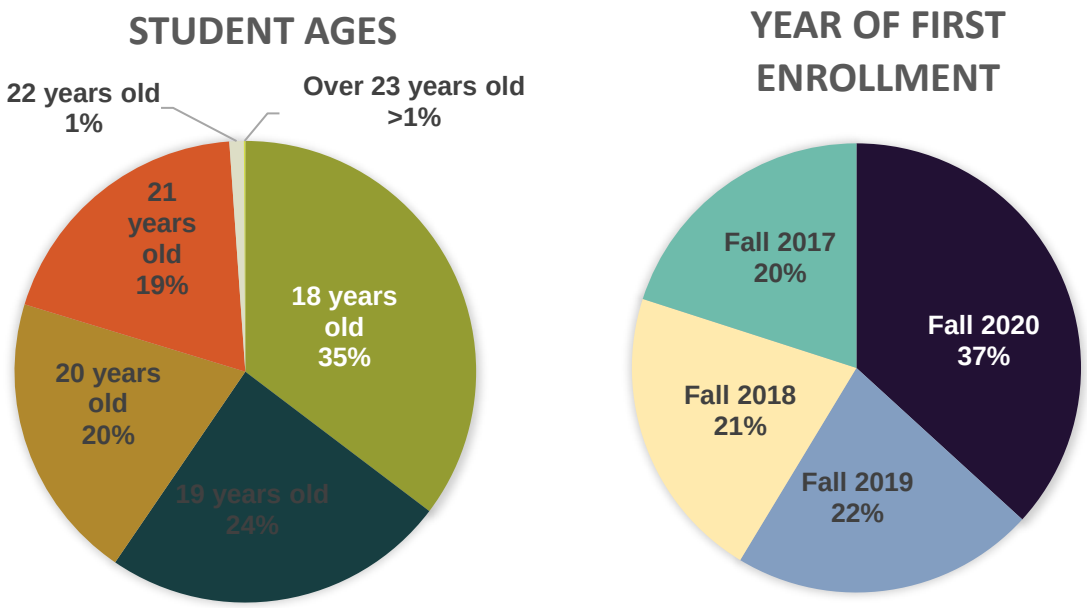
Of the 18,979 students contacted, 2,909 started the survey and 2,408 completed it (12.7% completion rate). The final sample size used for this report (i.e. students who began the survey and answered at least one behavior question) was 2,800 students, for a final response rate of 14.8%. Excluding outliers[1], the average completion time for the survey was approximately 19 minutes and 36 seconds (with a mode of 18 minutes and 2 seconds).

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

Sample Characteristics

Our sample consisted of 2,853 undergraduate students who began the survey. Where appropriate comparisons may be made, we provide the 15th Day Enrollment numbers for Autumn 2020 (AU20). Respondents were more female than male (67.7% female; AU20: 49.6% female), with an average age of 19 years old (AU20: 18.8). By design, participants were skewed towards first-year students at Ohio State: 681 (24.3%; AU20: 16.2%) were first-year freshmen, 648 (23.1%; AU20: 20.5%) were second years, 586 (20.9%; AU20: 23.8%) were third-years, and 874 (31.2%; AU20: 39.3%) were in their fourth year since first enrolling. Additionally, the average (non-zero) GPA of our participants was a 3.56 (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 (71.4%; AU20: 65.6%), with a minority of students identifying themselves as Asian (8.8%; AU20: 8.0%), Hispanic (5.3%; AU20: 5.1%), Black/African American (3.7%; AU20: 7.2%), Native Hawaiian/Pacific Islander (0.04%; AU20: 0.1%), American Indian/Alasaka Native (NA%; AU20: 0.1%) or two or more races (4.6%%; AU20: 4.3%). In addition, 3.1% of our sample were international students studying at Ohio State (AU20: 6.8%).

In terms of living situation and financial independence, our participants most commonly live in student residence halls (42.1%), although a substantial minority live in a house or apartment with other students (36.7%), and a minority live on their own (8.0%) or with

family (12.6%). Students reported that, on average, 40.6% of their living expenses came from personal earnings or savings (with a standard deviation of 31.2%), 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 (67.6%), 10.1% in an urban setting, 11.0% in a small town, and 11.3% in a rural or agricultural environment. In addition, 53.5% described themselves as Democrats, 11.4% as Republicans, 26.5% as independents, 3.9% as Libertarians, and 4.6% 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 (66.2%), while 25.9% reported taking just one or two classes; only 8% 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 2. Response by program of study

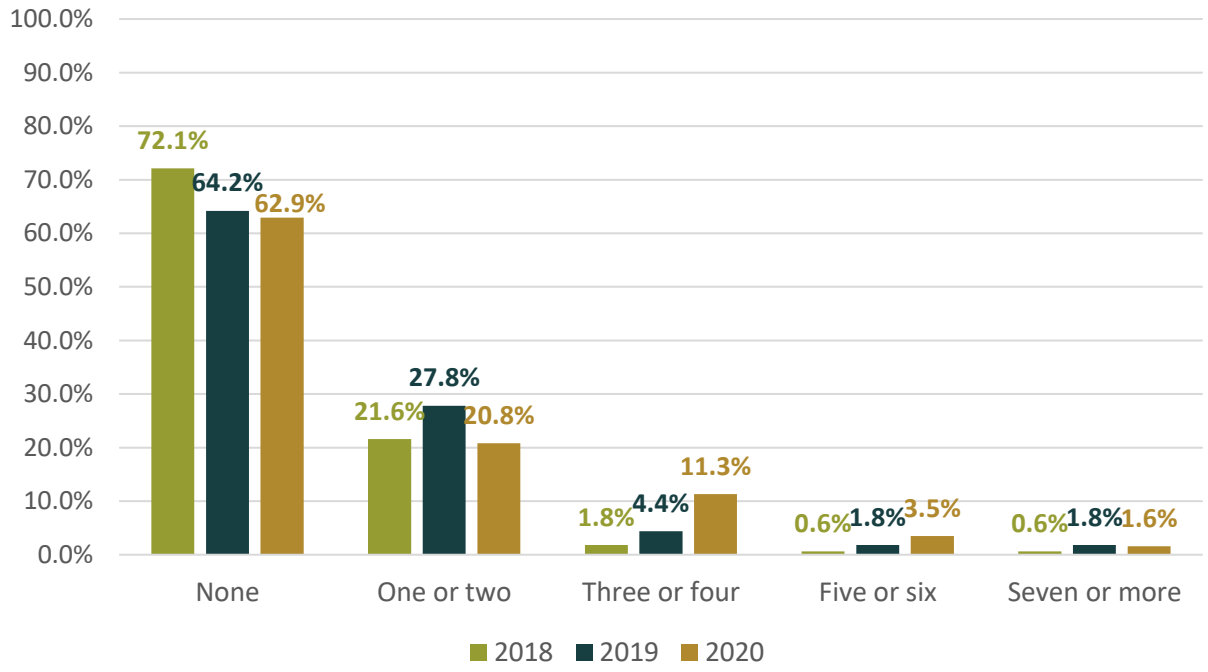
Program	Percent of respondents	Enrollment AU20
Arts and Sciences	36.7	37.9
Engineering	19.1	17.9
Business	11.2	15.6
Education and Human Ecology	4.8	6.7
Exploration Program (no declared major)	4.9	5.0
Health and Rehabilitation Sciences	4.4	4.4
Agriculture	3.3	3.2
Environment and Natural Resources	4.3	1.8
Nursing, Dental, and Medical	3.5	2.9
Pharmacy	1.5	1.0
Public Health	1.1	0.7
Architecture	1.3	1.2
John Glenn Public Affairs	1.1	0.7
Social Work	0.8	1.0
Total N	2,800	46,352

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.

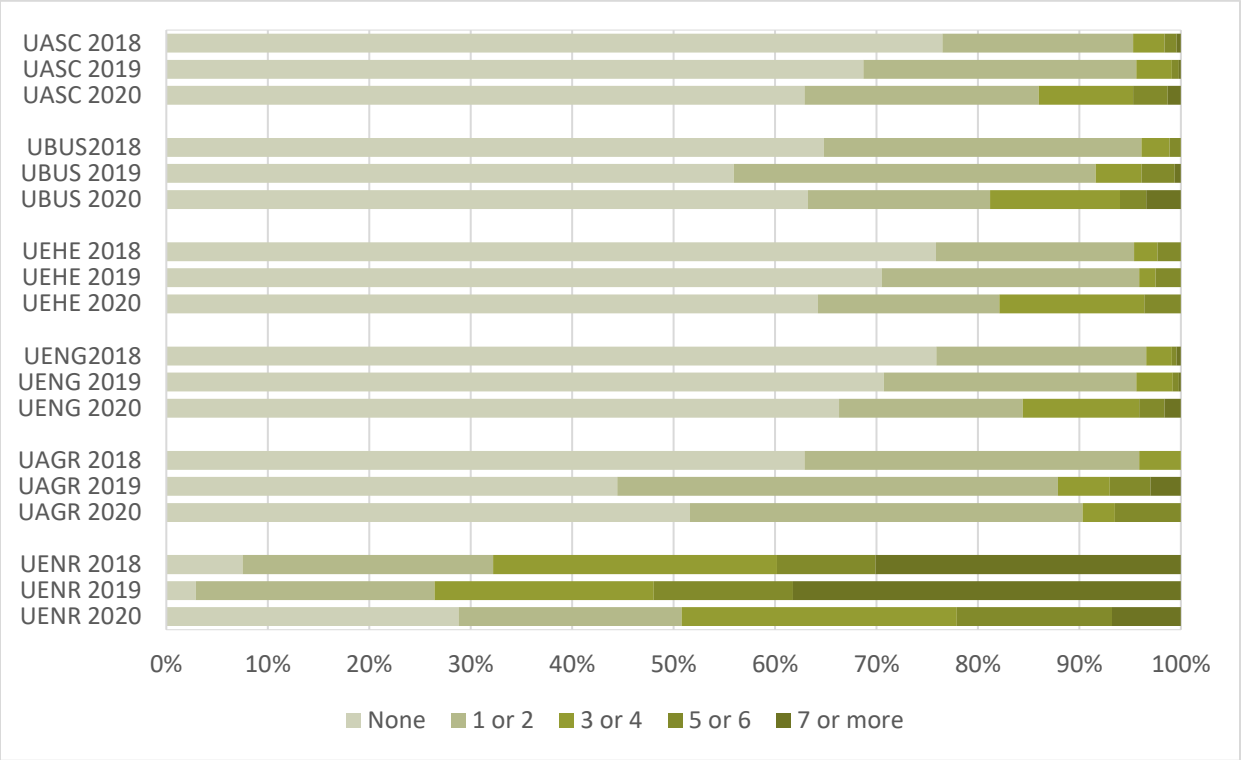
To begin, students were asked: "How many courses have you taken with a focus on sustainability at OSU?" (N = 1,763; Figure 1.1). Similar to 2019, the most common responses to this question in 2020 was "None" (62.9%; 2019 = 64.2%) or "One or two" courses (20.8%; 2019 = 27.8%).

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



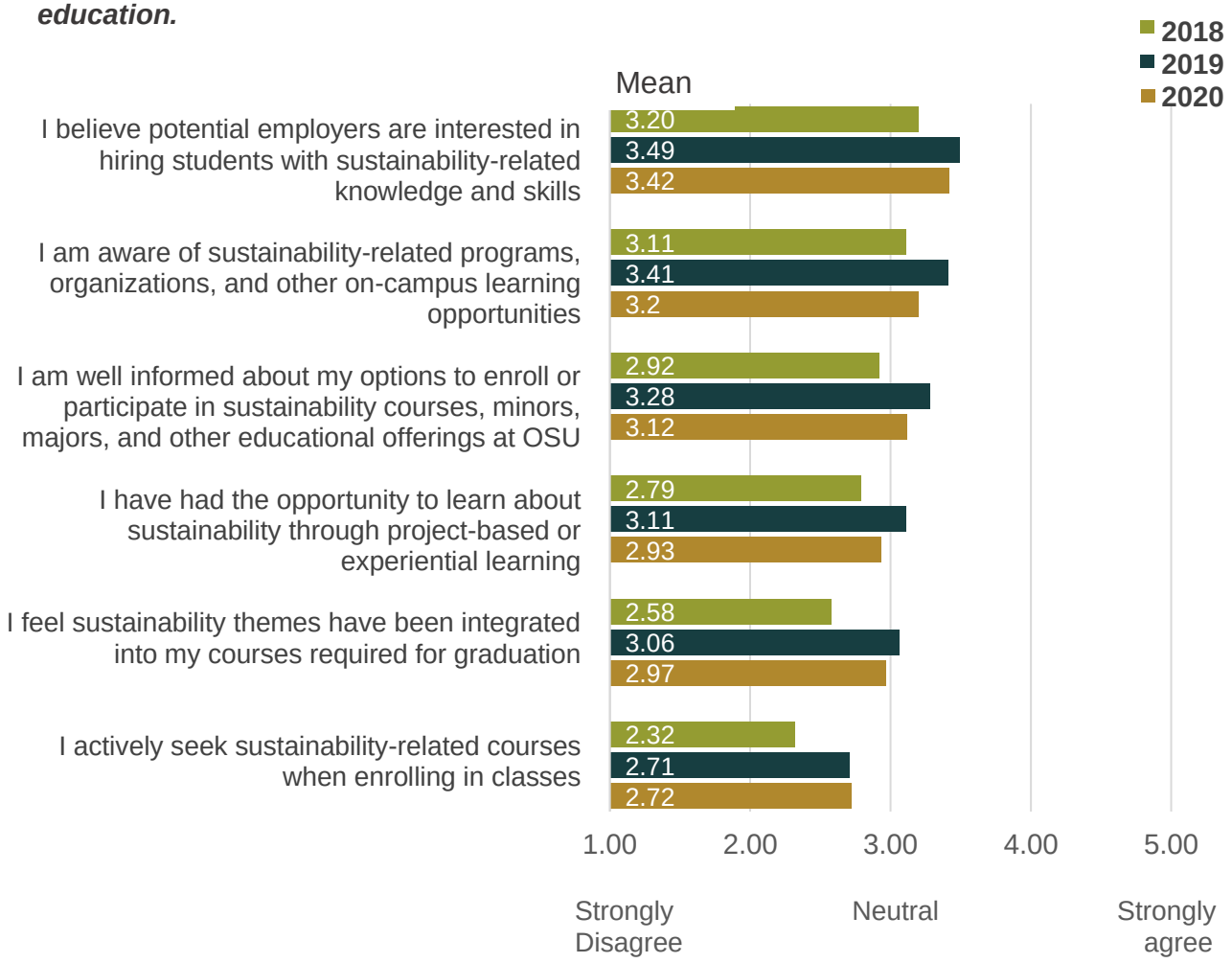
Below, we show the same question broken out by the 4 largest major programs, plus Agriculture (UAGR) and Environment and Natural Resources (UENR): Arts and Sciences (UASC), Engineering (UENG), Business (UBUS), Education and Human Ecology (UEHE; Figure 1.2). Unsurprisingly, UENR majors take the most sustainability classes of any major, but we see increases among all majors from 2018 to 2019. In 2020 there was a drop in sustainability courses taken among UENR, UBUS, and UAGR majors.

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



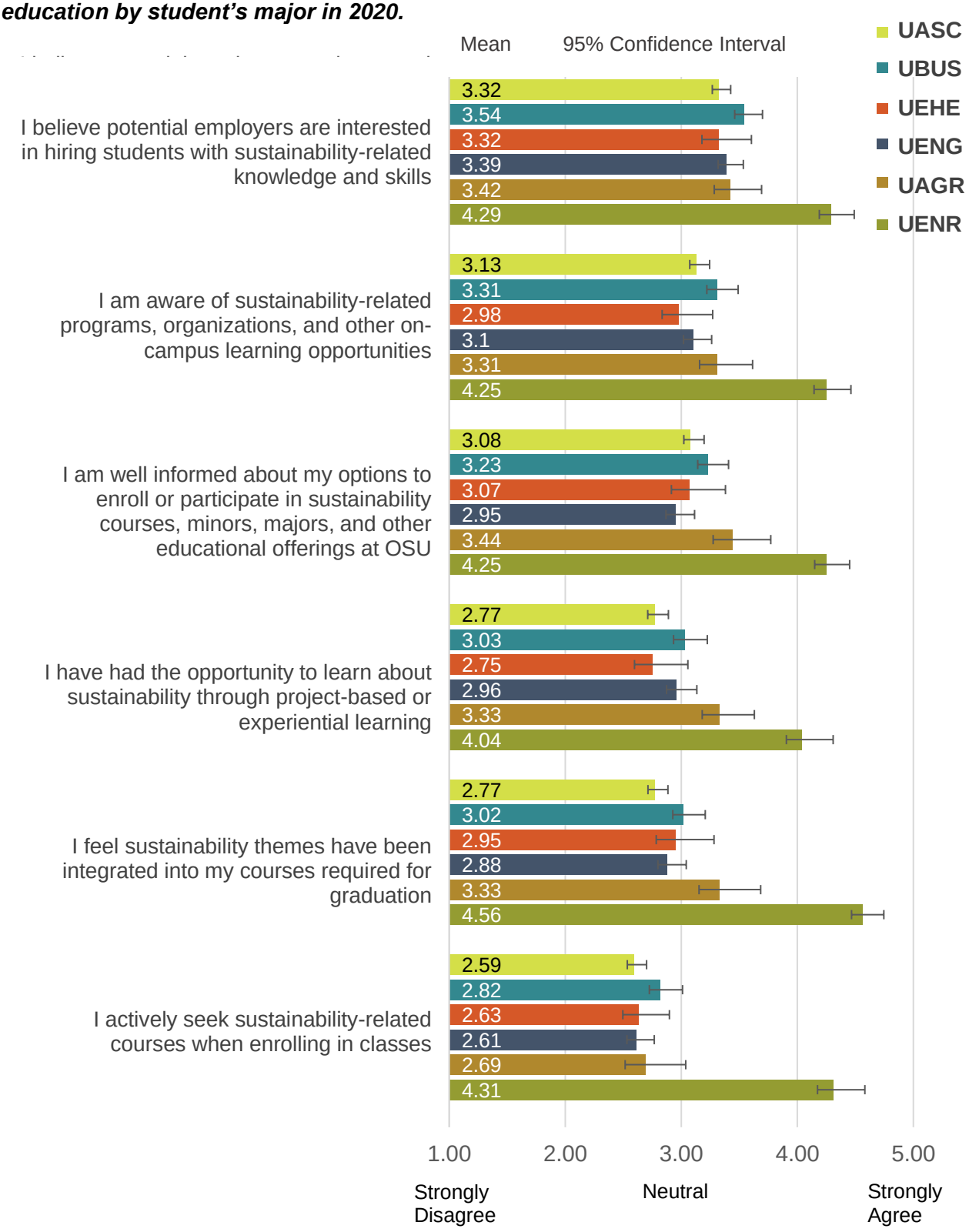
Students were then asked to rate their agreement with six different items related to sustainability education on a 1 – 5 "strongly disagree" to "strongly agree" scale (N = 1,428). See Figure 1.3 for average scores per item. Some notable trends in this data are how highly students agree that sustainability-related 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 was a general bump in agreement across items from 2018 to 2019, with a slight dip in agreement in 2020. This dip could be COVID-related, given the focus on on-campus opportunities and the more limited nature of course offerings.

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 major in 2020.



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 = 738 – 1,231). 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 and UAGR students in major courses with a focus on sustainability, particularly when compared to UASC students.**

Figure 1.5. Average student interest in sustainability courses at OSU

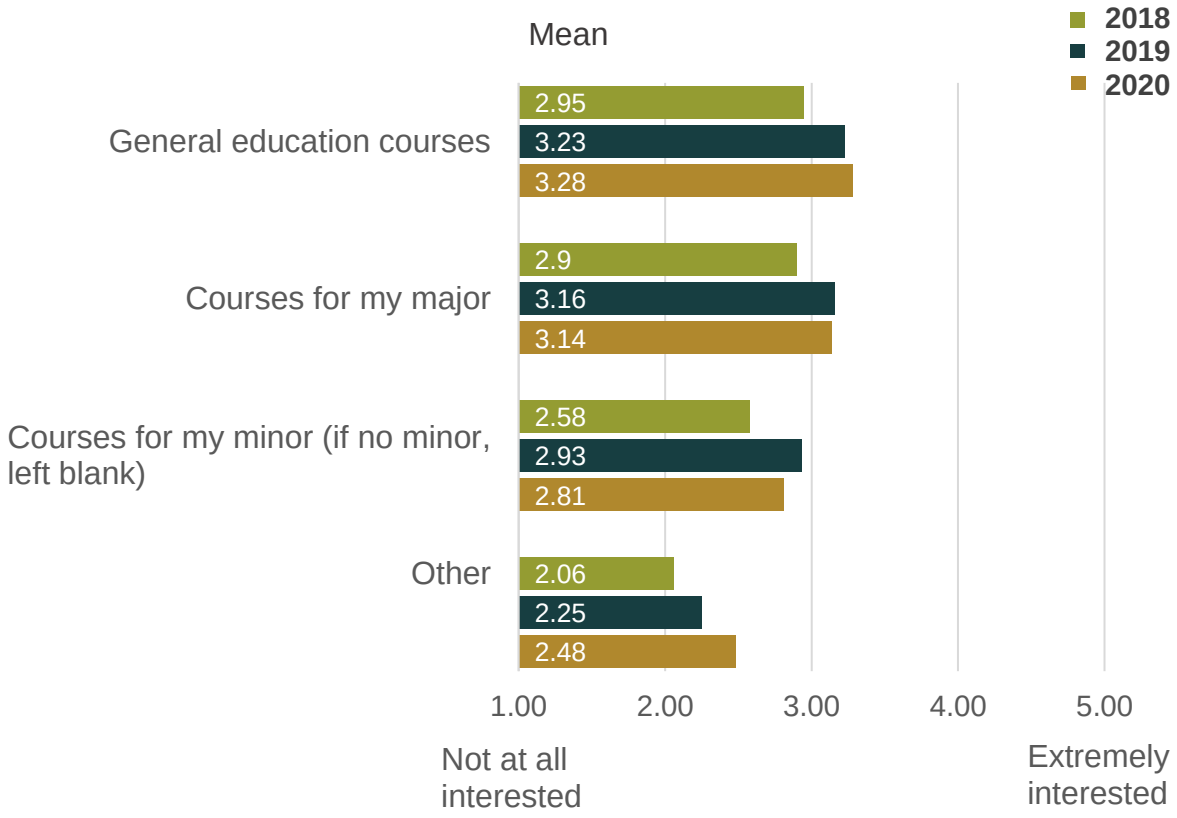
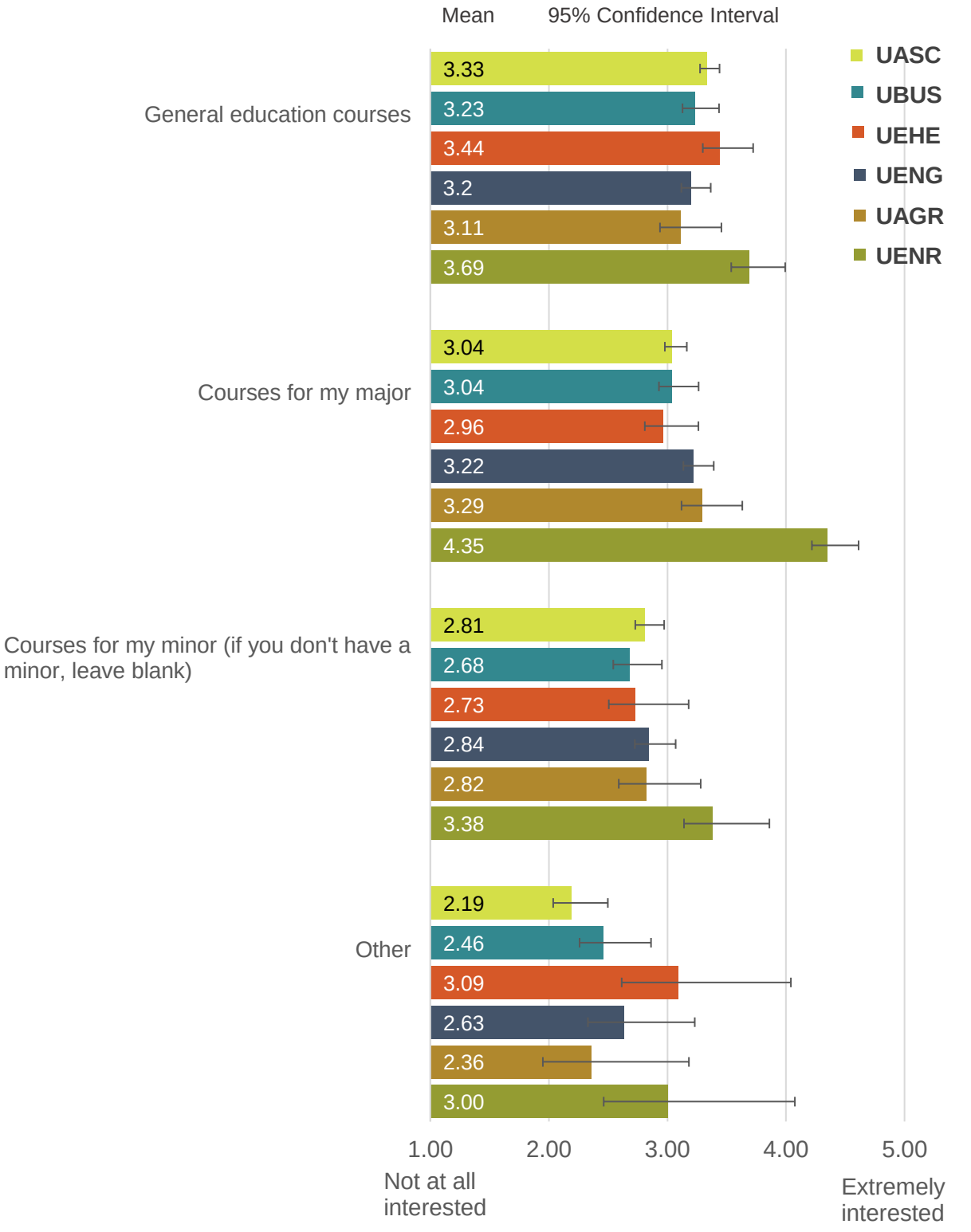
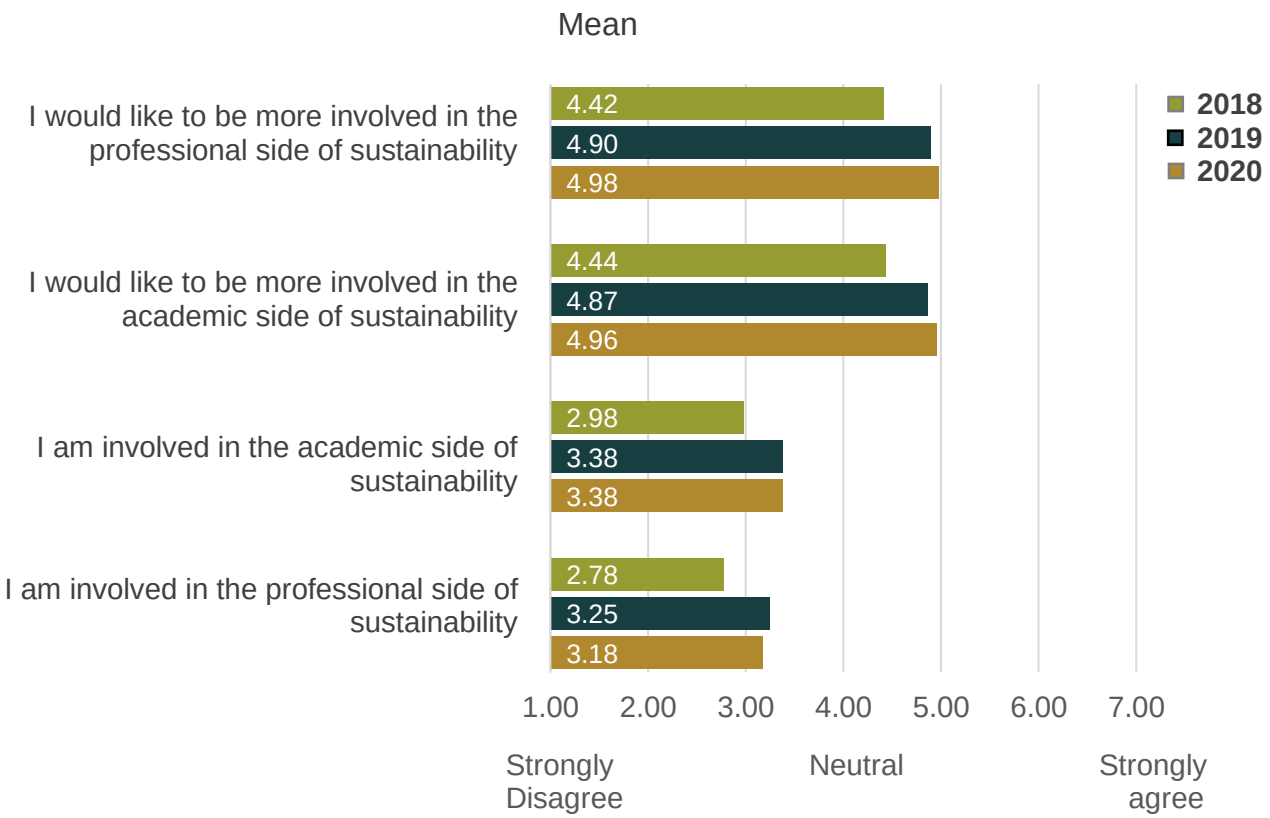


Figure 1.6. Average student interest in sustainability courses at OSU by student's primary program in 2019.



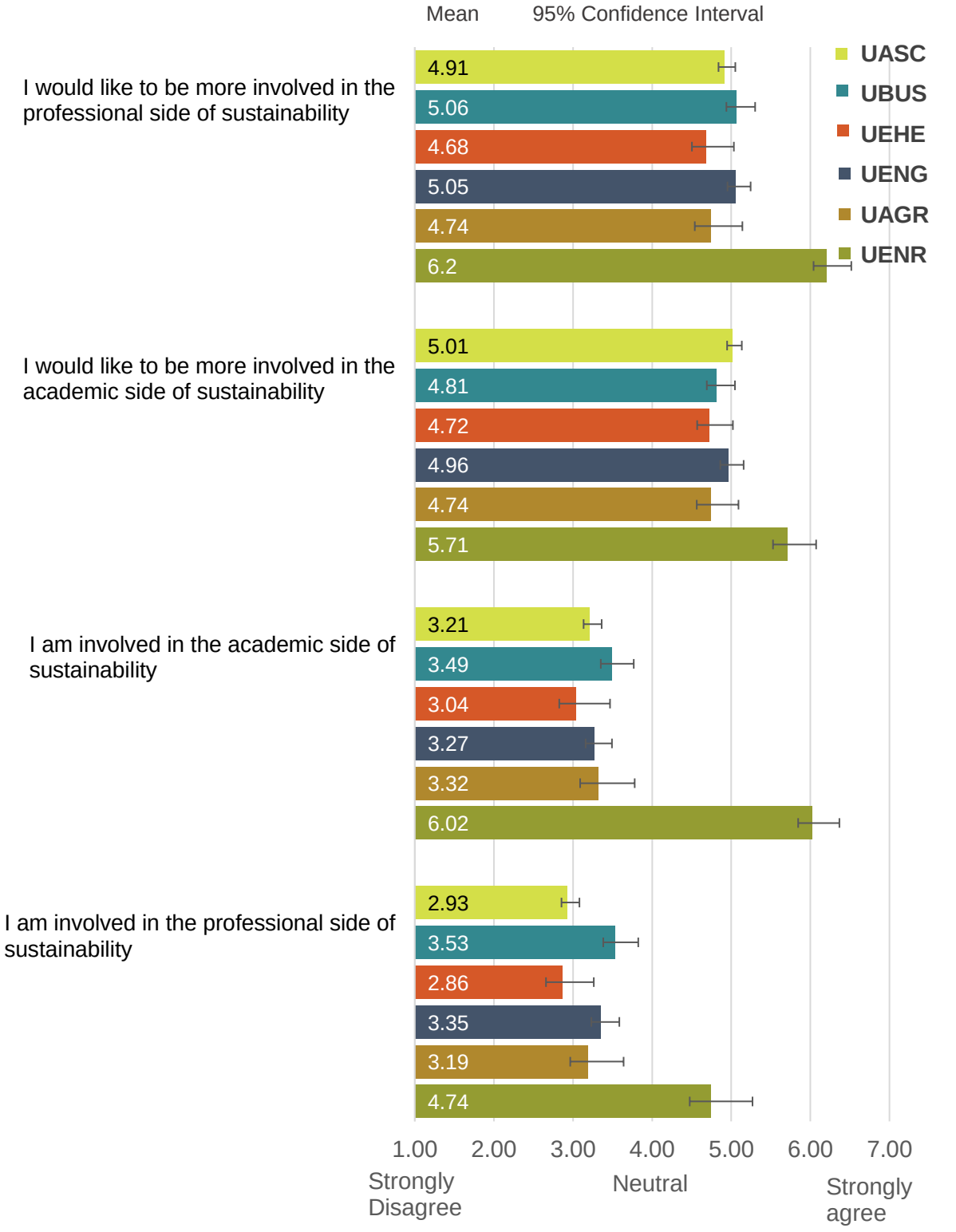
Additionally, students indicated their agreement with four items related to their amount of current and desired involvement in the academic (i.e. through taking sustainability courses and pursuing sustainability-related research opportunities) and professional sides of sustainability (i.e. pursuing sustainability-related internships, volunteer opportunities, and student organization involvement or leadership) on a 7-point scale of "strongly disagree" to "strongly agree" (N = 1,211). See Figure 1.7 for average scores per item.

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



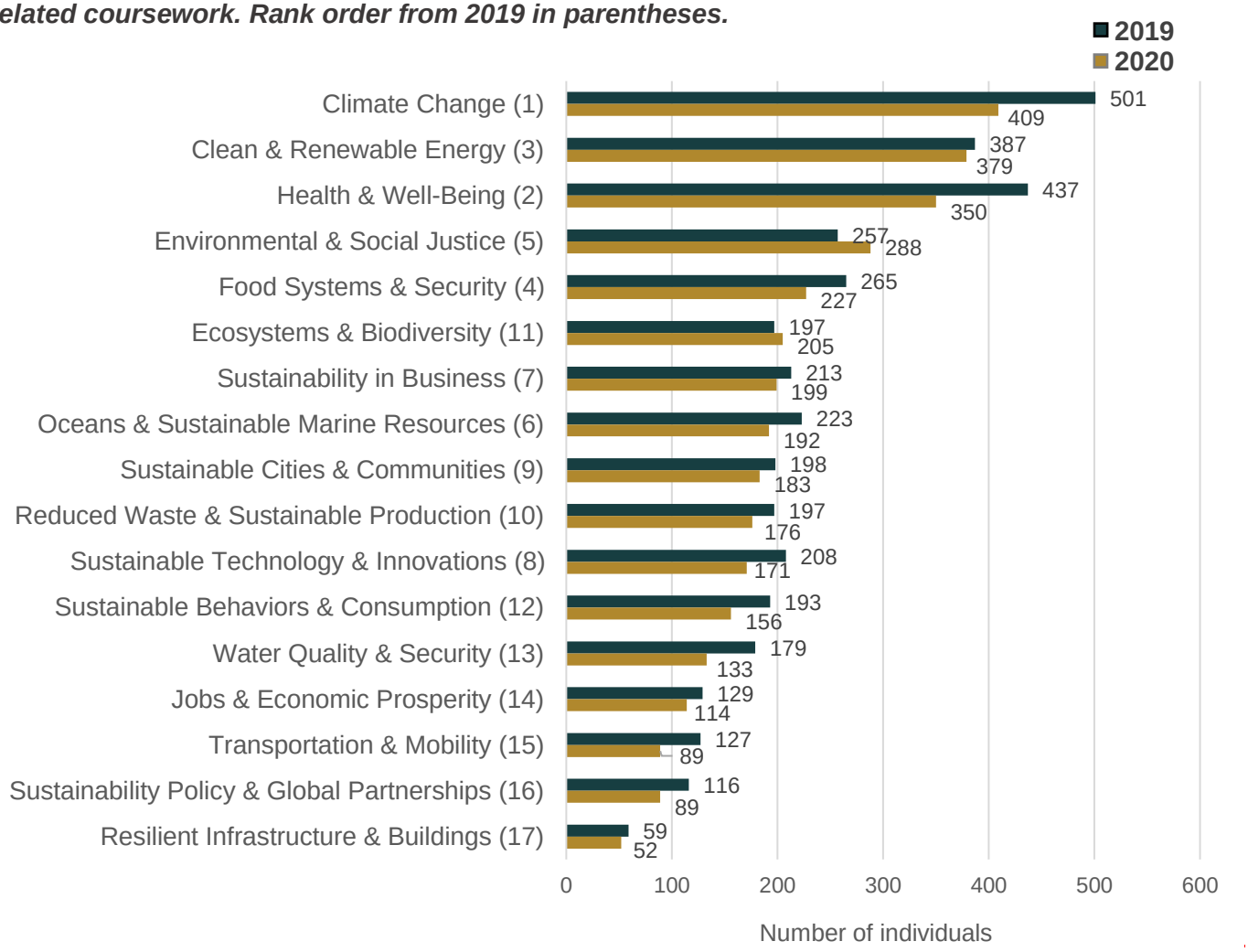
Overall, students seem to consistently agree with the statement that they would like to become more involved in the professional side of sustainability, and were equally as interested in becoming involved in the academic side of sustainability. Meanwhile, in 2020, **the majority of students continue to 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 have found COVID restrictions challenging, as a gap emerged in 2020 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 2020.



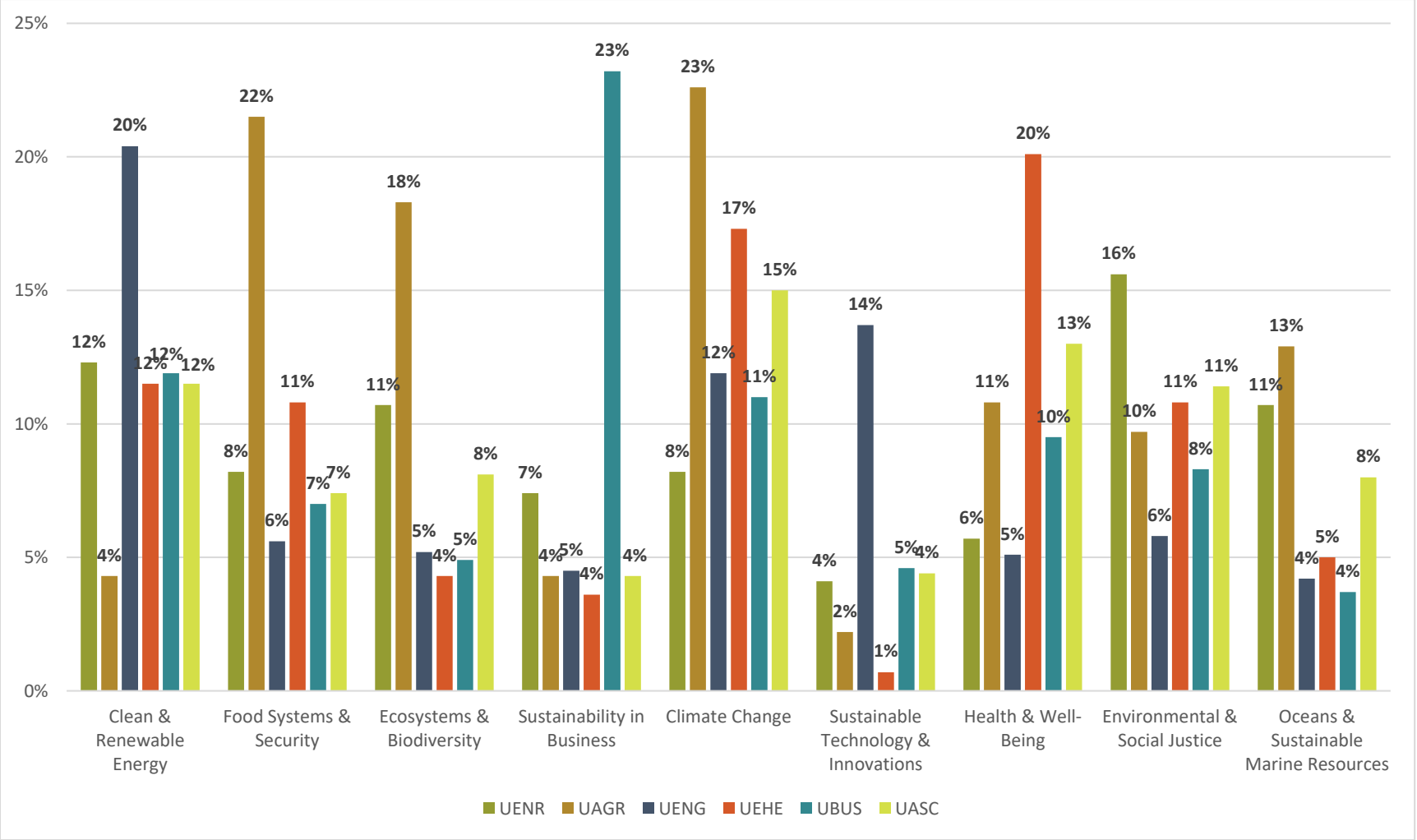
Students were also asked to choose three topics they would like to learn more about through taking sustainability-related courses at Ohio State (N = 1,232). As seen in Figure 1.9, climate change, health & wellbeing, and clean & renewable energy are still the most popular topics overall, however environmental and social justice, and ecosystems and biodiversity gained some popularity from 2019 to 2020.

Figure 1.9. Total number of students that chose each preferred topic in sustainability related coursework. Rank order from 2019 in parentheses.



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 in 2019 and 2020. UENR interests continue to span several topics in 2020, from Environmental & Social Justice to Clean & Renewable Energy. **UAGR majors expressed different in 2020, with higher interests in Climate Change and Ecosystems & Biodiveristy topics than in 2019.**

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 = 1,232; 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, although environmental justice jumped up to the second most preferred skill for professional development. **When separated by program below (Figure 1.12) the preference for environmental justice appears to be driven by UENR, UEHE, and UASC students, and UAGR students showed increasing interest in environmental justice from 2019 to 2020.**

Figure 1.11. Number of students that chose each preferred sustainability-related skill for professional development. Rank order from 2019 in parentheses.

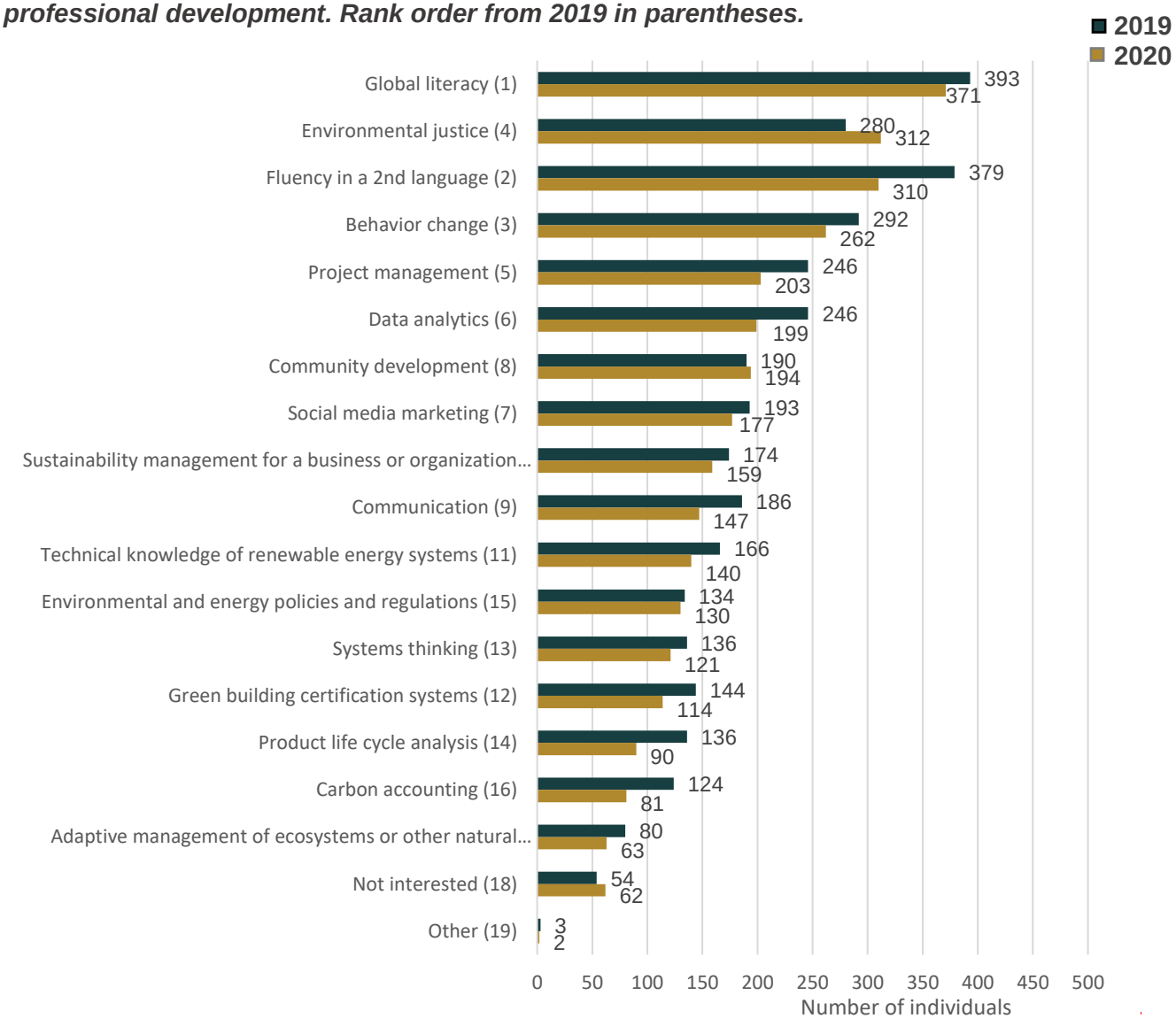
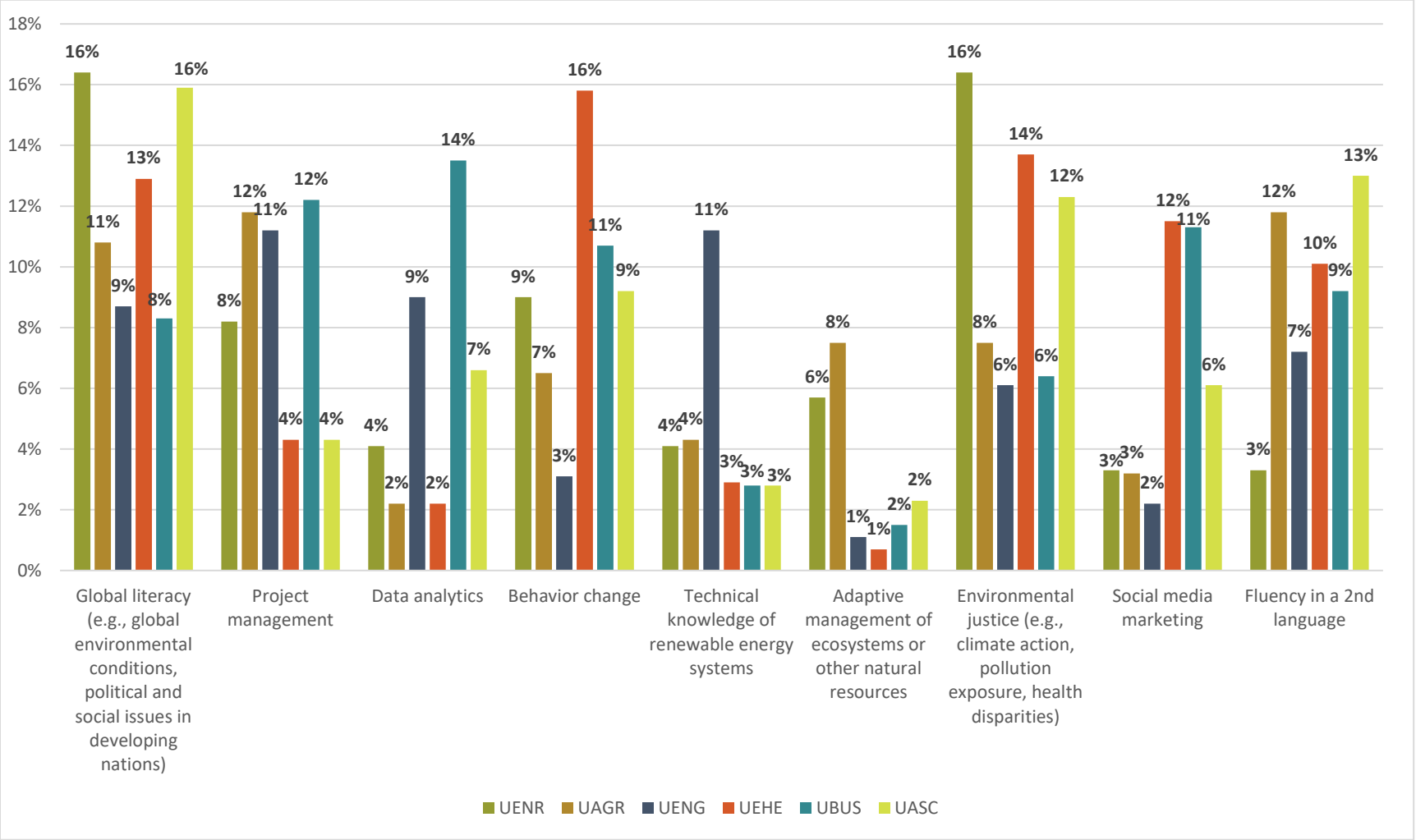


Figure 1.12. Percent of students in each program choosing each preferred sustainability-related skill for professional development.



Next Steps and Acknowledgements

Next steps: Currently plans are in place repeat the campus sustainability survey in 2021 and proceeding years, 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, and the Center for the Study of Student Life 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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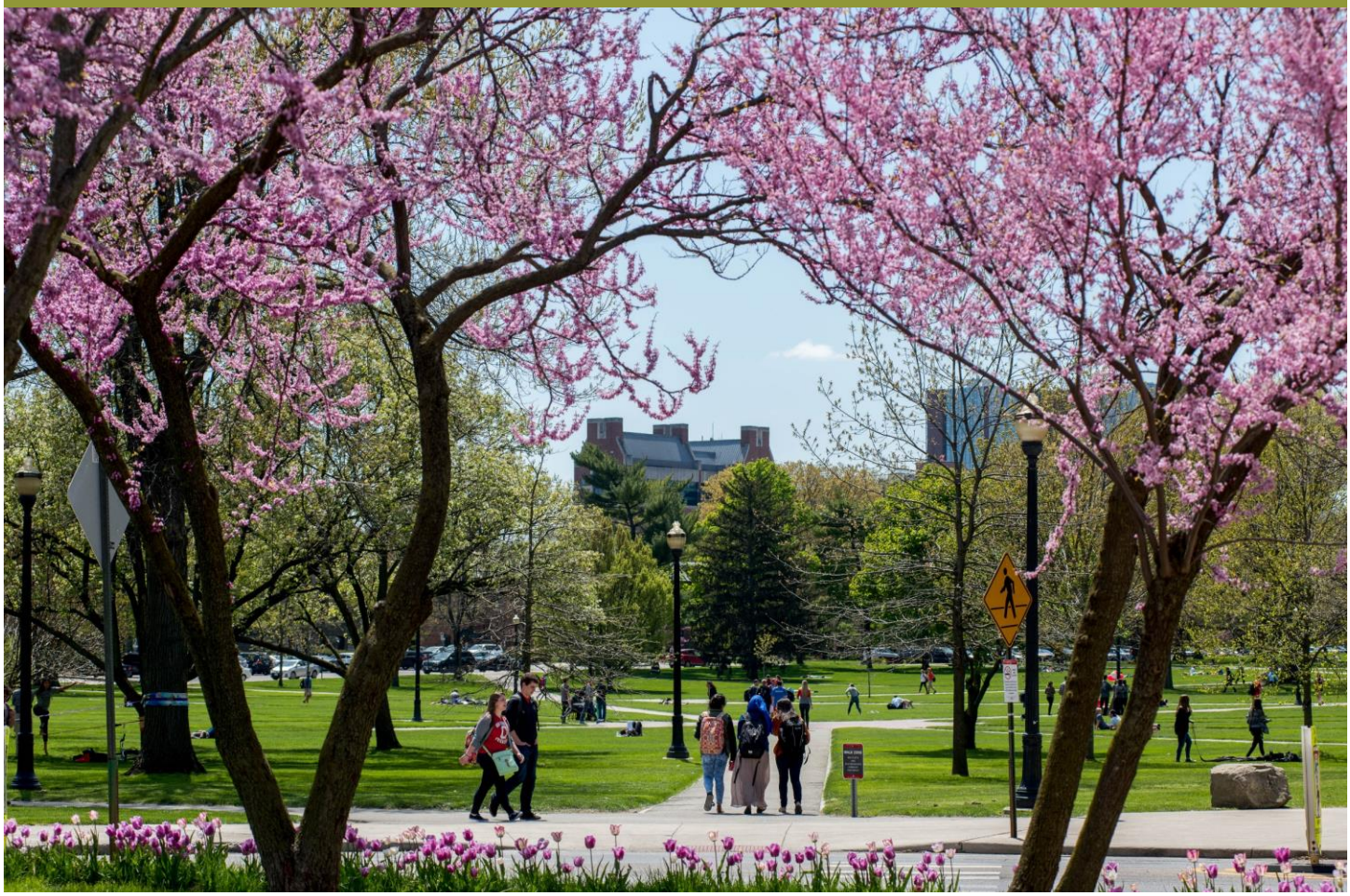

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