SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES

2021 Campus Sustainability Survey: Results and Trends

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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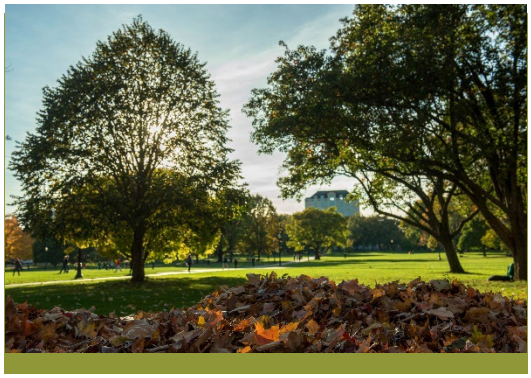

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OHIO STATE SUSTAINABILITY GOALS

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

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 2021, through online survey responses from 2,374 Undergraduate students from the Columbus campus (out of 20,500 randomly selected students originally contacted; a response rate of approximately 12%). 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.

Engagement in sustainable behaviors:

In total, undergraduate student engagement in sustainability-related behaviors such as carrying a reusable water bottle, turning off the lights in an empty room, and printing on both sides of the paper remain quite high, suggesting progress towards OSU Sustainability goal #5. Likewise, nearly half (47%) of students report often or always sorting out their recycling, suggesting progress toward OSU Sustainability goal #7f. However, opportunities to further promote campus sustainability goals continue to present themselves in emphasizing behaviors that are low cost, but that many students have not yet adopted, such as limiting purchases of new items and shifting purchases to second hand wherever possible, which could also inform OSU Sustainability goals #5 and #7f (For more on these results, please see Section 1).

Recommendation: Our results suggest a gap that might be reduced by highlighting the 4 R's together: ***Refuse, Reduce***, ***Reuse, Recycle.*** By pairing these impactful behaviors in a familiar way with a high priority action, this simple messaging could improve sustainable behavior both on and off campus, in support of OSU Sustainability goals #5 and #7f.

Sustainability knowledge:

Student knowledge of sustainability-related topics (e.g. sustainable economics, social sustainability) as assessed through quiz-type questions **remains higher than that assessed in 2014.** However, some misconceptions remain on topics regarding the causes of pollution and environmental degradation (please see Section 4 for detail). One major misconception worsened among students in relation to causes of pollution.

In 2021, 36.6% of students incorrectly answered that waste dumped by factories is the main cause of pollution of streams and rivers (in 2018 the percent answering incorrectly was 24.1%). Less than half of student respondents identified the correct answer—surface water runoff from yards, city streets, paved lots, and farm fields.

Recommendation: As noted above, although student knowledge of sustainability-related topics has generally improved, one area for attention pertains to causes of pollution. The Franklin Soil and Water Conservation District points out a number of behaviors that impact water quality and can be implemented by students, staff, and faculty to improve water quality in central Ohio. Communication around these behaviors could improve campus to community linkages (OSU Sustainability goal #5) and provide an opportunity to understand the complexities of sustainability across the campus community (OSU Sustainability goal #2).

Student awareness and support for campus initiatives:

The 2021 survey contained several items developed in collaboration with the Sustainability Institute, the Office of Student Life, and OSU Facilities, Operations and Development. Together, these items provide insights about student prioritization sustainability initiatives on campus. Additionally, we provide data related to sustainability curriculum development with the Sustainability Education and Learning Committee (see OSU Sustainability goal #1).

Reusable Food Containers: About half of respondents (42.5%) indicated that they had ordered on campus and received a reusable container during AU21. Of those students that received a reusable container, 64.2% indicated that they did reuse the container, and among all student respondents, over 4 in 5 expressed support for expanding the program. **Recommendation**: Expansion of the reusable container program is widely supported by students and could improve progress toward OSU Sustainability goal #7f.

Sustainability Curriculum: Most respondents indicated that they had taken no classes related to sustainability or the environment at Ohio State (62.6%). Though students generally disagreed with the statement, "I actively seek sustainability-related courses when enrolling in classes," the average for this item has generally trended upward since 2018. The most frequently selected preferred topics for sustainability-related coursework remained climate change, followed by clean & renewable energy, and health & well-being. **Recommendation:** Course syllabi tied to these three themes (climate change, clean & renewable energy, and health & well-being) and building on preferred sustainability-related skills (global literacy and environmental justice) may see greater popularity among students and improve strides toward OSU Sustainability goal #1. See Section 3 for further detail and additional findings.

Future plans:

The ESS lab plans to continue using an annual survey and a panel of undergraduate students to measure changes in sustainability knowledge 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.

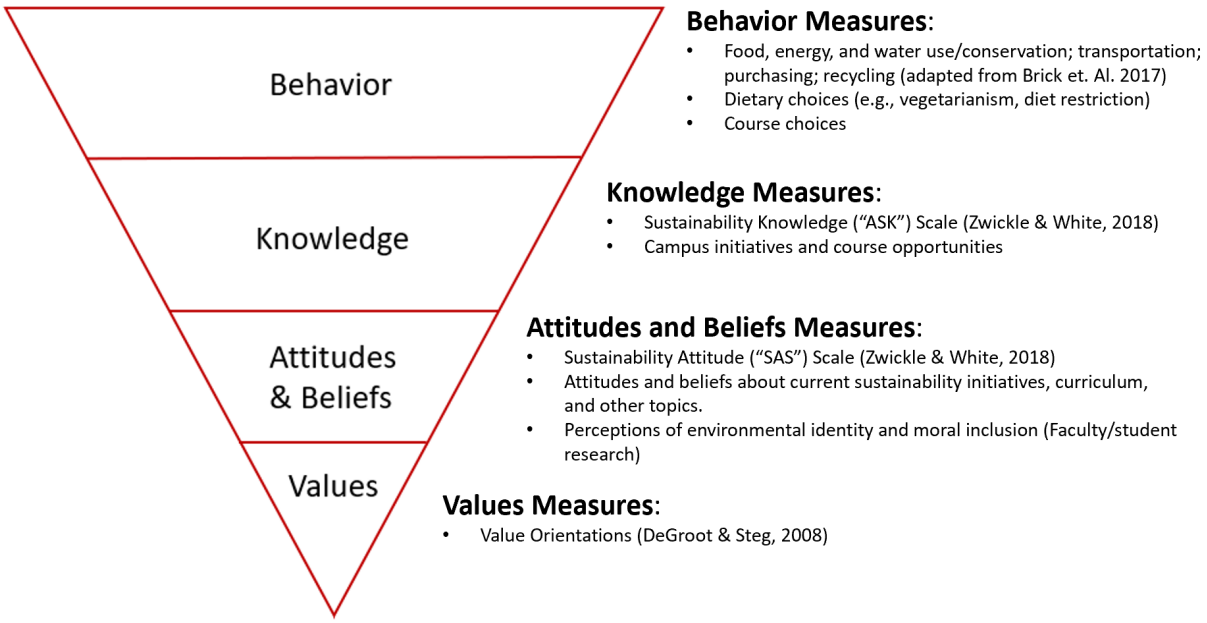
Methodology and Design

The 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. Some of these items are kept year-to-year, per discussions with campus partners.

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.) Typically, 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 lab manager and leadership committee.

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.

Table 1. Sample sizes by rank and response N

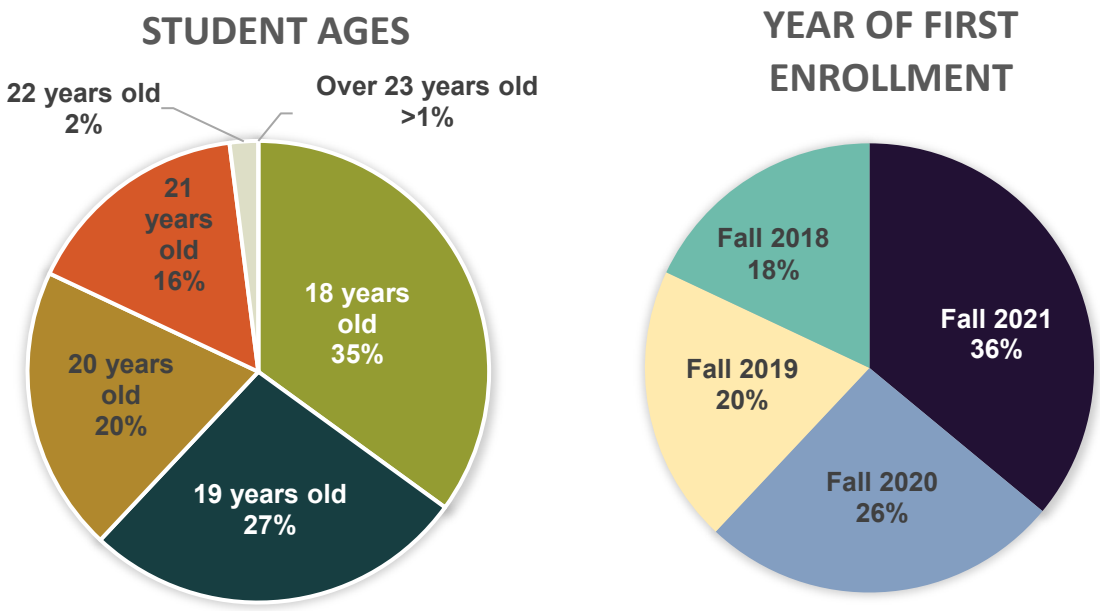
Rank	Respondents from 2020	New contacts 2021	Overall Respondents 2021	Recontacted Respondents 2021
First year	0	5,500	919	0
Second year	1,013	3,987	645	266
Third year	618	4,382	505	181
Fourth year	573	4,427	456	173
Total	2,024	18,296	2,525	620

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/Alasaka 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 (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	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

Section 1: Sustainable Behaviors

Replicating the survey from 2020, we again used the first section of the 2021 survey to ask students about their engagement in 15 pro-environmental and sustainability-related behaviors, including those that take place on and off-campus. Students were asked how often they engaged in these behaviors on a 1 – 5 "never" to "always" scale. Some of the behaviors were adapted from Brick et.al. (2017), and others were based on past surveys.

Similar to 2019 and 2020, we find that in 2021, some behaviors are quite common among undergraduate students at Ohio State (Figures 3.1 and 3.2). For example, more than half of students say they "often" or "always" carry a reusable water bottle (M = 4.45 SD = 0.93), turn off the lights in an empty room (M = 4.35; SD = 0.79), or print on both sides of the paper (M = 3.49, SD = 1.19). **The walk, bicycle, or take public transportation instead of using a car behavior saw a downward trend in frequency between 2019 and 2020 with the mean dropping from 3.90 to 3.47. The COVID-19 pandemic may have contributed to this decrease, specifically regarding public transportation, as the average for this behavior trended towards more frequent again in 2021 with students widely returning to campus (M = 3.72, SD = 0.95).** Meanwhile, behaviors such purchasing second-hand items instead of purchasing new items (M = 3.14, SD = 0.92), using reusable bags when shopping (M=3.00, SD=1.20) and limiting consumption of new items (e.g. electronics, clothes) (M = 3.22, SD = 0.96) were less frequent. One observation from these patterns is that, understandably, **easier behaviors performed on campus are more common than more effortful ones.** In addition, several behaviors that are adopted less frequently by students are ones over which they may have limited control, such as eating organic food on campus (M = 2.87, SD = 0.92). However, there remain several **low-cost and relatively easy behaviors that may merit further emphasis** to promote campus sustainability goals, particularly around reducing consumption of new items and purchasing second-hand items instead of new.

Figure 3.1. Sustainable behaviors: "Below is a list of behaviors you may or may not do. Please indicate how often you do these behaviors." (N = 2369 to 2374)

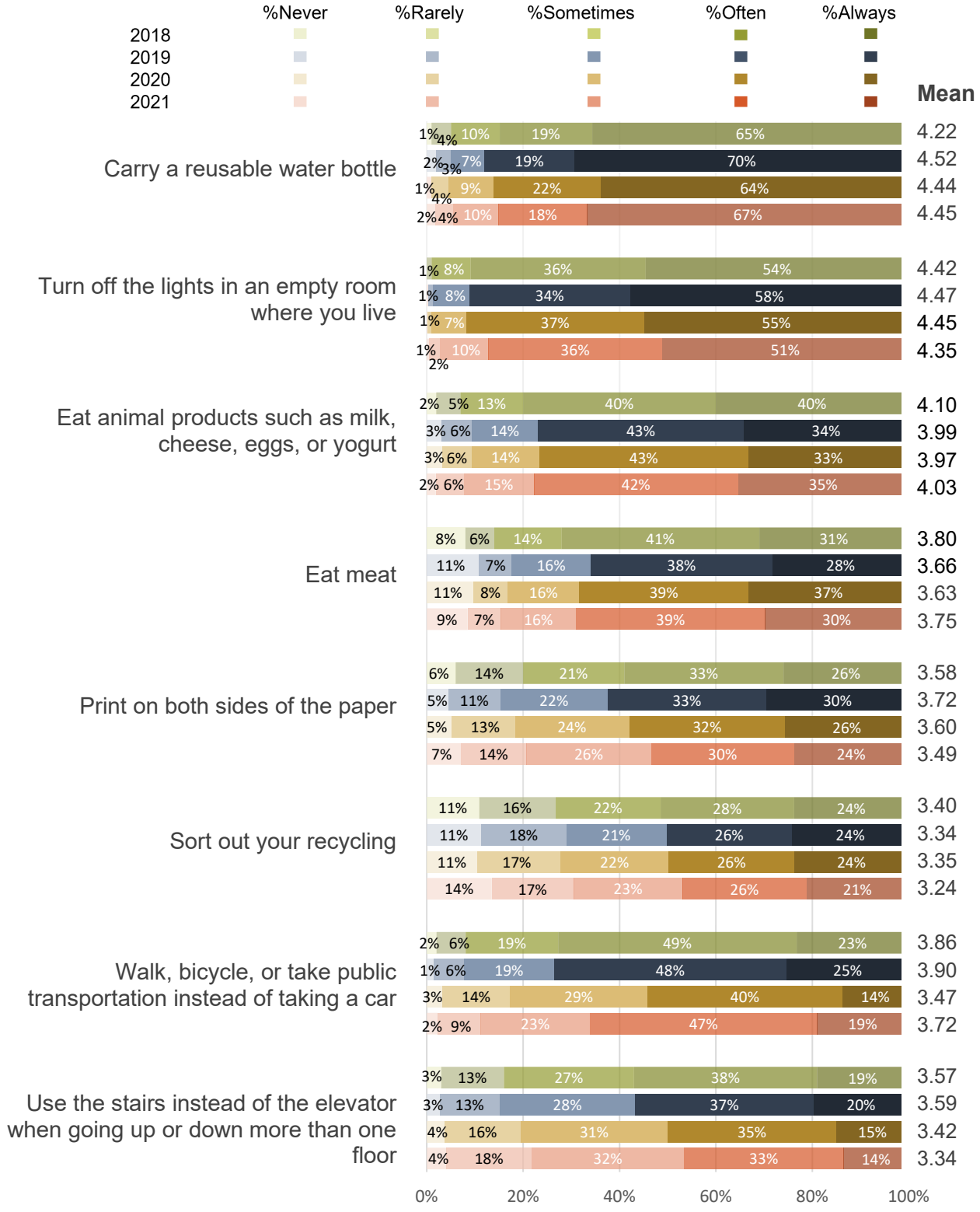
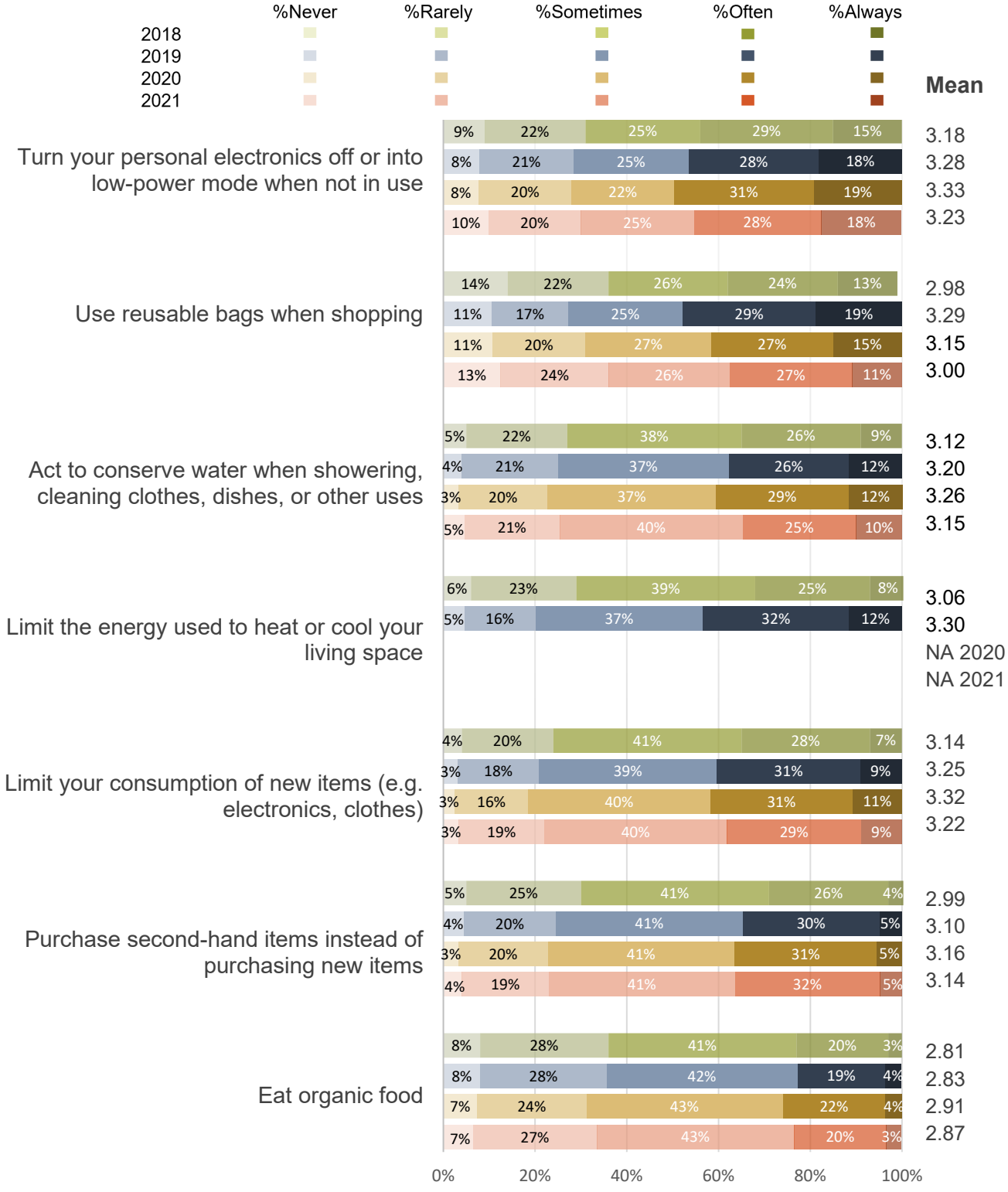


Figure 3.2. Sustainable behaviors: "Below is a list of behaviors you may or may not do. Please indicate how often you do these behaviors." (N = 2369 to 2374)

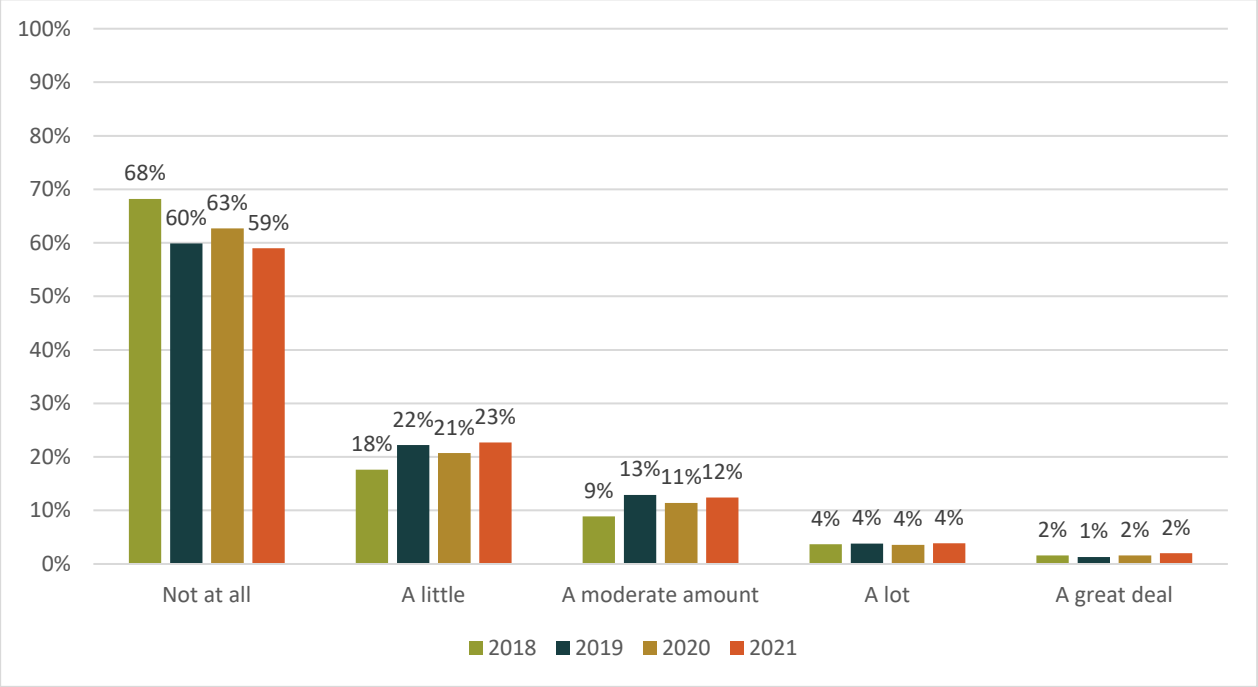


Section 2: Attitudes Towards Campus Initiatives

In addition to the longitudinal scales, the survey also included items of interest to our collaborators in Student Life, the Sustainability Institute, and Facilities Operations and Development (FOD) to gauge support for current or possible sustainability initiatives at Ohio State. These items were largely self-generated, and we will review them section-by-section in the following pages.

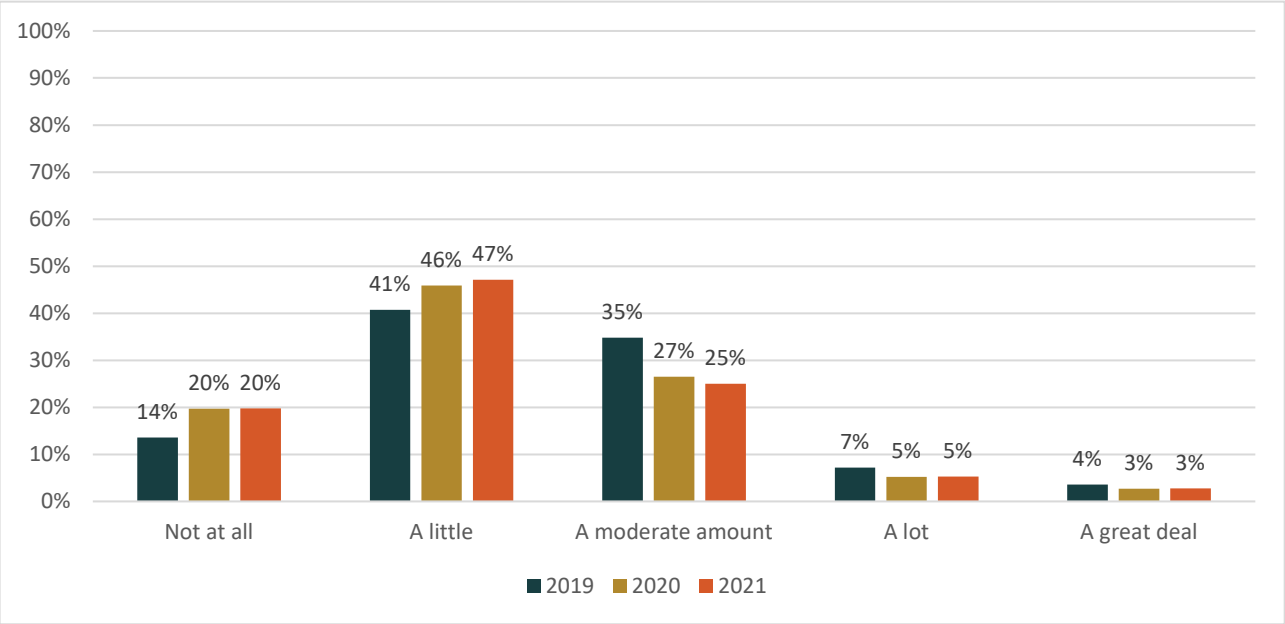
To begin, students were asked: "When deciding to come to Ohio State, were you influenced by the university's sustainability programming? See graph below for a breakdown of responses on a 1 – 5 scale of "not at all" to "a great deal". **Response scores to this question were again generally quite low**, with an average of 1.67 (SD = 0.97, N = 927, Figure 4). This remains **an area for improvement**: as Ohio State continues to build on its reputation for being a sustainable and innovative campus, these responses may become higher in the future.

Figure 4. Influence of sustainability programming on student choice to attend OSU in 2018, 2019, 2020, and 2021.



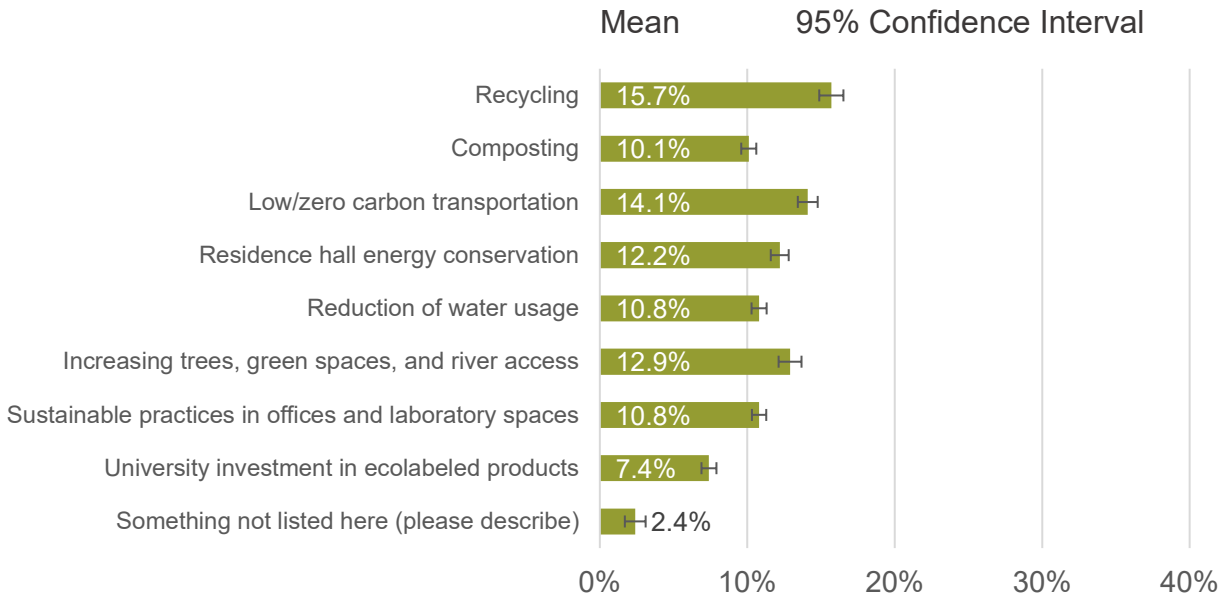
Then, students were asked about their knowledge of various sustainability initiatives on campus (e.g., Low Emission or Fuel-Efficient Vehicle Parking, Zero-Waste/recycling) on a 1 – 5 scale of “not at all” to “a great deal”. Students averaged between a little and a moderate amount of knowledge, with an average of 2.24, just below the midpoint (SD = 0.92, N = 935; Figure 5).

Figure 5. Self-assessed student knowledge of sustainability initiatives on campus.



Students were also asked how they would allocate resources to various sustainability initiatives on campus, divided among different project areas so that the total equals 100% (N = 929-948; Figure 6). In coordination with FOD, we edited and expanded the available list of options, so direct comparisons to 2020 are not available. **Overall, students prioritized recycling (M = 15.7%, SD = 12.6), closely followed by low/zero carbon transportation (M = 14.1%, SD = 10.4), and increasing trees, green spaces, and river access (M = 12.9%, SD = 12.0).**

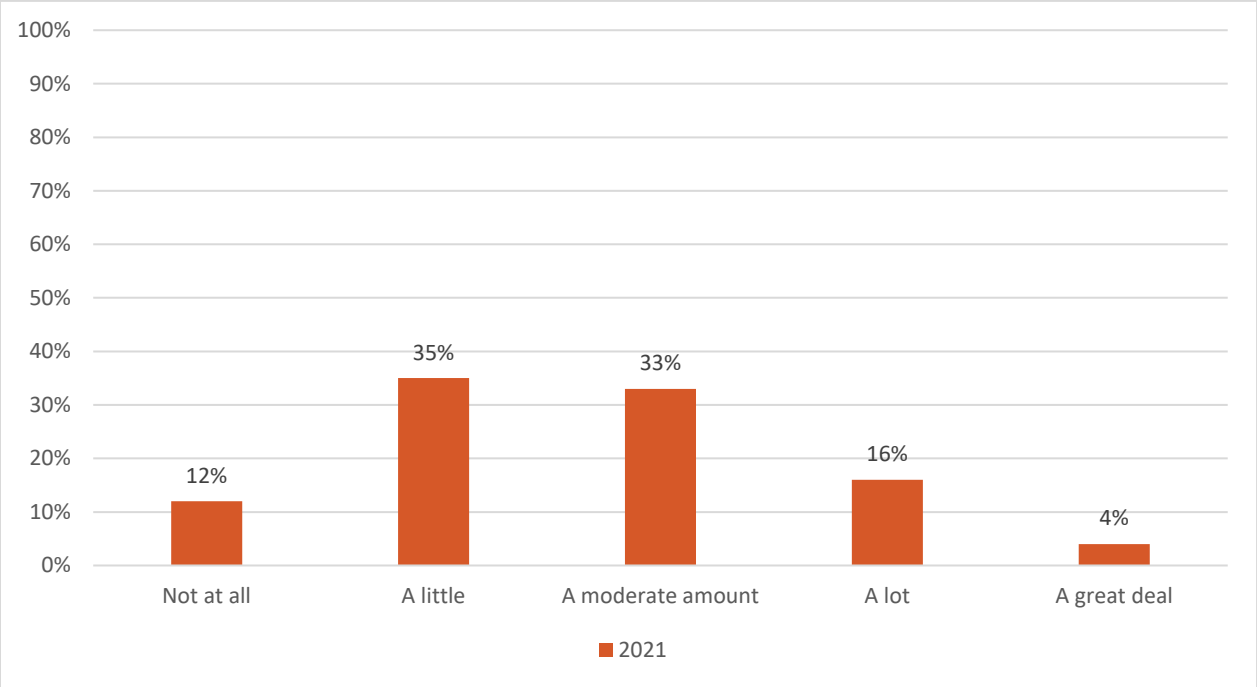
Figure 6. Allocation of resources to sustainability initiatives on campus



In partnership with Student Life, we designed a set of questions to assess reusable container use in AU21, as well as support for an expanded reusable container program. Among respondents, 42.5% indiated that they had ordered on campus and received a reusable container during AU21. **Of those students that received a reusable container, 64.2% indicated that they did reuse the container.** All respondents were asked to rate their opposition to or support of expanding this program on a 5-point scale from Strongly oppose to Strongly support, and **81.2% selected either support or strongly support for expanding this program in the future.**

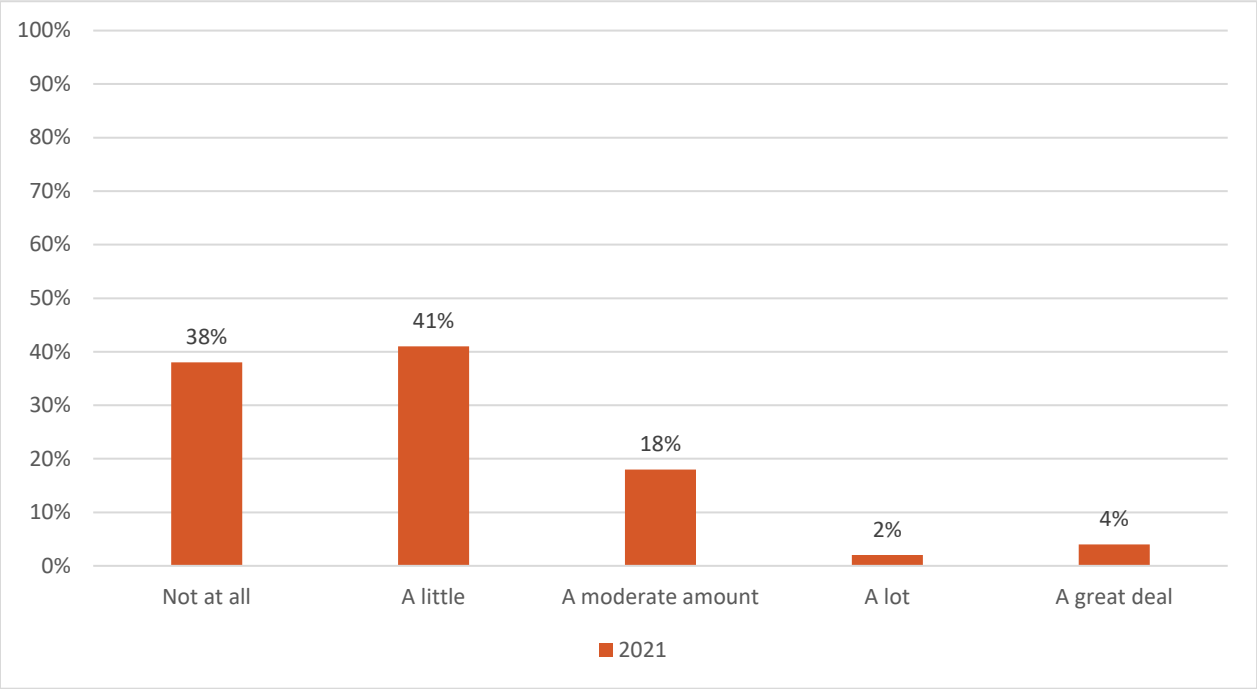
In coordination with the Sustainability Institute, we asked the following question: “When deciding whether or not to move to a city after college, to what degree would a city’s sustainability initiatives and programming influence your decision?” Responses ranged from “Not at all” to “A great deal” (Figure 7.1), and averaged between “A little” to “A moderate amount (N = 925, M = 2.66, SD = 1.02).

Figure 7.1. Influence of sustainability initiatives and programming on choice of city after college.



Finally, students were asked, “How much knowledge would you say you have regarding various sustainability initiatives within Columbus, OH (e.g., Climate Action Plan, Sustainable Columbus, Greenspot)?” Responses ranged from “Not at all” to “A great deal” (Figure 7.2), and averaged between “None at all” to “A little” (N = 926, M = 1.89, SD = 0.87).

Figure 7.2. Knowledge of sustainability initiatives and programming in Columbus, OH.

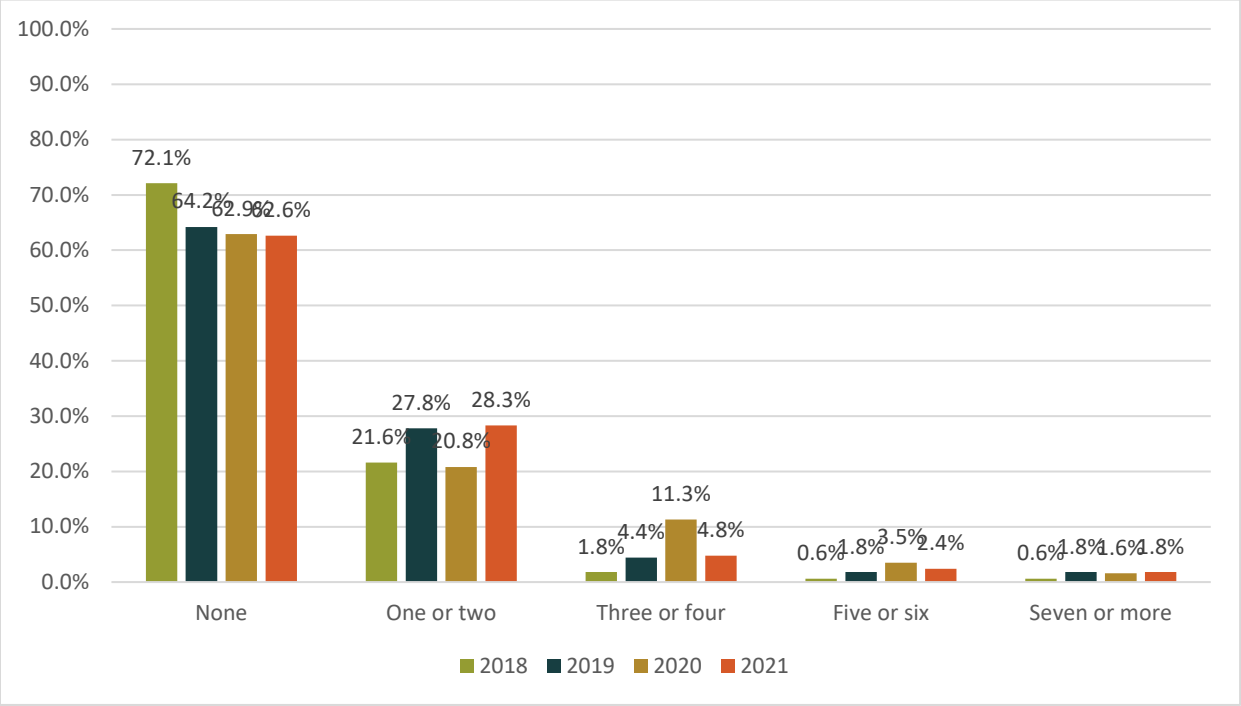


Section 3: Sustainability Curriculum Development

The survey also 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 = 1,843; Figure 8). Similar to 2020, the most common respons to this question in 2021 was "None" (62.6%; 2019 = 64.2%) or "One or two" courses (28.3%; 2020 = 20.8%).

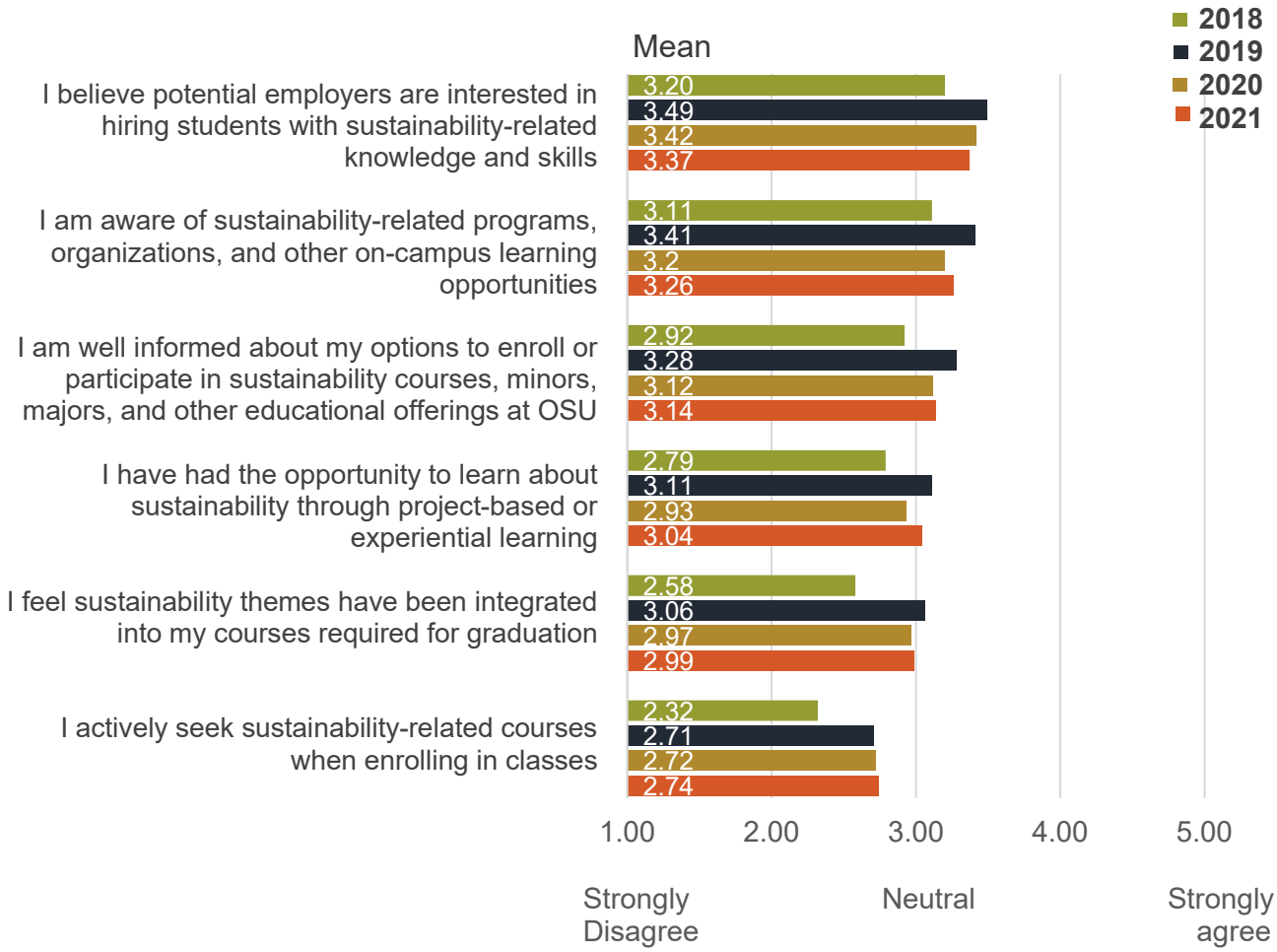
Figure 8. Number of courses taken with a focus on sustainability at OSU.



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 =

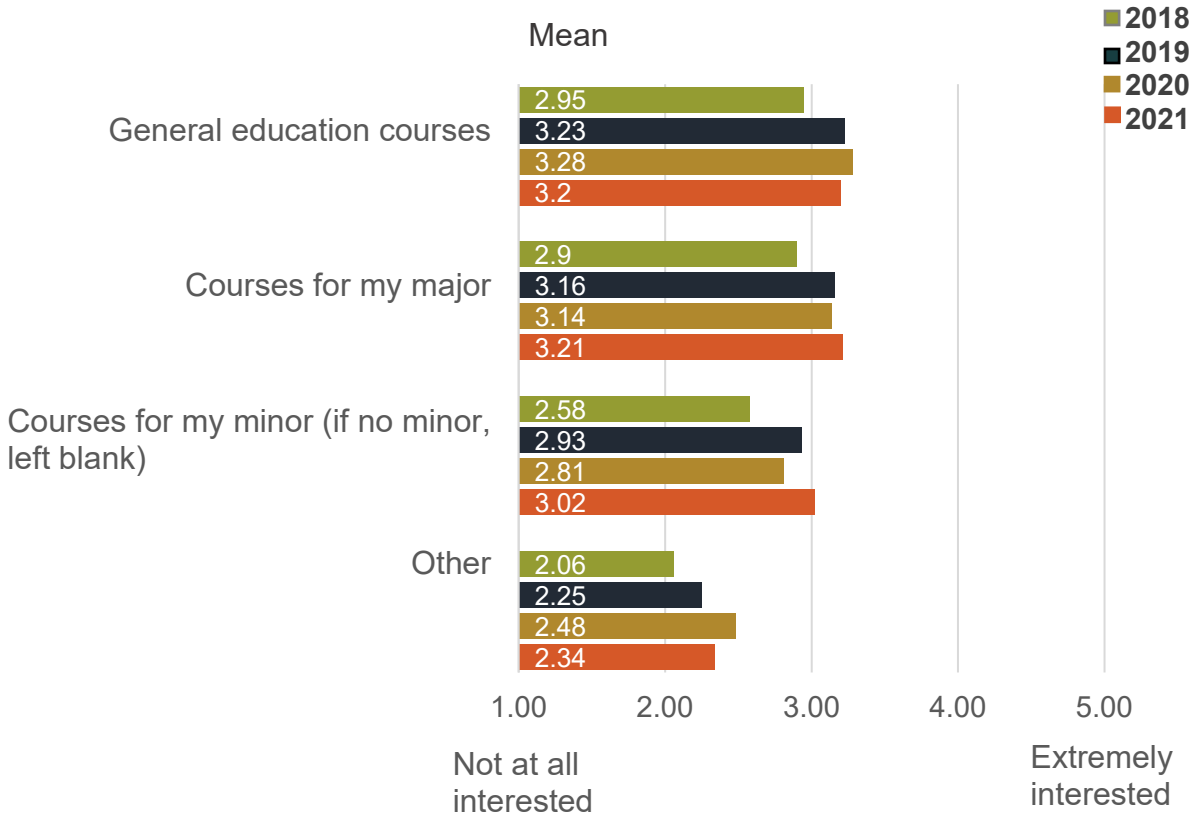
941). See Figure 9 for average scores per item. Some notable trends in this data are how highly students agree that sustainability-related knowledge and skills are valued by potential employers, as well as their awareness of sustainability-related opportunities on campus. However, they generally do not 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 9. Agreement with statements about beliefs and actions related to sustainability education.



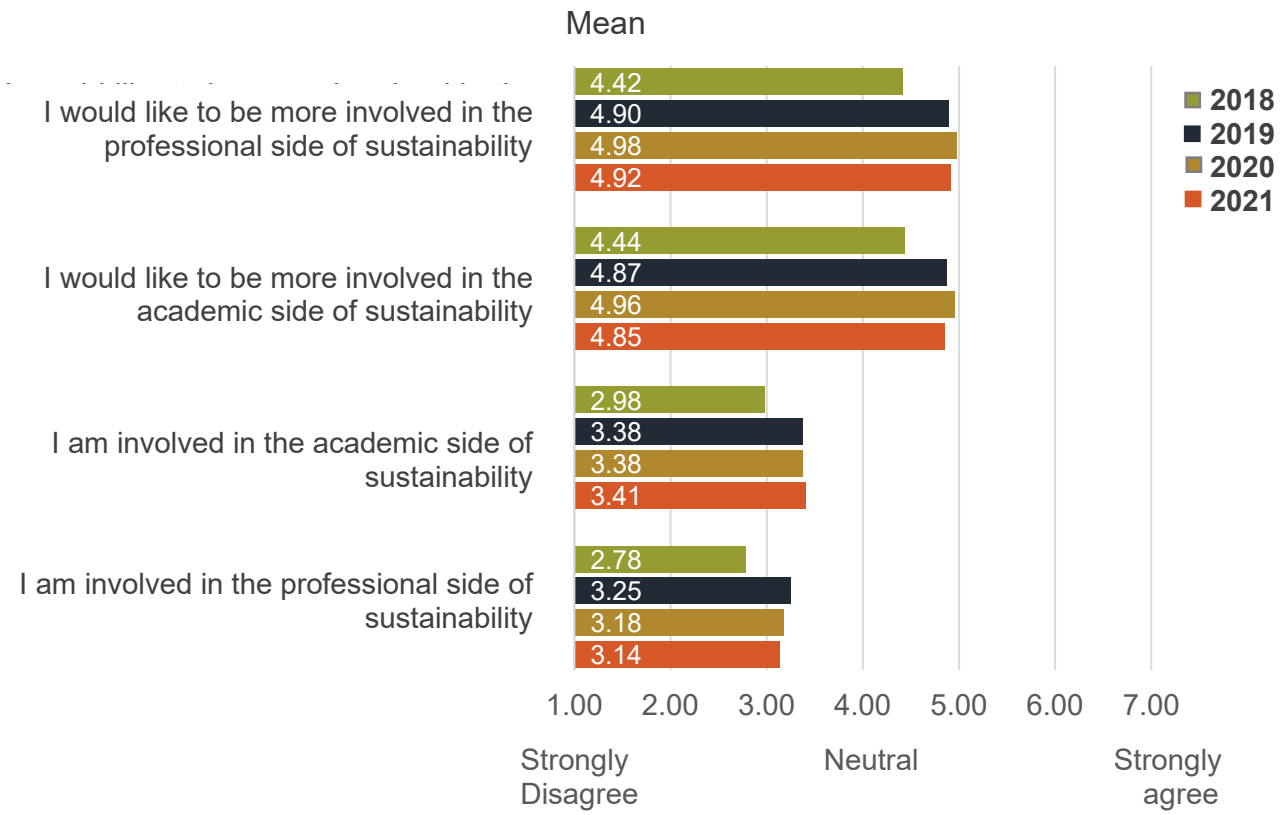
Next, students were asked to rate their interest with four different kinds of sustainability courses or content at Ohio State on a 1 – 5 “not at all interested” to “extremely interested” scale (N = 152—944). See Figure 1.5 below for average scores per item and Figure 1.6 for between major comparisons. 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 10 suggests more interest among UENG students in major courses with a focus on sustainability, and the least interest among EHE students.**

Figure 10. Average student interest in sustainability courses at OSU



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 11 for average scores per item.

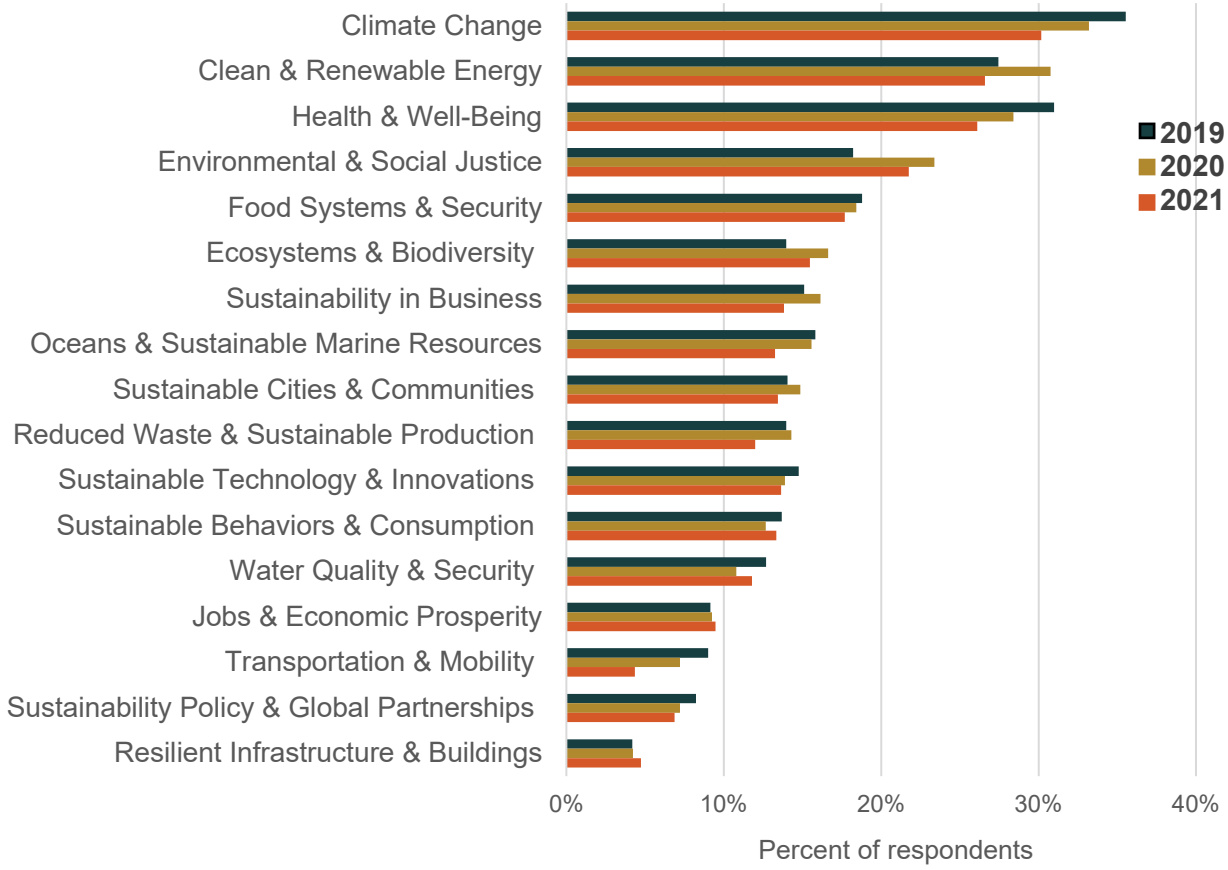
Figure 11. Current and desired involvement in academic and professional aspects of sustainability.



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.

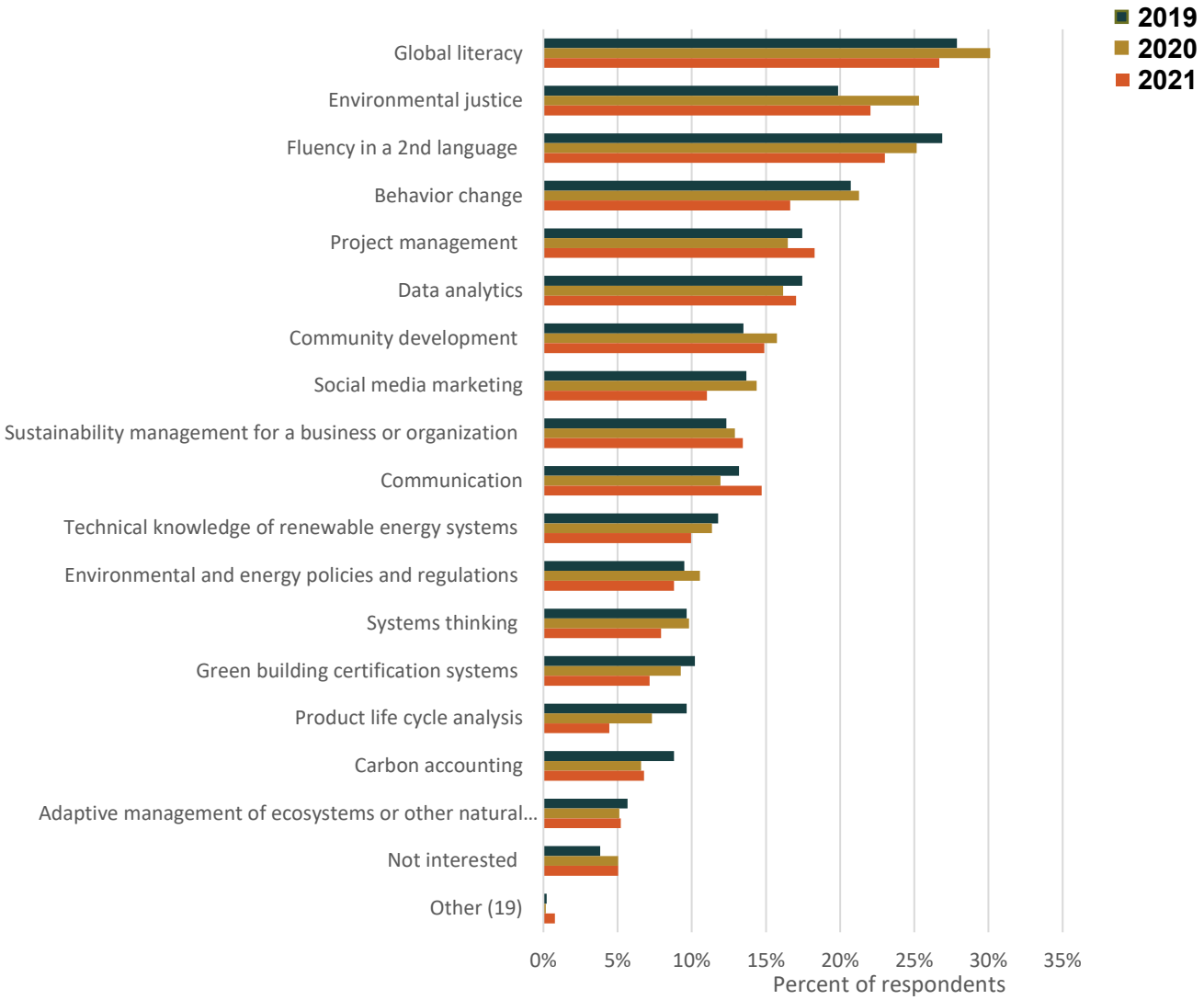
Students were also asked to choose three topics they would like to learn more about through taking sustainability-related courses at Ohio State (N = 1,034). As seen in Figure 12, climate change, health & wellbeing, and clean & renewable energy are still the most popular topics overall, and trends in 2021 largely followed 2020.

Figure 12. Percent of students that chose 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 13). 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.

Figure 13. Percent of students that chose each preferred sustainability-related skill for professional development.



Section 4: Sustainability Knowledge Assessment

We assessed student knowledge of sustainability topics and issues using the 12-item "ASK" (Assessment of Sustainability Knowledge) scale developed by Zwickle and Jones (2018), which measures knowledge related to ecological, economic, and social aspects of sustainability. Students were asked to answer multiple-choice quiz questions to the best of their ability. (Note that we did not include a "do not know" option, so scores may be slightly inflated due to additional guessing. Questions that students viewed but skipped were still counted as 'incorrect', however).

Overall, **student knowledge of sustainability and environmentally-related topics was high**, with an average of 8.5 items correct out of 12 (SD = 2.23), or 71% correct. With a couple of exceptions, the percent of students answering correctly has stayed largely the same across questions since 2018. Students remained correct on more technical questions such as the purpose of ozone (90.6% correct), the biggest global emitter of greenhouse gases (89.7% correct) and describing changes in the wealth gap in America (92.8% correct; Tables 3.1, 3.2). **We also see a slight improvement in identifying lifestyle behaviors impacting the environment, with a higher percentage of students correctly answering question 12 (ordering several behaviors from most to least environmentally impactful).** However, one major misconception worsened among students, particularly in relation to causes of pollution. In 2021, 36.6% of students incorrectly answered that waste dumped by factories is the main cause of pollution of streams and rivers (in 2018 the percent answering incorrectly was 24.1%). This and other lower-score items could point to potential gaps in student understanding where education or interventions could be targeted in the future.

It is also possible to estimate changes in sustainability knowledge by comparing answers between the 2014 and 2020 versions of this survey. The average student score in 2014 was 6.93 out of 12 items (SD = 3.05), or 58% correct. Taking into consideration some scale changes, this result suggests that **students in 2021 are, on average, getting the correct answer on 1.5 more questions than students in 2014.**

Table 3.1. Responses to ASK items in 2018, 2019, 2020, and 2021.

ASK Question	Correct Answer / Most Common Incorrect Answer (2020)	% Correct (2021) N = 1959 / % Incorrect (2021)	% Correct (2020) N = 2478 / % Incorrect (2020)	% Correct (2019) N = 3276 / % Incorrect (2019)	% Correct (2018) N = 2872 / % Incorrect (2018)
1) What is the most common cause of pollution of streams and rivers?	"Surface water running off yards, city streets, paved lots, and farm fields"	42.6%	41.1%	44.4%	50.8%
	"Waste dumped by factories"	36.6%	39.0%	36.3%	24.1%
2) Ozone forms a protective layer in the earth's upper atmosphere. What does ozone protect us from?	"Harmful UV rays"	90.6%	88.6%	90.5%	87.3%
	"Climate change"	4.4%	5.2%	4.2%	5.4%
3) Which of the following is an example of sustainable forest management?	"Never harvesting more than what the forest produces in new growth"	78.5%	77.2%	78.0%	76.1%
	"Setting aside forests to be off limits to the public"	14.8%	15.3%	16.5%	15.1%
4) Of the following, which would be considered living in the most environmentally sustainable way?	"Reducing consumption of all products"	68.7%	68.3%	70.9%	65.6%
	"Recycling all recyclable packaging"	21.2%	20.1%	19.2%	20.8%
5) Which of the following is the most commonly used definition of sustainable development?	"Meeting the needs of the present without compromising the ability of future generations to meet their own needs"	81.6%	81.3%	84.5%	80.7%
	"Creating a government welfare system that ensures universal access to education, health care, and social services"[1]	7.6%	--%	--%	--%
6) Over the past 3 decades, what has happened to the difference between the wealth of the richest and poorest Americans?	"The difference has increased"	92.8%	90.6%	89.5%	85.0%
	"The difference has stayed about the same"	4.6%	5.3%	7.5%	9.9%

Table 3.2. Responses to ASK items in 2018, 2019, 2020, and 2021.

7) Many economists argue that electricity prices in the U.S. are too low because	"They do not reflect the costs of pollution from generating the electricity"	68.0%	69.3%	69.9%	68.1%
	"Electric companies have a monopoly in their service area"	22.3%	20.4%	21.3%	19.9%
8) Which of the following is the most commonly used definition of economic sustainability?	"Long term profitability"	57.3%	58.9%	57.3%	56.6%
	"When costs equal revenue"	28.1%	26.9%	28.2%	26.9%
9) Which of the following countries passed the U.S. to become the largest emitter of the greenhouse gas carbon dioxide?	"China"	89.7%	88.7%	89.8%	86.5%
	"Japan"	4.0%	4.2%	3.9%	5.2%
10) Which of the following is a leading cause of the depletion of fish stocks in the Atlantic Ocean?	"Fishermen seeking to maximize their catch"	33.5%	31.2%	31.3%	29.0%
	"Ocean pollution"	40.0%	42.6%	43.1%	45.1%
11) Which of the following is the best example of environmental justice?	"All stakeholders from an indigenous community are involved in setting a quota for the amount of wood they can take from a protected forest next to their village"	82.2%	81.8%	81.7%	75.2%
	"The government dams a river, flooding Native American tribal lands to create hydro-power for large cities"	8.0%	6.5%	7.5%	9.6%
12) Put the following list in order of the activities with the largest environmental impact to those with the smallest environmental impact:	"Flying in a commercial airplane from Washington D.C. to China" > "Producing one McDonald's quarter-pound hamburger" > "Producing one McDonald's chicken sandwich" > "Keeping a cell phone charger plugged into an electrical outlet for 12 hours"	57.0%	58.1%	57.7%	45.2%
	"Flying in a commercial airplane from Washington D.C. to China" > "Keeping a cell phone charger plugged into an electrical outlet for 12 hours" > "Producing one McDonald's quarter-pound hamburger" > "Producing one McDonald's chicken sandwich"	28.3%	26.0%	26.9%	33.0%

[1]The incorrect answer for question 5 changed from "Setting aside resources to be used for preservation, never to be used," in 2018-2020, to, "Creating a government welfare system that ensures universal access to education, health care, and social services," in 2021.

Section 5: Next Steps and Acknowledgements

Next steps: Currently plans are in place to repeat the campus sustainability survey in 2022. 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.

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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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