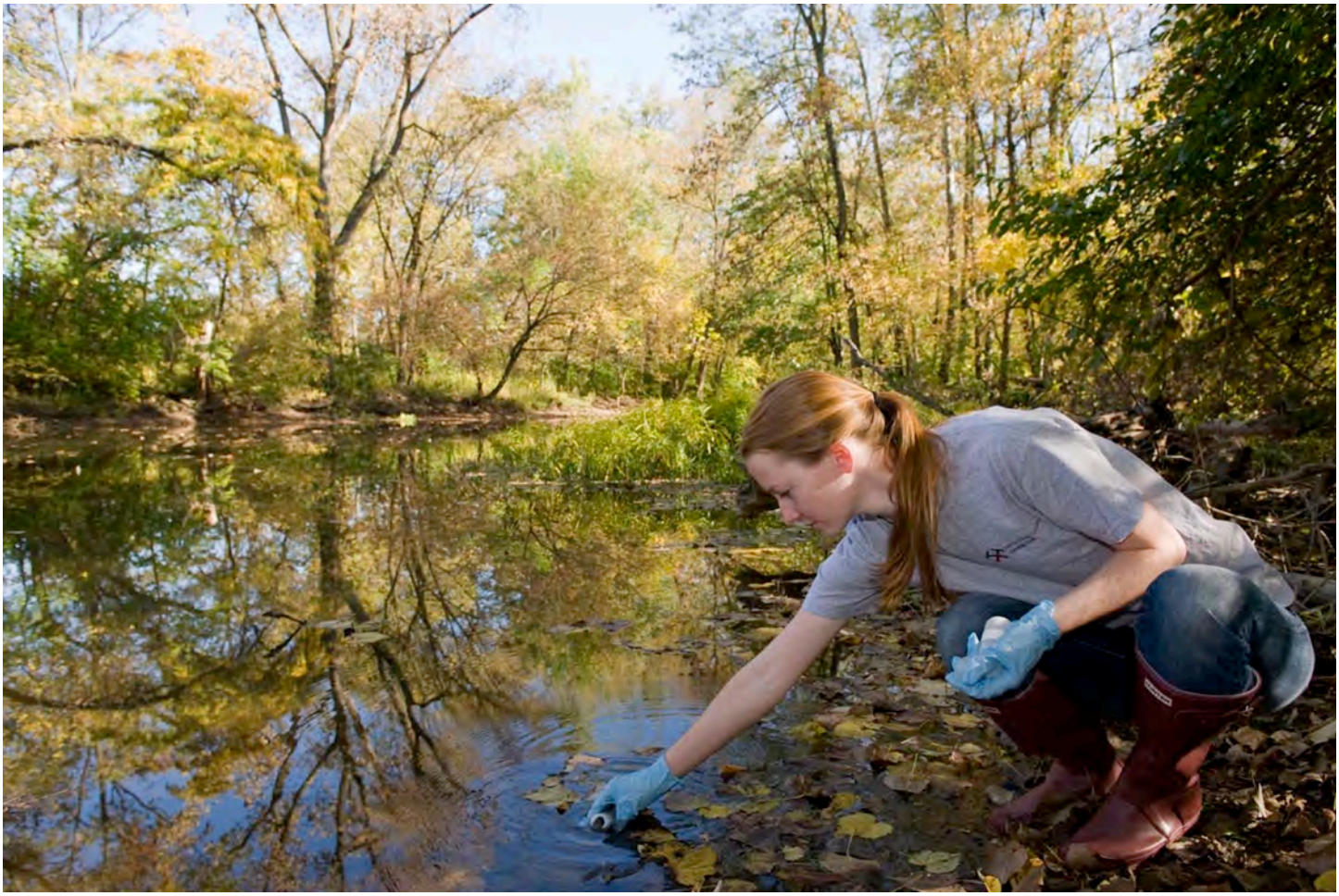
SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES

Environmental Behaviors of Ohio State University Students

A Descriptive Report from the Environmental and Social Sustainability Lab
(ESSL DR2-2013)



THE OHIO STATE UNIVERSITY
COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

About the Environmental and Social Sustainability Lab

The Environmental and Social Sustainability (ESS) Lab is a community of scholars working to build scientific understanding of environmental and social sustainability in an interdisciplinary context. We collaborate to describe, analyze, and communicate environmental problems and potential solutions. We are staffed by a core group of affiliated faculty members and students representing a range of social sciences with focus on the environment and natural resources. In addition to a core of faculty leaders, the Environmental and Social Sustainability (ESS) Lab serves as a clearing-house, tailored to particular projects, by gathering research and support personnel from across the campus and nation as needed.

Author Contact Information:

Pranay Ranjan, ranjan.10@osu.edu
Tomas Koontz, koontz.31@osu.edu

School of Environment and Natural Resources
The Ohio State University
2021 Coffey Rd
Columbus, OH 43210

Suggested Citation

Ranjan, P. and T. Koontz. 2013. *Environmental Behaviors of Ohio State University Students (ESSL DR2-2013).* The Ohio State University, School of Environment and Natural Resources.

Introduction

The second annual OSU Sustainability Survey was administered in April, 2013. The survey was administered to a random sample of 10,000 undergraduate students at the Ohio State University (OSU). As was the case last year, we distributed the survey in spring term. Our invitation and follow-up emails generated over 2,000 students clicking on the first page of the survey, and subsequently completion of the survey by 1,427 students, for an overall response rate of over 14 %. This is on par with many electronic surveys, and good for the length of the survey (over 20 minutes on average for completion). The survey included several questions about behaviors linked to the efforts undertaken by the OSU Office of Energy Services & Sustainability. For this report, two types of analyses have been done: overall responses and comparisons between on-campus respondents (30 % of the total) and off-campus respondents (70% of the total).

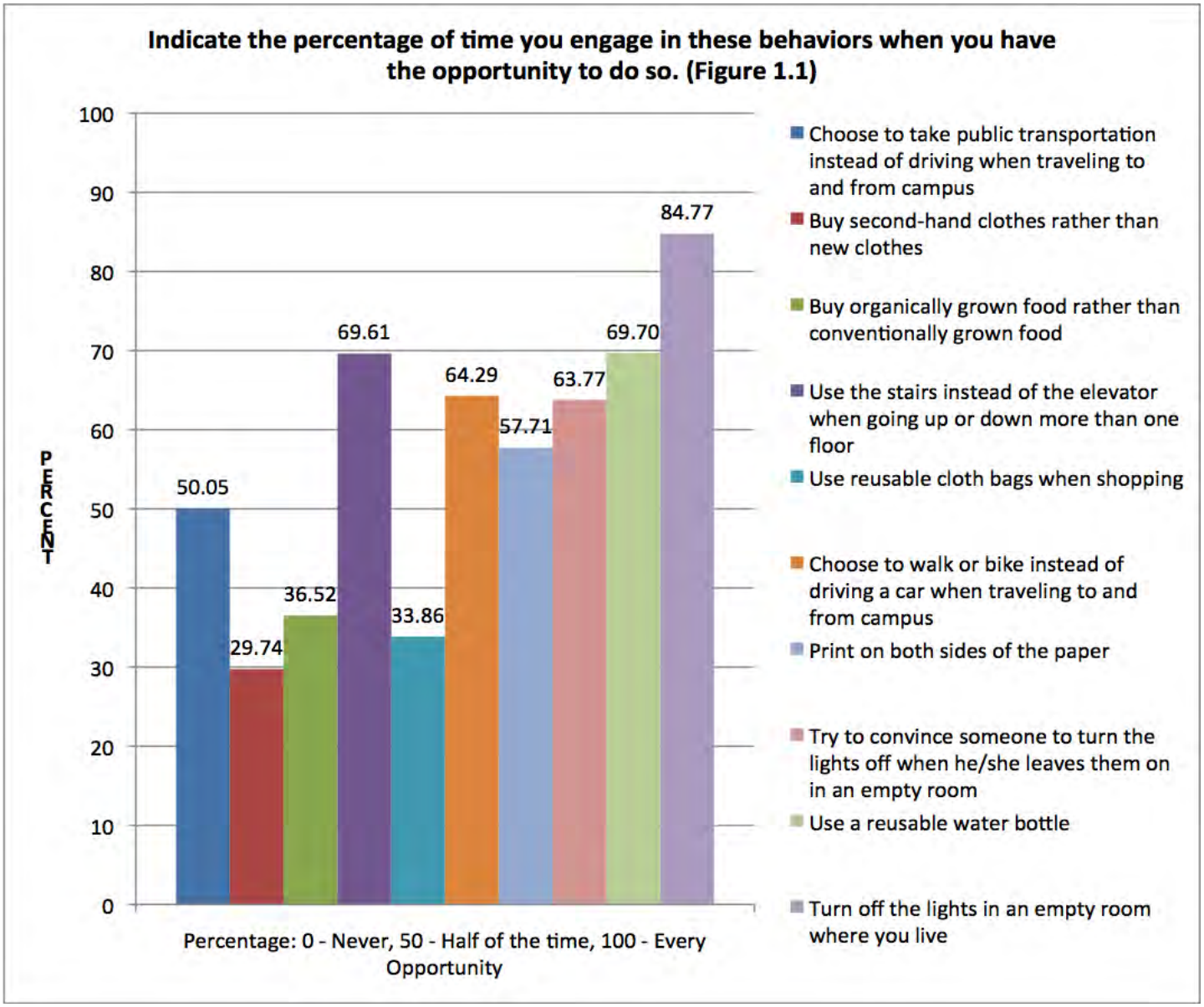
Our results indicate that overall, respondents engage in different pro-environmental behaviors at different rates. While turning off lights in an empty room is reported with high frequency, taking public transportation when traveling to and from campus is not. Focusing on several behaviors related to energy use, we find that off-campus respondents report more pro-environmental behavior. With regard to factors thought to affect pro-environment behavior, we see similarities with on-campus respondents in (1) beliefs about the links from behaviors to environmental impacts and (2) perceived behavioral control, but differences in (3) norms promoting such behaviors. Our data on three referent groups (family, friends, and OSU student body) indicate that family members provide the strongest behavioral cues about pro-environment behavior norms, and that respondents report engaging in one particular pro-environmental behavior – turning out the lights – more than they think other OSU students do.

In the Conclusion section we suggest several possibilities for increasing efforts to promote pro-environment behaviors related to energy.

1. Engaging in pro-environmental behavior

Students were provided a list of 10 pro-environment behaviors and asked to indicate the percentage of times they engaged in these behaviors whenever they had the opportunity to do so (see Fig. 1.1). The behavior in which students most often engaged was turning off lights in an empty room, with a response of approximately 85%. Using a reusable water bottle and using stairs instead of elevator, were the next most frequent behaviors, with a response of about 70%. Behavior in which students engaged least was buying second-hand clothes rather than new clothes (about 30%). Note that the most frequent behaviors are those that are relatively easy to do.

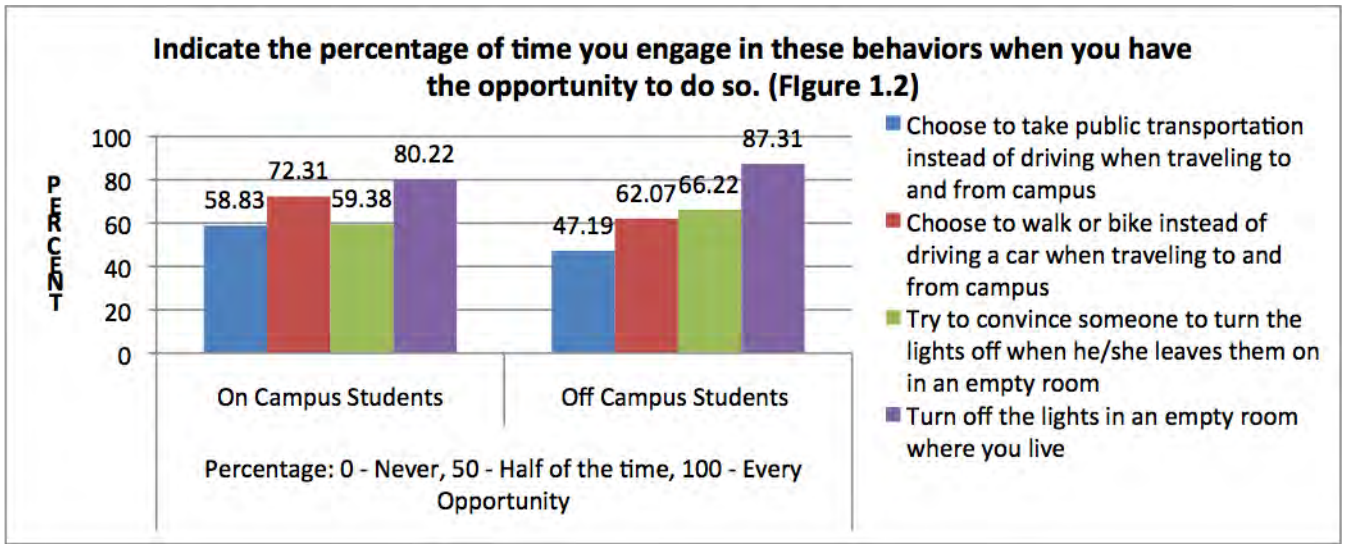
From the list of 10 pro-environment behaviors, 4 behaviors especially relevant to the efforts by Energy Services and Sustainability are the following: choosing to take public transportation, choosing to walk or bike, turning the lights off in an empty room, and trying to convince someone else to turn the lights off in an empty room. Survey results indicate that students choose to take public transportation instead of driving, when traveling to and from campus, only half of the time they have the opportunity to do so. In comparison, students engaged in pro-environmental behaviors of trying to convince someone to turn the lights off in an empty room and choosing to walk or bike instead of driving a car when traveling to and from campus, more often with a mean response of approximately 64% each.



For the second level of analysis (comparing on-campus to off-campus students), four specific behaviors were selected, as indicated in the graphs below. Both on-campus and off-campus students engaged frequently in turning off lights in an empty room, with a response of approximately 80% and 87% respectively. Interestingly, off-campus students indicated a higher engagement in the behavior of turning off lights in an empty room where they live, compared to on-campus students, with a difference of 7%. One possible reason for this difference is that most off-campus housing requires payment of electricity bills based on usage. However, for on-campus students, especially those living in dorms, there is no such requirement. Another possible explanation is a difference in norms, which is discussed later in this report.

A difference of approximately 10% was found between on- and off- campus students for the behaviors of choosing to take public transportation, and choosing to walk or bike. For both the behaviors, on-campus students had a higher response. Choosing to take public transportation is a feasible and also convenient option for on-campus students as they have easy access to the Campus Area Bus Service (CABS).

Both turning off lights and transportation behaviors are consistent in suggesting higher frequency of behaviors that are easier or more feasible to do.

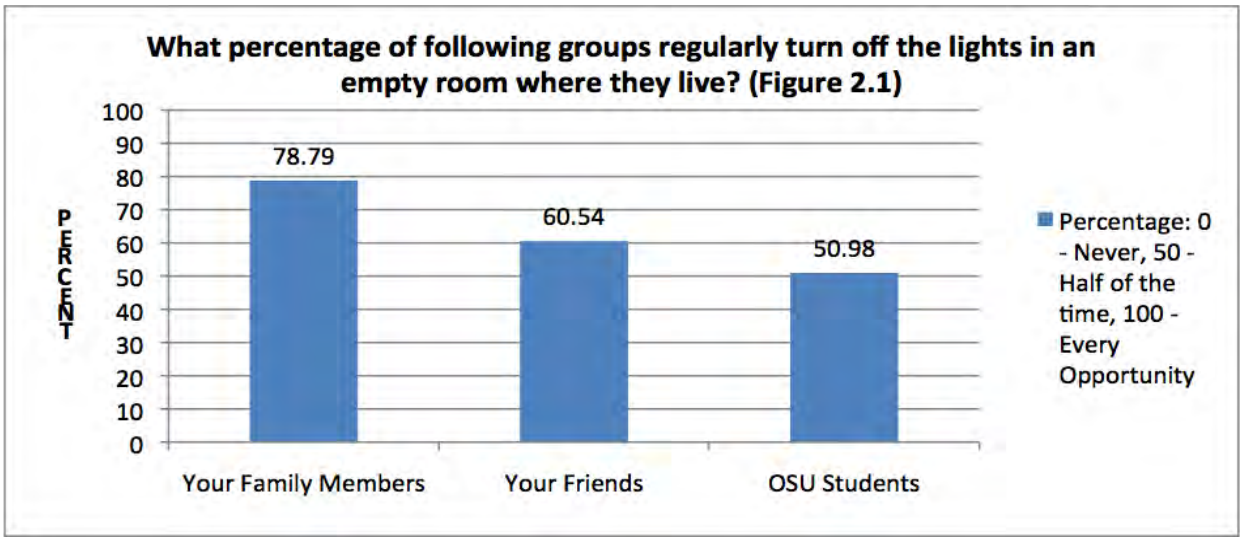


2. Pro-environment behavior of three referent groups - family members, friends, and OSU students

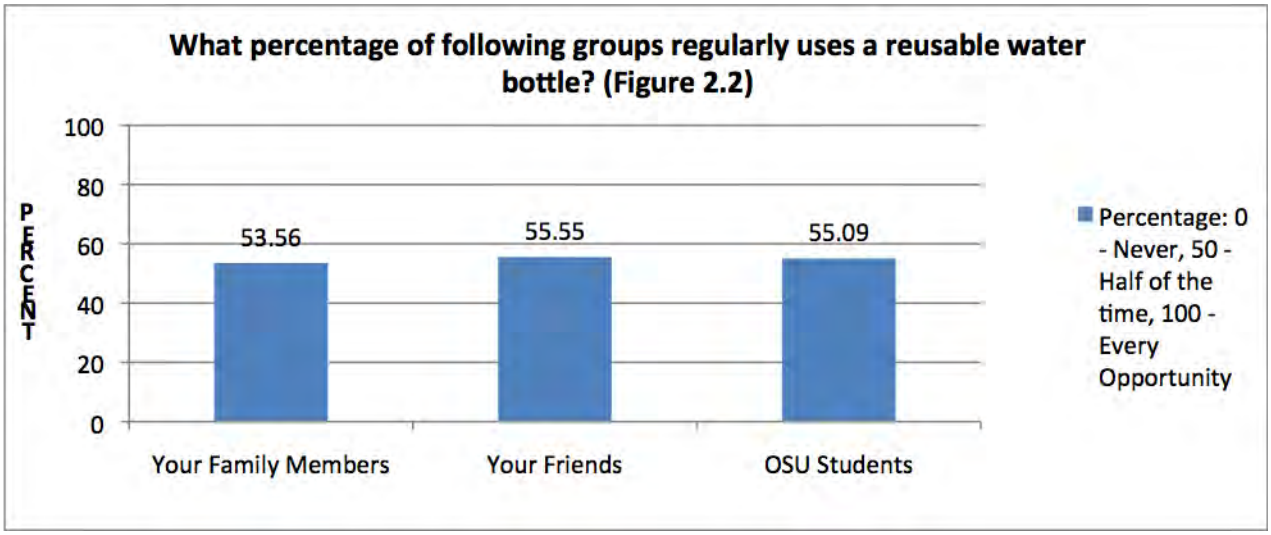
Norms can guide behavior as an individual looks to social cues from “important others” (referent groups) in deciding which actions to take. The influence of norms can vary depending on several factors, including an individual’s perception of how “important others” behave, and how much the

individual seeks to be like the referent group. OSU students have several different referent groups that may be important for their behavior, including family, friends, and the OSU student body. Respondents were asked to indicate the percentage of the three referent groups (family, friends, and the OSU student body) which regularly engaged in listed pro-environmental behaviors (see Fig. 2.1). Three pro-environmental behaviors were selected for this question – turning off lights, using reusable water bottle, and buying second hand clothes.

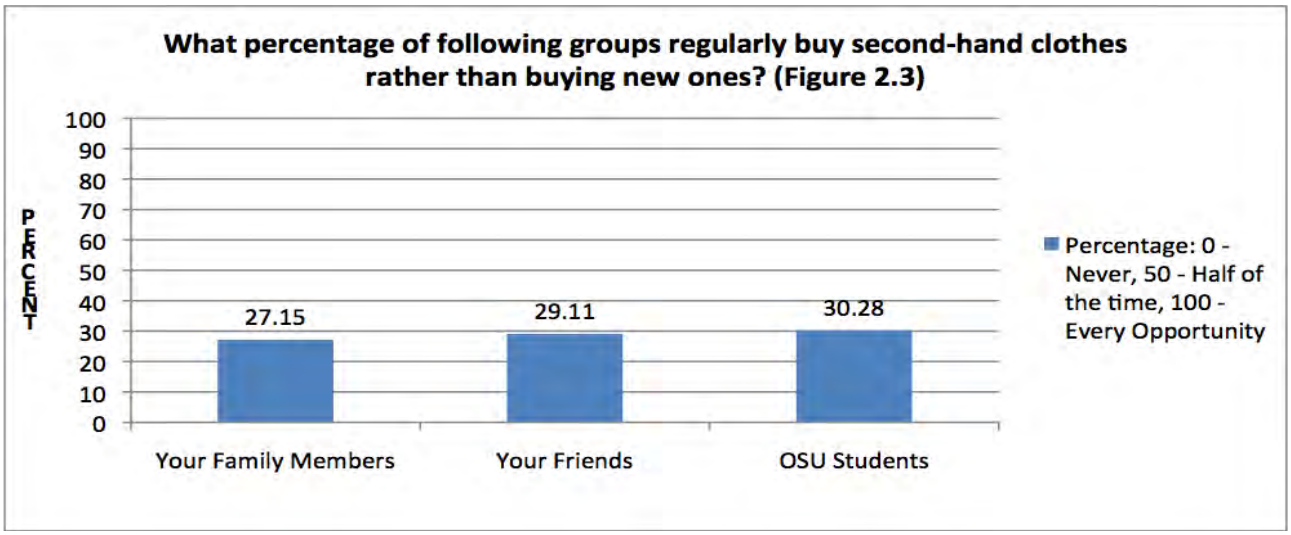
Turning of lights was a behavior for which students indicated a wide difference in engagement by each referent group. Approximately 79% of family members of respondents engaged in regularly turning off lights in an empty room where they live (see Fig. 2.1). About 61% of friends of respondents were reported to engage in this behavior, and only about 51% of OSU students.



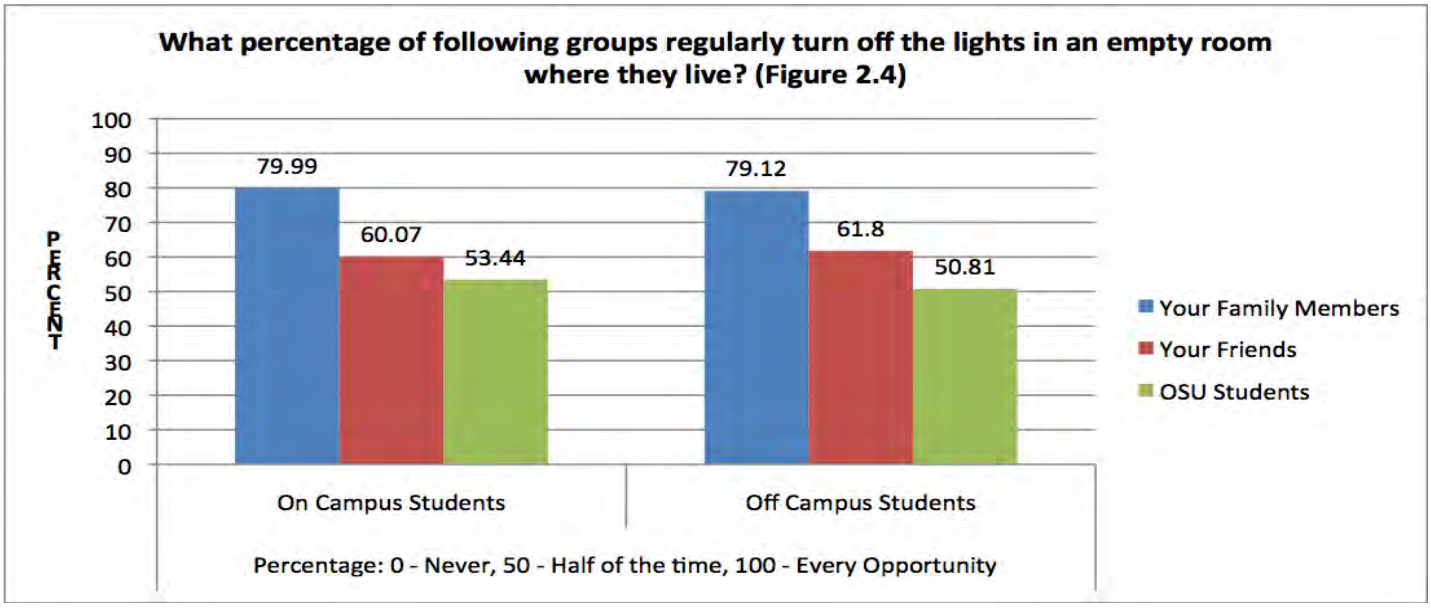
In contrast, the reported levels of use of reusable water bottles was similar across all three referent groups (see Fig. 2.2).



Buying second hand clothes elicited the lowest percentage of response, compared to other two behaviors, for all three groups. This finding is also in line with findings from previous section where respondents indicated that they engaged in buying second hand clothes only about 30% of the time (see Fig. 2.3).



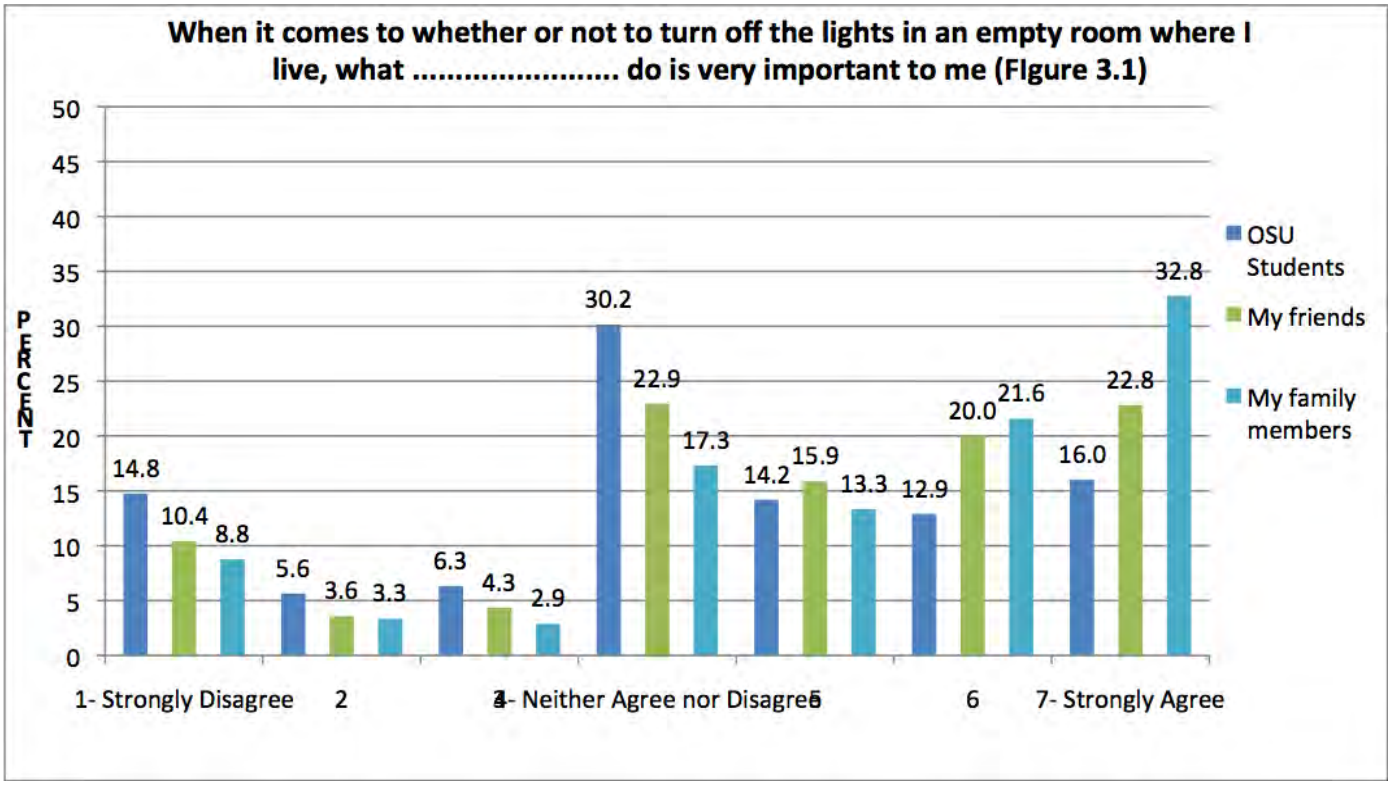
For the second level of analysis, the specific behavior of turning off lights was selected. A comparison across on-campus and off- campus students with respect to this behavior elicited similar responses. Both the groups indicated that approximately 79% of their family members and about 61% of their friends regularly engaged in turning off lights in an empty room where they live (see Fig. 2.4). An interesting finding was that whether a respondent lived on-campus or off-campus, it did not change their perception of the percentage of times OSU students engaged in turning off lights. Both groups believed that OSU students engaged in regularly turning off lights in an empty room where they live, only half of the time.

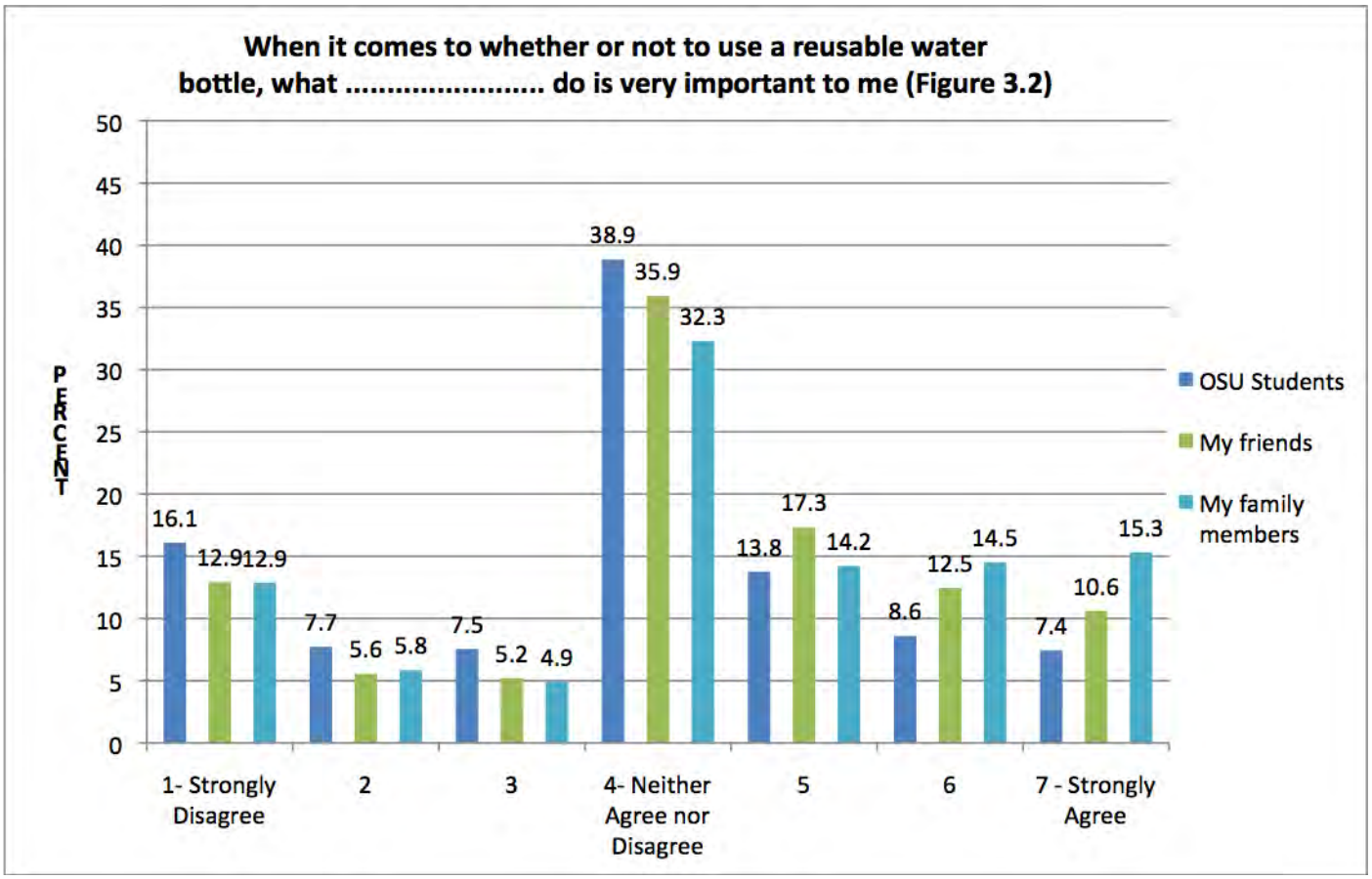


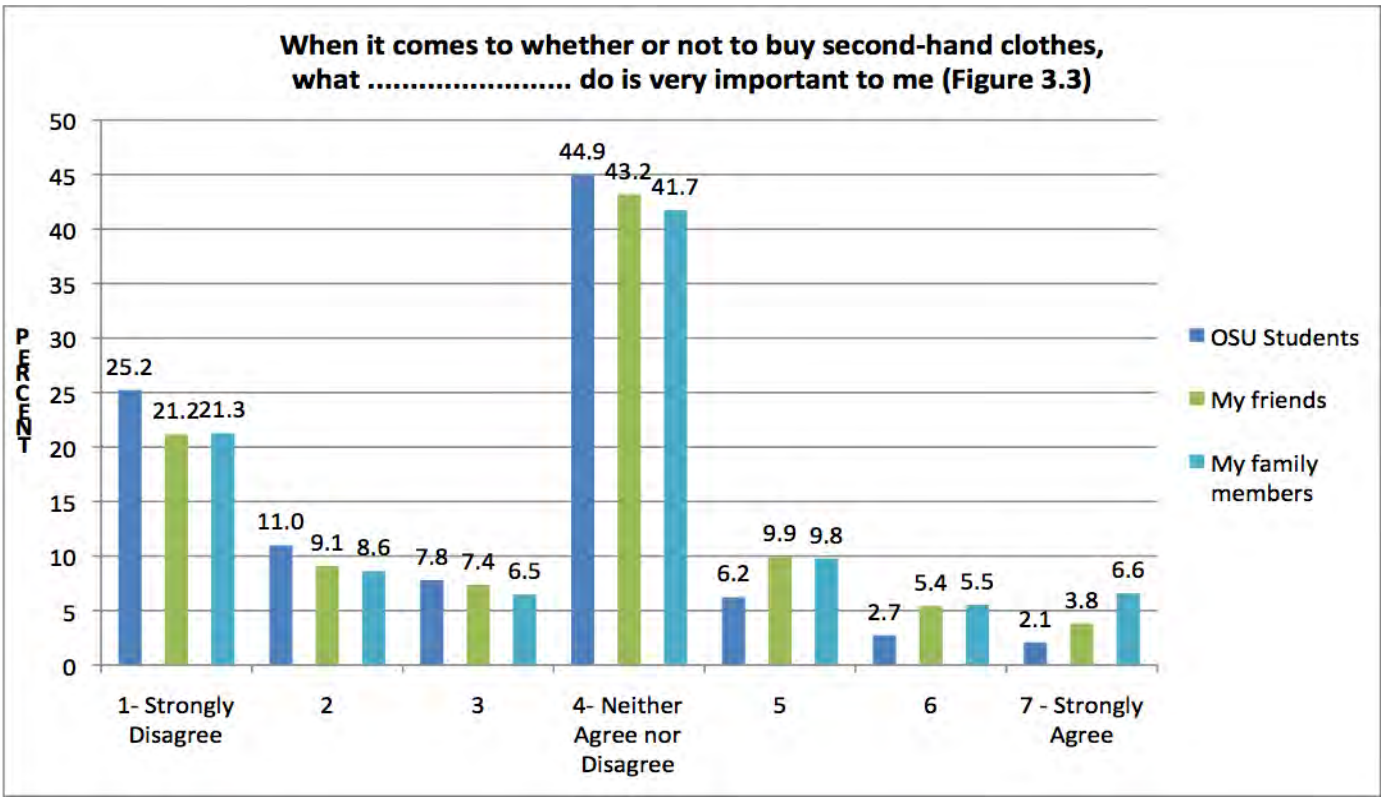
3. Influence of family members, friends, and OSU student body on pro-environment behaviors

The influence of norms depends in part on how much the individual seeks to be like the referent group. For this question, respondents were asked to indicate how much their behavior was affected by the behaviors of the three referent groups (family, friends, and OSU student body). In other words, how powerful are the cues from each of these groups? Like the previous question, three pro-environment behaviors were selected: turning off lights, using reusable water bottle, and buying second hand clothes. For the behavior of regularly turning off lights in an empty room, approximately 68% of respondents indicated that what their family members did was very important to them (scores of 5, 6, or 7 on the 7-point scale) (see Fig. 3.1). For the same behavior, the importance of the respondent's friend's behavior and of OSU students elicited approximate responses of 59% and 43%, respectively. For the behavior of using a reusable water bottle, 44%, 40%, and 30% of respondents agreed that the behavior of family members, friends, and OSU students, respectively, was very important in affecting the respondent's own behavior (see Fig. 3.2). Similarly, for the behavior of buying second-hand clothes, 22%, 19% and 11% of respondents agreed that the behavior of family member, friends, and OSU students was very important in affecting the respondent's own behavior (see Fig. 3.3).

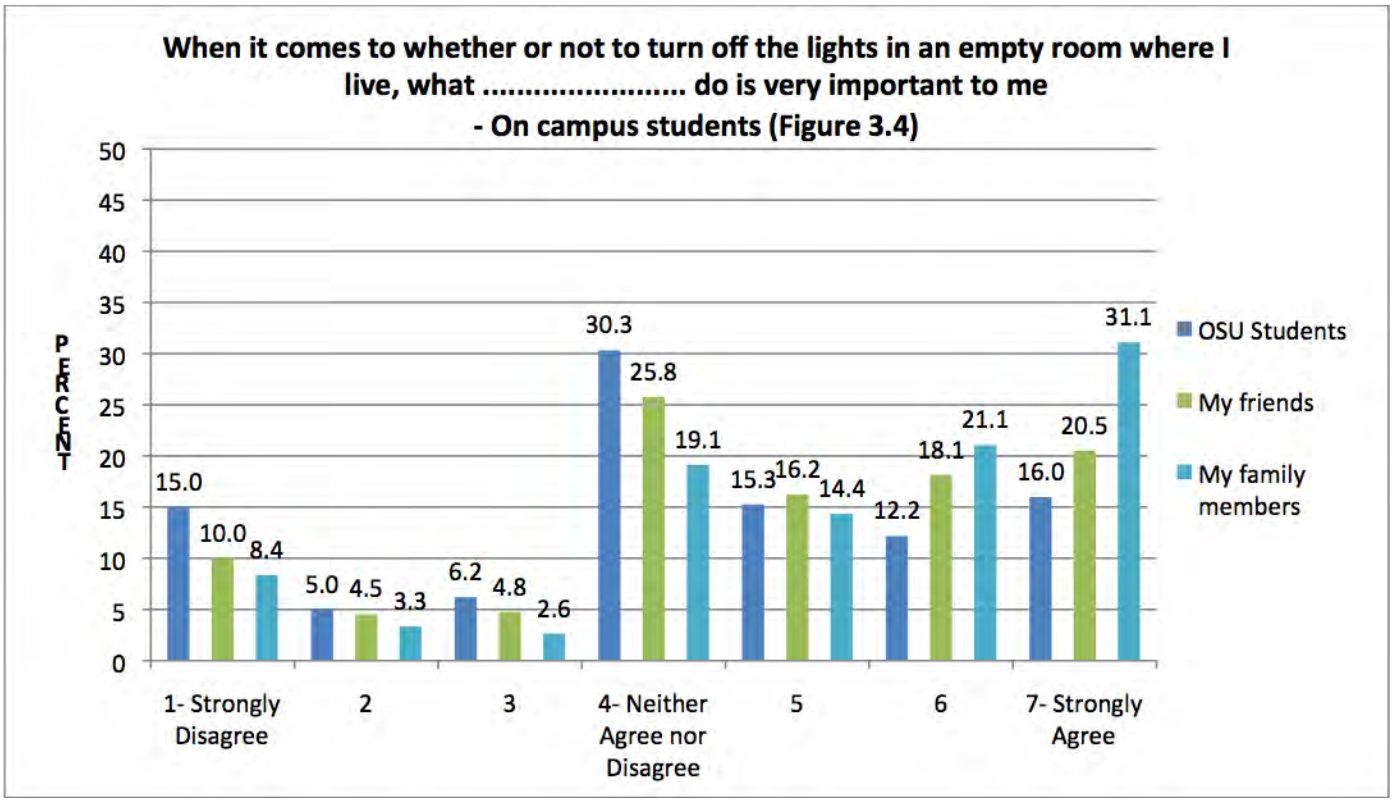
There are two important points that emerge from this analysis. First, the pro-environment behavior of turning off lights elicits the greatest influence from important others, compared to the other two behaviors. This indicates that regularly turning off lights in an empty room is a behavior for which respondents feel that it is very important what the three groups do. Secondly, of the three groups, with respect to turning off lights in an empty room, what a student's family member does is most important to them, whereas behavior of OSU students is least important.

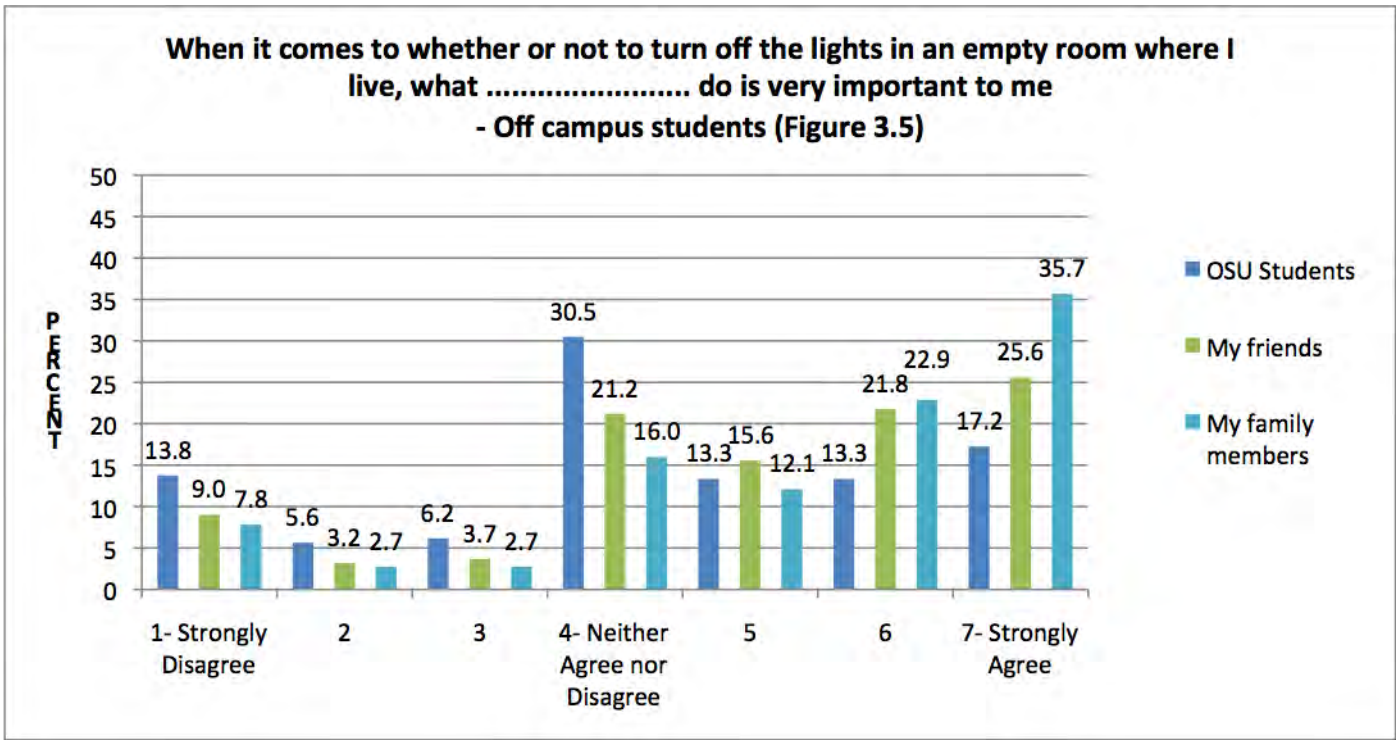

When it comes to whether or not to turn off the lights in an empty room where I live, what ..... do is very important to me (FIgure 3.1)
PERCENT
50
45
40
35
30
25
20
15
10
5
0
14.8
10.4
8.8
5.6
3.6
3.3
6.3
4.3
2.9
30.2
22.9
17.3
14.2
15.9
13.3
12.9
20.0
21.6
16.0
22.8
32.8
OSU Students
My friends
My family members
1- Strongly Disagree
2
3
4- Neither Agree nor Disagree
5
6
7- Strongly Agree


When it comes to whether or not to use a reusable water bottle, what ..... do is very important to me (Figure 3.2)
PERCENT
50
45
40
35
30
25
20
15
10
5
0
16.1
12.9
12.9
7.7
5.6
5.8
7.5
5.2
4.9
38.9
35.9
32.3
13.8
17.3
14.2
8.6
12.5
14.5
7.4
10.6
15.3
OSU Students
My friends
My family members
1- Strongly Disagree
2
3
4- Neither Agree nor Disagree
5
6
7 - Strongly Agree



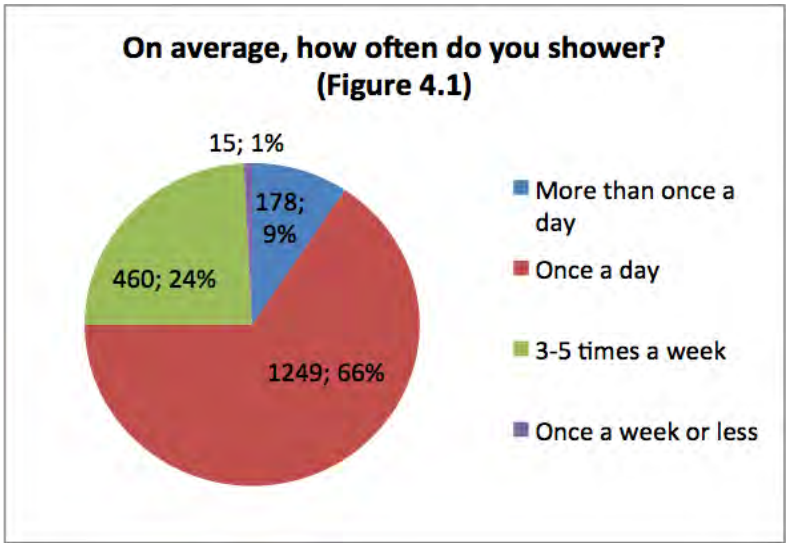
For the second level of analysis, a comparison across on-campus and off-campus respondents was carried out with respect to the behavior of regularly turning off lights in an empty room. Similar to the findings in the previous section, for both on-campus and off-campus respondents, what their family members do is very important to respondents, with 67% and 71%, respectively, agreeing with the statement (agreement level of 5, 6, or 7 on the 7-point scale) (see Fig. 3.4 and 3.5). However, the behaviors of OSU students for both on- and off- campus students did not appear to have much importance; agreement with the statement was just 44% for both on- and off- campus respondents.

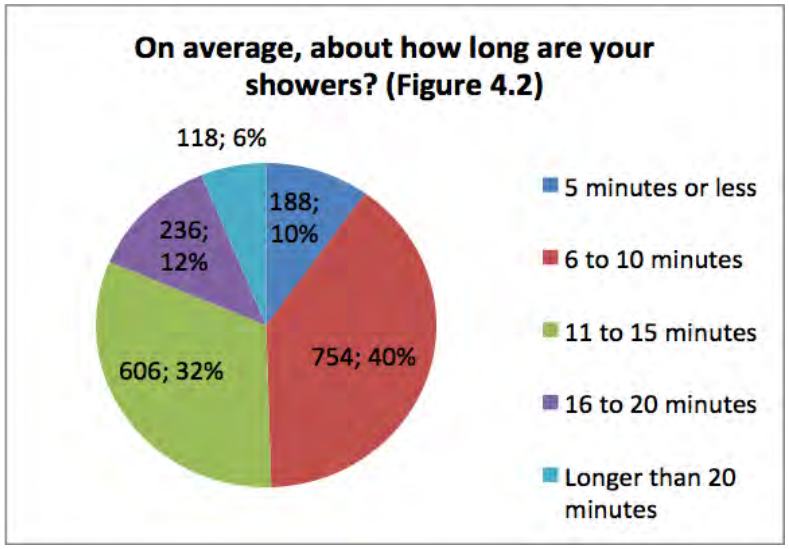

When it comes to whether or not to turn off the lights in an empty room where I live, what ..... do is very important to me
- On campus students (Figure 3.4)
PERCENT
50
45
40
35
30
25
20
15
10
5
0
15.0
10.0
8.4
5.0
4.5
3.3
6.2
4.8
2.6
30.3
25.8
19.1
15.3
16.2
14.4
12.2
18.1
21.1
16.0
20.5
31.1
1- Strongly Disagree
2
3
4- Neither Agree nor Disagree
5
6
7- Strongly Agree
OSU Students
My friends
My family members


When it comes to whether or not to turn off the lights in an empty room where I live, what ..... do is very important to me
- Off campus students (Figure 3.5)
PERCENT
50
45
40
35
30
25
20
15
10
5
0
13.8
9.0
7.8
5.6
3.2
2.7
6.2
3.7
2.7
30.5
21.2
16.0
13.3
15.6
12.1
13.3
21.8
22.9
17.2
25.6
35.7
1- Strongly Disagree
2
3
4- Neither Agree nor Disagree
5
6
7- Strongly Agree
OSU Students
My friends
My family members

4. Frequency and duration of showers

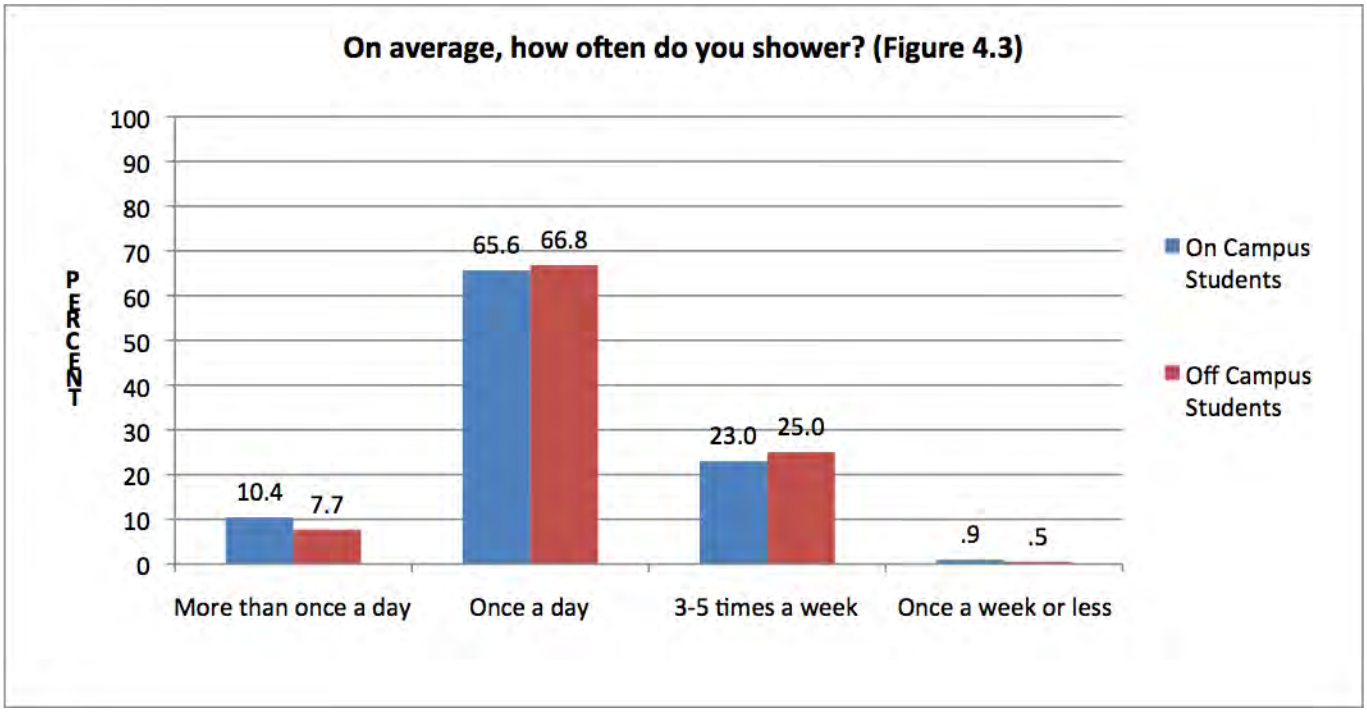
Taking showers represents usage of energy to warm the water. The amount of energy used varies depending upon both the frequency and duration of showers. Thus, respondents were asked to indicate how often and for how long they typically shower. Approximately 66% of respondents indicated that they showered once per day (Fig. 4.1). Almost 9% of respondents indicated that they showered more than once per day. In their response to duration of showers, approximately 72% of respondents indicated that they showered for between 6 and 15 minutes (Fig. 4.2). About 18% of respondents indicated that their shower lasted longer than 15 minutes.





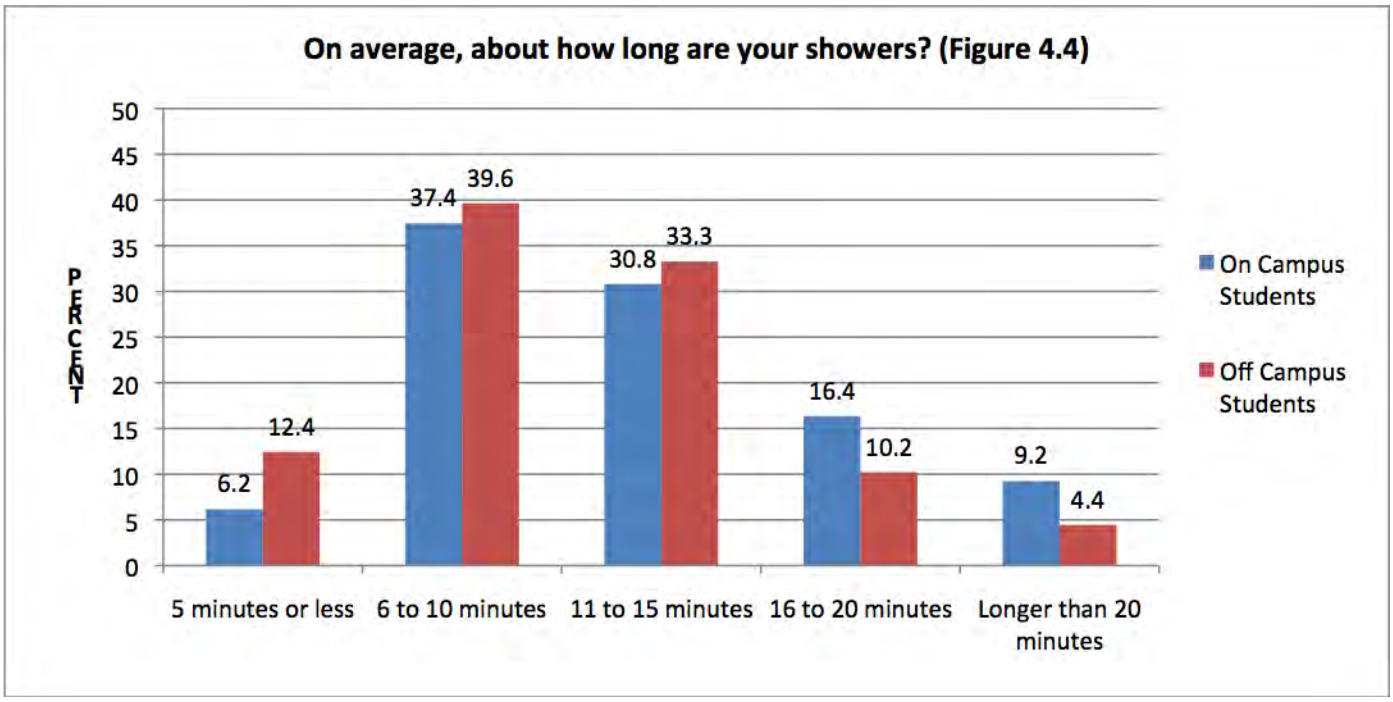
The second level of analysis comparing on-campus and off-campus respondents indicated that a higher proportion of on-campus respondents reported typically taking more than one shower per day

(Fig. 4.3). This difference might be related to the fact that most off-campus housing requires payment of energy bills depending upon usage, or that respondents living on campus are more likely to return to their dorm during the day, where they take showers.



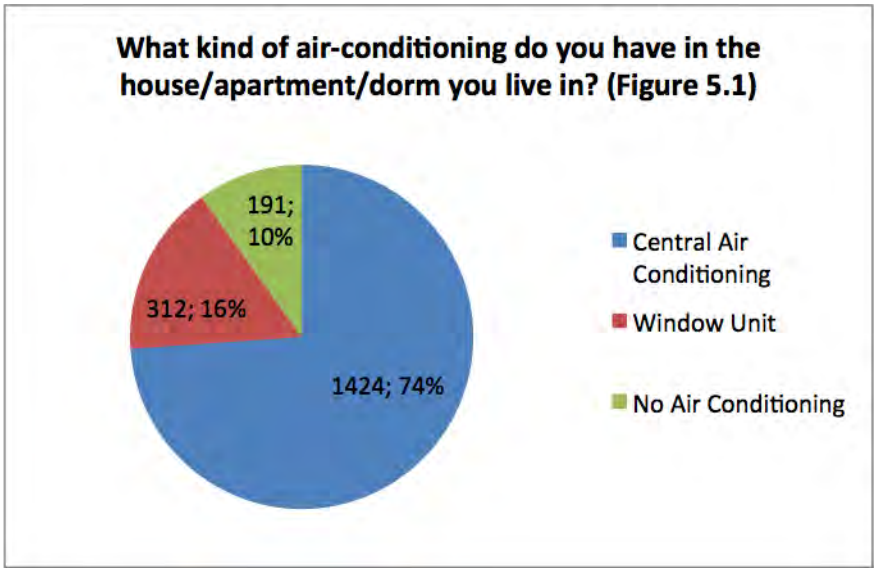
Interesting insights emerge on comparing the duration of showers across on campus and off campus students. A higher proportion of off-campus students indicated that they showered for less than 5 minutes, 6 to 10 minutes, and 11 to 15 minutes, whereas on-campus students indicated a higher propensity to take showers longer than 15 minutes (Fig. 4.4).

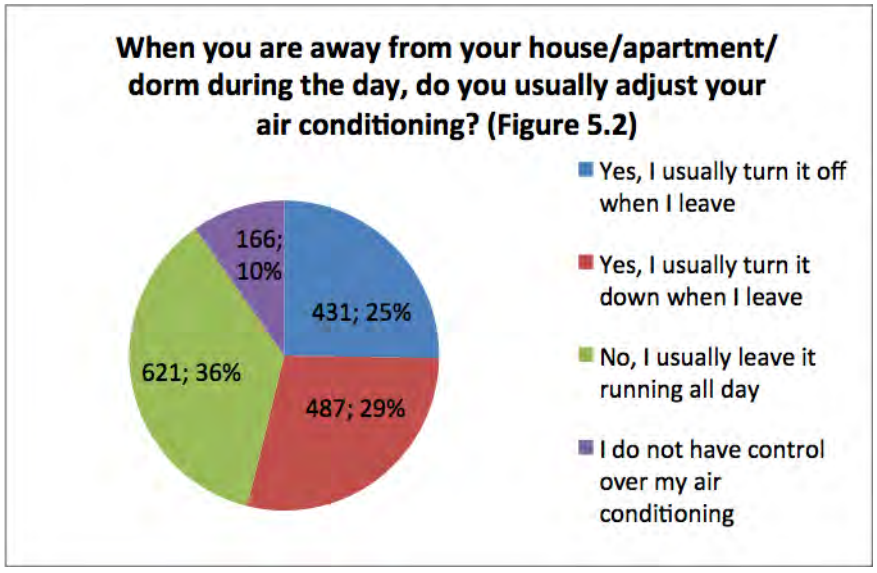
Combining the results from analyzing the frequency and duration of showers, the data suggest that on-campus students have a higher shower frequency, and also longer shower durations. These findings further support the possibility that most off campus students tend to care more about their energy and water consumption due perhaps to energy and water bills based on usage, and/or perhaps that on-campus students spend more time in their place of residence because it is closer to their classes.



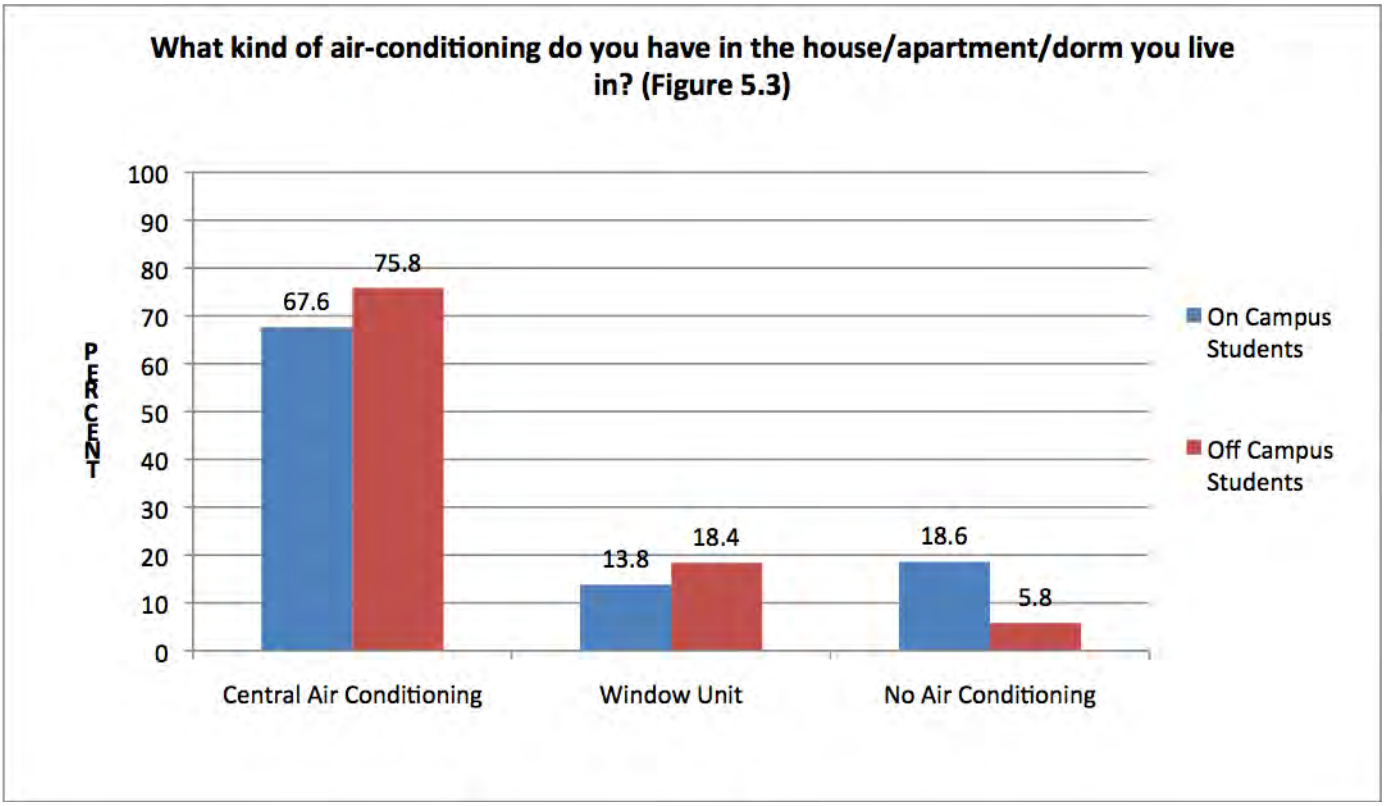
5. Air Conditioning Use

A major home electricity use in climates such as Columbus is air conditioning. Respondents were asked to indicate the kind of air conditioning they have and also to indicate how and whether they controlled its operation. Overall, 74% respondents indicated that they had a central air conditioning system in the house/apartment/dorm where they lived, while 16% had a window unit (Fig. 5.1). With respect to the ways of operating the air conditioning unit, 54% of respondents either turned it off or turned it down when they left, whereas the remaining 46% either left it running all day, or did not have control over their air conditioning (Fig. 5.2).



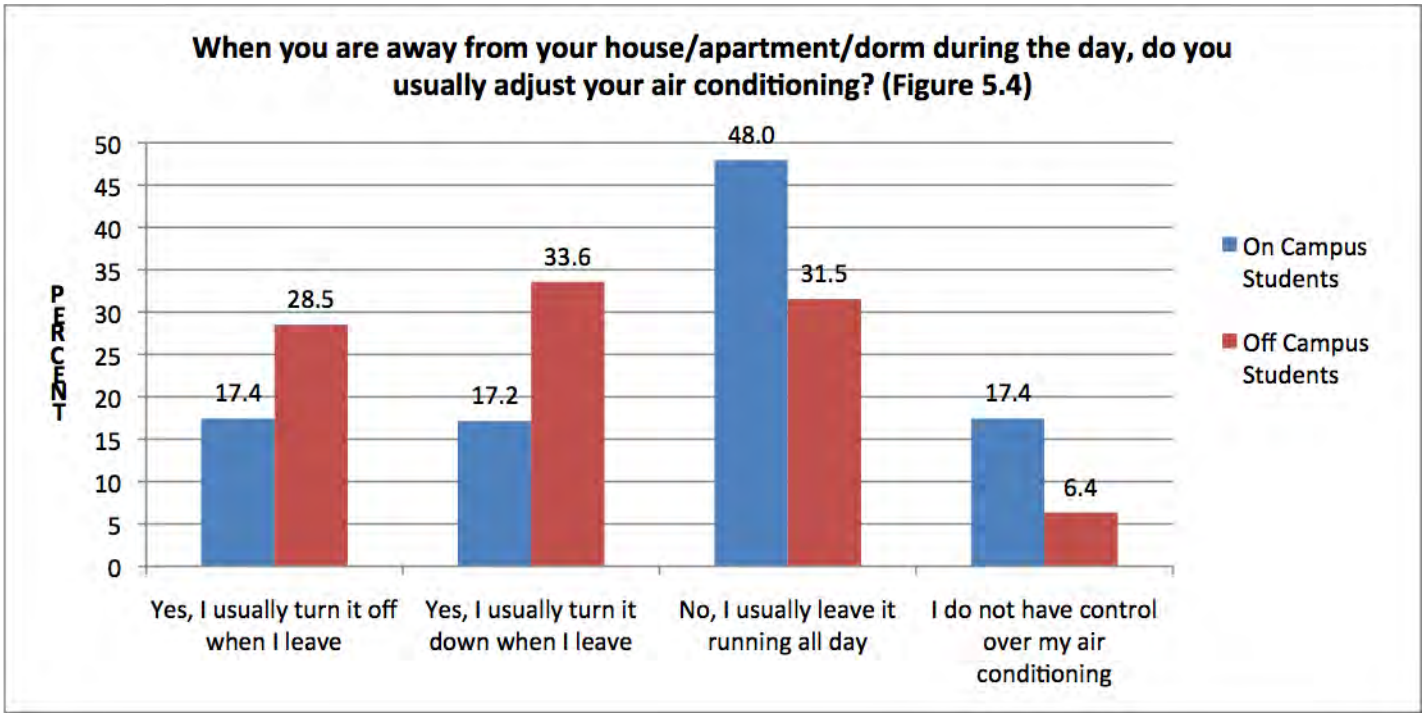


The second level of analysis between on-campus and off-campus respondents indicated that approximately 94% of off-campus respondents had either a central or window air conditioning unit (Fig. 5.3). In comparison, about 81% on-campus respondents had either of these.



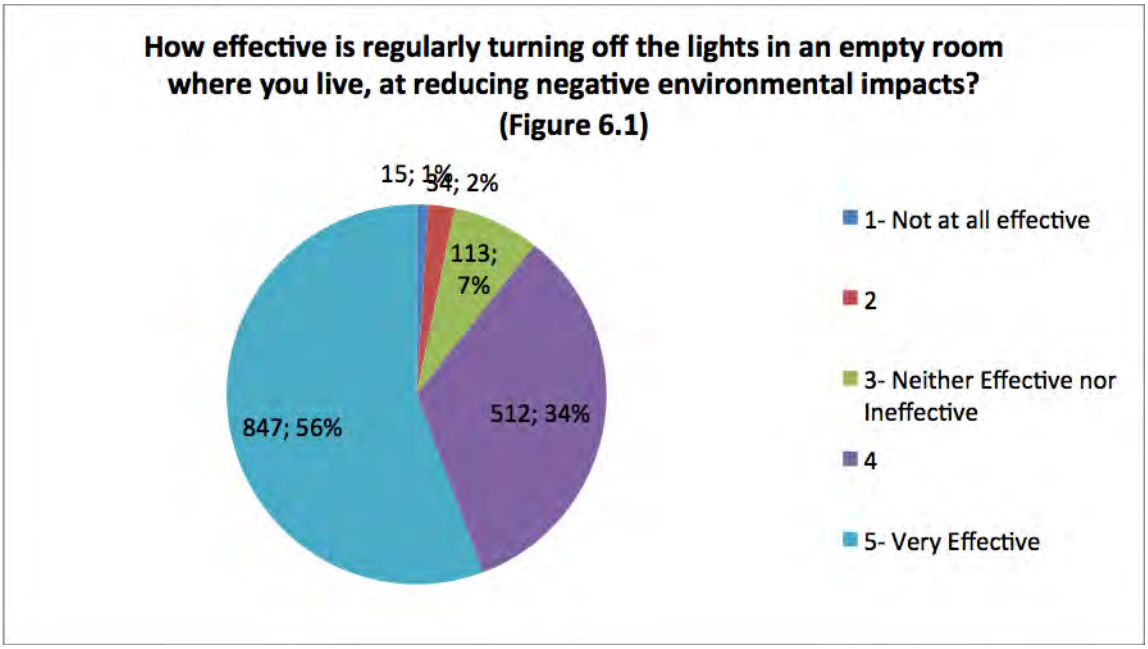
Patterns of use differ between on- and off-campus respondents who have air conditioning. Only 35% of on-campus respondents say they turn it off or down when they leave, whereas 62% of off-campus respondents do. Conversely, nearly half of on-campus respondents leave their air conditioning running all day, compared to about one third of off-campus respondents.

These findings further indicate that off-campus respondents tend to be more careful with operation/control of their air conditioning unit when compared to on-campus respondents. A possible explanation for this behavior, as indicated earlier in the report, could be that most off-campus housing requires students to pay electric bills based on usage, which serves as an incentive to reduce energy use.

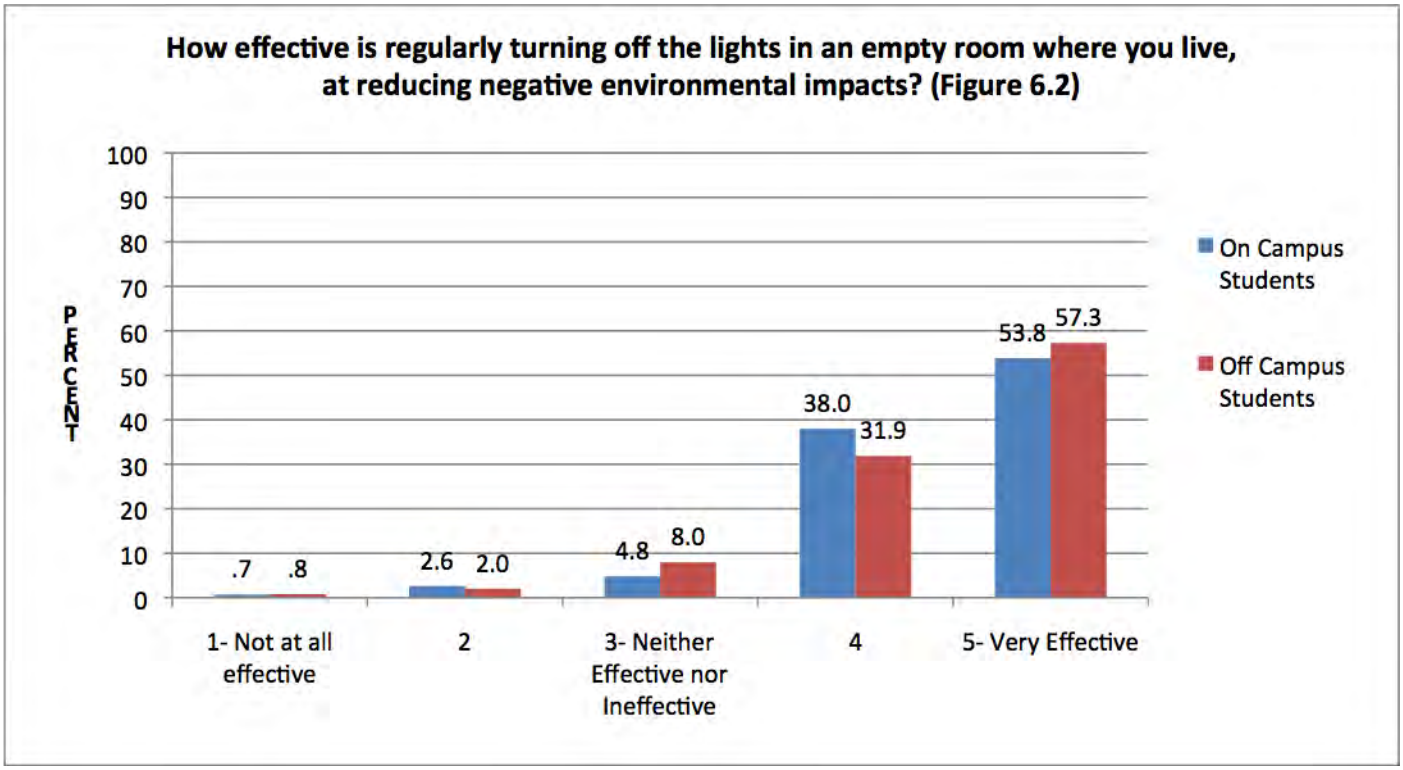


6. Perceived effectiveness of pro-environmental behavior on reducing negative environmental impacts

Those promoting pro-environment behaviors among individuals often aim to convince individuals that such behaviors reduce negative environmental impacts. The survey included a question about how effective/ineffective respondents perceived their behavior with respect to regularly turning off lights to be in reducing negative environmental impacts. As shown in Figure 6.1, 90% of respondents perceived turning off the lights in an empty room where they live to be either effective or very effective in reducing negative environmental impacts.

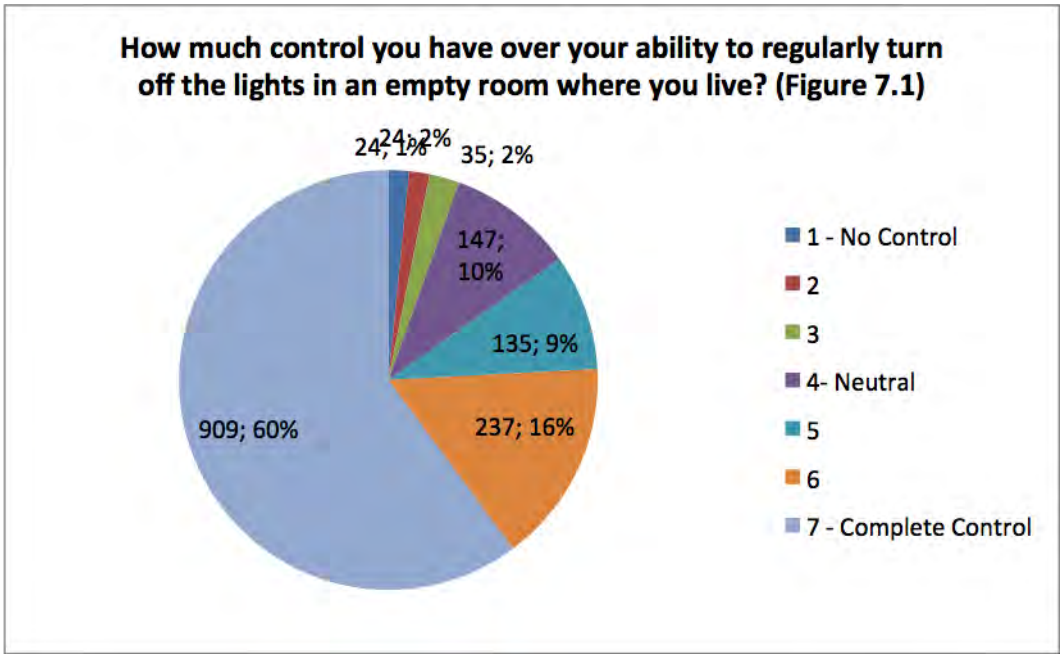


Comparison across on-campus and off-campus respondents indicated that almost 92% on-campus respondents perceived turning off the lights in an empty room where they live to be either effective or very effective in reducing negative environmental impacts (see Fig. 6.2). For off- campus respondents this percentage was slightly lower, 89%. Although there is not much difference in response across on- and off- campus respondents, an important difference that emerges referring to Figure 1.2 is that although 92% on-campus respondents perceive turning off lights as a way of reducing negative environmental impacts, the percentage of times they engage in this behavior is only about 80%. On the contrary, off-campus respondents engage in turning off lights in an empty room where they live about 87% of the time they have the opportunity to do so. Thus greater belief that the behavior reduces negative environmental impacts does not translate to greater engagement in the behavior.

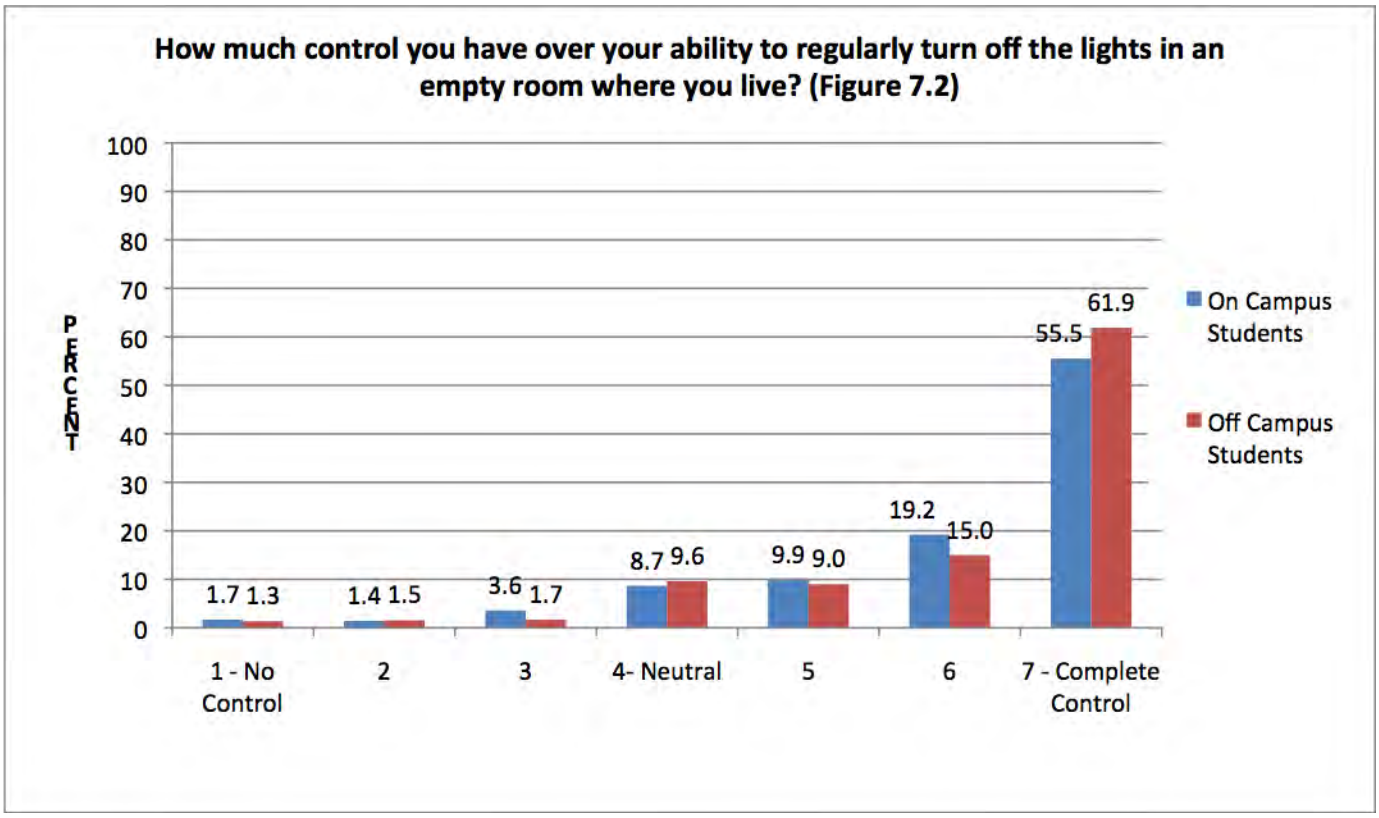


7. Perceived control over pro-environmental behavior

Understanding individual behavior requires understanding the degree of control that the individual perceives over that behavior. For the behavior of turning off lights when leaving an empty room where they live, control might be reduced, for instance, if a roommate is in the residence and wants the light left on, or if a room does not have a light switch that is easily flipped. In this survey, the majority of respondents reported having complete control, and an additional 25 % indicated agreement that they have some control (Fig. 7.1).

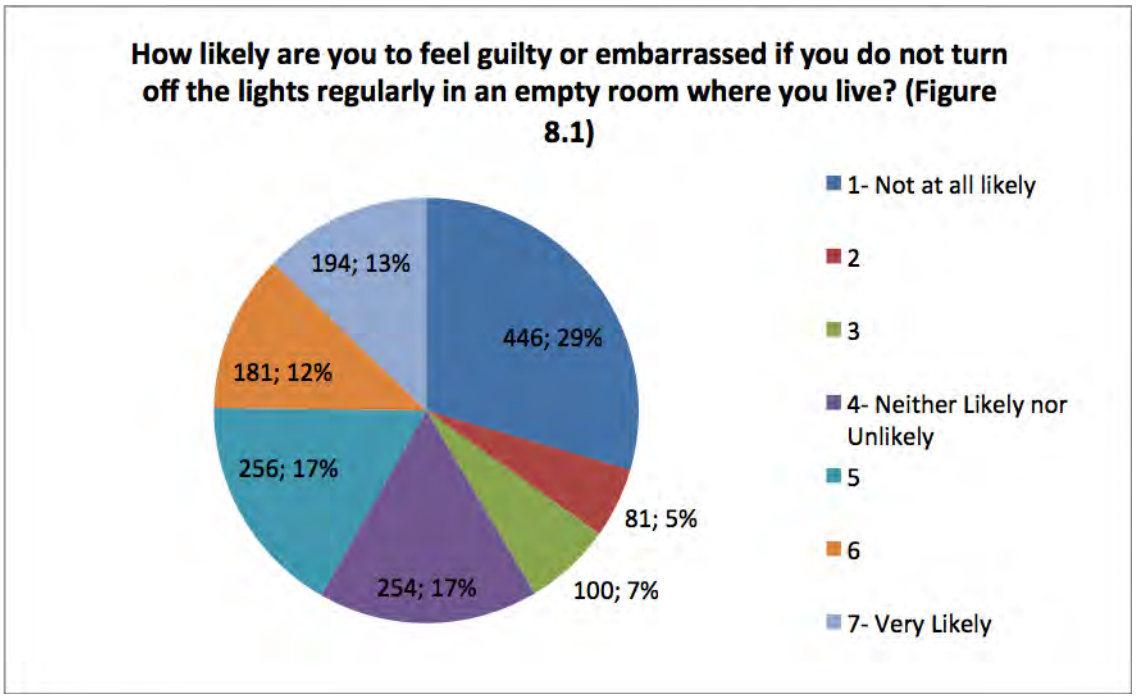


Comparison across on-campus and off-campus respondents students indicated that approximately 62% of off-campus respondents perceived that they had complete control over their behavior of turning off lights in an empty room where they lived, with another 24% indicating some control (Fig. 7.2). For on-campus respondents these proportions were about 56% and 29%, respectively. Thus the proportions indicating agreement with the statement (5, 6, and 7 on the 7-point scale) are similar between on- and off- campus respondents.

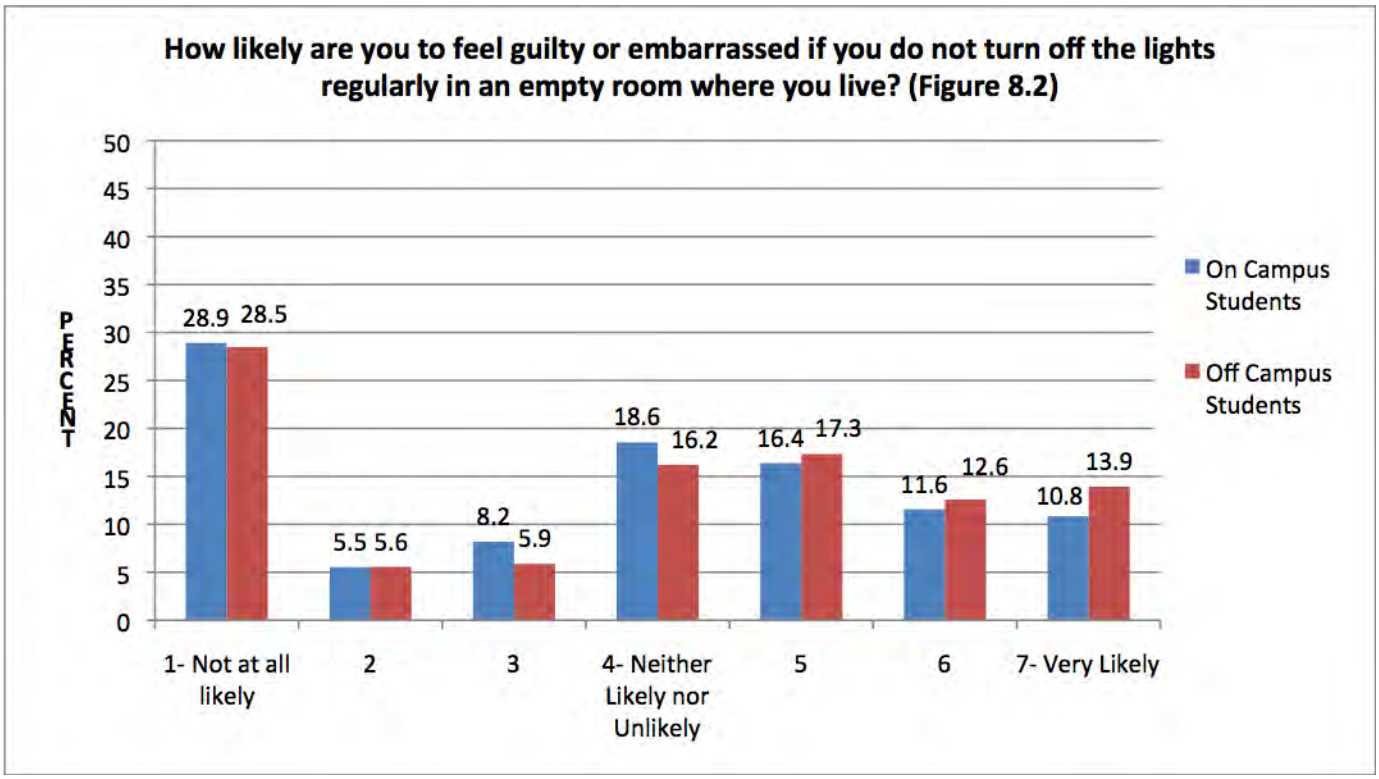


8. Normative behavior regarding energy conservation

An important factor that may affect pro-environment behavior is the existence of norms that promote them. As described above, individuals often look for social cues about appropriate behaviors. Acting against these social cues can generate feelings of embarrassment or guilt, which can encourage conformity to what the individuals perceive to be the socially appropriate behavior. In the survey, respondents were asked to indicate how likely they were to feel guilty or embarrassed if they did not turn off lights regularly in an empty room where they lived. About 58% of respondents responded between the continuum, ‘not at all likely’ and ‘neither likely nor unlikely’ to feel guilty or embarrassed if they did not engage in this behavior (Fig. 8.1). The remaining 42% of respondents indicated some likelihood of feeling guilty or embarrassed if they did not engage in this behavior.



In the second level analysis, approximately 61% of on-campus respondents responded between the continuum, 'not at all likely' and 'neither likely nor unlikely' to feel guilty or embarrassed if they did not engage in turning off lights in an empty room where they lived. For off-campus respondents this lack of guilt and embarrassment was found for about 56% of respondents. The remaining 44% of off-campus respondents indicated at least some likelihood of feeling guilty or embarrassed if they did not engage in this behavior. Response from on-campus respondents indicated that just 39% of them would feel guilty or embarrassed if they did not engage in this behavior. Thus, the trend in the data suggests that off-campus respondents are more likely to feel guilty or embarrassed than on-campus students if they do not engage in turning off lights regularly in an empty room where they live.



Conclusion

Based on the results obtained above, several suggestions and discussion points are relevant for the Office of Energy Services & Sustainability, as follows:

1. Referring to Figures 1.1 and 1.2, we found that respondents chose to take public transportation instead of driving when traveling to and from campus only half of the time they have the opportunity to do so. In fact, off-campus residents chose to engage in this behavior less than half of the time. Thus, off-campus students could be provided with some kind of incentive in order to encourage them to take public transportation instead of their personal vehicles. One such option could be operation of a greater number of buses or more frequent CABS stops in the off-campus areas.

2. Referring to Figures 1.1 and 2.1, there is a disconnect between what respondents report they do, and what they think other OSU students do. Nearly 85% of respondents reported that they regularly turn off lights in an empty room where they live, whereas respondents think just 51% of OSU students do so. Messaging indicating that most OSU students turn off lights in an empty room where they live could promote greater awareness that doing so is common among the OSU student population. Such messaging could reinforce this behavior, although, as we discuss below, this referent group is less influential than other referent groups.

3. Regarding referent groups that respondents observe and look to for cues about pro-environment behaviors, our analyses indicate differences across family members, friends, and the OSU student body. First, students believe that their family members most often engage in pro-environment behaviors. Second, they indicate that when it comes to engaging in pro-environment behaviors what their family members do is very important to them, followed by friends and lastly the OSU student body. Thus, it appears from results that a student's decision to engage in a pro-environmental behavior is closely embedded in their family values. Future efforts to encourage sustainable practices among students should connect such communication with family values and practices. Results from section 2 & 3 also indicate that other OSU students have less influence on encouraging students to engage in pro-environment behaviors.

4. On-campus respondents indicate higher frequency and duration of showers (graph 4.3 & 4.4), and they also indicate that they either do not have control over air conditioning unit or they usually leave it running all day (Figure 5.4). It is likely that charging students for the water and energy they use would lead to greater conservation.

5. Findings from Figure 1.1 and 6.2 indicate that although on-campus respondents feel that regularly turning off lights in an empty room is quite effective at reducing negative environmental impacts, they actually engage in this behavior less often compared to off-campus students. Unfortunately, increasing knowledge and beliefs about links from individual behavior to environmental impacts is not sufficient to encourage pro-environmental behavior.

6. Comparison across on-campus and off-campus students for lights, showers, and air conditioning indicates that on-campus respondents report higher level of energy consumption. However, when it comes to efficacy and perceived control (sections 6 and 7), there is not much difference across the two groups. Results from section 8 indicate that off-campus respondents are more likely to feel embarrassed or guilty if they fail to turn off lights regularly when leaving an empty room. (The survey did not ask about guilt and embarrassment for failing to do other pro-environment behaviors).

7. This report points out the importance of understanding the differences across behaviors of on-campus and off-campus students. Any future endeavor to encourage sustainable practices should take this into consideration. Our results suggest that off-campus students have two advantages over on-campus students: their behaviors are typically linked to their costs, and they have higher norms favoring pro-environment behaviors, which lead them to feel guilty or embarrassed if they fail to act.

Acknowledgements

The second annual OSU Sustainability Survey was conducted thanks to financial support from the Ohio State University Office of Energy Services and Sustainability and the School of Environment and Natural Resources. We appreciate intellectual and implementation support from Aparna Dial as well as Jeremy Brooks, Jeremy Bruskotter, Eric Toman, Robyn Wilson, Kristi Lekies, Elizabeth Burnett, Ellen Eilers, Ajay Singh, Adam Zwickle, and Anna McCreery.

THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES

School of Environment and Natural Resources

210 Kottman Hall

2021 Coffey Road

Columbus, OH 43210

Phone 614.292.2265

Fax 614.292.7432

URL senr.osu.edu, ess.osu.edu