

UBC Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

**The Relationship Between Students' Levels of Inclusiveness on Various Floors of
The Centre for Interactive Research on Sustainability (CIRS) Building**

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EXECUTIVE SUMMARY

In our present study, we investigated whether students' being on various floors of the CIRS building affected their feelings of inclusiveness and belongingness. We administered a ten-question survey to 66 participants on the first, second and third floors of the CIRS building that asked about their time spent the building and their levels of inclusiveness and belongingness. Our results found that students on the second floor felt greater levels of belonging than students on the first and third floors. The results also found that students on the third floor felt more welcome than students on the first and second floors. Lastly, we found that students on the first floor had the greatest feelings of inclusiveness in the UBC community in comparison to students on the second and third floors. Our study suffered from certain limitations such as small sample size and time constraint that students may have experienced to complete the survey. Future research should conduct qualitative studies in order to determine reasoning behind students reported levels of inclusiveness and belonging.

The Relationship Between Students' Levels of Inclusiveness on Various Floors of the CIRS Building

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INTRODUCTION

According to the Annual Report on Enrolment for the 2017/18 school year, the Vancouver campus of the University of British Columbia had a total of 55,780 undergraduate and graduate students enrolled (Szeri & Mathieson, 2018). Each year, students around the world are introduced to UBC's ethereal but very large campus, which some may find intimidating.

Previous research conducted has examined various topics in regard to students' university experiences such as students' preference for study spaces or the relationship between noise, privacy and stress. Arlove, Johnston, Koyuncu, & Uribe (2015) identified three cafes at the UBC campus that were most preferred, neutral, and least preferred based on student responses. Participants in each cafe were asked to rate certain factors in their environment such as noise level. The study found that factors most important for student wellbeing were location, lighting and airflow (Arlove, Johnston, Koyuncu, & Uribe, 2015). Sandhu, Uy, Kim, & Frackiewicz (2015) examined the relationship between noise and privacy in the study spaces of UBC students and their reported stress levels. Their research found that in comparison to study spaces with low noise levels and high privacy levels, study spaces with high noise levels and low privacy levels produced higher stress levels in students (2015). Similarly, Shim, Cheng, Javaherdoust, & Jung (2016) examined student stress levels but based on attendance at community events and activities on campus. Overall, their research suggests that attending annual events at UBC more frequently is not related to lower stress levels (2016).

The existing research conducted at the University of British Columbia has touched upon various factors that affect the experiences of students on campus. However, no study has yet examined the relationship between feelings of inclusiveness and belonging on various floors of campus buildings. The present study was motivated by this knowledge gap and therefore conducted a study to examine this relationship, specifically in the CIRS building.

RESEARCH QUESTION AND HYPOTHESIS

Since it is such a large campus, for our research project we wanted to test students' reported level of inclusiveness, specifically focusing on the CIRS building. We decided to test reported levels of inclusiveness in the building, as well as UBC campus as a whole, finding participants on the first three floors CIRS building. We hypothesize that students on the first floor would report lower levels of inclusiveness than students on higher floors. We suspect that students visiting higher floors have an affiliation with CIRS, whether it be studying or visiting a staff member, thus correlating to higher levels of inclusiveness. We suspect this because students on the second and third floor may actively choose to study there. Furthermore, we hypothesize that students on the first floor will report higher levels of belonging in the UBC community because of their exposure to increased social stimulation.

METHODS

To measure our hypothesis, we administered a 10-question questionnaire, consisting of multiple choice and Likert scale questions to assess students' feelings of inclusiveness and belonging with regard to the CIRS building. Our independent variable was the floor the students were located on, and our dependent variable was the students' different feelings of inclusiveness according to the floor. The student participants were randomly selected and were already residing in the CIRS building, at which time the survey was administered to them. The students' location in the CIRS building, whether first, second or third floor, was our 3 conditions being tested, again, hypothesizing that students on the higher floors would report higher levels of feeling included within CIRS. In total, our research used the responses of 66 participants: with 22 students on the first floor, 19 students on the second floor, and 21 students on the third floor. The 10 question questionnaire began with questions concerning which floor the participant was currently on, how much time they spent in the building on the average week, and which floors they most frequently visited. Furthermore, they were then asked about their current mood and if any events in the last 24 hours affected their response. Lastly, using Likert scale questions the participant reported feelings of inclusiveness and welcoming associated with CIRS and if they personally felt included in the UBC community overall.

RESULTS

After administering the questionnaire to 66 students at the University of British Columbia, we identified that different floor levels had different effects towards a student's feeling of belongingness and inclusiveness in the CIRS building, along with UBC's campus. For the first floor, 26 participants were tested, which composed 39.39% of total participants. On the second floor, 19 participants were tested upon, composing of 28.79% of total participants. For the third floor, 21 participants were tested, composing of 31.82% of total participants.

As shown in Appendix B, the results identify the level of calmness, the feeling of welcomeness, the hours of visit and belongingness on each floor of the CIRS building, as well as the inclusiveness amongst the UBC campus based on participants on different floors. After calculating the results for each floor and the level of inclusiveness associated with the CIRS building, the results showed that the participants on the second floor ($M = 3.47$, $SD = 0.612$) felt more belongingness to the CIRS building than participants on the first floor ($M = 3.12$, $SD = 1.211$) and participants on the third floor ($M = 3.10$, $SD = 1.136$). When evaluating the results for the level of welcomeness of the CIRS building, the results showed that the participants on the third floor ($M = 2.57$, $SD = 0.746$) felt more welcome in the CIRS building than the participants in the first floor ($M = 2.31$, $SD = 1.192$) and the participants on the second floor ($M = 2.21$, $SD = 0.918$). The results showed that the calmness of the participants on the first ($M = 3.31$, $SD = 1.158$) and second floor ($M = 3.26$, $SD = 0.991$) were more calm than participants on the third floor ($M = 2.81$, $SD = 1.25$). Finally, the results of inclusiveness on the UBC campus showed that the participants on the first floor ($M = 4.19$, $SD = 1.059$) felt more included on the UBC campus than participants on the second floor ($M = 3.53$, $SD = 0.772$) and participants on the third floor ($M = 3.14$, $SD = 1.062$).

After evaluating the 66 participants, the results, in Appendix C, showed that 37.88% of the total participants felt neutral about being included within the CIRS building, 37.88% felt somewhat welcomed in the building and 28.79% felt neutral about their inclusiveness within the UBC community. The results also identified that 61.54% of participants on the first floor were in the CIRS building for attending classes, while 94.74% of the participants on the second floor and

85.71% of the participants on the third floor were in CIRS for studying purposes. 34.62% of participants on the first floor spent less than three hours or between three to five hours in the building per week; whereas, 31.58% of the participants on the second floor spent between three to five hours per week and 33.33% of the participants on the third floor spent between five to ten hours per week in the building.

An ANOVA revealed that there was a significant difference between the hours of visits to the CIRS building for the first floor and third floor ($p < 0.05$), as seen in Appendix D. An ANOVA also revealed a significant difference between the levels of inclusiveness within the UBC campus to the first and third floor ($p < 0.05$). There was not a significant difference between the different floor levels and calmness, feelings of belonging and welcomeness within the CIRS building and inclusiveness between the first and second floor.

DISCUSSION

This study intended to measure and examine whether the floor level a student was on, affected their feeling of belongingness or inclusiveness in CIRS Building. We were specifically interested in examining the functional role of students' reasons for visiting the CIRS building, and hypothesized that students visiting higher floors have an affiliation with CIRS, whether it be studying or visiting a staff member which would correlate to higher levels of inclusiveness. By using multiple choice and Likert-Like Questions, we asked students to rate their feelings of inclusiveness in the CIRS building, and their level of inclusiveness in the UBC community as a whole.

Limitations

The present study was subjected to predicted limitations as well as unforeseen limitations that arose after collecting and analyzing data responses. Predicted limitations consisted of a small sample size, time constraints, and the environment in which the survey took place in. Due to the fact that the sample size was composed of 66 participants, our findings are not generalizable; therefore, our findings may not accurately represent the rest of the population. There were considerably less participants on the second and third floor compared to the first, so when collecting data, we would have to wait around for new participants to test. Furthermore, since we did not produce any incentive for survey participation, we needed to keep our questionnaire short and concise, as they produce higher rates of completion compared to longer ones (Cozby & Rawn, 2016). Since students may have wanted to quickly get back to what they were doing, participants may have rushed through their answers in order to finish quickly, potentially leading to added stress. Increases in stress may cause participants to not read the question correctly or to not take their time and consideration with their answers. On the first floor, the study was held in a busy, loud environment with high volume and many other people around. The noisy environment may have distracted or further stressed our participants. The space on the second and third floor was more confined, producing opportunities for participants to see other's completing questionnaires, as well as opportunities for awaiting participants to view the survey. All of these limitations generate susceptibilities and threats to the internal validity of the study because these limitations may offer an alternative explanation to the findings of the study. An unforeseen limitation that arose post data collection is that there were higher reports of inclusiveness in the UBC community on the first floor, compared to the second and third. With such a small effect it is difficult to

say with certainty that the floor a participant is on influences their feelings of inclusiveness. The reversal effect of higher feelings of inclusiveness in the UBC community adds uncertainty, as it rejects our hypothesis and contradicts our findings of feelings of inclusiveness in the CIRS building. If we were to re-run the study these variables could be improved by testing more participants, and creating quiet spaces on each floor that is separate for participants to complete the survey unrushed, and in a calm, quiet environment. This would be beneficial as it has potential to increase the external validity of the study.

Implications

Feelings of inclusiveness were reported lowest on the first floor, compared to the second and third. We hypothesize that this may be influenced by their reason for visiting the CIRS building. The first floor's primary purpose was to attend class, whereas participants on the second and third floor's primary purpose was to study. Those on the second and third floor may have reported higher levels of inclusiveness because they voluntarily chose to study there. The majority of people on the first floor reported feeling the most included in the UBC community—we hypothesize that this may be influenced by higher levels of social interaction they experience compared to the second and third floor. The cafe may contribute to higher feelings of inclusiveness as it provides students with an opportunity to purchase food, also acting as a common meeting area for eating, socializing or studying. Feelings of welcomeness were reported lowest on the third floor, followed by the first floor, with highest levels on the second floor. We hypothesize that the third floor reports lowest because it contains offices and work spaces for staff. Further we hypothesize that participants on the third floor reported lowest feelings of welcomeness because of social isolation. There were significantly less students on the third floor compared to the first and second. Feelings of both inclusiveness and welcomeness were reported highest on the second floor. We hypothesize that this may be because students feel comfortable enough to voluntarily study there, and that staff offices and work spaces are located on the third floor.

Recommendations for UBC

Further considerations may include a qualitative assessment to the study where participants explain why they chose certain answers regarding feeling of inclusiveness in the CIRS building. This would allow researchers to examine to why students are feeling this way, and if there are confounding variables that offer an alternative explanation. Moreover, researchers must consider individual differences within this study because individual differences may influence the participants' answers. Participants' own level of introversion or extroversion may mediate their perception of feelings of inclusiveness in the CIRS Building. Future studies should aim to balance personality factors such as introversion and extroversion, as well as analyze how the participants' personality characteristics affect their answers. Although the spaces on the second and third floor are structurally different compared to the first, we did see statistical significance regarding higher feelings of inclusiveness in the UBC community on the first floor. Future studies should focus on improving feelings of inclusiveness on the second and third floor by adding a vending machine or proper signage. A suggestion we have for our client would be to implement a sign notifying students that there are more study spaces on the second and third floor, this

would increase social stimulation which we hypothesized lead to higher reported feelings of inclusiveness in the UBC community. A further suggestion would include installing a vending machine on the second or third floor. Currently, there are no opportunities to buy food on the second or third floor in the CIRS building, and we hypothesized that the cafe on the first floor may contribute to higher levels of inclusiveness. Future studies may focus on other external factors affect feelings of inclusiveness in the UBC community. This could be done by way of measuring inclusiveness after the Annual Ranking of Canadian Universities is released. Future studies may also consider comparing feelings of inclusiveness between buildings order to find further test what makes UBC students feel included on campus. Discovering and implementing strategies to promote inclusiveness may yield as an additive benefit for UBC campus as it may further increase student's positive feelings towards school and campus life as a whole.

Appendix A. Example Survey Questions

Example 1. Multiple choice question

② What is the purpose of your visit(s) to the CIRS Building?

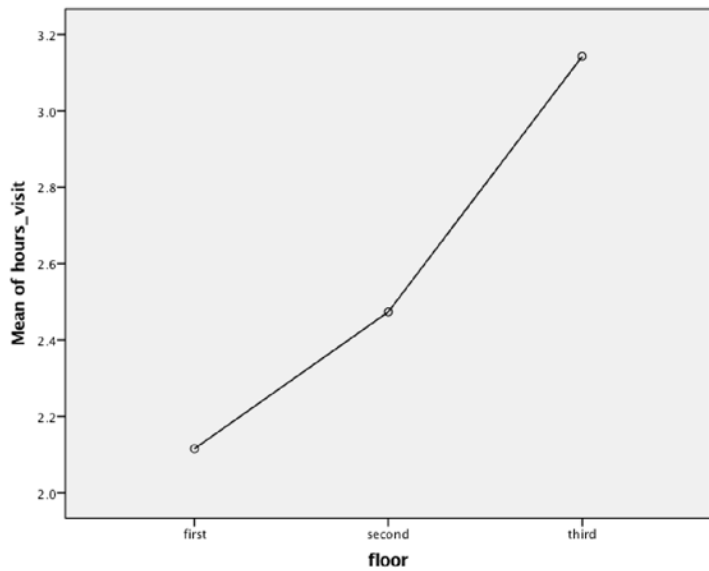
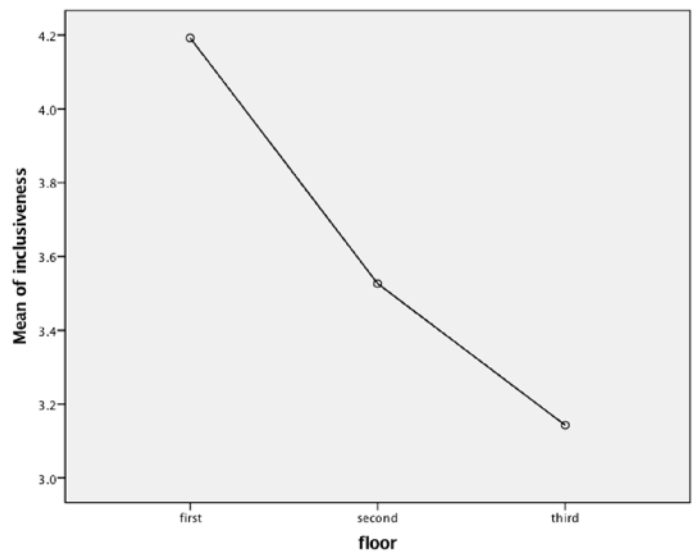
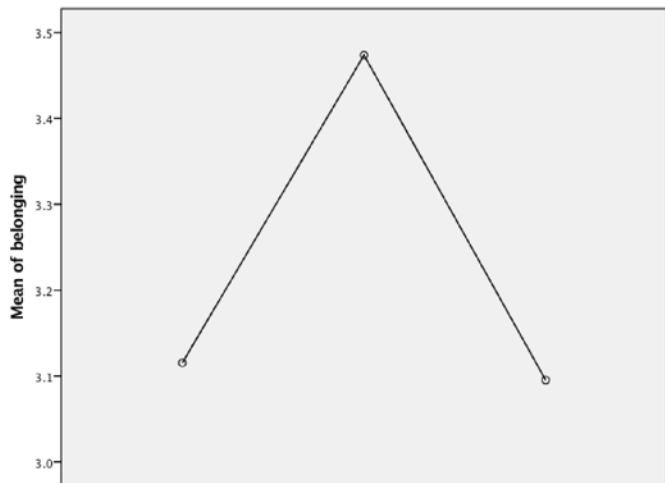
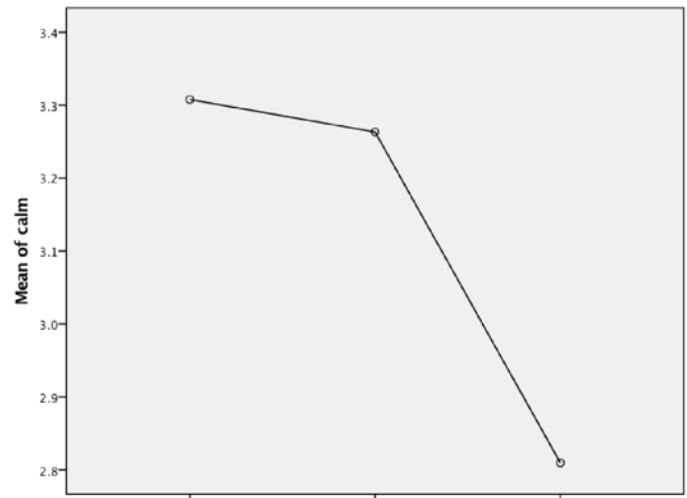
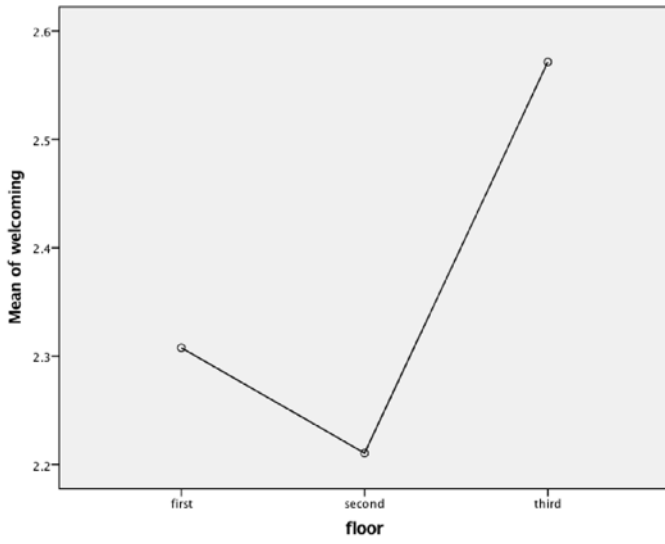
- Attending class
- Studying
- My office is located in the CIRS Building
- Cafeteria/food
- Socializing

Example 2. Likert Scale question

⑦ Defined by feelings of belonging, what level of inclusiveness do you associate with this building?

Not at all included	Somewhat not included	Neutral	Somewhat included	Very included
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix B. Different Means Within Each Floors



		Descriptives							
		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
calm	first	26	3.31	1.158	.227	2.84	3.78	1	5
	second	19	3.26	.991	.227	2.79	3.74	1	5
	third	21	2.81	1.250	.273	2.24	3.38	1	5
	Total	66	3.14	1.149	.141	2.85	3.42	1	5
belonging	first	26	3.12	1.211	.237	2.63	3.60	1	5
	second	19	3.47	.612	.140	3.18	3.77	2	4
	third	21	3.10	1.136	.248	2.58	3.61	1	5
	Total	66	3.21	1.045	.129	2.96	3.47	1	5
welcoming	first	26	2.31	1.192	.234	1.83	2.79	1	5
	second	19	2.21	.918	.211	1.77	2.65	1	4
	third	21	2.57	.746	.163	2.23	2.91	1	4
	Total	66	2.36	.987	.121	2.12	2.61	1	5
inclusiveness	first	26	4.19	1.059	.208	3.76	4.62	2	5
	second	19	3.53	.772	.177	3.15	3.90	2	5
	third	21	3.14	1.062	.232	2.66	3.63	1	5
	Total	66	3.67	1.072	.132	3.40	3.93	1	5

Appendix C. Different Effects on Floor Levels

Floor One:

Defined by feelings of belonging, what level of inclusiveness do you associate with this building?

Assessment ID: 30 Report ID: 3



How welcoming do you find the environment in the CIRS Building?

Assessment ID: 30 Report ID: 3



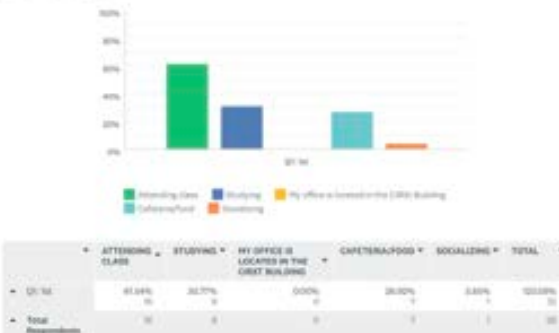
In general, how included do you feel in the UBC community?

Assessment ID: 30 Report ID: 3



What is the purpose of your visit(s) to the CIRS Building?

Assessment ID: 30 Report ID: 3



On average, how long are your visits per week?

Assessment ID: 30 Report ID: 3



How calm do you feel at the moment?

Assessment ID: 30 Report ID: 3



Floor Two:

Defined by feelings of belonging, what level of inclusiveness do you associate with this building?

Assessment ID: 3166649-0



How welcoming do you find the environment in the CIRS Building?

Assessment ID: 3166649-0



In general, how included do you feel in the UBC community?

Assessment ID: 3166649-0



What is the purpose of your visit(s) to the CIRS Building?

Assessment ID: 3166649-0



On average, how long are your visits per week?

Assessment ID: 3166649-0



How calm do you feel at the moment?

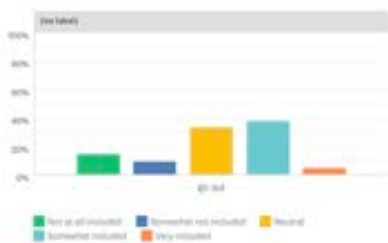
Assessment ID: 3166649-0



Floor Three:

Defined by feelings of belonging, what level of inclusiveness do you associate with this building?

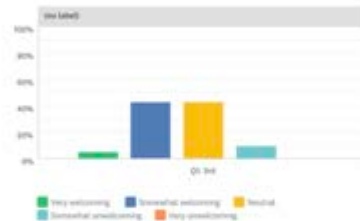
Assessment 21 Skipped 0



Q1 3rd	NOT AT ALL INCLUDED	SOMEWHAT NOT INCLUDED	NEUTRAL	SOMEWHAT INCLUDED	VERY INCLUDED	TOTAL	WEIGHTED AVERAGE
Q1 3rd	16.0%	10.0%	35.0%	39.0%	1.0%	20	2.0

How welcoming do you find the environment in the CIRS Building?

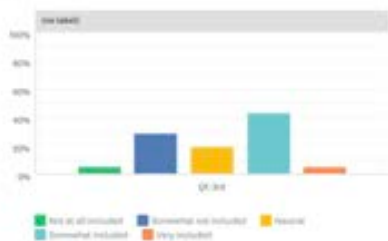
Assessment 21 Skipped 0



Q1 3rd	VERY WELCOMING	SOMEWHAT WELCOMING	NEUTRAL	SOMEWHAT UNWELCOMING	VERY UNWELCOMING	TOTAL	WEIGHTED AVERAGE
Q1 3rd	5.0%	45.0%	45.0%	5.0%	0.0%	20	2.0

In general, how included do you feel in the UBC community?

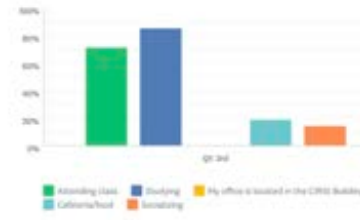
Assessment 21 Skipped 0



Q1 3rd	NOT AT ALL INCLUDED	SOMEWHAT NOT INCLUDED	NEUTRAL	SOMEWHAT INCLUDED	VERY INCLUDED	TOTAL	WEIGHTED AVERAGE
Q1 3rd	5.0%	30.0%	20.0%	45.0%	0.0%	20	2.0

What is the purpose of your visit(s) to the CIRS Building?

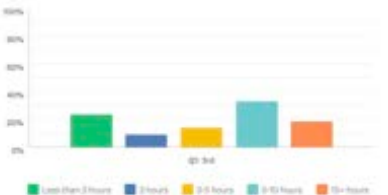
Assessment 21 Skipped 0



Q1 3rd	ATTENDING CLASS	STUDYING	MY OFFICE IS LOCATED IN THE CIRS BUILDING	CAFETERIA/FOOD	SOCIALIZING	TOTAL
Q1 3rd	75.0%	85.0%	20.0%	15.0%	15.0%	20
Total Respondents	15	16	4	4	3	42

On average, how long are your visits per week?

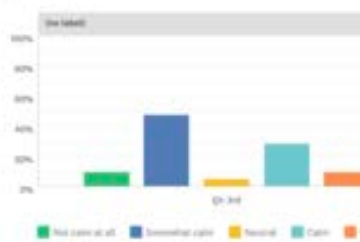
Assessment 21 Skipped 0



Q1 3rd	LESS THAN 3 HOURS	3 HOURS	3-5 HOURS	5-10 HOURS	10+ HOURS	TOTAL
Q1 3rd	25.0%	10.0%	15.0%	35.0%	15.0%	20
Total Respondents	5	2	3	7	3	20

How calm do you feel at the moment?

Assessment 21 Skipped 0



Q1 3rd	NOT CALM AT ALL	SOMEWHAT CALM	NEUTRAL	CALM	VERY CALM	TOTAL	WEIGHTED AVERAGE
Q1 3rd	15.0%	45.0%	10.0%	30.0%	0.0%	20	2.0

Appendix D. ANOVA Results and Significance Levels

Dependent Variable	(I) floor	(J) floor	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
calm	first	second	.045	.345	.991	-.78	.87
		third	.498	.336	.305	-.31	1.30
	second	first	-.045	.345	.991	-.87	.78
		third	.454	.362	.427	-.42	1.32
	third	first	-.498	.336	.305	-1.30	.31
		second	-.454	.362	.427	-1.32	.42
belonging	first	second	-.358	.316	.498	-1.12	.40
		third	.020	.307	.998	-.72	.76
	second	first	.358	.316	.498	-.40	1.12
		third	.378	.332	.493	-.42	1.17
	third	first	-.020	.307	.998	-.76	.72
		second	-.378	.332	.493	-1.17	.42
welcoming	first	second	.097	.299	.944	-.62	.81
		third	-.264	.291	.638	-.96	.43
	second	first	-.097	.299	.944	-.81	.62
		third	-.361	.314	.487	-1.11	.39
	third	first	.264	.291	.638	-.43	.96
		second	.361	.314	.487	-.39	1.11
inclusiveness	first	second	.666	.298	.073	-.05	1.38
		third	1.049 [*]	.290	.002	.35	1.74
	second	first	-.666	.298	.073	-1.38	.05
		third	.383	.312	.442	-.37	1.13
	third	first	-1.049 [*]	.290	.002	-1.74	-.35
		second	-.383	.312	.442	-1.13	.37

Descriptives

hours_visit

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
first	26	2.12	.909	.178	1.75	2.48	1	4
second	19	2.47	1.124	.258	1.93	3.02	1	4
third	21	3.14	1.493	.326	2.46	3.82	1	5
Total	66	2.55	1.243	.153	2.24	2.85	1	5

Multiple Comparisons

Dependent Variable: hours_visit

Tukey HSD

(I) floor	(J) floor	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
first	second	-.358	.357	.577	-1.21	.50
	third	-1.027 [*]	.347	.012	-1.86	-.20
second	first	.358	.357	.577	-.50	1.21
	third	-.669	.374	.182	-1.57	.23
third	first	1.027 [*]	.347	.012	.20	1.86
	second	.669	.374	.182	-.23	1.57

*. The mean difference is significant at the 0.05 level.

References

- Arlove, A., Johnston, C., Koyuncu, L., & Uribe, N. (2015) *How built environment affects wellbeing based on students' preference for different cafes in the UBC Vancouver campus*. Vancouver. Retrieved from <https://open.library.ubc.ca/cIRcle/collections/undergraduate-research/18861/items/1.0108858>
- Cozby, P. C., & Rawn, C. D. (2016) *Methods in Behavioral Research*. Unified States of America. McGraw-Hill Ryerson Limited.
- Sandhu, A., Uy, E., Kim, K., & Frackiewicz, M. (2015). *The Relationship Between Noise and Privacy in UBC Students' Study Spaces and Reported Stress Levels*. Vancouver. Retrieved from <https://open.library.ubc.ca/cIRcle/collections/undergraduate-research/18861/items/1.0228115>
- Shim, B., Cheng, D., Javaherdoust, J., & Jung, S. (2016). *Relationship between community events and activities on campus and student stress*. Vancouver. Retrieved from <https://open.library.ubc.ca/cIRcle/collections/undergraduate-research/18861/items/1.0343396>
- Szeri, A. & Mathieson, C. (2018). *2017/18 Annual Report on Enrolment*. Retrieved from <https://senate.ubc.ca/sites/senate.ubc.ca/files/downloads/2017-18-Enrolment-Report.pdf>