UBC Social Ecological Economic Development Studies (SEEDS) Sustainability Program

Student Research Report

Stair Wraps: Perceived Effectiveness for Increasing Physical Activity

Brynley Ross, Larissa Nogacz, Natalie Repole, Rylee English, Stephen Koo

University of British Columbia

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Executive Summary

Current physical activity guidelines recommend adults to engage in at least 30 minutes of moderate-intensity physical activity on most if not all days of the week, but the lack of such physical activity has caused an increased risk in mortality in Canada. The UBC SEEDS Sustainability Stair Intervention Project has been put in place to explore the impact of stair and elevator wraps as physical interventions. Following studies which analyzed factors that motivated people to take the stairs, it was found that stair wrap interventions that altered the aesthetics and visibility of the stairwell were effective in increasing stair use.

In the early stages of our project, we wanted to gather data from specific groups and cohorts to see how they perceived stair wraps, and to provide baseline data for UBC SEEDS to further examine results of any future stair wrap interventions. We wanted to focus on first- and second-year students as it is in the initial years of university that habitual behaviors are set for the remaining campus years. Unfortunately due to the coronavirus, the campus was closed before we could collect data, and for the health and safety of the community we decided to change our data collection method to be promoted through social media platforms and text messages instead.

We gathered quantitative data to determine if UBC students were aware of the stair wrap that was installed temporarily in the NEST building and their opinions on its effectiveness. Over 40 students' responses were gathered through a survey using the Qualtrics platform which included multiple choice and likert-scale questions, as well as open-ended response options. Questions served to provide a view of students' stair-use patterns, reasons for taking the stairs, the perceived effectiveness of stair-wraps, and what could be done to increase their stair use. The shift from approaching campus students in-person to people we were in contact with led to a greater percentage of upper-years partaking in the survey, with a larger percentage of them being Kinesiology students. Due to this skew in our sample, we analyzed our responses as a whole without creating a sub-group to generalize our findings.

Our findings indicated that convenience is one of the biggest factors for why campus students preferred taking the elevator over the stairs. However, our project was fairly inconclusive in regards to the effectiveness of the past stair wrap intervention due to the coronavirus pandemic. While some participants may choose to take the stairs over the elevator, these values were not statistically significant due to the lack of sample size. It is recommended that future research is conducted on improving stairwell convenience as well as directional signage that indicates where stairwells along with the health benefits associated with taking the stairs.

Introduction & Literature Review

According to our results, convenience is the leading reason why university students choose to take the elevator instead of the stairs.. In our collaborative project with UBC Social Ecological Economic Development Studies (SEEDS) sustainability program, our goal was to encourage students and the school community to take the stairs more frequently, as opposed to taking the elevator. With health promotion as our focus, it is important to have public awareness regarding the health benefits associated with incorporating physical activity into their daily lives. While we do not focus on individuals with disabilities that utilize elevators for necessary transportation, this project explores whether stair wraps can serve as physical activity interventions for students to increase stair use while promoting physical activity behaviors. In this project we examine how different stair wrap interventions in a university building can impact one's habitual choice to take the elevator.

There are many perceived health benefits of taking the stairs over the elevator. A study conducted by The European Society of Cardiology concluded that the use of stairs during normal working hours by inactive individuals may reduce their likelihood of developing cardiovascular disease (Meyer et al., 2010). All subjects had their physical measurements taken at the beginning of the study, after 12 weeks, and at 6 months post-study (Meyer et al., 2010). By the end of the study, every participant had increased their maximum rate of oxygen consumption (VO_{2max}) and decreased their harmful (LDL) cholesterol levels (Meyer et al., 2010). These results indicate that promoting stair use at work or during daily tasks may be a key lifestyle change to improve fitness, body composition, blood pressure, and lipid profile (Meyer et al., 2010). If the general

public is made aware of these direct health benefits they may be more inclined to take the stairs instead of waiting for the elevator. This is the main motive behind the UBC SEEDS stair wrap intervention, to improve the overall health of students and determine the necessary resources for a successful intervention.

One of the considerations for the UBC stair wrap intervention is to explore the factors that motivate people to take the stairs. This included the assessment of enhanced aesthetics, visibility, and accessibility as factors that affect stairwell usage in a study done by the Maastricht University in the Netherlands, which used prompts of white stair rise banners with health messages placed on alternating steps featuring messages such as “take the stairs”, “exercise prevents diseases”, and “saves you time” (van Nieuw-Amerongen et al., 2011, p. 133). Additionally, the aesthetics, visibility, and accessibility of the stairwell were also altered. The ventilation system was changed so that doors could remain open at all times, the wooden doors were replaced by glass doors to increase visibility, and the walls were painted green as the color is associated with peacefulness and freshness (van Nieuw-Amerongen et al., 2011, p. 134). Stair users were observed over seven weeks with four different cameras, starting with a baseline week period followed by two weeks of observation before concluding with four-week post-intervention measurements. This study by van Nieuw-Amerongen et al (2011) highlighted the effectiveness of changing environmental features of the stairwell to promote stair-use among university employees and students, with results showing an increase of stair-use by more than 8% at four weeks post-intervention.

Another article titled *The Stairwell Project: Taking Steps to Improve Public Health* published by the University of California, Los Angeles (UCLA Healthy Campus Initiative similarly expands upon the strategies used to promote stair use at the Fielding School of Public Health (FSPH) (2017). To create a more vibrant and welcoming stairwell, it was painted, repaired, and cleaned (UCLA Healthy Campus Initiative, 2017). Additionally, bulletin boards were installed in the stairwell providing information about the health benefits of stair use, artwork lined the walls to create a gallery-inspired space, and placards along with elevator and door decals were used to further encourage stair use (UCLA Healthy Campus Initiative, 2017).

Data collected by an electronic people counter indicated that stair use increased by nearly 29% over 14 weeks following the launch of the stairwell project (UCLA Healthy Campus Initiative, 2017). Additionally, an online survey was conducted to gather supplementary data; where 62% of respondents credited the stairwell project with their increased stair use and 86% had more positive perceptions towards the FSPH since the project was implemented (UCLA Healthy Campus Initiative, 2017). Elements that respondents found the most appealing was the artwork, new paint, and the decals placed on doors to inspire stair use over elevator use (UCLA Healthy Campus Initiative, 2017).

Through design changes, visual cues, and the collaborative efforts of those involved in the stairwell project, the promotion of stair use increased physical activity helping to improve public health (UCLA Healthy Campus Initiative, 2017). These factors along with elements discussed in the study done by Maastricht University in the Netherlands were considered when planning this project to quantitatively determine what UBC students considered an effective stair wrap. Thus, colorful visual cues along with aesthetics, visibility, and accessibility will be

focused on in our survey questions to see if these factors are also important to UBC students in affecting their stair use. Questions considering students' awareness of the stair wrap, opinions on the accessibility of the stairwell, and whether the aesthetics of the stair wrap has an impact on their conscious decisions to take the stairs will be asked.

Emily Macrae's 2016 news article "*How Stairs Can Improve Public Health*" reviews Toronto's "*Rediscover the Stairs*" campaign which has been carried out in over forty workplaces, using signage to remind the public that stairs provide physical activity which can be integrated into activities of daily living. However, design flaws, poor lighting, and location were revealed to be some of the biggest issues preventing people from taking the stairs (Macrae, 2016). To mitigate this, low-cost interventions such as adding paint and carpet significantly increased positive perceptions and active use (Macrae, 2016).

While certain aesthetic and design flaws can be easily addressed to increase stair use for the general public, stairs can also represent an accessibility barrier rather than a fitness opportunity for many individuals including persons with disabilities, seniors, and young children. As such, it was imperative that we discovered the factors that would decrease the barriers to individuals using the stairs.

Methods

Participants

Respondents in this survey included 40 University of British Columbia (UBC) students. Respondents included 25 people with she/her pronouns and 15 people with he/him pronouns. Of

the survey respondents, 23 identified their ethnicity as asian, 17 as caucasian, 1 as pacific islander, and 1 as black/african. We received the highest response rate from students in their fourth year of university (41.0%), followed closely by students in their third year of university (35.9%).

Materials and Data Collection

A 15-question online survey was created using the platform Qualtrics (Appendix A). All respondents agreed to the terms and conditions of the *Participant Consent Form for Class-Based Projects* which accompanied the survey and contained information regarding the project's principal investigator, purpose, procedure, outcomes, benefits, confidentiality, risks, contact information, complaints, and consent. The survey included multiple choice, likert-scale, and open-ended responses. The data collected sought respondents' stair-use patterns, their reasons for taking the stairs or elevator, the perceived effectiveness of stair wraps, and what interventions would increase their stair-use. Data collection occurred online with survey access granted through an anonymous link shared by the research team.

Design and Procedure

The research design of this project was quantitative and focused on numerical data collected from a survey. Quantitative methods are characterized by determining the relationship between an independent variable and a dependent variable as described by the USC Libraries research guide (2020). In the case of the UBC SEEDS stair wrap intervention, the independent variable is the stair wraps while the dependent variable is the students. Within the survey qualitative aspects were included which allowed us "to make sense of, or interpret, phenomena in

terms of the meanings people bring to them" as stated by Lisa Given, editor of *The Sage Encyclopedia of Qualitative Research Methods* (2008, p. 313). Qualitative aspects were demonstrated in survey questions which asked respondents to share their personal opinions regarding the perceived effectiveness of stair wraps in increasing physical activity. The quantitative research design explored the relationship between stair wraps and their perceived effectiveness to better inform future research and interventions occuring at UBC.

Recruitment

The chosen demographic was UBC students and after assessing survey results a sub-group would be further analyzed based on which year of university they are in, their age, ethnicity, pronouns, or activity level. The survey could be completed online by following an anonymous link shared by the research team on their personal social media accounts or via text message. Disseminating the survey in this way likely limited respondents to friends and mutual friends, but there is no definitive way to know as we did not require respondents' names in the survey.

Analyzing Results

Survey results have the potential to inform future stair wrap interventions led by the UBC SEEDS sustainability program. A minimum of 40 survey responses was successfully achieved, with the collective thoughts, beliefs, and ideas of UBC students being highly valuable in guiding future decisions regarding stair wrap interventions on the UBC campus.

Challenges and Rationale

Initially we planned to book a table in the AMS Nest building (the Nest) at UBC to collect data. Here we would inform patrons utilizing the Nest about our SEEDS research project and ask them if they would like to participate in the survey. Laptops would be provided on-site so the survey could be completed and submitted immediately. After calling the Nest general info phone number we learned that our research team would be charged a daily rate of $250 to collect data there seeing as we are not part of a UBC club. We were then advised by the Nest to contact the Kinesiology Undergrad Society (KUS). If the KUS felt aligned with our research project they could book a table at no cost on our behalf thereby allowing us to collect data at the Nest. The KUS was emailed but we did not receive a response so our data collection method changed to recruiting in public spaces on campus.

With this form of recruitment we would again provide a brief overview of the SEEDS project and ask passerbys if they would like to participate in the survey. We would have QR codes produced by Qualtrics for the survey, these scanable codes would directly open the survey on the respondents mobile device. Unfortunately, before we had the opportunity to collect data this way campus was closed due to the global Coronavirus pandemic. For the health and safety of the community we changed our data collection method to strictly online.

The survey was disseminated online through personal social media accounts and via text message, informing potential respondents about our survey and how to access it online. We anticipated a low response rate because of the unique circumstances surrounding the Coronavirus pandemic. We understood that people may be feeling especially stressed, anxious, and concerned

during this time, all of which could impact the response rate of the survey. Yet, despite these factors we reached 40 survey respondents which was the minimum number of respondents needed for our survey.

Results

Data analysis

The research data was gathered using a survey through the Qualtrics software to determine the effectiveness of stair wraps on increasing physical activity. We identified key themes from the 40 respondents to identify the effectiveness of stair wrap interventions. This data was then inputted into JASP to calculate descriptive and inferential statistics. We also used qualitative descriptive statistics to explain correlations found.

General trends

From our sample population, we found 49.15% of participants take the elevator over the stairs because of convenience, and 11.86% who always choose to take the stairs over the elevator (Figure 1.1).

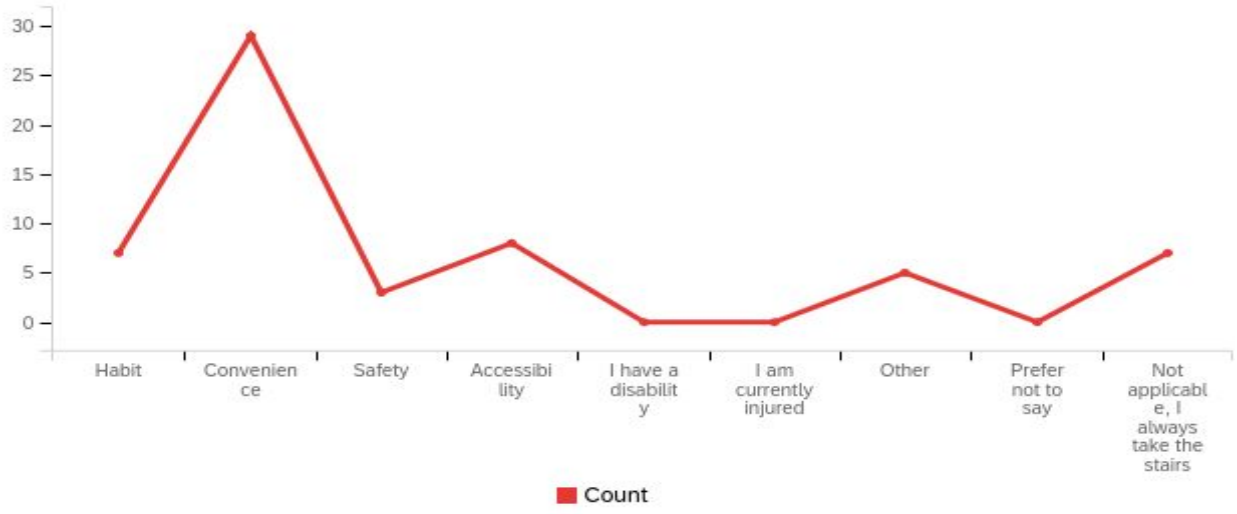
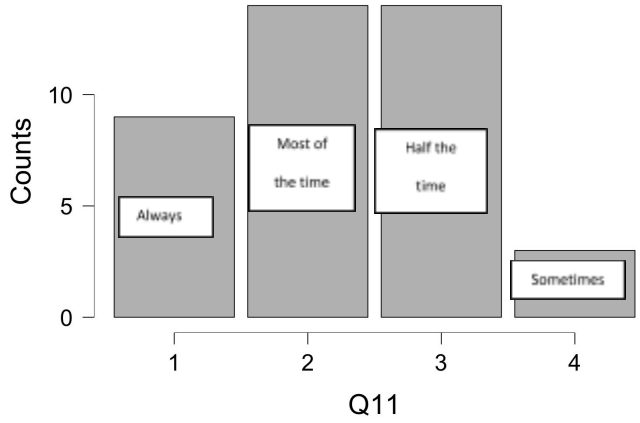


Figure 1.1: Data for question 13. Why do you choose to take the elevator instead of the stairs? Select all that apply.

For those who choose to take the stairs instead of the elevator, 23.53% do so because of convenience, and only 22.50% concisely choose the stairs for exercise. 55.00% of people noticed the stair wraps in the nest during MoveU month in February 2020. On average, our sample population visits the Nest building 3 times per week (M=3.20).

Overall, 23 out of the 40 respondents choose to take the stairs at least most of the time (graph 1.1). This trend was related to the activity levels of the sample population with the majority engaging in more than 30 minutes of moderate-vigorous physical activity per week (table 1.1).

Figure 1.2: Frequency Distribution Histogram for how often one chooses to take the stairs over the elevator



#	Field	Choice Count	
1	0 - 30 minutes	10.00%	4
2	31 - 60 minutes	25.00%	10
3	61 - 90 minutes	10.00%	4
4	91 - 120 minutes	12.50%	5
5	121 - 150 minutes	7.50%	3
6	Greater than 151 minutes	35.00%	14
			40

Table 1.1 – Data for question 7. On average, how many minutes do you engage in moderate or vigorous physical activity per week?

Shown below (figure 1.3) is the data if stair-wraps would increase the likelihood of one to use them. It trends towards a standard distribution, so it could be a factor; however, our data shows convenience is the main factor in why individuals choose to take the elevator versus the stairs.

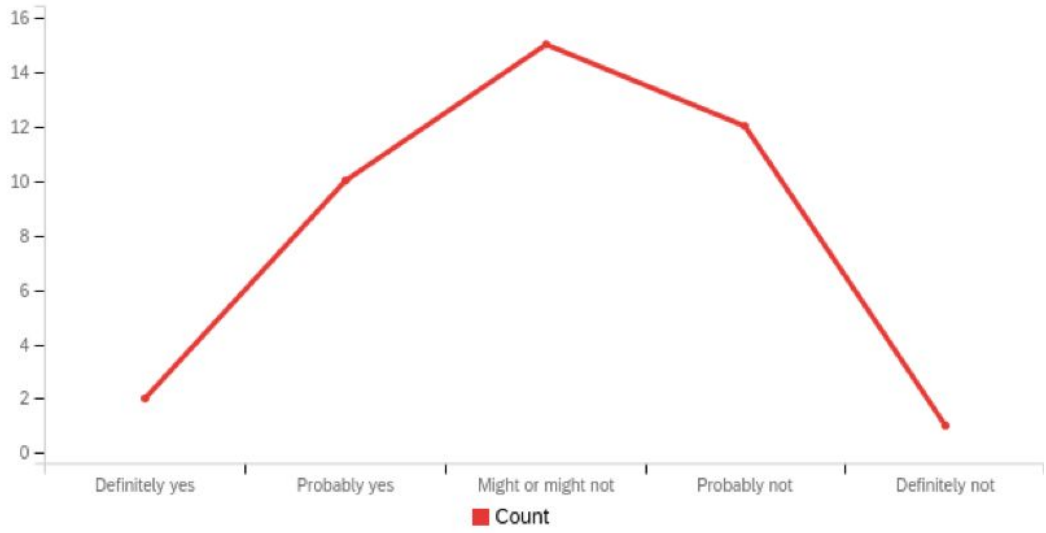


Figure 1.3: Data for question 15. Do you think you would be more inclined to take the stairs if they had a stair-wrap?

Stair wrap characteristics

According to our participants, the majority are more likely to take the stairs if they had a stair-wrap on them (shown in table 1.2). This finding may support the implementation of stair-wraps in buildings across the UBC campus to promote stair usage.

#	Field		Choice Count
1	Definitely yes	5.00%	2
2	Probably yes	25.00%	10
3	Might or might not	37.50%	15
4	Probably not	30.00%	12
5	Definitely not	2.50%	1
			40

Table 1.2 – Data for question 15. Do you think you would be more inclined to take the stairs if they had a stair-wrap?

Areas for improvement

Overall, stair wraps do not seem correlated to increasing physical activity.

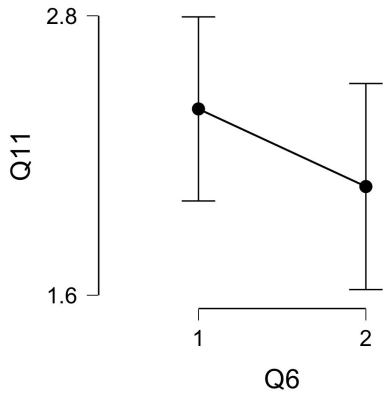
Convenience seems to be the main reason individuals chose the elevator over stairs. If SEEDS could find a way to work with UBC to make stair wells the most accessible choice throughout campus, then there could be an increase in overall stair use.

Of this sample population, 24.51% said artwork would increase their stair use; bright lighting and clear signage were also high among the list. Taking this into consideration, UBC could install a combination of these techniques to promote stair use which would directly increase one's daily physical activity.

Correlations

Shown in figure 1.2, we found women are more likely to take the stairs over males. This finding may be due to the sample population; we had 25 individuals who identify as female, and 15 who identify as male.

Figure 1.2: Descriptive Plot for gender vs. likelihood of taking the stairs



However, our results seem to show little correlation between stair wraps and an increase in physical activity. Further research needs to be done with a larger sample size to support a positive relationship between stair wraps and their effectiveness in increasing one's physical activity levels. Our data shows a $p > .05$. Therefore, there is too high of a probability that the relationship between these two variables does not exist in the population, and thus we cannot conclude with certainty that stair-wraps have an influence in increasing physical activity. It is not statistically low enough to support our research hypothesis. The likelihood of doing so in error is too large. More research needs to be done in this area for a better understanding on this topic.

In summary, we found that stair-wraps were a good promotional tool, but the data does not show enough of a relationship in increasing one's daily physical activity due to the lack of sample size.

Discussion

UBC SEEDS and Athletics and Recreation had the desire to create environments that promote holistic living. Pertaining to the stair wrap intervention, a holistic approach would be that of taking the stairs instead of the elevator. Our group was then tasked with exploring the effectiveness of stair wraps in promoting stair use, as well as exploring different kinds of installations that may support individuals in the UBC community to take the stairs, making it a habit that would lead to increased daily physical activity levels.

At the beginning of this project we sought out specific groups, how they perceived stair wraps, and how that may be correlated to their average weekly physical activity levels. We wanted to focus on first- and second-year students as it is in these initial years of university that habits can be set for the remaining years on campus. Due to the coronavirus our survey was instead promoted through social media platforms or text messages. The shift from approaching students in-person to people we were already in contact with through social media led to a greater percentage of upper-years partaking in the survey, some of which are likely Kinesiology students. Therefore, we took the sum of our respondents and analyzed them as a whole without creating a sub-group and instead generalized our findings.

One of our findings indicated that almost ¾ of the respondents preferred taking the elevator over the stairs in instances when it was more convenient. Convenience can be speculated as elevators being faster than the stairs or along one's preferred route. However, even though people often choose the elevator out of convenience, 35% of respondents chose the stairs "most of the time" and another 35% of respondents chose the stairs "about half the time". These values correlate to the 35% of respondents who engage in an average of 151+ minutes of moderate to vigorous physical activity per week.

Our project also looked at the noticeability and effectiveness of stair wraps in promoting stair use. Our group focused on the stair wraps installed in the Nest Building during February 2020, the MoveUBC month. Of the survey respondents, 27.5% visited the nest a minimum of once a week, these respondents noticed the stair wraps applied to the mains stairs leading to the upper levels of the building. However, when respondents were asked if they would be more

inclined to take the stairs if they had a stair wrap only 5% said “definitely yes” and 25% said “probably yes” putting into question the actual effectiveness of stair wraps in increasing physical activity.

The aesthetics, cleanliness and liveliness of stairwells as factors that encourage universities and broader communities to take the stairs is fairly new, with recent studies from Maastricht University and UCLA being the most prominent in available literature. These studies took different approaches to improving stairwells, yet both found positive changes in behaviour and an increase in stair use. Our group approached this project through a theoretical lens which involved self-reporting on behaviours and perceptions. While not conclusive in regards to behaviour changes due to the implemented stair wraps, our project in addition to that of fellow research groups can serve as a guide for UBC SEEDS and Athletics and Recreation wishing to move forward with moving forward with stair wrap interventions.

It is fair to say that this project was reasonably inconclusive in regards to the effectiveness of stair wraps, while some participants may take the stairs over the elevator, and might be more likely to do so if stairs are presented with “motivational” wraps, these values did not present as being statistically significant. Further studies are needed in order to determine the true effectiveness of stair wraps related physical activity and health promotion.

A notable takeaway from this project is that people most often choose the stairs (60%) or the elevator (72.5%) out of convenience. The Ottawa Charter for Health Promotion embraces the importance of “making the healthiest choice the easiest choice” famously spoken by Nancy Milio (as cited in O’Neil et al., 2012, p. 9). Upgrading building stairwells to make them more

convenient may not be feasible depending on resources, but low-cost interventions can be carried out to make stairwells more agreeable and user-friendly. From our research we also found that respondents liked the idea of increased artwork, lighting and directions towards stairs. Increased signage directing patrons to the stairwell and signage within stairwells informing patrons of the rooms on each floor are examples of ways convenience can be increased, while artwork and bright lighting are examples of ways to beautify stairwells.

Recommendations

The recently installed stair wraps in buildings across UBC have prompted further investigation about stair use and the effectiveness of stair wraps in increasing physical activity. A few main findings from the results section will be examined and recommendations for future stair wrap implementation will be provided to help increase the effectiveness of stair wraps in increasing stair use. Additionally, short and long-term suggestions will be provided to act as a guide for future studies.

Beginning with the response that most participants answered similarly on, it was discovered that nearly ¾ of respondents stated they take the elevator out of convenience. This should come as no surprise since most individuals typically choose whichever option is the most convenient for them. Building off of the principles of health promotion and the focus of making the healthiest choice the easiest choice, stairs need to be illustrated as the easiest option if people are to take them more often than the elevator. With this in mind, a few specific recommendations can be carried out to make stairs more favourable.

Our findings also indicated that 62.5% of respondents with varying levels of agreement stated stair-wraps are an effective way to encourage stair use instead of the elevator and promote physical activity. Conversely, only 30% of respondents with varying levels of agreement said they would be more inclined to take the stairs if they had a stair-wrap. Therefore, it is recommended that greater focus is placed on improving stairwell convenience more broadly as it was cited as the top reason for taking either the stairs or elevator. It is suggested that directional signage is installed to help indicate where stairwells are located. Signage can be wall-mounted or on sandwich boards in convenient locations throughout the building. For many, it can be difficult to orient yourself in unfamiliar buildings on campus and individuals may feel intimidated by their new surroundings. If individuals become familiarized with the stairs in buildings before elevators, this may become ingrained as the easiest choice purely out of habit. Bright, eye-catching signs providing the location of stairs and accompanying wraps will not only help individuals find the stairs but may also spark individual interest to discover the wraps firsthand. This is vital as 55% of respondents reported they noticed the stair wraps installed in the Nest, which leaves 45% of respondents unaware or not noticing that the stair wraps were there. To truly evaluate the effectiveness of stair wraps, nearly all respondents should be aware of them and it is believed additional signage will help mitigate this.

Further, in addition to providing stair wrap signage, elevator wraps can be installed on the outside of elevator doors. These wraps can be brightly coloured, easy to read and can serve to provide directions to nearby stairs while promoting the idea of convenience and saving time. For example, one wrap could be “Tired of waiting? Need some colour in your life? Check-out the new stair wrap and take the stairs!” paired with arrows pointing towards the stairs. This will help

illuminate the idea of speed and convenience associated with stair use. These wraps could be an effective tool for reminding individuals that the stairs are an efficient and appealing option while providing direction to building users.

Interestingly enough, findings from the survey indicated that women were more likely to take the stairs over men. While these results may only be by chance due to the smaller sample size of 40 people which contained fewer men to begin with (15 people indicated they go by he/him pronouns), some inferences can still be made and recommendations provided. Assuming these findings could be replicated and remain statistically significant across a larger cohort, men are considered a target audience for populations that should increase their stair use. As mentioned in the Introduction and Literature Review section, studies show that stair use has been found to reduce the risk of cardiovascular disease (Meyer et al., 2010). This is an important detail as men are more at risk for developing cardio-vascular disease at an earlier age and have a substantially higher mortality rate than women (Mosca, 2011).

Utilizing the Health Belief Model (Champion, 2008) discussed in Kin 464, stair wraps could be installed with this framework in mind in order to reach target audiences and evoke change from particular parties. To explain this framework in action, consider the following suggestion: Stair wraps could be themed with medical facts to help promote stair use by men. This could include health statistics like, “Did you know – men have a greater risk of developing cardio-vascular disease (CVD) compared to women? Luckily for you, stairs can help decrease this. With each step you are helping improve this statistic”. This type of messaging is informative and grants insight about health issues populations may not be aware of while also providing a simple solution and health benefit. This type of messaging does not promote gender

roles of fitness but rather is health improvement and promotion focused. The key components of this model includes perceived susceptibility (how susceptible are individuals to developing CVD) and perceived severity (what is the mortality rate), as well as perceived benefits and perceived barriers of health-related behaviours. . It is important to note that women also suffer from CVD and have a higher mortality rate at an older age due to this disease (Mosca, 2011). To encourage all populations, perhaps medical messaging could be geared towards Men and Women's Health Month (June and May respectively) with health themes corresponding to the particular month.

Lastly, the results from the survey found that 24.51% percent of respondents stated artwork would help increase their stair use. These results are conclusive with findings from previous literature reviews which found bright lighting, clear signage and bright colours helped promote stair use (Macrae, 2016). To support artwork, UBC could promote local artists' work along the walls of stairwells, railings or on the stairs themselves. This would enable the engagement of more students and help foster a sense of community across campus. Similar to an art exhibition, new artwork can be on display every month or 4 months which can entice individuals to take the stairs to see what has been recently painted or put on display and help engage a broader audience across UBC. Stair wraps in the form of local, authentic art is a cost-effective way to improve the effectiveness of stair wraps as well as aid in cultivating a better overall health experience for the UBC population.

Recommendations for Future Studies

For the 22.5% of respondents who always take the stairs, these individuals are not the target population but could provide insight as to why they consistently choose the stairs over the

elevator. Their reasoning could help with further developing ideas about stair wrap effectiveness or what they find attractive in stair-use. For this survey, only two respondents who always take the stairs provided brief reasoning which included, “the elevator is slow” and “view elevator as a necessity for others and not myself.” With very limited reasoning provided no statistical inferences can be made and further research is required.

Future studies analyzing the effectiveness of stair wraps in increased stair use would be best conducted with a larger sample size. Given that some results from this project were rather inconclusive, such as the relationship between stair wraps, baseline physical activity levels, and increasing physical activity levels, it is highly recommended that future studies have a larger sample size. Moreover, it is suggested that future studies are conducted largely in person and survey mediators have a table placed near an elevator informing individuals of the stair wrap’s location and if they would like to complete a survey and enter to win a prize. This may prompt those who were unaware of the stairs location to investigate the new wraps but also allows for data collection of individuals using the elevator. A survey table should be placed at the top and bottom of the stairwell where the stair wrap is present to aid in data entry from those who took the stairs. These types of situations could allow for open-house style data collection alongside the survey. In addition to this, stair wrap effectiveness may be best measured in buildings that require the vast majority of individuals to access another floor. The second floor of the Nest is not used by all building occupants and may produce different or less accurate results. Lastly, similar to this survey, it is suggested QR codes or survey links are posted in convenient locations by the stairs, elevator and social media platforms to get responses at times when research mediators are not present. Those developing survey questions in the future should consider the

value of both quantitative and qualitative questions and employ the one which best serves the researchers methodology in order to achieve greater insight to intrinsic and extrinsic motivations which influence an individual's likelihood of taking the stairs. Prospective research could mimic the structure of this survey, which was quantitative supplemented with qualitative aspects.

Future Research - Beyond Stair Wraps

To include a greater population, future studies should analyze the effectiveness of ramp-wraps. Ramp-wraps are more inclusive and allow persons with disabilities, individuals in wheelchairs or those with invisible disabilities to feel more included in health promotion through physical activity where they may otherwise feel excluded from stair wraps. While ramps may not be present and cannot be installed everywhere, where applicable it is a healthier option compared to elevators and may be more inclusive than stairs. Ramp-wraps could be further analyzed in contrast to stair wraps in order to find which individuals actually enjoy more.

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Appendices

Appendix A

Survey Questions

1. Participant consent form for class-based projects (see Appendix B)
2. If you are a UBC student, which year of university are you in?
    - 1st year
    - 2nd year
    - 3rd year
    - 4th year
    - Post graduate
    - Not applicable
3. What is your age?
    - 18 or younger
    - 19
    - 20
    - 21
    - 22
    - 23
    - 24
    - 25
    - 26

- 27
- 28
- 29
- 30 or older
- Prefer not to say

4. I identify my ethnicity as: Select all that apply.
    - Caucasian
    - Black/African
    - Asian
    - Hispanic/Latinx
    - Pacific Islander
    - Indigenous/First Nations/Aboriginal
    - Other
    - Prefer not to say
5. What are your gender pronouns?
    - She/her
    - He/his
    - They/them
    - Prefer not to say
6. On average, how many minutes do you engage in moderate or vigorous physical activity per week? Note: Moderate-intensity physical activities will cause adults to sweat a little and to breathe harder, such as brisk walking and bike riding. Vigorous-intensity physical

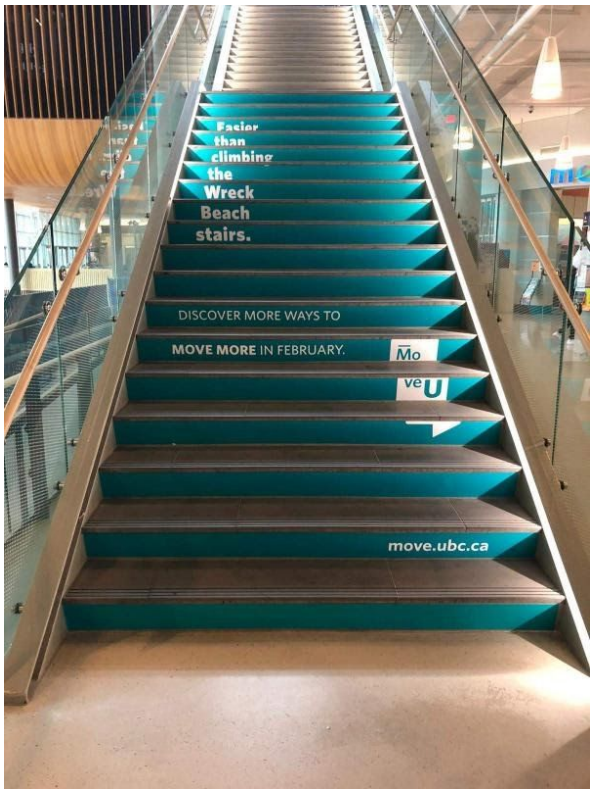
activities will cause adults to sweat and be ‘out of breath’, such as jogging and cross-country skiing.

- 0 - 30 minutes
- 31 - 60 minutes
- 61 - 90 minutes
- 91 - 120 minutes
- 121 - 150 minutes
- Greater than 151 minutes

7. On average, how often do you visit the Nest building at UBC per week? Note: Multiple visits per day count as separate visits.
    - 7+ times a week
    - 4-6 times a week
    - 2-3 times a week
    - Once a week
    - Never
8. How often do you choose to take the stairs instead of the elevator?
    - Always
    - Most of the time
    - About half the time
    - Sometimes
    - Never
9. Why do you choose to take the STAIRS instead of the elevator? Select all that apply.

- Habit
- Exercise
- Convenience
- Safety
- Accessibility
- Less busy
- Other
- Prefer not to say
- Not applicable, I always take the elevator

10. Why do you choose to take the ELEVATOR instead of the stairs? Select all that apply.
    - Habit
    - Convenience
    - Safety
    - Accessibility
    - I have a disability
    - I am currently injured
    - Other
    - Prefer not to say
    - Not applicable, I always take the stairs
11. Stair-wraps are adhered to staircases with the hopes of increasing stair-use and beautifying a space. In February 2020 this stair-wrap was installed at the Nest building, did you notice it?



Repole, Natalie. (2020). The nest stairwell [Digital image]. Natalie's personal photograph.

- Yes
- No
- Unsure, I can't recall either way

12. Do you think you would be more inclined to take the stairs if they had a stair-wrap?

- Definitely yes
- Probably yes

- Might or might not
- Probably not
- Definitely not

13. Select the image of the staircase you are more likely to take.

	
Grey concrete stairwell [Digital image]. (n.d.). Retrieved from https://tampaflconcrete.com/stair-contractor/	Stair-wrapped stairwell [Digital image]. (2014, September 16). Retrieved from https://twitter.com/topublichealth/status/512014784284590080

- Without stair-wrap.
- With stair-wrap.
- I am not likely to take one staircase over the other.

14. What staircase installations would likely increase your personal stair-use? Select all that apply.

- Stair-wraps
- Bulletin boards
- Bright lighting
- Clear signage indicating where the stairs are
- Motivational messages
- Music
- Artwork
- Other
- Nothing would increase my stair-use

15. Overall, do you think stair-wraps are an effective way to encourage people to choose the stairs instead of the elevator and promote physical activity?

- Strongly agree
- Agree
- Somewhat agree
- Neither agree nor disagree
- Somewhat disagree
- Disagree
- Strongly disagree

Appendix B

Participant Consent Form for Class-based Projects

KIN 464: Health Promotion and Physical Activity - Stair Wrap Intervention Group #9

Principal Investigator:

Dr. Andrea Bundon (Assistant Professor, School of Kinesiology, Faculty of Education)

The purpose of the class project:

To gather knowledge and expertise from community members on the effectiveness of stair and elevator wrap on increasing physical activity.

Study Procedures:

With your permission, we are asking you to participate in a survey. With the information gathered, students will critically examine how different individuals understand or engage in health promoting activities or health promotion initiatives.

Project outcomes:

The information gathered will be part of a written report for the class project. The written report will be shared with campus partners involved with the project. Summaries of findings will also be posted on the following websites. *No personal information/information that could identify participants will be included in these reports or shared with campus partners.*

UBC SEEDS Program Library:

https://sustain.ubc.ca/courses-degrees/alternative-credit-options/seeds-sustainability-program/seeds-sustainability-library

Potential benefits of class project:

There are no explicit benefits to you by taking part in this class project. However, the interview will provide you with the opportunity to voice your opinion on your experiences with health promoting activities or initiatives in a broad sense and will provide the students with an opportunity to learn from your experiences.

Confidentiality:

Maintaining the confidentiality of the participants involved in the research is paramount, and no names of participants will be collected.

At the completion of the course, all data (i.e. notes) and signed consent forms will be kept in a locked filing cabinet in Dr. Andrea Bundon's research lab (1924 West Mall) at the University of British Columbia. All data and consent forms will be destroyed 1 year after completion of the course.

Risks:

The risks associated with participating in this research are minimal. There are no known physical, economic, or social risks associated with participation in this study. You should know that your participation is completely voluntary and you are free to withdraw from the study and

there will not be negative impacts related to your withdrawal. If you withdraw from the study, all of the information you have shared up until that point will be destroyed.

Contact for information about the study:

If you have any questions about this class project, you can contact Andrea Bundon by phone at 604-822-9168 or by email at andrea.bundon@ubc.ca

Research ethics complaints:

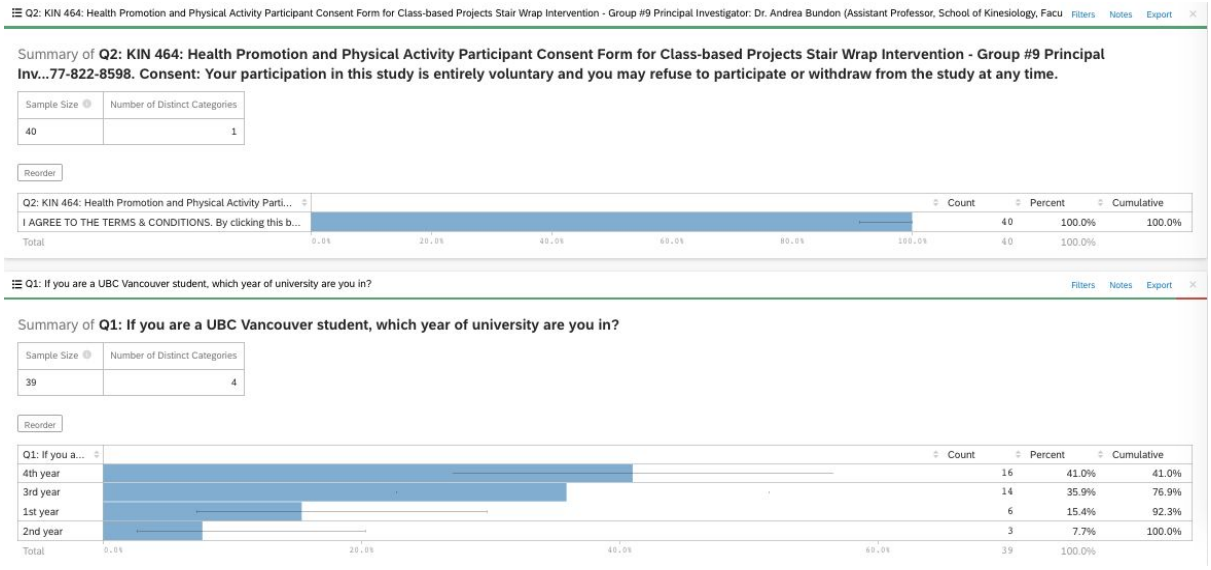
If you have any concerns or complaints about your rights as a research participant and/or your experiences while participating in this study, contact the Research Participant Complaint Line in the UBC Office of Research Ethics at 604-822-8598 or e-mail RSIL@ors.ubc.ca . or call toll free 1-877-822-8598.

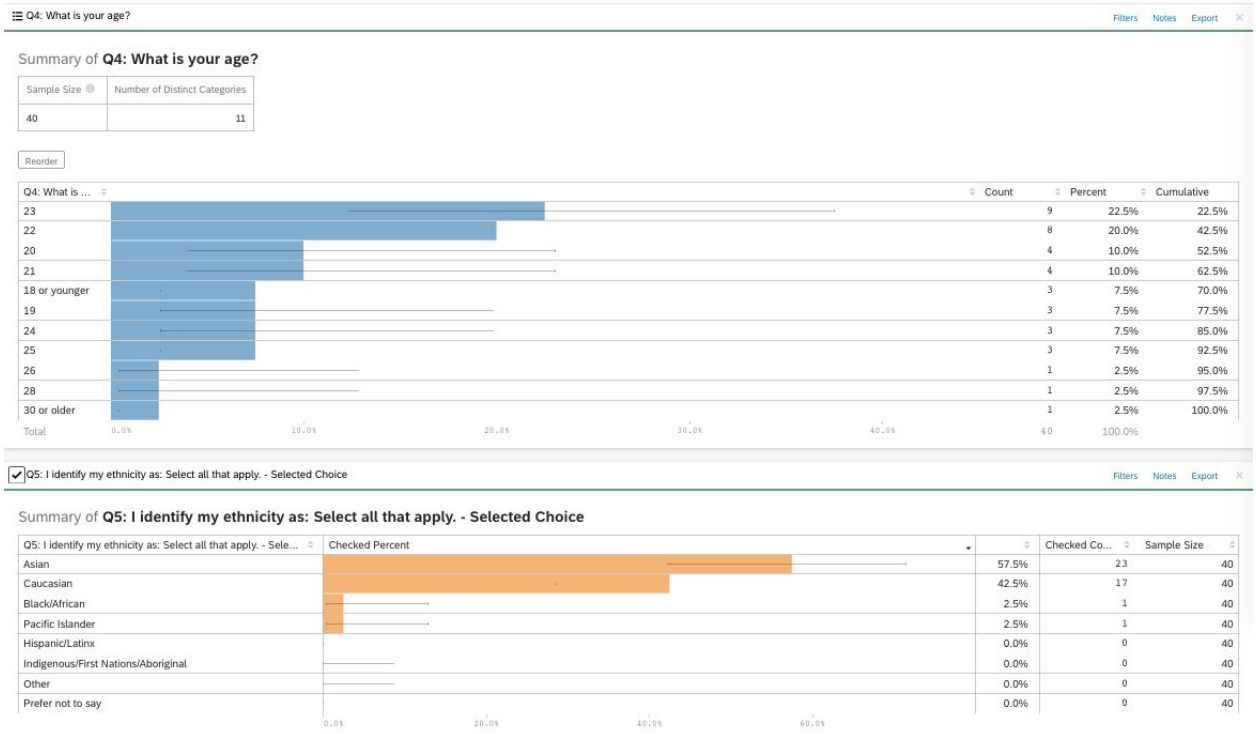
Consent:

Your participation in this study is entirely voluntary and you may refuse to participate or withdraw from the study at any time.

Appendix C

Qualtrics Survey Question Results





Q6: What are your gender pronouns?

Filters Notes Export

Summary of **Q6: What are your gender pronouns?**

Sample Size	Number of Distinct Categories
40	2

Reorder

Q6: What ar...	Count	Percent	Cumulative
She/her	25	62.5%	62.5%
He/his	15	37.5%	100.0%
Total	40	100.0%	

Q7: On average, how many minutes do you engage in moderate or vigorous physical activity per week? Note: Moderate-intensity physical activities will cause adults to sweat a little and to breathe harder, such as brisk walking and

Filters Notes Export

Summary of **Q7: On average, how many minutes do you engage in moderate or vigorous physical activity per week? Note: Moderate-intensity physical activities will c...g and bike riding. Vigorous-intensity physical activities will cause adults to sweat and be 'out of breath', such as jogging and cross-country skiing.**

Sample Size	Number of Distinct Categories
40	6

Reorder

Q7: On average, how many ...	Count	Percent	Cumulative
Greater than 151 minutes	14	35.0%	35.0%
31 - 60 minutes	10	25.0%	60.0%
91 - 120 minutes	5	12.5%	72.5%
0 - 30 minutes	4	10.0%	82.5%
61 - 90 minutes	4	10.0%	92.5%
121 - 150 minutes	3	7.5%	100.0%
Total	40	100.0%	

Q9: On average, how often do you visit the Nest building at UBC per week? Note: Multiple visits per day count as separate visits.

Filters Notes Export

Summary of **Q9: On average, how often do you visit the Nest building at UBC per week? Note: Multiple visits per day count as separate visits.**

Sample Size	Number of Distinct Categories
40	5

Reorder

Q9: On average, ...	Count	Percent	Cumulative
2-3 times a week	11	27.5%	27.5%
Once a week	11	27.5%	55.0%
Never	7	17.5%	72.5%
7+ times a week	6	15.0%	87.5%
4-6 times a week	5	12.5%	100.0%
Total	40	100.0%	

Q11: How often do you choose to take the stairs instead of the elevator?

Filters Notes Export

Summary of **Q11: How often do you choose to take the stairs instead of the elevator?**

Sample Size	Number of Distinct Categories
40	4

Reorder

Q11: How often do yo...	Count	Percent	Cumulative
About half the time	14	35.0%	35.0%
Most of the time	14	35.0%	70.0%
Always	9	22.5%	92.5%
Sometimes	3	7.5%	100.0%
Total	40	100.0%	

Q12: Why do you choose to take the STAIRS instead of the elevator? Select all that apply. - Selected Choice

Filters Notes Export

Summary of **Q12: Why do you choose to take the STAIRS instead of the elevator? Select all that apply. - Selected Choice**

Q12: Why do you choose to take the STAIRS instead of t...	Checked Percent		Checked Co...	Sample Size
Convenience		60.0%	24	40
Exercise		57.5%	23	40
Habit		50.0%	20	40
Less busy		50.0%	20	40
Accessibility		27.5%	11	40
Other		7.5%	3	40
Safety		2.5%	1	40
Prefer not to say		0.0%	0	40
Not applicable, I always take the elevator		0.0%	0	40

0.0% 20.0% 40.0% 60.0%

Q12_7_TEXT: Other - Text

Filters Notes Export

Summary of **Q12_7_TEXT: Other - Text**

Sample Size	Number of Distinct Categories
3	3

Reorder

Q12_7_TEXT: Other - Text		Count	Percent	Cumulative
The floor I am going to is between 1-5		1	33.3%	33.3%
View elevator as a necessity for others and not myself.		1	33.3%	66.7%
the elevator is slow		1	33.3%	100.0%
Total	0.0% 20.0% 40.0% 60.0% 80.0%	3	100.0%	

Q13: Why do you choose to take the ELEVATOR instead of the stairs? Select all that apply. - Selected Choice

Filters Notes Export

Summary of **Q13: Why do you choose to take the ELEVATOR instead of the stairs? Select all that apply. - Selected Choice**

Q13: Why do you choose to take the ELEVATOR instead ...	Checked Percent		Checked Co...	Sample Size
Convenience		72.5%	29	40
Accessibility		20.0%	8	40
Habit		17.5%	7	40
Not applicable, I always take the stairs		17.5%	7	40
Other		12.5%	5	40
Safety		7.5%	3	40
I have a disability		0.0%	0	40
I am currently injured		0.0%	0	40
Prefer not to say		0.0%	0	40

0.0% 20.0% 40.0% 60.0% 80.0%

Q13_7_TEXT: Other - Text

Filters Notes Export

Summary of **Q13_7_TEXT: Other - Text**

Sample Size	Number of Distinct Categories
5	5

Reorder

Q13_7_TEXT: Other - Text		Count	Percent	Cumulative
If I'm carrying a lot of heavy things		1	20.0%	20.0%
Laziness		1	20.0%	40.0%
The floor I am going to is 5+		1	20.0%	60.0%
When too far		1	20.0%	80.0%
when i'm tired		1	20.0%	100.0%
Total	0.0% 20.0% 40.0% 60.0%	5	100.0%	

Q14: Stair-wraps are adhered to staircases with the hopes of increasing stair-use and beautifying a space. In February 2020 this stair-wrap was installed at the Nest building, did you notice it?

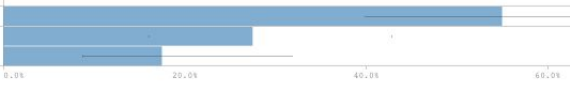
Filters Notes Export

Summary of **Q14: Stair-wraps are adhered to staircases with the hopes of increasing stair-use and beautifying a space. In February 2020 this stair-wrap was installed at the Nest building, did you notice it?**

Sample Size	Number of Distinct Categories
40	3

Reorder

Q14: Stair-wraps are adhered to staircases ...	Count	Percent	Cumulative
Yes	22	55.0%	55.0%
No	11	27.5%	82.5%
Unsure, I can't recall either way	7	17.5%	100.0%
Total	40	100.0%	



Q15: Do you think you would be more inclined to take the stairs if they had a stair-wrap?

Filters Notes Export

Summary of **Q15: Do you think you would be more inclined to take the stairs if they had a stair-wrap?**

Sample Size	Number of Distinct Categories
40	5

Reorder

Q15: Do you think y...	Count	Percent	Cumulative
Might or might not	15	37.5%	37.5%
Probably not	12	30.0%	67.5%
Probably yes	10	25.0%	92.5%
Definitely yes	2	5.0%	97.5%
Definitely not	1	2.5%	100.0%
Total	40	100.0%	

Q16: Select the image of the staircase you are more likely to take.

Filters Notes Export

Summary of **Q16: Select the image of the staircase you are more likely to take.**

Sample Size	Number of Distinct Categories
40	3

Reorder

Q16: Select the image of the staircase you are more likely...	Count	Percent	Cumulative
I am not likely to take one staircase over the other.	19	47.5%	47.5%
With stair-wrap.	18	45.0%	92.5%
Without stair-wrap.	3	7.5%	100.0%
Total	40	100.0%	

Q17: What staircase installations would likely increase your personal stair-use? Select all that apply. - Selected Choice

Filters Notes Export

Summary of **Q17: What staircase installations would likely increase your personal stair-use? Select all that apply. - Selected Choice**

Q17: What staircase installations would likely increase y...	Checked Percent		Checked Co...	Sample Size
Artwork		62.5%	25	40
Bright lighting		52.5%	21	40
Clear signage indicating where the stairs are		40.0%	16	40
Stair-wraps		32.5%	13	40
Motivational messages		27.5%	11	40
Music		27.5%	11	40
Nothing would increase my stair-use		7.5%	3	40
Bulletin boards		2.5%	1	40
Other		2.5%	1	40

Q17_8_TEXT: Other - Text

Filters Notes Export

Summary of **Q17_8_TEXT: Other - Text**

Sample Size	Number of Distinct Categories
40	2

Reorder

Q17_8_TEXT: Other - Text	Count	Percent	Cumulative
(blank)	39	97.5%	97.5%
Tapes to indicate each step	1	2.5%	100.0%
Total	40	100.0%	

Q15: Overall, do you think stair-wraps are an effective way to encourage people to choose the stairs instead of the elevator and promote physical activity?

Filters Notes Export

Summary of **Q15: Overall, do you think stair-wraps are an effective way to encourage people to choose the stairs instead of the elevator and promote physical activity?**

Sample Size	Number of Distinct Categories
40	6

Reorder

Q15: Overall, do you think stair-...	Count	Percent	Cumulative
Somewhat agree	13	32.5%	32.5%
Agree	8	20.0%	52.5%
Somewhat disagree	7	17.5%	70.0%
Neither agree nor disagree	6	15.0%	85.0%
Strongly agree	4	10.0%	95.0%
Disagree	2	5.0%	100.0%
Total	40	100.0%	