

**The University of British Columbia's Wellbeing Initiative Mental Health of Campus Residents Through  
the Built Environment**

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**University of British Columbia**

**PLAN 579**

**December 09, 2014**

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# The University of British Columbia's Wellbeing Initiative Mental Health of Campus Residents Through the Built Environment



PLAN 579/SPPH 571 Final Project  
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Tuesday, December 9<sup>th</sup>, 2014

## Abstract

Positive mental health and wellbeing is the ability to enjoy life and deal with various challenges on a day-to-day basis. As public health issues are becoming more prominent in society, so are the resources and creative strategies to reduce these issues. There is an ongoing shift in the focus of public health initiatives: from individuals to the community as a whole, and from reactive to preventative measures. The connection of the built environment in relation to the wellbeing and health of residents at The University of British Columbia (UBC), both students and non-student residents, is considered in this paper. UBC seeks to build a complete community on campus, and is focused on providing an environment for lifelong learning and support of residents' wellbeing. This report summarizes the current conditions at UBC and provides fifteen recommendations for how the university could improve the wellbeing of residents in three different aspects of the campus: public realm, informal learning spaces, and connections to the wider community. Best practice analysis of other university campuses and neighbourhood communities is used to address the ability for UBC to engage in these recommendations.

The public realm on the university campus includes, but is not limited to, the streets & pathways, building frontage & spacing, and courtyards & public art. Recommendations for UBC include:

- *Integrate public artwork within the public realm to foster a sense of community;*
- *Install community gardens within existing communities;*
- *Encourage residents and students to participate in dog therapy;*
- *Rent out UBC facilities for public events to bring residents onto campus;*
- *Develop complete student residence communities with amenities for students;*
- *Ensure easy access to mental health support;*
- *Provide dog therapy at student residences; and,*
- *Host art therapy sessions at student residences.*

Informal learning spaces in student residence buildings includes the following recommendations for UBC:

- *Expand informal gathering spaces in academic buildings, residences, and mixed-use hubs throughout campus;*
- *Implement planned outdoor learning spaces and identify priority areas for improvements to the outdoor learning environment;*
- *Consider establishing living-learning communities in existing residences; and,*
- *Support the 'Living Lab' philosophy by enhancing the visibility of UBC research in neighbourhoods on campus.*

With regards to connecting to the wider community, recommendations include:

- *Improving connections for pedestrians and cyclists during construction;*
- *Expanding the current TransLink shuttle service on campus; and,*
- *Consider establishing a high-tech bike share system on campus.*

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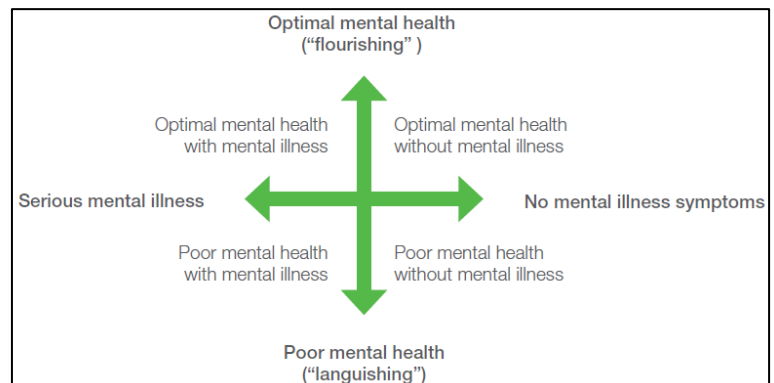
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# Mental Health and Wellbeing of Campus Residents

## Mental Health and Wellbeing

Mental health is the “capacity of each and all of us to feel, think, and act in ways that enhance our ability to enjoy life and deal with the challenges we face. It is a positive sense of emotional and spiritual well-being that respects the importance of culture, equity, social justice, interconnections, and personal dignity” (Government of Canada, 2006). While it is often used interchangeably with mental illness, they are distinct concepts that can manifest themselves independently of each other. A state of mental health is not simply the absence of mental illness. Given the proper environment, an individual with mental illness may experience positive mental health; in a less supportive environment, someone without an illness may languish (CACUSS/CMHA, 2013). Mental health interacts with physical health and social functioning to form an individual’s overall wellbeing, or their “perceptions and evaluations of their own life in terms of their affective states and their psychological and social functioning” (Keyes, 2002).



**Figure 1: The dual continuum model of mental health and mental illness. Reprinted from CACUSS/CHMA, 2013, p.6**

## Current State of Wellbeing of Campus Residents

The transition to life on campus can be challenging. Students have to adapt to living apart from family and friends, the pace and structure of post-secondary education, and may also be exposed to more alcohol consumption and drug abuse than in previous experience (Das & Evans, 2014; Nelson et al., 2009). They are also at an age when many mental illnesses begin to manifest themselves (Tompkins & Witt, 2009). These factors contribute to the 15-24 age range being the largest group of Canadians who face mental health challenges (Everall, 2013). Unfortunately, they are also the demographic which is least likely to seek help. A survey of student residents at Dalhousie found that 56% of respondents rated their stress level as high or very high (Makrides, 1998). In a survey of undergraduates from three public

BC universities, more than a third reported that they had experienced severe depression and 8.8% said they had seriously considered suicide (ACHA, 2013). The same survey found that only 45% of undergraduates met recommended levels of physical activity. The ‘Freshman 15’ is a widely publicized phenomenon of weight gain in new students stemming from poor diet, lack of exercise, and the overconsumption of alcohol, though research has shown that average weight gain is closer to five pounds (Kapinos et al., 2014; Vella-Zarb & Elgar, 2010). Highlighting the connection between mental and physical health, students (excluding varsity athletes) who do meet activity recommendations are one-third less likely to report poor mental health (VanKim & Nelson, 2013).

While students may be the visible demographic at-risk for mental health issues on campus, nearly half of UBC campus residents have no affiliation with the university. Little is known about the mental health of non-university affiliated residents living on a somewhat isolated campus however. The most recent survey of residents of the University Neighbourhoods Association (UNA) did not include questions on health and wellbeing, though two-thirds of respondents said they were satisfied with their neighbourhood (McAllister Opinions Research, 2008).

## **Conceptual Framework**

Fortunately, public awareness of mental health issues is increasing. There is an ongoing shift of focus for mental health initiatives from individuals to the community as a whole, and from reactive to preventative measures (Student Development & Services, 2013). Adopting this holistic approach means moving beyond counseling centers to the broader physical and social environment of the university, considering the needs of all residents- not just those diagnosed with mental illness- and helping to foster a ‘campus climate of care’ (Owens & Rodolfa, 2009). As UBC seeks to build a complete community on campus, one focused on lifelong learning and deeply supportive of its residents’ wellbeing, the purpose of this report is to summarize current conditions and provide recommendations for how the university could improve the wellbeing of residents in three different aspects of the campus: public realm, informal learning spaces, and connections to the wider community. For the purpose of this paper, student residents are defined as individuals registered in University courses that live in UBC facilities designated as student housing. Permanent residents encompass all individuals who live on UBC property not designated as student housing; these could include professors/staff and their associated spouses & children, as well as individuals who have no affiliation with the university. Currently, about 50% of residents on UBC campus are not affiliated with the university.

# Public Realm and University of British Columbia Residents

The public realm, as defined by the University of British Columbia, is ‘the collection of outdoor spaces between buildings shared by the university community of student, faculty, staff, alumni and the broader community’ (The University of British Columbia [UBC] 2009). The public realm encompasses the tangible and intangible entities individuals feel or experience in a space. Public realm includes, but is not limited to: streets & pathways, building frontage & spacing, and courtyards & public art. A good public realm has the potential to create memorable, usable and functional space, while providing opportunities for meeting other people. Jan Gehl, a scholar who has long justified the need for functional public space, states that good public realm allows for interactions with people, old and young, and provides space for people to watch what is going on in the ever changing human scene. The space allows an individual to be entertained by the street life and by the people actively using the streets (Gehl 1989). On a university campus such as UBC, there are many opportunities to use public realm to enrich the experience of all users of the campus space, including students, staff, faculty, residents and the greater public. Public realm can shape interactions, movement around campus, and can be an inspiration for creativity and ideas.

The university campus of today is largely an American invention; the earliest universities in Europe did not own their own buildings, but rather, taught out of the homes of the teachers or rented centrally located facilities. Even once institutions began to acquire property, these spaces were typically small and scattered throughout a city or built inward-looking around a central courtyard like most monasteries at the time. The tradition of placing buildings far apart in open spaces originated with the development of Harvard campus, both for practical (deterring fire spread) and philosophical reasons; their founders were idealists who believed in the ideal of community and felt the university campus should be an integral part of the town surrounding it. The notion of higher education being a total experience that is more than just what is learned in the classroom also influenced campus design (Gumprecht 2007).

## Public Realm at UBC

UBC has already put much thought and investment into revitalizing public spaces on campus with the creation of the ‘UBC Public Realm Plan for the Vancouver Campus’ (2009). This plan identified five (5) priority physical public realm projects needing improvement, which included:

- 1 Organizing transportation spines;
- 2 Large common areas;
- 3 Outdoor informal social and learning spaces;
- 4 Pedestrian pathways; and
- 5 Entryways.

UBC has worked hard to encourage creativity through making spaces across campus that allow for individuals or groups of people to use their imagination in space. For example, in the summer of 2014, an old piano was placed outside of the front entrance to the Student Union Building inviting students to play (seen in Figure 2). It allows students who do not have a piano to have access to one. Furthermore, the piano brings animation, vibrancy and engagement to the atmosphere of the campus community.



**Figure 2: Piano outside of the Student Union Building**

Relaxation in public space has been encouraged through the installation of three bentwood swings throughout campus. Also in the summer of 2014, UBC installed giant beanbag Pop Rocks (seen in Figure 3) to encourage people to sit, socialize and enjoy the space in front of Koerner Library.





**Figure 3: Pop Rocks outside of Koerner Library**

Other spaces, such as the skatepark, have been completely transformed to suit the needs and interests of the population at UBC. These spaces have all been successful in creating a good public realm at UBC, and are open to students, staff, faculty and the general public.



**Figure 4: Skatepark on UBC Campus**

Much has been written about the university campus as an educational entity, however, there is far less literature on the greater public purpose it has in serving and impacting the surrounding community. With its concert halls, museums, sports stadiums, landscaping, and busy event schedule, the campus is a hub of activities that can serve not only students and staff, but the larger population as well. This is especially true of campuses that are located outside of downtown areas or in small cities that may be isolated. UBC is an interesting situation, as the campus is part of the metropolis that is Vancouver, however, it can also be seen as semi-isolated due to being quite far out on a peninsula and largely surrounded by water. Though it is connected to the rest of the city by public transit, the only amenities that are walkable are on campus property. This makes residents reliant on the University for easily accessible amenities and entertainment. One does not want residents to feel like they need to

leave campus (and thus, their community) to get the things they need. A huge step in the right direction with respect to this was when the Save-On-Foods in Wesbrook Village opened in 2010; prior to this, residents had to leave campus to access a grocery store.

The plans created thus far are designed for directing and prioritizing investment in the public realm of the academic core of campus. This does not really have an immediate effect on the permanent residents who live on the periphery of campus. Residents may also use these spaces, however it is important to address the need for usable and enjoyable public spaces in the student residences across UBC campus.

### **Best Practices in Student and Permanent Residences**

Creating residences that cater to student needs is essential to optimize health and happiness within the community. Many student residences at UBC have the necessary amenities to help achieve this, however, some are lacking. Physical activity can help alleviate stress, anxiety and depression. It is therefore essential to provide access to fitness facilities in every single residence building. Currently, Fraser Hall and Walter Gage do not have fitness facilities, creating potential challenges for the residents in these buildings to have access to opportunities to exercise.

Privacy and open space are two other crucial components each residence must include. Lau (2014) outlines that privacy and open space are extremely important to reduce the negative impacts that residences have on students. Having privacy and a space to retreat to can help to buffer some of the negative impacts of a crowded and noisy residence. This allows for an individual to restore energy and reduce mental fatigue one may face from constant stimulation from others. If an individual is sharing a residence room, they may not have their own private space. It is therefore necessary that private and quiet study space or relaxation space be made available. The University of Waterloo's St. Paul's Residence has a meditation room that is available to students (University of Waterloo 2014). On the other hand, Lau also states that open space can encourage students to be social and interact with one another. This can help to alleviate the stress associated with daily life or a busy schedule. Common gathering rooms for social activities must be incorporated and advertised in residence buildings to provide opportunities for a strong residence community.

Campus safety has been of a concern for a long time, as many violent and sexual attacks occur on university and college campuses. Women who are aged 18 to 24, the most common aged university students, experience the highest rates of sexual violence in Canada (Canadian Federation of Students Ontario 2014). The built form of a campus can either hinder or encourage safety. There are many

strategies that help to ensure a campus is safe, and these strategies are important to consider around residences, as students may be heading to and from their building at times that are conventionally seen as less safe, such as late at night. Open views and even buildings on a site can help to increase ‘eyes-on-the-street’, allowing individuals to be able to see their surroundings and be seen by others. Trimmed vegetation can also help with sightlines and the ability to see surrounding environments. Lastly, adequate lighting and emergency phones are also helpful for nighttime safety (Day 1995).

Street art, seen in many North American cities such as Portland and Minneapolis, has been used to gather communities together. It helps to create a bonding experience where community members can make an impression on their public realm. It allows individuals to express values and interests in a creative and social way. Art can be incorporated into residences in the form of wall art inside the residence buildings, or outdoors in a common area, as a way to alleviate stress and as a bonding experience for students and staff.



**Figure 5: Street Art in Portland**

## **Connection to Wellbeing**

The positive mental effects of having a vibrant public realm are similar for both student and permanent residents, though their preferences and needs are likely different as some permanent residents tend to be older and might require an environment conducive to raising a family. Though there is very little known about how the public realm affects the mental health and wellbeing of permanent residents of a University campus specifically, the same principles that apply to residents of any community are likely to apply in this situation. The Project for Public Spaces is a non-profit planning and design organization that has pioneered an approach called ‘Placemaking’ to help create vibrant and sustainable public spaces that build strong communities. This concept is rooted in community-based participation

and encompasses the planning, design, management and programming of public spaces. This approach has identified four key attributes that make ‘Great Places’.

- 1 Sociability; is it welcoming, neighbourly, and diverse?
- 2 Uses and activities; is it active, fun, and vital?
- 3 Access and linkages; is it walkable, accessible, and connected?
- 4 Comfort and image; is it attractive, sittable, and safe?



**Figure 6: Placemaking Concepts**

Applying these placemaking attributes to UBC neighbourhoods will help each community feel unique, engaged, and optimally functional (Project for Public Spaces 2014).

Access to nature has been an important concern for urban planners throughout history. Biophilia is a term coined by Edward O. Wilson, who hypothesized that people feel an innate connection with nature (Kellert 1995). Many studies support this theory and have found that contact with nature has positive effects on mental health and wellness by decreasing stress and mental fatigue (Groenewegen et al. 2006; Maller et al. 2006). In addition to the restorative effects to the individual that community gardens have been found to support, studies also show that they promote community building and reduce crime (Armstrong 2000; Twiss et al. 2003). Community gardens also align well with UBC’s sustainability goals, as they give condo and apartment dwellers the opportunity to grow their own vegetables which has been found to promote healthy eating habits and local food consumption (Armstrong 2000). This activity has become very popular in Vancouver during the past few years with

seventy-five official gardens currently located in city parks, school yards, and private property scattered around the Vancouver area (City of Vancouver 2013). Due to their popularity, best practice guidelines on setting up gardens and many other resources can be found on the City of Vancouver website.



**Figure 1: Community Garden on Burrard Street in Vancouver**

More specifically for student residents, it is important to create a safe and happy environment to optimize the mental health of the students. Students will likely be under pressure and stress, and it is essential to create a good public realm to improve their wellbeing. A good public realm, allowing for connections and opportunities for individuals to socialize, but also retreat to relaxing environments will help to alleviate the stresses of daily life. The spaces created will be functional and memorable (UBC 2009).

## **Recommendations for Permanent Residences**

The good news is that there is no need to re-invent the wheel and that most, if not all, the public realm priorities identified in the UBC Public Realm Plan will foster the same benefits to permanent residents if applied to their residential areas. As such, it is recommended that the UBC Public Realm Plan be applied to the UBC property at large and the key concepts of ‘Placemaking’ be worked into each Neighbourhood Plan. Specific recommendations/ideas include:

### ***1.1 Public Artwork***

- Put artwork into the outlying residential areas to create a greater sense of space and individuality.
- Permanent sidewalk designs or paintings to bring character to an area. A good example is the Rainbow Crosswalk at Davie St and Bute St in Vancouver.
- The BC Lions had local artists decorate blank Orca statues in 2004, (followed by Bears and Eagles) which were then auctioned off and scattered around the city. These statues were great tourist attractions as well as brought interest and mystery when a person came across one unexpectedly. UBC could do something similar with Thunderbird statues by inviting Visual Art students to bring them to life and installing them in the various UBC neighbourhoods.

### ***1.2 Community Gardens***

- Install into existing neighbourhoods and put aside areas in the new development plans for community gardening plots. These could include either in-ground plots, raised plots, or a combination of both which would allow greater accessibility for those with mobility issues (which also aligns with UBC initiatives for accessibility).

### ***1.3 Dog Therapy***

- Help foster a connection with nature and its associated restorative affects for students by sending out notices (perhaps through the University Neighbourhoods Association) to surrounding permanent residents inviting them to walk their dogs on campus on designated dates (likely around midterm and final exams), times, and possibly even areas (such as around the SUB, Main Mall, and University Blvd.)

- This would not only help students but also strengthen community bonds by providing an informal opportunity for permanent residents of different neighbourhoods to meet each other and make connections through their dogs.
- Actually inviting permanent residents onto campus also gives them the opportunity to explore the university core and the amenities it provides; an area that residents not affiliated with the university may otherwise feel out of place in.

### **1.4 Public Events at UBC**

- Bringing the greater community onto campus by renting out UBC facilities for public events and better marketing of Varsity Athletics.
- UBC could be a great venue for outdoor summer concert series (much like those at Burnaby's at Deer Lake Park), farmers markets, and other community events. UBC could also benefit by getting rental fees for facilities that do not get as much use in the summer.
- Athletics is one of the main ways that American colleges bring the greater public onto campus. A wider distribution of athletic schedules and information that highlights how they are fun and low-cost entertainment for families would be a great way to encourage those outside the UBC community to come to campus.
- *Relevant UBC Policies: PRP (IV.i)*

## **Recommendations for Student Residences**

### **1.5 Complete Residence Communities**

- Include all necessary amenities within residences: fitness facility, quiet study areas, common social areas, and a specific room for meditation or yoga.
- Create safe outdoor spaces, equipped with emergency phones, adequate lighting and trimmed vegetation.
- Place making using art – allow residents to paint murals on the wall each year to establish a physical connection to the built environment they live in.

### **1.6 Mental Health Support**

- Ensure easy access to a mental health counselor at all residences
- Have a student/resident mental health representative in all residences
- *Relevant UBC Policies: P&P (p.11)*

### ***1.7 Dog Therapy***

- In alignment with the recommendations for the resident community at-large, permanent UBC residents could bring their pets into student residences during high stress times, such as exam periods.

### ***1.8 Art Therapy***

- Host art therapy sessions in student residences during high stress times, such as midterms or final exam periods.



# Informal Learning Spaces and UBC Residents

The traditional model of postsecondary education- where students attend lecture, absorb information, and then filter back to their residences or the library- is a largely solitary experience. North American campus planners have historically sought to separate the campus in the “midst of nature for maximum quietness and concentration” (Yaylali-Yildiz et al. 2014). However, just as our perception of mental health has expanded from the clinic to the wider community, there is increased recognition that the academic life of universities extends beyond the classroom. The proliferation of wireless internet and networked devices enables students to connect, collaborate, and learn almost anywhere: indoors or out. These informal learning spaces can take a variety of different forms, from dedicated buildings to seating alcoves in hallways (Jamieson 2009). Together, they encompass the ‘interior public realm’ of a university. While they are not replacements for more formal learning spaces, they provide valuable spaces for social interaction, academically-related or otherwise.



**Figure 8: 'Harvest Table' - SPHH Building, UBC**

## Best Practices in Informal Learning Spaces

The primary requirement for good informal learning spaces is flexibility. They need to accommodate a number of different uses, from independent study, group work, peer-tutoring, to socializing (Ibrahim & Fadzil 2011). Seating should be comfortable, functional, and support the use of laptops (Jamieson 2009). No single space can accommodate all potential uses however. Libraries are a natural location for larger, more general-purpose spaces, but smaller faculty-specific areas should be

distributed throughout the campus (Matthews et al. 2011). Opportunities to eat and drink help animate the space and should be located close by (Bryant et al. 2009).



**Figure 2: 'Hot Tub' SFU Surrey Campus**

Outdoor spaces in particular need to be adaptable to different weather conditions in order to extend their viability further into the night and longer into the winter. They need to provide some shelter from noise, wind, and rain. Seating options have to allow students to move along with the sun and shade. Lastly, they need to support the technologies required for modern learning, with power outlets, wireless internet, and projectors (DiCesare 2012).

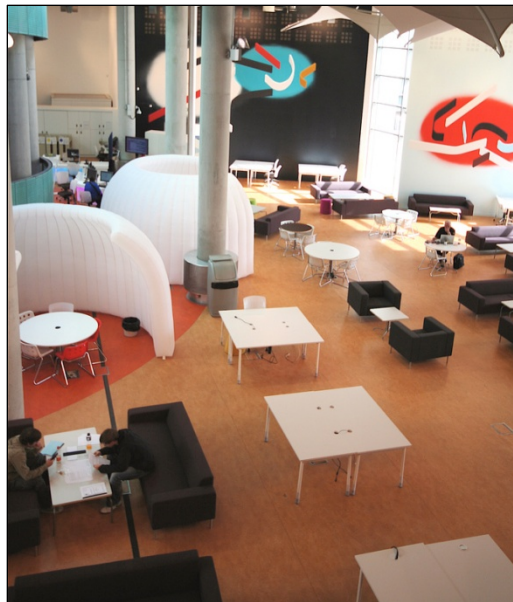


**Figure 10: Reading Porch - McHenry Library, UC Santa Cruz**

Informal learning spaces can also be integrated into student residences in 'living learning communities', where floors in residences are designated for specific majors or interests. Several Canadian universities have established these optional programs, which are intended to foster intellectual exchange and support between incoming students, their new academic peers, senior students, and faculty (McGill 2014; University of Waterloo 2014; University of Victoria 2014).

## Connection to Wellbeing

As spaces which link the social and academic components of university life, informal learning spaces are important supportive venues for resident interaction and social wellbeing. The availability of peer tutoring for mathematics through learning commons has shown to improve academic performance, lower student anxiety, and foster a sense of community among students (Solomon et al. 2010). Studies on outdoor learning to date have overwhelmingly focused on children, though the results have been positive (DiCesare et al. 2012). In a survey of Dalhousie students, a large majority of students supported expanding outdoor learning spaces, particularly for informal group work and tutorials (Clark et al. 2014). Research on living-learning communities in the United States has shown these programs have positive impacts on the perceived ease of transition for first-year students (Inkelas et al. 2007), student attrition, and academic performance (Stassen 2003).



**Figure 11: Learning commons with moveable 'igloo' dividers - New Caledonian University, Glasgow**

## Recommendations for Informal Learning Spaces

### ***1.9 Expand informal gathering spaces in academic buildings, residences, and mixed-use hubs throughout campus***

- Funding opportunities available to faculties through the Informal Learning Spaces Committee could be increased.
- Consider providing students with more information on informal spaces in their vicinity, as well as their intended use.
- *Relevant UBC Policies: VCP (pt. 2,§3.1); P&P (p.11)*

### ***1.10 Implement planned outdoor learning spaces and identify priority areas for improvements to the outdoor learning environment***

- Expand outdoor wireless coverage to cover the entire campus core, particularly courtyards and interior spaces between buildings, as well as outdoor areas in student residences.
- Monitor the formal and informal utilization of these spaces and conduct surveys to improve design principles for future projects.
- *Relevant UBC Policies: VCP (pt. 2 §4.2); PRP (IV.i)*

### ***1.11 Consider establishing living-learning communities in existing residences and gauge interest for similar programs at new mixed-use hubs***

- Interest and faculty based learning communities have been operating for decades at several large Canadian universities.
- Depending on interest from students, the university should consider locating some LLCs in new residences for upper-level students enrolled in faculties in the vicinity of new mixed-use hubs.
- *Relevant UBC Policies: MH&WS (p.11)*

### ***1.12 Support the 'Living Lab' philosophy by enhancing the visibility of current research, wellbeing initiatives, and sustainability programs in community spaces in UNA Neighbourhoods***

- *Relevant UBC Policies: VCP (pt. 3 §2.3.5.c); WPNP (§1.4.1.d)*

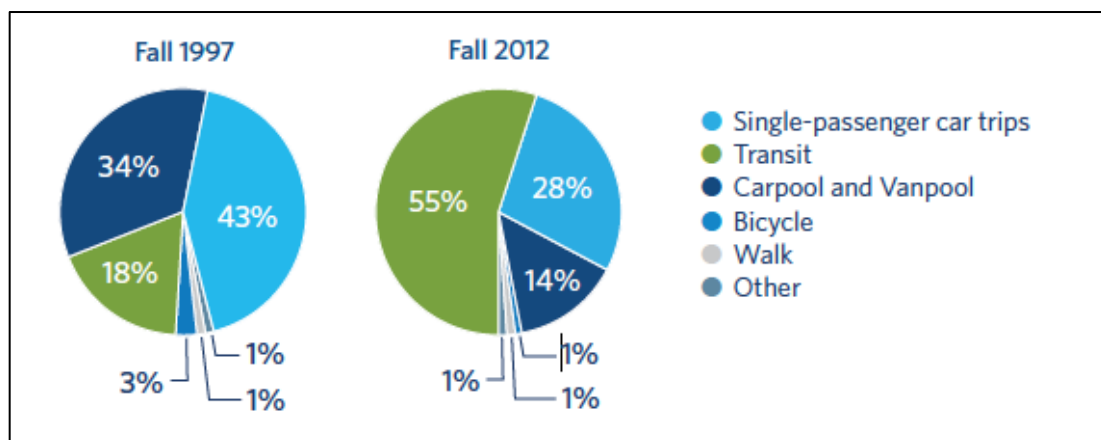
# Community Connection and UBC Residents

Land use and transportation planning at the University of British Columbia campus are interconnected. It is important to provide sustainable transportation choices both on campus and to and from campus to create a complete residential community at the university. To plan transportation for UBC’s future, it is vital to understand the growth projections for students coming to campus, students living on campus, and residents living in UBC neighbourhoods. UBC’s residential population reached over 9,000 residents in 2013, with projections to grow significantly by 2021:

**Table 1: UBC Projections**

Projections	2013	2021	2041
Residents in UBC student accommodations	9,400	10,000	16,000
Residents in UBC neighbourhoods	9,000	12,500	24,000
Full time student enrolment	35,808	47,294	60,294

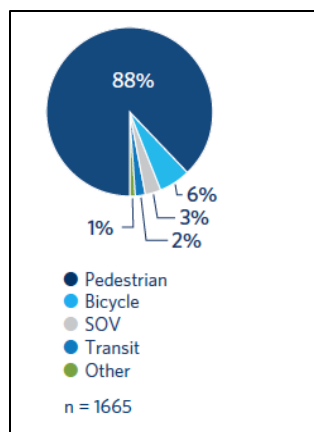
A higher day time campus population and a larger number of people living and working at UBC will add considerably more trips to UBC. From 1997 to 2012, there has been a significant change in the way people travel onto UBC campus, shifting from private vehicles to public transit:



**Figure 3: Mode shift of travel to UBC Campus**

The significant increase of transit mode share from 18% to 55% is due to population growth, increased parking fees, and the introduction of the student U-Pass. The increase of transit users has also resulted in a decrease of people traveling by single occupancy vehicle to UBC. The projected increase in student enrollment will bring more people onto campus every day, further magnifying the current stress on the transit network. Encouraging students and staff to live on campus may lower the amount of people traveling to campus daily. However, currently 50% of the permanent residents on campus are not UBC faculty, staff or students. Understanding the community connection to campus is important when considering potential improvements for the transportation network.

Travel patterns within UBC’s campus are not tracked at the same level of detail as travel to and from the university. The UBC Transportation Plan commits to implementing a comprehensive on-campus travel motoring system in the near future. In the meantime, a survey of 1,665 residential community members from 2013 shows that walking is the most common method of moving around campus, at 88%, followed by bicycling at 6%, Single Occupancy Vehicle at 3% and Transit at 2% (UBC 2014):



**Figure 4: Mode share on UBC campus**

These on-campus travel statistics contrast with the travel mode share statistics to and from campus. The large proportion of pedestrians is important considering that UBC campus is more than 400 hectares in size. Therefore, movement on foot is not an efficient and fast way to travel on campus, and other travel modes should be explored and encouraged through the implementation of infrastructure and policy. The focus should be to increase the mode share of bicycle and transit trips on campus, and to create a feeling of connectivity to the large campus for the residential community. In the meantime, creating a connected campus that is safe, convenient and pleasant for walking should be a priority to

improve current walking conditions and improve the wellbeing for the residents and students living on campus.

These findings fit well within the current priorities of the Vancouver Campus Plan (UBC 2010b), which include:

- Improve the pedestrian environment through establishing a Pedestrian Priority Zone, maintaining east-west pedestrian routes and completing the Main Mall greenway;
- Improve cycling facilities on campus;
- Work with the local community, TransLink and the provincial government to create permanent bus facilities and a future rapid transit station close to University Boulevard; and,
- Manage traffic, reduce speeds and improve wayfinding for drivers.



**Figure 5: Existing and future connectivity on UBC campus**

Recent improvements to UBC campus provide good connectivity for alternative transportation on campus, with some room for additional improvements. Our recommendations include:

- To create a well-connected urban fabric that improves accessibility and mobility for pedestrians & cyclists during construction;
- To consider establishing a bikeshare system on campus for students, staff, and residents; and,
- To consider expanding the current transit routes on UBC campus to have more frequent and reliable service for local residents.

Best practices from other university campuses will be explored to expand on these ideas.

### **Best Practices in Connecting to the Wider Community**

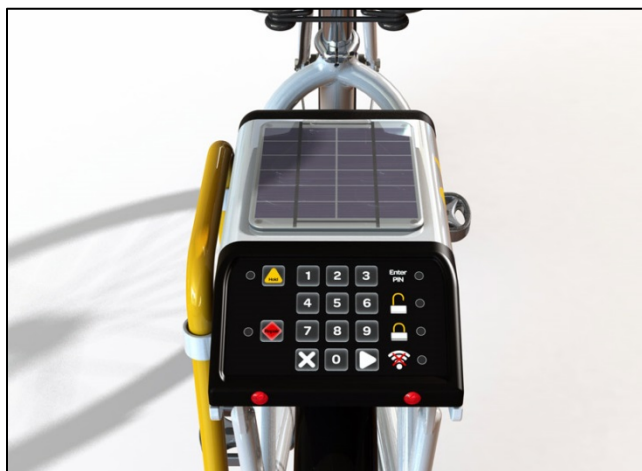
Currently, UBC’s “Purple and Yellow” bike share program operates 50 – 100 public bicycles and is run by the Bike Co-Op, a student run organization dedicated to improving the campus environment for bicycles. UBC campus housing donates abandoned bicycles for its fleet of purple and yellow bicycles; bikes are also accepted from the community. To become a member and gain access to the bicycles, people can do six hours of volunteer work at the Bike Co-op, or students pay \$15 and community members pay \$20. The members receive keys to the purple and yellow bikes and can ride any bicycle on campus (Toor & Haylick 2004). This simple community run bike share system has some drawbacks, however, such as the varied bicycle designs and the bicycles’ vulnerability to theft. Currently, this grassroots bike share system is not widely used by community residents. UBC campus is in need of a high-tech, easy to use, bike share system which can be used by the community residents, student residents, and daily student population. A high-tech bicycle system will become widely used and will transform UBC into an innovative, eco-friendly and well-connected campus.



**Figure 6: The UBC Bike Coop**



A potential bike share system for UBC should be modeled after the “Call A Bike” Deustch Bahn German system and the American Social Bicycles system. These systems are easy to use, inexpensive to install and flexible to user needs because they do not require physical docking stations. For these systems, the technology is integrated into the bicycle, requiring minimal infrastructure and working with existing bicycle parking. The system is easy to expand as memberships and popularity increases. The “Call a Bike” system requires you to register through a phone app or online and then reserve a bicycle online or directly from a keypad interface on the bike to receive the four-digit unlocking code. This system is unique because users can take a break and park the bike while keeping the code valid, and can leave the bicycles at any bike rack within the campus area. The bicycles are equipped with GPS technology and can be found at the bicycle hub locations or system users can use the location-based service on smart phones. Modeled after other bike share programs around the world, users will pay a yearly fee to become members and receive the first thirty minutes of every journey free, to encourage short trips and a quick turnover of bicycles (Social Bicycles 2014). Students and residents can bring their own helmets to use with the bicycles. The optimal solution would be to implement this bike share program as part of the student fees, so students would get an automatic membership through tuition and have the option to opt out. Residents will also be able to purchase memberships online. A partnership with the City of Vancouver could be established in the future to allow members of this bike share to use the system that the City of Vancouver is planning to launch in 2015.



**Figure 16: Social Bicycles unlocking pad is built into the bicycle**

The UBC campus is undergoing a lot of exciting positive changes, such as new buildings and outdoor areas. The Vancouver Campus Plan's commitment is to upgrade intersections and crosswalks around campus and to improve greenways and pathways. Currently, construction results in issues for pedestrian and bicycle connectivity during the upgrades and beautification of campus. This issue affects both students and residents trying to move through campus due to detours, road closures and sidewalk closures.



**Figure 7: UBC construction**

Best practices to protect pedestrian and bicyclists needs at construction sites include:

- Use barricades to create a safe temporary passageway for pedestrians;
- Avoid sidewalk closures as much as possible;
- Passageways need to be accessible to wheelchairs (wide enough and should include ramps when there are height changes);
- Bicyclists may share the lane for low traffic speeds; or a temporary bike lane can be installed;
- Construction signs should not obstruct pedestrian and bicyclist paths;
- Bus stops must remain accessible to pedestrians; and,
- Additional lighting should be provided to identify hazards (Litman 2002).

In addition, clear wayfinding signage needs to be available for pedestrians and cyclists, and rerouting should be done so that pedestrians are given the shortest route possible. For each specific construction zone, the problem will be site-specific and pedestrian and cyclist connectivity issues need to be addressed.

## Connection to Wellbeing

Prioritizing connectivity through alternative transportation such as walking, bicycling and public transit is important for wellbeing and health. Studies show that increased sedentary time spent commuting can lead to a reduction of time available for the individual to walk or cycle for both recreational and utilitarian purposes (Humpel et al. 2002). Studies have also found that each additional hour spent in a car per day was associated with a 6% increase in the likelihood of obesity, while each additional kilometer walked per day was associated with a 4.8% reduction in the likelihood of obesity (Frank et al. 2004). Creating an environment that fosters safe, convenient, and pleasant opportunities for active transportation will positively improve the physical health of UBC residents.

The daily commute can impact individuals' stress level and overall wellbeing. Commutes take time and money, cause stress, and interfere with time for personal relationships and wellbeing (Bruno & Alois 2014). Studies have found that the longer time spent commuting in a private vehicle is worse for health and wellbeing. Commuting through active modes such as walking or bicycling is the best for wellbeing, followed by the use of public transit, and lastly followed by driving (Adam et al. 2014). In fact, pedestrians and bicyclists reported the most relaxing and exciting trips and were the happiest with their form of travel (Gatersleben & Uzzell 2007). To improve the wellbeing of UBC campus residents, it is important to improve connectivity to provide opportunities for active and convenient travel. The best method is to build on the strong pedestrian environment and offer sustainable alternatives to improve and shorten commuting times. The UBC campus has a great foundation for transportation connectivity, and it can be improved through innovative best practices.

## Recommendations for Connections to the Wider Community

### ***1.13 Improve connectivity for pedestrians and cyclists on campus***

- To create a well-connected urban fabric that improves accessibility and mobility for pedestrians and cyclists during construction.
- When re-routing pedestrian traffic, avoid sidewalk closures, improve signage for wayfinding and provide convenient and quick alternative connections for walkers.

### ***1.14 Expand transit on campus***

- Consider working with TransLink to expand the current transit shuttle routes on UBC campus to have more frequent and reliable service for local residents. Providing more frequent service (every 10 – 15 minutes) is vital to increase ridership.

### ***1.15 Innovative Bike Share System***

- Consider establishing a high tech next generation bike share system on campus to provide convenient alternative transportation options for students, staff and residents.
- Improve on the current simple and small “Purple and Yellow” bike share system operated by the Bike Co-Op on UBC campus.
- Consider forming a partnership with the City of Vancouver’s future bike share system, and with TransLink to integrate the system with the U-Pass.
- *Relevant UBC Policies: TP (C3.1.1)*

# Conclusions

UBC is a vibrant and proactive institution that is committed to providing an environment that promotes optimal mental health and wellness for its students, faculty, staff, and residents. The UBC Vancouver Campus Plan and the Public Realm Plan demonstrate this commitment and forethought. Though these plans are quite exhaustive and have already produced some amazing positive changes, they tend to be focused around the academic core rather than UBC's campus at large. Improvements to these plans can be made to better support the mental health and wellbeing of the university's residents, both students and permanent. Public realm, informal learning/socializing spaces, and campus connectivity are three aspects of campus life that have the greatest effects on the wellbeing of UBC residents. Reviewing literature, reading other university campus plans, and accessing web info generated best practices pertaining to these aspects of campus life which could be emulated. Wellbeing is not just the lack of illness and is a complicated and difficult thing to promote successfully through the built environment. Though UBC is already doing a good job, it is hoped that the recommendations included in this report may speed up the process and provide campus planners with innovative ideas that may not have been considered yet. A summary of these recommendations is represented on the next page.

## Final Recommendations for UBC Residents

- 1.1 Integrate public artwork within the public realm to foster a sense of community*
- 1.2 Install community gardens within existing communities*
- 1.3 Encourage residents and students to participate in dog therapy*
- 1.4 Rent out UBC facilities for public events to bring residents onto campus*
- 1.5 Develop complete student residence communities with amenities for students*
- 1.6 Ensure easy access to mental health support*
- 1.7 Provide dog therapy at student residences*
- 1.8 Host art therapy session at student residences*
- 1.9 Expand informal gathering spaces in academic buildings, residences, and mixed-use hubs throughout campus*
- 1.10 Implement planned outdoor learning spaces and identify priority areas for improvements to the outdoor learning environment*
- 1.11 Consider establishing living-learning communities in existing residences*
- 1.12 Support the 'Living Lab' philosophy by enhancing the visibility of UBC research*
- 1.13 Improve connectivity for pedestrians and cyclists on campus*
- 1.14 Expand public transit on campus*
- 1.15 Implement an innovative bike share system*

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