

ACADEMIC SUSTAINABILITY
PROGRAMS OFFICE

SUSTAIN 3S03 COURSE REPORT

Fall 2016



A LETTER FROM THE SENIOR MANAGER

In September 2016, another fantastic cohort of students took part in Sustain 3S03 – Implementing Sustainable Change. Students from 5 faculties and the Arts & Science Program engaged in interdisciplinary, community-based, student-led, and experiential education related to sustainability.

Led by instructor Dr. Michael Mikulak, with support from Teaching Assistants Crystal Chan, Tiffany Sun, and Christine Yachouh, students had the opportunity to examine the concept of sustainability by focusing on specific case studies and examples in relation to larger questions of power, knowledge, and human and non-human agency. Lectures, tutorials, and assignments were focused on developing truly interdisciplinary conversations that consider the different techniques and tools society has at its disposal for addressing the environmental crisis.

To complement their theoretical knowledge of sustainability, students undertook an experiential learning project of their choosing. During the first week of classes, 49 students formed 10* project groups based on their individual interests in sustainability. To offer support, guidance, and ensure students had the opportunity to work with members of the McMaster and broader community, 20 individuals formally accepted the role of Community Project Champion by offering their time, resources, and expert knowledge to assist students in achieving their project goals. Additionally, countless members of the community participated in events, provided feedback through consultation, and offered mentorship. The tremendous amount of community support and engagement is illustrated by each group in the pages to follow under the heading of Collaborators.

As you read this report, you will notice that the breadth of student interests related to sustainability is far reaching. Projects range from increasing access to local food by “bridging the gap between farm and campus”; to developing a sustainable organizational structure for a local community group; and to conducting research and analysis on cycling demographics, with a focus on the disparity between cycling rates by gender.

I hope you enjoy reading this report as much as I have enjoyed my experience in working with the individuals who have created it.



KATE WHALEN
Senior Manager, Academic Sustainability Programs

*While 10 projects were implemented, only 9 are reported on within this report.



OUR MISSION

McMaster developed the Sustainable Future Program for students interested in learning about sustainability while having the opportunity to engage in experiential learning through developing and implementing real-world sustainability initiatives. The Sustainable Future Program (SFP) aims to build reciprocal relationships between students, community members and McMaster University to engage all parties in the journey towards a sustainable future.

OUR GUIDING PRINCIPLES

- Teach students about sustainability from an interdisciplinary perspective.
- Provide the opportunity for self-directed, interdisciplinary, and experiential learning.
- Support student learning within the University and local community.
- Engage undergraduate students in taking part in meaningful, experiential research.
- Foster opportunities for students to place local knowledge and local action within a global context.



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SUSTAINABLE FUTURE PROGRAM

IMPROVING ON-CAMPUS BIKE SHARE



Sustain 3S03 team members (from left): Erin Sinclair, Tyler Marr, Angela Xie
Photo Credit: Midhat Malik

STUDENT AUTHORS

Zaeem Kibria, Engineering; **Tyler Marr**, Social Sciences; **Mehant Parkash**, Engineering; **Erin Sinclair**, Business; **Angela Xie**, Arts & Science

OVERVIEW

In 2014, the City of Hamilton, in partnership with Social Bicycles, implemented a community bicycle sharing program, Social Bicycles Hamilton (SoBi Hamilton). Operated by local non-profit organization Hamilton Bike Share Inc., SoBi Hamilton consists of a full fleet of 750 bicycles located at over 110 hubs across the city, including the Downtown, Westdale, Dundas, and East Hamilton areas of Hamilton. The goal of SoBi Hamilton is to promote cycling as a sustainable transportation option, while complementing existing public transit and filling in transit gaps by creating an efficient transportation network. The main goals of this project are to provide insight on student transportation needs and how they can be better met through on-campus bike sharing, and to enhance the perception of cycling as a sustainable and enjoyable mode of travel.

OBJECTIVES

1. Determine current student transportation needs and how they can be better met through an on-campus bike share offering.
2. Increase awareness of cycling and bike share as a sustainable transportation option.
3. Enhance the SoBi Bike Share experience within the McMaster community by actively promoting cycling as an enjoyable and social activity.

REPORTING

Through this project, we learned that the MSU (McMaster Student Union) would be holding a referendum on the implementation of a \$15 universal SoBi bike share pass for all full-time undergraduate students. We utilized this opportunity to educate students about SoBi, so they could make an informed vote. Our campaign efforts consisted of class talks, tabling, and social media campaigns on Facebook, Twitter, and Instagram. On November 3, 2016, after 4 days of intensive campaigning, the SoBi referendum was unsuccessful with a 46.8% “yes” vote from 4128 people (18.5% of the undergraduate population). Despite our initial disappointment, the results of the referendum demonstrated that our extensive campaign efforts had been successful in garnering attention from the student population. Of all 5 referenda, the SoBi referendum had the highest voter turnout.



Sustain 3S03 team member: Zaeem Kibria
Photo Credit: Erin Sinclair



Sustain 3S03 team member: Mehant Parkash
Photo Credit: Tyler Marr

Though the SoBi referendum did not pass during the October referenda, we took the initiative to survey McMaster undergraduate students to learn about their attitudes towards cycling. As per our findings from a sample population of 113 participants, alternate transportation options, expensive membership costs and current bike ownership were the top three reasons, respectively, as to why students were not users of SoBi. In addition, students chose the John Hodgins Engineering Building due to its centrality on campus, and the David Braley Athletic Centre as the top locations for a new SoBi hub. We presented this information to our Project Champions to aid in their understanding of students’ perceptions of potential barriers to the bike share program. This information will enable SoBi to better tailor the service, address concerns, and to meet the needs of McMaster students.

COLLABORATORS: We would like to thank our Project Champions – Chelsea Cox, Sanathan Kassiedass, and Peter Topalovic – for providing us with information, guidance pertaining to the project, and their continuous support. In addition, we would like to thank Crystal Chan, Christine Yachouh, and Kate Whalen for their invaluable guidance throughout the project, which has been instrumental to this project’s success.

NEW FEE FOR STORMWATER MANAGEMENT IN HAMILTON



Photo Credit: Samantha Craggs, CBC Hamilton

STUDENT AUTHORS

Daljeet Cheema, Business; **David Gowland**, Engineering & Management;
Sophia Silverton, Arts & Science

OVERVIEW

The occurrence of more frequent extreme precipitation events is increasing due to climate change and poses a significant problem to stormwater management systems in urban areas. Hamilton's stormwater management system currently does not have the capacity to withstand intense weather events. Consequences of this include, but are not limited to, increased pollution in the Hamilton harbor as a result of water runoff, and the increased risk of severe flooding and property damage.

Current funding for stormwater management originates from property owners who are charged a fee based on water usage, as displayed on their utility bill. This does not accurately reflect the impact of a property on Hamilton's storm water management infrastructure. The largest contributor to increased costs is the use of impervious surfaces, such as paved parking lots, which prevent natural water absorption. More funding is needed for the stormwater management system, but it is not equitable to charge residents large stormwater fees based on their water usage. In response, the non-profit organization, Environment Hamilton, has been campaigning at Hamilton City Hall for a restructured stormwater management fee system that is equitable, transparent, promotes awareness of stormwater management, and encourages implementation of green infrastructure.

OBJECTIVES

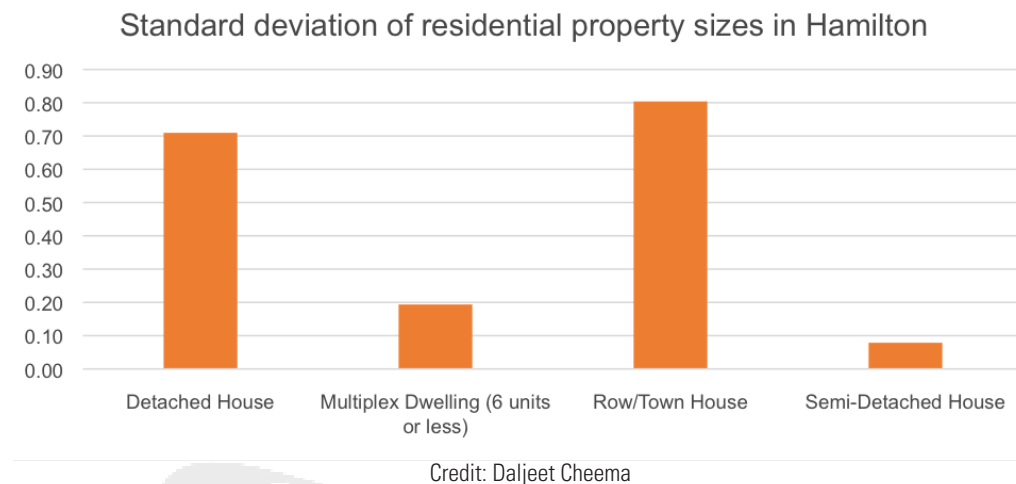
1. Organize a body of knowledge to justify the improvement of the Hamilton stormwater management infrastructure.
2. Create a compelling case for an equitable and transparent stormwater management fee structure.
3. Concisely disseminate relevant information regarding the issues, risks, and benefits associated with changes in stormwater management for the competent authorities.

REPORTING

We worked closely in consultation with the knowledgeable team at Environment Hamilton to produce a resource that would be of value to them and their efforts to change stormwater management fees. We created a summary report on previous stormwater management fee arrangements in the City of Hamilton and a comparison report on stormwater management fee systems used in peer cities like Mississauga. We then constructed a compelling case for the new structure by: performing valuations on potential costs of flooding, determining effective stormwater mitigation practices, and valuing the costs of implementation. Following this research-heavy project component, we then designed a new fee structure through detailed data analysis of over 160,000 Hamilton properties.

Through the process of research, we discovered that existing resources on stormwater management are technical, lengthy, and repetitive. In our report we ensured that information would be accessible to those who have no prior knowledge of stormwater management. Our final product compiled all of the above information into a concise and convincing final report that can be referenced by Environment Hamilton and City Councillors.

Interesting Excerpt from Data Analysis: Our data proved our thesis that residential properties are very similar and can be grouped based on their categories. The standard deviation of residential property sizes in Hamilton is very low in comparison to non-residential properties, and this is a significant reason behind the chosen fee structure described in our final report.



COLLABORATORS: We would like to thank our Community Project Champion, Ian Borsuk from Environment Hamilton, along with others members of the Environment Hamilton community who supported our work. We would also like to thank our course instructional team for Sustain 3S03.

Header Image: Craggs, S. (2015, September 1). Massive investment still required to solve city flooding. CBC Hamilton, Online.

HYDROGEN ENERGY IN THE 21ST CENTURY



GRAND&TOY®

STUDENT AUTHORS

Raisa Ahmed, Science; **Natalie Cranston**, Science;
Dalia Nasser, Science; **Emily Urban**, Engineering; **Shira Weiss**, Science

OVERVIEW

Canada is one of the world's leading countries in research and development of hydrogen energy technologies but most of these advances are implemented elsewhere as Canadian hydrogen energy adoption had been slow. The world currently relies on non-renewable resources that are unsustainable. Traditional energy sources, including coal and electricity, are major contributors to climate change.¹ Hydrogen energy is not harmful to the environment and has the potential to replace traditional energy in many applications.² The increased amounts of CO₂ and other greenhouse gases produced from these sources has encouraged discussions of alternative energy sources.

Grand & Toy is a Canadian subsidiary of Office Depot that specializes in business solutions and supplies. Their vision is "powering the potential of Canadian businesses to lead the journey towards sustainability".³ As an initiative of thought leadership efforts by Grand & Toy, the purpose of this project was to explore hydrogen as an alternative source of energy to accompany the needs of the 21st century, specifically for industries within Canada.

OBJECTIVES

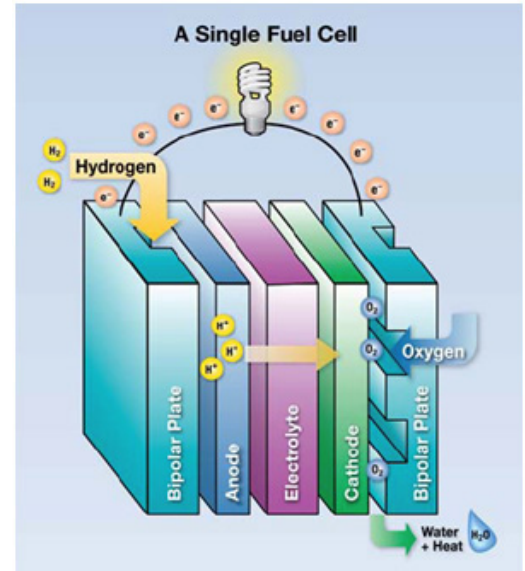
1. Develop an understanding of current uses of hydrogen energy as well as the advantages and disadvantages of using it as a fuel source.
2. Understand hydrogen energy from the perspective of Canada's business leaders.
3. Share findings to support the discussion of hydrogen energy as a viable energy source for businesses.

REPORTING

Through our research on hydrogen energy, focusing on the pros and cons of its use in business, we developed a deep understanding of the emerging technology and its potential applications. Notably, we learned from our research that a major application of hydrogen energy is in the form of hydrogen fuel cells. We were also able to discern some of the advantages and disadvantages of this energy source from both research and acquired interview data.

We were specifically interested in the viability of the use of hydrogen energysources in Canadian organizations. To gain a business perspective, we interviewed representatives from Wajax Corporation. We found that these businesses used hydrogen energy in a very positive way as a clean and efficient source of energy. For example, hydrogen-powered forklifts are significantly more convenient and cost effective than electric-powered forklifts or propane forklifts. According to interviewees, disadvantages of hydrogen energy include the high cost associated with implementing the technology, which was consistent with our literature review findings. Some participants also had concerns with the high pressure storage capacity that is required for proper hydrogen flow since pressurized hydrogen is dangerously flammable, however our research showed that hydrogen fuel cells are very safe under normal conditions.

The research and data we collected was analyzed to determine the most relevant and interesting information. We were then able to draft a professional report on the use and applications of hydrogen energy as it pertains to Canadian businesses. This draft was sent to Grand & Toy for review. We look forward to our findings being reviewed and published in the Grand & Toy Insights report.

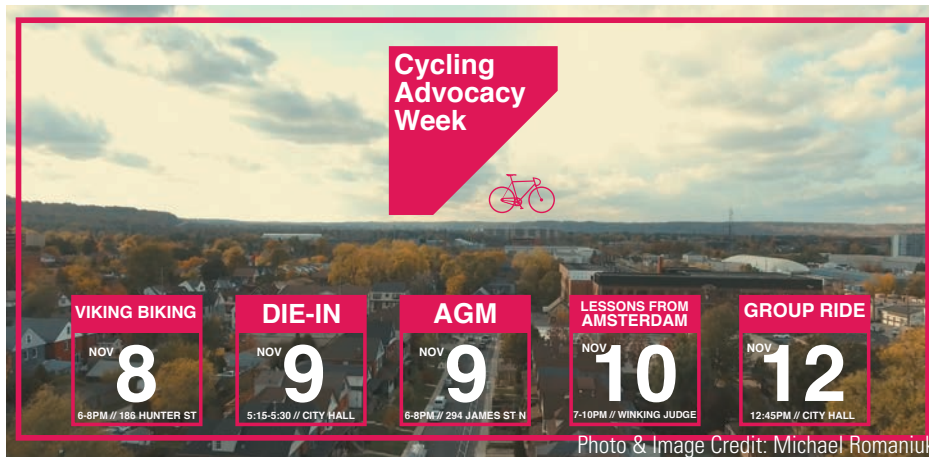


Hydrogen Fuel Cells. (2009). Retrieved December 1, 2016, from <http://h2101.harcc.edu/Hydrogen101Curriculum/H101FuelCells/tabid/516/Default.aspx>

COLLABORATORS: We would like to thank our Community Project Champions: Serguei Tchertok, Sustainability Manager at Grand & Toy, and Hannah Hinchey, Sustainability Intern at Grand & Toy by helping this project move in the right direction and providing feedback for our ideas. We would also like to thank Kate Whalen for her support and guidance when going through the ethics approval process.

1. Global Greenhouse Gas Emissions Data. (2016). Epa.gov. Retrieved from <https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data>
2. Fuel Cell Basics. (2016). Fuel Cell & Hydrogen Energy Association. Retrieved from <http://www.fchea.org/fuelcells/>
3. Corporate Profile. (2016). Grandandtoy.com. Retrieved from https://www.grandandtoy.com/en/sites/core/aboutUs_corporateProfile.aspx

CYCLING ADVOCACY WEEK



STUDENT AUTHORS

Akeel Ali, Engineering & Management; **Danielle De Laat**, Science; **Zoe Grant**, Humanities; **Yasa Ibragimova**, Arts & Science; **Michael Romaniuk**, Science

OVERVIEW

The City of Hamilton has made strides to improve cycling in the city, but there are still many areas for improvement. The City created a Cycling Master Plan in 2009, which outlines changes to infrastructure and traffic regulations, includes a list of priority areas of focus, as well as an associated timeline for the plan to be fully implemented. However, while 35% of the Plan's timeline has passed, only 11% of the targets have been achieved.¹

Enter Cycle Hamilton: a member-supported coalition of individuals, communities, and organizations that collaborate to promote a safe, fun, healthy and sustainable cycling culture in Hamilton. In 2016, Cycle Hamilton developed the idea of Cycle Advocacy Week (CAW) - a week-long event to generate awareness of the organization and its cause through encouraging active engagement and participation. The goal of this project is to support the successful implementation of Cycle Hamilton's first Cycle Advocacy Week. The importance of the pilot project is critical, as it will set the stage for growing, educating and engaging the City of Hamilton for ultimately the approval from the City of new bike lanes and improved traffic laws.

OBJECTIVES

1. Promote the non-profit organization Cycle Hamilton.
2. Grow the number of individuals associated with Cycle Hamilton, aiming to increase the total number of memberships within the organization.
3. Advocate for a safe, healthy, and sustainable cycling culture in Hamilton.

REPORTING

One project of CAW was a release of the marketing campaign, The Red Bike Project. Three bicycles were spray-painted red, and placed throughout the city asking individuals to answer the question, “Why Ride?” on the bicycle. The Twitter campaign #WhyRide was implemented for one week; over 50 people tweeted #WhyRide, leading to 439 retweets, shares and likes in the Twitter community. CAW became a well-known initiative within the Hamilton community, when featured on Spotted@Mac, a community based social media page followed by nearly 25,000 people, and having been featured in a Raise the Hammer article. In addition, a promotional video is in the midst of production and will be featured on the Cycle Hamilton website for future promotional purposes.



The Red Bike Project consisted of a variety of social media campaigns to increase cycling awareness across the City of Hamilton.

Photo & Image Credit: Cycle Hamilton

The Annual General Meeting was a central component to CAW; board members were elected, the organization’s future targets were addressed, and Jared Kolb from Cycle Toronto was able to present some of the successes of cycling advocacy in Toronto.

Due to the AGM and events related to CAW, Cycle Hamilton gained 20 new individual members. To further this expansion, we developed a continuous membership growth strategy by creating a database of over 250 potential business sponsors. These establishments were contacted through an initial email proposal, and approximately 15 Hamilton businesses have responded via email expressing interest in partnering with Cycle Hamilton. Through negotiating business partnerships with a target of approximately a dozen central Hamilton businesses (coffee shops, bicycle and parts stores, etc.) Cycle Hamilton has created a system for continuous membership growth and community presence.

The Die-In event involved 12 community members to gather outside City Hall and re-enact a die-in to increase awareness of cyclist’s deaths throughout the city. The Group Ride engaged 25 community members to cycle from downtown Hamilton to Dundas, promoting the current petition of ‘#CycleSafeSydenham.’ Clara Hughes and another 624 people so far, have signed the petition to show their support to making Hamilton a safer commute.

COLLABORATORS: Project Champions for our group project – Dave Heidebrecht, Benita van Miltenburg, Johanna Bleecker. Cycle Hamilton members – Ann McKay, Ian Borsuk, Alexandra Brodka, Angie Bennett, Erin Kennedy, Ned Nolan, Juby Lee, Linda Lukasic, Stephen Bieda, Roman Caruk, Toomas Riis, Cora Muis, Steve Garic.

1. Cycling Master Plan (2009). City of Hamilton. Retrieved November 30, 2016, from <https://www.hamilton.ca/sites/default/files/media/browser/2014-12-17/cycling-master-plan-chapters-1-2-3.pdf>

CYCLING DEMOGRAPHICS IN HAMILTON



Campus Bike Library bicycle rack behind Mills Library at McMaster University. Photo Credit: Nathania Ofori

STUDENT AUTHORS

Robert Etherington, Science; **Patricia Kousoulas**, Science; **Nathania Ofori**, Science;
Coomal Rashid, Science; **Aisha Ikra Saeed**, Science

OVERVIEW

According to Statistics Canada, 1.45% of all work trips in Canada are through the means of cycling.¹ Compared to the national average, Hamilton commuter cycling levels are lower at 0.89%.¹ Research on cycling has indicated that females are less likely to cycle than males.² Transportation Tomorrow Survey data (2011) revealed that on average, only 30% of Hamilton cyclists were female.³ By way of an observational survey and a supplementary behavioural survey, we would like to explore the cycling attitudes and behaviours of cyclists at McMaster University. We aim to better understand the barriers cyclists face, in addition to other contributory factors. We would also like to determine whether or not a gender gap exists in this community. By identifying barriers we can begin to find solutions to enable all Hamiltonians to choose cycling as a safe, enjoyable and sustainable mode of transportation.

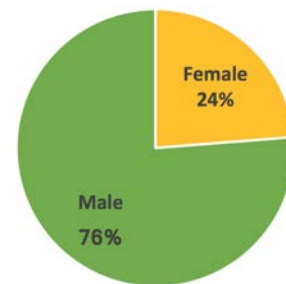
OBJECTIVES

1. Identify the attitudes and behaviours of all cyclists in general at McMaster University.
2. Identify barriers to cycling.
3. Identify possible actionable and measurable solutions based on identified barriers.
4. Share results using various communication means to inform the community about our findings and collaborate with other groups at McMaster.

REPORTING

In order to accomplish these objectives, several steps were undertaken. We completed an observational survey to identify the gender distribution of the cyclists traveling to and from campus over the course of a two week period in late October. We observed over 1000 individuals through the duration of this period. Subsequently, a supplementary behavioural survey was undertaken in-person and online to better understand the barriers that cyclists and non-cyclists faced. We aimed to receive 150 responses and were able to reach this goal. Additionally, the City of Hamilton provided us with detailed information on previous years' activity of cyclists around the McMaster area, which allowed us to compare our results with existing data. To support our understanding, a literature review was conducted offering us different perspectives on the gender gap in cycling, in addition to cycling attitudes and behaviours in other cities such as Toronto and Montreal. We utilized Microsoft Excel to analyze the results of our observational study and survey. Our survey determined the most prevalent barrier for cycling was due to students not having access to a bike. After determining the major barriers to cycling from this analysis, we identified feasible solutions to tackle this issue. We undertook an educational campaign, which included creating an engaging video that incorporated the data we collected, as well as discussed steps individuals could take to promote cycling. We were able to share our results through the McMaster Academic Sustainability Programs Office Facebook page as well as through personal sharing. We then reached out to the Women Gender and Equity Network (WGEN) and other groups on campus asking them to share our video and potentially collaborate with us in the future. In addition, we were able to present our results to City of Hamilton staff. Based on these completed deliverables, we believe that this issue has been brought to the forefront, and we can confidently hand this project to the next cohort. Overall, our team hopes to use this platform to continue promoting cycling on campus to both staff and students.

McMaster University Cycling Observational Count



Observational study results; 24% of observed cyclists are female.

COLLABORATORS: We would like to express our sincere thanks and appreciation to our Community Project Champions, Janelle Trant and Steve Molloy, from the City of Hamilton, for providing us with cycling data, in addition to their guidance and support. We would also like to extend our thanks to McMaster University's Senior Manager, Academic Sustainability Programs, Kate Whalen, for her assistance and feedback on applying to the McMaster Research Ethics Board. Additionally, we would like to thank the McMaster Students Union's Women and Gender Equity Network for their willingness to collaborate with us on this campaign. Through their dedication to this project, our collaborators demonstrated their commitment to making Hamilton a healthier and safer community for all.

1. Statistics Canada 2006. "Employed labour force by mode of transportation to work, by census metropolitan area (2006 Census) (Ottawa-Gatineau, Kingston, Peterborough, Oshawa, Toronto)." <http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/labr88c-eng.htm>.
2. Dickinson, Janet E., Simon Kingham, Scott Copsey, and Deborah J. Pearlman Hougie. "Employer travel plans, cycling and gender: will travel plan measures improve the outlook for cycling to work in the UK?" *Transportation research part D: transport and environment* 8, no. 1 (2003): 53-67.
3. Transportation Tomorrow Survey 2011. http://dmg.utoronto.ca/pdf/tts/2011/tts_2011_presentation.pdf

LOCAL FOOD AT MCMASTER: BRIDGING THE GAP BETWEEN FARM AND CAMPUS



Photo Credit: Aedammair Dunleavy

STUDENT AUTHORS

Aedammair Dunleavy, Humanities; **Vyshnavi Mahendran**, Science;
Shaera Rahim, Science; **Rhys Thomas**, Science; **Louise Twells**, Arts & Science

OVERVIEW

Local food production and distribution has recently been emphasized as a method of increasing food sustainability in the 21st century. At McMaster, Mac Farmstand was established in 2010, selling local produce and other goods to students during the summer and fall months. While a great initiative, there is still much work to be done in order to establish a sustainable food system at McMaster. Through an experiential "local food outing", the project aimed to increase awareness and knowledge surrounding local food in the Hamilton region. Furthermore, in preparation for the expansion of Mac Farmstand, the group investigated local food initiatives at other Ontario universities and created a thorough report outlining clear and specific recommendations for McMaster going forward.

OBJECTIVES

1. Provide an opportunity for students to see firsthand where local food comes from.
2. Increase awareness and knowledge surrounding the importance of supporting local food initiatives such as Mac Farmstand.
3. Investigate the progress of other Ontario universities and outline clear steps going forward with regard to local food initiatives at McMaster.

REPORTING

A trip to Dyment's farm in Dundas was organized to showcase local food in its production phases. We found that there is a community of people at McMaster who are passionate about local food, and the farm trip was successful in bringing some of this community together. The outing was enjoyable and educational, as a number of those on the trip had never visited a local farm. With a turnout of 18 people, the trip was definitely a success! The group enjoyed exploring the farm, picking pumpkins, and many purchased various goods from the market. Following the visit to Dyment's, the group made a stop in the heart of Dundas, home to various local food stores, restaurants, and cafes. Most of the group enjoyed a meal at Detour Cafe, which sources most ingredients locally. The group was also able to explore Picone's Fine Foods, and Mickey McGuire's Cheese store. All three locations accept the new Local Food Discount Card, and so visiting these places was a great (and delicious) way to promote local food around McMaster.



Photo Credit: Mac Farmstand

Promotion more generally was a key aspect of this project. Beginning in September, our group volunteered at the Local Food Fest, organized by Mac Farmstand. We engaged with students on the topic of local food, and helped distribute and promote the new Local Food Discount Card, which offers students a 10% discount at 11 locations in Hamilton that source ingredients locally. In collaboration with Mac Farmstand, we were able to advertise the local food outing. Through social media, we spread the word and encouraged people to sign up for the trip.

Our investigation into local food initiatives at other Ontario universities was interesting and inspiring. Queen's, Guelph, Western, and Brock have taken further steps in establishing local food programs, and McMaster could certainly learn from what they are doing. In writing a report summarizing our findings, we analyzed projects that have worked for other universities and predicted which initiatives may be successful here at McMaster. Sharing the report was another step. While our project has a limited time frame, increasing the availability and accessibility of local food at McMaster is a long term goal. Through sharing our report with important stakeholders at the university, we will hopefully facilitate future progress in food sustainability at McMaster.

COLLABORATORS: We would like to give a special thanks to our project champions Chris Roberts and Wayne Terryberry, as well as our student mentors Adam Chiaravalle and Kaitlyn Deans. We would also like to thank all those who participated in our excursion, and the volunteers at Mac Farmstand who helped us share and promote the event!

SPN SUSTAINABILITY PLAN



HIVEX conference, concurrent session led by Hamilton SPN
Photo Credit: Peter Topalovic

STUDENT AUTHORS

Dina Hamed, Humanities; **Danielle Hudson**, Science; **Matthew Li**, Engineering;
Isa Mulder, Social Sciences; **Nicole Vasarevic**, Humanities

OVERVIEW

Sustainability issues are complex, and global efforts to solve these problems are being made. However, it is easy to overlook the most effective local platform for action, the community. Communities provide an opportunity to make small scale changes, which then contribute to make a global impact. The key is to act local, and through that, make global change.

The Hamilton Sustainability Professionals Network (SPN) does this by filling the gap between sustainability professionals and the broader Hamilton community. SPN encourages networking, provides tools for education and inspires action in Hamilton's communities during events and workshops. Additionally, the SPN provides volunteer opportunities and accessible research reports. Since 2013, the SPN has grown in size and impact and has identified the need to redefine their core focus and direction for future growth.

OBJECTIVES

1. Recommend options for a revised core focus and organizational structure.
2. Develop a strategy for maintaining an executive board and the general membership.
3. Provide recommendations to improve Sustainability Professionals Networks' online presence.
4. Outline the financial implications for each of the recommended organizational structures.

REPORTING

The goal of this project was to provide the SPN Executive Board with a report outlining a redefined direction for future growth. Through research and consultations we compiled a report of recommendations summarizing SPN's core focus, three different options for organizational structures, membership plans, enhancement of online presence, and plans for financial sustainability.

Our first objective was to revise SPN's core focus and organizational structure. Through research, interviews with industry professionals, and further discussions with the SPN board members, our team compiled a written report outlining three potential organizational structures for the future SPN: incorporated not-for-profit, charitable organization, and an acquisition or partnership with Evergreen Hamilton. For each option we explored benefits, challenges, and opportunities, then outlined practical steps required to adopt each recommended structure.

Next we created a strategy for recruiting and retaining members for SPN. We used research to compile recommendations for a membership structure that would facilitate SPN's future executive board succession. The succession model outlined each board member's term length, responsibilities, and the pathway to holding an SPN executive chair position.

Our third priority was to provide SPN with recommendations that would improve the appearance of their online presence. We did this by researching "best practices" for website and social media platform synchronization. As well as developed a plan to give the website design a new and contemporary look. These recommendations were critical for membership recruitment and keeping the SPN relevant and connected with the community.

Lastly, we highlighted the financial implications associated with each of the three options for organizational structure. Each "financial implications" section outlined key strategies to keep SPN financially sustainable. The final report, titled *Direction for Future Growth*, was presented to the Executive Board, which then took our recommendations under consideration. Our recommendation will allow SPN to continue functioning as a networking hub for the environmentally conscious, engage the Hamilton community, and remain sustainable for years to come.



Hamilton SPN Executive Board, from left: Liz Nield, Maria Topalovic, Jay Carter, Kate Whalen, Peter Topalovic, Jayde Liebersbach, Janelle Trant
Photo Credit: Adam Moniz

COLLABORATORS: We would like to thank our Community Project Champions: Maria Topalovic, Peter Topalovic, and Liz Nield. As well as the rest of the SPN Executive Board members: Jayde Liebersbach, Jay Carter, Janelle Trant, and Kate Whalen. In addition, thank you to Lynda Lukasik and Jay Carter for taking time to meet with our team to share their insights and information. Every individual mentioned above provided their enthusiasm, support, and guidance to make this project a success, thank you.

SUSTAINABILITY IN ACTION: SUPPORTING COMMUNITY CAMPUS PARTNERSHIPS IN SUSTAINABILITY



STUDENT AUTHORS

Natalie Charette, Humanities; **Jeevika Goyal**, Science;
Bakht Khan, Science; **Jacob Lee**, Social Sciences; **Natalie Phung**, Health Sciences;
Carol Tang, Science

OVERVIEW

Cities have the ability to positively impact our environment, economy, society, and overall sustainability (Newman, 2006). For cities to achieve this, various groups within the city must work together towards common goals. Change Camp Hamilton is a partnership between Hamilton's educational institutions, the City of Hamilton, and local community organizations. Its goal is to connect post-secondary students with members of the community and local organizations in a joint effort to pursue the City of Hamilton's Our Future Hamilton visioning initiative (Change Camp Hamilton, 2016). In adherence to this goal, the objective of our project was to actively engage the Hamilton community through ChangeCampX, a Change Camp Hamilton workshop. The purpose of ChangeCampX was to build partnerships for future collaboration, clarify the expectations of student participation, and establish the foundation for individuals to commit to making a positive impact on sustainable development in Hamilton.

OBJECTIVES

1. Promote ChangeCampX workshop on the themes of "Building Environment & Infrastructure" and "Clean & Green" to connect Hamilton students with local community organizations to address sustainability issues.
2. Plan and implement the ChangeCampX workshop to facilitate engaging dialogue and action plans.
3. Share findings, results, and recommendations with Change Camp Hamilton stakeholders.

REPORTING

Our project involved creating topics for roundtable discussions in order to connect members of the Hamilton community and define opportunities for them to collaborate on local initiatives. ChangeCampX took place on November 24th and featured community projects relating to the themes of “Clean and Green” and “Built Environment and Infrastructure.” In total, 55 participants attended the workshop and partners from 9 community organizations agreed to act as workshop facilitators. Facilitators and guests with similar interests were seated at the same roundtables to create specific action plans. To promote ChangeCampX, we created and distributed infographics, posters, e-blasts, and posted consistently on Facebook and Twitter. Relevant local organizations, students, and residents within the Hamilton community were invited via email to attend or facilitate the workshop.



Change Camp X Workshop
Photo Credit: Dave Heidebrecht

During the workshop, our team delivered a presentation to welcome the attendees and introduce Change Camp Hamilton. Guest speakers then presented their community organizations and explained how to successfully implement change following the Stages of Change model. To encourage a sustainable event model, we reached out to local food catering options. Mes Amis Catering provided catering for the event, including locally produced food and fair trade coffee and tea. We concluded the event by having all participants write a postcard to themselves, to be mailed to them by Change Camp Hamilton in the near future, as a reminder of their commitment to an action plan they developed at the workshop. We distributed feedback surveys to all attendees to assess the outcome and successes of ChangeCampX. Based on our preliminary analysis, approximately 25% of attendees completed a post-event survey and the majority found the roundtable sessions valuable, as the average rating of the sessions was 4.5 out of 5. Attendees were from various backgrounds: university student, resident, and community organization. All attendees formed at least one new connection at the event and felt encouraged to take part in existing sustainability initiatives in Hamilton. We consolidated the preliminary data to create a workshop outcome report template. The report summarized the overall outcomes of ChangeCampX (the group planning process, workshop execution, recommendations for future events, etc.) to serve as a guide for future Change Camp Hamilton events.

COLLABORATORS: We would like to thank our Community Project Champion, Dave Heidebrecht, Coordinator of the Office of Community Engagement, McMaster University, for providing us with information and resources, acting as a liaison with others at Change Camp Hamilton, and offering feedback, and mentorship throughout. Additional thanks goes to Christine Yachouh and Crystal Chan, Teaching Assistants for Sustain 3S03, and Kate Whalen, Senior Manager, Academic Sustainability Programs, McMaster University, for their support. Finally, thank you to Mes Amis Catering and all ChangeCampX participants, community organizations, roundtable facilitators, and volunteers!

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HAMILTON CYCLING GAP ANALYSIS



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OVERVIEW

It is noted that cyclists in Hamilton are at greater risk of becoming victims of motor vehicle collisions than what would be expected from the provincial average¹. Additionally, the number of cyclist commuters in the city is lower than that of the national mean². These numbers can be attributed to cyclists feeling unsafe on roads hence choosing alternative methods of transportation. Leading research shows that well-developed road infrastructure, including bike lanes, can increase safety and decrease accidents³. With a commitment to eliminating cycling¹, the City of Hamilton, supported by local advocacy group: Cycle Hamilton, has taken initiative to map all existing bike lanes in order to locate gaps in the current cycling networks. This project aims to identify gaps from the perspective of a cyclist, in order to recommend infrastructure improvements. Providing high-quality infrastructure and well-connected networks for cyclists will increase safety and support cycling as a sustainable mode of transportation for all.

OBJECTIVES

1. Assess Hamilton bike lanes for safety and connectivity from a user perspective.
2. Determine potential new routes based on a rating system for cyclist safety.
3. Create a comprehensive video from a user perspective displaying the contrast between the top ranked bike lane, and bike lanes that need improvement.

REPORTING

After successfully biking all of Hamilton's bike lanes and rating them based on safety, quality and connectivity, we then compared it to existing information. Data obtained on employment density, and location of schools was correlated with the existing bike lanes map provided by the City of Hamilton. This information, along with data on dangerous roads from Hamilton's Public Works Department, was used to consider what proposed bike lanes should be implemented in the near future.

This analysis establishes that Hamilton already has some high quality bike lanes. 57.55% of the existing lanes were well rated, with no need for improvement in the near future. Most of these well rated lanes can either be found in downtown or in suburban areas where 96% of these lanes had good quality pavement, which is a key factor when considering bike lane safety. However, this leaves 42.45% of existing bike lanes in poor condition. These roads were poorly rated either due to their pavement quality, safety, lack of proper signage and general appearance. Unlike the well rated lanes, the poorly rated lanes can be found all across the city, but primarily downtown, and lacked connectivity to the rest of Hamilton, such as the mountain.



Figure 1: Bike Lanes in Need of Improvement in Hamilton, ON. This is a visual representation of bike lanes that were rated poorly in this study and were found to be need of improvement.

Our full report and video was shared with the City of Hamilton as well as Cycle Hamilton, and can be found online at ASP.mcmaster.ca.

COLLABORATORS: We would like to thank the following individuals for their support: survey implementation was facilitated by the members of this student group. The community project champion, Peter Topalovic, was responsible for advising the group throughout the project. The community mentor, Alex Ricci, provided a map of various bikes lanes around Hamilton. Patrick DeLuca provided assistance with navigating the ArcGIS program and Scholars Geoportal. Dr. Scott provided GIS data on biking patterns. Our academic advisor Kate Whalen interviewed the group progress and provided feedback. Our non academic advisor Vikram Hardatt would arrange the group member meetings and provide us background information as well as feedback on the final report.

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