CRC REPORT

Research Dissemination and Website Statistics

as of March 2014
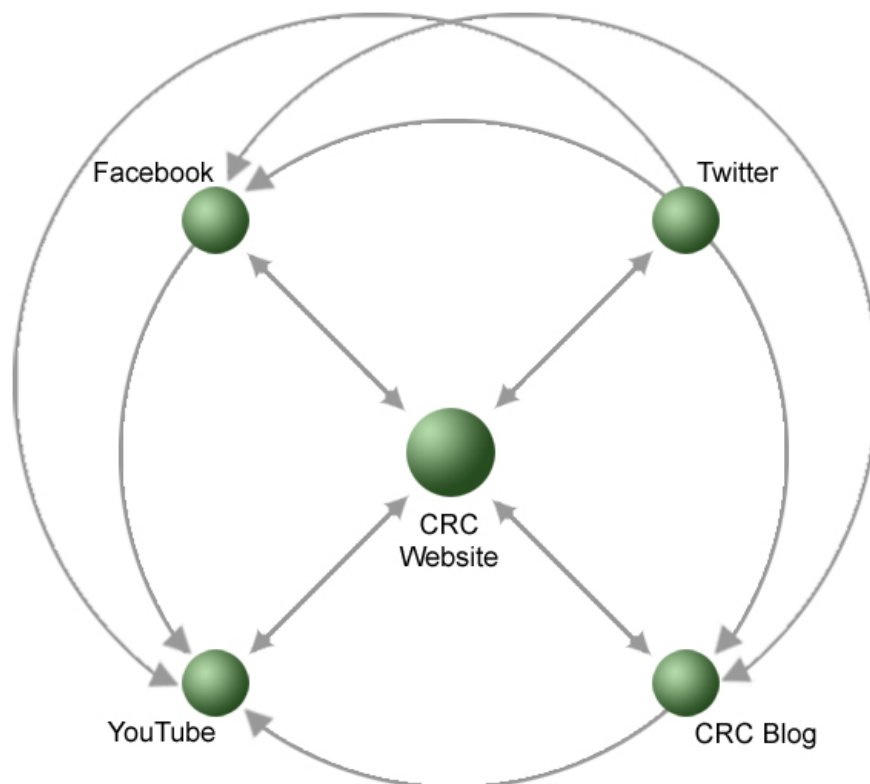
Prepared by

Rob Newell and Ann Dale

Canada Research Chair in Sustainable Community Development

Royal Roads University

crcresearch.org

Community Research Connections
crcresearch

Sustainable Community
Development

Executive Summary

The Canada Research Chair in Sustainable Community Development (CRC) ends on September 30, 2014, and this will be the final report on its online presence, research dissemination and social media work. Over the last three years, we have significantly increased our online presence and outreach through more dynamic use of social media, experimenting with different forms of interactive visual media and data, and collaborative research efforts involving individuals and organizations across the country. The following report analyses CRC web data and discusses trends in our online presence. The report focuses on the most recent fiscal year of April 2013 to March 2014; however, it also provides information and time series graphs on the last three years of data to position current levels of web traffic among previous levels.

The CRC research program has six media channels for its research dissemination — the website, online real-time e-Dialogues, a dedicated blog, a Facebook page, Tweeting, and through social media (HEADTalks). Over the last fiscal year, April 2013 to March 2014, crcresearch.org received 40,353 visits, which averages to over 3,300 visits per month. This is an approximately 25% increase in web traffic from the previous year (April 2012 to March 2013) and a 40% increase from two years previous (April 2011 to March 2012). Of the 40,353 website visits observed in September 2013 to March 2014, approximately 83%, that is 33,613, of these visits were from unique visitors. This means that over 8 out of 10 of visits to the website on a given week were conducted by distinctly different users, a significant achievement for a research site that was already well established.

Over the period of April 2013 to March 2014, crcresearch.org received 64,277 webpage views, an 11% increase from the previous year and a 27% increase from two years previous. Almost half (47%) of the views were associated with case studies and publications (45% and 2% respectively), more than one sixth (16%) of the web traffic was associated with research projects; e-Dialogue and forums comprised over a tenth (11%) of the traffic. Altogether, almost three quarters, i.e., approximately 74%, of total website traffic directly accessed research resources and materials, an indicator that the website is being directly accessed for its research outcomes and substantive content, our major objective for experimenting with diverse research dissemination online channels.

In the period, April 2012 to March 2013, crcresearch.org received visitors from 182 countries, which comprises approximately 94% of the world's nations. This is an increase from the previous year, when the site received visitors from 85% of the world's countries, and from two years previous, when it received visits from 75% of the world's countries.

Although Canada is the primary source of website traffic, proportionate levels of Canadian traffic have decreased from the previous year (53%) and even more from two years previous (62%), which is a significant observation in light of the fact that overall levels of web traffic have increased. This indicates that CRC's research is reaching increasingly more diverse, global audiences, which is particularly important for work that CRC does on critical global issues, such as climate change and issue related to challenging universal dominating paradigms, such as growth.

Such a research web presence has direct benefits for the university's overall profile, with spill over effects for recruitment and retention. Although we have no way to directly measure our impacts on recruitment, it appears common sense to conclude that it does have a benefit, and perhaps more so, to potential international recruitment. More importantly, the cross-school collaboration has proven to have significant iterative benefits for both teaching and research and shows the potentiality of a fully integrated research and teaching program, perhaps a more modern approach to professional development than certificate laddering into degree programs. If professional accreditation could be secured for such integrated programming, it may well prove to be a novel niche for future RRU academic programming.

 The first section of this report provides an introduction to CRC's online research dissemination channels and discusses when we began using social media and how this form of online communication is used. The report then details outcomes of analyses on web data relating to CRC's parent website, i.e., crcresearch.org. These analyses include examinations of numbers of visits to the site, sources of web traffic, locations (by country) from where the website is being accessed, and the types of content accessed from the website. The next section discusses CRC's experimentation with social media programs and reports on CRC YouTube and Facebook data.

We have also experimented with the use of Twitter; however, Twitter data is not available and thus is not included in the report. The final section discusses publications produced from the work with social media, and provides abstracts and citations. The report concludes with a summary of the overall trends in CRC research program's online performance and outcomes from our use of social media for research dissemination and widespread communication of research outcomes.

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CRC Online

CRC's experimentation with social media began in late 2010 when Principal Investigator, Professor Ann Dale, created a blog, entitled *Views from the Edge*, to discuss sustainability research ideas and concepts to broad, diverse audiences. Shortly following the establishment of this blog, we diversified our social media capabilities by establishing a YouTube channel, a Facebook page, and a Twitter account. In September 2011, we began a focused effort in building a social media audience by producing and publishing YouTube videos at least once a month, posting on Facebook (roughly) 2 to 3 times a week, and 'tweeting' through Twitter a couple times a week. This level of online activity has been sustained (for the most part) from the fall of 2011 to the spring of 2014 (current), which has allowed CRC to examine the long-term performance of consistent social media efforts in terms of its potential for disseminating sustainable development research and connecting to diverse, public audiences.

CRC uses social media platforms in a complementary fashion, meaning that posts, entries, videos and data visualizations are synchronized releases, refer and link to one another. Facebook posts are automatically 'tweeted' through CRC's Twitter account, YouTube videos and CRC blogs are posted on Facebook when published, and blogs contain hyperlinks to YouTube videos. In addition, Facebook, Twitter, YouTube video descriptions, and blogs contain hyperlinks to research projects on the main website, and, in turn, the main website contains hyperlinks to the social media platforms where appropriate. All of this is also complimented by systematic virtual real-time e-Dialogues that are also strategically timed to stimulate ongoing interest and increase outreach to our first target audience, Canadians and then internationally.

The objectives of 'inter-connecting' CRC's online channels in this manner is to maximize research dissemination, public outreach and web presence to CRC research outcomes and policy papers, develop symmetry between CRC's research and its public outreach, and create a dynamically interactive virtual space for people to learn, engage in ideas on sustainable community development with the research team and through e-Dialogues, practitioners, policy makers and civil society leaders. The figure on the title page illustrates how online traffic is directed in the CRC program through its use of social media programs.

More recently, we began experimenting with the use of visualizations as another method of

communicating the patterns and relationships in sustainable development that emerge from complex data sets in a format that is engaging and understandable to public audiences. This work began in summer of 2012 with Patterns of Our Footsteps, a blog series that graphs and analyzes open source data (i.e., from Statistics Canada, BC Statistics, World Data Bank, etc.) and discusses the analyses in language intended for public audiences. In the fall of 2013, we started bi-monthly publication of interactive visualizations to display the results of two meta-analyses; the first on 53 CRC case studies and 55 e-Dialogues and the second, on data produced through the Meeting the Climate Change Challenge (MC³), a research partnership (RRU, UBC, and SFU) on climate innovation in BC. Built using Adobe Flash and Tableau, the interactive aspect of these visualizations allow for an engaging and in-depth exploration of complex relationships between ideas and concepts on sustainable community development that have emerged through the diverse set of case studies and e-Dialogues produced throughout a decade of research on sustainable community development (CRC) and 75 transcripts of interviews with local climate leaders across BC (MC³). Other visualization techniques include graphical recording, which is a pictorial method of collecting notes. Graphic recording has been used for both the workshop on De-growth: A Critical Juncture?, and the MC³ Peer-to-Peer Learning Exchange, and these are publicly available on both the CRC and MC³ websites.

When published, CRC visualizations (i.e., Patterns of Our Footsteps, interactive visualizations, and graphic records) are both housed within CRC Visualization section of the website and shared through social media. Due to the fact that they are visually engaging, they are effective tools for translating complex data to diverse audiences, as well as drawing attention and building our online audiences. In addition, because visualizations convey information pictorially, some of CRC visualizations have served as useful materials or bases for YouTube animations (particularly images produced from graphic recording), and this has become a novel method for disseminating complex research data in a concise and publicly engaging manner.

Website Presence

Web traffic data for CRC's main website, crcresearch.org, is collected using Google Analytics (GA), and has been since November 2010. Prior to November 2010, CRC used AW Stats to collect web traffic data. The decision to shift website monitoring systems from AW Stats to GA was

made because (at the time) GA more accurately captured *human* web traffic (i.e., excluding spiders and web robots). However, because GA's system for measuring web traffic differs from AW Stats, reliable longitudinal analyses of web traffic data can only be performed on data collected from GA or AW Stats, but not on combined data sets. Therefore, in order to (reliably) compare current web traffic with previous trends, this report uses data collected only through GA and thus refers to trends from November 2010 to March 2014, inclusive.
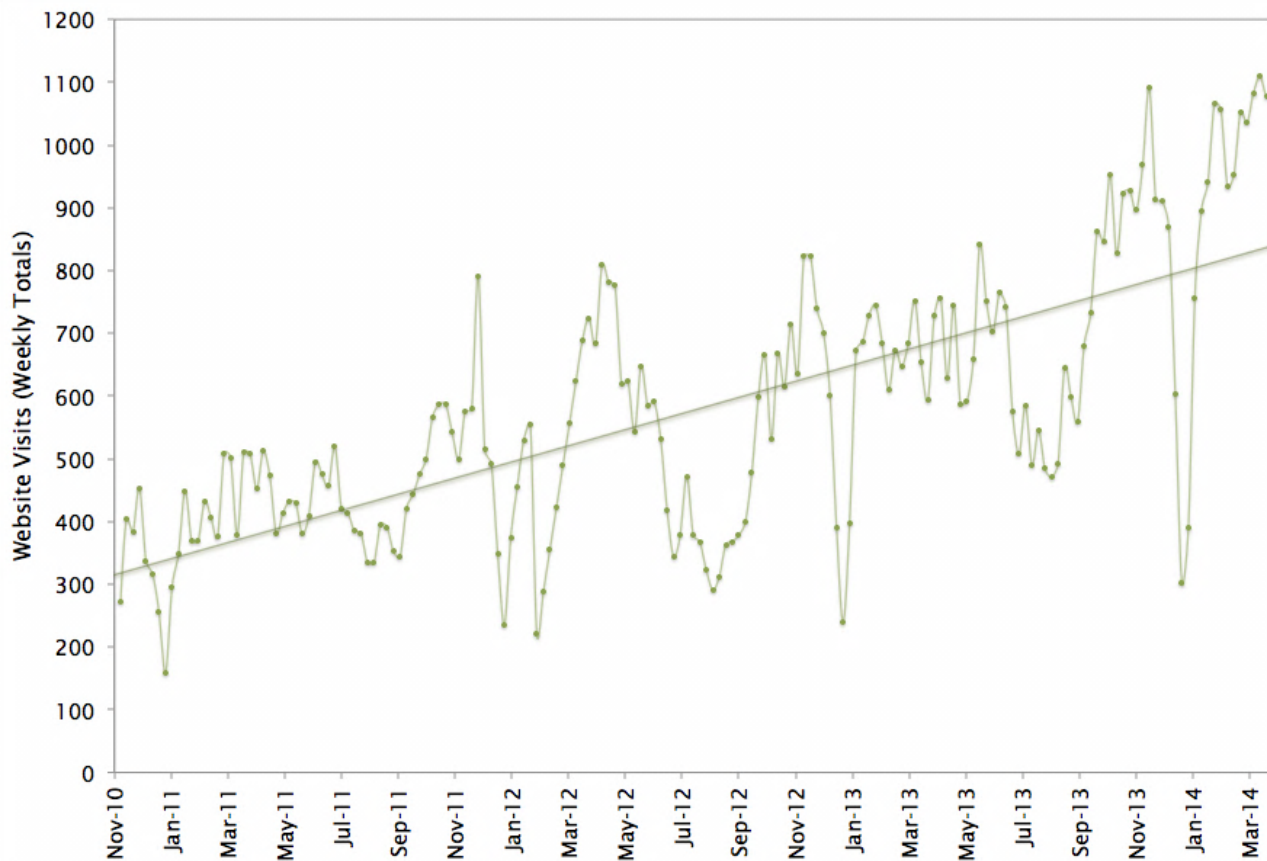

Figure 1. *Website traffic data for crcresearch.org ranging from the implementation of Google Analytics to current*

As seen in Figure 1, CRC's website has experience a marked increase in web traffic over the last three years. Throughout the recent fiscal year of April 2013 to March 2014, crcresearch.org received 40,353 visits, which averages to over 3,300 visits per month. This measures to (approximately) a 25% increase in web traffic from the previous year (April 2012 to March 2013) and a 40% increase from two years previous (April 2011 to March 2012). Consistent with these findings, regression analysis indicates a steady (overall) increase in web traffic has

occurred from November 2010 to current (F=185.5, DF=176, p<0.001). Web traffic does fluctuate around the linear regression model from month to month (R^2=0.51); however, fluctuations are due to seasonal variation (explained in more detail below) and traffic levels relative to their respective seasons have increased from year to year.
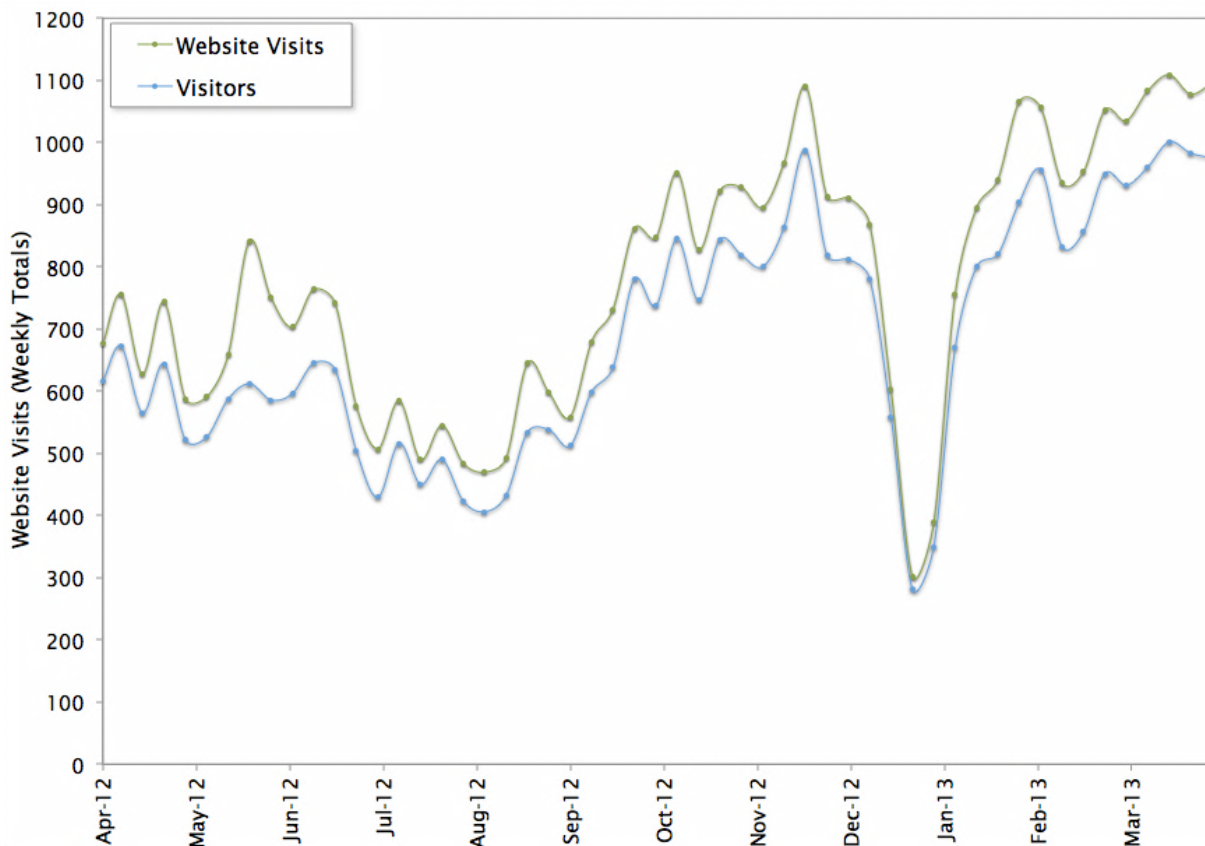

Figure 2. *Weekly totals of visits and unique visitors to crcresearch.org*

Figure 2 displays weekly trends for both visits and unique visitors. The green time series represents the total amount of visits crcresearch.org received, and the blue time series represents the number of these visits that constituted unique visitors, i.e., visits from different computers and/or IP addresses. Both trends occur in similar patterns indicating that distinct, individual visitors and total website traffic are (for the most part) proportionally consistent, and traffic statistics have not been highly skewed in any given week by high usage from a minority of active visitors.

Of the 40,353 website visits observed in September 2013 to March 2014, approximately 83%,

i.e., 33,613, of these visits were from unique visitors. This means that over 8 out of 10 of visits to the website on a given week were from distinctly different users. Such a statistic is encouraging in terms of the CRC's online outreach because it demonstrates that website visits are not being dominated by a handful of individuals and the research program is connecting with large audiences.

Both Figures 1 and 2 display fluctuations in web traffic occurring throughout each year. Decreased levels of web traffic are associated with late December and to a (lesser degree) summer months of July and August. In contrast, high levels of activity are observed to occur in the fall (particularly in November) and the spring. This pattern indicates that our resources and materials are used less frequently during months commonly allocated for holidays in academic, practitioner, and government sectors, i.e., summer and winter, and more frequently during periods of higher work and academic activity. Much of our work contributes to academic collaboration, informing practitioners and evidence-based policy making, and decision-makers on innovations and best practices in sustainable community development, and thus these trends imply that CRC's we are reaching our primary targeted audiences.

Traffic Sources and Destinations

The following three figures display information on how people are using the CRC website, from where the site is being accessed, and how people are reaching the site.
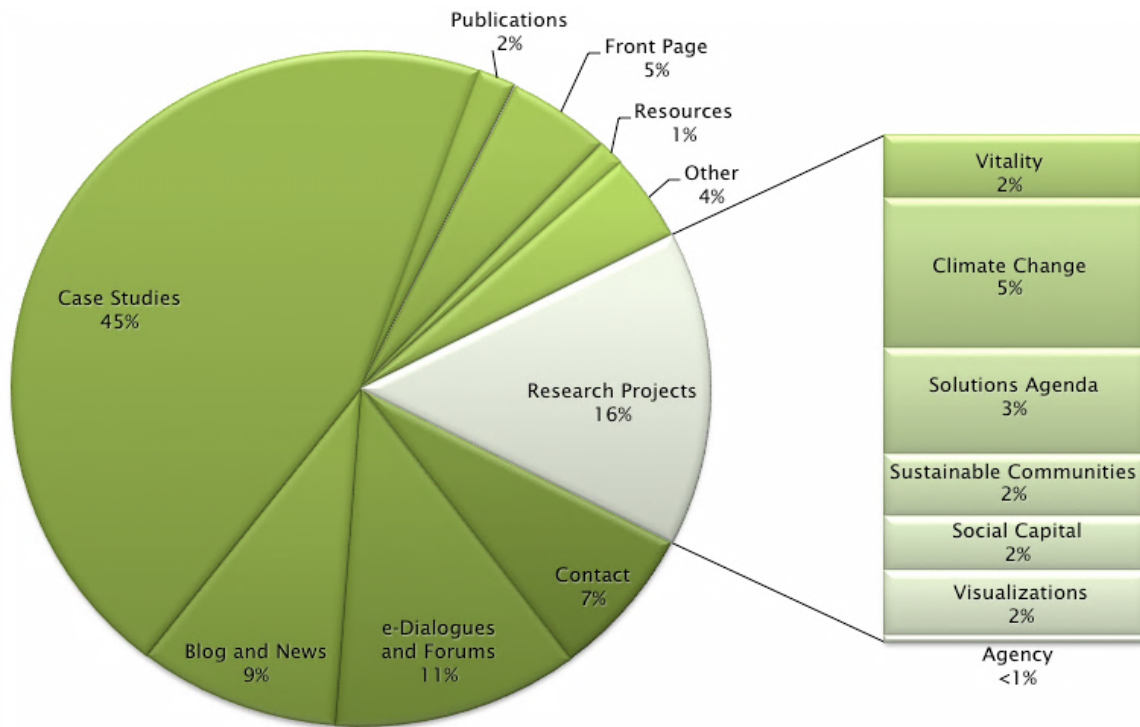
Figure 3. *Proportionate views of different types of web content on crcresearch.org*

In the period of April 2013 to March 2014, crcresearch.org received 64,277 webpage views, an 11% increase from the previous year and 27% increase from two years previous. Almost half (47%) of the views were associated with case studies and publications (45% and 2% respectively), more than one sixth (16%) of the web traffic was associated with research projects, and e-Dialogue and forums comprised over a tenth (11%) of the traffic. Altogether, almost three quarters, i.e., approximately 74%, of total website traffic was associated with research resources and materials, which indicates that the website is effectively being accessed for its research outcomes and substantive content.

A noticeable difference between the destinations of web traffic from the previous year to the current is a substantial increase in the proportion of traffic directed to research projects and case studies. Research projects in April 2012 to March 2013 received approximately 12% of traffic, whereas in the most recent year they received 16%. In light of the fact that overall webpage views have increased by 11%, this increase in research project web traffic represents significant growth in audience and interest. The increase roughly corresponds to the work done through CRC Visualizations (2%) and the Solutions Agenda (3%), which both are projects that mostly were active in the recent year. In terms of case studies, web traffic has increased

dramatically from 37% to 45%. Specific reasons for this increase are uncertain; however, possible explanations include more consistent efforts linking blogs and news posts to case studies, hyperlinks to case studies embedded in recently developed Visualizations and Solutions Agenda content, and increased interest in CRC research materials through network expansion resulting from new research collaborations (particularly with the Canadian Council on Social Development). Our research on the use of online communication channels for research dissemination and knowledge mobilization in the MC^3 project supports these potential explanations, as this work has elucidated that continually building an online presence through activities such as blogging can lead to increase in traffic to and interest in research materials (e.g., cases studies), regardless of when they were published and initially publicized (Newell and Dale, in press).

Other significant sources of webpage traffic occur with contacts pages and blog and news pages, which comprise approximately 7% and 9% of the traffic, respectively. 'Contacts' pages refer to pages that provide contact details and/or biographies for research team members and partners. Also, included in this category is the innovator database, which contains contact information for community leaders and innovators identified in case studies and researchers affiliated with CRC. Significant sources of traffic to contacts pages indicate that the website is being utilized for developing or strengthening connections within research and practitioner networks. 'Blog and news' pages refer to posts that provide insights from the research team and information on new developments in and updates on CRC research activities, partner projects, and other projects related to sustainable community development. A significant level of blog and news web traffic is indicative of successful efforts in connecting with people and updating them on recent developments in CRC's research and sustainable community development, in general.

Homepage views constitute less than 5% of the total views indicating that the vast majority of visits to the website are not 'accidental'. To clarify, if a large contingency of the viewers simply 'happened' upon the website and then moved on, the proportion of homepage views would likely be significantly larger. However, since 74% of the webpage views accessed research resources and, in comparison, 5% of views were of the homepage, visitors are evidently visiting the site due to research resources (i.e., its content), rather than landing on the homepage and deciding that crcresearch.org was not the site he/she was attempting to reach.

In late September 2013, CRC launched a new website navigation page consisting of an interactive animation. The animation design was based on sketched images of a flowering plant and fauna interacting with the plant. The plant bloomed and attracted different types of fauna depending on what part of the flower the user clicked, and once bloomed, elements of the animation would appear that link to various projects and resources on crcresearch.org. Through using the flower sketch design, the animation integrated aesthetics and interactivity for the purposes increasing both website navigability and engagement. It is difficult to determine to what degree the animation met this objective because it was developed and hosted on a page for which web statistics are not available; however, webpage views statistics indicate that the majority of webpage visits (59%) occurred in the latter half of the April 2013 to March 2014 period, directly following the release of the animation on September 30th, 2013. This increase in web traffic could be attributed to several different factors (such as seasonal variation in web activity); however, an increase of this size was not observed in previous years and thus it is possible that the new website navigation tool has contributed to this.
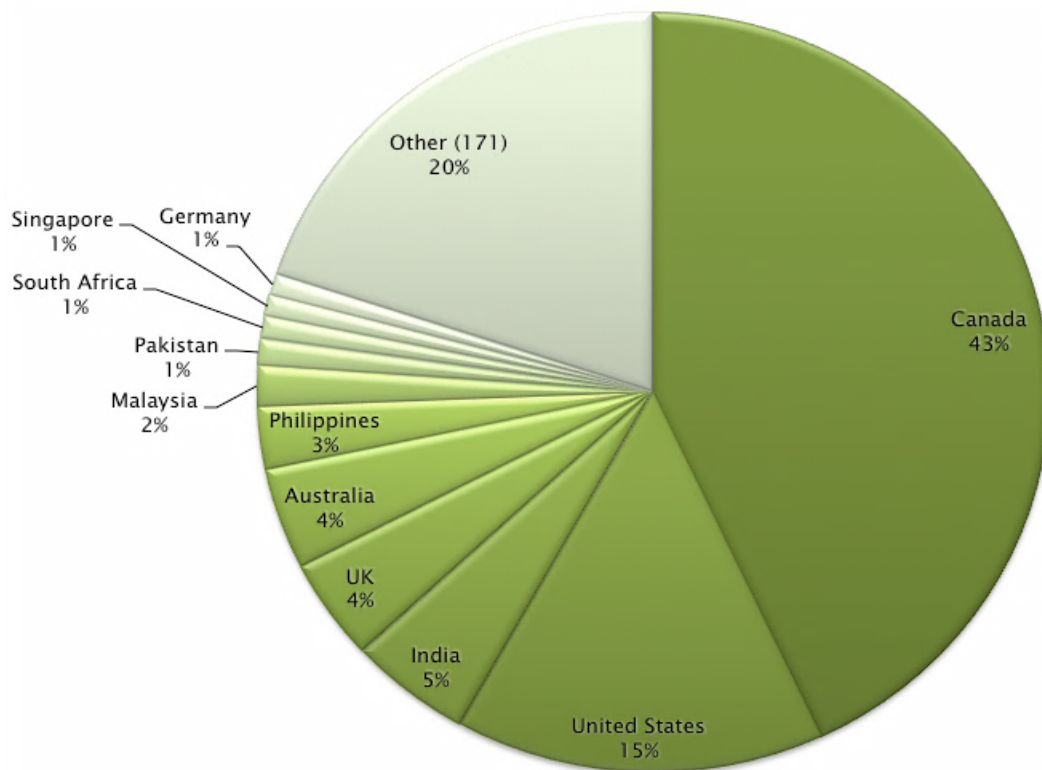

Figure 4. *Proportionate sources of website traffic categorized by country*

In the period of April 2012 to March 2013, crcresearch.org received visitors from 182 countries, which comprises approximately 94% of the world's nations. This is an increase from the previous year, in where crcresearch.org received visitors from 85% of the world's countries, and from two years previous, in where the site received visits from 75% of the world's countries. As seen in Figure 4, CRC's website receives more visitors from Canada than any other country, Canadian visitors comprise 43% of the total traffic. This is to be expected, as CRC is a Canadian research program that focuses heavily on Canadian communities and involves collaborations with Canadian researchers and practitioners. However, although Canada is the primary source of website traffic, proportionate levels of Canadian traffic have decreased from the previous year (53%) and even more from two years previous (62%), which is a significant observation in light of the fact that overall levels of web traffic have increased. This indicates that our research is reaching increasingly more diverse, global audiences, which is particularly important for research that CRC does on critical global issues, such as climate change adaptation and mitigation, its work on the international de-growth movement, the international cooperative movement, and its critical examination of issues of optimal scale, diversity and limits to the current economic paradigm.
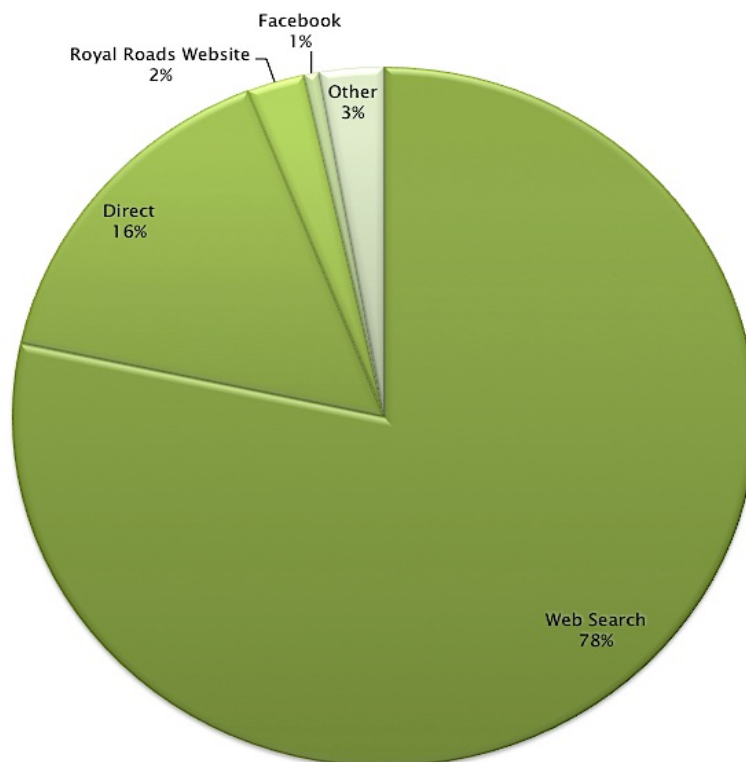

Figure 5. *Proportionate usage of online routes for reaching crcresearch.org*

As seen in Figure 5, the vast majority of web traffic (78%) to crcresearch.org reaches the site through search engines (i.e., Google, Bing, Yahoo, etc.). Search engine traffic refers to visitors that are not reaching the site through direct links, and the fact that most visitors reach CRC materials through Internet searches indicates that crcresearch.org is typically being accessed by broader, public groups, rather than specific parties that are familiar enough with CRC that they have direct addresses to website materials. This observation implies that crcresearch.org serves as a useful, public resource for people researching and exploring topics related to sustainability and sustainable community development.

Direct traffic comprises the next major source of web traffic (16%). As the name implies, direct traffic can refer to visitors that are familiar with CRC and access CRC webpages by entering a web address into their Internet browser or through a bookmark. However, direct traffic can also refer to people that access CRC webpages through e-mail, which can include people that reach the website through our quarterly newsletter and periodic announcements. We send newsletters and announcements to a distribution list of over 5,000 people several times a year, and, therefore, it is possible that much of the direct traffic observed through the web statistics is due to this supplementary communications strategy. In addition, direct traffic can also result from people reaching the website through file documents, such as PDFs and Word docs, and, in the case of CRC, this could refer to people reaching the website through hyperlinks embedded in CRC policy documents, discussion papers, and reports that are distributed among academic, government and practitioner networks.

Other major sources of web traffic, i.e., any source of traffic that is greater than 1%, includes the RRU website (2%) and Facebook (1%). Significant web traffic through the RRU website is expected considering RRU is the host institution of the research program. Facebook is the next most significant source of traffic channeling approximately 1% of visits to the site. CRC's work with Facebook will be discussed in further detail below; however, it is important to note that, albeit Facebook channels 1% of website traffic, the CRC Facebook page contains links external to crcresearch.org (such as articles and projects relevant to CRC Research's work, CRC videos posted on YouTube, work done through the MC[3] partnership project, etc.) and thus this statistic does not reflect our total Facebook traffic.

The 'Other' category refers to a cumulation of websites that channel less that 1% of CRC's website traffic each. This category consists of websites of research partners and organizations doing related work that contain links to CRC webpages, such as Sustainability Solutions Groups, the National Municipal Adaptation Project, and Climate CoLab. Although these websites have channeled relatively low levels of traffic to crcresearch.org, the number of these websites is plentiful (over 200), which reflects the diversity of connections CRC has made with other groups and organizations.

YouTube Profile

We established a YouTube channel, branded as the Humanity, Education and Design Talks (HEADTalks), designed to disseminate sustainability ideas and research to the broader public through creative and visually engaging media. HEADTalks videos are created and released on a schedule that ensures videos complement the themes and topics that we are focusing on at that time, thereby ensuring symmetry between the research projects and public outreach efforts. HEADTalks has been a highly experimental research initiative, and videos vary in format and approach, from interviews blended with images to stop motion animations.

HEADTalks was established in February 2011. In the spring and summer of 2011, the channel was populated with an introductory video that explained the purpose of HEADTalks and a non-narrative, stop-motion animation, entitled *Sketching Sustainability*. HEADTalks efforts increased in September 2011, when we began releasing a new video every month. This level of output has remained (more or less) consistent from September 2011 to current.

Certain videos are designed to be a part of a larger series developed as a complement to a particular research effort, and these videos are grouped using YouTube's playlist function. Video series have been developed for research projects such as Vitality, the Solutions Agenda, Rethinking Growth, and MC^3. In addition, playlists have been created that gather videos that were not initially intended to be a part of a video series, but over time, ultimately complement each other. For example, a playlist has been created for Sustainable Communities and has been populated with videos that discuss sustainable community development and express ideas

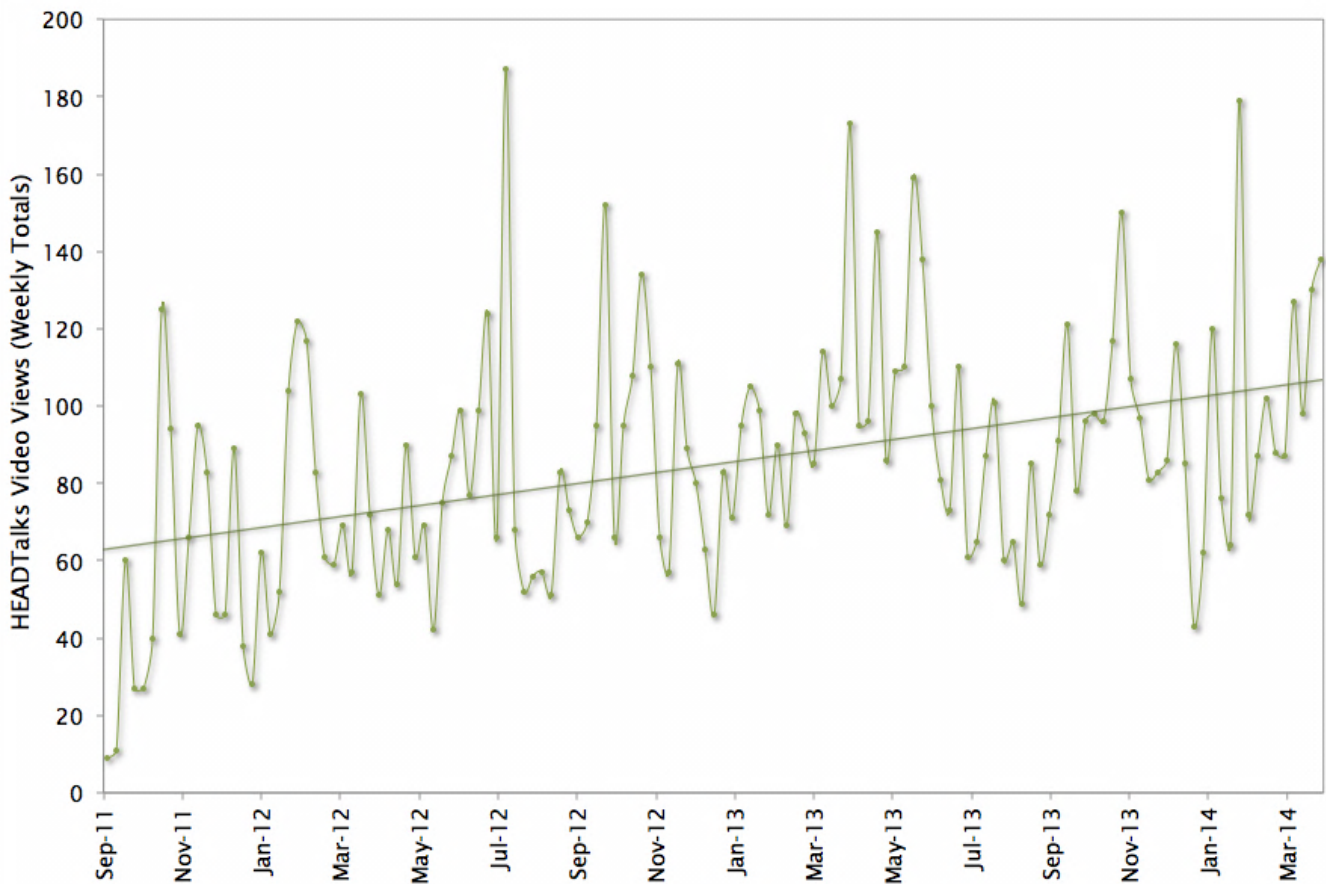around CRC's research themes of place, limits, scale, and diversity.

Figure 6. *Total monthly visits to HEADTalks ranging from September 2011 to current*

Regression analysis shows that HEADTalks views have steadily increased from September 2011 (when videos were being regularly posted) to the current (F=22.2, DF=134, p<0.001). Fluctuation in viewership has occurred (R^2=0.14); however, in a similar manner to that observed with the website, fluctuations result from seasonal variations with lower viewership in December and August (i.e., holiday months), and on an overall basis, viewership has increased. In addition, HEADTalks currently has 46 subscribers, over half of which have subscribed in the last year, indicating the CRC videos are steadily building a following. This steady gain in HEADTalks momentum is significant for effective research dissemination because a video channel with high viewership allows for creative, innovative and effective methods for sharing research with diverse audiences and the public sphere.
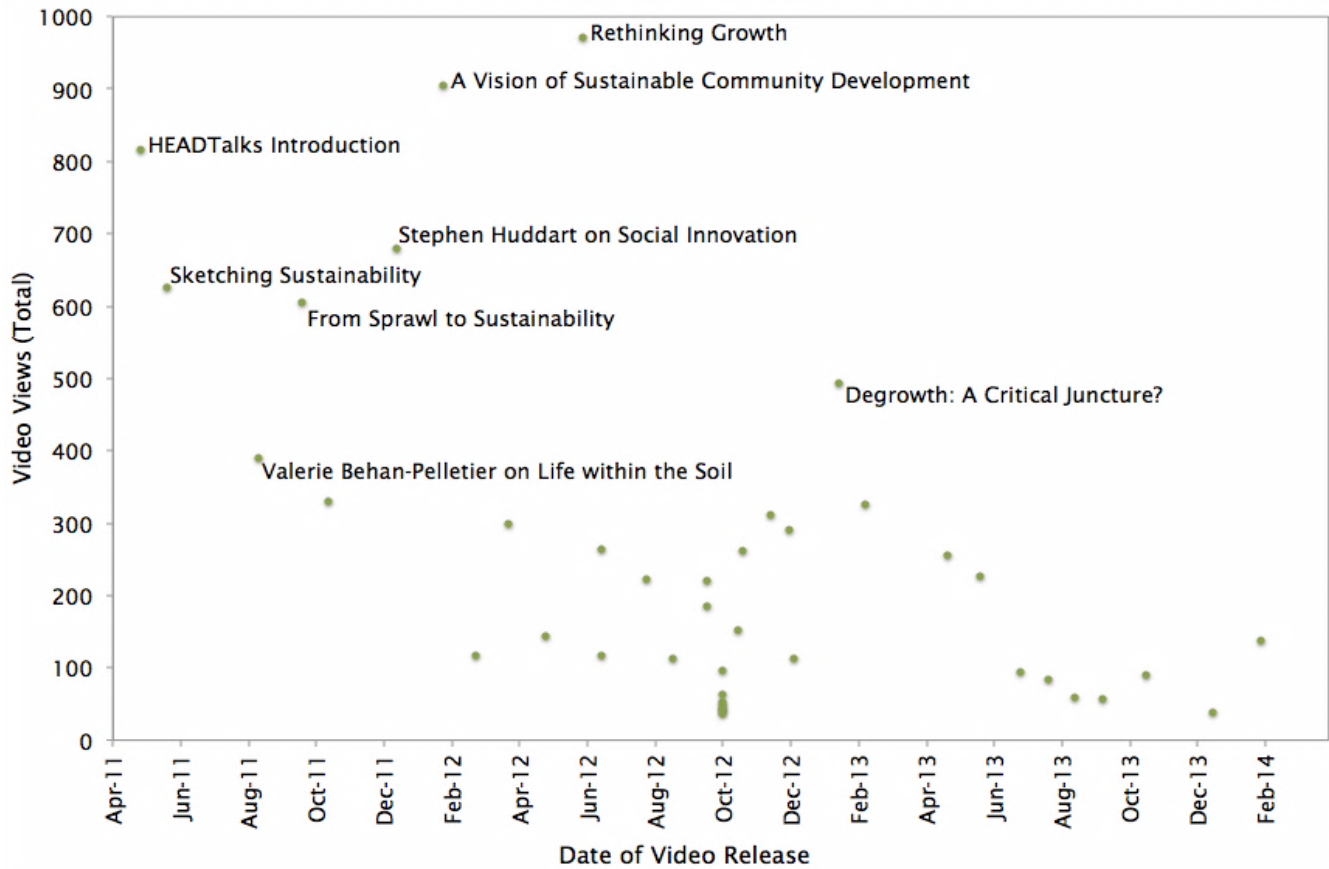
Figure 7. *HEADTalks video videos displayed with dates of video release*

Note: Data points representing the top eight videos that have received the most views are labeled with their respective video titles.

Figure 8 displays the dates in which HEADTalks videos were released with the numbers of views each video received as of March 2014. Regression analysis provides evidence that the number of views is correlated with the length of time video a view has been made available to the public ($F=21.3$, $DF=38$, $p<0.001$). This indicates that videos continue to receive steady levels of viewership following their release. In most cases, HEADTalks videos receive higher levels of viewership immediately following release due to the publicizing of new releases through Facebook, Twitter, the main website, and YouTube's messaging system (which automatically sends a message to subscribers when a new video is released). However, as indicated by the results of the regression (and Figure 7), audience engagement with a video is not limited to the period when the video was released, and unlike time-sensitive methods of delivering information (such as news articles, Facebook posts, or blog posts), video publications

demonstrate longevity in terms of their ability to continue to disseminate information to the public sphere

Data points representing the top eight videos that have received the most views are labeled with their respective video titles in Figure 7. Of particular note is that this selection of videos is highly varied in both style and topic.

- *Sketching Sustainability* is a stop-motion animation on sustainability
- *Stephen Huddart on Social Innovation* features an interview with Stephen Huddart, President of the McConnell Foundation, blended with images that complement his discussion on social innovation
- *From Sprawl to Sustainability* is a clay animation video on sustainable development;
- *A Vision of Sustainable Community Development* is an animated slide show coupled with a narrative from Professor Ann Dale
- *Rethinking Growth* features a series of quotes and ideas relating to rethinking to constant economic growth paradigm
- *De-growth: A Critical Juncture?* is an animation featuring images from the graphic recording on CRC's workshop on rethinking growth and progress (of the same name),
- *Valerie Behan-Pelletier on Life within the Soil* features an interview (and images) with Dr. Behan-Pelletier on soil ecology and its importance to humanity and the larger biosphere.

Note: The *HEADTalks Introduction* is not listed above because it plays automatically when visiting the channel, which is likely why it has received a large number of views.

HEADTalks videos vary in format and style as we experiment with different strategies for reaching differentiated, targeted audiences. Therefore, the fact that the most-watched videos are highly varied is encouraging in terms of meeting this objective, as this potentially means that people watching the videos are equally diverse, i.e., age, interests, occupation, etc.
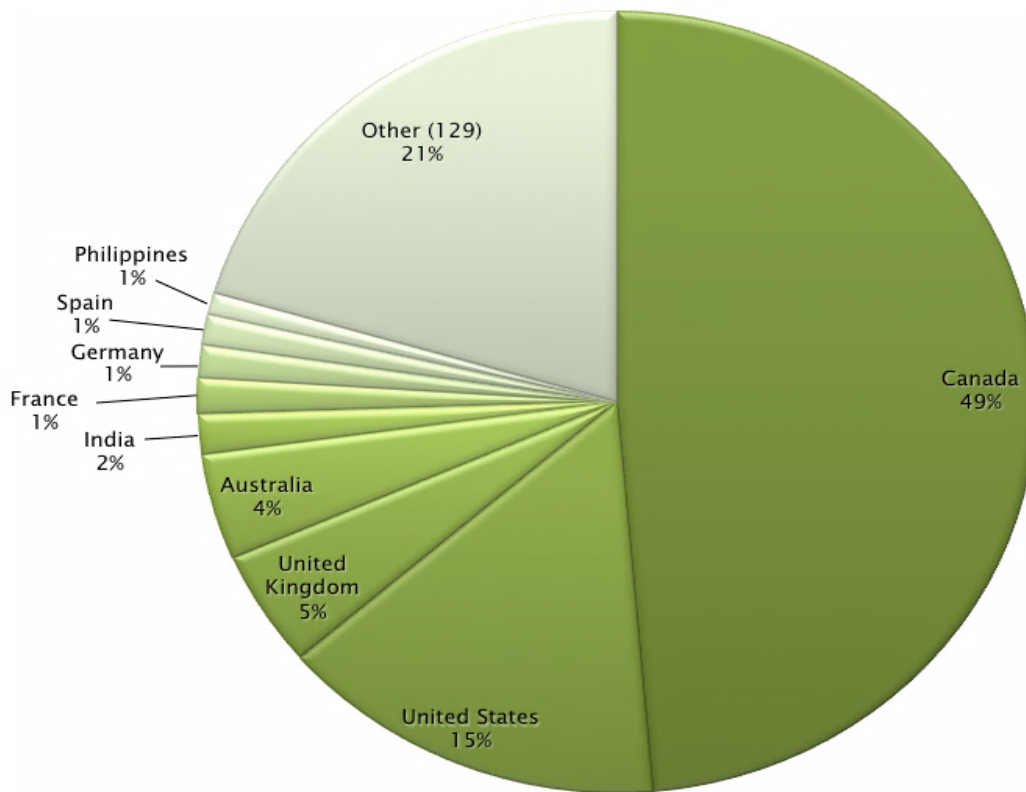
Figure 8. *Proportionate HEADTalks viewership originating from different countries*

Similar to the trends with CRC's website traffic, Canada was the largest source of HEADTalks viewership (almost half of the total views) during April 2013 to March 2014. This is expected as HEADTalks videos often feature examples from Canadian communities and/or ideas from Canadian researchers and innovators. In addition, videos are often shared within Canadian networks through project partners and the CRC newsletter, which is primarily distributed to Canadian researchers and practitioners. The next largest source of views is the United States, which is also an expected observation because American communities share commonalities with Canadian communities and CRC's research network and newsletter reaches some American researchers and practitioners. However, although the majority of HEADTalks viewership is North American in origin (64%), Figure 8 shows that HEADTalks videos have reached audiences from a total of 138 countries, which demonstrates these videos have connected to some degree with audiences of diverse backgrounds and (presumably) lifestyles. This is a particularly encouraging observation, when last year's report noted that HEADTalks audiences were distributed among only 108 countries.

Cross-School Teaching and Research

CRC's work with video media has paved the way for new cross-school teaching and research opportunities. Of particular note is the partnership CRC has formed with RRU's School of Communication and Culture. The partnership began in late 2011 with a pilot project developed by CRC Research Associate, Rob Newell, and RRU Communications Professors, Drs. Jennifer Wallinga and Phillip Vannini, which involved CRC working with two students of the MA in Intercultural and International Communications program on a sustainability-focused video. The video, entitled *Environmental Education in Our Backyard*, was completed as a part of the students' coursework for Contemporary Issues in Communications (IISC 638), and was eventually released on HEADTalks as a part of CRC's monthly release schedule. The partnership proved to be mutually beneficial as the communications students received an education in video production and sustainability messaging and we received different perspectives in producing a HEADTalks video designed to reach different audiences.

Following the success of this pilot project, we subsequently partnered with the BA in Professional Communications (BAPC) program, partnering with Dr. Virginia McKendry, and designed a larger project involving working with students of the COMM420 Media Project course. The students were given materials on the program's research themes of place, scale, limits and diversity. Two cohorts of students were divided into 11 teams, and each team was assigned one of the themes from which they were to create a video project. Tasha Diamant (Course Instructor), Dan Anthon (AV Media Technician), and Rob Newell worked together to provide creative guidance and technical tutorials to the students; however, ultimately, the videos were produced based on the student's creative vision and centered on aspects of the research program that particularly interested them. The BAPC partnership was very well received by both students and staff and has been repeated twice since – the second year focusing on research themes around the Solutions Agenda and the third year being a more open exploration of CRC's research that allowed students to focus their project on any aspect of the research (i.e., no defined themes).

Several positive outcomes have resulted from this collaboration with RRU's School of Communication and Culture. Firstly, it has lead to the release of more HEADTalks videos,

contributing to both CRC's publications and the students' professional portfolios. To date, six student videos have been released on HEADTalks and more are scheduled for release over the next six months. Secondly, it has produced interesting insights on how people, that are not necessarily in the sustainability field, 'view' research produced by our program. These insights have been shared through conference presentations, such as at the 2013 World Conference on Educational Media and Technology (EdMedia), and also will be shared through an academic paper (scheduled to be prepared later this year). Thirdly, the partnership has lead to other interesting opportunities for partner projects involving CRC and communications students, for example, a student of the COMM400 Professional Experience course is currently working with us on an interactive animation that portrays trends in Canadian energy production and consumption.

Facebook Profile

We established a Facebook page in 2010; however, similar to HEADTAlks, this page was not active and used on regular basis until September 2011. Since this time, CRC has posted approximately 2 to 3 times a week and this pattern has remained (more or less) consistent to date. Posts refer to CRC-related activities such as updates on research projects, releases of new videos and visualizations, new CRC and MC^3 publications, upcoming e-Dialogues, and so forth. In addition, posts are also created around other projects, links, and videos that are not CRC related, but still related to sustainability and sustainable community. For the latter, we still try to refer to our work to situate CRC and its research contributions in the broader context of research done around the globe in sustainability and sustainable community development.
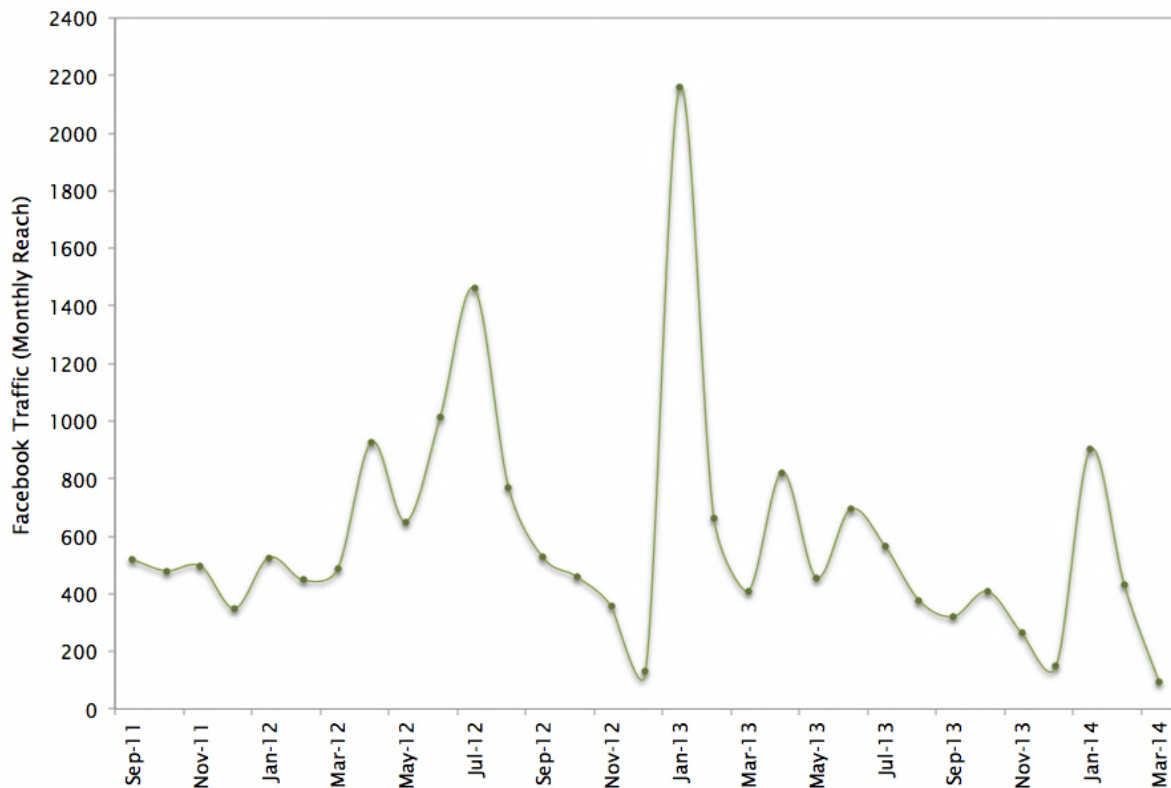
Figure 9. *Monthly totals of CRC Facebook daily reach values*

Figure 9 displays monthly trends in CRC Facebook traffic using a metric that Facebook refers to as 'reach'. Reach is a comprehensive metric that captures numbers of people that have seen or interacted with any content associated with a Facebook page. Figure 10 was created by summing daily reach values for each month between September 2011 and March 2014. It shows the overall trends in Facebook engagement over the last three years.

We have been able to continually engage people through Facebook; however, levels of Facebook traffic have fluctuated dramatically. Part of this fluctuation can be attributed to 'viral reach'. Viral reach refers to when a post is shared through other people's Facebook pages and thus is distributed through their Facebook networks. If a particular post is shared by multiple people, this can greatly contribute to viral reach, which in turn can dramatically increase total reach. For example, a particularly high level of reach was observed in January 2013 and this coincided with a post on an animation that expressed outcomes from CRC's workshop on exploring alternatives to the conventional economic model of constant growth (*Degrowth: A Critical Juncture?*). This post was shared by multiple people leading to high level of viral reach, and consequently, the

overall level of reach for January 2013 was higher than that of any other month. Another example of viral reach inflating total reach (but to a lesser degree) can be seen in January 2014, which experienced a high level of reach due to people sharing a post on *Sustainability Blooming*, an animation we produced that gives an overview of the CRC research outcomes over the last decade. The animation was built from the same sketch images used for the interactive animation map, and this was a deliberate attempt to introduce more 'art' into our research dissemination.

Experimenting with Facebook has demonstrated that type of media included or linked to in a post affects the level of engagement with the respective post. In particular, posts that contain 'stand-alone images', i.e., images such as a single-panel cartoon or mind maps that express a message completely without linking to external pages, receive higher viewership and interaction than posts that contain links to articles or projects (i.e., websites, forums, etc.). Such an observation implies that attraction to posts is related to whether posts communicate to and engage audiences in a visual manner. This insight has led to further experimentation with and development of visual media, for example, CRC's more recent work with data visualizations. In this manner, experimenting with Facebook has been beneficial in that it has provided insights on how to engage in more effective dissemination strategies and connect with broader audiences, which in turn has inspired novel and innovative research efforts.
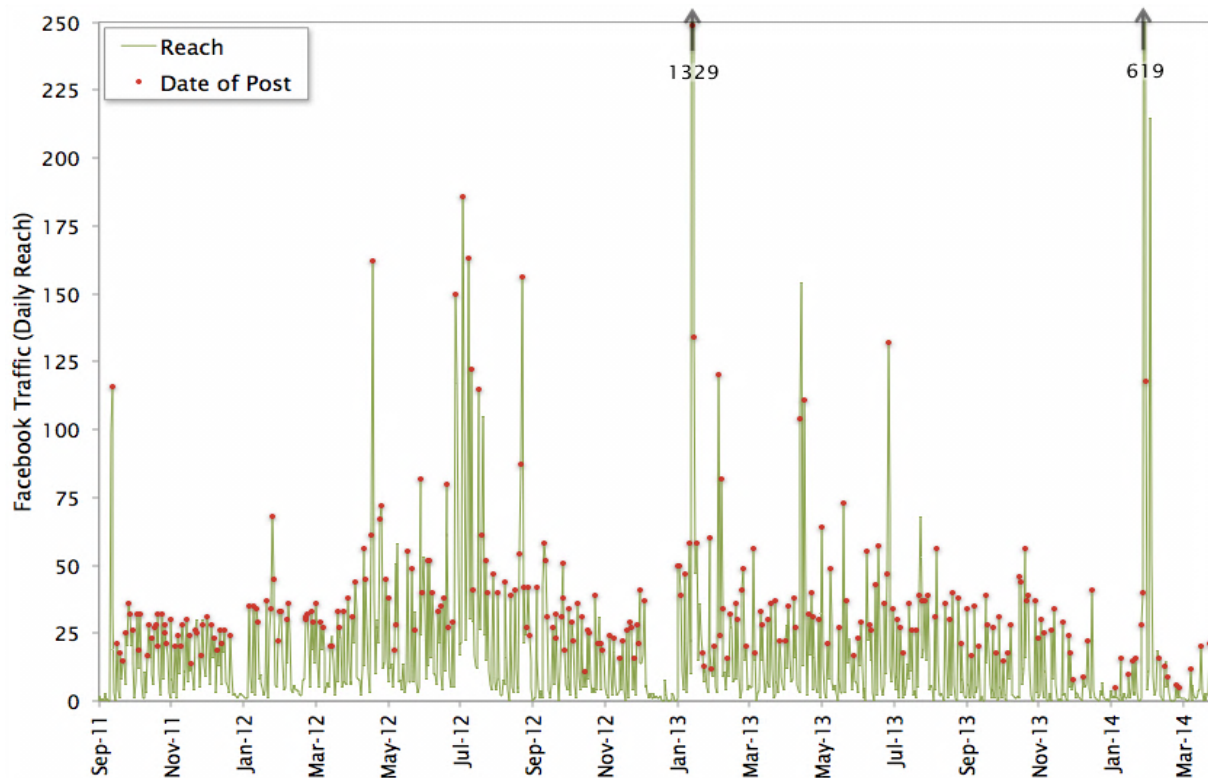
Figure 10. *Daily reach of CRC Research's Facebook page displayed with dates of page posts*

Figure 10 displays CRC's daily Facebook reach (represented by the green line) in relation to the dates of Facebook posts (represented by red dots). A strong correlation can be observed between the number of people that have viewed CRC Research's Facebook page/content and when posts are created. High interaction (i.e., page visits, comments, clicks on posts, etc.) occurs on (and directly following) days that posts have been produced, and, if posting decreases for a significant period of time (such as was seen in December 2012) then interaction with the page decreases accordingly. What can be deduced from this correlation is that, unlike YouTube videos which consistently receive views following release, Facebook posts typically are only viewed within a couple days of being posted, and thus diligence and regularity in posting is essential for maintaining Facebook engagement.

As noted above, posts in January 2013 and January 2014 received high levels of viral reach, and thus total reach on days pertaining to these posts was 1,329 and 619, respectively. These reach values demonstrate the potential online social networks have for amplifying the level of exposure a project, message, or idea can receive. The specific factors that lead to a Facebook post

going 'viral' are not entirely clear (although, as discussed above, visuality might contribute to this); however, the potential social media has for research dissemination and communicating research outcomes is evident.

A Facebook user or group can provide a 'Like' to a page to show approval or favourable opinion toward an organization operating a Facebook page and/or the content on the page. Providing a Like is an active method of showing favour toward a page/organization, and thus the Like metric provides an impression of the numbers of people that are actively engaging in a Facebook page rather than happening across it by chance. In addition, when a person Likes a Facebook page, the organization operating the page is displayed in the person's Facebook profile and posts from the page appear in the person's Facebook newsfeed. Therefore, Likes can increase exposure to a page (and thusly content from the page) by increasing its prevalence in virtual networks.

Figure 11 shows lifetime totals of Likes from September 2011 to current. 'Lifetime totals' refer numbers of Likes CRC Facebook has received from the date of its establishment to a given day. It is important to note that these values refer to *net* totals, as Likes can be both provided and removed, and thus a trend in Likes can both increase and decrease. In the case of CRC Facebook, the trend in Likes has increased overall, indicating that CRC has steadily built an online following over the last three years.
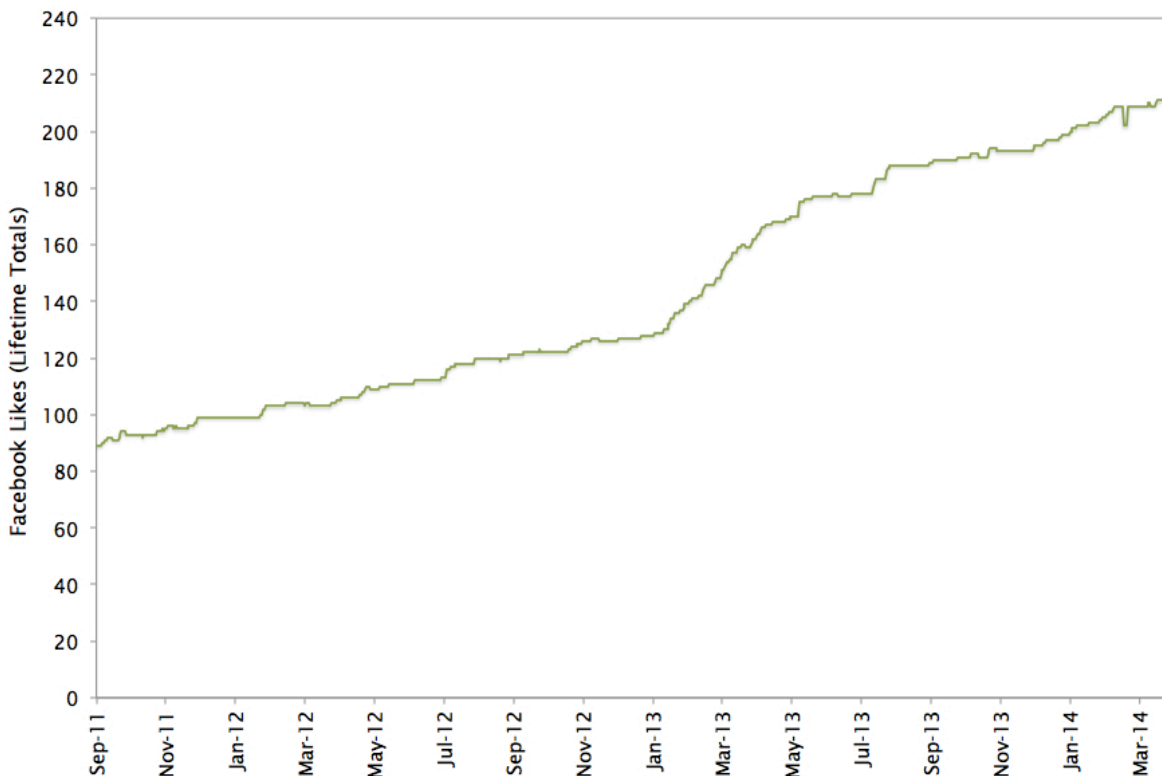
Figure 11. *Lifetime total numbers of 'Likes' provided to the CRC Facebook page*

Publications

As an academic research program, we are, of course, dedicated to publishing our research and contributing to peer review literature in the social sciences. Below is a list of accepted, submitted, and in preparation articles produced through our social media research and experimentation.

Newell, R., and Dale, A. (in press). Meeting the Climate Change Challenge (MC^3): The role of the Internet in climate change research dissemination and knowledge mobilization. *Environmental Communication: A Journal of Nature and Culture*

Abstract: This paper explores the role that Internet and online technologies played in research dissemination and knowledge transfer in a recent research project, MC^3, as well as advancing dialogue on climate innovations and best practices in broader communities. In addition, the team looked at the potential of on-line expert-practitioner research collaborations for these purposes. Electronic communication was seen as a key element for creating distributed networks essential to the project and for building new

practitioner/research knowledge collaboratives. The paper discusses how online communication strategies and technologies were used to ensure wide dissemination of its research outcomes. MC³'s research dissemination and knowledge mobilization strategies are analyzed, using engagement as the primary measure, to gain insights on the effectiveness and challenges of employing Internet-based tools in communication strategies aimed at addressing climate change.

Newell, R., and Dale, A. (Submitted). Social media and research: Mobilizing knowledge and building online community. *Information, Communication, & Society*

Abstract: Social media is playing an increasing more significant role around the world in how practitioners, academics, government, and the public engage with one another. Recognizing this trend, the Canada Research Chair in Sustainable Community Development program (CRC) began experimenting with social media in late 2010 to evaluate its use in disseminating sustainability research and ideas to large, diverse audiences. The current study analyzes CRC YouTube and Facebook data to investigate social media's potential for connecting with diverse groups and building online audiences. Findings of the study indicated that the type of online audiences (i.e., diversity) was influenced by the real-world context of the CRC program and requirements for building/maintaining audiences differed depending on social media application (i.e., Facebook or YouTube).

Newell, R. (In preparation). The crossroads of virtual and physical places: An exploration into the geographical relationships of online social networks

Abstract: An increasing reliance on virtual communication technologies is changing the nature and scope of communities, as ideas and relationships are no longer bound by physical geography. Among these emergent technologies, social media is becoming a dominant and rapidly evolving method for communication. Increasing prevalence of social media users holds implications for how upcoming generations of people will meet and engage with each other, positioning 'virtual geography' as having a central role in the way people will socialize and connect. However, considering social networks typically are formed around a shared set of certain norms, values, and meanings, it is possible that the role of 'place' and the shared meanings of physical places will always play a strong role in social network formation, even in an increasingly more digital world. The current study explores the geographical relationships of online social networks, specifically examining whether engagement in online networks is driven primarily by the proliferation of virtual connections or if it has distinct place-based characteristics and occurs through an interplay of the physical and virtual world. The research used Facebook data collected through social media experiment run by the Community Research Connections (CRC) research program, and specifically focused on spatial patterns of CRC Facebook engagement within Canada.

The findings of the study suggest that virtual networks and building of online social capital are strongly related to inter-personal networks formed through physical communities and in-person relationships.

Conclusion

The CRC ten-year research program has led a dynamic, interactive constantly learning/research website platform that is now more of the biggest research websites in the country and we are regarded as leaders in the country in novel research dissemination tools and techniques. This online strategy has culminated in greater profile and online presence over the last three years, which is evident through the increasing website traffic to crcresearch.org and the level of public engagement with HEADTalks. In addition, CRC's experimentation with social media and online communication tools has opened avenues for novel and interesting research projects, including integrating teaching and research projects, through our collaboration with RRU's School of Communications and Culture, and has inspired further innovative research dissemination tools, such our recent visualizations work. Furthermore, as CRC continually becomes more experienced and knowledgeable in the dynamics of online networks and communities, insights gained through this research are (and will continue to be) shared through presentations and publications to diverse audiences, a critical contribution to the advancement of the social sciences, as the world becomes increasingly more sophisticated in the use of virtual communications.