

A Media Analysis of Theme 4 of the Healthy Kids Community Challenge: “Power Off and Play!”

Exploring potential exposure to, and engagement with, an online social marketing campaign



Evaluation Report
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Public Health Ontario

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Introduction

As part of Public Health Ontario (PHO)'s provincial evaluation of the Healthy Kids Community Challenge (HKCC), we conducted a media analysis to measure potential exposure to, and engagement with, the HKCC campaign and its fourth theme, 'Power Off and Play!'

Background

The Healthy Kids Community Challenge (HKCC) was a community-based initiative in Ontario to promote healthy weights.¹ The program, funded by the former Ministry of Health and Long-Term Care (MOHLTC), supported 45 communities in Ontario to improve children's health by promoting healthy behaviours.² The HKCC targeted children and youth ages 0 to 12 through program initiatives surrounding key social marketing themes.¹ These themes included: 'Run. Jump. Play. Every day!' (Theme 1), 'Water Does Wonders' (Theme 2), 'Choose to Boost Veggies and Fruit' (Theme 3) and 'Power Off and Play!' (Theme 4). The program ran between September 2015 and September 2018, with new themes promoted approximately every nine months.³⁻⁵

The EPODE Methodology

The HKCC was based on the Ensemble Prevenir l'Obésité Des Enfants (EPODE) [Together Let's Prevent Childhood Obesity] methodology.⁶ The EPODE methodology is a "large-scale, coordinated, capacity-building approach for communities to implement effective and sustainable strategies to prevent childhood obesity."⁶ It is comprised of four pillars, including: 1) political commitment, 2) resources, 3) support services and 4) evidence.⁶

The support services pillar involves using a central coordination team to plan, coordinate and provide social marketing and other communication and support services to community practitioners and leaders.⁶ The central coordinating team for the HKCC was the MOHLTC. The MOHLTC provided resources, funding, coordination and consultation services to support HKCC communities in planning and delivering programming and social marketing content.^{3,5} For example, HKCC communities were encouraged to use social media to promote the program and related activities; the MOHLTC provided participating communities with toolkits that included social marketing materials that could be adapted to their local contexts.⁴ Local project managers were hired for each HKCC community to plan and lead initiatives at the community level. They were responsible for submitting Theme-Based Action Plans (TBAPs) and Project Activity Reports (PARs) to the MOHLTC. TBAPs provided information on the activities communities hoped to initiate throughout each theme and the PARs provided information on the implementation of each theme-based initiative.⁵

Measuring Exposure to Social Media

Social media are defined as dynamic and interactive computer-mediated communication tools that are widely used among the general population.⁷ This may include forums, messages boards, review and

opinion sites, blogging, microblogging and media sharing.⁸ Social media may be used for a variety of purposes within the field of public health and health promotion, including to: 1) communicate with consumers for market insights; 2) establish and promote a brand with consumers (e.g., the HKCC brand); 3) disseminate critical information; 4) expand reach to include broader more diverse audiences; and 5) foster public engagement and partnerships with consumers.⁹ As social media was a key component of the HKCC, it is important to understand how it was used across communities.

Consistent with media analyses of Themes 1, 2 and 3,³⁻⁵ two models were used to evaluate the potential exposure to, and engagement with, social media messages from Theme 4 of the HKCC ('Power Off and Play!'): 1) McGuire's Communication Persuasion Matrix Model – later known as the Hierarchy of Effects Model (HOEM)¹⁰ – and 2) Neiger's social media engagement model.⁹

The HOEM describes the pathway through which campaign messages may be effective. This model has previously been used to evaluate the effectiveness of other health promotion mass media campaigns in Canada and the US.^{6,11,12} The model describes how proximal variables, such as awareness, knowledge and attitudes can lead to more distal outcomes, such as behaviour change.¹⁰ McGuire proposes that in order for a message to be effective, an individual must first be exposed to the message or new information.¹⁰ Secondly, the individual must attend to the information being presented. Once a message is attended to, it must be understood and accepted by the viewer reflected by their attitude change.¹⁰ This new information is then stored in memory so that it can later be retrieved and acted upon.¹⁰

According to the HOEM, message exposure is the precursor to, and an essential component of, campaign effectiveness. Slater (2004) defines message exposure as "the extent to which audience members have encountered a specific message or class of messages/media content."¹³ Since there are currently no indicators measuring the extent to which individuals were actually exposed to any HKCC related messages, *potential* exposure is used for this analysis as a proxy. Potential exposure is the extent that individuals may have potentially encountered a message. For the purposes of this study, messages that were posted online were those that community members may have potentially been exposed to.

In addition to measuring potential message exposure, Neiger et al., (2012) proposes key performance indicators and associated metrics for evaluating social media use in health promotion.⁹ As part of this model, three levels of message engagement and their associated metrics are proposed: low, medium and high engagement.⁹ Low engagement involves the degree to which individuals acknowledge, agree with, or have a preference for, the message content. Metrics of low engagement can include 'Likes' or 'Favourites' on a social media site (e.g., 'Likes' on Facebook or Twitter). Medium levels of message engagement involves creating and sharing message content with others. This can include commenting on posted content or sharing videos or links. High engagement involves actual participation in offline events that results from exposure to social media content/messages.⁹ Metrics or indicators of high engagement might include, for example, the number of individuals who register for programs/services recommended by a social media message.⁹

The degree to which individuals engage with a message may be indicators of its effectiveness. For example, 'Likes' on social media platforms also may serve as social cues of acceptance and/or

agreement of a message. According to McGuire's model, acceptance is a precursor to attitude changes which can lead to changes in behaviour.¹⁴ Additionally, high rates of message sharing on social media platforms have been associated with greater behavioural intentions.¹⁵

Twitter

Many of the HKCC communities used Twitter to disseminate messages of the HKCC.³⁻⁵ Twitter is a popular microblogging service that originated in the mid 2000s.¹⁶ The social media platform allows users to follow others so that they can receive all of the messages (called tweets) from those they follow.¹⁶ Each user has their own user identifier address known as a Twitter handle (represented with an '@' sign, e.g., @HKCCEastYork). Tweets have a strict limit of 280 characters (previously 140 characters until November 2017).¹⁷ A common practice among Twitter users is the use of a retweet. Retweeting allows users to spread information of their choice beyond the reach of the original tweet's followers.¹⁶ The platform also allows for users to like and respond to other users' posted tweets. Another common convention used by Twitter users is the hashtag, which is used to create and follow a discussion by prefixing a word with a '#' character (e.g., #PowerOffandPlay).¹⁶ These hashtags are often tracked to identify trending topics.¹⁶ For more information on Twitter related terms, see [Appendix A](#). While various social media platforms (e.g., YouTube, Facebook, and Instagram) were used across communities during the HKCC, this analysis focused on Twitter to allow for comparison across all four Themes.

Objectives

The purpose of this report was to examine the use of social media (specifically Twitter) among HKCC communities during Theme 4 of the HKCC ('Power Off and Play!') and to compare this use with that of the previous three themes.

Specifically, the main objectives of this study were to:

- To measure potential exposure to, and engagement with, HKCC Theme 4 ('Power Off and Play!') social media (i.e., Twitter) messages produced by HKCC communities.
- To compare exposure and engagement of these messages with that of the previous three themes (where applicable).

Methods

A mixed methods approach was undertaken to measure potential exposure to, and engagement with, HKCC or Theme 4 Twitter messages.

A search was conducted using Google's Advance Search function to identify any new HKCC community Twitter accounts that had not been previously identified through Theme 1, 2 or 3 media analyses. Searches were only conducted for those communities in which a HKCC Twitter account had not been previously identified (See [Appendix B](#) for the full Google search strategy). No new HKCC community Twitter accounts were identified.

'Power Off and Play!' ran between January 1, 2018 and September 30, 2018. Data for the Theme 4 analysis was collected from January 1, 2018 to October 31, 2018 (i.e., the due date for Theme 4 PARs to be sent to MOHTLC).

In August 2019, tweets published between January 1, 2018 and October 31, 2018 were searched using Twitter's Advanced Search function. The search strategy was adapted from those used in the previous three HKCC analyses from Themes 1, 2 and 3,³⁻⁵ as well as a preliminary review of relevant tweets published during the time period of interest. The search strategy included key terms and hashtags to identify tweets related to the HKCC and/or Theme 4 (See [Appendix B](#) for the full Twitter search strategy). All tweets that met the inclusion and exclusion criteria (see [Table 1](#)) were included in a database for analysis.

Relevant content for each tweet was extracted by a single reviewer in September 2019. For each included tweet, the following information was extracted: date of tweet, hashtags, publisher of tweet, content of tweet (original text), number of followers, number of likes, number of replies, number of retweets, quotes, mentions, photos/images, videos, links, polls or gifs.

Data were entered and coded in Microsoft Excel 2013. The following categories were then coded by a single reviewer: publisher (e.g., political figure), content (e.g., event coverage), HKCC community, presence of content related to HKCC Theme 4 and presence of theme integration. See [Table 2](#) for coding strategy and related definitions.

Basic descriptive statistics (i.e., mean, median, minimum, maximum, standard deviation) were calculated for the number of tweets across the HKCC communities using Excel. Cross tabulations were used to visualize the remaining data.

Inclusion and Exclusion Criteria

Table 1. Twitter Search Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
English or French language tweet	Tweets in languages other than English or French
Tweet is publically available (i.e., user does not need to have a Twitter account or follow an account to view the tweet)	Tweets that are not publically available
Tweet must be published between January 1, 2018 and October 31, 2018	Tweets that are published before January 1, 2018 or after October 31, 2018
Tweet must be related to and/or mention the HKCC and/or Theme 4 ('Power Off and Play').	Tweets that contain search terms, but are not related to HKCC or Theme 4
	Advertisements (e.g., pop-up ads on accounts)
	Duplicate tweets, identified through different search terms or posted on the same day

Coding Strategy

Tweets that met inclusion criteria were coded into subcategories. Data extraction categories, subcategories and related definitions (where applicable) are outlined in the tables below.

Table 2. Coding Strategy

Category	Subcategories	Definition
Month published	January – October	Month in which tweet was published (e.g., July)
Hashtags	n/a	Hashtags present in the tweet (e.g., #HKCC)
Publisher of tweet	HKCC Community MOHLTC Municipality Public Health Unit Member of the public	Publisher of the tweet (e.g., Twitter account). See Table 3 below for detailed coding strategy.

Category	Subcategories	Definition
	News/media outlet Political Figure Community Health Centre External organizations School Teacher/professor Library Other	
HKCC community	See Appendix C for list of HKCC communities	The HKCC community the tweet publisher is based in (e.g., Ajax). Note: If the publisher was not located in an HKCC community, the closest community was selected.
Content of tweet	Campaign awareness Event advertising Event coverage Promotion of resources Promotion of social media Input or feedback Recognition Community partnerships Promoting Theme 4 behaviour Personal reflections Other	See Table 4 below for detailed coding strategy.
Presence of HKCC Theme 4	Theme 4 content No Theme 4 content	Tweets that included the words 'Power Off and Play' (including in the hashtags) were considered to have Theme 4 content. Additionally, tweets that mentioned 'play,' 'active play' and/or screen time were considered to be related to Theme 4.
Presence of theme integration	Theme integration No theme integration	Tweet mentioning at least two of the four HKCC themes (i.e., Theme 1 'Run. Jump. Play. Everyday,' Theme 2 'Water Does Wonders,' Theme 3 'Choose to

Category	Subcategories	Definition
		Boost Veggies and Fruit’ or Theme 4 ‘Power Off and Play’).
Followers	n/a	Number of followers the publisher has
Number of likes	n/a	Number of likes the tweet received
Number of replies	n/a	Number of replies to the original tweet
Number of retweets	n/a	Number of times the tweet has been retweeted
Presence of quotes	Yes No	If a tweet contains a quote
Presence of mentions	Yes No	If a tweet contains any mentions
Polls	Yes No	Presence of a poll included in the tweet
Attachments	Photo Video Gif Link No attachment	Type of attachment(s) included in the tweet (e.g., photo)

Table 3. Coding Publisher of Tweets

Subcategory	Definition
HKCC community	Twitter accounts created specifically for the HKCC of a particular community (e.g., @CollingwoodHKCC).
MOHLTC	Twitter accounts from the Ontario Ministry of Health and Long-Term Care (MOHLTC).
Municipality	Twitter accounts from a municipality (e.g., @Cityofhamilton).

Subcategory	Definition
Public health unit	Twitter accounts from public health units in Ontario (e.g., @MLHealthUnit).
Member of the public	Twitter accounts from members of the public (who were not identified as teachers/professors or political figures) (e.g., @ElaineUskoski).
News/media outlet	Twitter accounts from news or media outlets (e.g., @1043FreshRadio).
Political figure	Twitter accounts for political figures (e.g., @mayorblocking)
Community health centre	Twitter accounts from a Community Health Centre/Aboriginal Health Access Centre (e.g., @SRiverdaleCHC).
External organizations	Twitter accounts for an organization, including childcare, food, health sport and recreation, education or non-profit/charity organization, among others (e.g., @Burl_ParksRec).
School	Twitter accounts from a school or school board (e.g., @Lakeside_PS).
Teacher/professor	Twitter accounts from teachers or professors (e.g., @hpeactive4ife).
Library	Twitter accounts produced for libraries (e.g., @BtfdLibrary).
Other	Twitter accounts that do not fit into any of the above subcategories (e.g., @gtawater1).

Table 4. Coding Content of Tweet

Subcategories	Definition	Example Tweet
Campaign awareness	Broad promotion of the HKCC in general, as a campaign/ program.	“Ajax families, let’s get active and healthy in 2018. Join the Healthy Kids Community Challenge! http://healthykidsajax.ca/pledge/ #HealthyKidsAjax”
Event advertising	Promoting an HKCC event, an event where HKCC communities will be present (e.g., sports events, festivals) or participation in an HKCC contest (e.g., photo contests).	“Join us September 29 for the Healthy Kids Community Challenge celebration - drop by for free fun activities and healthy snacks! http://bit.ly/2Og0las #HamOnt #HealthyKidsON”

Subcategories	Definition	Example Tweet
Event coverage	Reviewing details, successes and stories from HKCC-related events or providing live updates of events while they are occurring.	<p>“Our Active Recess Team kept out indoor recess active by leading grade 3-4 students in a basketball game and showing them some basic drills</p> <p>#ScreenFreeRecess #PowerOffandPlay @HealthyKidsHPE @BaysidePublic @HealthyKidsBPS”</p>
Promotion of resources	Promoting resources (e.g., websites, newspaper articles, blog posts, YouTube videos) pertaining to HKCC or healthy behaviours.	<p>“Balance screen time with other activities this summer using the Family Media Plan. https://bit.ly/2epneyO #HealthyKidsON #HKCC #healthy activities”</p>
Promotion of social media	Promoting engagement with Twitter, Facebook, YouTube or other social media outlets (i.e., asking the audience to retweet, visit a Facebook page, watch a YouTube video, etc.).	<p>“Families everywhere are accepting the Healthy Kids Community Challenge to #PowerOffandPlay by creating a plan that sets reasonable screen time limits and adds other fun and more meaningful experiences to the day. Check out the vid for more: https://youtu.be/lpMuciTxGbw #screentime”</p>
Input or feedback	Asking a question or requesting input or feedback regarding HKCC and/or its programming.	<p>“#ckont #parents complete the following survey about the #PowerOffandPlay! campaign by October 21: https://form.simplesurvey.com/f/l/POPCampaign</p> <p>>> Get entered in a #prize draw for one of five \$20 gift cards for participating.</p> <p>>> Retweet this post for the chance to win a board game”</p>
Recognition	Tweets related to recognition or expressed gratitude toward HKCC communities, participants and volunteers or included information related to HKCC contest/prize winners.	<p>“Thank you, Healthy Kids Community Challenge @cityofhamilton for helping us shape communities of young people. Kids deserve great futures. #GreatFuturesStartHere #PurnellClub @terrywhitehead”</p>
Community partnerships	Tweets acknowledging a community partnership related	<p>“This spring all primary divisions in @LimestoneDSB and @ALCDSB will receive a resource kit to help boost veggies and fruit. This</p>

Subcategories	Definition	Example Tweet
	to the HKCC as a campaign or HKCC programming.	gift is made possible in partnership with KFL&A Region Healthy Kids Community Challenge”
Promoting Theme 4 behaviour	<p>Tweets promoting or mentioning screen time and/or active play. This may include tips to help reduce screening time, stats related to screen time and active play, the benefits of reduced screen time, etc.</p> <p>Note: Tweets that focused only on active play were considered to be focused on Theme 1.</p>	<p>“It's important to put screens away during meal times - connect with family and friends! #PowerOffandPlay! #HealthyKidsON”</p>
Personal reflections	An individual’s personal reflections or comments related to the HKCC.	<p>“This is amazing - can't wait to try it @CollingwoodHKCC #HealthyKidsON !”</p>
Other	Content that does not fit within any of the other subcategories. This may include job posting, inspirational quotes, etc.	<p>“Join our #Team! For more information and to apply for open positions visit: http://bit.ly/2sMvdhZ #HKCC #Rexdale #HealthyKids”</p>

*Some tweets were coded to be included in more than one content subcategory.

Results

The search strategy identified 702 tweets. Of those, 412 tweets met the inclusion and exclusion criteria. Twenty-seven of the included tweets were duplicates and were removed from the analysis. In total, 385 tweets were included in this analysis.

While there were 45 communities participating in the HKCC, the number of communities included in this analysis totalled 46. There were four separate participating communities within the City of Toronto; however, due to the involvement of local organizations within Toronto, it was often difficult to determine which of these four communities a tweet was attributed to. Therefore, an additional community category named ‘Toronto (Unspecified)’ was added to the analysis. Tweets that were from Canada-wide or Ontario-wide publishers and could not be associated with a particular HKCC community (e.g., Parks and Recreation Ontario) were removed from the community-based analyses (n= 6). Community names have been removed from all analyses in this report.

Theme 4

Number of Tweets

The mean number of tweets across all communities (n= 46 communities, including the Toronto-wide category) was 8.2 (Table 5 and Figure 1). The standard deviation (9.0) and range (0 to 28) indicates substantial variation in tweeting practices across communities.

This analysis included tweets published between January 1, 2018 and October 31, 2018. The greatest number of tweets were published in May and the fewest were published in October (Figure 2). On average, 32 tweets were published each month (between January and October).

Table 5. Descriptive Statistics: Tweets by community (n=379)

Descriptive Statistic	Value
Mean	8.2
Median	3.5
Standard Deviation	9.0
Minimum	0
Maximum	28

Figure 1. Number of Tweets by HKCC Community

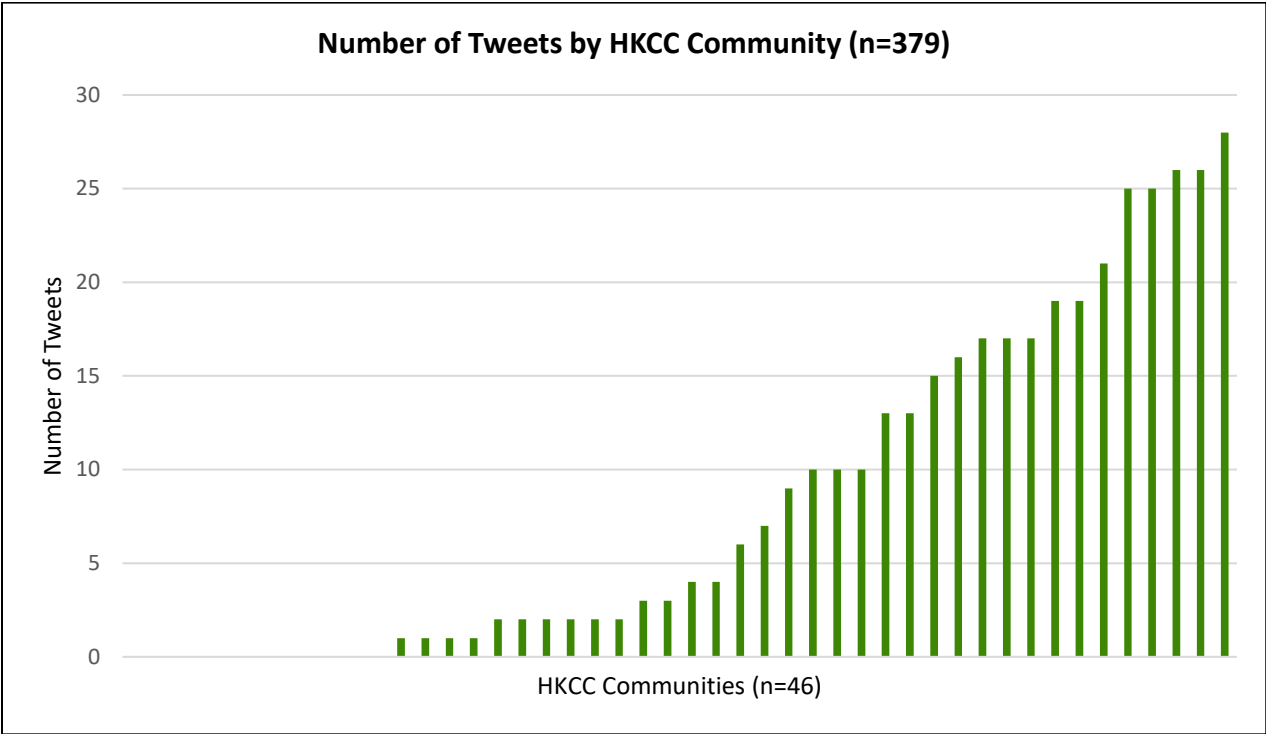
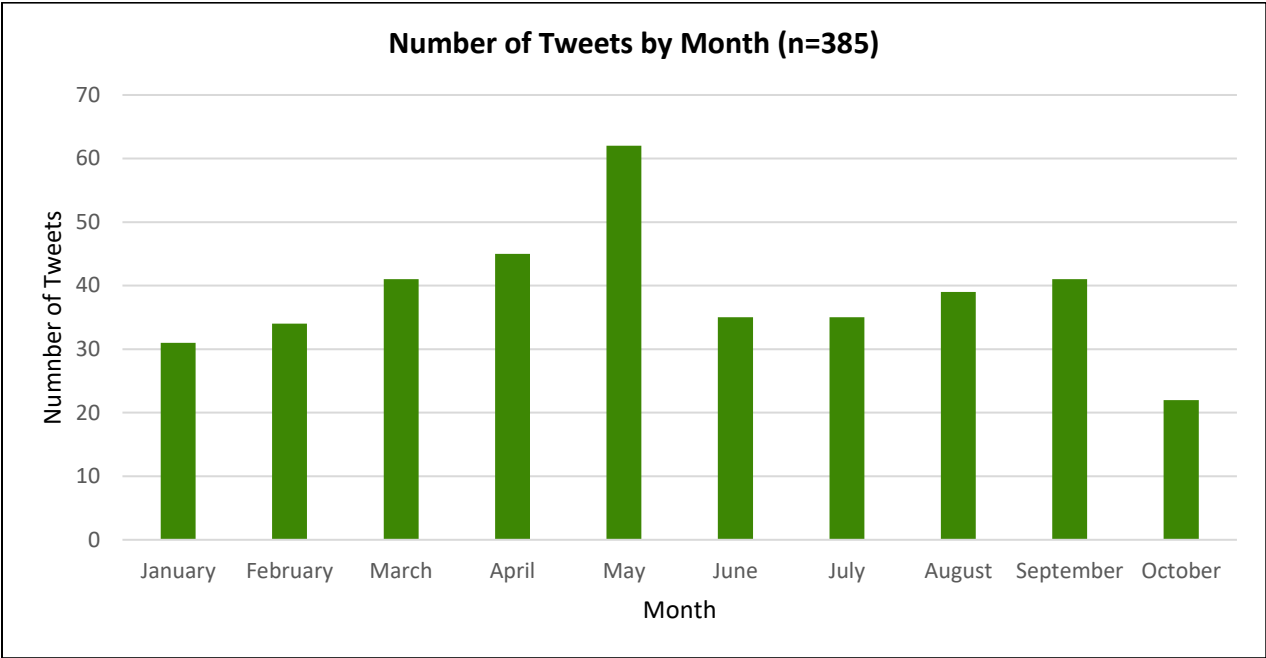


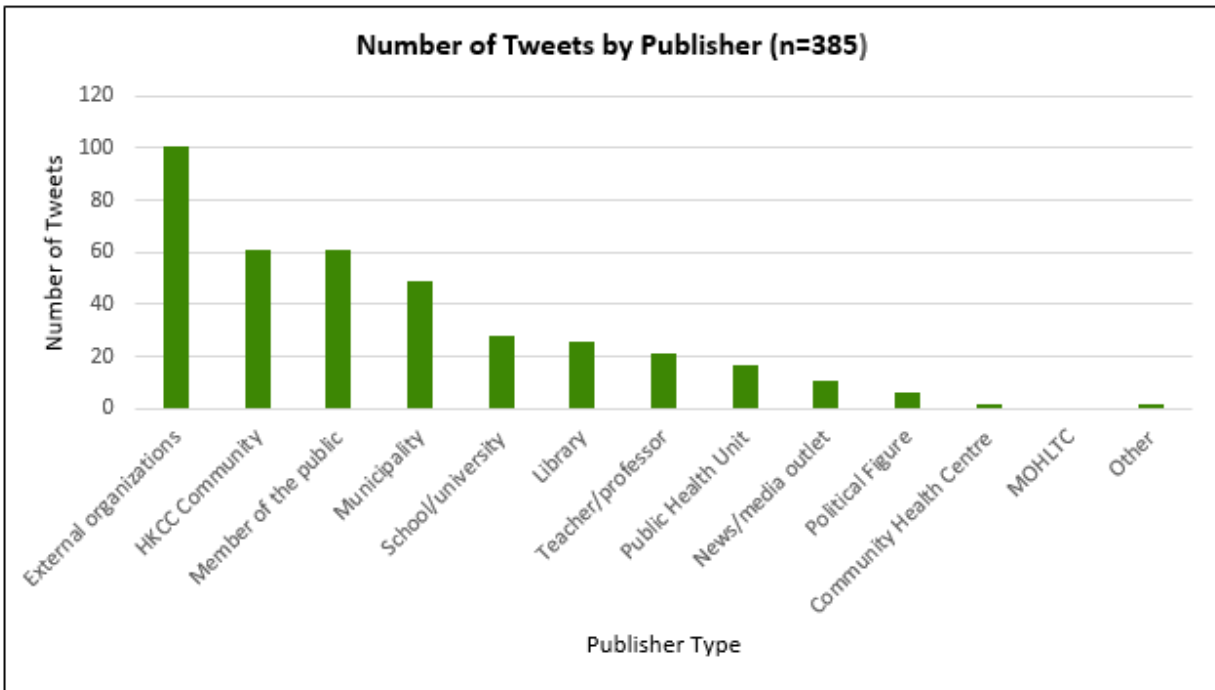
Figure 2. Number of Tweets by Month (2019)



Tweet Publisher

The greatest proportion of tweets were from external organizations (e.g., YMCA) (26.2%) followed by members of the public (15.8%) and HKCC communities (15.5%) (Figure 3). No tweets were from the MOHLTC. Few tweets were from publishers, such as community health centres, political figures, news/media outlets or public health units (all less than 2%).

Figure 3. Number of Tweets by Publisher



Content of Tweets

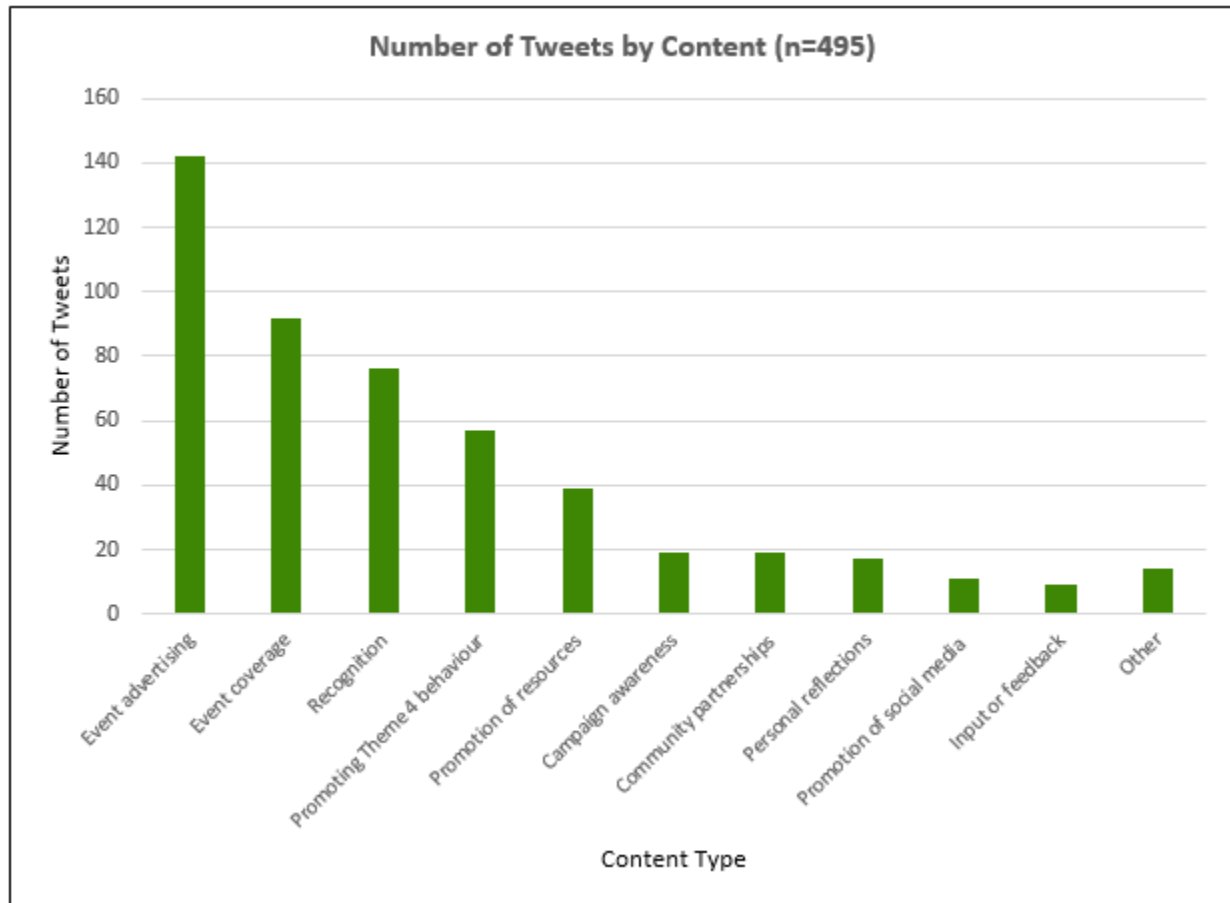
There was variability in the content of the included tweets. It is important to note that a single tweet was assigned to more than one content subcategory if that tweet contained more than one type of content. For example, a tweet might promote reduced screen time, but also advertise an upcoming event. From the 385 tweets collected, 97 tweets (25.2%) contained content representative of more than one content subcategory amounting to a total of 495 counts for Twitter message content.

Of the 385 tweets analyzed, 36.8% contained content pertaining to event advertising, 23.9% contained content related to event coverage and 19.7% contained content related to recognition (Figure 4). Few tweets contained content related to personal reflections (4.4%), promotion of social media (2.9%) or input or feedback (2.3%). See Table 4 for examples of tweets from each content subcategory.

Among the 97 tweets that contained content representative of more than one content subcategory, the most commonly co-occurring content areas were 'event coverage' and 'recognition' (n=30). As well, tweets containing content related to 'promoting Theme 4 behaviour' also commonly contained content related to 'promotion of resources' (n= 19). 'Event advertising' most often co-occurred with content related to 'promoting Theme 4 behaviour' (n= 14). Lastly, of the 385 included tweets, more than half (55.3%) had presence of Theme 4 content. This means that they mentioned Theme 4 'Power Off and Play' or they included content related to screen time and/or active play. There were, however, some tweets (n= 20, 5.1%) that included content that focused on one of the other three HKCC themes without

mentioning Theme 4. Additionally, only three of the included 385 tweets showed evidence of theme integration.

Figure 4. Number of Tweets by Content



*Note: Analysis is based on a denominator of 495, since tweets could be coded as having more than one content type.

Engagement

Overall, the majority of tweets were retweeted (i.e., 70.1% had at least one retweet) and were liked (i.e., 83.9% had at least one like). Publishers with the greatest percentage of retweeted tweets included community health centers (100%), municipalities (85.7%) and libraries (84.6%) (Table 6). The publisher type with the lowest percentage of retweeted tweets was news/media outlets (45.5%). Publishers who had the greatest proportion of liked tweets included libraries, teachers/professors and community health centers, all with a 100% ‘like rate.’ The remaining publishers all had ‘like rates’ greater than 50% (most above 80%). (Note: community health centers only had two tweets, which may have accounted for its high percentage of likes and retweets).

Just under half of the tweets (42.6%) mentioned another Twitter user. Publishers with greatest proportion of tweets that included mentions were teachers/professors (71.4%), schools/universities (67.9%) and news/media outlets (63.6%). Lastly, only a small proportion (<9.3%) of tweets were replied to; therefore, replies were not further analysed.

Table 6. Engagement with Tweets

Publisher Subcategory	Total Number of Tweets	Number of Tweets that were Retweeted (%)	Number of Tweets that were Liked (%)
MOHLTC	0	0 (0.0%)	0 (0.0%)
Community health centre	2	2 (100.0%)	2 (100.0%)
Other	2	1 (50.0%)	1 (50.0%)
Political figure	6	3 (50.0%)	5 (83.3%)
News/media outlet	11	5 (45.5%)	6 (54.5%)
Public health unit	17	11 (64.7%)	12 (70.6%)
Teacher/professor	21	17 (80.9%)	21 (100.0%)
Library	26	22 (84.6%)	26 (100.0%)
School	28	21 (75.0%)	27 (96.4%)
Municipality	49	42 (85.7%)	41 (83.7%)
HKCC community	61	42 (68.8%)	49 (80.3%)
Member of the public	61	34 (55.7%)	51 (83.6%)
External organizations	101	70 (69.3%)	82 (81.2%)
Total	385	270	323

Overall, the majority of tweets included some sort of attachment (83.6%) (e.g., photo, video, link, poll or gif.) Of those tweets that included an attachment, the most commonly used attachments were images/photos (79.8%) and links (40.6%) ([Table 7](#)).

Table 7. Type of Attachments

Attachement type	Number of Tweets (%)
Poll	0 (0%)
Gif	2 (0.6%)
Video	12 (3.7%)
Link	131 (40.6%)
Photo	257 (79.8%)

Comparison across Themes

Number of Tweets

Overall, the number of tweets published across all four themes varied substantially. Themes 1 and 2 had a substantially greater number of tweets compared to Themes 3 and 4 ([Table 8](#)). The mean number of tweets across HKCC communities and their respective standard deviations also varied and were commensurate with the total number of tweets for each theme.

Table 8. Number of Tweets across HKCC Themes

Descriptive Statistic	Theme 1	Theme 2	Theme 3	Theme 4
Total number of tweets	1,684	2,725	396	385
Mean across HKCC communities	35.7	57.3	8.4	8.2
Standard deviation	43.4	62.1	11.8	9.0

Tweet Publisher

HKCC communities were among the top three most prevalent publishers across all four themes. For Themes 1, 2 and 3, HKCC communities were the most prevalent publishers and for Theme 4, they were the third most prevalent publishers. External organizations and municipalities were other common publishers and ranked among the top four publisher types across all four themes ([Table 9](#)).

Table 9. Tweet Publishers across HKCC Themes

Publisher	Theme 1 (% of Tweets)	Theme 2 (% of Tweets)	Theme 3 (% of Tweets)	Theme 4 (% of Tweets)
External organizations	14.8%	6.0%	17.9%	26.2%
HKCC community	57.0%	61.4%	72.7%	15.8%
Member of the public	9.7%	8.0%	4.5%	15.8%
Municipality	5.0%	9.6%	5.0%	12.7%
School/university	2.4%	3.2%	7.3%	7.3%
Library	NR	NR	0.8%	6.8%
Teacher/professor	NR	NR	NR	5.5%
Public health unit	1.1%	3.5%	1.3%	4.4%
News/media outlet	2.9%	1.8%	1.0%	2.9%
Political figure	2.4%	1.8%	0.5%	1.6%
Community health centre	0.4%	0.8%	1.0%	0.5%
Community centre	0.7%	0.4%	0.8%	0.0%
MOHLTC	0.1%	0.04%	3.0%	0.0%
Other	3.4%	3.5%	NR	0.5%

*NR – Not reported

Content of Tweets

The most prevalent types of tweet content across all four themes were ‘event advertising,’ ‘event coverage’ and ‘campaign awareness.’ For example, ‘event advertising’ and ‘event coverage’ were the top two most common content types for Themes 1 and 4. ‘Event advertising’ and ‘event coverage’ were the third and fourth most common content types for Theme 2 and ‘event coverage’ was the third most common content type for Theme 3. Additionally, ‘campaign awareness’ was among the top two most commonly reported content types for Themes 1, 2 and 3; however, tweets promoting ‘campaign awareness’ were less prevalent in Theme 4. It is important to note, however, that the content analyses for Themes 1 and 2 categorized tweets into one content area, while the Themes 3 and 4 assigned tweets to two or more content areas, if applicable.

Across the four themes, the number of tweets that had content promoting the behaviour related to each theme appeared to increase as the themes progressed, with the exception of Theme 4. For example, in Theme 1, 13.5% of total tweets included content promoting physical activity; in Theme 2, 24.5% of tweets included content promoting increased water consumption; in Theme 3, 27.9% of tweets included content promoting consumption of fruits and veggies. In Theme 4, only 14.8% of tweets promoted reduced screen time and/or active play.

Engagement

A comparison of all four themes indicated that there was an increase in tweet engagement (e.g., number of retweets, likes, attachments) as the themes progressed. For example, for Theme 1, 48.8% of tweets were retweeted and 61.4% of tweets were liked. For Theme 2, 57.3% of tweets were retweeted and 60% of tweets were liked. These numbers increased to 73.2% and 92.9% (Theme 3) and 70.1% and 83.9% (Theme 4) for retweets and likes respectively (Table 10). In contrast, few tweets were replied to across Themes 2 (4.8%) and Theme 4 (9.3%) (not reported for Themes 1 and 3).

Media analyses of Themes 3 and 4 reported measures related to tweet attachments. Data from Themes 3 and 4 indicate that there may have been a slight increase in use of attachments as themes progressed. For example, in Theme 3, 69.2% of tweets with attachments had photos and 29.4% had links; this increased to 79.8% and 40.6% for photos and links respectively for Theme 4. The use of gifs were less popular (1.2% and 0.6% for Themes 3 and 4 respectively). Videos were not reported for Theme 3; therefore a comparison could not be made.

Table 10. Tweet Engagement across HKCC Themes

Descriptive Statistic	Theme 1	Theme 2	Theme 3	Theme 4
Percentage of tweets retweeted	48.8%	57.3%	73.2%	70.1%
Percentage of tweets liked	61.4%	60.0%	92.9%	83.9%

Discussion

The most common publishers across all four themes were HKCC communities. This was expected, as social marketing was a key component of the HKCC and was part of the roles and responsibilities of the participating communities. For example, HKCC communities were encouraged to use social media to promote the campaign and related activities. Communities were also provided with toolkits that included social marketing materials that could be adapted to their local contexts.⁴ Other publishers that were also considerably active in promoting HKCC-related messages were external organizations, members of the public and municipalities. It is interesting to note that external organizations were the most frequent publisher of tweets for Theme 4. This might also indicate a growth in partnerships within HKCC communities over time. As more external organizations became integrated or engaged with the HKCC, they may have become more active in promoting the program through their own social media channels.

While content related to ‘event advertising’ and ‘event coverage’ was common across all four themes, content related to ‘campaign awareness’ was less prevalent in Theme 4 when compared to the previous three themes. This may be due to fact that Theme 4 was the end of the three-year campaign when communities were likely well aware of the HKCC. Therefore, promoting the campaign itself may not have been as much of a priority. Instead, communities may have shifted their communication strategies from promoting general awareness of the campaign to promoting the specifics of the campaign, such as events taking place. It is important to note, that difference in content type across all four themes may be due to differences in methods. Content analyses for Themes 1 and 2 categorized tweets into one content area, while the Themes 3 and 4 assigned tweets to two or more content areas if applicable. This may have influenced results.

Additionally, while more than half of the tweets in Theme 4 promoted the designated theme ‘Power of and Play!’, 5.1% of the tweets focused on content related to previous themes (e.g., fruit and vegetable consumption or increased water consumption). This may be due to the fact that some of these tweets came from organizations whose mission and mandate were better aligned with the previous themes. For example, tweets from @PetesOHLhockey promoted Theme 1 (‘Run. Jump. Play. Every Day!’), tweets from @GTAWater1 promoted Theme 2 (‘Water does wonders’) and tweets from @FoodRescueca promoted Theme 3 (‘Choose to boost veggies and fruit’). These organizations may have chosen to continue to promote the themes that aligned with their mandate despite that respective theme’s implementation period ending.

Lastly, as previously identified in the Theme 3 media analysis, each new theme had an increase in the proportion of tweets that included content promoting the theme’s target behaviour. For example, 13.5% of tweets in Theme 1 promoted physical activity; 24.5% of tweets in Theme 2 promoted water consumption and 27.9% of tweets in Theme 3 promoted vegetable consumption. This trend did not continue for Theme 4; only 14.8% of tweets promoted reducing screen time and/or active play. This may have been due to the shift in communication strategies (described above) where publishers shifted their

focus from promoting the campaign and its related theme to instead promoting the specifics of the campaign, such as events taking place.

The comparison of all four themes indicate that there was an increase in message engagement (i.e., number of likes and retweets) as themes progressed over time. For example, tweets published during Themes 3 and 4 had more likes and retweets compared to Themes 1 and 2. Additionally, there was a slight increase in the use of attachments between Themes 3 and 4. Together these findings suggest that publishers may have become more familiar with the Twitter platform over time (e.g., become more 'tech savvy') and were therefore able to take more advantage of Twitter's advanced functions, such as the use of attachments, like and retweet functions. Additionally, publishers may have gained new followers over the course of the HKCC program, possibly contributing to the increase in the number of likes and retweets of their tweets.

Limitations and Future Research Directions

This report aimed to measure the potential exposure to and engagement with tweets produced by HKCC communities during Theme 4 of the HKCC and to compare this exposure and engagement with that of the previous three themes; however, differences in coding, screening and data extraction across the four themes limited the types of comparisons that could be made. For example, there were some slight differences in subcategories used for the publisher type and content analyses (e.g., the recognition and/or appreciation subcategory was used for Themes 1, 2 and 4, but not for Theme 3). Some media analyses categorized tweets into more than one content subcategory (e.g., Themes 3 and 4) while others did not (e.g., Themes 1 and 2). Additionally, as with the previous media analyses, a single reviewer was used to code results. Individual differences in coding may have led to differences in results. Future research should consider the use of two or more coders to maximize reliability and minimize bias.

Differences in inclusion and exclusion criteria may have also contributed to differences in results. For example, the media analysis for Theme 3 excluded tweets that were focused on other themes (i.e., mentioned Themes 1, 2, 4 without mentioning Theme 3); however, this exclusion criteria was not used for the other three media analyses.

Lastly, this analysis measured message exposure and engagement; however, subsequent measures of campaign effectiveness, such as behaviour change (according to McGuire's Hierarchy of Effect model¹⁰) were not measured. Similarly, measures of high engagement according to Neiger's model of engagement were not measured (e.g., actual participation in offline events that results from exposure to social media content/messages).⁹ Future research should examine how these measures of message exposure and engagement translate into subsequent measures, such as behaviour change.

Conclusion

The results from this media analysis contribute to the greater understanding of the potential exposure to and engagement with tweets produced by HKCC communities during Theme 4 of the HKCC. It also provides greater understanding of how this potential exposure and engagement compares across all four themes. The findings from this report can be used to inform and triangulate with the results of the broader implementation and impact evaluation of the HKCC. Overall, the findings provide important context for interpreting the variation in awareness of the HKCC campaign across communities, as well as other related outcomes.

References

1. Manson H. Evaluating the Healthy Kids Community Challenge: Ontario's community-based initiative to promote healthy weights. *Can J Diabetes*. 2015;39(S1):S3.
2. Public Health Ontario. Healthy Kids Community Challenge (HKCC) [Internet]. Toronto, ON: Ontario Agency for Health Protection and Promotion; 2019 [updated 2020 Jan 14; cited 2020 Feb 20]. Available from: <https://www.publichealthontario.ca/en/health-topics/health-promotion/child-youth-health/hkcc>
3. Ontario Agency for Health Protection and Promotion (Public Health Ontario), Alegre R, Laxer RE, De Rubeis V, Manson H, Harrington DW. A media analysis of "Water Does Wonders": measuring potential exposure to the Healthy Kids Community Challenge [Internet]. Toronto, ON: Queen's Printer for Ontario; 2018 [cited 2020 Feb 20]. Available from: <https://www.publichealthontario.ca/-/media/documents/report-hkcc-water-does-wonders.pdf?la=en>
4. Ontario Agency for Health Protection and Promotion (Public Health Ontario), Ladak A, Harrington DW, Manson H. A media analysis of "Run. Jump. Play. Every Day.": measuring potential exposure to the Healthy Kids Community Challenge [Internet]. Toronto, ON: Queen's Printer for Ontario; 2016 [cited 2020 Feb 20]. Available from: <https://www.publichealthontario.ca/-/media/documents/hkcc-media-analysis.pdf?la=en>
5. Ontario Agency for Health Protection and Promotion (Public Health Ontario), Lee J, Laxer RE, Harrington DW. A media analysis of the Healthy Kids Community Challenge Theme 3 [Internet]. Toronto, ON: Queen's Printer for Ontario; 2019. Available from: <https://www.publichealthontario.ca/-/media/documents/report-hkcc-vegetables-fruit.pdf?la=en>
6. Borys JM, Le Bodo Y, Jebb SA, Seidell JC, Summerbell C, Richard D, et al. EPODE approach for childhood obesity prevention: methods, progress and international development. *Obes Rev*. 2012;13(4):299-315. Available from: <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1467-789X.2011.00950.x>

7. Grajales FJ,3rd, Sheps S, Ho K, Novak-Lauscher H, Eysenbach G. Social media: a review and tutorial of applications in medicine and health care. *J Med Internet Res*. 2014;16(2):e13. Available from: <https://www.jmir.org/2014/2/e13/>
8. Sterne J. *Social media metrics: How to measure and optimize your marketing investment*. Chichester: Wiley; 2010.
9. Neiger BL, Thackeray R, Van Wagenen SA, Hanson CL, West JH, Barnes MD, et al. Use of social media in health promotion: purposes, key performance indicators, and evaluation metrics. *Health Promot Pract*. 2012;13(2):159-64.
10. McGuire W J. Theoretical foundations and campaigns. In: Rice RE, Atkin CK, editors. *Public communication campaigns*. 2nd ed. Newbury Park, CA: SAGE; 1989. p. 43-65.
11. Craig CL, Bauman A, Reger-Nash B. Testing the hierarchy of effects model: ParticipACTION's serial mass communication campaigns on physical activity in Canada. *Health Promot Int*. 2010;25(1):14-23. Available from: <https://doi.org/10.1093/heapro/dap048>
12. Spence JC, Brawley LR, Craig CL, Plotnikoff RC, Tremblay MS, Bauman A, et al. ParticipACTION: awareness of the participACTION campaign among Canadian adults--examining the knowledge gap hypothesis and a hierarchy-of-effects model. *Int J Behav Nutr Phys Act*. 2009;6:85. Available from: <https://doi.org/10.1186/1479-5868-6-85>
13. Slater MD. Operationalizing and analyzing exposure: the foundation of media effects research. *Journal Mass Commun Q*. 2004;81(1):168-83.
14. Scissors L, Burke M, Wengrovitz S. What's in a Like? Attitudes and behaviors around receiving Likes on Facebook. Paper presented at: Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing. 2016 Feb; San Francisco, CA.
15. Kim JW. They liked and shared: effects of social media virality metrics on perceptions of message influence and behavioral intentions. *Comput Hum Behav*. 2018;84:153-61.
16. Kwak H, Lee C, Park H, Moon S. What is Twitter, a social network or a news media? Paper presented at: Proceedings of the 19th international conference on World Wide Web. 2010 April 26-30; Raleigh, NC.
17. Perez S. Twitter officially expands its character count to 280 starting today. *TechCrunch* [Internet]. 2017 Nov 7 [cited 2019 Aug 19]. Available from: <https://techcrunch.com/2017/11/07/twitter-officially-expands-its-character-count-to-280-starting-today/?renderMode=ie11>

Appendix A: Twitter Terminology

Table 11. Twitter Terminology

Term	Definition
Bio	Twitter bios are personal descriptions of up to 160 characters, which serve as a way to characterize your persona on Twitter.
Followers	A follower is another Twitter account that has followed you to receive (view) your tweets in their home timeline. Subscribing to a Twitter account is called “Following.” Anyone on Twitter can follow or unfollow anyone else at any time. A list of followers is generated after other Twitter users have followed an account.
Hashtag	A hashtag is any word or phrase immediately preceded by the pound (#) symbol (e.g., #HKCC). Clicking on this hashtag allows Twitter users to see other tweets containing the same keyword or topic.
Likes	Likes are used to show appreciation or agreement with a tweet. Twitter users can view tweets an account has liked from their profile page by clicking the Likes tab.
Mention	Mentioning other accounts is done by including the “@” sign directly followed by a username. This is visible to the followers of the tweet publisher and the mentioned user.
Quote	A method of re-posting a tweet along with a comment.
Reply	A response to another person’s tweet. If the Twitter account replying to the tweet is public, then the reply will be visible along with the tweet.
Retweets	A re-posting of a tweet. Twitter's retweet feature allows for the sharing of a tweet with another user’s followers, while maintaining the original publisher’s handle. Twitter users can retweet their own tweets or tweets from someone else.
Tweet	A short post made on the social media application Twitter. Tweets can be 280 characters long. (*Previous limit of 140 characters was applied until November 2017.) ¹⁷

Appendix B: Search Strategy

Twitter Advanced Search Engine

Advanced Search: “All of These Words”

- Set Twitter’s custom data range to January 1, 2018 to October 31, 2018.
- Execute the following search queries and review all results of each query
 - Healthy Kids Community Challenge
 - Power off and play
 - Enfants En Santé

Advanced Search: “These Hashtags”

- Set Twitter’s custom data range to January 1, 2018 to October 31, 2018.
- Execute the following search queries and review all results of each query
 - #HKCC
 - #HealthyKidsON
 - #PowerOffAndPlay
 - #healthykidscommunitychallenge
 - #EnfantsEnSantéON

Google Advanced Search Bar

- Used to identify HKCC Community Twitter pages and related Twitter pages. The first five pages were searched for each enquiry. This search was completed only for communities that did not have a HKCC twitter handle identified in the previous three media analyses, including:
 - Alfred-Plantagenet and Bourget
 - Ajax
 - Brantford-Brant
 - Georgina
 - Guelph
 - Huron
 - Kapuskasing
 - Kenora
 - London
 - Marathon
 - North Channel/Thessalon
 - Oshawa

- Ottawa
- Sault Ste. Marie
- St. Thomas-Elgin
- Shkagamik-Kwe
- Uxbridge
- Waterloo
- Windsor-Essex

Advanced Search: “All of These Words”

- HKCC OR “Healthy Kids Community Challenge” AND <HKCC community> AND Twitter

Appendix C: HKCC Community Twitter Accounts

The following list provides information on which of the 45 HKCC communities have dedicated HKCC Twitter accounts. This information was last updated in August 2019.

Table 12. HKCC Community Twitter Accounts

Number	HKCC Community	HKCC Twitter Handle	General Twitter Handle
1	Alfred-Plantagenet and Bourget		
2	Ajax		@townofajax
3	Aurora	@FitKidsAurora	
4	Brantford-Brant		@CityofBrantford
5	De Dwa De Dehs Nye	@HealthyKidsDAHC	@_DAHC_
6	Burlington	@healthykidsburl	
7	Chatham-Kent	@superkidsck	
8	Chigamik	@HKCCNorthSimcoe	
9	Collingwood	@CollingwoodHKCC	
10	Danforth-East York (Toronto)	@HKCCEastYork	
11	Georgina		@georginatown
12	Grey Highlands	@HealthyKidsSEG	
13	Guelph		@energizeguelph
14	Hamilton	@HealthyKidsHam	@cityofhamilton
15	Hastings and Prince Edward	@HealthyKidsHPE	
16	Humber-Downsview (Toronto)	@HealthyKidsHD	@YAAACE_si
17	Huron		
18	Kapuskasing		

Number	HKCC Community	HKCC Twitter Handle	General Twitter Handle
19	Kenora		
20	Kingston	@KFLAHealthyKids	@cityofkingston
21	Lambton Shores	@HKCCLambton	
22	Leeds & Grenville	@healthykidslg	
23	London		@inmotion4life
24	Manitoulin Island	@HKCCmanitoulin	
25	Marathon		
26	Middlesex	@MiddlesexHKCC	
27	Timmins-Misiway	@HKCCTimmins	
28	Niagara	@NiagaraKids	
29	North Channel/Thessalon		
30	Oshawa		@oshawacity @activeoshawa
31	Ottawa		@ottawahealth @OttSchoolBus
32	Peterborough	@HKCCPtbo	
33	Renfrew County	@HealthyKidsCor	
34	Rexdale (Toronto)	@HKCCrexdale	
35	Sault Ste Marie		
36	Scarborough (Toronto)	@HKCCScarborough	
37	St. Thomas-Elgin		@ElginHealth
38	Sudbury	@healthykidsSud	
39	Shkagamik-Kwe		

Number	HKCC Community	HKCC Twitter Handle	General Twitter Handle
40	Temiskaming Shores	@HealthyKidsTem	
41	Thunder Bay	@healthykidstbay	
42	Uxbridge		@UxCamps
43	Wabano	@HKCCWabano	
44	Waterloo		@CPTwlooregion
45	Windsor-Essex		@CityWindsorON

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