



OPEN ACCESS

# Social marketing to address attitudes and behaviours related to preventable injuries in British Columbia, Canada

Jennifer Smith,<sup>1,2</sup> Xin Zheng,<sup>1</sup> Kevin Lafreniere,<sup>2</sup> Ian Pike<sup>1,2,3</sup>

<sup>1</sup>BC Injury Research and Prevention Unit, Vancouver, British Columbia, Canada

<sup>2</sup>The Community Against Preventable Injuries, Vancouver, British Columbia, Canada

<sup>3</sup>Department of Pediatrics, University of British Columbia, Vancouver, British Columbia, Canada

## Correspondence to

Jennifer Smith, BC Injury Research and Prevention Unit, F508 4480 Oak St, Vancouver, British Columbia V6H 3V4, Canada; jsmith@bcchr.ca

Received 1 November 2017

Revised 31 January 2018

Accepted 8 February 2018

## ABSTRACT

**Background** Social marketing is a tool used in the domain of public health for prevention and public education. Because injury prevention is a priority public health issue in British Columbia, Canada, a 3-year consultation was undertaken to understand public attitudes towards preventable injuries and mount a province-wide social marketing campaign aimed at adults aged 25–55 years.

**Methods** Public response to the campaign was assessed through an online survey administered to a regionally representative sample of adults within the target age group between 1 and 4 times per year on an ongoing basis since campaign launch. A linear regression model was applied to a subset of this data (n=5186 respondents) to test the association between exposure to the *Preventable* campaign and scores on perceived preventability of injuries as well as conscious forethought applied to injury-related behaviours.

**Results** Campaign exposure was significant in both models (preventability:  $\beta=0.27$ , 95% CI 0.20 to 0.35; conscious thought:  $\beta=0.24$ , 95% CI 0.13 to 0.35), as was parental status (preventability:  $\beta=0.12$ , 95% CI 0.03 to 0.21; conscious thought:  $\beta=0.18$ , 95% CI 0.06 to 0.30). Exposure to the more recent campaign slogan was predictive of 0.47 higher score on conscious thought (95% CI 0.27 to 0.66).

**Discussion** This study provides some evidence that the *Preventable* approach is having positive effect on attitudes and behaviours related to preventable injuries in the target population. Future work will seek to compare these data to other jurisdictions as the *Preventable* social marketing campaign expands to other parts of Canada.

## INTRODUCTION

Social marketing is a catalyst for social change in support of the public good when marketing principles are applied to influence a target audience in domains such as policy, environment and health.<sup>1</sup> Social marketing has long garnered interest among prevention professionals in the public health domain as a potential knowledge translation tool.<sup>2</sup> Mass media campaigns targeting individual attitudes and behaviours related to public health concerns can be a cost-effective intervention and are thus of considerable interest to decision-makers responsible for finite public health resources.<sup>2</sup>

Social marketing applies the principles of traditional marketing to influence behaviour in support of the public good. The focus of any social marketing

endeavour is fundamentally consumer-oriented and driven by the perspective of the target audience.<sup>3</sup> Therefore, substantial time and effort is invested in research activities to segment the audience and understand their needs and desires. From this foundation, resources can be efficiently applied to reach the intended audience in the right time and place with a call to action that will engage their attention and elicit a positive response. Further, a social marketing approach must consider barriers to change, such as competing pressures or prohibitive costs associated with the desired behaviour.

In British Columbia (BC), Canada, preventable injuries claimed over 2000 lives and resulted in nearly 35 000 hospitalisations, incurring \$2 billion in direct costs to the healthcare system in 2010 alone.<sup>4</sup> The provincial government recognises the significance of this toll and announced an initiative in 2006 to reduce the human and financial burden of preventable injuries. Initially led by government, this task force soon evolved into a not-for-profit organisation, with government fulfilling a role as one of several partners committed to mounting a campaign grounded in foundational market research.

Over the course of 2.5 years, the Community Against Preventable Injuries (*Preventable*) conducted a detailed formative evaluation to better understand the issue from the perspective of its intended audience and develop an impactful approach. Sampling across the province, *Preventable* consulted British Columbians regarding their views towards injury prevention and how they might be engaged in a proposed campaign. Iterative focus group consultations, in addition to public attitude surveys, a review of the social marketing literature and economic burden and injury morbidity and mortality data, eventually defined a high-priority target group aged 25–54 years, who were receptive to an injury prevention message. *Preventable* learnt that this group firmly believed that serious injuries were both ‘a fact of life’ and ‘will never happen to me’. Importantly, this group also asserted that they knew the risks and had sufficient knowledge about how to prevent injuries—they would not pay attention to shocking, graphic, directive or instructional campaign content. Rather, a reminder to use their knowledge, delivered as close as possible to the moment of risk, would be most effective. *Preventable*’s social marketing strategy was then developed in direct response to the stated preferences of its target audience.



**To cite:** Smith J, Zheng X, Lafreniere K, et al. *Inj Prev* 2018;**24**:i52–i59.

	Sample Questions	Scale
<b>Attitudes</b>		<b>10-point scale:</b>
Nature of injury (3)	“It is inevitable that people get injured” “The majority of injuries are preventable” “No one plans on/anticipates getting hurt”	<i>Disagree completely – Agree completely</i>
Concern (2)	“How concerned are you about the impact that preventable injuries can have on your life [the lives of your family and friends]?”	<i>Not concerned at all – Very concerned</i>
Preventability (11)	“How preventable do you think the following injuries are?” Poisoning, drowning, falls from ladders, etc.	<i>Not preventable at all – Entirely preventable</i>
<b>Behaviours</b>		<b>10-point scale:</b>
Conscious thought applied to behaviour (12)	“How much conscious thought do you give prior to doing the following activities?” Jaywalking, mixing medications, multitasking while driving, etc.	<i>No thought at all – A lot of thought</i>
Past experience (3)	“In the past 12 months, have you been injured seriously enough where you [your family or friend] received medical treatment (such as ER, hospitalization or an MD office)?”	<i>Yes or No</i>
	“Have you knowingly been a passenger in a vehicle or driven a vehicle, where the driver has consumed alcohol?”	<i>Yes or No</i>

**Figure 1** Sample of survey items to measure attitudes and behaviours related to serious injuries.

The *Preventable* approach is theoretically grounded in the Health Action Process Approach (HAPA) model of behaviour change. According to HAPA, once an individual has formed a behavioural intention, he or she must engage in a series of cognitions to translate that intention into action.<sup>5,6</sup> Along the transitional pathway, the individual must form a plan that includes the steps required to enact that behaviour as well as those needed to mitigate any difficulties or barriers that arise. When *Preventable* interrupts the planning process by providing a reminder to consider injury as a potential consequence of the intended behaviour, the individual is afforded an opportunity to reassess and adjust the chosen course of action according to his or her pre-existing knowledge. *Preventable* targets this message to the time and place of potential risk through strategic use of mass media, social media, ambient signage and ‘guerrilla stunts’.

*Preventable* tracked public response to the campaign with a province-wide survey that measured injury-related attitudes, beliefs, awareness and behaviours, in addition to tracking advertising metrics and market penetration. The survey was administered at strategic intervals throughout the duration of the campaign, from launch in 2009 to the present day. The purpose of this paper is to examine the tracking data that relates to attitudes and behaviours within the context of the HAPA model, illustrating with examples from the *Preventable* campaign and discuss the implications for other population-level injury prevention interventions.

## METHODS

### Survey background

*Preventable* contracted with Insights West and Ipsos ASI, full-service marketing companies that each maintain large panels of adult volunteers in Western Canada, to develop and administer the survey in consultation with the academic team. Questions relating to injury attitudes and behaviours were developed to

validate the findings of the focus groups (figure 1). The survey is administered online to a regionally representative<sup>i</sup> sample between 1 and 4 times per year and is not sent to the same person within a 12-month period. In addition to collecting demographic information, the survey tracks injury attitudes, awareness and behaviours as well as brand metrics and response to specific campaign elements. The latter varies between surveys, and so to provide feedback about current campaign creative material, the exact number of questions changes slightly between waves. Importantly, the survey includes questions referring to specific scenarios or injury types that have been featured in the campaign as well as those that have not.

### Inclusion criteria

The survey was administered at baseline in May 2009, immediately prior to campaign launch. Throughout the launch period, the survey was administered on a rolling basis in order to monitor the pilot phase of the campaign. After the end of the launch period, the survey was switched to a wave schedule, with 17 waves completed between January 2010 and December 2016. Each wave was structured to be representative of the provincial population by age, gender and region, generating a sample between approximately 300 and 700 responses per wave. Because the survey changes slightly over time as questions are added, a subset of the data was selected in order to have a complete dataset for analysis. Survey waves that included the question, ‘In the past 12 months, have you been injured

<sup>i</sup>BC is geographically vast, with many rural areas and remote communities. The BC population is approximately 4.7 million people, with almost half located in the Greater Vancouver Regional District.<sup>17</sup> The province is divided into Health Authority (HA) regions for the delivery of health services tailored to the needs of each regional population, with high-level coordination across BC.

seriously enough where you received medical treatment (such as ER, hospitalisation or an MD office)?' were included. Waves 10 through 16 met this criterion, collected between November 2012 and April 2016.

### Participants

Panellists residing in BC, between the ages of 25 and 54 years, able to complete the survey in English and with no current or prior professional expertise in marketing or advertising were eligible to participate. Respondents who rated the same score on every item, including the reverse item 'it is inevitable that people get injured' (n=120), were excluded.

All participants provided written informed consent prior to completing the survey.

### Data analysis

Proportions were calculated to describe demographic characteristics of the subsample. Information regarding the characteristics of non-respondents was not available and is therefore not included in the analysis.

Exposure to the campaign was defined as answering 'yes' to any question on the survey about awareness of *Preventable* as an organisation, knowledge of the website or having seen any ad prior to the date of survey. Respondents were considered not exposed if they answered 'no' to all of the above.

A linear regression model was used to test the effect of exposure to the campaign on attitudes towards injury ('preventability') and conscious forethought preceding behaviour ('conscious thought'), while controlling for various demographic

factors such as age, gender, education level, income, employment status, marital status, parental status, region of residence as well as survey year. In addition, history of a medically attended injury to self or family in the preceding 12 months and history of knowingly riding in a vehicle with a driver who had consumed alcohol were included in the model. Outcome variables 'preventability' and 'conscious thought' were each scaled as an average score on a number of related survey items. Figure 2 shows the items included in each scale as well as the distribution of scores. Because two outcome variables were tested, a significance level of  $p < 0.025$  was set. All analyses were conducted using Statistical Analysis System V.9.4.

### RESULTS

There were 5186 respondents included in the analysis. Survey response rates varied between waves, ranging from 32% to 24%, with an average rate of 27.6%. The sample was evenly distributed between females (55.3%), married persons (50.2%), those employed full-time (59.6%) and parents (50.3%). Two-thirds had been exposed to the *Preventable* campaign (67.6%) and well over one-third had completed university (39.6%) or reported an annual household income of \$75 000 or more (36.8%). Participant characteristics are further described in table 1.

Table 2A and B show the results of the regression analysis. Exposure to the campaign was significant in both models, as were age category, gender and parental status. Campaign exposure predicted increases of 0.27 in preventability (95% CI 0.20 to 0.35) and 0.24 in conscious thought (95% CI 0.13 to 0.35). Parental status predicted slightly higher scores on preventability

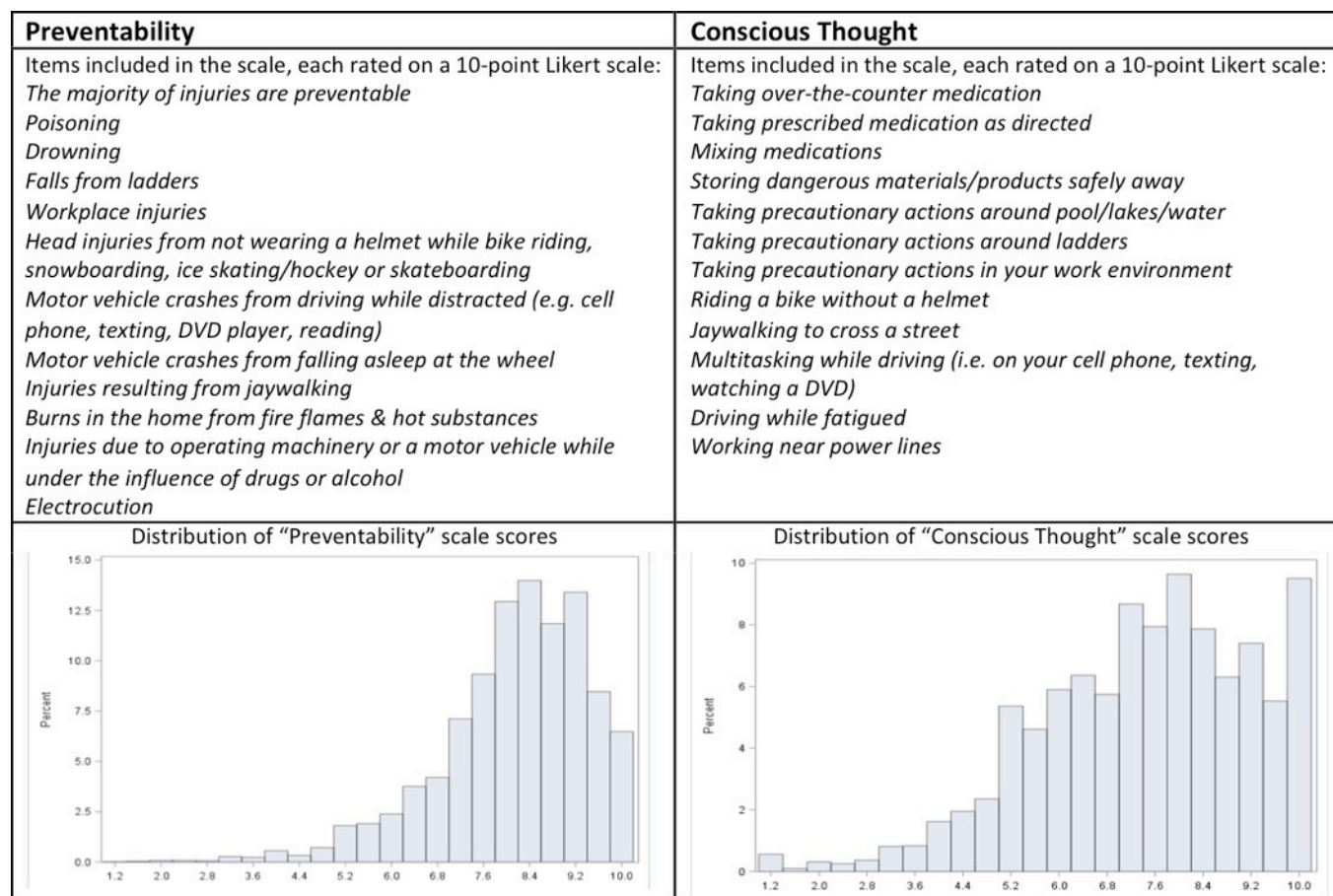


Figure 2 Preventability and conscious thought scales.

**Table 1** Participant characteristics

Variable		N	%
Total	Sample	5186	100
Year	2012	750	14.5
	2013	1497	28.9
	2014	1479	28.5
	2015	732	14.1
	2016	728	14.0
Region	Interior	786	15.2
	Fraser Valley	1561	30.1
	Vancouver Island	789	15.2
	Northern	756	14.6
	Vancouver Coastal	1294	25.0
Gender	Male	2316	44.7
	Female	2870	55.3
Marital status	Single (never married)	1430	27.6
	Married	2605	50.2
	Domestic partnership	645	12.4
	Widowed	44	0.9
	Divorced	316	6.1
	Separated	146	2.8
Parental status	Parent	2607	50.3
	Not a parent	2579	49.7
Age category	25–34 years	1568	30.2
	35–44 years	1515	29.2
	45–55 years	2103	40.6
Educational attainment	Elementary school (Eighth grade or less)	6	0.1
	Some high school (9th to 11th grade)	135	2.6
	Graduated high school	699	13.5
	Trade school/two year associate's degree/attended college	722	13.9
	Some college or university	1052	20.3
	Graduated college/university	2052	39.6
	Postgraduate	520	10.0
Employment status	Self-employed	580	11.2
	Employed full time	3093	59.6
	Employed part time	547	10.6
	Unemployed	279	5.4
	Student	141	2.7
	Retired	157	3.0
	Homemaker	389	7.5
	Household income		
Household income	Under \$25 000	409	7.9
	\$25 000 to \$39 999	572	11.0
	\$40 000 to \$49 999	398	7.7
	\$50 000 to \$59 000	505	9.7
	\$60 000 to \$74 999	565	10.9
	\$75 000 or more	1910	36.8
	Prefer not to answer	827	16.0
Campaign slogan	'Have a word with yourself' (2012–2014)	3726	71.8
	'Seriously?' (2015–2016)	1460	28.2
Knowingly ridden in a vehicle with a driver who had consumed alcohol	Yes	1536	29.6
	No	3650	70.4
Medically attended injury in past 12 months (self)	Yes	651	12.6
	No	4535	87.4

Continued

**Table 1** Continued

Variable		N	%
Medically attended injury in past 12 months (family or friends)	Yes	1168	22.5
	No	4018	77.5

( $\beta=0.12$ , 95% CI 0.03 to 0.21) and conscious thought ( $\beta=0.18$ , 95% CI 0.06 to 0.30). Modelling age, education level and household income as ordinal, rather than nominal variables did not change the results, although education did not achieve significance in the preventability model when this alteration was made. One region was significant in the preventability model only, and personal or family history of a medically attended injury trended but did not achieve significance. Recall of the campaign slogan 'Seriously?' was significant only in the model of conscious thought ( $\beta=0.47$ , 95% CI 0.27 to 0.66), as were markers of deliberate behaviour, such as marital status and knowingly riding in a vehicle with a driver who had consumed alcohol.

## DISCUSSION

Social marketing has been established as a valuable component of any modern public health strategy.<sup>7</sup> Health promotion campaigns, such as the truth campaign, have used social marketing principles to change public attitudes and influence health behaviours.<sup>8,9</sup> A prominent Canadian example is ParticipACTION, a multimodal physical fitness promotion and obesity prevention campaign that ran for 30 years and was relaunched in 2007 after a 6 year hiatus.<sup>10</sup> The campaign began in the 1970s, before social marketing was developed in the health promotion field, yet social marketing concepts are easily recognisable in the organisation's branding, communications and community mobilisation activities.<sup>11</sup> No other Canadian health promotion campaigns have yet achieved the longevity of ParticipACTION, but the demonstrated successes of carefully applied social marketing techniques have generated interest in leveraging these techniques to strengthen other areas of public health promotion.<sup>13</sup>

Commonly, approaches to injury prevention in the health promotion field tend to focus on one specific target group, environmental context or injury type.<sup>12</sup> For example, parents are often the target of educational and preventative public health messaging about injuries to children in the home.<sup>13</sup> Another highly visible example is drinking and driving campaigns aimed at reducing alcohol-related motor vehicle fatalities.<sup>14</sup> The underlying commonality of these types of campaigns is that they treat each injury type or risk population as a specialised concern and tailor the campaign focus accordingly. *Preventable* takes a new approach to preventing injury with a social marketing campaign that targets common societal attitudes underlying risky behaviours at home, at work, at play and on the road.

Ongoing tracking of the *Preventable* campaign via the online survey has yielded a wealth of information that serves to provide a basis for assessing the market penetration and brand value of the campaign, developing and testing the evolving creative platform as well as tracking awareness, attitudes and behaviours related to injury throughout the province. It is beyond the scope of this paper to discuss these data in their entirety; the purpose of this paper is to provide some insight into the effective use of social marketing as a knowledge translation tool for achieving behaviour change at the population level.



**Table 2A** Regression model for 'Preventability', with age, education level and household income modelled as nominal variables

Parameter	Estimate	SE	t Value	Pr >  t	95% confidence limits	
Intercept	30.8665147	51.99165254	0.59	0.5528	-71.0592158	132.7922452
<b>Campaign exposed</b>	<b>0.27388744</b>	<b>0.03985484</b>	<b>6.87</b>	<b>&lt;0.0001</b>	<b>0.19575503</b>	<b>0.35201985</b>
Not exposed	0	–	–	–	–	–
<b>Age 35–44 years</b>	<b>0.25855092</b>	<b>0.04765348</b>	<b>5.43</b>	<b>&lt;0.0001</b>	<b>0.16512985</b>	<b>0.35197200</b>
<b>Age 45–55 years</b>	<b>0.39769468</b>	<b>0.04680236</b>	<b>8.50</b>	<b>&lt;0.0001</b>	<b>0.30594218</b>	<b>0.48944719</b>
Age 25–34 years	0	–	–	–	–	–
<b>Male</b>	<b>-0.18567858</b>	<b>0.03764061</b>	<b>-4.93</b>	<b>&lt;0.0001</b>	<b>-0.25947018</b>	<b>-0.11188699</b>
Female	0	–	–	–	–	–
Married	0.04663505	0.05362448	0.87	0.3845	-0.05849172	0.15176182
Domestic partnership	0.04746075	0.06319649	0.75	0.4527	-0.07643122	0.17135272
Widowed	-0.34553149	0.19736179	-1.75	0.0800	-0.73244446	0.04138147
Divorced	0.12066397	0.08353066	1.44	0.1486	-0.04309162	0.28441956
Separated	0.06515086	0.11404181	0.57	0.5678	-0.15841955	0.28872127
Single (never married)	0	–	–	–	–	–
Self-employed	-0.09801915	0.09528868	-1.03	0.3037	-0.28482546	0.08878716
Employed full-time	-0.04607728	0.08426554	-0.55	0.5845	-0.21127354	0.11911898
Employed part-time	0.00724893	0.09531168	0.08	0.9394	-0.17960246	0.19410032
Student	0.14257446	0.13282724	1.07	0.2831	-0.11782337	0.40297229
Retired	0.11163668	0.12902952	0.87	0.3870	-0.14131601	0.36458936
Homemaker	0.02720038	0.10482899	0.26	0.7953	-0.17830898	0.23270974
Unemployed	0	–	–	–	–	–
<b>Some high school</b>	<b>2.44014479</b>	<b>0.53215343</b>	<b>4.59</b>	<b>&lt;0.0001</b>	<b>1.39689796</b>	<b>3.48339162</b>
<b>Graduated high school</b>	<b>2.40399311</b>	<b>0.52298933</b>	<b>4.60</b>	<b>&lt;0.0001</b>	<b>1.37871179</b>	<b>3.42927442</b>
<b>Trade school/attended college</b>	<b>2.54732825</b>	<b>0.52286605</b>	<b>4.87</b>	<b>&lt;0.0001</b>	<b>1.52228862</b>	<b>3.57236787</b>
<b>Some college or university</b>	<b>2.50593109</b>	<b>0.52216960</b>	<b>4.80</b>	<b>&lt;0.0001</b>	<b>1.48225680</b>	<b>3.52960537</b>
<b>Graduated college/university</b>	<b>2.52742575</b>	<b>0.52179103</b>	<b>4.84</b>	<b>&lt;0.0001</b>	<b>1.50449361</b>	<b>3.55035788</b>
<b>Post graduate</b>	<b>2.48305432</b>	<b>0.52409655</b>	<b>4.74</b>	<b>&lt;0.0001</b>	<b>1.45560239</b>	<b>3.51050624</b>
Eighth grade or less	0	–	–	–	–	–
<b>Parent</b>	<b>0.12436667</b>	<b>0.04358138</b>	<b>2.85</b>	<b>0.0043</b>	<b>0.03892864</b>	<b>0.2098047</b>
Not a parent	0	–	–	–	–	–
Income \$25 000–\$39 999	0.05204012	0.08516687	0.61	0.5412	-0.11492313	0.21900337
Income \$40 000–\$49 999	0.08943938	0.09405941	0.95	0.3417	-0.09495702	0.27383579
Income \$50 000–\$59 999	0.02998161	0.09047007	0.33	0.7404	-0.14737817	0.20734138
Income \$60 000–\$74 999	0.05802720	0.09022005	0.64	0.5201	-0.11884244	0.23489684
Income \$75 000 or more	0.15251375	0.08124322	1.88	0.0605	-0.00675748	0.31178497
Income prefer not to answer	0.07178417	0.08348300	0.86	0.3899	-0.09187798	0.23544631
Income under \$25 000	0	–	–	–	–	–
Injury to self in past 12 months	-0.11400554	0.05464297	-2.09	0.0370	-0.22112897	-0.0068821
No injury to self in past 12 months	0	–	–	–	–	–
Injury to family in past 12 months	0.08943370	0.04362396	2.05	0.0404	0.00391219	0.17495520
No injury to family in past 12 months	0	–	–	–	–	–
Passenger in vehicle with drinking driver	0.00677588	0.03920381	0.17	0.8628	-0.07008024	0.08363201
Not a passenger in vehicle with drinking driver	0	–	–	–	–	–
Campaign slogan 'Seriously?'	0.0558835	0.07282851	0.77	0.4429	-0.08689133	0.19865832
Campaign slogan 'Have a word with yourself'	0	–	–	–	–	–
Region Fraser Valley	-0.10634715	0.05631172	-1.89	0.0590	-0.21674205	0.00404774
Region Vancouver Island	-0.08005552	0.06444068	-1.24	0.2142	-0.20638663	0.04627560
Region Northern	0.07322634	0.06543751	1.12	0.2632	-0.05505900	0.20151167
<b>Region Vancouver Coastal</b>	<b>-0.17743487</b>	<b>0.05929829</b>	<b>-2.99</b>	<b>0.0028</b>	<b>-0.29368472</b>	<b>-0.06118502</b>
Region Interior	0	–	–	–	–	–
Year	-0.01275582	0.02582722	-0.49	0.6214	-0.06338815	0.03787651

Predictor variables that achieved p value<0.025 are shown in bold font.

This study examined the effect of exposure to the *Preventable* campaign on the attitudes of British Columbians towards the preventability of injuries, as well as their level of conscious thought applied to injury-related behaviours. The results of the regression

model appear to indicate that the campaign has the desired effect. Exposure to the *Preventable* campaign predicted a higher perceived preventability and greater conscious forethought. British Columbians who have seen the campaign (approximately two-thirds of the

**Table 2B** Regression model for 'Conscious thought', with age, education level and household income modelled as nominal variables

Parameter	Estimate	SE	t Value	Pr >  t	95% Confidence limits	
Intercept	76.76270688	71.49975055	1.07	0.2830	-63.4071848	216.9325986
<b>Campaign exposed</b>	<b>0.23871841</b>	<b>0.05480901</b>	<b>4.36</b>	<b>&lt;0.0001</b>	<b>0.13126947</b>	<b>0.34616735</b>
Not exposed	0	-	-	-	-	-
<b>Age 35–44 years</b>	<b>0.33086003</b>	<b>0.06553383</b>	<b>5.05</b>	<b>&lt;0.0001</b>	<b>0.20238588</b>	<b>0.45933419</b>
<b>Age 45–55 years</b>	<b>0.58323299</b>	<b>0.06436335</b>	<b>9.06</b>	<b>&lt;0.0001</b>	<b>0.45705348</b>	<b>0.70941250</b>
Age 25–34 years	0	-	-	-	-	-
<b>Male</b>	<b>-0.3686681</b>	<b>0.05176397</b>	<b>-7.12</b>	<b>&lt;0.0001</b>	<b>-0.47014748</b>	<b>-0.26718873</b>
Female	0	-	-	-	-	-
<b>Married</b>	<b>0.23693980</b>	<b>0.07374524</b>	<b>3.21</b>	<b>0.0013</b>	<b>0.09236779</b>	<b>0.38151181</b>
Domestic partnership	0.13012033	0.08690882	1.50	0.1344	-0.04025789	0.30049855
Widowed	-0.45446136	0.27141508	-1.67	0.0941	-0.98655024	0.07762753
<b>Divorced</b>	<b>0.40811899</b>	<b>0.1148727</b>	<b>3.55</b>	<b>0.0004</b>	<b>0.18291969</b>	<b>0.63331829</b>
Separated	0.00398123	0.15683212	0.03	0.9797	-0.30347636	0.31143883
Single (never married)	0	-	-	-	-	-
Self-employed	-0.06291903	0.13104252	-0.48	0.6311	-0.31981804	0.19397999
Employed full-time	-0.06490893	0.11588331	-0.56	0.5754	-0.29208946	0.1622716
Employed part-time	0.04470908	0.13107414	0.34	0.7330	-0.21225193	0.30167009
Student	0.18293499	0.18266614	1.00	0.3166	-0.17516826	0.54103824
Retired	0.11516046	0.17744346	0.65	0.5164	-0.23270411	0.46302503
Homemaker	0.12560935	0.14416250	0.87	0.3836	-0.1570104	0.40822911
Unemployed	0	-	-	-	-	-
Some high school	1.49771262	0.73182589	2.05	0.0408	0.06302292	2.93240231
Graduated high school	1.59309347	0.71922328	2.22	0.0268	0.18311024	3.00307671
Trade school/attended college	1.49893666	0.71905374	2.08	0.0372	0.08928581	2.90858752
Some college or university	1.51144253	0.71809597	2.10	0.0354	0.10366931	2.91921575
Graduated college/university	1.44538217	0.71757536	2.01	0.0440	0.03862957	2.85213477
Postgraduate	1.36917161	0.72074594	1.90	0.0575	-0.04379668	2.78213990
Eighth grade or less	0	-	-	-	-	-
<b>Parent</b>	<b>0.18182993</b>	<b>0.05993381</b>	<b>3.03</b>	<b>0.0024</b>	<b>0.06433419</b>	<b>0.29932567</b>
Not a parent	0	-	-	-	-	-
Income \$25 000–\$39 999	0.08348551	0.11712284	0.71	0.4760	-0.14612503	0.31309604
Income \$40 000–\$49 999	0.11042457	0.12935200	0.85	0.3933	-0.14316031	0.36400945
Income \$50 000–\$59 999	0.05402287	0.12441588	0.43	0.6642	-0.18988513	0.29793086
Income \$60 000–\$74 999	-0.04935828	0.12407206	-0.40	0.6908	-0.29259223	0.19387567
Income \$75 000 or more	-0.05407638	0.11172697	-0.48	0.6284	-0.27310871	0.16495595
Income prefer not to answer	-0.00603643	0.11480715	-0.05	0.9581	-0.23110723	0.21903436
Income under \$25 000	0	-	-	-	-	-
Injury to self in past 12 months	0.05227983	0.07514588	0.70	0.4866	-0.09503803	0.19959769
No injury to self in past 12 months	0	-	-	-	-	-
Injury to family in past 12 months	0.11182171	0.05999237	1.86	0.0624	-0.00578883	0.22943225
No injury to family in past 12 months	0	-	-	-	-	-
<b>Passenger in vehicle with drinking driver</b>	<b>-0.32121096</b>	<b>0.05391371</b>	<b>-5.96</b>	<b>&lt;0.0001</b>	<b>-0.42690473</b>	<b>-0.21551719</b>
Not a passenger in vehicle with drinking driver	0	-	-	-	-	-
<b>Campaign slogan 'Seriously?'</b>	<b>0.46734297</b>	<b>0.10015493</b>	<b>4.67</b>	<b>&lt;0.0001</b>	<b>0.27099675</b>	<b>0.66368919</b>
Campaign slogan 'Have a word with yourself'	0	-	-	-	-	-
Region Fraser Valley	-0.00259812	0.07744077	-0.03	0.9732	-0.15441494	0.1492187
Region Vancouver Island	-0.03032027	0.08861985	-0.34	0.7323	-0.20405284	0.14341229
Region Northern	0.05711003	0.08999072	0.63	0.5257	-0.11931001	0.23353007
Region Vancouver Coastal	-0.1205636	0.08154796	-1.48	0.1394	-0.28043225	0.03930505
Region Interior	0	-	-	-	-	-
Year	-0.03547008	0.03551801	-1.00	0.3180	-0.10510047	0.0341603

Predictor variables that achieved p value<0.025 are shown in bold font.

sample) are more likely to perceive many different injury scenarios as preventable and think consciously before enacting a potentially risky behaviour, regardless of whether that particular scenario has been featured in any of the campaign ads or not.

Parental status was also significant in both models, a finding that was consistent with the views expressed in the focus group consultations during the development phase of the campaign platform. Parents who were consulted during the formative



**Figure 3** *Preventable* messaging at the time and place that injuries are likely to occur.

evaluation tended to be more fatalistic about injuries, indicating that it is not feasible, or even desirable, to prevent all injuries. These parents felt that children needed freedom to test their limits and that some risk was the cost of the learning experience vital to normal healthy growth and development. At the same time, they expressed a strong need to set a good example and take more precautions when in the presence of their children. These findings are reflected in the current study, with parental status predictive of higher scores on preventability and conscious thought.

The model of conscious thought showed that exposure to the slogan ‘Seriously?’ had a significant effect, and while this may be due in part to the longer period of time for which the campaign was already in market when this slogan was introduced, it may also provide some evidence for the ability of the campaign to target the moment of decision and interrupt the planning process that precedes action. *Preventable* messaging follows the HAPA model, which posits that the transition between intention and action is moderated by a cognitive process that helps the person plan how to enact the intended behaviour as well as how to mitigate potential barriers to action.<sup>6</sup> A previous study of helmet use behaviours among cyclists in the context of the HAPA model found that exposure to the *Preventable* campaign was associated with a greater propensity to plan to use a helmet.<sup>15</sup> Those who see or recall the message at the moment of decision are prompted to reflect on the intended behaviour, while those who already perform safety behaviours regularly are supported in their actions when campaign messaging reinforces good decisions at relevant moments.

**Figure 3** illustrates two examples of campaign activities delivered at the time and place that injuries commonly occur. A 3D painting of a child running into the road prompts drivers in a school zone to slow down and watch for vulnerable child pedestrians. Towels laid out on a popular beach in summer remind swimmers, ‘Before you think only other swimmers drown, have a word with yourself’. Delivering engaging messaging at the time and place it is most relevant and compelling demonstrates how strategic application of place and promotion concepts supports both planning processes and behavioural outcomes.<sup>3</sup>

The strength of the *Preventable* campaign lies in the careful and thorough consultation with the target audience conducted throughout BC prior to the development of the campaign messaging. *Preventable* sought to fully understand the prevailing attitudes and awareness of its audience with respect to injury prevention as a singular issue as well as identify points of entry into the public discourse of serious injuries. British Columbians clearly expressed their willingness to engage with an injury prevention message, but not if it came directly from government,

as there were concerns about hidden agendas or conflicts of interest. Thus, *Preventable* was set up as a not-for-profit organisation with a board of directors representing public, private and non-profit organisations, to deliver its message in a format acceptable to its audience.

Over the course of the formative evaluation phase prior to campaign launch, *Preventable* found that British Columbians believed that injuries were inevitable, yet they also believed that they would never personally experience a serious injury. Clearly, a traditional, information-based public health campaign was not going to be effective. Consistent with the literature on public understanding of the word ‘accident’, *Preventable* found that the intended audience already understood that injuries resulting from ‘accident’ were preventable.<sup>16</sup> Generally, people felt that injuries were the result of taking shortcuts, not thinking ahead or being careless, and even in some cases ‘plain stupidity’. Accordingly, the most common solutions offered were ‘just be more careful’ or ‘be more aware’. Rather than filling a knowledge gap, the challenge was to develop an approach that would address the underlying reasons why people behave in ways that do not seem consistent with their understanding of injuries.

Focus group participants consulted during the formative evaluation strongly rejected content that would bring them to a ‘dark place’ where the outcome of an injury-producing event was made explicit. In particular, parents refused to even discuss the idea of ads that feature ‘the dark place’ with respect to children, asserting that they would be strongly repelled by such content. Rather than messaging intended to shock or shame them into changing their behaviour, they indicated that a reminder to exercise their judgement in the right place and time would be welcome, as they felt such a message respected their intelligence and personal agency in preventing injuries. These preferences were common across the target age group, regardless of gender, socioeconomic status, parental or marital status or region of residence. The campaign messaging was developed following the consultation period in direct response to the stated preferences of British Columbians to be addressed as thoughtful, responsible individuals who are credible sources of prevention knowledge in their own right.

This study examines the approach of the *Preventable* campaign messaging in the context of the prevailing attitudes and behaviours related to preventable injuries among British Columbian adults. Engaging messaging that reminds the audience to ‘Have a word with yourself’ in the time and place of potential risk was found to have a significant effect on perceived preventability of injury as well as conscious forethought applied to behaviour in this population. This paper describes the attitudes and behaviours of adults in BC; however, the campaign

is currently active in Alberta and undergoing market testing in the Atlantic provinces. Future work will seek to compare the effect of the campaign as it expands to other jurisdictions in Canada and as long-term tracking data in these regions becomes available.

### Limitations

This study is subject to some limitations. While efforts were made to ensure adequate regional representation in each survey wave, with slight oversampling in the least populous region and undersampling in the most populous region, the sample is slightly skewed towards the more educated and affluent, so findings may not be as reliably generalised to populations of lower socioeconomic status. However, recruitment of respondents continued until sufficient numbers were gathered that provided statistically representative samples at the provincial and regional health authority levels, permitting comparisons among the regions and between those respondents that recalled the campaign and those that did not. Last, the distributions of the outcome variables (preventability and conscious thought) were not perfectly normal, although the sample size was large enough and the model fit adequate to compensate. Additionally, we purposely delayed in publishing these data to ensure sufficient time in market with consistent messaging to have a population-level effect as well as allow for long-term data collection and amassing a large sample size for analysis.

### CONCLUSION

The *Preventable* campaign represents a unique approach to injury prevention from a public and population health perspective. Crown corporations, NGOs and leading organisations in both the private and public sectors have all brought their talents and resources to the table, to provide funding and guidance and to provide unique and meaningful touch points and communication channels to reach the target audience. *Preventable* has been a catalyst for shifting injury-related attitudes and behaviours among the adult population, with its creative platform and approach to messaging that engages its audience in the right place and at the right time: before an injury occurs.

#### What is already known on this subject

- ▶ Social marketing is a useful tool for prevention and raising awareness within the domain of public health.
- ▶ The Health Action Process Approach model of health behaviour change proposes that the transition between intention and behaviour is moderated by planning.

#### What this study adds

- ▶ *Preventable's* innovative creative platform provides a reminder in the time and place that serious injuries have the potential to occur.
- ▶ Adults aged 25–54 years already know how to stay safe. For them, engaging campaign content leaves room to assess the intended behaviour within the context of their pre-existing knowledge.

**Contributors** All authors have reviewed and approved the final version of the manuscript prior to submission. JS wrote the first draft of the paper, revised the draft critically for content and contributed to the analysis and interpretation of the data. XZ planned and conducted the analysis and contributed to interpreting the data. KL and IP conceptualised the study design, contributed to acquiring the data and contributed to critical revisions of the draft article. IP contributed to the interpretation of the data.

**Funding** Funding for the ongoing evaluation was provided by The Community Against Preventable Injuries (grant number F14-01872).

**Disclaimer** For this study, The Community Against Preventable Injuries Board of Directors had no role in the study design; in the collection, analysis and interpretation of the data; in the writing of the report or in the decision to submit the paper for publication.

**Competing interests** IP is serves as Co-Executive Director for The Community Against Preventable Injuries. KL serves as Executive Director for The Community Against Preventable Injuries.

**Patient consent** Not required.

**Ethics approval** This study has been reviewed and approved by the research ethics board at the University of British Columbia, certificate #CW09-0158/H09-01604.

**Provenance and peer review** Not commissioned; externally peer reviewed.

**Open Access** This is an Open Access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

© Article author(s) (or their employer(s) unless otherwise stated in the text of the article) 2018. All rights reserved. No commercial use is permitted unless otherwise expressly granted.

### REFERENCES

- 1 Luca NR, Suggs LS. Theory and model use in social marketing health interventions. *J Health Commun* 2013;18:20–40.
- 2 Grier S, Bryant CA. Social marketing in public health. *Annu Rev Public Health* 2005;26:319–39.
- 3 Andreassen AR. Marketing social marketing in the social change marketplace. *Journal of Public Policy & Marketing* 2002;21:3–13.
- 4 Rajabali F, Ibrahimova A, Barnett B, et al. Economic burden of injury in British Columbia. *Vancouver, Canada* 2015.
- 5 Schwarzer R. Modeling health behavior change: how to predict and modify the adoption and maintenance of health behaviors. *Appl Psychol* 2008;57:1–29.
- 6 Schwarzer R, Luszczynska A. How to overcome health-compromising behaviors: The health action process approach. *Eur Psychol* 2008;13:141–51.
- 7 Smith BJ, Tang KC, Nutbeam D. WHO health promotion glossary: new terms. *Health Promot Int* 2006;21:340–5.
- 8 Douglas Evans W, Wasserman J, Bertolotti E, et al. Branding behavior: the strategy behind the truth social marketing campaign. *Soc Mar Q* 2002;8:17–29.
- 9 Farrelly MC, Nonnemaker J, Davis KC, et al. The influence of the national truth campaign on smoking initiation. *Am J Prev Med* 2009;36:379–84.
- 10 Faulkner G, McCloy C, Plotnikoff RC, et al. Relaunching a national social marketing campaign: expectations and challenges for the "new" ParticipACTION. *Health Promot Pract* 2011;12:569–76.
- 11 Bauman A, Madill J, Craig CL, et al. ParticipACTION: this mouse roared, but did it get the cheese? *Can J Public Health* 2004;95 Suppl 2(SUPPL. 2):S14–9.
- 12 Pike I, Richmond S, Rothman L, et al. *Canadian injury prevention resource*. Toronto, Ontario, 2015.
- 13 Kendrick D, Ca M, Ye L, et al. Parenting interventions for the prevention of unintentional injuries in childhood. *Cochrane Database Syst Rev* 2013;28:CD006020.
- 14 Elder RW, Shults RA, Sleet DA, et al. Effectiveness of mass media campaigns for reducing drinking and driving and alcohol-involved crashes: a systematic review. *Am J Prev Med* 2004;27:57–65.
- 15 Karl FM, Smith J, Piedt S, et al. Applying the health action process approach to bicycle helmet use and evaluating a social marketing campaign. *Inj Prev* 2017. DOI: 10.1136/injuryprev-2017-042399. [Epub ahead of print]
- 16 Girasek DC. How members of the public interpret the word accident. *Inj Prev* 2015;21:205–10.
- 17 Government of British Columbia ERB. Trends in B.C.'s population size & distribution. <http://www.env.gov.bc.ca/soe/indicators/sustainability/bc-population.html> (accessed 28 Jun 2017).