Communicating aquatic safety to national parks visitors in Queensland, Australia via social media: campaign co-design and pilot evaluation

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Abstract

Background: Social media is a major driver of tourism to aquatic sites in national parks where increased tourist numbers and risky behaviours are leading to injuries and deaths. This study co-designed a social media safety campaign with Queensland National Parks and Wildlife Service (QPWS) to evaluate whether messages reach park visitors and impact behaviours at a known injury hotspot.

Methods: Social media posts describing risks in national parks locations popular with social media users were promoted on Instagram and Facebook between January and February 2024. Quantitative analysis of in-person survey data of visitors to Curtis Falls in Tamborine National Park was conducted, as well as analysis of campaign sentiment and metrics.

Results: The social media communication campaign was well received by social media users with a high number of engagements with the campaign content including four thousand link clicks, 100+ shares and 254 saves across the communication materials presented. Content analysis of comments on social media revealed that some respondents (20%) felt the tone of the organic content component of the communication campaign was patronising, while others (20%) were pleased to receive messages around safety in national parks. In-person surveys (n=50) showed that 78% of respondents use social media to find places to visit in nature, 74% often or occasionally rely on social media for information or inspiration about their national parks visit with 39% relying on national parks content on social media pages. A third (32%) recalled (prompted) at least one of the communication materials from Instagram. Almost half (48%) considered QPWS safety communications somewhat or very effective on social media.

Conclusions: Results suggest that social media may be a useful way to encourage safer behaviours around aquatic hazards in National Parks among social media users. We recommend communicating with social media users more frequently with messages that have been co-designed with end-users. Influencers may also represent a useful avenue to pursue but further research is needed to find the most effective communication strategy.

Introduction

Tourism has been transformed because of the integration of social media and smartphone technology, significantly altering traveller behaviour (1). Consequently, this combination has given rise to the ‘selfie-tourism’ and social media-driven tourism phenomena (2). These trends have been particularly evident in national parks, which have become popular backdrops for those seeking to elevate their social media presence with compelling images, earning ‘likes’ and ‘shares’. Tourists are increasingly drawn to places that promise visually stunning experiences, capable of generating significant social media engagement (3). This shift is fuelled further by travel influencers, whose large followings amplify the attractiveness of scenic spots such as national parks, attracting a new breed of visitors—the 'new tourists', who are keen to capture and share their own content, though they are often unfamiliar with the inherent risks and hazards of such locations (4).

In Australia, there have been multiple instances of accidents leading to fatalities as tourists attempt daring feats for social media content (4). For example, cliffside poses and seaside snaps have led to fatal falls and drownings (3–5). The presence of tourists unfamiliar with responsible travel practices (e.g., checking weather conditions, tidal conditions, or reading warning signs) heightens the need for targeted educational content accompanied by regulatory measures such as …. to manage the impact of this new wave of tourism.

As this new tourist (6) is driven by social media to visit picturesque destinations, we argue it may be prudent to “meet people where they are” and engage people via social media to communicate risk information about aquatic locations (7), as well as best practice methods to stay safe in these potentially hazardous locations. Research has shown that among parks users, social media, rather than an official Parks website, are more frequently visited for site and/or safety information (3).

Considering this, social media may be seen as both a boon and a bane to population health and safety. On the one hand, social media has driven an increase in misinformation, such as in the realm of vaccine hesitancy (8) and ideas of "wellbeing" that are unsubstantiated or even harmful (9), but on the other, social media may be a useful avenue to combat such misinformation by authorities capitalising on the reach that social media has amongst a captive audience (7,10).

However, (11). studies have suggested that social media has utility for behaviour change and modifying health harming behaviours beyond simply raising awareness (12). Harnessing social media for behaviour change involves utilising the interactive features of social platforms to encourage people to adopt new behaviours or maintain existing ones. These platforms allow users to participate and create content, engaging them within their social networks and fostering a sense of connection to the intervention. Social media strategies can create a sense of widespread support for certain behaviours (11,13). Campaigns on these platforms can promote social norms that encourage actions like getting vaccinated for COVID-19, eating healthy, staying active, or avoiding nicotine(12). Health promotion researchers can leverage social media as a powerful intervention strategy by creating engaging content such as videos, infographics, and interactive posts to widely disseminate health messages (14). The interactive nature of social media platforms allows for direct participant interaction through comments, messages, and live sessions, facilitating support and encouragement for healthy behaviours. Not only does this intervention style enable targeted and expedient messaging to be sent to the people of interest, but the approach is cost-effective compared to traditional media and can reach broader and more diverse audiences, including hard-to-reach populations, thereby enhancing the overall impact of health promotion efforts (15).

Theoretical Framing

The Theory of Planned Behaviour (TPB) (16) is particularly relevant in addressing behaviours such as ignoring warning signs at aquatic locations and engaging in risky

activities in natural environments, which can lead to fatalities and injuries such as due to drowning (17). The TPB posits that behaviour is driven by intentions, which are influenced by attitudes toward the behaviour, subjective norms, and perceived behavioural control. In the context of preventing accidental harm in natural environments, the TPB is a useful framework for designing health behaviour campaigns, as has been done in the context of promoting exercise (18), fruit and vegetable consumption (19), and vaccine uptake (20). More recently, the TPB has been extended to explore social media-based interventions (21). Specifically, smart technology (such as phones) use behaviours, via social media, influenced tourist satisfaction and revisit intention in Chinese tourism (22). Zheng et al. (2024) used TPB to highlight the significant impact of social media on revisit intention, suggesting strategies for enhancing tourist satisfaction and encouraging repeat visits through targeted social media engagement.

Operating on a similar premise, a social media communication campaign to discourage risky health behaviours could promote safety among tourists. Specifically relevant to the TPB, social media campaigns can be used to change attitudes by highlighting the dangers of ignoring warning signs and sharing real-life stories of incidents to evoke emotional responses. Subjective norms can be influenced by showcasing respected community figures, representatives of authoritative bodies, and peers who advocate for safety and caution in natural settings. Perceived behavioural control can be enhanced by providing practical tips and resources on how to stay safe, such as by providing information on safe swimming areas and information on identifying and responding to hazards. By addressing these components, TPB-based interventions can effectively reduce risky behaviours and promote safer practices in the natural environment.

Aims

As social media drives increasing numbers of people to aquatic locations in national parks and elsewhere, it is imperative to better understand the role that social media risk communication campaigns can have in reducing the incidence of risk-taking behaviour, and whether such communication campaigns can be effective at reaching these visitors.

Therefore, this study aimed to determine whether a social media risk communication campaign, based on TPB principles and co-designed with a national park land management authority in Australia, was effective at reaching social media users who visit aquatic locations in national parks and whether campaign messages influenced their behaviour.

Methods

Design and Ethics

This study employed a two-phase data triangulation approach, integrating two primary data sources. Firstly, a campaign was developed utilising a co-production approach (23,24) informed by community consultation through social media interactions and qualitative interviews (3). In the subsequent phase, data on service delivery of the campaign were collated, encompassing information gathered by the Queensland National Parks and Wildlife Service (QPWS) Visitor Experience team and the University of New South Wales Sydney (UNSW Sydney). In this phase, surveys were conducted with stakeholders involved in the campaign's development and implementation. The analysis combines descriptive examination of existing campaign materials with quantitative analysis of stakeholder experiences. This triangulated approach enabled a comprehensive exploration of the campaign's impact and effectiveness, capturing insights from both the design and delivery perspectives. Human research ethics approval was granted by the University Research Ethics Committee (HC230479).

Phase 1: Campaign materials co-design and promotion

Campaign materials were developed through findings derived from surveys of 509 social media users and 18 in-depth interviews (with social media travel and adventure influencers) which sought to ascertain how social media users liked risk messaging to be communicated to them. This included pilot testing ‘key messaging’ in the surveys to find out which would resonate most effectively with social media users. The messages which

resonated greatest, as defined by highest approval, were then included in the campaign material messaging.

Messages were included in three website landing pages which provided information on hazards at aquatic locations in national parks, and provided guidance on staying safe when visiting, as well as tips on safe social media activity in these locations. Messages were delivered via 10 paid (sponsored) Instagram ad posts and 6 organic (unpaid) Instagram and Facebook posts. The communication campaign was also promoted by QPWS via email direct marketing.

Prior to the commencement of the communication campaign, the QPWS and UNSW Sydney collaborated on a media release and media opportunity which involved promoting the campaign messages via the news media in Queensland.

Statewide campaign communication materials were promoted on Instagram and Facebook in Queensland from January 1st to 31st (which overlaps with the Queensland summer and school summer holidays when visits to aquatic sites in national parks typically increase). Sitte specific Southeast Queensland ads ran on Instagram from February 12th to February 18th.

Phase 2: Quantitative Surveys

Surveys were collected in person by the lead author from Saturday 17th to Sunday 18th February 2024 at Curtis Falls in Tamborine National Park in Queensland, Australia. The researcher set up a survey collection site at the entrance to the sole trail that led down to the waterfall (the main tourist attraction at the site). Data collection was originally planned to take place at Cedar Creek Falls on the same dates. However, due to severe storms, this site was closed over the study period, so the alternative site of Curtis Falls was chosen, which is a 5.7 km drive away from the former and is also within Tamborine National Park

Participants and recruitment

Participants were eligible to take part if they were aged 18 years or older, spoke and read English and were visiting Tamborine National Park during the data collection period. Potential participants were approached on site by the researcher and asked if they would like to participate in a survey. Participants were provided information on the study in the form of a participation information sheet and consent form and asked to provide verbal consent if they would like to take part.

Survey measures

Demographic survey items included age, gender, whether born in Australia, and main language spoken at home. The wider survey assessed aspects of social media-driven national parks visitation in Queensland and aimed to understand the type of content that social media users wished to see regarding risk communication. The survey tool can be found in supplementary file 1. Data collected from the social media communication campaign ads and website landing pages included engagements, post impressions, post reach, link clicks (which directed to landing pages with more information), post saves, ad recall, and shares, and comments. Comments were content analysed for sentiment via Content Analysis.

Analysis

Preliminary analysis of quantitative data was performed using Microsoft Excel, with robust analyses conducted using R. Descriptive statistics were generated for demographic characteristics of the analysed sample. To determine the significance of the observed differences in visitation to national parks attributed to social media across demographics, a Pearson's chi-square test for independence was conducted ($p<0.05$). Where multiple categories within a variable were analysed, a modified Bonferonni correction was applied (25).

Results

Sample characteristics

The in-person survey had a total of 50 respondents. Sample characteristics are summarised in Table 1. In total, 26 (52%) identified as female, 25 participants (50%) were born in Australia, 36 participants (72%) considered themselves to be tourists to the area, and 14 considered themselves locals. Sixty four percent (n=32)of participants spoke English at home with 18 speaking a language other than English. Half of participants (n=25, 50%) said they visited national parks a 'few times per year'.

Table 1. Sample Characteristics and Statistical Analysis of Social Media Attributed Visitation to the National Park

	Total number of sample (%)	**Social media attributed visitation to the national park**		**χ^2 (df)**	**p-value**
		Yes	**No**		
Variable	**N (%)**	**N (%)**	**N (%)**		
Total	50 (100)	16 (32)	34 (68)		
Age group				1.82 (3)	0.61
18-24	13 (26)	4 (31)	9 (69)		
25-34	19 (38)	8 (42)	11 (58)		
35-44	12 (24)	3 (25)	9 (75)		
45-54	6 (12)	1 (17)	5 (83)		
Gender				0.01 (1)	0.91
Man/male	24 (48)	7 (29)	17 (71)		
Woman/female	26 (52)	9 (35)	17 (65)		
Location Born				2.30 (1)	0.13
Australia	25 (50)	5 (20)	20 (80)		
Overseas	25 (50)	11 (44)	14 (56)		
Local or visitor[$]				0.00 (1)	1.00

Local	14 (28)	4 (71)	10 (29)		
Visitor	36 (72)	12 (33)	24 (67)		
Main language spoken at home				1.21 (1)	0.27
English	34 (68)	8 (24)	24 (76)		
Other	16 (32)	8 (44)	10 (56)		
Most used social media platform				3.92 (2)	0.14
Instagram	28 (56)	9 (32)	19 (68)		
Facebook	14 (28)	3 (21)	11 (79)		
Other	8 (16)	5	3		
How often do you visit national parks?				1.09 (3)	0.78
Few times per year	25 (50)	7 (28)	18 (72)		
Monthly	13 (26)	4 (31)	9 (69)		
Weekly	6 (12)	3 (50)	3 (50)		
Rarely	6 (12)	2 (33)	4 (67)		
Do you research national parks before you visit them?				0.77 (1)	0.38
Yes	42 (84)	15 (36)	27 (64)		
No	8 (16)	1 (12)	7 (88)		
Do you visit specifically to take photographs?				8.48 (1)	0.004*
Yes	11 (22)	8 (72)	3 (27)		
No	39 (78)	8 (20)	31 (80)		
Frequency of social media for reliance for visiting national parks				9.17 (3)	0.027*
Often	20 (40)	11 (55)	9 (45)		
Occasionally	17 (34)	4 (23)	13 (76)		
Rarely	8 (16)	1 (12)	7 (87)		
Never	5 (10)	0 (0)	5 (100)		
Have you ever taken risks to get social media content?				0.24 (1)	0.62
Yes	9 (18)	4 (44)	5 (56)		
No	41 (82)	12 (29)	29 (71)		

Would other people consider your social media content to be risky?				0.00 (1)	0.96
Yes	8 (16)	2 (25)	6 (75)		
No	42 (84)	14 (67)	28 (33)		

[$]Survey respondents self selected whether they were a local or visitor.

[*]Indicates statistically significant result.

Survey respondents were asked which mediums they prefer to receive risk-related information on when visiting national parks. The commonly selected responses were on-site signage at national parks (n=32; 64%), followed by social media posts from an official national parks account (n=22; 44%), and general risk information on national parks websites (n=18; 36%). Other selections included; visual examples of risks (photos, infographics, videos etc.) online (n=16), slogan-based messaging (e.g., "Stay Safe", "Stay On Path") (n=11), brochures/pamphlets (n=8), Posters (n=8), and T.V/radio (n=2).

Survey respondents were also asked from whom they would like to receive risk information. The most selected option was from ‘official national parks organisations’ (n=34, 68%), followed by ‘friends and family’ (n=19, 38%). Social media platforms directly (e.g. Instagram alerts) and government sponsored advice on social media were both chosen 13 times, with ‘influencers’ receiving a count of 5 and ‘other’ 1.

As part of this survey, the researchers wished to further understand the methods that social media users use to find places to visit in nature. Survey respondents were asked “When using social media to find places to visit in nature, which methods do you use?” the most selected method of using social media to search was via the search bar (n=26, 52%), followed by in-feed posts from accounts followed (n=15, 30%), and geotags (n=10, 20%). Further options included; posts shared with user (n=9, 18%), dedicated social media channels from Parks (n=8, 16%), none of these methods (n=6, 12%), hashtags (n=1), and other unspecified methods (n=3).

Survey respondents were asked “what type of content do you believe would be most impactful in conveying safety messages on social media?” Respondents most frequently

selected ‘Parks Ranger advice / National parks advice’ (n=27, 54%), ‘Visitor stories/testimonials’ (n=24, 48%), videos (n=23, 46%), ‘data and statistics’ (n=21, 42%), ‘infographics’ (n=15, 30%), ‘government advice’ (n=13, 26%), and ‘content from travel influencers’ (n=6, 12%).

Social media campaign metrics

Overall, the social media communication campaign reached approximately 962,000 social media users, with 83,800 engagements and 1.9 million impressions. There were 254 total saves of the posts, with 4,000 link clicks which took the user through to the landing pages which presented more risk information on the sites. The posts were shared a total of 102 times, and 55 comments were left by users across the communication campaign. Approximately 16,000 users would have been able to recall the ads (Table x). Queensland National Park and Wildlife Service also increased their social media following by more than 1,000 users during the campaign phase.

Table 2. Social media metrics, including reach and engagements, of the communication campaign materials.

Campaign material	Reach/views*	Link clicks (to land pages)	Engagements*	Ad recall lift	Comments	Saves	Cost (AUD)
General ads (statewide)	316k	3.1k	42k	N/A	18	201	$2,390
Southeast Queensland targeted ads	293k	470	18.9k	7.4k	N/A	25	$2,215
Cairns (Josephine falls) targeted ads	255k	490	21.8k	9k	N/A	14	$2,362

Organic content	97.9k	646	1.5k	N/A	57	N/A	N/A
Landing (web) pages supporting material	4155	N/A	N/A	N/A	N/A	N/A	N/A
Total	1,924,420	4706	84,200	16,400	75	240	$6,967

*reach refers to the number of people that saw the campaign materials on Instagram. Views refer to the number of people that viewed the website landing pages. Define engagements.

Statewide phase ads

The state-wide ads (not site specific) ran from 1 -31 January, 2024. Four paid (sponsored) ads were placed on Instagram targeting 18-35-year-olds Australia-wide, interested in travel and outdoor creators, national parks, visiting Queensland and nature. The ads placements displayed in Instagram feeds, explore, search results and profile feeds. The ad creative leveraged different formats including Carousels made up of both stills and gifs and Reels depicting video content. The state-wide ads conveyed a tourism-style narrative including content which promoted ‘chasing waterfalls’ and capitalised on the POV (Point of View) trend that is common on Instagram and TikTok. The state-wide ads directed users to visit a link which was a landing page on the QPWS website which provided more information on visiting QPWS locations and how to stay safe there, encouraging desired behaviours from park managers with an ad campaign goal of maximising the number of link clicks.

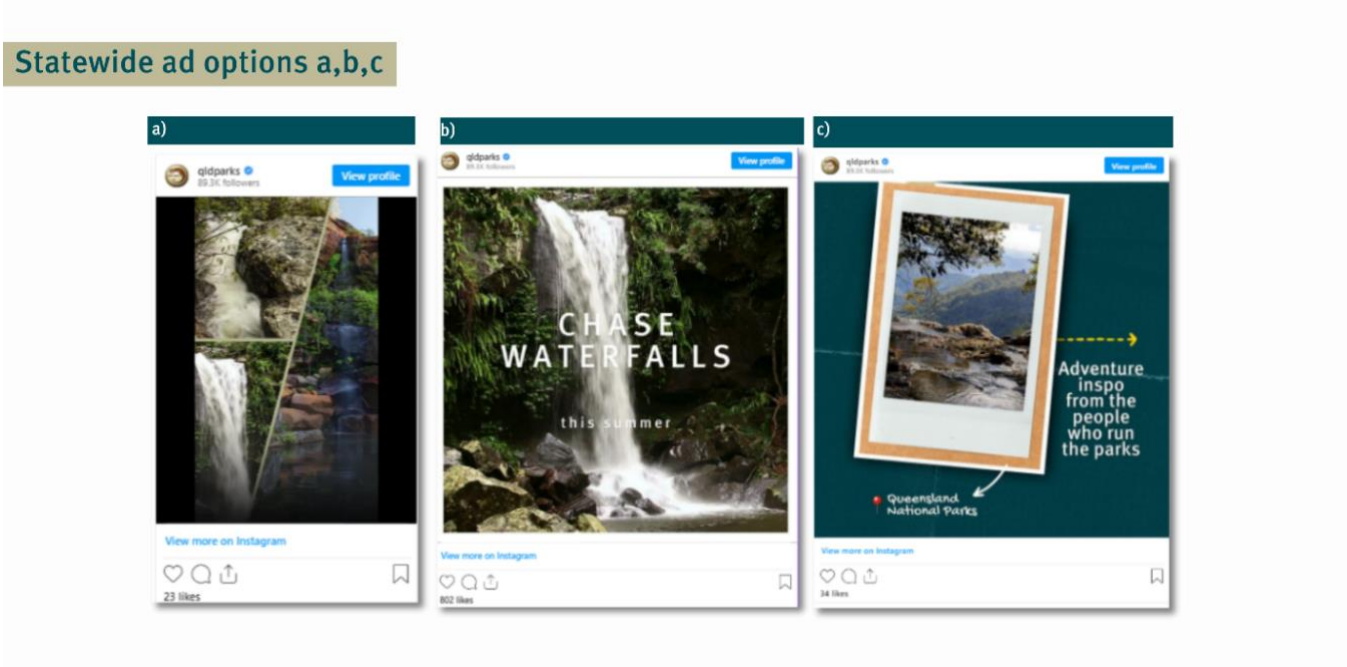
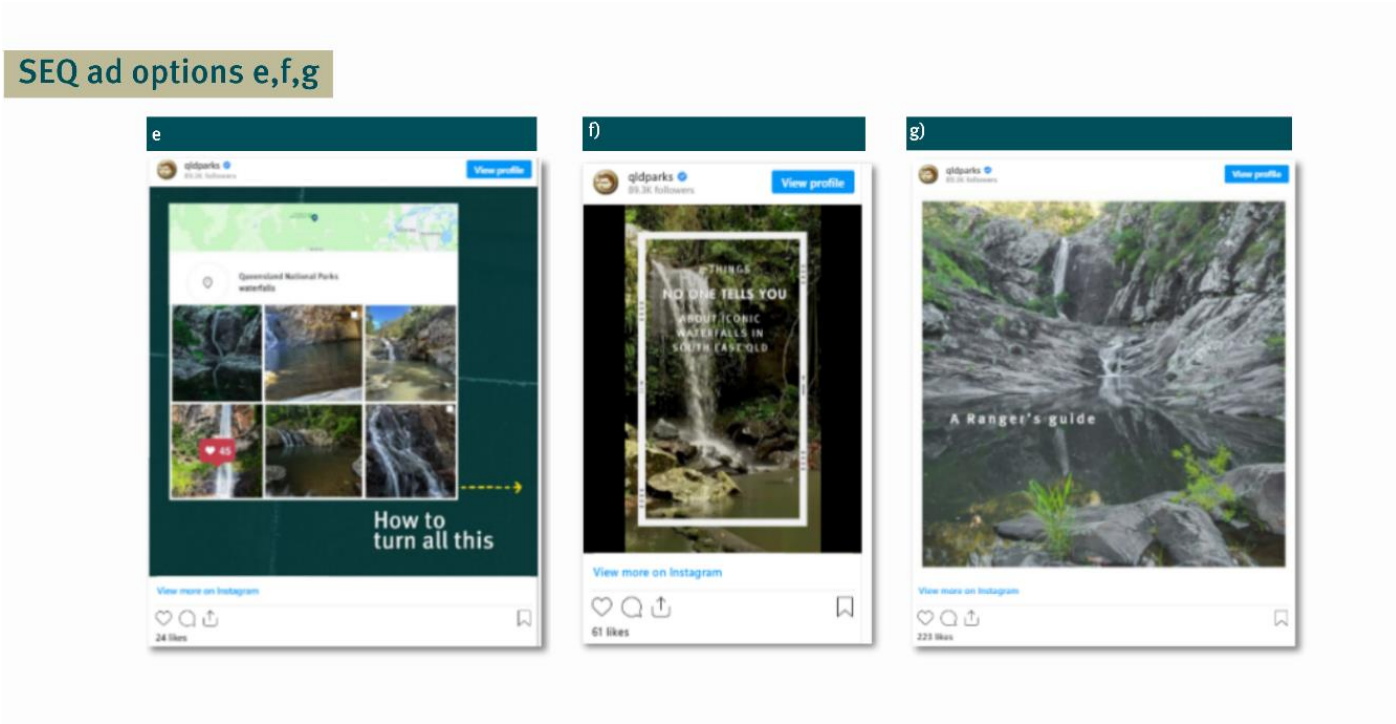


Figure 1. Panel showing statewide ads a, b and c that were displayed to users on Instagram and Facebook.

Targeted site-specific Instagram ads

Site specific ads ran for users who were geolocated to the survey site of Curtis Falls (Tamborine National Park). These ads contained more information that was site specific including restricted access area and waterfall safety advice, realities of how busy these areas can be and other location recommendations to disperse visitor traffic to other national park locations.



335

336 **Figure 2. Panel showing Southeast Queensland campaign ads e, f, g)** ***ad d was not**
337 **offered to those surveyed as its ad reach was deemed too low.**

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339 **Ad Recall during survey at Curtis Falls**

340 Participants were asked if they could recall seeing any of six images that had been posted
341 on Instagram in the previous 1 week. Participants were able to recall more than one of
342 the images. Sizteen out of 50 respondents (32%) surveyed recalled seeing a post on
343 Instagram. The most recalled Post was Post A. Post A was recalled 14 times. Post F was
344 recalled 4 times. Post C was also recalled 4 times. Post E was recalled 3 times. Post B
345 was recalled 2 times. Post D was recalled 1 time.

346

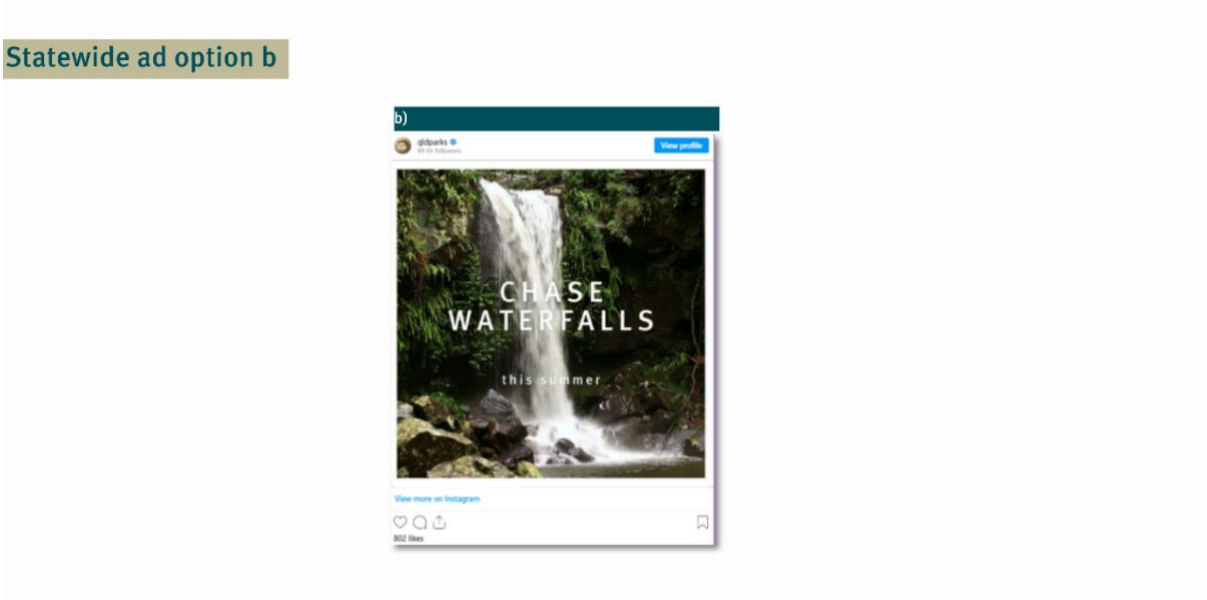

Figure 3. Ad B. In response to the question "what interested you about the post you saw?" respondents chose, 'the caption' (n=6, %), 'it's somewhere you want to go' (n=3, %), 'the travel/adventure information' (n=3, %), 'nothing' (n=4).

Content analysis of comments on communication materials

Fifty-five comments received by users on Instagram were thematically analysed for their response to the communication materials (Table 3).

Table 3. Themes found in content analysis of user comments on communication campaign posts.

Theme	Responses N (%)	*Example response*
Frustration with messaging	**11 (20)**	*"Thanks for the tip guys, I'll just post photos of rangers looking at trees and at offtrack lookouts to advertise our beautiful parks. Got it"*
Agreement with message	**11 (20)**	*""Once you get there, take our signs as a sign to stay safe" - people please follow the signs. I see so many 'influencers' risking injury just to get the best shot, or people who think the no dogs/pets signs don't apply to them!"*

Criticism of Post and Tone	**13 (24)**	*“your post came across very passive aggressive. FYI. And that wasn’t the message that people are reading. I would love for you guys to start doing more workshops or collaborations with local artists or photographers that can provide you guys with that exposure and education all in one”*
Influencer Criticism and Authenticity	**3 (5)**	*"I see so many 'influencers' risking injury just to get the best shot."*
Photography and Artistic Expression	**3 (5)**	*"It is most likely influenced by their environmental surroundings and creative mind in what they see. This allows people to become artistic individuals within such wonders of nature - Art is an expression of one’s views - and should be celebrated as such."*
Park Management and Visitor Experience	**3 (5)**	*"Time in nature makes space for life’s best moments, so get out there, be safe and enjoy them."*
Other	**17 (31)**	*“Queensland National Parks what is a "travel inspo"?”*

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Discussion

This study utilised data from both online and offline sources including from 50 in-person surveys conducted with visitors to a Queensland national park, and data from the social media communication campaign, including comments from users who viewed the campaign materials. The communication campaign was designed to combat the plethora of influencers and travel posters on Instagram who risk injury and death, and cause management issues by mimicking dangerous behaviours they have seen online or to take their own "Insta-worthy" photos (3). The campaign took the approach of promoting safe visitation to Queensland national parks statewide, and then specifically at two popular aquatic attractions in two national parks. For relatively little cost, this social media communication campaign was able to reach a total online audience of more than 1.1million people. Unfortunately, due to severe weather, survey data collection was only able to take place at one park location.

Although the materials in this study were co-designed with a land management authority and informed by social media user surveys and influencer interviews, content analysis of the user comments on the materials highlighted a mismatch between what users like and want to see in risk communication materials and what was provided. Thematic analysis indicated around half of the comments determining the communication materials to be frustrating or of a negative sentiment. We note that by integrating TPB principles (26) more fully, social media campaigns can be tailored to address these factors—changing attitudes by highlighting the dangers of ignoring warning signs, influencing subjective norms through respected community figures, and enhancing perceived behavioural control by providing practical safety tips. Aligning our findings with the TPB underscores the importance of aligning communication strategies with users' preferences and behaviours to promote safety effectively. Therefore, we recommend that for effective risk communication in an aquatic national park environment it is essential to co-design messages and materials with end users(7,10,27). It also highlights a mismatch between what land managers think visitors and social media want to see, and what they want to see (3).

Results from surveys undertaken at Curtis Falls showed that social media plays a significant role in influencing visitation patterns. Specifically, the survey revealed that a third of all respondents attributed their visit to seeing content on social media. Additionally, the Chi-square analysis highlighted that visiting specifically to take photographs and the frequency of social media reliance for visiting national parks were significantly associated with social media attributed visitation. This indicates that land managers should prioritise communicating risks to those social media users who wish to visit national parks specifically to take photographs. This cohort may be the most engaged and actively searching for relevant social media content, and therefore this cohort is well placed to receive risk information on photography related risks (e.g. such as selfie injuries) (4).

These findings are in line with our previous research which suggests that national parks visitation has been increasing due to photography and social media instigated sight-seeing. Land managers have attested to a change in visitor behaviour on their parks and purported that this change is driven by social media and tourists' search for "instagrammable" and photogenic locations, that sometimes put them in situations of increased risk (3).

These insights have practical implications for land managers and policy makers. To mitigate the risks associated with social media-driven visitation, it is crucial to involve social media users and influencers in the co-design process of risk communication materials. This collaborative approach can ensure that the messages are engaging and resonate with the intended audience, ultimately promoting safer behaviours and enhancing visitor safety in national parks.

Recommendations for future risk communication campaigns on social media

Although this study used data and insight gained from previous research with land managers (3), influencers, and social media users, the current study did not directly co-design the communication campaign with the targeted audience, instead the co-design

was undertaken between the research team and the land manager. Future campaigns should include the targeted demographic in the co-design process, if feasible, as previous research has shown effectiveness of this methodology in the field of water safety and injury prevention (27). Nevertheless, anecdotally, the Queensland National Parks and Wildlife Service Visitor Experience Team indicated that this communication campaign had been more successful than their previous attempts to communicate summer travel safety messages to parks visitors who were driven to sites by social media content which was acknowledged by a greater engagement on their social media posts and an increase in their follower count.

While not possible in the current pilot study which focused on self-reported behaviour change, collecting data on actual behaviour, and changes to behaviour, such as adherence to safety guidelines (e.g. warning signs) and a reduction in risky activities, would be beneficial to further understand the real-world impact of such a safety communication campaign. This could be done in the form of in-person or remote camera observational studies. Furthermore, evaluating such a communication campaign across different national parks and natural settings will help understand its effectiveness in various contexts and environments, and among potentially different cohorts of visitors.

The study highlights the importance of integrating digital and physical information sources to reinforce safety messages. Future campaigns should ensure that consistent messaging is provided through on-site signage, which should be clear and visually engaging, placed at key locations within national parks to remind visitors of safety guidelines. Official websites should offer comprehensive information, easily accessible to visitors planning their trips. Additionally, continuous engagement with visitors through social media posts, stories, and ads should leverage the interactive features of these platforms. Crucially, the tone of these messages needs to resonate with the users and therefore a co-design process would be valuable. Influencers and respected community figures play a crucial role in shaping social media trends and behaviours (9). Future campaigns should collaborate with travel and adventure influencers to amplify safety messages and reach a broader audience, leveraging their social capital on social media (7).

The dynamic nature of social media requires ongoing monitoring and adaptation of communication strategies (7). Future efforts should include the use of real-time analytics to track engagement, reach, and sentiment, allowing for quick adjustments to the campaign. Regularly soliciting feedback from users in an iterative manner will help identify areas for improvement and ensure the messaging remains relevant and effective. Implementing a cycle of continuous improvement, where each campaign builds on the insights and lessons learned from previous efforts, will contribute to the development of more effective social media risk communication campaigns.

Limitations

During the survey data collection phase of this research, the weather proved a significant challenge. Unfortunately, surveys were only successfully collected from one of the two planned sites. The first author also attended Josephine Falls in Wooroonooran National Park, Far North Queensland, to collect data, but due to severe and torrential rain over the data collection period no surveys were able to be collected.

Conclusion

This study highlights the dual role of social media as both a driver of increased visitation and a potential tool for effective risk communication. By leveraging the reach of social media and incorporating user feedback, land managers can better address the challenges posed by social media-influenced visitation and ensure the safety and enjoyment of all visitors to national parks.

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