

Car park signage for the prevention of roadside litter

Case Study

Introduction

Over the Spring and Summer of 2019, a collaboration between Keep Scotland Beautiful, University of Stirling Management School and Loch Lomond and the Trossachs National Park Authority (LLTNPA) trialled a series of behaviour change interventions targeting car park litter, as part of our 'Give your litter a lift' campaign.

This case study describes the approach, results and learnings from this work.

Background

Launched in November 2016, the 'Give your litter a lift, take it home' campaign aims to address the nearly 50 tonnes of litter dropped on Scotland's roads each year. It does this through a combination of awareness raising and infrastructure interventions aimed at changing the behaviour of those responsible.

Find out more at:
www.KeepScotlandBeautiful.org/roadside

This project was conceived as the research dissertation of a Behavioural Science MSc Student from the University of Stirling Management School. The aim was to evaluate the effectiveness of a series of behaviour change interventions in reducing roadside litter.

The interventions consisted of three different anti-litter messaging approaches, carried on signage in a car park setting: (a) original campaign messaging (b) messaging designed to appeal to social norms and (c) messaging designed to appeal to social identity. Further descriptions of each can be found in the boxes to the right.

Behaviour change messaging approaches:

A) Original

The original campaign signage featuring the campaign call-to-action ('Give your litter a lift, take it home') and illustrated with a litter character strapped into a car seat (i.e. getting a lift).



B) Social norms

A polling stat was added to the sign (YouGov, 2018) alluding to a social norm whereby a majority of people think roadside litter creates a negative impression of our country and therefore that littering our roads is not socially acceptable.



C) Social identity

The addition of a Saltire in the background was intended to appeal to a sense of national (social) identity. This could build on the effect of the social norm activated by the stat, for visitors who value Scotland, regardless of their national identity.



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Research took place between April and June 2019. The interventions were tested at three car parks, identified by campaign partners Loch Lomond and the Trossachs National Park Authority, at their Bracklinn Falls, Inveruglas and Firkin Point attractions respectively. The sites were chosen for having an ongoing litter problem; the messaging signs were expected to help reduce this. By comparing three different messaging approaches we hoped to test the idea that appealing to social norms and identity would increase the effectiveness of our signage.

Experimental design

Each messaging approach was tested at each of the three sites in sequence, in order to maximise the amount of data collected as well as controlling for any extraneous effects that each site might have on results. Each approach was rotated from site to site in random order, in order to control for any effect of the intervention’s progression over time. An overview of this design can be seen in Table 1.

Each intervention consisted of three signs carrying the given messaging approach, attached in places identified at each site in advance, on the basis of practicality and visibility.

The impact of each messaging approach on littering behaviour was measured over two monitoring phases: a three-week period of baseline measurements from all sites, followed by a nine-week period of intervention testing, allowing each approach to be tested at each site for three weeks (See table 1).

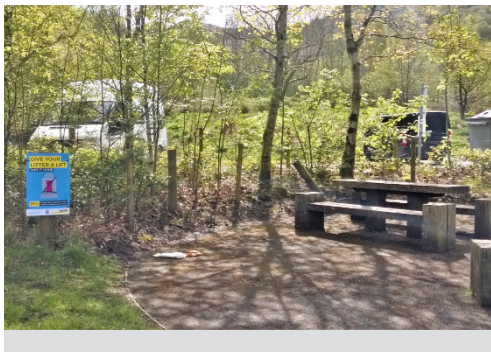


Table 1: Intervention and monitoring schedule

Time period	Bracklinn Falls	Inveruglas	Firkin Point
Baseline (1 April 2019 – 28 April 2019)	No signage		
Intervention 1 (29 April 2019 – 19 May 2019)	Original	Social identity	Social norms
Intervention 2 (20 May 2019 – 09 June 2019)	Social norms	Original	Social identity
Intervention 3 (10 June 2019 – 30 June 2019)	Social identity	Social norms	Original

Littering at each site was measured on the basis of the amount of litter collected by waste management staff during their daily cleansing operations. This was recorded in $\frac{1}{4}$ **bag measures (full bag = 1)**. At the Bracklinn Falls site, monitoring was carried out by the local Callander community group on a weekly basis.

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Results

Unfortunately, due to a combination of low litter levels overall and fewer data points due to weekly rather than daily monitoring, the data from the Bracklinn Falls carpark was discounted from this analysis. It focuses instead on the more robust results obtained from the Inveruglas and Firkin sites, where all three messaging approaches were found to have an impact in reducing the amount of litter on the ground.

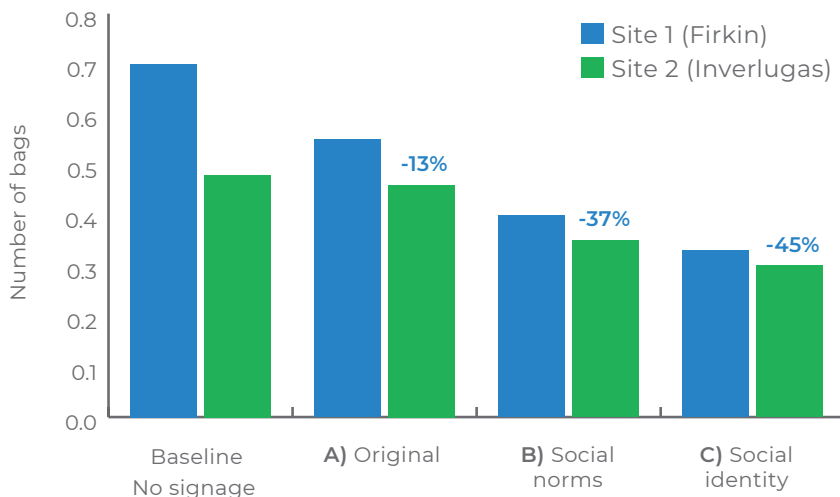


Figure 1- comparing litter levels recorded for the three intervention approaches against the baseline, at the Firkin and Inveruglas sites

The most effective approach at both sites was the 'social identity' messaging, with an average litter reduction of **45%** against the baseline. The 'social norm' messaging saw a **37%** average litter reduction across both sites and our original campaign messaging a reduction of **13%** reduction (figure 1).

Because the experimental design controls for any temporal effects, these results can be attributed to the messaging interventions themselves, thus demonstrating that (a) messaging signage is an effective tool for reducing the incidence of littering behaviour and (b) appealing to social norms and social identity adds value to this approach, helping to strengthen impact.

In interpreting and seeking to apply these findings in a different context, it's also worth considering the demographics of the audience in this study, likely a combination of both Scottish and international tourists, looking to enjoy some natural scenery.

Finally, it is worth noting that these results were not found to be 'statistically significant', which means that we cannot infer with any certainty that the trends observed were not simply due to chance. However, based on experience from similar studies, we are happy to take them forward as considerations for future work.



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"Litter is a multifaceted problem and this study shows the value of collaboration in addressing it.

We are grateful to our MSc student Daniel Maraffi, for carrying out essential background research, site scoping and data collection, as well as leading on the conceptual and experimental design that shaped the project. By combining academic insights with the expertise of the Park Authority and local community and, crucially, their help with delivery on the ground, we were able to carry out a robust study with valuable results for all.

We look forward to applying the insights gained in our ongoing litter prevention work."

Georgina Massouraki, Campaigns Officer, Keep Scotland Beautiful.

"Litter has unfortunately been a long standing issue for Loch Lomond & The Trossachs National Park, which is why we have committed to tackling it in our 5-Year Plan. We are keen to work in partnership with national experts like Keep Scotland Beautiful to ensure that best practice for litter prevention is reflected here in the National Park. This study was a great example of how people can be 'nudged' towards the right behaviour, something we have previously seen with on-bin signage, so we will continue to look for opportunities to use this technique in our litter prevention work. I want to thank Daniel, the student who led this study and Cleaner Callander for carrying out the monitoring for us."

Nik Turner, Litter Prevention Manager, Loch Lomond and Trossachs National Park Authority.

"Opportunities such as this enable our students to make a real business impact, whilst at the same time developing key skills which are essential in their future graduate careers. We were delighted to be able to further develop our strategic partnership with Keep Scotland Beautiful through this student consultancy project, and look forward to building upon this through other mutually beneficial initiatives which are currently being explored."

Lynn Whiteside, Employability Manager, University of Stirling Management School

Keep Scotland Beautiful would like to thank Loch Lomond and the Trossachs National Park and University of Stirling Management School.



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Please get in touch with us if you would like to find out more about our work and what we can do for you. Tel: 01786 471333