Litter Innovation Fund (LIF)

Final Report

Further to your award it is important for us to evaluate how effective your research project has been and if the wider aims of the fund have been achieved.

The purpose of the Litter Innovation Fund is to support councils and communities in the development and evaluation of innovative approaches to tackling litter, which have the potential to be implemented more widely. The Litter Strategy also encourages people to use and contribute to online best-practice 'hubs', to help test and refine new innovations, share learning and extend the implementation of best-practice.   It is therefore a condition of your award that you provide a full report of your project, to share in the knowledge and insights gained from your experiences and, if successful, to enable others to replicate it.

To assist these two aims, we require you to complete the following document. Section A sets out a template final report which is designed to provide the information needed to identify interventions with the potential for wider application, and to enable your project to be implemented by others if appropriate. Please consult the monitoring and evaluation guidance for further help on answering any questions. You can also contact us at LitterFund@wrap.org.uk.

As set out in the guidance to applicants once we have signed off this report, successful applicants are expected to make the information from Section A of this template available online, to share best practice, enable others to replicate your project and learn from your experience. Information that you share with us may also be subject to requests for disclosure by Defra or MHCLG under the Freedom of Information Act or Environmental Information Regulations. It is likely therefore that information from this report will be released into the public domain. If there is any information contained in your report that you wish to remain confidential or regard as subject to copyright or commercially sensitive, please clearly identify it. In particular, please do not include personal data of any individuals.

The completed form should be e-mailed to litterfund@wrap.org.uk

LIF Reference Code	ENG102-xxx	**Date**	1 February 2019
Organisation Name	Hubbub	**Completed by**	Alex Robinson

Project Abstract
Please provide an overview of this report, up to 400 words (Grant funding amount received, Aims, Results and Scalability of the project)

Grant funding amount received:
- £9,650

Aims:
- To raise awareness of the problem of litter among football supporters in the Brighton area, particularly targeting the main group responsible for littering in Brighton – men aged 25-69.
- To use innovative behaviour change techniques, such as social norming, gamification and nudge theory.
- To use creative communications to widen the reach of the message
- To create a M&E framework to determine the impact of the campaign, such as any changes in attitude amongst the target audience, and whether there was a reduction in litter and littering behaviour.

Results:
- Engagement with fans on the launch day was very successful: over 600 people engaged with our litter referees and/or talked to our volunteers at the Trashconverter van (which swapped trash for prizes from the club shop). The project was featured in the match day programme as well as on the Brighton & Hove Albion and council websites, Hubbub social media and more.
- The installation was very popular and had constant attention before and after the match (though we did not have the resources to count the exact number of interactions). The football club were very happy with the project and have installed the Goal Bins permanently at their training & community pitches.

Scalability:

- Some interventions are easily replicable: the 'Litter Referees', 'Trashconverter' stand and a sculpture made from litter could be successfully deployed at any football ground.
- It was extremely difficult to get high quality baseline M&E data as each match was played under different conditions.
- The results are inconclusive about the effectiveness of the interventions.
- We hope to develop our approach with other Premier League clubs next season and continue to share our results.

Final Report

What did you want to achieve?
Please set out the project context, purpose and aims. This will have been laid out in your original application. For sharing purposes please include this, and any clarification needed

- What specific problem(s)/area(s) did your intervention target, and why did you choose it? Please include a description of the local context.
- What did your intervention aim to achieve? Set out the intended outcomes and impacts.

Research conducted by Hubbub for Brighton & Hove Council showed that, in the Brighton area, men are more likely to litter than women and littering is most prevalent among the 25 to 69 age group. From this insight, Brighton & Hove City Council identified football fans as a key target audience in their litter-reduction strategy.

Hubbub, Brighton & Hove Council and Brighton & Hove Albion FC worked together to engage adult football fans on the issue of litter. Together we aimed to raise awareness of the vast amounts of litter in and around the stadium, to move social norms away from littering, and nudge supporters to bin their litter in and outside of the football grounds. The combined activities aim to reducing littering behaviour amongst football fans.

Our intended aims were to:

- Collect all the litter in and around the stadium after the Wolverhampton Wanderers football match on 27 October 2018.
- Create a football-related installation made out of the collected litter, and display this in the stadium grounds on the 27 October, creating visibility for the installation at the Wolves match.
- Communicate the size of the litter issue and costs related to litter via the club's leader-board, announcements at half-time, media and the social media channels of all partners.
- Organise a rubbish-themed penalty shoot-out competition with football related prizes, playing to the fans' competitive side.
- Install goal-shaped litter-bins, nudging fans to bin their litter.
- Have referees walking in and around the stadium on match days giving cards to people who litter and rewarding those who use the bins.
- Create inspiring materials for the Football club, Council and other local influencers to communicate about the campaign on and offline.
- Engage media, to increase the reach of messaging.
- Create a measurement and evaluation framework to measure the impact of the campaign among football fans, any changes in attitude amongst the target audience, and whether there was a reduction in litter and littering behaviour.

Our ambition was to create awareness of litter in and around the stadium and to encourage football supporters to bin their litter.

What was your project plan?

- Describe the project plan – what you intended to do, including details of intervention site(s), timelines, use of resources (e.g. materials) and involvement of people and other organisations. Include details of a control or comparison site, if applicable.
- How did you expect your intervention to achieve its aims and intended impacts (see the 'intervention pathway' diagram in the Monitoring & Evaluation guidance)

The project ran from 22 September 2018 to 24 November 2018 in three stages:
1. 22/9-26/10: Pre-campaign: measurement and planning (comparison)
2. 27/10: launch day, including all interventions
3. 24/11: post-campaign, measurement and assessment (comparison)

Location:
It took place in and around the Amex Stadium, Brighton & Hove Albion's home ground (as well as online and on social media).

Partners:
Our partners (with roles in brackets) were:
- Brighton & Hove Council (volunteer support for M&E and launch; provided Trashconverter; PR support)
- Brighton & Hove Albion FC (collected litter for sculpture; PR & media support; gifts for Trashconverter from club shop; all permissions; waste collection and disposal)
- King's College London (M&E)

Key resources:
- Custom Hubbub-designed Split Goal Bins for litter and recycling
- Football sculpture (made of litter collected at Brighton vs Tottenham Hotspur match on 22/9)
- Trashconverter (a mobile cart which gave out prizes to fans who binned or recycled their litter correctly)
- Litter Referees (inc referee costumes, green cards, whistles etc.)

Route to impact:
- Nudge techniques: the split goal bins were designed to make the choice to bin litter correctly easy and fun
- Salience: split goal bins and all interventions were bright and prominently located (rather than on the perimeter as is usually the case)
- Fun theory: litter referees brought the litter issues home to fans in a way that put a smile on their face
- Visualisation: the sculpture was made of litter from the stadium
- Incentivisation: fans were rewarded with gifts from the club shop for binning or recycling their litter correctly.

What was innovative about this project?

- Describe how your project differs from existing approaches, or extends/develops previous research.

The campaign was a unique collaboration between Hubbub, Brighton & Hove City Council as the operational partner, and Brighton & Hove Albion FC as the key influencer. It was authentically rooted in football and football culture, with staff and volunteers with a passion for the game (and often Brighton as a club!), and we ran a campaign in a way that football fans could relate to and that engendered pride in the club and stadium. It was, we believe, the first time that a range of behaviour change techniques were trialled at a major football stadium.

What did you do?

- How did you implement your project in reality? Please describe what happened during your project.
- Did anything change from your original plan, and if so, why? Did you encounter any problems or unexpected issues that might have affected your results?
- How did people react during the project?

To enable others to replicate your project, please include images of any key signage, posters, graphics etc. that you used, as well as photographs, maps or other essential information to show how interventions were deployed. Documents can be provided as appendices if appropriate. The information you provide should not be subject to copyright and should be able to be shared freely

The first thing to note is that our project was delayed from the initial planning. Delays with the LIF funding confirmation meant we had to push the project back from the Spring of the 2017/18 season to Autumn/Winter 2018/19 season. This meant that the project felt less like the next phase of the existing Streets Ahead litter partnership with Brighton & Hove City Council, and more like a standalone event. It may have also reduced the familiarity of the messaging and brand for the Brighton populace.

Broadly speaking, we were able to implement our original plan. This involved creating improved infrastructure for litter and recycling at a Brighton home game and engaging with the fans in fun ways (but with serious intent).

There were several changes and challenges from the original plan that may have affected the project:
- The football club cancelled one of our key interventions a few days before the launch due to clashing demands from a community event they were running. We had planned to run 'recycling penalty shoot outs', which formed part of our funding application. Unfortunately, the club allocated the goals and space to their community day. We went back to the drawing board and designed a new game called "rubbish control", an educational game

which tested both football skills and recycling knowledge! Shortly before the event the club told us they could no longer give us the space for this game. This was our most in-depth intervention.

- The weather was a much larger factor than we anticipated. Two pre-campaign litter counts took place under very different conditions and had very different findings: one was heavy rain and cold, one was dry and warm. When you add in that one was on a Saturday afternoon and the club lost, the other a Friday night and they won, you see it starts to become hard to get consistent data. As the data from the wet match was so flawed, we recommend disregarding it. Because the club only play at home 1-3 times a month there simply weren't the opportunities (or budget) to keep going back to build up more and more data.
- The cleansing team's efforts, while impressive, were not consistent, which almost certainly affected our counts. On the warm, dry Friday evening match, for example, they were much more proactive.

People's reactions were very interesting. On the baseline count days our M&E team were subject to some verbal abuse from football fans (nothing serious but questioning why they were going around counting litter), so we had some trepidation about the launch day itself. But on the day the fans were incredibly supportive, wanting their photos taken with the installation and eagerly collecting 'green cards' from the Litter Referees so they could trade them at the Trashconverter for prizes from the club shop (magnets and badges and suchlike). While the refs were most popular with families, because they were themselves 25+ football-loving men they were also able to talk to our core audience with credibility.

Please see Appendix A for pictures of the project.

How did you monitor your intervention?

Indicators:
- What indicators did you set out to monitor, in order to help understand if your project achieved its intended outcomes and aims?
- Were you able to establish a baseline, i.e. by collecting information on the original state of your indicators, before your intervention began?
- What were your intended indicators of success?

Core Evaluation Objectives
1. Has the campaign had an effect on litter?
2. What was the level of engagement with the public?

Participants and Test Site

This exercise was designed to target adult men (25-60) by engaging with them via their favourite pastime, football. The test sites were 1) the walkway area from Amex Stadium to the Falmer train station and 2) the East Lower Concourse (home team concession area) which includes a family section and has a seating capacity of 5000.

We aimed to track the number of people we engaged with and who saw the campaign, and to track the changes in litter counts.

Timeline

This evaluation exercise took place over three stages; 1) baseline, 2) campaign and 3) post campaign.

Date	Match	Exercise	Actors
Stage 1: Baseline			
September 22, 2018	Tottenham Hotspur	Litter counts and general observations.	King's College, council volunteers.
October 5th, 2018	West Ham United	Litter counts.	Council volunteers
Stage 2: Campaign			

October 27th, 2018	Wolverhampton Wanderers	Data collection on trash converter and litter reward scheme, shoot-out participation, litter count.	Hubbub, King's and council volunteers.
Stage 3: Post Campaign			
November 24th, 2018	Leicester City	Litter count	Kings and council volunteers

Baseline

A baseline study was executed to conduct an analysis of the efficiency of the #StreetsAhead Football Phase. This baseline consisted of two litter counts during two home games at the Albion Amex Stadium. These counts were done in two phases; first **outside** the stadium immediately after kick-off (map 1, page 9), and second **inside** the Lower East Stands (map 2, page 10) soon after the end of half time. Table 1 below outlines the data collection days, litter counts and significant variables.

Date	Kick Off	Opponent	Outcome	Weather	Litter count	Attendance1
Saturday, 22/09/2018	17:30	Tottenham Hotspur	Loss	Rain	361	30,531
Friday, 05/10/2018	20:00	West Ham United	Win	Dry	676	30,544

General Litter Profile

In total, 1,037 pieces of litter were counted and categorised across the two sites. The most commonly found type of litter were cigarette butts, followed by food packaging and drink containers and accessories.

It is important to note that the profile of litter was quite different between inside and outside counts. Outside the litter consisted mostly of cigarettes, indoors we have a variety of food packaging and drinks and accessories. Figure 2 below illustrates the difference in proportion of litter types inside and outside the stadium.
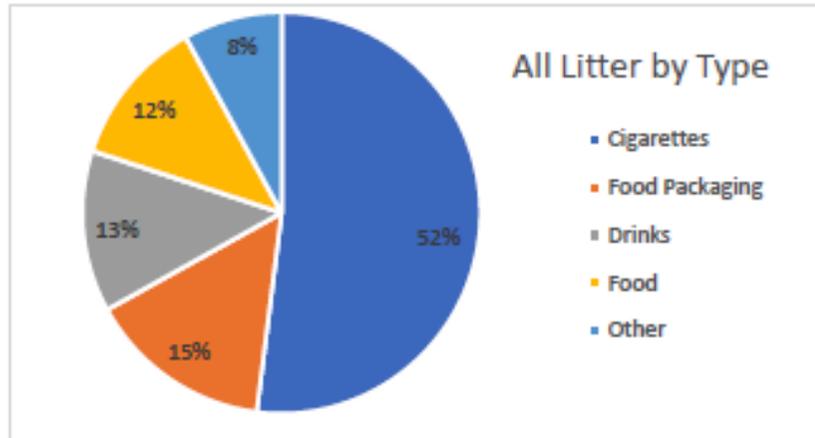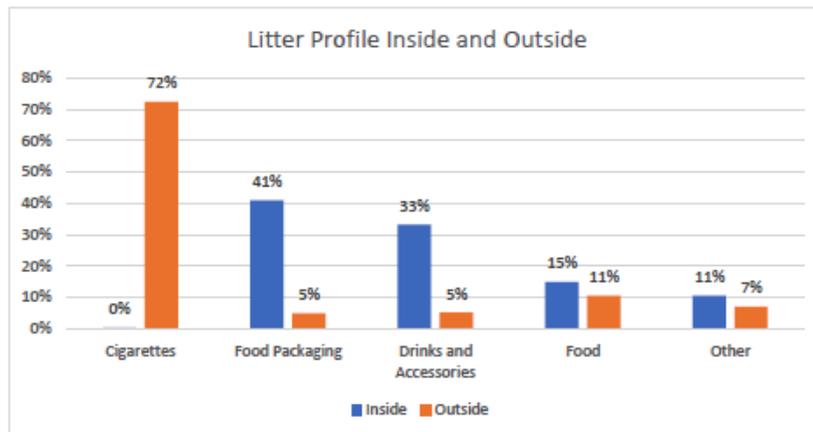
Figure 1 All litter by type

Figure 2 Litter profiles of inside and outside the stadium

Breakdown of Indoor Litter

Indoor litter was far more varied than outdoor litter; which was mostly cigarette ends. The two most common types of indoor litter were drinks and food packaging. Figure 3 below provides a more detailed breakdown of these two categories.
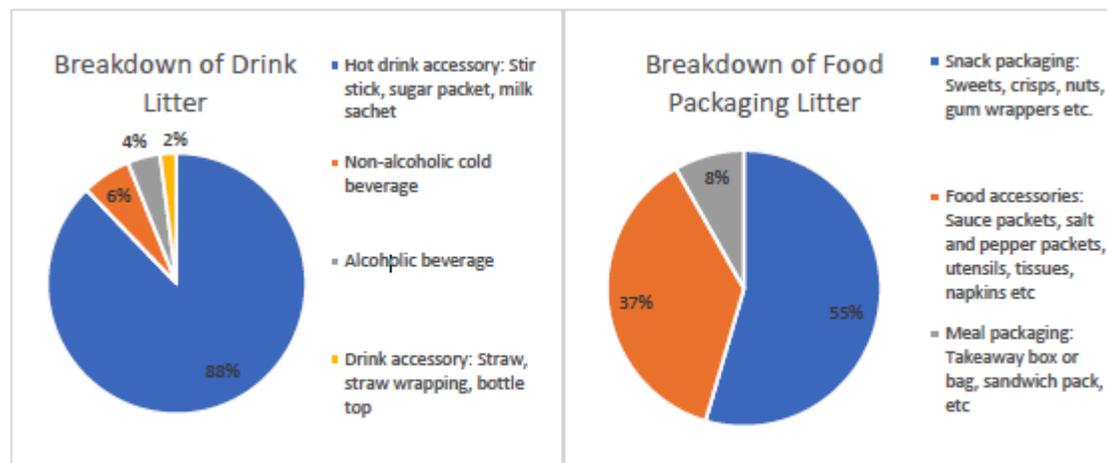

Figure 3 Breakdown of common indoor litter types

Other influences and understanding causality

- How did you try to understand if any changes that occurred in your indicators were caused by your project, rather than other external factors?
- Were you able to identify and monitor a comparison or 'control' site?
- Describe the context and what happened during your intervention e.g. description of the weather, any events, any other campaigns (local or national), etc.
- What, if any, data/information did you record on external factors that may have influenced your data?
- How did you attempt to mitigate against them?

Due to the nature of the project we were not able to establish a control site. What we did discover, was quite how significant the weather was as an external factor.

During the dry day more litter was found outdoors. This figure could also have been influenced by researcher's attention to detail as the rain caused us to count hastily. Weather also influenced the amount of cigarette litter, where more were found when conditions were dry.
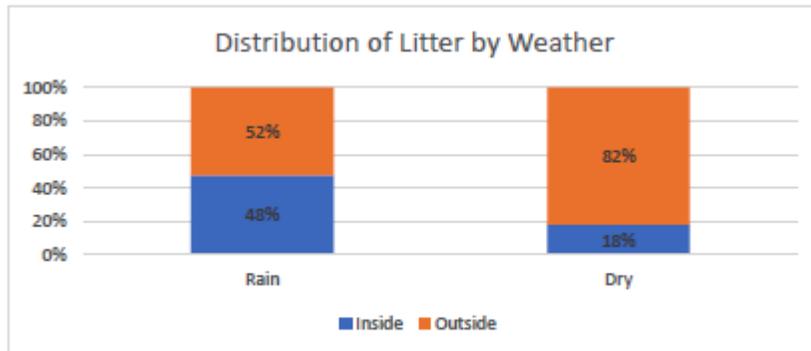

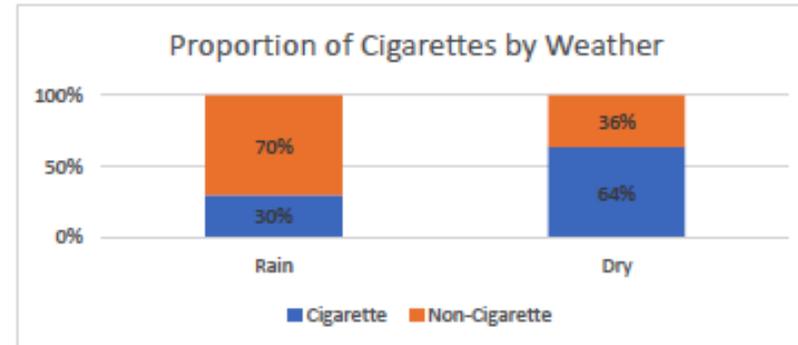Figure 4 Proportion of indoor to outdoor litter by weather

Figure 5. Outdoor litter breakdown by test day

Weather had only a little influence on the amount of indoor litter (wet n=172, dry n=123). Figure 6 below illustrates that the litter profile is fairly uniform between both days with the exception of "hot drink accessories"; which were the main item to influence the increase of indoor litter during wet conditions. (Hot drink accessories refer to sugar and milk packets as well as stir sticks, note that not one hot drink cup was found littered.)
In our counting exercises cleansing staff did not collect litter and I feel confident that their influence on the sample is not significant.
Behaviour inside the stadium is however influenced by a variety of factors, 1) distribution of responsibility when in a crowd, 2) deflection of responsibility when in a closed environment that has designated cleansing staff and 3) the consumption of alcohol.
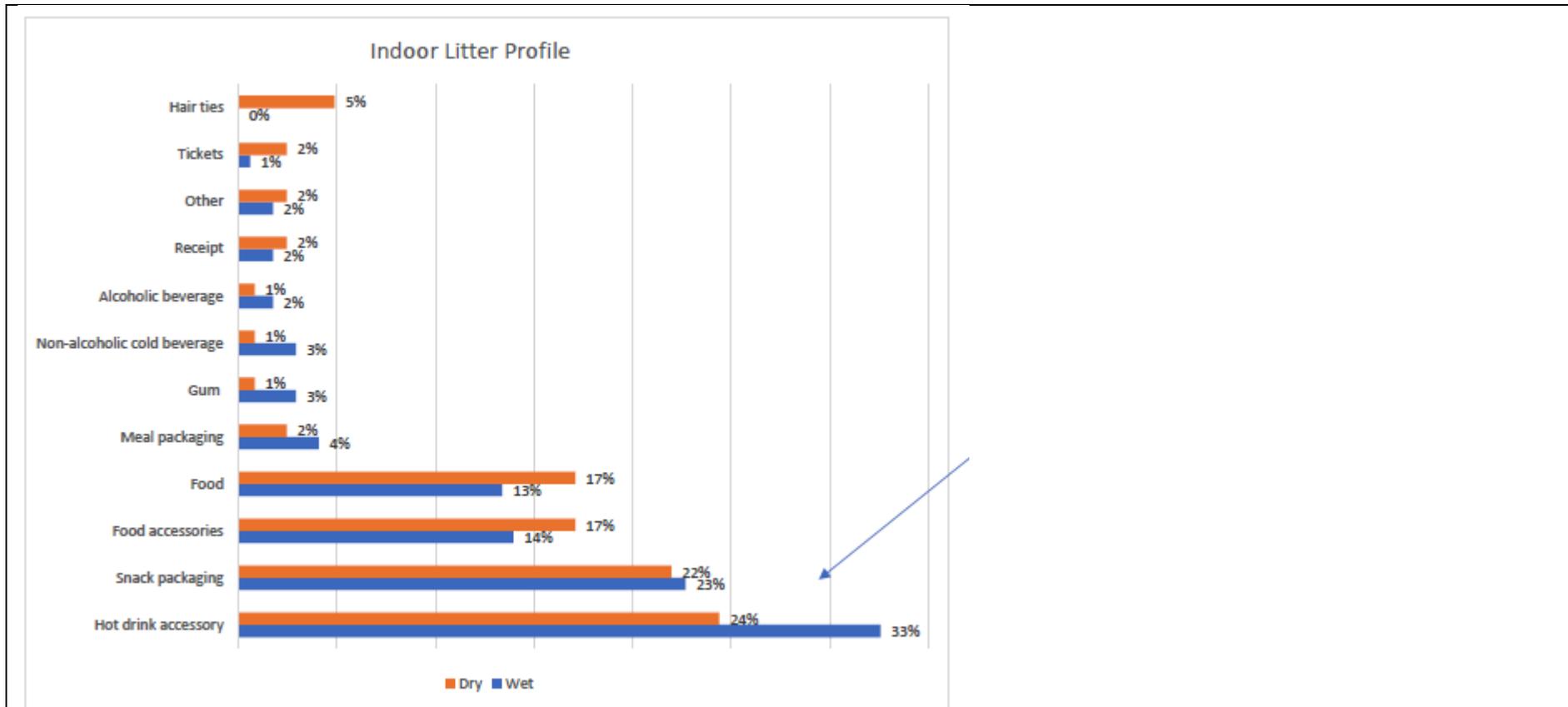
Indoor Litter Profile

Category	Dry	Wet
Hair ties	5%	0%
Tickets	2%	1%
Other	2%	2%
Receipt	2%	2%
Alcoholic beverage	1%	2%
Non-alcoholic cold beverage	1%	3%
Gum	1%	3%
Meal packaging	2%	4%
Food	17%	13%
Food accessories	17%	14%
Snack packaging	22%	23%
Hot drink accessory	24%	33%

■ Dry ■ Wet

Figure 6 Breakdown of indoor litter profile by wet and dry days

The way which weather influences litter is twofold, not only are fans avoiding getting wet, but the variety of pre-game activities and entertainment are cancelled. Pre-game activities typically begin 3 hours before kick-off and are highly attended; during the wet sample day these events did not take place, the photos below taken at similar times and areas leading to kick off illustrate this, and help demonstrate why we were not able to effectively mitigate

against the effects of the weather. As a result, while we believe the above observations are relevant, we would not use the wet weather data as part of a baseline if we were to continue this project.

Image 1 Difference in outdoor pregame activities in wet and dry weather

Community Day

While the weather was beyond anyone's control, it was frustrating that the match that we were able to reschedule our launch for was also the match the club chose for their Community Day. This meant that the area outside the ground was busier than usual and that there were competing messages and activities (I have described above how our gamified intervention was sacrificed to make space for the community activities). It also took the focus of the club's PR away from our launch. On the other hand, the community events did mean people were milling around outside the ground for longer and were perhaps more likely to engage with our sculpture, bins or referees.

Hubbub Internal Changes

Another unfortunate consequence of the delayed project delivery was that both Hubbub staff members involved in designing the project had moved on before we delivered it. While we of course were able to handover, it did mean we lost continuity and did not have the close relationships with the council and football club that the original managers of the project had.

METHODS: Data sources and collection

- How did you source or collect the data/information to measure the indicators above?
- For each data source, set out at what points during the project you collected data (and why), and at what locations. Include information on the data you collected before your project began.
- How did you make sure data collection was consistent?

This has been covered in part above. The locations are pictured in Appendix A.

For consistency, two baseline litter monitoring sessions took place prior to the campaign launch. Counts were conducted outside immediately after kick-off and inside the Lower East Concourse immediately after half time (same time/location for all counts). Our partner from King's College ran the count each time and managed the volunteers from the Council (who were usually the same people) to increase consistency of counts.

Date	Match	Exercise	Actors
Stage 1: Baseline			

September 22, 2018	Tottenham Hotspur	Litter counts and general observations.	King's College, council volunteers.
October 5th, 2018	West Ham United	Litter counts.	Council volunteers
Stage 2: Campaign			
October 27th, 2018	Wolverhampton Wanderers	Data collection on trash converter and litter reward scheme, shoot-out participation, litter count.	Hubbub, King's and council volunteers.
Stage 3: Post Campaign			
November 24th, 2018	Leicester City	Litter count	Kings and council volunteers

OUTCOME: Results and Data Analysis

Please record all the information derived from the project, using appendices if appropriate. As set out in the Monitoring and Evaluation Guidance, please include any assumptions made or qualifications needed.

See Appendix B for litter counts and analysis. Summary of headline data and context:

Table 1 Data collection dates and variables

	Date	Kick Off	Opponent	Outcome	Weather	Litter count	Attendance[1]
Pre campaign	Saturday, 22/09/2018	17:30	Tottenham Hotspur	Loss	Rain (heavy)	361	30,531
	Friday, 05/10/2018	20:00	West Ham United	Win	Dry (warm)	676	30,544
During campaign	Saturday, 27/10/2018	15:00	Wolverhampton Wanderers	Win	Dry (cold)	616	30,654
Post campaign	Saturday, 24/11/2018	15:00	Leicester	Draw	Rain (light)	576	30,553

From this we can see that, disregarding the wet weather day when few people were outside, there was a small improvement in litter reduction, from 45 people per piece of litter counted before the campaign, to 53 people per piece of litter afterwards.

Date	Litter Count	Attendance	Ratio People:Litter
05/10/2018	676	30544	45:1
27/10/2018	616	30654	50:1
24/11/2018	576	30553	53:1

However, further investigation shows that the reduction in litter is largely cigarettes. We suspect this is because the match on 5/10 was on a Friday evening so the attendance was fewer families and more people drinking and smoking.

Date	Litter Count	Cigarettes	Non-Cigarettes
05/10/2018	676	429	247
27/10/2018	616	322	294
24/11/2018	576	239	337

Impacts and Evaluation - What did you learn?

- What were the outcomes against your indicators, and were they as expected? Please provide details of immediate, intermediate and long term impacts. Can you demonstrate that the outcomes would have been different if intervention had not taken place? Did any negative consequences arise? Which interventions, or aspects of your intervention, were particularly effective, and why?
- If outcomes/impacts were not as expected, it's useful to know why. Did you identify what factor(s) contributed to the project not working as intended?

- The litter count outcomes are detailed above.
- The litter referees engaged 228 people.
- Trashconverter engaged 409 people.
- Official attendance was 30,654. We are not able to show what proportion of attendees saw the sculpture, other interventions, read the match day programme article or the Brighton & Hove AFC website article, but it is safe to say it was in the tens of thousands.
- Our tweets had 3716 impressions and 71 engagements.

The club and the council also tweeted the following, which we do not have stats on:

The outcomes were inconclusive, partly for reasons detailed above (weather, timings, other campaigns, the attention of the club and so on). But if we did it again, we would also design it differently (see next section).

More positively, we were able to donate the seven split goal bins to Brighton & Hove Albion FC's community pitch, which runs programmes for juniors, disabled and other local groups and has over 60,000 users a year.

What would you do differently?

- What, if anything, would you do differently if you ran a similar project again?
- If outcomes/impacts were not as expected, do you think the factor(s) you identified as contributing to the project not working as intended could be overcome were the project repeated, and if so, how?
- What advice would you give to anyone else running this type of intervention?

1. We would find a way to count how many times the split goal bins were emptied, and to compare the contamination rates of mixed recycling with the existing bins, so we could get data on waste and recycling collection and not just litter.

2. We would focus our intervention on cigarettes. Because we did the baseline after designing the project, we were not set up to tackle the most prevalent form of litter.

3. We would make sure we had the budget to be in the same location consistently over a much longer period. One launch event was simply not enough, especially if affected by weather and other factors. As the campaign took much longer to organise and deliver than expected we were not able to do it this time, but it is an important learning for the future.

4. We would ensure the launch was on a day without competition from other events so we could focus attention from club & fans on our interventions.

5. We would try to get the marketing side of the club on board and not just facilities and stadium management. We did try this, with some success, but if the club were really behind it and making match day announcements and using social media to promote it, it would make it much more visible and credible to fans.

For these reasons we have not produced the 'how-to' guide we originally intended – we feel the results we had were not robust enough and the project was much more time-consuming to deliver than our other work with the council. In terms of advice, the other thing we would recommend looking into is finding the key hotspots for fans in transit – getting off the train, for example, or leaving/entering the environs of the stadium – and targeting those spots.

What did it cost

Please provide details of your full project costs and contributions in kind (regardless of source), to enable others to understand the funding required to replicate your intervention. This could also include resource cost. Remember to include the costs of monitoring and evaluation. Be specific.

Description	Quantity	Total Value
Project management (time)		£6,200
Baseline & Evaluation (time)		£1,500
Creating communications materials (time)		£1,000
Referee stunt (actors, costumes, materials)		£901
Penalty-shoot out competition (time / materials)		£1000
Goal shaped bins	7	£2,146
Football-themed litter installation (incl litter collection & installation)	1	£4,342
Prizes for Trashconverter	450	£1,350
PR support and social media (time)		£1,500
Photography		£300
Monitoring and evaluation		£1,742
Total		**£20,981**

Next Steps

Based on what you have learned:

- How are you planning to build on the activity yourselves?
- If the project was successful, how could/should this intervention be replicated and/or scaled up by you or others?
- If the project was not successful, how might it be changed to potentially deliver better results?

• What further research or refinement is needed?
We are taking what we have learned about litter and recycling at football stadiums and working towards a larger partnership that will focus on longer term initiatives and involve fan groups, clubs and sponsors. The project in Brighton has been a brilliant springboard to this work and we hope it will be the first step in some significantly scaled-up campaigns communicating with football fans about litter, recycling and sustainability in general. Some ideas on what could be changed are listed above. In terms of replication, the split goal bins were popular and could be deployed for any football event. Indeed, one large restaurant chain is planning to use them in all its sponsored football activities. The litter referees would be easy to replicate and would work especially well at family-oriented events. Research into football fans' attitudes to litter and recycling might be of value, as well as close observation of the journey from transport hub to stadium and back.

Is there any other information you wish to share ? e.g. Any media regarding the project, correspondence with those affected by intervention, or anything else of relevance.
From David Baker, Facilities Manager for Brighton & Hove Albion FC: "The day went really well and received a really positive response from our supporters. Thought the sculpture and trash convertor looked really good and gave a good focal point for the day. It was a pleasure to work with you and your team, the passion and enthusiasm they showed for the campaign assisted in ensuring it was a great success." Press coverage: • The Council: https://new.brighton-hove.gov.uk/news/2018/art-amex-what-load-rubbish • The Club: https://www.brightonandhovealbion.com/news/2018/october/albion-support-streets-ahead-campaign/ • G-Scene: https://www.gscene.com/news/amex-art-what-a-load-of-rubbish/

Feedback to us
Your feedback is important to us. We would be grateful for any comments on (or recommendations for future) Litter Innovation Fund management and materials:
I would like to say thank you for your patient, flexible and helpful support! It enabled us to experiment in a new area and build up some knowledge that we hope we can put to effective use in the future.