

anti-littering interventions

impact report bournemouth, christchurch and poole, UK

report compiled by Ellipsis Earth in partnership with Hubbub and McDonald's
September 2021

ellipsis



#leaveonlyfootprints?

introduction

The 15 miles of Dorset coastline stretching from Poole to Christchurch via the seaside resort town of Bournemouth has been a much-loved UK tourist destination for nearly two centuries.^{1,2} Today, millions of visitors flock to the region every summer, creating a local tourism industry worth over £590 million a year³ and creating 12,000 jobs.⁴ But along with this economic prosperity comes added strain on local services, and pressure for local councils to meet increased demand for waste management.

In June 2020, during an untimely combination of lockdown frustration, ongoing pub & restaurant closure and heatwave weather, over a million people descended on the Bournemouth coastline in just a three day period. With BCP cleaning services overwhelmed, an estimated 40 tonnes of rubbish accumulated on the beaches alone, with the busiest day culminating in a Major Incident being declared and making national headlines^{5,6,7,8} and even international news.^{9,10,11}

Broken bottles and nappies among 'tonnes' of rubbish dumped on British beaches

Shocking pictures showed plastic bags, bottles and takeaway wrappers scattered across the country's pristine beaches as Brits flocked to the seaside to enjoy the heatwave

By Neil Murphy
09:44, 26 Jun 2020

'The atmosphere was ugly': Bournemouth aghast at beach chaos

NEWS | UK

Bournemouth beach awash with rubbish as thousands flock to coast amid heatwave

'We are creating a pandemic and pollution hell on Earth'

VIEW COMMENTS | News | Local News | Dorset

Pictures show 'appalling' amount of litter on Bournemouth beach after major incident declared

NEWS | UK

'Tonnes' of rubbish left behind on Bournemouth beach by sunseekers on the hottest day of the year

The Health Secretary warned beaches

CNN travel

News

2nd August 2020

Rubbish strewn across the sands after thousands descend on Bournemouth beach

By Jane Reader | Jane Reader
Senior Reporter

Major incident declared after thousands flock to UK beaches in sweltering heat

Jack Gray, CNN • Updated 26th June 2020

News

3rd June 2020

Will we see litter left on Bournemouth beaches this year?

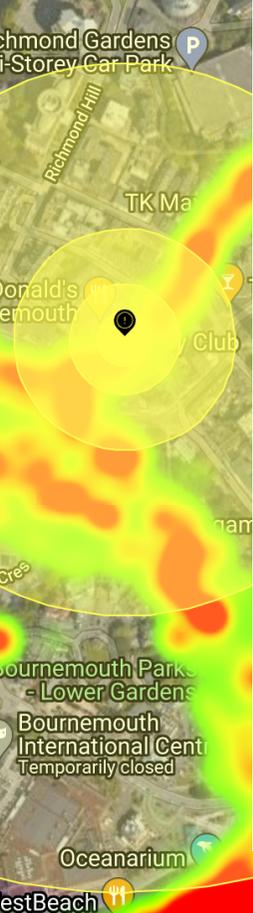
a walk in the park

In May of 2021, 9 BCP beaches were awarded Blue Flag status,¹² with the notable exceptions of the most popular Bournemouth and Boscombe beaches – though these retained Seaside Awards.¹³ The awarding body stated *'It is a full-time commitment to create beaches worthy of these awards. As we all plan our 2021 holidays much closer to home, those choosing to holiday at a destination with an award-winning beach can be assured it will be clean and safe.'*¹⁴ In addition, 23 green spaces across BCP were awarded Green Flag status, indicating the highest standards of cleanliness, including the popular Lower Gardens in central Bournemouth town.¹⁵ Criteria for these prestigious awards state that *'Litter must be adequately dealt with, and Bins must be available and they must be regularly emptied'*.¹⁶

Just weeks later, the May bank holiday saw a 476% rise in littering across BCP compared to lockdown levels – an increase of 242% relative to visitor numbers. Local residents were concerned that a lack of preparedness would recreate familiar scenes:

"Beach goers had clearly tried to do their bit. Nearly all of [the litter] was placed by the side of the bins; due to the bins being full the bags had been pulled apart by gulls. Some of this rubbish will also have been blown into the sea overnight creating a negative impact on our seas." Bournemouth Resident calls for BCP to empty bins sooner.¹⁷

Amid growing concerns from local residents and in light of now infamous national visibility, BCP council announced a significantly enhanced £3.5 million Seasonal Response Plan which included additional staffing and bin provision to help cope with another wave of crowds.¹⁸ To ensure the best deployment of this, and in an effort to prevent a repeat of the previous year, BCP council was offered expert help in the form of a data-driven anti-littering campaign funded by McDonald's and delivered by Hubhub and Ellipsis Earth.



a step ahead

Award-winning environmental charity Hubbub specialises in positive, playful approaches to behaviour change and public engagement, and they have developed a series of anti-littering interventions in urban areas across the UK.¹⁹ But in order to maximise the impacts of these interventions, they needed to know which ones to use, and where.

McDonald's town centre stores in Bournemouth and Boscombe operate daily litter picks by restaurant staff as well as regular city-wide, coastal or forest litter picks, but without knowing the best routes or times to pick, the efficiency of these efforts was unknown. In addition, the stores had little knowledge of the impact of their specific product packaging on littering across BCP.

At Ellipsis Earth, our rapid, highly accurate environmental mapping and monitoring software enables deeply informed littering analysis.

stepping it up

Ellipsis Earth's mission was clear:

- provide the first ever comprehensive baseline data to BCP council, to help them understand key areas, times and types of littering and to give a clear overview of the litter situation across BCP.
- use Ellipsis-gathered data to develop a series of recommendations for BCP to optimise current cleaning schedules, maximise existing bin performance and improve communication for responsible public litter behaviour.
- provide recommendations to Hubbub on where and when to deploy a range of different interventions to maximise their performance and target different audiences, and subsequently to evaluate the impact of these interventions.
- provide McDonald's stores in Bournemouth and Boscombe with insights on litter patterns of their products, evaluation of current litter-picking routes and schedules by their staff, and recommendations for local and national actions to reduce the littering impact of their brand.
- evaluate the overall success of the summer's anti-littering campaign to inform future actions for BCP and other councils, and to contribute to the conversation around, and development of, a national anti-littering strategy.

We understand financial spending down to the penny, but we have close to zero idea about litter. Data is key - if we can get clear data on littering, it will make a huge difference.

a year of trash in BCP

Same CO2 footprint of all flights in and out of Bournemouth airport for **2 years**



equivalent of...



powering a kettle for **3,294 years**



powering every home in BCP for **20 days**

driving an electric car **4,320 times** around the world



enough litter to fill **2 x** vitality football stadiums

2,666 tonnes

laid end to end, this would stretch as far as ziplining from **Bournemouth Pier to Beijing**



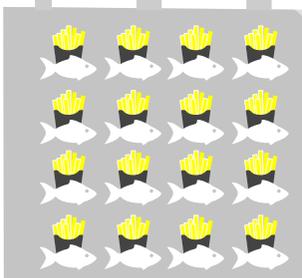
per person costs

- ★ **367** items littered
- £ **£0.20** value
- 🧹 **£3.23** cost of clean up
- 🏠 **1 week** of powering an individual home

£95,000 collectable recycling value

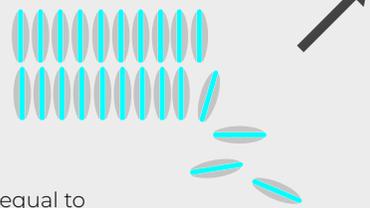


16.9 million years environmental damage



equal to **4 million** portions of fish & chips

of which



equal to **25,085** surfboards lost to the ocean

74 tonnes headed to:



interventions map

Between March and August 2021, Ellipsis Earth delivered the most scientifically robust litter survey ever conducted in the UK. Images were gathered by ground and aerial teams across a total land area of 475,000sqm covering BCP's beaches, parks and urban areas. These were rapidly processed by our unique software to identify and map 47 categories of litter by location, type, time and duration. 350 existing BCP council bins were also mapped and measured for performance, and two McDonald's stores were analysed as litter sources.

Analysis of littering patterns during peak visitor periods (e.g. May Bank Holiday followed by Half Term) gave insight into the most at-risk locations, times and behavioural trends. Over 128,000 individual items were littered in one week, with the most common items including cigarette butts, paper napkins and plastic fragments from food & drinks containers torn apart by wildlife. On average, an item was littered every 3 seconds, and remained on the ground for 6 hours in town and park spaces and 8 hours on beaches. Bins

in Bournemouth's Lower Gardens were among the worst performing, being full and overflowing by 11am on most days. Average urban litter density was an item every 1.9m, with litter being placed on or nearby to full bins (known as 'tidy littering') contributing to around 40% of all litter.

Ellipsis delivered a series of recommendations to BCP council, Hubbub and McDonald's to help reduce littering across the region. The map shows all the locations where physical

interventions were recommended based on analysis of hotspot data and identified target sites. Hubbub provided a range of physical interventions to the council free of charge to be deployed in these target sites. Some of these interventions were successfully placed by the council, as shown.

Ellipsis then conducted further surveys at the end of the summer season to measure the impact of the interventions and evaluate their effectiveness.



example recommendations

best foot forward

Recommendations developed by Ellipsis Earth were informed by detailed data analysis to target specific litter types and locations. Examples of physical interventions that were provided by Hubbub in response to this data included:

- targeting hotspots for cigarette butt littering in Poole and Boscombe High Streets – using bright Hubbub ‘ballot bins’²⁰ to encourage participatory and playful engagement with responsible butt disposal
- targeting late night and weekend alcohol- and drugs-related littering at the rear of Bournemouth beach – using glow-in-the-dark bins and Hubbub’s new interactive ‘disco’ bin,²¹ to incentivize action by weekend partygoers²²
- targeting poor bin performance in Lower Gardens (existing small, dark, inaccessible and unwelcoming bins were the worst performing bins in the BCP region) – by adding colourful, large, open-top accessible and attractive vinyl bins alongside existing bins
- targeting high levels of food & drinks packaging in Bournemouth, Boscombe and Poole city centres – by adding bright Hubbub ‘voting’ bins²³ to increase visibility and boost awareness of bin availability.



In addition, a number of wider physical interventions were recommended, including increased visibility of signage across urban routes to direct people to nearest bins, improved consistency of bin labelling to be more understandable and attractive, additional bins in key hotspots in Christchurch and Poole, toy libraries or rentals to reduce high numbers of toy littering in key regions, glass bottle banks in strategic hotspots, adding ashtrays to specific existing urban bins, and adapting bin lids to be more accessible whilst still being protective at different times of day.

Operational recommendations were also suggested, including late evening overnight cleaning of Bournemouth beach, firstly to reduce the high environmental impact of litter on the foreshore being washed into the ocean overnight – shown by the data to include high numbers of family- and daytripper-related littering, and secondly reducing the long residence time of food-and-drinks packaging which is broken up into fragments by wildlife overnight. Additional litter-picking schedules were also suggested in several hotspots, as well as more frequent or adjusted emptying of bins in multiple identified sites, and more regular street cleansing of at-risk accumulation sites.

While most of these recommendations were not taken up by BCP council this summer, some are being considered for inclusion in the development of their 2022 litter strategy.

one step at a time

Longer term recommendations were also delivered, to include use of ethical enforcement and fines as a deterrent, long term education campaigns, reducing or banning the sale of plastic packaging and products from beachfront retail units (46 of which are BCP council owned, with sales of 18,000 souvenirs and 750,000 icecreams alone per season), region-wide introduction of paperless retail, single-use plastic penalties and reusable incentives, deposit return schemes for bottles and cups, and joining the pledge by other councils to be smoke-free by 2030.^{25,26}

Because these recommendations are driven by robust data, their inclusion allows future strategies on littering to be fully informed and more likely to have a targeted impact.

(For further detail on the recommendations provided please contact Ellipsis Earth).

results

Following the installation of Hubhub’s interventions, Ellipsis Earth conducted an evaluation survey to measure their impact, including detailed data showing the individual performance of each intervention.

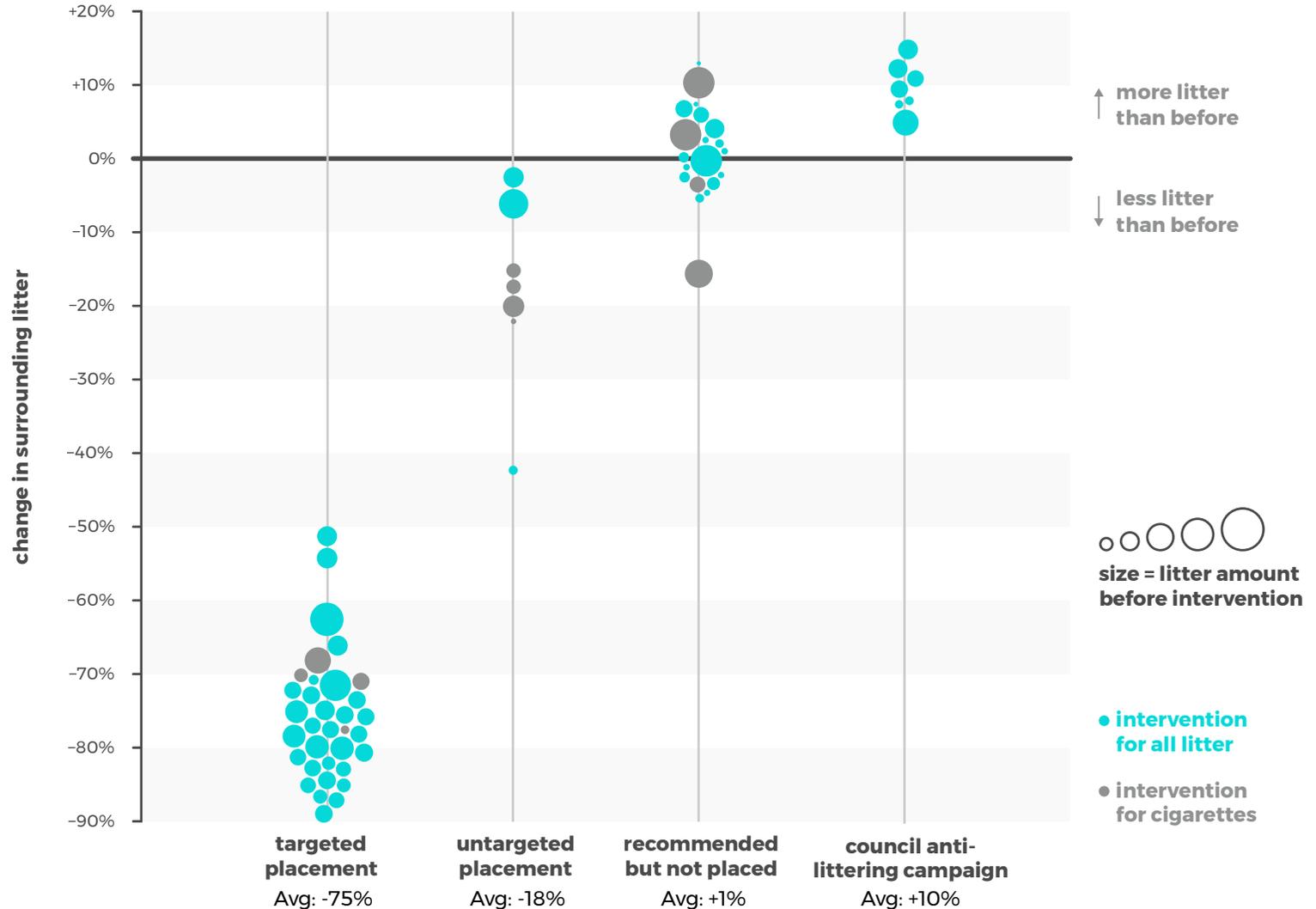
Where interventions were placed in the locations targeted by Ellipsis data, the average reduction in litter was an impressive 75%. For comparison, there was no decrease in littering around the 300+ existing BCP bins in the survey area.

Additionally, areas with numerous interventions showed a multiplier effect, whereby collective bin performance was significantly enhanced – for example, the East side of Bournemouth Pier which had both vinyl bins and glow-in-the-dark bins (79% reduction), and Lower Gardens which had multiple vinyl bins placed consistently and regularly along the main walkway (83% reduction).

Some interventions were placed by the council in untargeted areas, i.e. not where they had been recommended but instead somewhere nearby, or in some cases in entirely different locations. Interestingly, however, these interventions still showed an average litter decrease.

Importantly, there were several targeted areas where interventions were recommended and not placed at all. These high-density areas showed little to no reduction, and in fact an average increase in littering.

Finally, in areas with existing council messaging, the data shows an average of 10% increase in littering.



results cont.

making giant strides

It was extremely impressive to note the average reduction of 75% in littering surrounding targeted interventions, with some individual locations achieving nearly 90% reductions. Often these locations were not considered for interventions, with interventions that would have been placed randomly or at regular intervals across each site now able to be directed by the patterns shown in the data. Because many of the target sites had some of the highest levels of litter prior to the campaign (as shown by the size of the spots in the graph overleaf), these reductions were significant and had a positive impact on overall litter levels despite being deployed in a relatively small area.

leaps and bounds

Impressively, interventions that targeted specific litter types showed not only a direct impact on the individual items targeted, but also an associated wider impact. For example, where glow-in-the-dark bins were installed to target late night alcohol-and-drug related littering, the average reduction in all litter was 79%, but the specific reduction in glass bottles and aluminium cans was a remarkable 88%. Similarly, where ballot bins were placed in targeted tobacco littering hotspots, cigarette butt littering decreased by a respectable 73%, and there was an added bonus of 60% less litter in general.

stumbling block

Looking at the results for the several interventions which were incorrectly placed i.e. in non-target locations, the data highlights the importance and effect of data-driven targeting. For example, the world-first Hubbub 'Disco' bin was deployed by the council in Boscombe rather than its targeted location in Bournemouth - the small blue dot at the bottom of the middle column shows this popular bin still generated a commendable 42% reduction in littering, but the size of the spot highlights how low the litter levels were here in the first place, meaning the disco bin didn't reach its full potential.

Similarly, several tobacco ballot bins were placed further away from their target sites than ideally specified. Whilst these bins underperformed compared to their targeted counterparts, it was interesting to note an average reduction of 19% still occurred.

Comparison of these results to the alternative existing council messaging, which often tends to be more traditional or uses negative or even confrontational/accusatory language, shows an interesting response. This highlights the power of public perception around litter disposal responsibility, with several notable examples of rebellious littering or vandalism associated with the latter form of messaging.



top left
using 'nudge' questioning to encourage cigarette butt disposal

bottom left
poor performing bins in Lower Gardens before interventions

top right
additional colourful, open bins in Lower Gardens reduced littering around all bins

bottom right
vandalism of council anti-littering messaging



comparing metrics

the right footprint

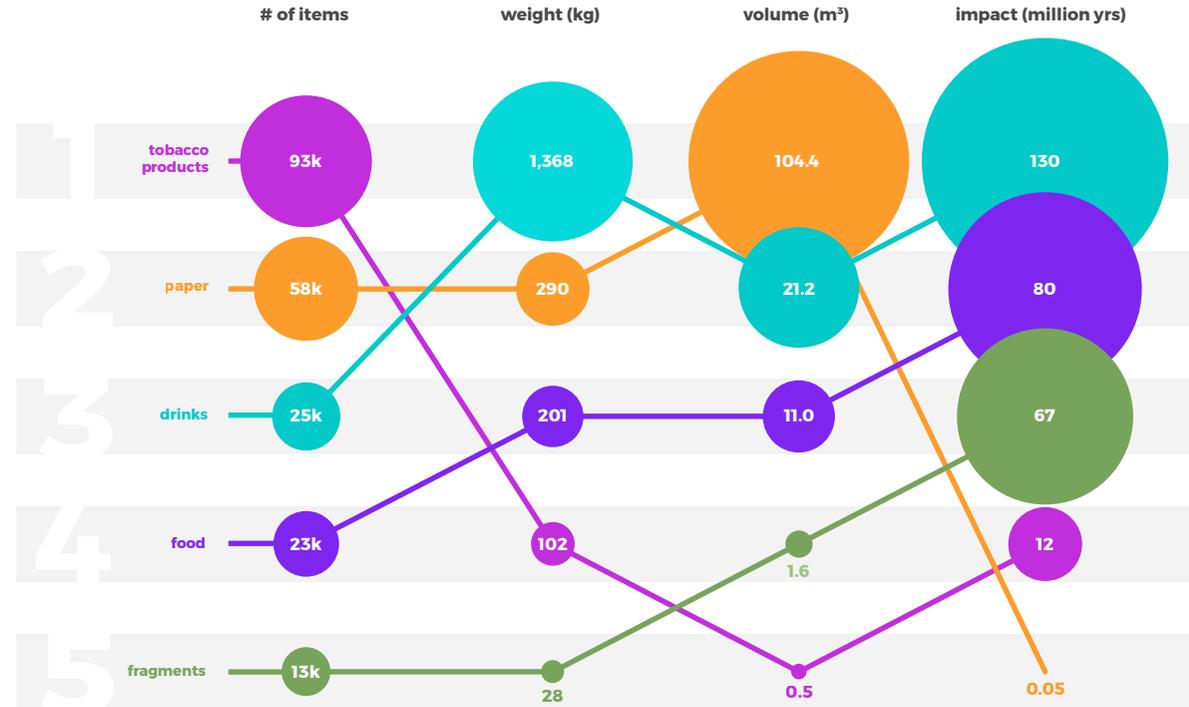
It is important to consider the metrics used when discussing littering. Historically, litter surveys focus on the number of items found, number of trash bags collected, or tonnes of litter removed during a beach clean, for example. Whilst important to know, these metrics can be a misdirect, causing interventions to focus on the most numerous items when they aren't necessarily the most urgent issue.

For example, BCP data shows that while food & drinks items are equally numerous, the high proportion of plastic bottles and large volume and weight of glass bottles means that drinks litter is often more problematic from a clean-up and transport perspective as well as having a much higher overall environmental impact. Food packaging is increasingly paper and cardboard, which is lower in overall environmental impact and recycling cost, as are the large quantities of paper napkins and receipts. And while cigarettes were by far the most numerous item, they are proportionally far lower in environmental impact, while their minimal weight and volume means lower peripheral management costs.

Environmental impact is especially relevant in this coastal location as the beaches in BCP are *erosional* – that is, the waves scour tonnes of sand and debris from the beach and into the sea during overnight high tide – this means that up to 30% of the litter deposited on the beaches throughout the day is washed into the ocean where its environmental impact will be fully realised.

For such high environmental risk areas, these metrics are especially important to inform decision-making; for example by targeting litter items which may seem less of an issue by number, but have a significant environmental impact (e.g. sauce sachets). Similarly, there is a clear need to capture litter in a timely manner to reduce the detrimental impact of litter being broken into fragments by water, wind and wildlife.

The impact of covid is also considerable for this reason – not because PPE is directly an issue (data has repeatedly shown PPE itself is less than 0.7% of all litter by all metrics), but due to supply chain and sanitation limitations causing a step backwards in packaging progress. Reverting to disposable cups, single-use utensils, and individual portions



of condiments has seen a significant increase in these items and their environmental impact; producers and suppliers must consider returning to incentivising reusable and bulk options as soon as it is safe to do so.

brand footprint

footing the bill

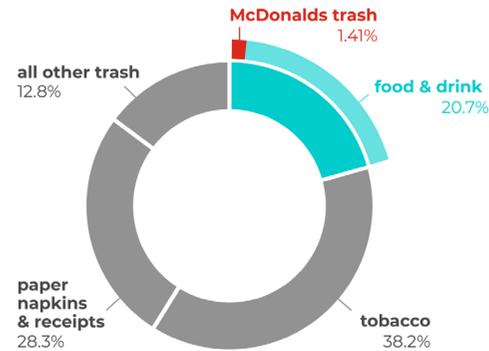
With McDonald's stepping up to support both the litter surveying and Hubbub's interventions, it was important to identify the brand's own role in the littering issue afflicting BCP. Two town centre stores, one in Bournemouth and one in Boscombe, were included in the surveys as potential major sources for branded litter. Whilst there are also several drive-thru stores in the wider region, their positioning and traffic flow means the vast majority of McDonald's branded littering in Bournemouth and Boscombe town centres and their respective beachfronts is most likely to have originated from the town centre stores.

Ellipsis data showed that a McDonald's packaging item is littered every 8 minutes on average across BCP, with branded litter travelling several km from source in a few extreme cases but being mostly limited to a 250-500m radius around the two stores. While urban littering is predominantly single items such as coffee cups and McFlurry pots, littering on the beaches is related to more complete meals - including napkins, food boxes and bags, cutlery, sachets and straws.

Critically, it was shown that 50% of all McDonald's branded litter was within 5m of a bin, and often within 1m, known as 'tidy littering'. This phenomenon occurs when individuals are attempting to dispose of litter correctly, but fall short due to numerous reasons including the bin being inaccessible, full, not visible or poorly signed. Where Hubbub interventions were introduced, McDonald's branded items were reduced by similar proportions as other litter, creating a significant reduction in total litter quantities of the brand.

taking a load off

Once again it is important to note the environmental impact of McDonald's branded items, as this reveals a more detailed perspective on where improvement opportunities lie. 80% of all McDonald's packaging now comes from recycled or certified sustainable sources.²⁷ Just five high-impact plastic items (straws, lids, sachets, cutlery and wrappers) are responsible for over 90% of the brand's environmental footprint; replacing these with sustainable alternatives

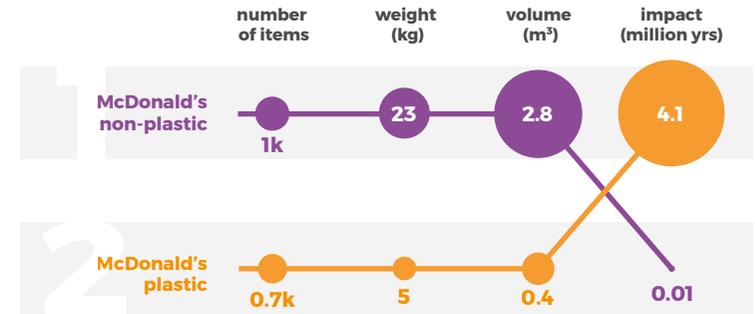


would drastically reduce their overall environmental impact and propel the brand to a more sustainable overall level.

McDonald's have made several commitments to reducing these specific high-impact items from their supply chain, along with existing sustainability targets for 2025 which include both packaging and recycling overhaul.²⁸ Both the Bournemouth and Boscombe stores have already reduced the number of paper napkins given out, which were noticeably reduced in the evaluation survey data.

step in the right direction

Finally, Ellipsis data was also used to deliver recommendations to each of the local stores regarding the optimum radius and routes for staff litter-picking, as well as identifying target sites for



McDonald's regular community litter picks. This has helped them to optimise the collection of all trash (not just their own) and to identify the most impactful areas to target in order to offset their litter footprint more efficiently.

McDonald's is frequently named as a major contributor to littering,^{29,30} with misleading reports often being sensationalised by the media to imply a much more significant impact than is necessarily the case.^{31,32,33} The surveys across BCP captured data on over 250,000 items over multiple periods, giving the first accurate picture of proportional accountability for the brand in this region. The proportion of McDonald's branded items found in our surveys is in fact higher than other reports, but context and comparative data helps to highlight the actual relative scale of these figures.

“
We are already collecting more litter in less time.”

”
MCDONALD'S BOSCOMBE
HAVING CHANGED THEIR LITTER PICKING ROUTE ACCORDING TO ELLIPSIS DATA

mountains into molehills

gathering pace

A key benefit of Ellipsis data being highly robust and representative data is that it can be used to translate into accurate estimates of wider impacts, for example reflecting the impacts across the BCP region over a whole year, taking into account seasonal patterns and variability across particular days or times.

While the total litter reduction currently achieved is extremely promising, the scale of potential reduction that remains to be achieved is extraordinary. With rollout of the remaining recommendations, including longer-term region-wide commitments, there is a valuable opportunity to drastically reduce the littering quantity, and additional public engagement campaigns and targeted education would have an even further positive effect.

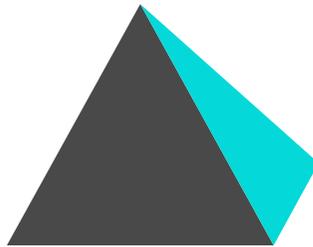
The potential of this opportunity has economic implications in attracting more visitor spending, significant cost-saving through reduced litter management, and even an estimated £100K annual value-add of recycling the additionally captured litter. Furthermore, the resulting decrease in litter lost to the ocean would see a 78% reduction in total environmental footprint for the whole BCP coastline, enabling it to develop into a truly sustainable seaside resort.

litter before interventions



309,308 m³
16.9 million years

litter after current interventions



201,209 m³
10.7 million years

litter if all interventions completed



65,266 m³
3.6 million years



Bournemouth Wheel (to scale)



78%
reduction in overall environmental impact if all interventions followed

impact discussion

a step in the right direction

The compelling results of this study reveal the remarkable power of using data to correctly place interventions and truly maximise their impact. This is especially visible when comparing the specific

success of the interventions relative to all other areas. In addition, the data highlights the importance of introducing complementary interventions across a wider area to multiply overall impact, and the importance of reaching each audience at the right time and with the right message. The ballot bin data, for example, demonstrates the domino effect of a street cleared of cigarette butts reducing other littering, and vice versa, showcasing the strong performance of this innovative design and the fascinating interplay between audience-, location- and item-specific interventions.

two steps forward, one step back

Social studies have demonstrated for many years that negative (reproachful, blunt, accusatory) messaging around topics such as littering are more detrimental than helpful, and that lasting behavioural change is much more successfully driven by positive, playful messaging.^{34,35,56,57,58} It is therefore interesting to see how clearly the data from the BCP surveys support this research, with very clear evidence of the reduction associated with playful, positive and collaborative messaging developed by Hubbub, versus an increase in littering associated with strongly negative council messaging.

Similarly, the results illustrate the effectiveness and popularity of colourful, positive interventions even when placed in untargeted areas; had the disco bin been placed in the correct target site, which had particularly high late night littering, it is likely to have had a much more significant impact. This, along with the high-density targeted areas where interventions were not placed at all, emphasise the missed opportunity of improving these particularly problematic areas.

In part this was due to jurisdictional, administrative or logistical difficulties with placing interventions in certain areas. This project highlighted the many challenges faced in implementing many of the recommended interventions, and an appreciation for the limitations and pressures that BCP council is currently working under. For anti-littering campaigns of this nature to be optimised with any lasting impact, a baseline level of council commitment and collaboration is critical to enable complete contribution from all stakeholders.

75%
reduction in litter
around data-driven
interventions



finding their feet

Whilst it was therefore disappointing that more of the immediate 'quick-win' initiatives were not undertaken this summer, the longer-term commitments by BCP council to use this data in developing their upcoming litter strategy is highly encouraging and we look forward to seeing future improvements across the region in the coming years. With the potential opportunity for significant improvement now highlighted, the stage is set for the BCP region to become the UK's leading sustainable coastal destination.



Even though we have miles of award-winning beaches, the ongoing stats and subsequent results will certainly help us to look at our bin locations and refuse logistics on the seafront, in our open spaces and town centre locations.



COUNCILLOR MARK ANDERSON
PORTFOLIO HOLDER FOR ENVIRONMENT,
CLEANSING AND WASTE, BCP COUNCIL

summary and evaluation

The Ellipsis Earth surveys of the BCP region covered 475,000sqm and identified over 250,000 items in the most robust litter survey ever undertaken in the UK. Additional analysis of 350 bins and performance of over 40 interventions gave an unprecedented level of detail, and the results demonstrate exceptional litter reduction in areas of action.

setting off on the right foot

Whilst the challenges of implementing new operations are appreciable, it is clear that major waste management systems overhauls will be needed to tackle littering effectively and sufficiently, and to ensure that investment in anti-littering has a wide scale, sustainable impact. This will require significant commitment and collaboration from councils willing to be bold and innovative in their actions, and able to leverage the gains achieved to meet the demands placed upon them for resources, time and manpower. Similarly, proportional and fair accountability must lie with producers and stakeholders whose decision-making can have a long-term and significant downstream impact, as well as consumers who must be targeted with appropriate messaging and education.

"Our teams have been carrying out litter patrols in our communities for nearly 40

years; this intervention is a real step-change allowing us to leverage technology and data to not only make clearing litter more impactful, but to help improve behaviour and encourage those people who do litter to act more responsibly" Helen McFarlane, Senior Sustainability Consultant for McDonald's

a community journey

The use of aerial imagery, artificial intelligence and machine learning to tackle this issue drew huge media interest in this campaign, gaining national press visibility and being popular social media content.³⁹ Littering is a topic that communities feel passionately about, that many people are personally and directly affected by, and that triggers a wide range of responses from multiple demographics.

This report highlights the power of a data-driven approach to community litter management and calls for other councils to adopt a similar method in considering future litter management plans. Our aim is to utilise this and other datasets to develop a national litter strategy which can be harnessed by councils in the UK and beyond, to optimise waste management operations whilst fostering a social behavioural shift towards a culture where littering is universally unacceptable.

“
The results speak volumes – properly informed interventions work, and we are calling on other councils to join the data-driven litter revolution.”

ELLIE MACKAY
ELLIPSIS EARTH

the path ahead

The metrics used to measure littering need to be carefully considered when defining, for example, appropriate and proportionate fines such as EPR (Extended Producer Responsibility). Ellipsis Earth analyses litter data using a wide range of metrics, from number, weight and volume to environmental impact, or even clean up cost vs recycling value, plastic and climate footprint, and long-term sustainability score, to give the best insights into where solutions and opportunities lie, and to inform the most effective recommendations in terms of the ultimate goal – long term improvement to the environment.

"Basing behaviour change activity on real data will really help us maximise impact and we're excited by what could be achieved. We want to create a replicable campaign that can be used as a template for future projects in other locations"

Trewin Restorick, Founder / CEO of Hubbub

The data for the interventions deployed in BCP shows not only that the Hubbub interventions work well when placed anywhere, but illustrates the extent to which data-driven placement drastically increases their performance. This is a winning combination which we hope to support further in a bid to tackle littering more intelligently, and we welcome everyone to step up to the challenge with us.



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