

UNDERSTANDING VEHICLE LITTERING

**RESEARCH REPORT
APRIL 2021**

**CENTRE FOR
SOCIAL
INNOVATION**



ABOUT THE CENTRE FOR SOCIAL INNOVATION

Keep Britain Tidy is a leading independent charity with three goals – to eliminate litter, prevent waste and improve local places. We have a long history of successfully delivering campaigns and programmes that have positive impacts for society and the environment at a local, regional and national level.

In 2015, Keep Britain Tidy launched the Centre for Social Innovation, becoming the only UK charity to take a systematic approach to applying behavioural insights to tackle litter and waste issues. The Centre focuses on understanding the root causes of these issues through high-quality behavioural insights research and uses this together with behavioural science to design, pilot and scale behavioural interventions.

What makes the Centre unique is that we have expertise in both research and behavioural insights *and* litter and waste. We believe bringing these two areas of expertise together is key to tackling the issues effectively.

We work together with private, public and third sector organisations, local authorities' managerial and operational staff as well as communities, to design interventions which are cost-effective, measurable and practical to deliver. In this way, we ensure that the interventions we develop are scalable. To date, over 290 local authorities and other organisations have implemented one or more of our tested interventions.

We have won numerous awards for our work including Nudge Awards 2018, AIM

Nudging for Good Awards 2017 and the Charity Awards 2016.

We are a Company Partner of the Market Research Society and all of our work is conducted in line with the Market Research Society Code of Practice.



EXECUTIVE SUMMARY

Introduction

Vehicle Littering has been identified as a problematic behaviour that incurs large cleansing costs and is a substantial element of environmental degradation along roads. Additionally, there is a lack of recent research into the behavioural drivers that underpin this form of littering. Combined, this presents a significant opportunity to understand this behaviour and to develop interventions based on this understanding. Keep Britain Tidy has partnered with Highways England to understand vehicle littering behaviours and develop and trial an effective intervention to tackle the issue.

Methodology

In order to gain an in-depth understanding of vehicle littering behaviours, a mixed-methods approach was used, with a sequential design wherein qualitative methods were used to explore an issue, followed by quantitative methods to quantify key insights for each

¹ An annual basis was selected due to the fact that Coronavirus has reduced the frequency with which many drivers are travelling

audience; general public and commercial drivers. The research was therefore conducted over five phases:

1. A literature review of the current evidence;
2. Three focus groups with 24 members of the general public who admit to having littered from their vehicle or at the roadside within the last 12 months;
3. An online survey conducted via YouGov. Overall sample size was 2069 adults, and results were analysed for those who don't drive as part of their job, and use the Strategic Road Network on at least an annual basis¹;
4. Three focus groups with 21 commercial drivers who admit to having littered from their vehicle or at the roadside within the last 12 months;
5. An online survey conducted via Savanta. The sample size was

² A model in which a number of determinants act to set a behavioural intention, and an ongoing justification process is involved in continuing the

508 and included a variety of drivers, including HGV and long distance lorry drivers, couriers, taxi drivers, and van drivers (for example, those working in trade).

Results

The results show many different types of littering behaviours, including disposing of items from the window whilst driving and whilst stopped, leaving items of rubbish next to bins, leaving rubbish where rubbish has already built up, and leaving rubbish in laybys in general either where there are no bins, or leaving items next to a vehicle. Accompanying these behaviours are complex situational and personal factors that determine the littering intention.

Using the integrative behaviour model², these different factors are posited to first drive the littering behaviour, and then act as justification to continue participating in the behaviour. These factors include

behaviour. Repeated behaviour leads to habit formation, at which point the behaviour becomes nearly automatic.

situational characteristics such as bins being full or overflowing, and personal factors, such as placing a greater importance on having a clean and tidy vehicle. Individuals then form

justifications for littering behaviours, which can become habits. This research shows that these are very varied, and supports that eventually the behaviour becomes habitual, bypassing the need for justifications. Key justifications that emerged in this research are that overflowing bins mean they are left with no choice but to leave items next to bins, the convenience of being able to dispose of litter immediately outweighs any negative considerations, and that when items may soon start to smell or rot, it is necessary to dispose of them immediately in order to prevent odours in the vehicle or a mess if something leaks or melts. These justifications are present for both the general public vehicle litterers and commercial drivers. For commercial drivers, there is the additional factor of their vehicle being their office or home for long periods of time, which leads to the increased importance of disposing of rubbish quickly. Additionally for commercial drivers, there may be a role for the

employer to play in providing regulations, as currently, many report not being given guidance on disposing of their rubbish or waste.

Conclusion and Recommendations

Overall, it appears evident from this research that vehicle littering behaviours are complex, with a number of driving factors. For some who admit to vehicle littering behaviours, it appears to be a deeply embedded behaviour and has become habitual in its nature. Given this, it appears that a complex and multi-strand approach will be most effective at targeting littering behaviours. It is suggested that a combination of awareness campaigns to drive knowledge of the unacceptability of some behaviours may be useful, combined with more in-depth information to counter specific justifications that some have developed.

Key recommendations include:

1. The optimisation of bin servicing to ensure that bins which are likely to fill quickly are prioritised
2. Work with industry bodies and employers to develop a consistent set of guidance and regulations for

employers with regards to littering behaviours

3. Use communications in a targeted manner to drive awareness of the issues and their impacts, promote work that is being done, for example litter picking and bin emptying, emphasise the benefits of correct disposal, and reduce the acceptability of littering behaviours.

INTRODUCTION

Litter left on roads presents a significant issue, and substantial resource is directed into tackling this issue. However, literature on the subject is lacking, and in recent years, there has been very little attention directed towards the issue. In order to address this gap in understanding, Keep Britain Tidy, in partnership with Highways England, has conducted research into vehicle littering behaviours to gain in-depth insight into the motivations, barriers, and situational factors that play a role in this behaviour.

In 2014, it was reported that Highways England spent at least £6 million on clearing litter from roads, showcasing the significant resource that addressing roadside litter demands. In addition to this, litter left at roadsides can harm wildlife, lead to increased plastic pollution, and degrade the appearance of these locations.

Following from this research, our intention is to utilise the emergent findings and the associated theoretical frameworks to develop an effective

intervention aimed at reducing levels of roadside litter. We will then trial and robustly monitor the impact of any intervention that is installed in order to assess its impact. By rooting the development of this intervention in research insights, we will be well positioned to ensure that interventions are targeted to address key behavioural factors.

The objectives of this research are:

- to update existing research on vehicle littering in England, including who is doing it, where and when they are doing it, what they are littering and why;
- to gather new behavioural insights to understand the triggers and barriers to vehicle litter and responsible waste disposal;
- to use these insights to inform recommendations for targeted interventions to prevent vehicle litter in England and;
- to pilot and robustly monitor one or more of these interventions to gather evidence about effective approaches to tackling vehicle litter.

METHODOLOGY

In order to gain a holistic view of vehicle littering behaviours, a mixed-methods research approach was used, comprised of five distinct research phases. A sequential design was embedded within this approach, wherein for each audience, qualitative data was first collected, followed by quantitative data. This allowed for influencing factors to be explored in depth, and key insights identified, in order to determine which elements should be quantified.

The five research phases are:

1. Literature review – a review of relevant literature on the topics of littering, and vehicle littering in particular, was conducted.
2. Focus groups with vehicle litterers – three focus groups, with twenty four participants in total, were conducted. Individuals were recruited if they had left items of rubbish in a layby or at the roadside or disposed of items from a window within the last 12 months, excluding cigarette butts. One group focused on those who had left litter at the roadside, while

two focused on those who had disposed of items from a vehicle window, however all three groups included at least one participant who exhibited both behaviours. Fieldwork was undertaken over the 16th and 17th of December 2020.

3. An online survey with members of the general public – An online survey was conducted using an online interview administered to members of the YouGov Plc UK panel of 800,000+ individuals who have agreed to take part in surveys. Within this, emails are sent to panellists selected at random from the base sample. The e-mail invites them to take part in a survey and provides a generic survey link. Once a panel member clicks on the link they are sent to the survey that they are most required for, according to the sample definition and quotas.

Total sample size was 2069 adults. Fieldwork was undertaken between 27th and 28th January

2021. Results were analysed for people who do not drive as part of their job, and who use the strategic road network on at least an annual basis.

4. Focus groups with commercial drivers who litter from their vehicle – three focus groups, with twenty one participants in total, were conducted. Participants were recruited if that drive on at least a weekly basis as part of their job, excluding their commute. The three groups were each distinct, as shown below, but all participants admitted to either leaving rubbish items at a layby or throwing items from a window within the previous 12 months. 17 of the participants reported that they had done both of the behaviours within this time frame. Group 1: Participants were recruited who drive heavy goods vehicles or light goods vehicles, but do not regularly stay overnight in their vehicles. Group 2: Participants comprised other drivers that do not drive

heavy goods vehicles. The sample consisted of car and van drivers working as taxi drivers, tradespeople, couriers, or other delivery drivers.

Group 3: Participants were recruited who stay overnight in their vehicle on at least a monthly basis. Six of the participants drive heavy goods vehicles and one drives a van.

Fieldwork was conducted over the 16th and 17th February 2021.

5. An online survey with commercial drivers – participants who drive on at least a weekly basis as part of their job, excluded their commute, were recruited for the survey. Total sample size was 508. The sample consisted of bus and coach drivers, taxi drivers,

LITERATURE REVIEW

General Littering

Research into vehicle littering behaviours specifically is relatively sparse, however, many of the insights gained from prior research into general littering behaviours are relevant in this context. Prior work that has examined research from a behavioural science perspective points to the contextual motivational factors of the environment in which litter occurs. For example, where it is easier to litter than to practice more responsible disposal behaviours, and if or when an individual litters, they will perceive time to have been saved, which acts to positively reinforce the littering behaviour.

Several theories have previously been used to explain littering behaviours, including Goal Framing Theory, the Focus Theory of Normative Conduct, and the Value Based Norm Theory, to name a few. It has been suggested that integrating such theory into interventions

aimed at tackling littering lead to improved effectiveness of interventions, as compared to those developed without the use of theory³.

In the Integrative Behaviour Model⁴ developed by Hansmann and Steimer, it is posited that;

“Habitual behavior[sic] takes place almost automatically without elaborated justification processes weighing the pros and cons. Instead, behavior, which often proves successful in the past, is repeatedly displayed without much conscious internal deliberation. Littering may prove successful in so far as the litterer thereby gets rid of unwanted waste and thus achieves the primary objective of disposal behavior.”

Within this theory, a number of factors can determine a person’s intention to take part in a behaviour, in this case littering. These include their knowledge and competencies, social norms and

group dynamics, their individual needs, attitudes and personal norms, and situational restrictions (both real and perceived). These act as determinants to the behaviour. There is additionally a process of justification, in order for people to feel more at-ease with the behaviour and continue with it. Littering behaviours are justified based on internal (e.g. self-image and personal norms) and external norms (e.g. social norms), situational factors, and the benefits as compared to the costs of the behaviour. These justifications lead to the continuation of the behaviour.

This leads to habit formation, at which point the behaviour is more automatic and linked with subconscious processes. The paper goes on to state that in order to address such habitual behaviour, interventions need to raise awareness of the problematic and dysfunctional nature of littering. Previous international research has additionally indicated that

³ Chaudhary, A. H., Polonsky, M. J., & McClaren, N. (2021). Littering behaviour: A systematic review. *International Journal of Consumer Studies*.

⁴ Hansmann, R., & Steimer, N. (2015). Linking an integrative behavior model to elements of environmental campaigns: An analysis of face-to-

face communication and posters against littering. *Sustainability*, 7(6), 6937-6956

when undesirable littering behaviour has become entrenched in this manner, more in-depth social education techniques may be beneficial in order to have a substantial impact on littering behaviours⁵.

Prior evidence has pointed to a number of factors in littering. Two notable factors that emerged from large-scale observations in America indicated that both the presence of bins, and the presence of prior litter at a site act to decrease and increase the likelihood of littering behaviour respectively⁶. The presence of litter can act to provide a social norm for the acceptability of littering, while the absence of bins may be a situational restriction. However, evidence on the presence of bins is contradictory. This may be due to the presence of littering behaviours when bins are filled with waste, for example. Other research has indicated that people can often mention situational factors such as overfilled bins as being the reasons

for their littering behaviours, which become part of their justification⁷.

Vehicle Littering

Evidence on vehicle littering has rarely been specifically examined. Given the extent to which roads are reportedly littered, and the negative impacts that this form of littering can have with regards to both cost and environmental degradation, there are substantial benefits that could arise from further research in this area.

Previous research into this subject matter conducted by Keep Britain Tidy⁸ identified several situational factors that may be associated with higher incidences of vehicle littering behaviour. These include the item type (smaller and smellier items are more likely to be littered), other people not being nearby, having 'respectable' passengers in the vehicle such as a parent or colleague. It was also shown that bins being absent or full was cited as a factor which could

increase littering behaviour. For HGV drivers specifically, it was noted that the amount of time spent in the vehicle leads to increased littering, and a desire to finish their shift quickly, resulting in a lower number of stops.

These previous findings link with justification factors outlined in the Integrative Behaviour Model; for example, a smelly item has higher costs associated with keeping it in the vehicle (an ongoing unpleasant odour), meaning that the benefit of its rapid disposal are increased.

⁵ Khawaja, F. S., & Shah, A. (2013). Determinants of littering: An experimental analysis. *The Pakistan Development Review*, 157-168.

⁶ Schultz, P. W., Bator, R. J., Large, L. B., Bruni, C. M., & Tabanico, J. J. (2013). Littering in

context: Personal and environmental predictors of littering behavior. *Environment and Behavior*, 45(1), 35-59.

⁷ Hansmann, R., & Steimer, N. (2015). Linking an integrative behavior model to elements of environmental campaigns: An analysis of face-to-

face communication and posters against littering. *Sustainability*, 7(6), 6937-6956.

⁸ Keep Britain Tidy (2009) Vehicle Litter Research Report.

GENERAL PUBLIC LITTERING BEHAVIOURS

Littering from Windows

When discussing littering from windows in the focus groups, many participants discuss disposing of biodegradable items such as apple cores, and orange and apple peels. Other items mentioned include small items such as snack packaging, tissues and receipts. A minority of participants revealed much more widespread littering behaviours however;

“So, most of the time I try to just have a plastic bag in the car. So, I try to fill that up and then normally by the end of the day, I have to throw that whole bag out. Whatever’s in it, I don’t care. It’s going out.” - Amber

Looking at the scale of these behaviours among the general public, in the national survey 16% of drivers reported that they had disposed of an item of rubbish from a vehicle window, and 6% reported that they had done so within the last year.

The proportion of people who admitted to ever disposing of litter from a vehicle

window increased among people with children aged 4 and under (26%), men (19%), those aged 25-34 and 35-44 (22% and 19% respectively), and those who use the Strategic Road Network more than once a week (19%).

Table 1: Frequency of disposal of litter item types among those who litter from their vehicle window

| Item Type | % ever dispose of out of a window | % dispose of at least once a month |
|------------------------------|-----------------------------------|------------------------------------|
| Fruit cores or peels | 56% | 10% |
| Other food items | 24% | 3% |
| Cigarette Butts | 22% | 12% |
| Chewing gum | 22% | 3% |
| Small pieces of paper | 21% | 4% |
| Snack packaging | 14% | 3% |
| Other items | 12% | 2% |
| Fast food packaging | 8% | 4% |
| Drinks containers | 7% | 3% |

Table 1 shows that by far, fruit cores and peels are the item type which most people have ever disposed of from a vehicle window (56%), followed by other food items. This is congruent with the findings from the focus groups and is likely due to the perceived lack of harm from littering these items, due to them being perceived as being biodegradable, and additionally to these items, particularly other food items, being more odorous. However, cigarette butts are the items most frequently disposed of, with 12% disposing of them from their vehicle window on a monthly basis.

Leaving rubbish at the roadside or in laybys

A number of behaviours were discussed in the focus groups with regards to the various behavioural patterns shown when disposing of litter items at the roadside or in laybys. Several participants mention leaving food items after they have pulled into a layby to eat, others discuss leaving general food and drink related packaging including chewing gum, snack packaging, and fast food packaging such as food wrappings and cups. Others will intend to dispose of litter in a bin within a layby, but if bins are absent or overflowing, then litter items will be placed next to a bin. This is mentioned by some as being contained within a bag.

In the national survey, this form of littering is reported to be less common than littering via the disposal of items from vehicle windows; with only 4% of those surveyed responding that they had ever littered in this way. However, there is a substantial overlap between both littering behaviours, and 69% of people who have left rubbish in laybys in the last year have also dropped items of rubbish from their window within the same time period. The variety of items mentioned in the focus

groups as being littered in this way are reflected in the item types that people report to have left at the roadside or in laybys in the national survey.

Table 2: Frequency of littering items at the roadside or in a layby among people who admit to ever having littered at the roadside or in a layby

| Item Type | % ever dispose of in a layby or at the roadside | % dispose of at least once a month |
|------------------------------|--|---|
| Fruit cores or peels | 52% | 9% |
| Snack packaging | 33% | 7% |
| Small pieces of paper | 31% | 11% |
| Other food items | 30% | 6% |
| Drinks containers | 29% | 7% |
| Fast food packaging | 29% | 8% |
| Other items | 27% | 5% |
| Chewing gum | 26% | 5% |
| Cigarette Butts | 20% | 9% |

Similar to items disposed of from windows, fruit cores and peels have been disposed of at the roadside by the greatest proportion of participants.

However, people who litter via leaving rubbish items at the roadside or in laybys are more likely to admit to having littered snack packaging (33%), small pieces of paper (31%), and other food items (30%) in this way.

MOTIVATIONS: INTERNAL

The force of habit

A theme that emerged throughout the groups is that a habit can be formed which then reduces the amount of thought going into the behaviour, where it can be considered automatic and immediate for people throwing items out of windows.

“I can sometimes feel guilty when I throw stuff out and then I do it again, like, the next week. It's weird.” – Andy

“As a driver, you can lose a lot of respect in front of other people like pedestrians and other drivers ... when I see people chucking stuff out the window, it makes me not want to chuck stuff out the window next time. But I end up doing it a few weeks later anyways” – Juber, talking about seeing other drivers littering

“I don't think about it, I just do it, and then as soon as I've done it, I feel like I just want to stop the car and go and find it, because it just makes you feel really bad.” - Stacey

Even when people are aware of the negative consequences of their littering, because of the immediate and automatic nature of the littering behaviour, these considerations are not top-of-mind in the moment, meaning they are not having a large enough influence in the moment to prevent the behaviour. In the survey, 35% of people report feeling guilty to a large extent, and only 22% report not feeling at all guilty following littering behaviour. It is likely that following the automatic habit of littering, more conscious processes resume and feelings of guilt kick-in.

Convenience

Related to the force of habit, but distinct, is the perceived ease of littering as compared to other disposal behaviours, such as finding a bin or taking rubbish home.

“It's the convenience. The right there, the right now. Just leaving it – get rid of it. Having the space, getting away the food smell. Not leaving everything for later, or any surprises that you may find, that may turn into a long-lasting smell.” – Chantal

“I think it's just because it's just quickly out of the car, and you know it's gone and it's not your problem anymore. I don't have to go home and think, ‘I've got to get my daughter out the car, I've got to get everything out, oh and I've got to get the rubbish’. So, I think it's just a positive of me thinking, ‘That's one thing less, that's less that I'm going to have to get out the car’.” – Stacey

For some, throwing items out of the window is an immediate and easy way to dispose of unwanted items of rubbish that mean that you don't have to give any further thought to their disposal. Giving thought to planning an alternate method of disposal may be a barrier for some in correctly disposing of items.

People can be concerned about forgetting about items if they don't dispose of them immediately, with several mentioning concern over finding ‘surprises’ at a later point in time.

And sometimes, you forget for one week [that rubbish is] there, and [it's] better that you get rid after we have been travelling

a lot, [otherwise] you find any surprise there. – Karima

The experience of such incidents following holding onto rubbish, or certain types of rubbish, may act to disincentivise this behaviour. It provides an example where using this method has been unsuccessful, meaning that people may subsequently be less likely to return to the same behaviour.

Others use littering in this way as a more systematic way of saving time.

“For instance, if I’m there to stop over to get some food, obviously, that is convenience and efficiency – I can do it, there and then, or it could either be, for me... when I do it, for instance, at the end of the week... I’ve got build up, I just pull over there, just leave some rubbish there and just go... and I just come back home, clean the clean car and that just saves my time on my journey for next week, to be honest” – Kristina, talking about situations where she might leave rubbish in a layby

Social norms

In certain contexts, the presence of others can act to increase the likelihood

of littering behaviours. A minority of participants report being more likely to litter when travelling with friends.

“If I’m with my friends and they’re getting more and more drunk, then they care a lot less and I tend to care a lot less as well, so more things would probably get littered rather than put in the bin.” – Demei

Concern over vehicle tidiness

For some, having rubbish in a vehicle can feel particularly concerning. This group may be motivated to remove any types of litter as quickly as possible, due to the feeling that having any litter in the vehicle has a negative impact on how they feel within their vehicle.

“Well it just makes your car look untidy really. You want your car looking nice and clean and pleasant, don’t you? And with litter around, well, it wouldn’t look like that would it?” – Michael

“I don’t like rubbish in my car so I’ll try and get it out at the first opportunity, even if that means throwing it out the window or something. I just can’t have it around me.” – Andy

Being able to dispose of rubbish immediately can help people within this group feel that they are organised and that their vehicle is tidy.

“Just mainly everything feels cleaner in the car and you feel organised. It’s like an OCD kind of thing, you know?” – Juber, talking about the benefits of disposing of rubbish items from vehicle windows

MOTIVATIONS: SITUATIONAL

Absent or Overflowing Bins

Conversations related to bins emerged throughout the groups. There are perceptions that bins in laybys aren't frequently emptied and that leaving litter next to overflowing bins is acceptable as there is no alternative. Additionally, it is felt that where no bin is present, leaving items in laybys is the alternative option.

"Got to say, those bins in laybys ... they're almost always overflowing and not because they're necessarily that busy – just because they don't get emptied"

"If there's a rubbish bin I'd normally go for it but if it's overflowing or there isn't one, I'm not going to kind of lose sleep over it." – Thomas

While having no bins may increase littering behaviours as compared to sites with salient bins that have available space, the presence of overflowing bins seem to be associated with increased littering behaviours, and their presence enables the justification of the behaviour through shifting responsibility onto those bodies responsible for bin servicing.

"Some of these bins are never changed, so you've literally got a pile of rubbish, like apple cores, coffee cups, and there's one bin and literally it's not been emptied for a month. That's what I find sometimes. So, I just tend to pile it up against it and then drive off."

"But for me, a lot of the times the bins are just full ... this is at petrol stations as well, garages. You stop off to like, I don't know, empty your car, which is newspapers, coffee, food, and you'll find there's no room for any waste. You think well, I've made an effort, I've tried so yeah." – Paul

When bins are overflowing, there can be a sense that people have done their part in attempting to dispose of rubbish items in a proper way, and so feel that leaving items is acceptable as it's the only choice they've been left with in disposing of rubbish that they don't want with them in their vehicles.

"I wouldn't put it anywhere inappropriate, if you know what I mean. So it would either be next to a bin or in a bin, or in amongst other rubbish." - Jonathan

Addressing the issue of, or the perception of the issue of, overflowing bins in the Strategic Road Network may be key to reduce this form of littering, which can often not be seen as littering, and rather a more responsible form of disposal.

Journey Type

Several people report being more likely to litter on longer journeys. This can be linked with the increased time that people have to spend with items of rubbish in their vehicles.

"It's usually if the journey's gone within 10, 15 minutes where if I know I'm getting out the car in five minutes I'll just take it with me. But if I know I'm going to be stuck in the car for another hour or so, I'll throw it out." – Andy

This is reinforced by the findings in the quantitative research, where 47% of people report that when they litter, they will typically be on a long journey (over an hour), as compared to only 20% who would typically do it on a short journey.

Item Type

People report being more likely to litter items when the items are smelly, sticky, or otherwise more likely to cause a mess in their vehicle. If items have an odour, then people feel there is a much more urgent need to throw them out of the vehicle quickly.

“But usually when it's chucking it out of the window it's usually things like, you know, something that's smelling really strong ... I tend to get rid of anything that can end up smelling bad immediately.” – Juber

“If it's leaking rubbish – let's say, a drink or... then, I would leave it on the side. But if it's a dry – like, I can keep it in the bag, it doesn't smell – I would take it to the end of the journey and recycle or throw it at home.” – Maksim

THE SCALE OF MOTIVATING FACTORS

Figure 1: Reported motivating factors for littering from a vehicle window among people who admit to having ever littered

Base | 271

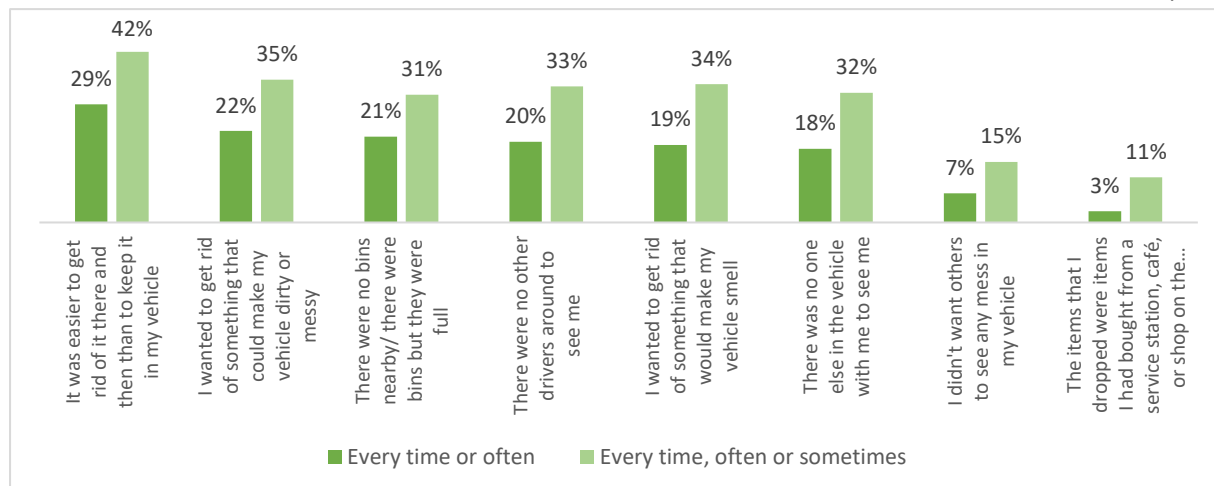
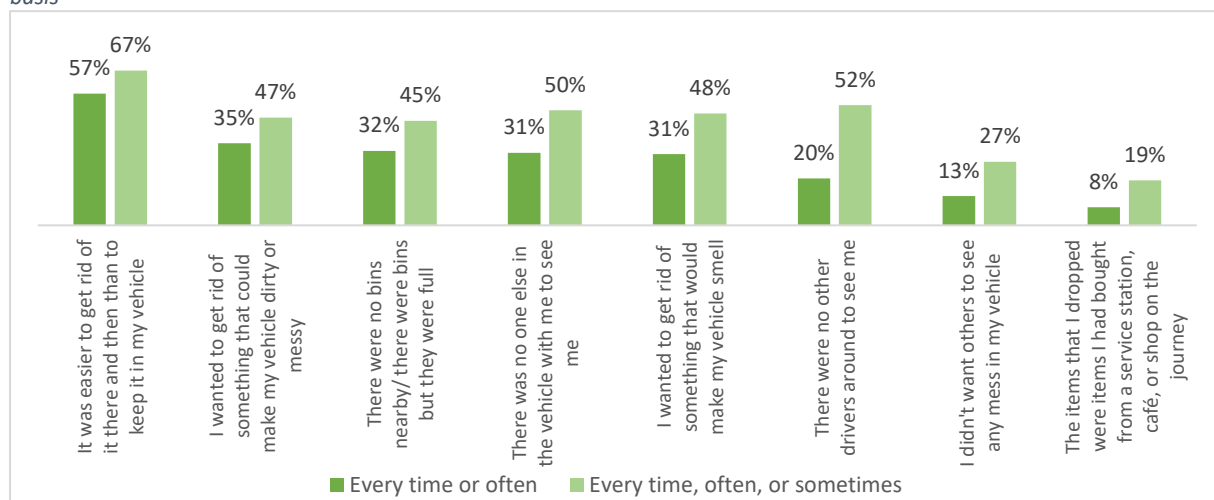


Figure 2: Reported motivating factors for littering from a window among people who litter any item on a monthly basis

Base | 64



The motivation of littering due to its convenience, being easier than alternate disposal behaviours, that emerged in the focus groups is further reflected in the results of the national survey. 29% of people who have littered report that this is a contextual factor when they litter either every time or often. This was followed by bins either being absent, or full, which was an influencing factor every time or often for 21% of this group.

For people who litter on a monthly basis, these influences can be seen to a greater effect, and over half of this group (57%) report that littering items was easier than alternative methods of disposal either every time or often when they had previously littered. This rises to 67% who report that this was a factor at least sometimes when they have previously littered.

Unsurprisingly, this group of more frequent litterers display greater affinity with the motivations. It may be that as they increasingly engage in littering behaviours, they lean on a wider range of

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reasoning dependent on the situational context. However, the greatest difference between this group and litterers overall is for the littering behaviour being easier than other behaviours; which may reinforce the theory that increased engagement in the behaviour reinforces this perception, leading to its becoming habit.

Social norms

Alternatively, the presence of others, and particularly other drivers nearby, can act to deter littering behaviours. Several people note that they are less likely to litter when other drivers are nearby, or when certain people are in the car with them. Some people are fearful of what the response might be from others if they are witnessed littering.

“Yeah, I tend to wait until there's no-one behind me or if you're travelling maybe that quickly and know there's no chance of somebody catching up or stopping at traffic lights alongside you.” – David

When discussing the influence of people being in the vehicle alongside them, people may be concerned about the image that is associated with littering, when it is in contrast to the way that people perceive themselves to be viewed by others. For some, this is whether anyone is in the car, while others are only impacted by certain people; for example, parents, grandparents, colleagues, or children. Reasons for not wanting to litter in front of children include not wanting to

act as a negative role model, and having more environmentally conscious children who might tell them off.

“I wouldn't do it in front of anyone. I only chuck stuff out the window if I'm by myself. Any company in the car, I'd avoid it. It's just that image and the respect you have for other people. You want to kind of maintain that. It looks bad so only if I'm with myself.” - Juber

Pro-environmental attitudes

Where people mention only mention throwing food items, such as fruit cores or peels, or other food mass that is perceived to be biodegradable, some display associated environmental awareness or pro-environmental attitudes. There can be a sense that they will provide food for birds, or other local wildlife, and won't do any damage to the environment.

Perception of others' littering

Despite their own littering behaviours, many hold a very negative view with regards to the littering behaviours of other road users, and feel that roadside litter is unpleasant.

“I absolutely loathe it. I can’t stand it. I’m a huge hypocrite, I think it’s disgusting. I don’t think people should do it. I shouldn’t do it and there is no justification for it.” - Demei

This may again best be understood when examining motivations as justifications for littering behaviour. When individuals have repeatedly littered, acting to reinforce justifications they have made for the behaviour, and formed a habit, they have increased their personal acceptability of littering. However, there is not this same process with regards to the littering behaviours of other road users, and so this is deemed more unacceptable among others.

Situational factors affecting littering

People are additionally more likely to litter in rural environments as opposed to urban ones, on longer journeys, and from a moving vehicle.

Deterrents

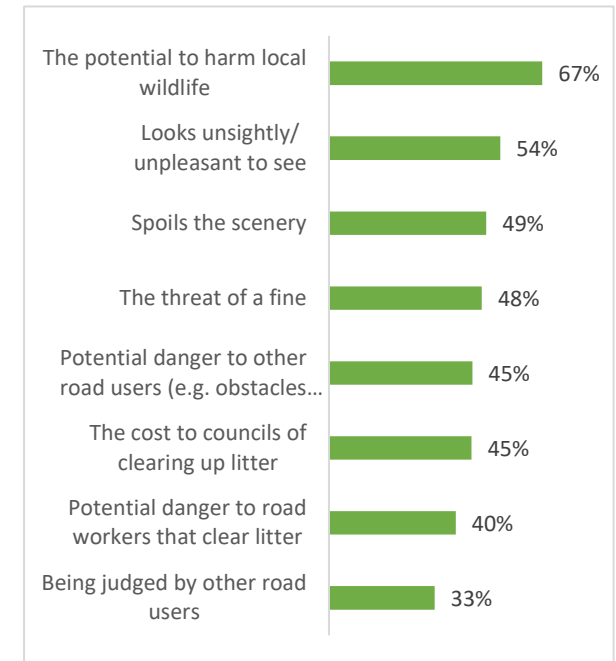
When discussing things that may discourage vehicle littering, focus group participants mention environmental, enforcement, and community-based messages. A number of vehicles for

these messages are suggested including signs installed in laybys, billboards, and packaging. Increased levels of enforcement and increased threats of enforcement are additionally cited as strategies that people feel might be effective in reducing this form of littering.

“I think there needs to be signs in, like, places like laybys where people are known to leave their rubbish ... if you put signs there saying 'take your rubbish home', maybe some information about, you know, how it impacts on the environment and the wildlife, it'll make people think and change their habits and think about taking it home or putting it in a bin somewhere else.” – Hayley

In the survey, the potential for litter to harm wildlife was considered most broadly by people who admit to having littered to be likely to encourage them not to litter, with just over two-thirds (67%) reporting that this would have an impact on them. This was followed by messages with a focus on litter looking unsightly or unpleasant to see which was selected by over half (54%).

Figure 3: Proportion of people who admit to having littered who feel that different types of messaging would be likely to encourage them to stop dropping litter



Base | 284

Based on the varied motivating factors and justifications, it may be that complementary messages delivered at key points in the littering journey would be most effective; for example, messages around litter spoiling scenery or harming wildlife installed in litter hotspot locations; a strategy that has previously led to decreases in litter levels at such hotspot roadside locations.

COMMERCIAL DRIVERS LITTERING BEHAVIOURS

When talking about the items that they throw from their vehicle windows, several drivers note that they mainly only throw biodegradable items such as apple cores, banana skins, or other food items, that are more likely to have an odour and additionally perceive that throwing these items will have a lesser impact on the environment.

Among other drivers who are throwing other items, a range of different item types are cited, predominantly related to food and drinks packaging or small items such as paper and receipts.

“Just, like, wrappers, like, drink bottles. Those kind of things. Anything... anything food and drink wise.” – Chris

“I tend to throw away cans. So like Coke cans. You know, Fanta cans. Stuff like that because I have a cup holder, and usually when it’s... when it goes empty, I tend to throw it out the window ... unwanted receipts as well, like, I throw receipts out the window, like it’s nothing. Like, it’s a small thing. Bits and bobs.

Bottles... not much really, then just cigarettes really, I’ve [littered] cigarettes boxes.” – Azrael

These behaviours are very frequent, with the vast majority of drivers reporting throwing items out on a daily basis, once a shift, or the majority of days that they are working.

A range of different disposal patterns are evident when talking about throwing items from vehicles; with drivers mentioning disposing of items from their windows at speed, while on the move in general, where bins are overflowing or absent, or in any roadside location where they have stopped.

“Most of the time, yeah, it just goes out of the window especially on the motorways... The reason, like, I’m driving, like, 70 miles per hour so, yeah, I think it makes sense, like, you know, just throwing it out, it just completely goes over from the road.” – Raghu

“It’ll be more when I’m on the move ... But and then otherwise... obviously when I’m stopped I would rather go to like a bin

or I mean occasionally I can leave it like on the kerbside if there isn’t a bin or sometimes I just can’t find one so it can be a mix of both really.” – Daniel

“It’ll be on the lay-bys and the motorways, and stop off sometimes, like... so I’ve got a thing as well. I don’t like to put rubbish in the bin if the bin’s full. So sometimes, you get that a lot at the service station, so I just leave it on the side.” – Steven

The prevalence of littering from vehicles is fairly high amongst commercial drivers; 47% report having littered from their vehicle window within the last year, and 42% within the last month. Drivers that were more likely to have littered within the last year are those who drive HGV vehicles (70%), those who regularly stay in their vehicles overnight (69%), those who typically spend 10 or more hours in their vehicle per shift (61%), those aged 25-34 (61%), and those living in London (58%).

Among commercial drivers who do litter, the frequency of littering behaviours is also high. Chewing gum is littered on a

Figure 4: Frequency of littering different item types among commercial drivers who admit to ever having littered from their vehicle window

Base | 253

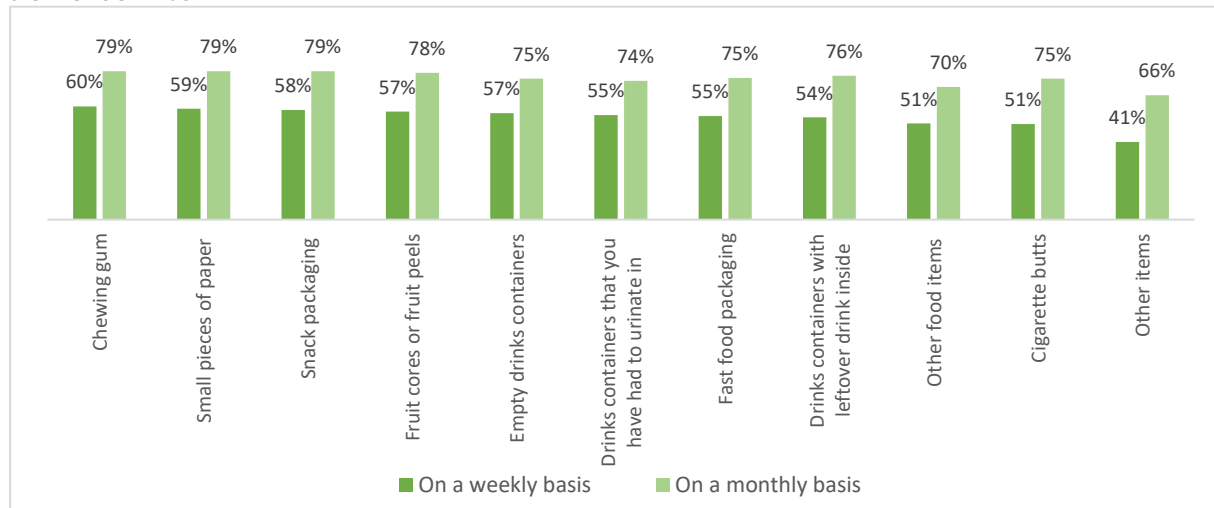
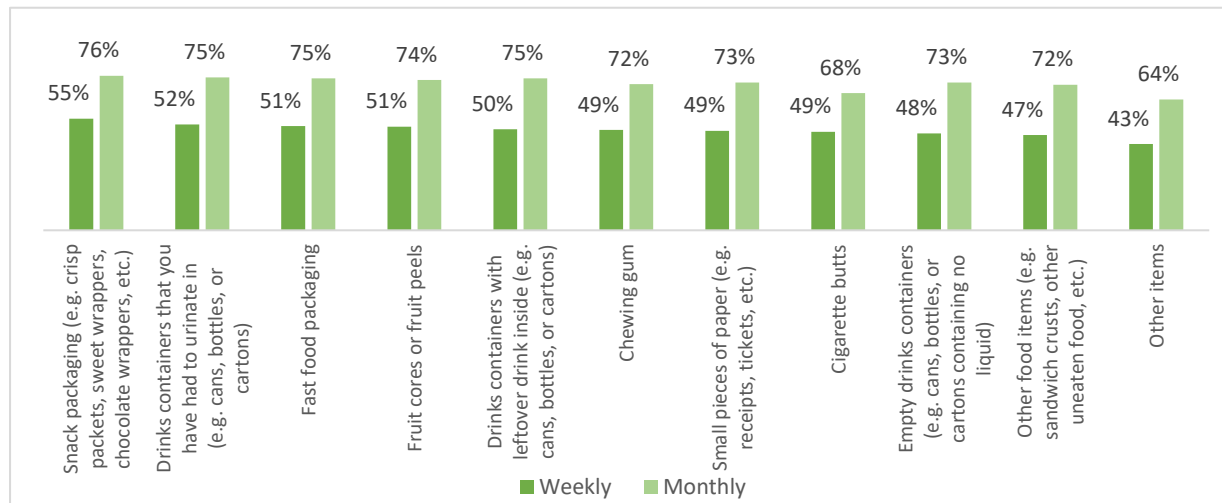


Figure 5: Frequency of littering items among commercial drivers who admit to ever having littered by leaving items at laybys or roadsides

Base | 247



weekly basis by 60%, small pieces of paper by 59% and snack packaging by 58%. However, all item types, excluding ‘other items’ are reportedly littered on a weekly basis by over 50% of drivers who admit to ever having littered. The prevalence of littering behaviours amongst drivers may have been increased by changes related to Coronavirus. Several drivers in the focus groups reported a lack of service provision for commercial drivers over this time period.

“In the first lockdown, we were going into services and that and you weren't able to use the toilet facilities which I think is disgusting. You know, everything was taped off so it was pointless even going in. They were blasé about what you could put in the bin. They had bins taped off. It was an atrocity.” – Daniel

There is a large overlap between those who drop items of litter from their vehicle windows and those who leave litter items in laybys or at the roadside. 92% of those who report having left items of rubbish at the roadside or in a layby within the same time period had also disposed of items from their window.

MOTIVATIONS: INTERNAL

The vehicle as an office or home

The vehicle being an office or home space for commercial drivers is one factor that may have a particular influence in increasing the urgency of littering behaviours. This may lead to drivers wanting to dispose of rubbish much sooner, as having rubbish in the vehicle is creating mess in their office or home space.

“Your cab is your office, it's your workspace and for some of us it's our bedroom as well so you don't want rubbish in there. You want to keep it a clean, tidy cab. So you just want to get rid of it as soon as you can.” – Ricardo

Associated with this is being in a small space with rubbish items for long periods of time, which is mentioned as increasing the need to get rid of items. Being in a confined space with rubbish items for a long period of time is cited as being “distracting” and “stressful”.

“You're in a very confined space. It's the space. I think if it was a bit bigger and I could hide it down one end, but t's just

the small space, I just have to get rid of it.” – Dominique

“I think it's about organisation, you know, you want a nice, clean working environment, immediate where you're sat and you don't want any distractions, noises from you know, whatever it may be, packaging moving around that might be in your ear shot, tins knocking together, you know, they're all distractions from the road ahead as it were doing your checks and everything, so yeah.” - Stephen

This additionally means that there are some key trigger points related to the vehicle being used in this way. One key trigger point for drivers who stay overnight in their vehicles is the point at which they go to sleep. Anything that may have an odour can become particularly bothersome at this point.

“I had just bought a load of rubbish so I could actually eat something ... When I say a load of rubbish that includes sweets and stuff because that was the only thing that was available to eat and something smelt so I just left it out. And

that was in a layby because otherwise I couldn't get to sleep.” – Lloyd

“Any rubbish, no matter what it is. It's not staying in my cab overnight because it does, it does smell the next day.” – Neil

Rubbish left in vehicles overnight can prevent drivers from falling asleep, with most of the conversation around the impact of rubbish at this stage focused on its odour. Again, the costs of not disposing of litter at this point are substantially increased.

Convenience

As with the general public, the convenience of littering behaviours is a motivator for drivers as well. Being able to litter items, either by disposing of items out a window or in a layby, can be the easiest method of getting rid of rubbish items.

“It's easy, throw it out the window, done. Drive. You don't have to worry about it later on.” – Barry

“Rather than having to think about what you're going to do with the rubbish, it's like, well you're already there at the lay-

by, you might as well just chuck it out. And it is... like, a large part of it is to do with laziness, as well, but it's just the convenience that, if you're there, you might as well..." - Maria

This may particularly be the case for drivers when they have work related factors as their main point of focus at the end of their shifts, and giving thought to disposing of rubbish items in the correct manner is an added thing to give thought to.

"It's more you've got enough to deal with as you're leaving work anyway when you've got your paperwork to hand in, you've got your keys, you've got your bags, you don't want to be carrying all the rubbish as well. [You] want to get rid of it as quick as possible." – Gareth

Given the increased frequency of littering behaviours among commercial drivers, shown in the survey, as compared to the frequency of littering behaviours among the general public, it may be that to a greater extent, these littering behaviours may have become well embedded within a fairly large proportion of drivers.

Not wanting others to see mess

A minority of drivers mention not wanting others to see mess in their vehicles; whether colleagues, passengers, or other

people. Therefore, another person getting into the vehicle soon may trigger disposal of all rubbish that is within the vehicle at that point.

"So if you're carrying other people, it's the last thing you want them to see your kind of litter and junk, so it's quite important."

– Joe

"Weirdly enough, it's embarrassing, but sometimes if I do it on... take the car... take the van to be cleaned, I'm like embarrassed that I've got loads of rubbish in there. So I'll throw it out the door so they've only got a little bit to tidy up, but it is embarrassing. But yeah, I suppose... the worse one is, like... is if you've got another passenger" – Steven

The perceived negative views that other people may have of rubbish in a vehicle may act to increase the costs of that behaviour, thereby increasing the pressure to remove these items.

MOTIVATIONS: SITUATIONAL

Absent or Overflowing Bins

Again, similar to the public, bins overflowing and not being emptied frequently is widely mentioned by commercial drivers. Leaving bagged up rubbish next to a bin is seen as being much more acceptable than other littering behaviours, as was also the case amongst the general public. Likely due to the increased use of services and laybys by commercial drivers, this is a more prominent theme among this group.

“I mean you know, if I’ve got out of my van to go and put some of my litter in a bin and the bin’s full and there’s no space, you know, I’ve done the best that I can.” – Paula

“But, gosh, if you could find a bin that’s not overflowing on the... on the motorways ... it’s mad. They’re always so, just, like, overflowing and, ugh. Yeah, it can be tricky sometimes.” - Dominique

“You pull up in your cab for maybe half hour and you just do what everyone else is doing. There’s no actual rubbish bin

there so people just create their own pile. So, you just kind of end up adding to the rubbish. You feel a bit guilty but you... but at least it’s in kind of one contained space so you know someone is going to come and clear it up.” – Joe

This behaviour can in some cases be interconnected with social norms, as once people start leaving litter due to bins not being present, it increases the acceptability of that behaviour. Again, where bins are overflowing, there is the feeling that there is little choice other than to leave litter items next to bins. In addition, where rubbish is left by bins, some participants felt more secure in the knowledge that it would be collected at some point in the near future, along with the contents of the bins.

“On the odd occasion I have left it by a full bin but knowing that it is probably going to be picked up when the bin’s emptied.” - Martin

Given the greater number of commercial drivers who have driven more frequently across Europe, there is additionally mention of bin facilities in the UK in

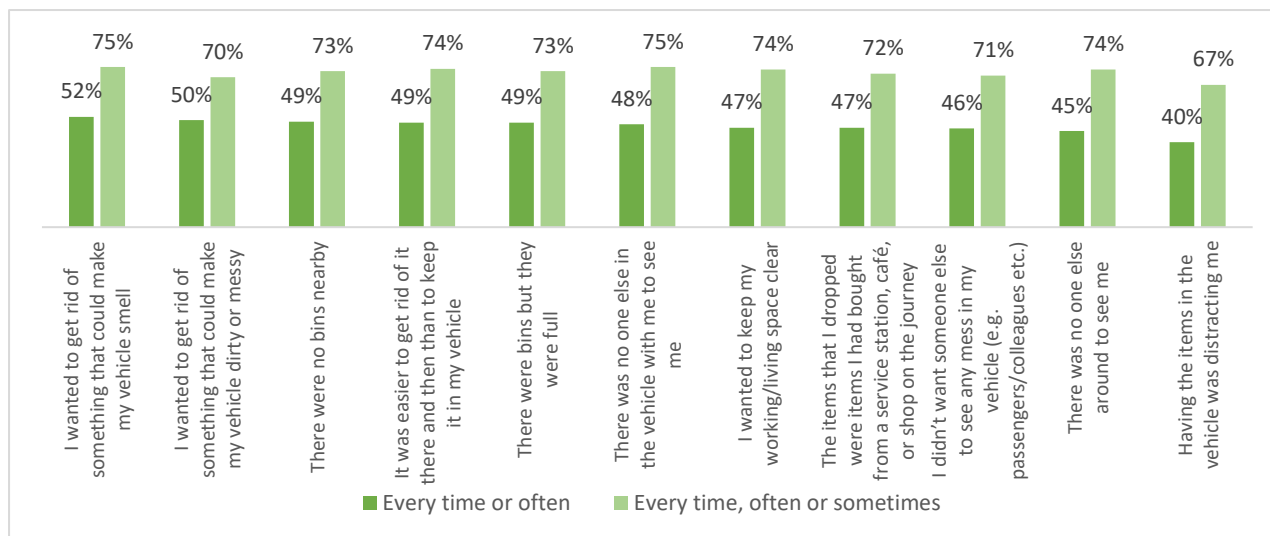
comparison to those in Europe, accompanied by the sentiment that other countries in Europe have better provision in this area,

“I think we’re way behind the rest of Europe to be honest. My experience of driving on mainland Europe is that, I mean they’ve been years ahead of having you know, systems where you can dispose of your rubbish like we do now at home but we seem to be way behind out on the road, rural that kind of thing.” – Stephen

THE SCALE OF MOTIVATING FACTORS

Evidently, perhaps linked to the increased frequency of littering behaviours, there are a greater number of motivators for drivers who admit to having littered from their vehicle. Just over half (52%) report that they wanted to get rid of something that might make their vehicle smell every time or often, and 50% report that they wanted to get rid of something that might make their vehicles dirty or messy. This links with the findings from the focus groups; due to their vehicles being their office and/or home, as well as a confined space, these factors may have a particularly strong influence.

Figure 6: Reported motivating factors for littering from a window among commercial drivers who have littered any item



Base | 253

BARRIERS

Social norms

As with members of the general public, drivers report being less likely to litter when there are other road users nearby. A couple of factors are mentioned in relation to this. Firstly, there can be a consideration over the impression that the behaviour might give about commercial drivers as a general cohort. Secondly, there is a concern that members of the general public may film drivers littering and report it either to their employer or on social media, particularly in the case of HGV drivers, where they may be driving a branded vehicle.

However, it appears to be the case that this influence does not extend across all situational contexts. One participant mentioned that they don't feel that there would be judgement from other drivers, as they perceive it to be likely that they have previously been in the same situation.

“Particularly in a lay-by and there's loads of other vans or, and trucks and HGVs, and even if they're not doing [it] themselves,

you tend to assume that they're not gonna think too much of it because I tend to assume that they've been in that same position I have” – Steven

Perceptions of others' littering

Again, similarly to the general public, many drivers have negative attitudes towards litter left at roadsides and towards the littering behaviours of others. There can be a comparative perspective, where individual behaviour is seen to be lesser than the behaviours of other drivers and so less important.

“Yeah, I'm quite judgmental about other people doing it, but when I'm doing it it's absolutely fine. But I'm not... like [other participant] said, I'm not throwing out massive things like sofas and mattresses. It's tiny compared... in comparison.” – Amarjit

This comparative perspective can act to minimise their own behaviour and increase how acceptable they feel throwing smaller items of litter is, given that some people are disposing of much more or much larger items.

Deterrents

Among commercial drivers, the potential to harm local wildlife is the factor most selected by drivers as being likely to encourage them not to drop litter (32%). This is followed by the threat of a fine (31%), and the fact that litter spoils the scenery.

Commercial drivers are more likely to be conscious of the threat of a fine than the general public are, and 43% of this group feel that it is likely that people who drop litter will be caught and fined.

In line with the greater level of discussion around bins within the focus groups, many suggestions involve changes to bin infrastructure; including a greater number of bins, differently designed bins, and bins positioned to be situated in hotspot littering locations.

THE ROLE OF THE EMPLOYER

Employers are in a position to be able to provide guidance and regulation to drivers on their littering behaviours. Several participants in the focus groups mention that they have not been given specific guidance on the disposal of litter, but are given advice on the use or misuse of on-site bins, and on the condition of the vehicle when they hand it over. Policies such as not allowing the use of bins at depot locations, and on requiring clean and empty vehicles without support for the disposal of rubbish may lead to increased pressure to dispose of rubbish by littering.

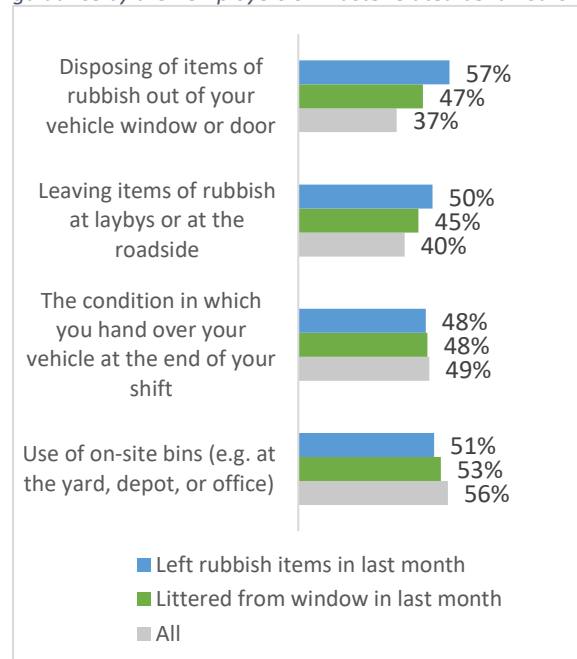
“But the companies, you know, they tell you don’t make a mess but in the same respect, they’re telling us that it’s costing the company so many thousands of pounds to dispose of our rubbish.” - Daniel

“Some sites I deliver to you don’t even have access to some of their bins. They might be way, way back in the corner somewhere which just adds to your, you know, time that you haven’t got to turn

around, that kind of thing. So that can be a bit of a problem.” - Stephen

As mentioned in the focus groups, employers can sometimes give guidance on the condition of vehicles when they’re handed over, but it is less common to be provided guidance on the correct disposal of rubbish items.

Figure 7: The proportion of drivers who have been provided guidance by their employers on waste related behaviours



Base: 508 | 120 | 88

Interestingly, the reported prevalence of having received guidance from employers on littering behaviours is higher among those who have recently littered. This may be linked with the fact that HGV drivers and drivers who stay overnight in their vehicles are more likely to have received guidance on this, which are the groups which are more likely to have littered.

41% of drivers surveyed felt that their employer would have an informal conversation with them if they were caught littering, while 38% thought that they would face a disciplinary procedure, while 14% didn’t think any action would be taken and 9% didn’t know whether action would be taken.

CONCLUSION

The results indicate that littering behaviours have become fairly well-ingrained amongst a substantial group of vehicle litterers, and particularly among commercial drivers where the behaviour may be more frequent.

There appear to be a number of situational and personal determinants of the behaviour. Several participants in the focus groups who only throw “biodegradable” items such as fruit items appear to hold more pro-environmental attitudes that prevent them from throwing items that they feel will not break down in the environment. Situationally, if there are no bins or bins are overflowing then it can have a negative impact on their behavioural intention, which can become justification, such as “there was no other choice” or “it will be collected soon anyway”. For commercial drivers, the physical environment of their job makes the behaviour more likely due to the increased amount of rubbish, the confined space, the long hours in the vehicle, and the fact that the vehicle additionally is an office and/or home. These determinants act to make the

intention of littering more likely in certain contexts.

Linking with the Integrative Behaviour Model, it is seemingly evident from the findings that vehicle litterers, both members of the general public, and commercial drivers, are likely to have justified, and continue to justify, littering behaviours, meaning that littering can become a more habitual, automatic behaviour. Justifications act to neutralise the behaviour going forward, and once someone has engaged in littering behaviour it is more easily justifiable given that the benefits of this disposal behaviour have clearly been demonstrated.

This research demonstrates that many people that litter have multiple justifications for littering behaviours, and it has already become a habitual and unthinking behaviour. These justifications include the lower level of effort that litter requires as compared to other disposal behaviours, and the benefits that people gain from disposing quickly in this way (eliminating odour or reducing mess). These outweigh any costs that may be

associated with the behaviour, such as the threat of enforcement, which is perceived to be unlikely, and social judgement from others, which can be evaded.

Overall, these findings indicate the complex nature of vehicle littering behaviour, with many influences that vary from person to person and from context to context. It is likely that to fully address the issue, equally complex approaches will be needed. Where behaviours have become habit, messages that disrupt the behaviour at the point of its occurrence may be beneficial. In line with previous research, given the many justifications that may have been developed for littering behaviours, more in-depth information and educative approaches may be beneficial. Using complementary approaches simultaneously may help to address the various dynamics that are at play in driving the behaviour.

RECOMMENDATIONS

Due to the embedded and habitual nature of vehicle littering behaviours, it is likely that addressing the behaviour using a multi-faceted approach will be necessary in order to significantly reduce levels of litter at roadside locations.

- Identify patterns of layby use and litter hotspots and utilise data to target strategies where most needed. Reducing litter in the most littered environments is likely to have a greater overall impact due to the knock-on effects related to people being less likely to litter clean environments
- Develop bin infrastructure and servicing to maximise the use of bins and decrease the behaviour of leaving litter items next to overflowing bins
 - Target bin servicing at well-used routes so that bins which are likely to become filled first, are emptied first
 - Once laybys and service stations which are heavily used by commercial drivers have been identified, optimise bins to suit the needs of this group, for example by installing larger bins and bins with larger apertures in which a whole bag of rubbish can easily be placed
 - Strategically place bins at hotspot layby locations
 - Include salient messaging on bins to drive awareness of the littering behaviours considered to be more acceptable, such as leaving rubbish items next to bins
- Address perceptions
 - Utilise communications to drive awareness of the frequency of bin emptying
 - Increase the visibility of layby servicing visits; ensure that cleansing teams are easily identifiable, time visits to coincide with periods of heavy use of laybys
- Educate
 - Promote education among commercial drivers with regards to the impacts of littering and its unacceptability as a behaviour
 - Develop educational resources for commercial drivers. These could be online assets, housed on the Highways England website, as well as physical assets such as informational leaflets
 - Utilise face to face conversations with commercial drivers or members of the general public who litter to challenge their specific justifications for littering behaviours. This could be done, for example, by officials at key roadside littering locations such as hotspot laybys, or through workshops.
 - Work with employers to develop industry guidance on littering behaviours amongst commercial drivers; for example, educational materials could be distributed to employers via an industry body

- Utilise peer to peer conversations; for example, driver 'litter ambassadors' who can distribute the messages to other drivers and decrease those who may feel that other
- Reduce personal costs associated with not littering
 - For example, in-vehicle containers to organise and reduce odour from litter items
- Increase costs associated with littering
 - Communicate to raise awareness and reduce the acceptability of behaviours that are currently deemed acceptable, and in some cases, not perceived to be littering; leaving rubbish next to bins and where there is already a build-up of rubbish
 - Increase the perceived or actual likelihood of enforcement action, for example through cameras or the publishing of littering fines statistics and 'case study' examples
 - Increase the perceived likelihood of social judgement from others; for example set up and publicise a reporting service for witnessing littering behaviour, not just incidents of litter
 - Communicate the impacts of litter on the Strategic Road Network in real terms
- Increase benefits of acting responsibly
 - Utilise communications that emphasise the merits of acting responsibly, for example, positive messages that use community-based encouragement messages
 - Incentivise correct disposal methods, for example through the gamification of litter bins or 'challenges'
- Work with service stations to reduce packaging or utilise packaging as a vehicle for awareness messages
- Personalise anti-littering messages to base them on common justifications that people have for their behaviours

GET IN TOUCH

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