



Encouraging battery recycling to reduce waste stream fires

Research findings and recommendations

November 2021





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recycle
your
electricals



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Project overview

Objectives

To understand current attitudes and behaviours towards disposing of used batteries and appliances containing them

To explore how to most effectively influence people to recycle them correctly, to reduce the risk of fires

Qualitative research

Zoom interviews with individual citizens of different lifestages (no recycling rejectors)

Living in Newcastle, Dartford, Leeds and Bridgend (different recycling collection approaches)

To get under the skin of what people really think, feel and do, and what drives that

And assess their response to potential messages, communication approaches and interventions

Quantitative research

Online survey amongst 2000 adults

To validate, quantify and/or refine the qualitative findings using a large national sample

94% of adults disposed of household batteries in the last year (83% of 18-34s)

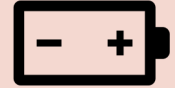
48% disposed of at least one electrical item with a chargeable built-in battery (64% of 18-34s)

e.g. electric toothbrush, e-cigarette, shaver, power tool, toy, gaming controller

This summary covers ...

USED HOUSEHOLD BATTERIES

How are people currently disposing of them?
What do they know, think or feel that influences that?



UNWANTED ELECTRICAL ITEMS CONTAINING EMBEDDED BATTERIES

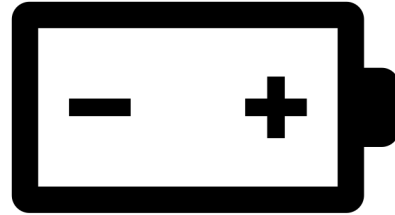
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HOW CAN WE DRIVE MORE OF THE 'RIGHT' BEHAVIOUR?

How have people developed the impressions they already have?
How can communications or other interventions most effectively encourage recycling?
(including using the risk or incidence of fires)





USED HOUSEHOLD BATTERIES

How are people currently disposing of them?

What do they know, think or feel that influences that?



How are people currently disposing of household batteries?

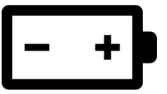
About 75% of people who dispose of batteries claim to be recycling them correctly, at least some of the time

Supermarket battery containers are by far the most common approach (used by almost 50%) followed by HWRCs, other types of shops/community locations and recycling at home (mostly apparently correctly using separate bags)

The more organised households have developed habitual systems of saving up used batteries in a certain place and then taking them to a particular recycling container they're aware of in a place they visit anyway

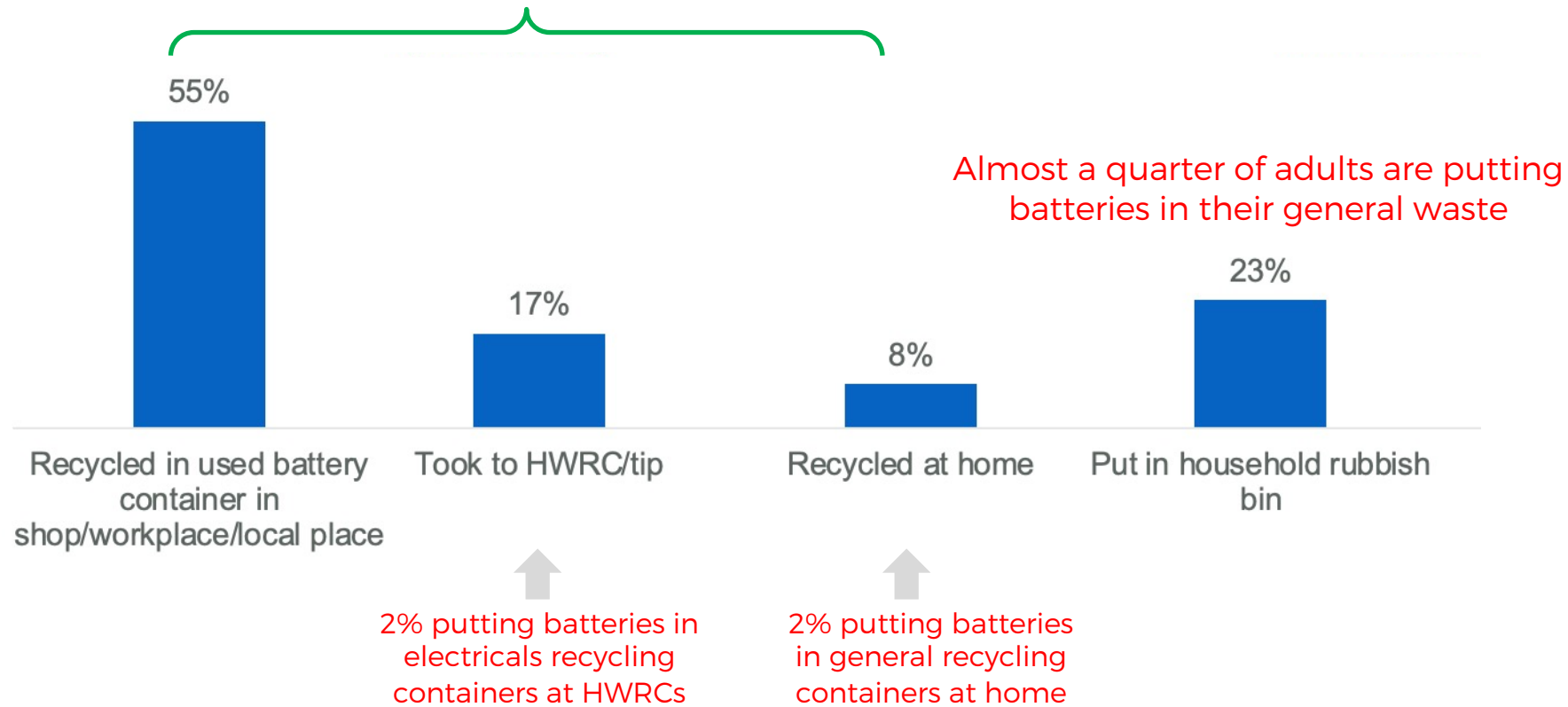
However around a quarter of adults (and over a third of under 35s) are putting batteries in their household bins, often without giving it a second thought

Around 4% seem to be wrongly putting batteries into their home recycling or the electricals areas of HWRCs



Battery disposal methods used in last year

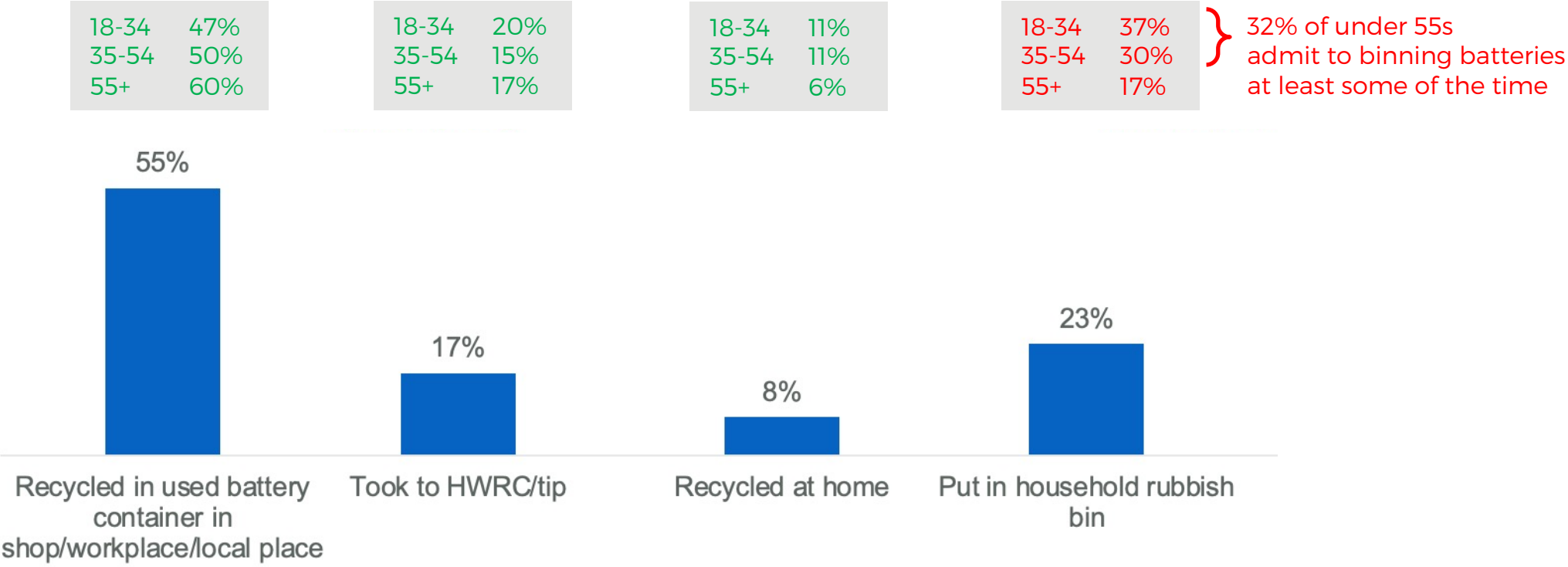
Total 80% claim to have used a recycling method
but about 4% seem to be doing it incorrectly,
leaving an estimated 76% correctly recycling batteries
(at least some of the time)



Source: Opinium quantitative research
Base: Adults who have disposed of household batteries in last year (1499)



Battery disposal methods in more detail



Of this 55%:

- Supermarket 84%
- DIY/home/hardware store 6%
- Office/workplace 6%
- HWRC/tip 5%
- Other shop 5%

Source: Opinium quantitative research
Base: Adults who have disposed of household batteries in last year (1499)



Battery disposal in the real world

In reality there's a spectrum of behaviour, with some people who recycle batteries admitting to not doing it every time

Always bin batteries

Sometimes recycle batteries

Always recycle batteries

Used batteries put in general waste without any real thought

Used batteries usually kept for recycling
But sometimes go in general waste when keeping/recycling feels too effortful

Used batteries always kept for recycling (in a pot/bag/drawer)
Typically taken to the same recycling container every time

What happens to the old battery?
Normally straight in the kitchen bin.
I'd take it out. It's done. It's rubbish.

Parent, male, Dartford

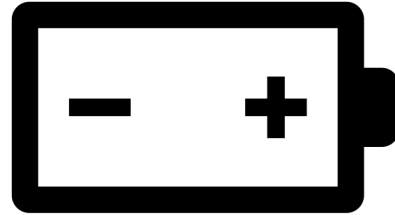
For batteries, I think because they're so small, I mean, I'm going to be honest and say not every time I take them to the tip.

Younger, female, Leeds

Batteries we normally take to Asda ... they've got one of those battery bin things there, so that's normally where I would take anything like that.

Younger, male, Bridgend

Language used for battery containers varies widely:
e.g. bin, bucket, tube, box, thing, canister, ...



USED HOUSEHOLD BATTERIES

How are people currently disposing of them?

What do they know, think or feel that influences that?



What do people know, think or feel that influences their battery disposal behaviour?

General commitment to recycling plays a major part, with 'battery binners' generally less inclined to make much effort beyond home recycling

However specific knowledge (or a lack of it) with respect to battery disposal also plays a significant part

People who recycle batteries generally know they should not go into general rubbish, although are hazy about exactly why (contamination of landfill?)

And they are aware of at least one place where they can recycle batteries locally

Whereas people who bin batteries are either unaware that you should not do so, or are vaguely aware but perceive no real negative consequence to doing so

Binners are also often not sure that batteries can be recycled or how/where to do it

Even those who do recycle batteries do not necessarily regard it as easy: while containers in shops make it easier, using them (or the tip) still involves more effort than just putting your recycling out for collection



Correlation to overall recycling attitudes

Always bin batteries

Sometimes recycle batteries

Always recycle batteries

Have environmental concerns but not inclined to make a lot of effort

Feel a personal responsibility to 'do the right thing' and prepared to make a fair amount of effort

Mindset is 'how do I dispose of this': 'what goes where?'
'Recycling' = the things I am told to put in my recycling containers

Mindset is recycling as default: 'how/where can I recycle this?'
General waste as a last resort

Source: Real World Planning qualitative research

	People who binned batteries	People who recycled batteries in container or took to tip
Agree 'I am actively looking for ways to reduce my carbon footprint'	50%	67%
Agree 'I feel my recycling efforts are worthwhile'	68%	85%
Agree 'Recycling is too much of a hassle to bother with'	18%	7%

Source: Opinium quantitative research

Base: Put batteries in household general waste (352); Took batteries to recycling container or tip (1084)



Correlation to battery disposal knowledge

Always bin batteries

Sometimes recycle batteries

Always recycle batteries



Can battery go in home recycling?

Can it go in the general bin?

No, don't think allowed (mostly)

Yes assume so

Source: Real World Planning qualitative research



Can I recycle battery at home?

No, not allowed



Where else can I recycle it?
Aware/have used recycling container



Can it go in the bin?
No

	People who binned batteries	People who recycled batteries in container or took to tip
Agree 'It's ok to put used batteries into household waste bins'	36%	6%

Source: Opinium quantitative research

Base: Put batteries in household general waste (352); Took batteries to recycling container or tip (1084)



Correlation to battery disposal knowledge

Always bin batteries

Sometimes recycle batteries

Always recycle batteries

Those who always or sometimes bin batteries are either **unaware that you should not or assume it's advisable rather than imperative:** they perceive no real risk to doing so

I don't know the reason, is it because they've got something in them which doesn't break down?

Younger, female, Leeds

Committed recyclers of batteries think it's a **definite 'fact'** that batteries should not go into general waste

But are hazy about why: they don't decompose? they could leak or react in landfill?

I would assume because once they end up in a landfill site, they're poisonous, aren't they? Well, they can be damaging to the lands because of the acid remaining in the batteries

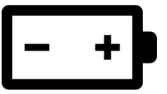
Younger, male, Bridgend

Source: Real World Planning qualitative research

	People who binned batteries	People who recycled batteries in container or took to tip
Agree 'Used batteries can cause problems if put into household rubbish bins at home'	50%	91%
Aware 'Used batteries going into landfill become toxic when they start to decompose'	38%	84%

Source: Opinium quantitative research

Base: Put batteries in household general waste (352); Took batteries to recycling container or tip (1084)



Understanding of battery recycling

Battery recycling is **poorly understood**, even by those doing it

There is **uncertainty** about whether it's always possible or how to go about it

Agree or think definitely/probably true	All adults disposing of batteries	People who binned batteries	People who recycled batteries in container or took to tip
I believe that any household battery can be recycled	29%	14%	33%
I think it's easy to recycle used household batteries locally	37%	7%	51%
I don't really know what to do with used household batteries	16%	55%	4%
Used household batteries can be put into home recycling containers in my area	28%	28%	23%
I can recycle batteries at my local Household Waste Recycling Centre (tip)	35%	12%	41%

Only half of those using a recycling container or the tip feel battery recycling is easy: it still involves the effort of keeping them and taking them somewhere



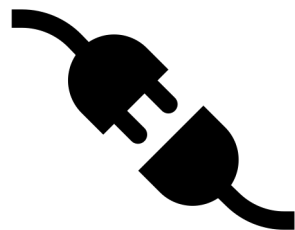
Knowledge that you can recycle batteries at HWRCs is incomplete, and even for those who know/assume it's the case the tip doesn't easily come to mind for batteries:

Where you go with big things that you can't get rid of in other ways, not tiny things where there's little material to recover anyway
Where exactly would you put batteries at the tip?

Source: Real World Planning qualitative research

Source: Opinium quantitative research

Base: Put batteries in household general waste (352); Took batteries to recycling container or tip (1084)



UNWANTED ELECTRICAL ITEMS CONTAINING EMBEDDED BATTERIES



How are people currently disposing of them?

What do they know, think or feel that influences that?



How are people currently disposing of the batteries embedded inside electrical items?

People generally **only think about removing batteries from an electrical item before disposal if the batteries are familiar household ones** (and even then not necessarily)

In lithium-ion battery cases it very rarely occurs to people since those batteries are usually hidden or very difficult to access; indeed users are not always even conscious that there is a battery present at all

Even if people are aware of a non-standard battery, **hardly any know that it's a lithium-ion one** (that is not a familiar concept at all)

Hence lithium-ion batteries are almost always getting disposed inside the overall item, which **in many cases gets recycled: typically at the HWRC** (especially if the item is large) but also in **on-street electricals banks** (especially in London) or **put out in a separate bag for kerbside collection** (especially in London)

However **27% of those disposing of these items say they have put at least one item containing an embedded battery into a home bin or home recycling container** in the last year: especially under 35s and especially if the item is small/cheap/regularly purchased

Unfortunately that's true of many of the most commonly disposed of lithium-ion battery items: electric toothbrushes, shavers, chargers, vapes

Electrical items containing chargeable batteries

Not a category that people can easily think of:

a wide variety of item types, battery types (not just lithium-ion) and disposal tendencies come to mind

Things powered by standard batteries that you regularly replace yourself	Things with unusual batteries that you might occasionally replace yourself	Things with a detachable or distinct battery unit	Things with specialist embedded batteries
E.g. remote control, mouse	E.g. watch, camera	E.g. drill, gaming controller	E.g. mobile phone, laptop
Batteries would typically be removed: could be use-able elsewhere, easy/familiar to take out	Batteries probably overlooked and disposed of inside item	Battery an essential component so moves on with item	Battery integrated and hard to remove: doesn't occur to people
But might get forgotten and disposed of inside a broken/unwanted item	Not easy to use these batteries elsewhere	Unless battery stops working and is replaced separately	

'Lithium-ion' batteries not a familiar concept at all

People typically don't know what they are, what they look like, what's different about them

Unless standard household batteries involved, batteries very unlikely to get removed:

hidden away, no reason to, not even really perceived as 'batteries'

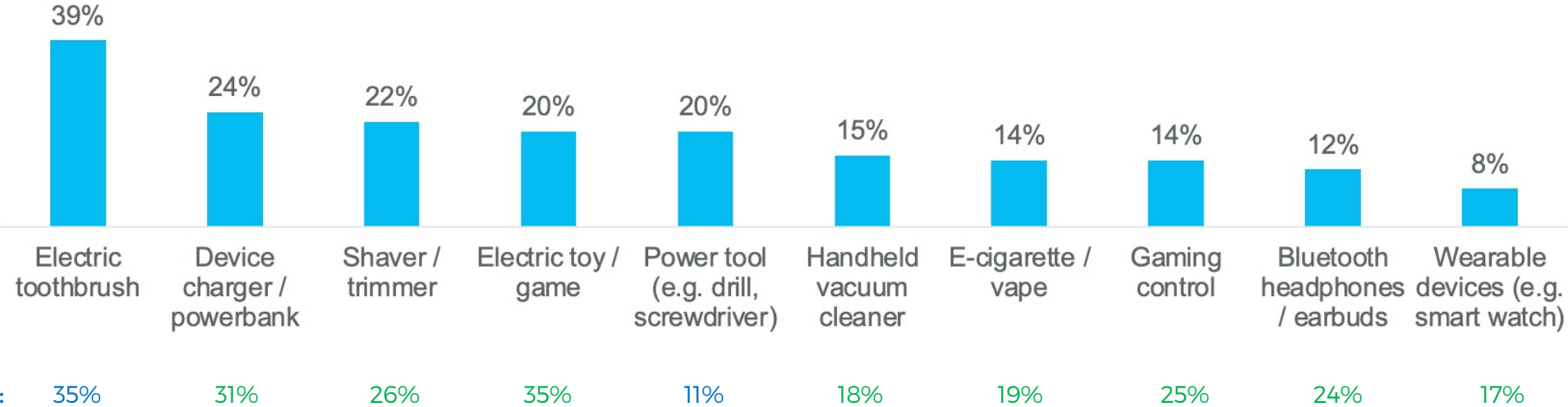
Battery most likely to get removed/detached if item could be dangerous if comes back to life (e.g. drill, shaver)



Electricals containing chargeable batteries disposed of

Of items with lithium-ion batteries, the most commonly discarded (in any way) are often smaller, frequently used, personal electricals like toothbrushes, chargers, shavers, vapes and headphones
Especially by **under 35s** (who are much more likely than average to be 'binners', especially of small items)

Electrical items with chargeable built-in batteries that UK adults disposed of in last year [disposed of in any way]

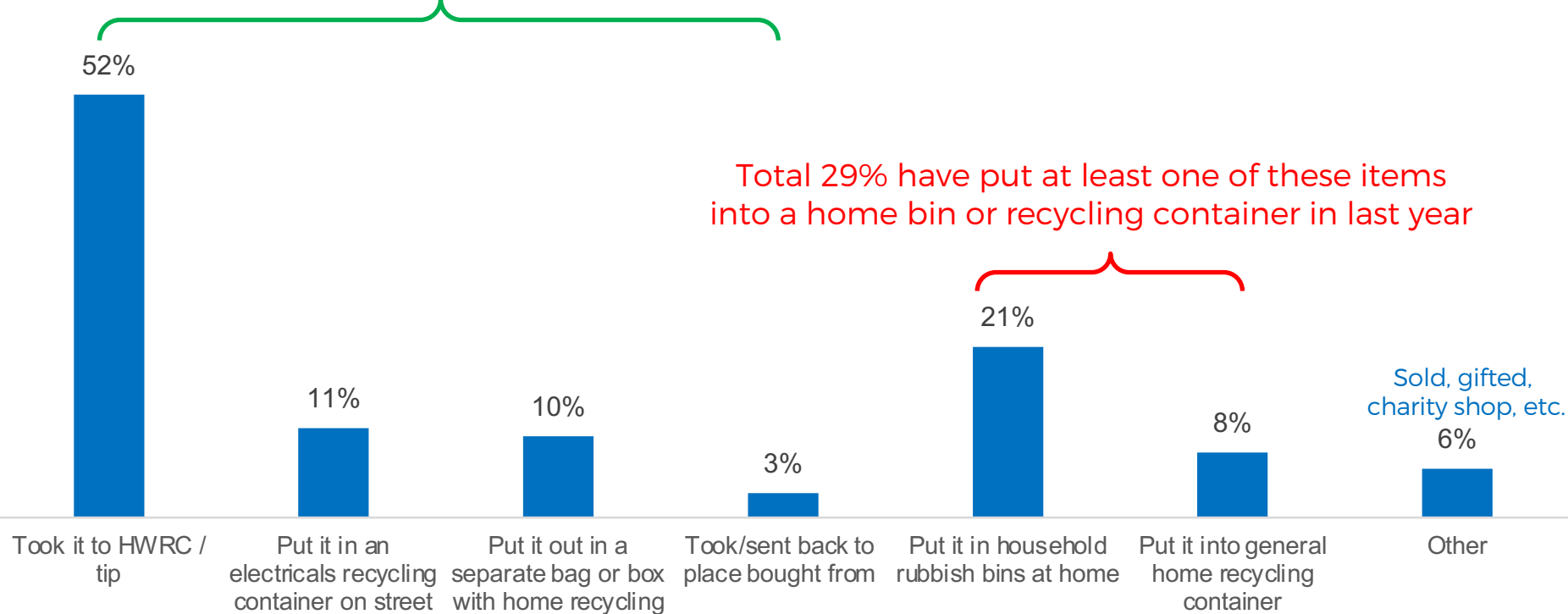


Source: Opinium quantitative research
Base: Adults who have disposed of electricals containing chargeable batteries in last year (502)



Disposal of electricals containing chargeable batteries

Total 76% claim to have used a recycling method in the last year
(at least once – not necessarily in all cases):
predominantly the HWRC



Total 29% have put at least one of these items into a home bin or recycling container in last year

Source: Opinium quantitative research
Base: Adults who have disposed of electricals containing chargeable batteries in last year (502)

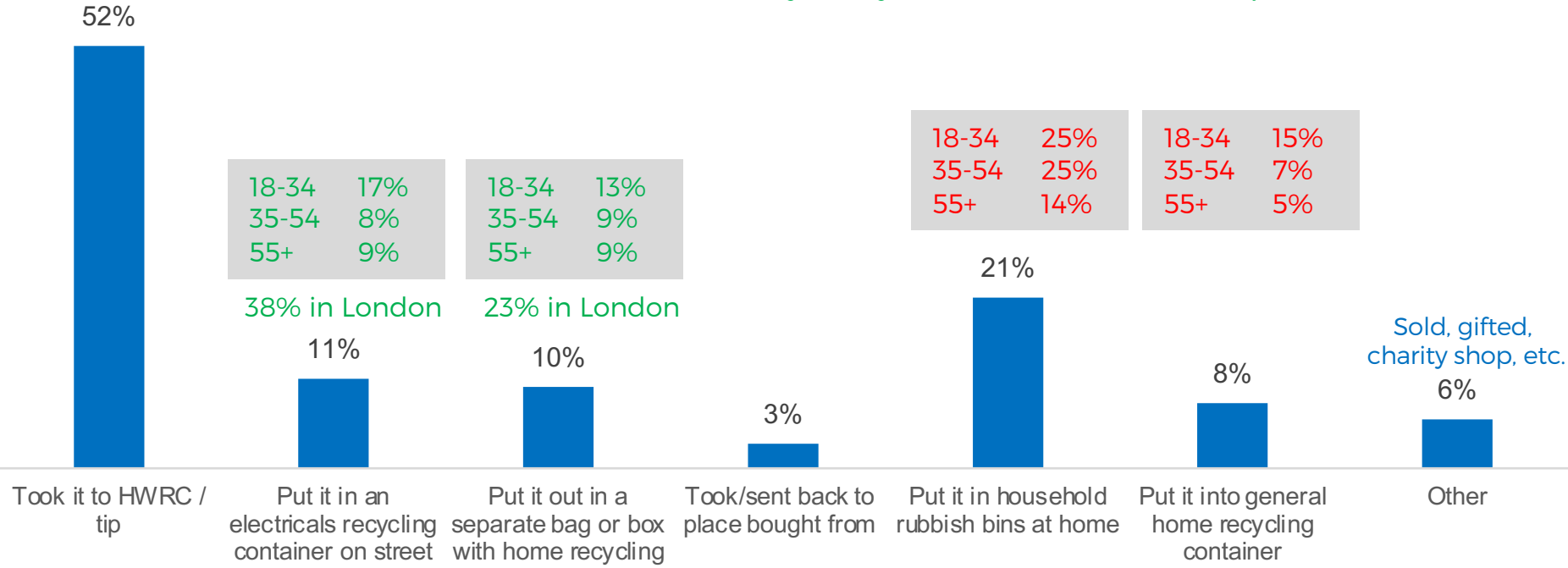


Disposal of electricals containing chargeable batteries in more detail

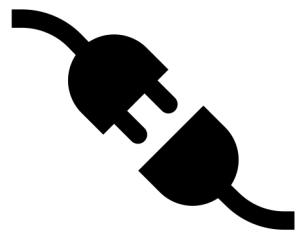
18-34	43%
35-54	48%
55+	60%

Under 35s are most likely to put these kind of items into household bins or recycling containers

Whereas 55+ are mostly likely to take them to the tip



Source: Opinium quantitative research
Base: Adults who have disposed of electricals containing chargeable batteries in last year (502)



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What do they know, think or feel that influences that?





What do people know, think or feel that influences their electricals disposal behaviour?

Given the absence of battery separation or understanding of lithium-ion batteries, the influences here are overall recycling diligence and knowledge of how to recycle electricals in general

There is a **lot of uncertainty about whether all such electrical items are recyclable**

Many believe that you can recycle at least some of them at HWRCs, but far from everyone and less so younger people

Even those aware don't always have the motivation to bother to go to the tip (or at least not for smaller items)

About a quarter **of people claim awareness of a kerbside collection option in their area,** **but some of this seems a false assumption**

More concerning is that **almost a third (and nearly 40% of under 35s) think home recycling containers could be used**

Overall **recycling this type of item feels even less easy than recycling batteries**



Perceptions of electricals recycling

Conviction about recyclability, knowledge of where to do that and perceptions of ease are all lower for these electrical items than for batteries, especially amongst younger people

	% adults agree with respect to electrical items with a chargeable built-in battery*	% adults agree with respect to used household batteries
I believe that any [x] can be recycled	25%	29%
I think it's easy to recycle [x] locally	21%	37%
I don't really know what to do with [x]	25%	16%
I can recycle [x] at my local HWRC (tip)	50%	35%

Age Group	% adults agree with respect to electrical items with a chargeable built-in battery*	% adults agree with respect to used household batteries
18-34	32%	34%
35-54	47%	30%
55+	57%	19%

* Example items given: Electric toothbrush, e-cigarette, shaver, power tool, toy, gaming controller or similar



The HWRC as a place to recycle is more clearly understood for these electrical items than for batteries
However younger people are much less clear

And whether anyone bothers to go to the tip is variable, especially for smaller items

Really I would like to take it [shaver] to the tip but do I want to drive half an hour to put a razor in a bin just to keep in line and keep things good? I'd probably (being honest) try and put it in general waste.

Younger, male, Bridgend

Source: Opinium quantitative research
Base: All adults (2001)

Source: Real World Planning qualitative research



Awareness of kerbside recycling options

There is quite high claimed awareness of separate kerbside collection

However it's at a level higher than its actual availability, and it's highest amongst younger people, so we can assume that some of it is a false assumption on prompting, rather than true pre-existing knowledge

Electrical items with a chargeable built-in battery ... (e.g. electric toothbrush, e-cigarette, shaver, power tool, toy, gaming controller or similar)	Definitely/ probably true	Definitely/ probably false	Don't know
Will be collected from my home if I put them out for collection separately from my other recycling	23%	54%	23%
Can be put into home recycling containers in my area	30%	48%	22%

18-34	39%
35-54	29%
55+	27%

18-34	35%
35-54	21%
55+	21%

Levels of misconception about recycling via home recycling containers are very similar to those for batteries (where 29% thought it was true) And are again highest amongst under 35s



HOW CAN WE DRIVE MORE OF THE 'RIGHT' BEHAVIOUR?

How have people developed the impressions they already have?

How can communications or other interventions
most effectively encourage recycling?

(including using the risk or incidence of fires)





How have people developed the impressions they already have?

Less than half of people recall seeing or hearing any information about battery disposal and only about a third think that was council information (i.e. definitive for the local area)

Younger people and those binning batteries are particularly unaware of any official guidance, and it's not a topic that would typically be discussed with friends or family

Those who know what to do have often worked things out for themselves via observation (typically noticing a battery recycling container in a local store) or by word of mouth

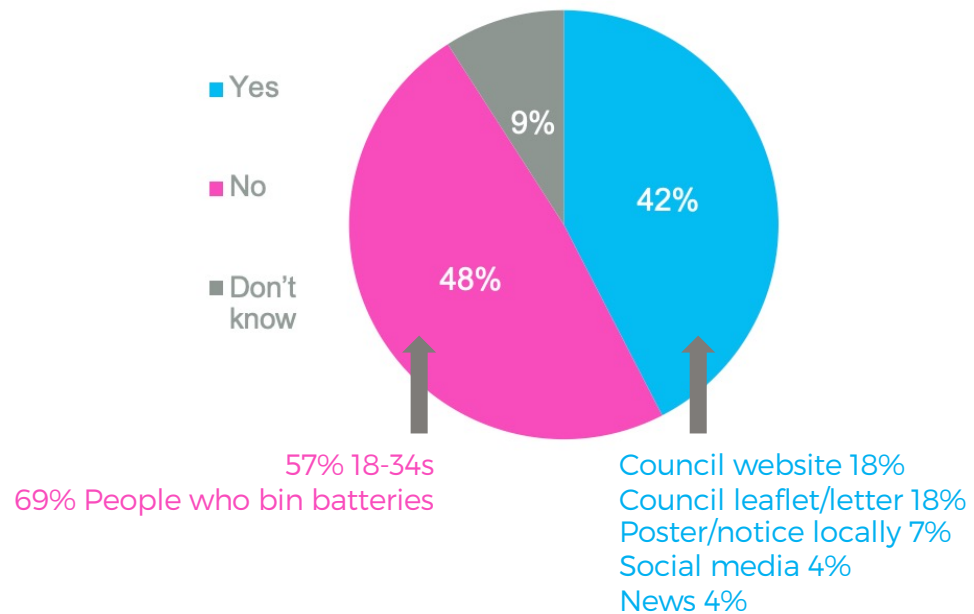
This makes knowledge more fragmented and conviction less strong than if people felt they'd received 'official' instructions

The inconsistency in incidence, location and appearance of battery recycling containers impairs the learning process; 'binners' often don't know what to look for



Recall of guidance regarding disposal of batteries

Have seen or heard information about battery disposal



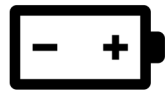
I think we got maybe one pamphlet a year through the door or something. But even then, I don't even remember ever reading anything about how to properly dispose of a battery. I think there needs to be more awareness of how to dispose of them correctly because I have no idea how you would.

Younger, female, Bridgend

We had a drawer full of batteries because we didn't actually know what to do with them. But we knew we couldn't throw them away. I think someone told us once about B&Q, so we asked or maybe found it. I can't remember.

Older, female, Dartford

Perceptions of battery recycling containers



These seem **critical to regular battery recycling becoming convenient and habitual** (especially the ones in supermarkets): somewhere just to 'pop' or 'drop' your batteries into during a shopping trip

However **inconsistency in shape, colour, signage and placement makes them hard to spot or recognise**

Users often only realised what the containers were from **seeing used batteries inside them** (or sometimes because they are battery-shaped or have Duracell branding); many 'binners' said they didn't know what to look for

It's in the shape of a battery. Says 'Battery recycling point' or something like that on the front, in a green sign. But I suppose if you weren't looking ... I looked at it so many times and never put two and two together that that's for recycling batteries.

Younger, male, Bridgend

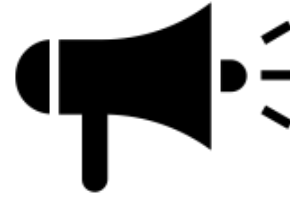
Even **users often only knew of one container** so might struggle to recycle batteries if they changed their shopping habits or that container disappeared

Source: Real World Planning qualitative research

	Binned batteries	Recycled batteries in container or took to tip
Agree 'I often notice recycling containers for used batteries in shops or other places in my area'	19%	52%

Source: Opinium quantitative research

Base: Put batteries in household general waste (352); Took batteries to recycling container or tip (1084)

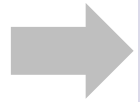


HOW CAN WE DRIVE MORE OF THE 'RIGHT' BEHAVIOUR?

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How can communications or other interventions most effectively encourage recycling?

From sharing a wide range of possible messages, language, imagery and existing interventions in the qualitative research it was apparent that a **simple, fact-based and logical narrative** had real potential to change the behaviour of those who don't always recycle these items

- i. Beginning with a definitive instruction to NEVER bin batteries or electricals containing them (rather than softer language such as 'should not')
- ii. Justifying that with new and impactful information about the fires that can be, and often have been, caused
- iii. Directing people to how they can easily recycle locally instead

As well as making people better informed about what to do there is a need to **make it easier** for them to do so (since some people know what to do but don't always bother to do it)

E.g. via making battery recycling containers easier to notice and more consistent, placing them at the electricals areas of HWRCs and showing people how to use a kerbside bag option (where available)



Most effective messages to communicate

You must NEVER put used batteries or electrical items containing batteries in your bin or recycling containers ...

... because they can cause fires if they get damaged during waste processing. There have been at least 300 such fires in the UK in the last year.



Instead it's easy to recycle batteries in dedicated battery containers in many local shops, schools and other local community spaces ...

... as well as at your local tip, where any electrical item can be recycled too.

What not to do



Why



What to do instead & where that's easy to do



What to do with the electrical items that you might be disposing of



It's a shock to the system because these are the sorts of things you just never really think about. And you think 'Okay, throwing it away in the bin is just a normal part of your day, when you can't use it any more'. You need to get rid of it. And to even think that it could cause a fire ... I mean, obviously, the bin men that come around and collect the waste, they are putting these bags into a machine that is quite literally crunching down and crushing the items.

Use of fire risk in communication



The fact that used batteries can trigger a fire was **mostly new and quite alarming information**, and immediately made people less inclined to put batteries into their home bins

While the risk was assumed to be quite small it was regarded as **credible**: batteries have carried charge and devices like mobile phones/e-cigarettes are known to have caught fire in some circumstances

Explaining that the fire risk **arises from crushing during collection and sorting** increased plausibility and reassured that fires were unlikely to arise inside homes

The fact that **numerous fires have actually happened** ensures the issue seems real and not just hypothetical; the video/photographic evidence supports this and commands attention

Spelling out or seeing that **workers could be harmed** makes people feel more guilty about the consequences to others of their own expediency

Specifying lithium-ion batteries was not useful: people don't want to have learn what that means and it can make the risk seem very small

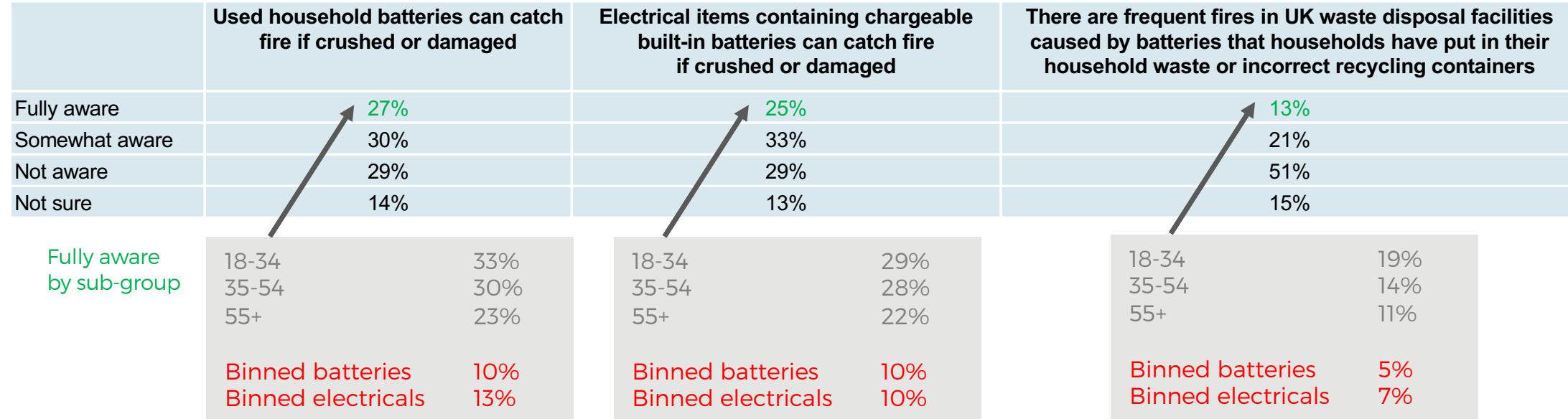
But alerting people to the **hidden batteries inside commonly binned items** like electric toothbrushes and e-cigarettes could well be helpful

I never really knew how dangerous it could be not to dispose of them properly. But actually to see that it can cause those fires I mean it's made me more aware. And now I definitely won't be putting them in my normal bin or my recycling bin again.

Younger, female, Leeds

Current awareness of fire risk

On prompting there is **currently some claimed (or assumed) awareness of the fire risk** although **very little amongst those binning items** (and less so of fires actually taking place)

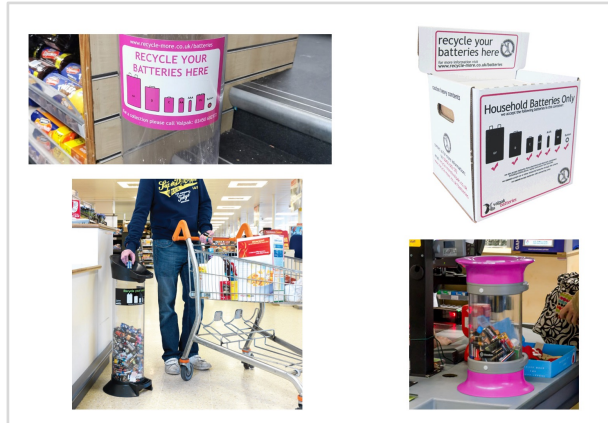


We can use these base levels of assumed awareness as benchmarks from which to monitor the development of increased knowledge as we communicate this information more widely and compellingly

E.g. focusing on 'fully aware' (as a proxy for genuine rather than assumed awareness) and people who bin batteries and/or electricals as the key groups to influence

Interventions that facilitate recycling

Make battery recycling containers much easier to recognise and notice: more consistent and obvious in placement, colour, signage



Show (don't just tell) people how to put batteries out for kerbside collection (where relevant)



Put battery recycling containers next to electricals containers at HWRCs



And ask people to remove batteries from electrical items

Help people to remember to collect batteries and put them out for kerbside collection (where relevant)



You would do it. It's easy. There's no reason why you wouldn't. It's there. It's given you your instructions. It's not telling you to go out of your house and do anything, to go out of your way.

Younger, female, Dartford



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electricals

In conclusion

- We now have a UK-wide understanding of levels of knowledge and attitudes to disposing of batteries - and how this affects people's behaviour
 - And a set of data which everyone can cut based on their own requirements
- We have established benchmarks in order to track future progress
- There has been really positive progress - many people are doing the right thing with their loose and embedded batteries.
- However, at least 25% of the UK admit to binning batteries, and many unaware there are embedded batteries inside electricals - and it only takes one rogue battery to cause a fire...

Fire!

- Awareness of fire danger very low - this is new news to majority of people
- Those who are aware are less likely to be binning batteries
- Helps to shift framing from an optional 'good' thing to do - to something definite that 'must be done'

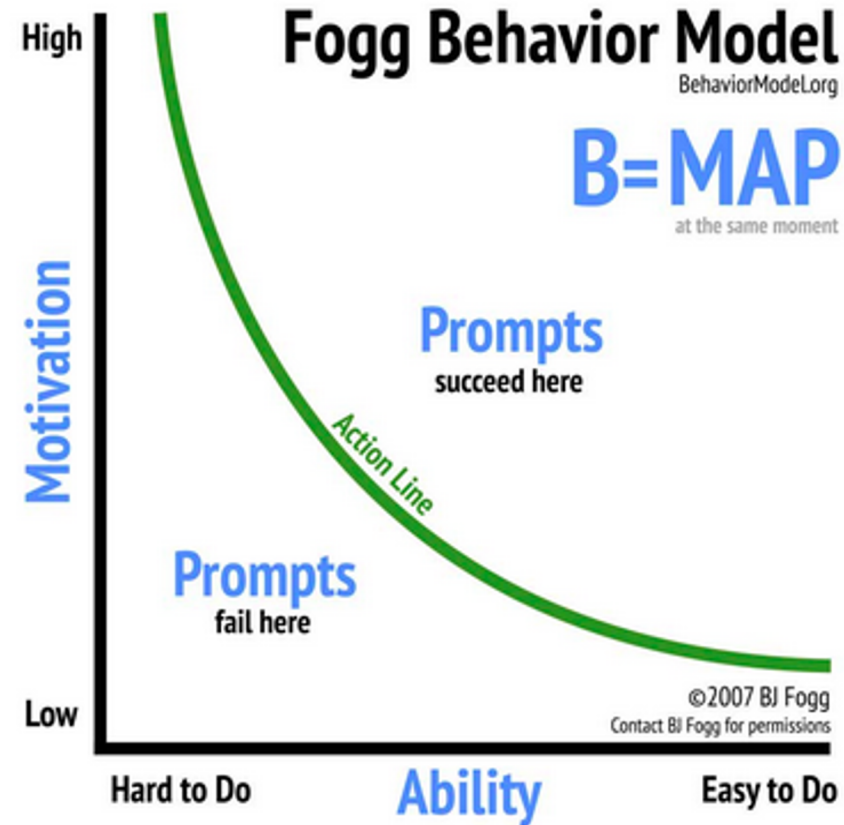


Use fire risk to stop everyone binning batteries every time - but we can have the biggest impact focusing on regular loose and embedded battery binners

What have we learnt about 'binners'?

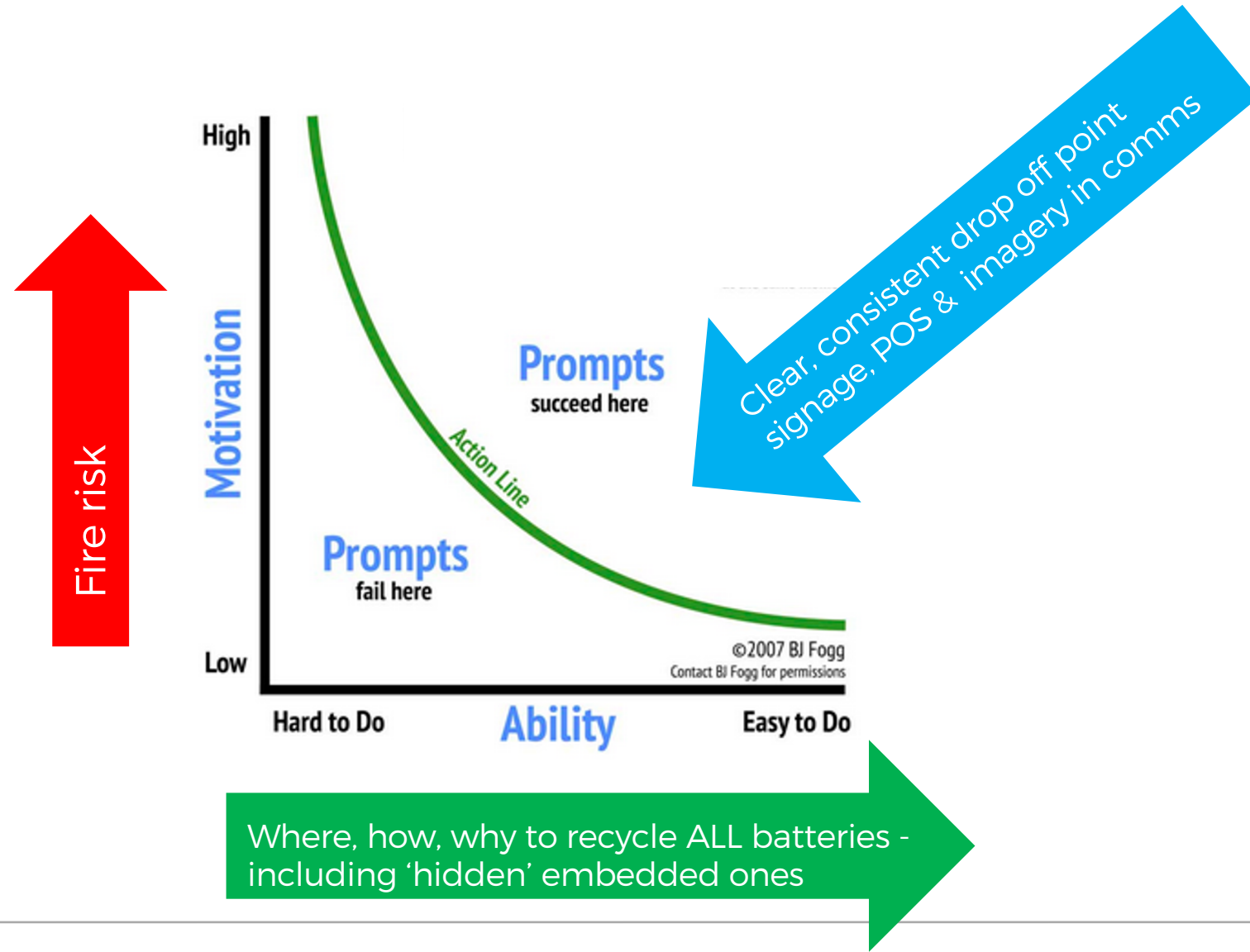
- Most (81%) say they don't know what to do with batteries
- Only 10% aware of battery fire risk, and that they can use their local HWRC to recycle batteries
- Higher proportion of people in the North West, and Northern Ireland
- More likely to be younger and female, particularly for loose batteries
 - 1 in 3 have binned loose
 - 1 in 4 have binned embedded batteries
- less environmentally aware
 - think recycling too much effort
 - Not aware of afterlife effect
 - Less likely to be anti-waste

Behaviour change is driven by a mix of factors – (perceived) ability, motivation and a prompt



Source: Dr BJ Fogg, Stanford University

Motivating and making it easier to dispose of batteries



CONTACT

Recycle Your Electricals is brought to you by Material Focus. Material Focus is a not-for-profit organisation - our vision is of a world where materials are never wasted.

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www.recycleyourelectrical.org.uk

Material Focus hello@materialfocus.org.uk



linkedin.com/company/materialfocus



About us

Material Focus is a new not-for-profit organisation – our vision is of a world where materials are never wasted.

Three I's inform and guide everything we do: inspiration, investment and insight.

Inspiration

We inspire people to change their behaviour. We do this through our Recycle Your Electricals campaign by revealing the hidden value of the materials in our electricals and by making it feel both easy (and normal) to reuse and recycle them.

Investment

We work with partners to expand the number, and type of collection points, making it easier for everyone to reuse and recycle their old electricals.

Insight

We fund technical research to overcome the barriers to reusing and recycling old electricals. Insight from this research galvanises new and innovative approaches to reuse and recycling, and supports enhancements to the UK waste electrical and electronic (WEEE) system.

