



RESEARCH REPORT

Butt Litter Index 2020

Research on Cigarette Disposal Behaviour for the NSW Environment Protection Authority

April 2021



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Taverner Research

Level 2, 88 Foveaux Street, Surry Hills, NSW 2010, Australia

t +61 2 9212 2900 f +61 2 9212 3920 www.taverner.com.au

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1. EXECUTIVE SUMMARY

Cigarette butts are consistently the most-littered item in NSW. It is estimated that each year 1.32 billion cigarette butts are littered in NSW.

The NSW Government, through the Environment Protection Authority (EPA), employs a range of programs designed to reduce butt litter. These include working with and funding councils to provide improved cigarette butt disposal infrastructure (bins, signage etc.), and identifying the behavioural and attitudinal characteristics of smokers that lead to butt littering.

As part of its efforts to measure and track butt litter, smoker attitudes and smoker behaviour, the EPA has developed a tool called the Butt Litter Check (BLC). The agency is now using this tool to develop a Butt Litter Index (BLI), which will provide robust evidence of longitudinal (i.e. time-based) changes in smoker behaviour, attitudes and butt littering rates.

In mid-2020, the EPA commissioned Taverner Research to conduct a BLI evaluation of sites across 20 NSW local government areas. The 2020 BLI was designed primarily to provide baseline data from which subsequent studies can be benchmarked.

Taverner Research worked with councils and EPA regional offices to identify 400+ potential sites across NSW where smokers congregate, from which 114 were chosen for evaluation. Fieldwork was conducted in September/October 2020 by a team of 11 Taverner Research researchers.

Across the 114 sites, researchers observed 3,005 incidents of smokers binning or littering cigarette butts. They also conducted site inspections (including assessment of the site using 20 different criteria), interviewed 569 smokers about their perceptions of their smoking area, and conducted butt litter counts.

Among the key conclusions:

- 64% of butts were littered, while 36% were binned.
 - These results align with previous cigarette behavioural research completed by the NSW EPA
- Littering rates were highest:
 - Where there were no butt bins;
 - In so-called “hotspots” - i.e. areas not catering to the needs of smokers.
 - Where smokers felt they had less ownership of the area;
 - When smokers were in groups
 - When bins were more than 2 metres away from where smokers stood;
 - Outside entertainment venues (and lowest outside office blocks)
- There was no significant difference in littering/binning rates by (observed) age, gender, type of group (i.e. all-male, all-female or mixed), or whether the observation occurred in a metropolitan or regional area.
- While the majority of littering was done on open ground (72%), garden beds were also a popular littering option (15%).
- 57% of butts were littered using the “drop and stomp” method, with 17% “flagrantly flung” and 13% “sneakily dropped”.
- The Area Inspection scores suggest that:
 - Smokers are more likely to bin their cigarettes in areas with convenient litter or butt bins, which seem clean, and where they feel a greater sense of involvement/ownership.
 - Signage, surveillance and fear of fines appear to play lesser roles in lowering littering rates.



1. EXECUTIVE SUMMARY

- Butt litter counts (within a 48m² zone of the smoking area) varied from zero to 326, with a trimmed mean of 35.7 butts per site. Of the 14 worst sites for butt litter, eight included garden beds.
- Previous research (including a BLI trial conducted by Taverner Research in 2018/19) has shown that smokers by and large understand the importance of the “social compact”. In particular:
 - People who perceive a behaviour as the “normal thing to do” or what is done by most people like themselves are consequently more likely to engage in that behaviour
 - When smokers pay attention to how they dispose of their butts, they feel positive about having “done the right thing”
- This latest research strongly backs up the existence of a social compact – in particular showing the correlation between cleaner sites with adequate butt or litter bins, higher Area Inspection scores, and lower littering rates. Likewise, the relationship between sites where smokers felt greater ownership and lower littering rates indicates that the social compact applies strongly in such areas.

2. RECOMMENDATIONS



Based on this study's 3,005 observations, 569 smoker interviews and 114 area inspections and butt litter counts, we offer the following conclusions and recommendations:

1. **The cleaner smoking areas are, and the greater ownership smokers feel in them, the less likely they are to litter.** (This is particularly evident in the difference in littering rates and Area Inspection scores between so-called "streamlined" and "hotspot" areas.) While both of these findings may seem self-evident, they have profound implications for creating clean and welcoming spaces designed to maximise these feelings of ownership.
2. **Engaging smokers in the social compact is an effective way to increase binning.** Demonstrating a commitment to provide clean areas with adequate bins for smokers in effect builds a social compact with smokers and appears to encourage smokers to respond positively in kind. Identifying additional ways to engage smokers in the social compact will continue to drive positive disposal behaviour.
3. **Butt bins appear to have a significant impact on littering rates.** As a highly visible sign that an area is welcoming to smokers, they also play a symbolic role in providing ownership. The continued and widespread roll-out of butt bins should hence improve AI scores and lower littering rates in those locations that contain them.
4. **Smokers who stand close to litter or butt bins are most likely to bin their butts, whereas those standing furthest away are most likely to litter.** This suggests the ability to identify a *tendency* to litter simply from the distance a smoker chooses to stand from their nearest bin. This in turn has important implications for bin placement and supporting messaging – e.g. placement of messages (say) 5+ metres from a litter or butt bin that will change littering behaviour of those choosing to stand further away, or encourage these smokers to move next to bins.
5. **Flower and garden beds appear to be acting as butt "magnets".** And the build-up of butts is exacerbated by the difficulty in cleaning these areas (vis-a-vis hard surfaces such as footpaths). This suggests some butt bins should be located in - or adjacent to - garden beds when feasible. It may also be worthwhile considering subtle signage inside garden beds reminding smokers that they are not litter bins.
6. **Transport hubs and entertainment venues exhibit higher littering rates and lower area inspection scores than office blocks and retail areas.** While the reasons for this are different in each case (e.g. less ownership at transport hubs, against propensity for riskier behaviour outside pubs and clubs), it indicates these venue types should become or remain a focus for attention.
7. **There is a minority of litterers whose behaviour will require additional strategies to address.** The popularity of the "flagrant fling" method of butt disposal (accounting for 17% of all littering behaviour, and higher still among men and those in groups) suggests there is an element of bravado among some smokers – either showing off to mates, or not being concerned about criticism or fines. There may be some capacity to address this through creative messaging.
8. **Enforcement and surveillance appear to play relatively minor roles in changing smoker behaviour.** This is not to say that these elements are not important, or that they do not deserve resourcing. However it does suggest that current strategies are having less impact than those designed to maximise cleanliness and feelings of site ownership.



3. PROJECT BACKGROUND AND METHODOLOGY

3.1. INTRODUCTION

As the NSW Environmental Protection Agency (EPA) website notes¹, *“The National Litter Index shows that cigarette butts are consistently the most-littered item in NSW. It is estimated that each year 1.32 billion cigarette butts are littered in NSW. Cigarette butts are unsightly, toxic and harmful to the environment. They are easily carried in stormwater runoff through drainage systems and eventually to local streams, rivers, and waterways. Cigarette filters contain cellulose acetate, a form of plastic that does not readily biodegrade and can persist in the environment.”*

The NSW EPA has set a target to reduce cigarette butt litter across the state. Working collaboratively with NSW councils and land managers, the EPA is delivering a program to reduce observed butt littering behaviour² by 25% by 2025, and 50% by 2030.

3.2. PROGRAM CONTEXT

To better understand smokers’ cigarette disposal behaviour, the Butt Litter Check (BLC) was developed to measure littering behaviour and assess the contextual factors in outdoor smoking areas that influence this behaviour. The BLC was then used to undertake extensive quantitative research around NSW.

The Butt litter check

The Butt Litter Check (BLC) is a location-based methodology, combining information from the inspection and grading of a location’s features with insights from community conversations (individual surveys), counts of litter on the ground, and importantly from observing how smokers discard their cigarette butts (disposal behaviour).

Information related to butt littering in each smoking area is measured in four ways.

1. Area Inspection (AI): an indicator of the likelihood that the smoking area provides a context for supporting cigarette butt litter prevention and encouraging smokers to use bins. The AI assessment is based on either a true or false grading for specific attributes and features of the smoking area. A total AI score out of 20 (then converted to 100) for a smoking area is based on adding together those positively scored attributes. The AI grading approach groups attributes into five sub-scales and each sub-scale can be scored to provide detailed guidance on strengths and gaps in smoking areas for preventing butt litter.
2. Behavioural observation: recording a minimum of 30 butt disposal actions as they occur and noting key features of smokers associated with either using bins or littering.
3. Litter count: standardised measure of the number of butts and other litter in the location.
4. Survey: structured conversations with people in smoking areas to gain insights into smokers’ views on the key features of the location and their disposal actions.

¹ <https://www.epa.nsw.gov.au/your-environment/litter-and-illegal-dumping/epa-work-prevent-litter/reducing-cigarette-butt-litter>

² Based on the Butt Litter Index



3. PROJECT BACKGROUND AND METHODOLOGY

Guidelines for using the BLC, including descriptions of the full approach for conducting all four research stages can be found at: <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/litter/epa-litter-prevention-kit-part-4.pdf?la=en&hash=A10D904D04D517155CBB88F4B85E7146BD4D9AB6> . (The four BLC data collection forms are included as Appendix 1 to this report.)

Quantitative Research³.

In 2017, research was conducted to assess disposal behaviour using the BLC. This included:

- Providing a contrast between subjectively classified streamlined and hotspot smoking areas.
- Validating the BLC area grading system to characterise litter prevention in smoking areas and contrasting with previous baseline findings.
- Establishing a cigarette butt-littering baseline specifically for NSW that could be used as a benchmark to set behavioural targets and monitor progress towards reduced butt litter.
- Comparing the effects on smokers' littering behaviour across different site types (retail, transport, car parks and office work break), and population centres (CBD, urban, rural).
- Providing insights into factors underlying smokers' habitual disposal of butts.

Qualitative Research

The EPA conducted primary research among smokers to help inform development of the new Cigarette Butt Reduction Program. The research aimed to provide a deeper understanding of barriers and drivers to appropriate cigarette butt disposal. The project reported behaviour in relation to cigarette butt disposal from a target audience of NSW smokers aged 18 years and over. The report assessed participants in terms of their capability to appropriately dispose of cigarette butts; observed whether they had the opportunity to appropriately dispose of cigarette butts and evaluated their motivation to appropriately dispose of cigarette butts

The results were analysed and further categorised by typical disposal moments and smoker typologies and suggested implications of the research findings for intervention design.

Findings from the NSW EPA-led Cigarette Butt Litter Prevention Trial⁴.

In 2017, the EPA began working with 16 NSW councils to develop and lead a partnership program, guided by social scientists to identify ways to positively influence smokers' cigarette butt disposal behaviour. In 2018, as a key part of this partnership program, the EPA led a practical quasi-experimental Trial to test strategies to reduce cigarette butt litter by influencing smokers' cigarette butt-littering behaviour in NSW.

³ Rob Curnow & Karen Spehr, Butt-littering behaviour in context, The Butt Litter Check: A foundation for the NSW EPA cigarette butt litter reduction program, August 2017. <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/litter/cigarette-butt-littering-behaviour-in-nsw-quantitative-research-and-baseline-report-community-change.pdf?la=en&hash=29E1703A1F364B2C8A336BB0D6B4061A97E1C288>

⁴ Identifying effective strategies to reduce cigarette butt litter Findings from the NSW EPA-led Cigarette Butt Litter Prevention Trial 2019. <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/litter/19p1840-butt-litter-trial-report.pdf?la=en&hash=D28C9E091A7082F33942BD278C8F8D258637A7C6> .

3. PROJECT BACKGROUND AND METHODOLOGY



The purpose of the Trial was to guide the EPA to develop an evidence-based program to support local land managers to prevent cigarette butt litter.

The Trial aimed to identify:

- The most effective strategies for reducing smokers' cigarette butt litter behaviour
- Councils' experiences as project partners trained to use tools to co-deliver the interventions and assess impacts
- The features of the relationship between place managers and smokers for keeping locations free of butt littering.

The Butt Litter Prevention Trial found that land managers who objectively review the way smokers interact with a smoking area can identify needed improvements, understand the '**social compact**' operating in the area and can design and implement projects that respond to local challenges.

Guide to prevent cigarette butt littering⁵

Based on the extensive research and Trial, the NSW EPA developed a Guide to prevent cigarette butt littering, which provides 13 detailed steps for land managers, local government, businesses and community groups to prevent cigarette butts from being littered. It is a key document in designing the locally tailored butt litter prevention projects.

⁵ <https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/litter/19p1840-butt-litter-trial-report.pdf?la=en&hash=D28C9E091A7082F33942BD278C8F8D258637A7C6>



3. PROJECT BACKGROUND AND METHODOLOGY

3.3. RESEARCH METHODOLOGY

The client and Taverner Research worked collaboratively to identify local government areas across NSW to be targeted for this research. Table 1, below, shows the original LGAs selected, and the actual numbers of sites per LGA visited during the five-week research program.

Table 1: Smoking Areas

Region	LGA	Initial SA s to be assessed	# sites visited	Stream-lined	Hotspot
Sydney & East	City of Sydney	36	12	5	7
	Waverley		8	6	2
	Bayside		8	4	4
	Randwick		8	2	6
Western Sydney	Parramatta	12	4	4	0
	Blacktown		4	4	0
	Cumberland		5	0	5
	Canterbury-Bankstown		2	0	2
Other Sydney	Northern Beaches	12	3	1	2
	North Sydney		3	2	1
	Canada Bay		3	3	0
	Inner West		1	0	1
	Ku-ring-gai		1	0	1
Newcastle	Newcastle	12	12	0	12
Wollongong	Wollongong	12	12	0	12
Central Coast	Central Coast	8	8	2	6
Inland	Tamworth	8	9	1	8
	Lismore	4	3	1	2
Coastal	Coffs Harbour	4	4	2	2
	Shoalhaven	4	0	0	0
	Port Stephens	0	4	0	4
TOTAL		112	114	37	77

Once LGAs had been identified, Taverner Research contacted appropriate personnel⁶ within each of the 20 initially designated Councils seeking local knowledge of popular smoking sites (with an initial goal of having Councils identify at least 30 potential sites each). This was later augmented with assistance from local EPA offices, and on-ground research conducted by Taverner Research staff. (Note the actual number of sites supplied by Councils varied from 6 to 49.)

A list was subsequently created for each of the initial 20 Councils chosen: see Table 2 for an excerpt of the Cumberland Council list:

⁶ Typically waste education officers or other waste-based staff



3. PROJECT BACKGROUND AND METHODOLOGY

Table 2: Excerpt of Cumberland Council smoker area list

#	LOCATION TYPE	BUSIEST TIME	INCIDENCE OF SMOKERS AT BUSIEST TIMES	NAME/DESCRIPTION OF SITE (AND ADDRESS IF POSSIBLE)
1	Shops	Consistent all day	High (30+ disposals per hour)	Outside Stocklands shopping centre - McFarlane Street, Merrylands (Opposite walkway).
2	Transport	Consistent all day	Medium (between 10 and 30 per hour)	Merrylands Station - Terminal Place
3	Transport	Consistent all day	Low (Less than 10 per hour)	Merrylands Station - Railway Terrace (seated area).
4	Shops	Consistent all day	Low (Less than 10 per hour)	Miller Street Reserve, 9 Miller Street, Merrylands (Next to St Vinnes Op Shop).
5	Venues	Evening (After 7pm)	Low (Less than 10 per hour)	Merrylands RSL - Military Road, Merrylands (outside entry).
6	Venues	Unable to say	Low (Less than 10 per hour)	Brickworks Drive, Merrylands - seated area in Reserve.
7	Venues	Unable to say	Unsure	Holroyd Gardens - Walpole Street - in the carpark and seated areas surrounding.
8	Transport	Consistent all day	Medium (between 10 and 30 per hour)	Guildford Station - Railway Terrace, Guildford.
9	Transport	Consistent all day	Low (Less than 10 per hour)	Guildford Station - Military Road, Guildford.
10	Shops	Unable to say	Low (Less than 10 per hour)	Outside Guildford IGA shop & Kebab House, Guildford Rd.
11	Transport	Consistent all day	Medium (between 10 and 30 per hour)	Granville Station - Memorial Drive, Granville.
12	Shops	Consistent all day	Medium (between 10 and 30 per hour)	Granville Shops - Various areas including outside Sydney Training Centre, Medical Centre, Grand Royale Centre, Hawa Charcoal Chicken.
13	Venues	Consistent all day	Medium (between 10 and 30 per hour)	Granville TAFE - The Avenue, Granville (Bus stop areas)
14	Transport	Late afternoon (2pm-5pm)	Low (Less than 10 per hour)	Granville TAFE & Granville Public School, William Street bus stop areas.
15	Venues	Evening (After 7pm)	Low (Less than 10 per hour)	Outside Granville Diggers & TAB & Carpark - Memorial Drive, Granville.

A team of 10 Taverner researchers were trained in the use of the BLC at Taverner's Surry Hills headquarters on Wednesday September 9th, 2020. (A further researcher, covering Lismore and Coffs Harbour, was trained separately.). Over the following five weeks, researchers covered all Council areas covered in Table 1.⁷

While smoking areas were initially selected from the lists supplied by Councils/EPA/Taverner site visits, researchers were also able to add further sites based on personal observation of popular smoking locations.

The research was focussed on four different location types, described in the BLC Guidelines as:

1. **Transport** (an interchange, hub or thoroughfare near a train station, bus stop, bus interchange or car park);
2. **Shops** including retail strips, outdoor malls and outside shopping centres;
3. **Office buildings** including office blocks, landmark buildings, courts, adult education centres and tertiary institutions; and
4. **Venues** – outside pubs, clubs, or hotels or other licensed venues, and outdoor eating areas.

Researchers were also asked to designate areas as either "streamlined" or "hotspots" These are again defined in the BLC Guidelines as such:

- **Streamlined smoking areas** are places where the expectations of the correct disposal of butts is obvious and clear. Typically, these areas are clean, well prepared for capturing butts, relatively free of butt litter, may have clear signage on where to smoke and dispose of butts and have places for smokers to meet out of the weather.
- **Hotspot smoking areas** are where expectations of correct butt disposal are unclear, butt littering is a problem and there are inadequate butt bin facilities available.

⁷ Though efforts were made to conduct observations in the Shoalhaven LGA, researchers were unable to identify sites with sufficient smokers to qualify. A decision was hence taken to use Port Stephens LGA as an alternate coastal LGA.

3. PROJECT BACKGROUND AND METHODOLOGY



(These terms are referenced throughout the Results section of this report.)

In all, 114 sites were eventually measured. This encompassed 3,484 observations.⁸

In addition, researchers conducted butt litter counts at a designated 48 m² zone within each of the 114 sites and conducted 569 brief interviews with smokers to understand their perceptions of each smoking area.

Results from the paper-based forms were manually data-coded into an Excel spreadsheet by trained Taverner staff. This data was audited for quality control purposes. Through this process 32 observations were removed from analysis due to poor or inconsistent data quality.⁹

Once the 447 “carried away” and inadequately recorded observations were removed, the final number of observations analysed was n=3,005.

The Excel-based results were then converted to SPSS and Q formats for analysis.

⁸ This includes 447 observations where the cigarette was carried away from the smoking area

⁹ Note that 228 of the 3,005 bin littering observations were missing bin distance. A decision was made that these records could be accepted due to being complete in all other respects.



4. SURVEY RESULTS

This section details survey results for observations, smoking area inspections, smoker interviews, and the links between these different steps. See METHODOLOGY section for details of how the survey was conducted, and APPENDIX 1 for examples of the four different survey forms used.

For all observations, researchers noted whether the smoker being observed: (a) binned their cigarette; (b) littered their cigarette; or (c) carried the cigarette away from the observation area. **Observations where the cigarette was carried away have been excluded from this analysis**, meaning that the binned and littered rate will always (unless advised otherwise) add to 100%. Hence where only a binned rate is provided, the littered rate will be 100% less this binned rate – and vice versa.

For ease of understanding in graphs, binned rate will always be coloured green, and littered rate in pink.

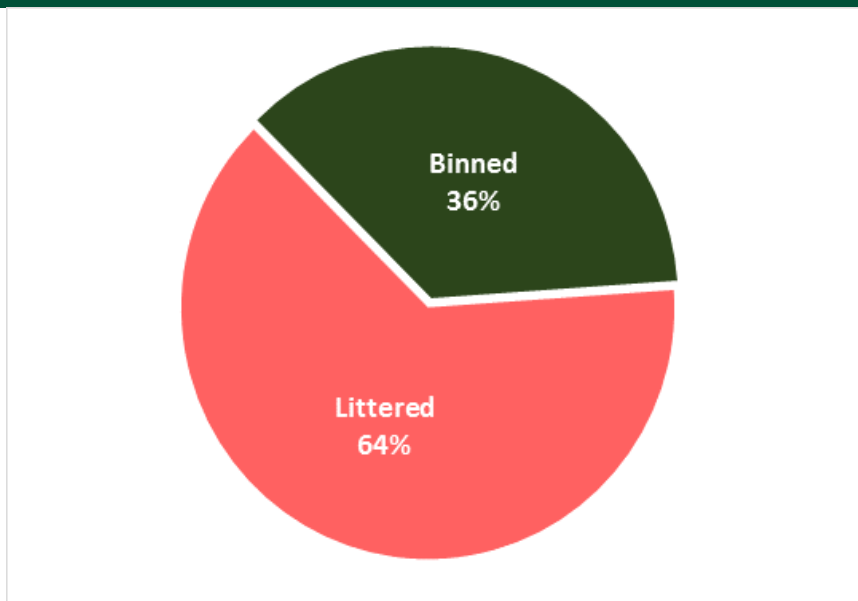
4.1. OBSERVED BEHAVIOUR

Excluding instances where smokers carried their cigarette butt away from the smoking area, there were 3,005 observations made in 114 sites across NSW.

Figure 1: Binning and Littering rates

BINNING AND LITTERING RATES

BASE: ALL OBSERVATIONS (N 3005)



Of all observations (excluding those where the cigarette or butt was carried away from the smoking area), 64% were littered against 36% which were binned.



4. SURVEY RESULTS

Table 3: Littering rates by different smoker or site characteristics

Factor	Characteristics	Littering rate	Statistically significant?
Region	Metro	64%	No
	Regional	59%	
Type of group	Just male	64%	No
	Just female	61%	
	Mixed group	67%	
Group size	One	61%	Yes
	Two	70%	
	Three or more	66%	
Age (approx)	Under 25	60%	No
	25-34	64%	
	35-44	66%	
	45-54	66%	
	55+	62%	
Gender	Male	64%	No
	Female	62%	
Distance to nearest bin	0.5 metres or less	6%	Yes
	1-1.5 metres	45%	
	2-5 metres	65%	
	6-10 metres	78%	
	11-20 metres	88%	
	21+ metres	92%	
Type of location (1)	Hotspot	74%	Yes
	Streamlined	43%	
Type of location (2)	Transport	66%	Yes
	Retail	63%	
	Office block	57%	
	Entertainment venue	71%	
Graffiti and damage	Some/lots of graffiti	64%	No
	Some/lots of damage	60%	

Group size appears to influence binning rates, with people smoking in company more likely to litter than those smoking alone. And as one would expect, littering rates are significantly higher where distance between the smoker and their nearest visible bin is greatest.

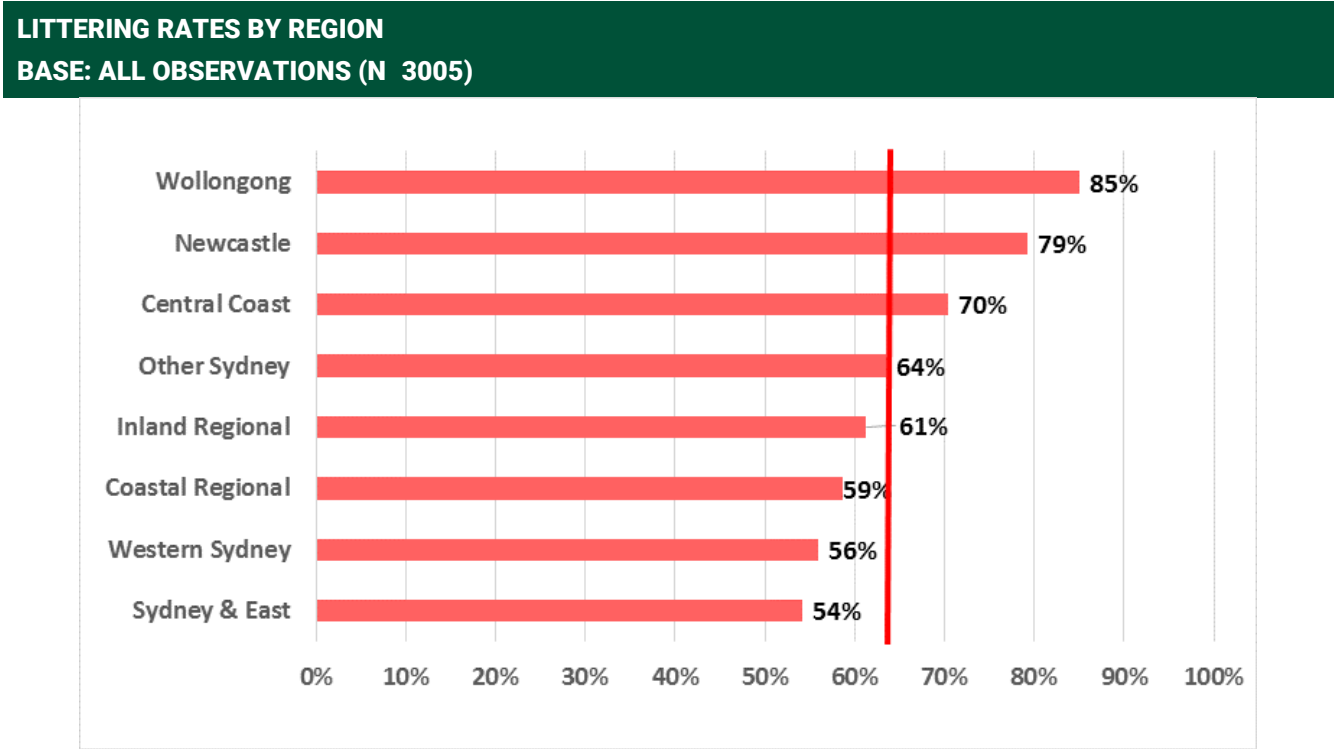
There were no statistically significant differences in littering rates by metro vs regional, type of group (i.e. all male, all female or mixed), age, gender, or whether the site contained damage or graffiti. However hotspots exhibited significantly higher littering rates than streamlined locations. And littering rates were highest outside entertainment venues (e.g. pubs and clubs), and lowest outside office blocks.

As shown in Figure 2 (next page), there were also significant differences by region:



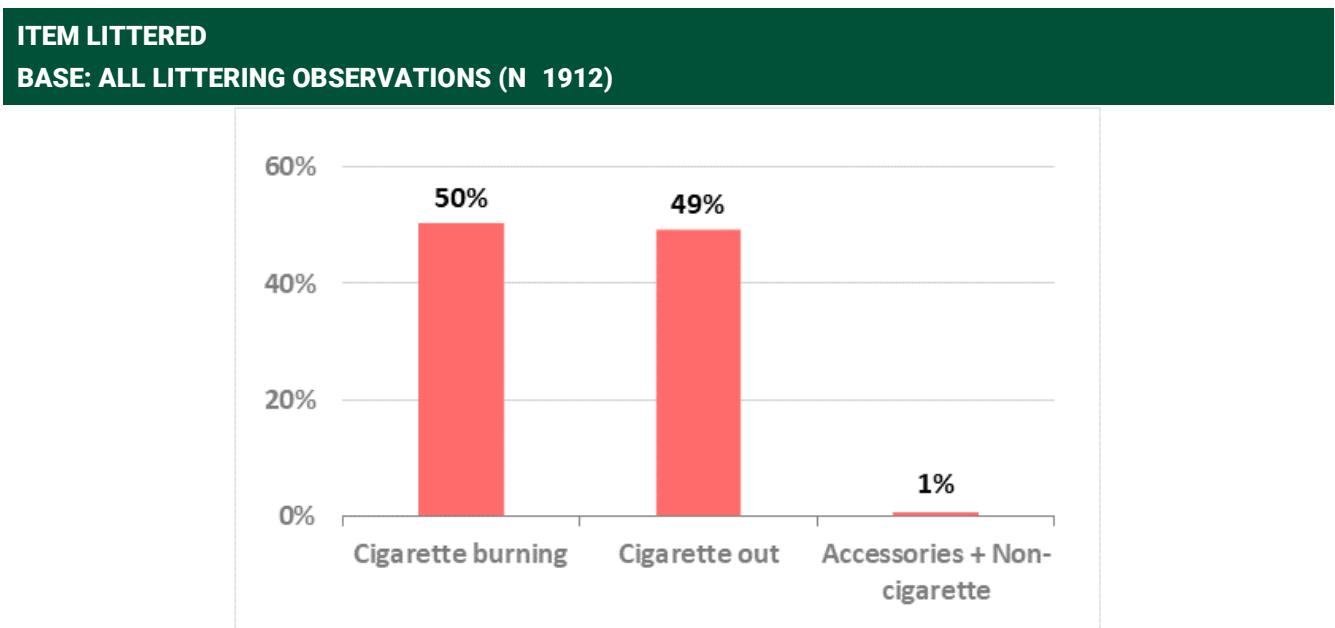
4. SURVEY RESULTS

Figure 2: Littering rate by region



Of the regions observed, littering rates were significantly higher in Newcastle and Wollongong than in Sydney’s western suburbs, or Sydney CBD and eastern suburbs. (However it should also be noted that none of the regions measured had littering rates of less than 50%. Moreover, littering rates will generally have less to do with region and instead be more reliant on: (a) smoker areas selected; and (b) characteristics of those specific sites.)

Figure 3: Item littered

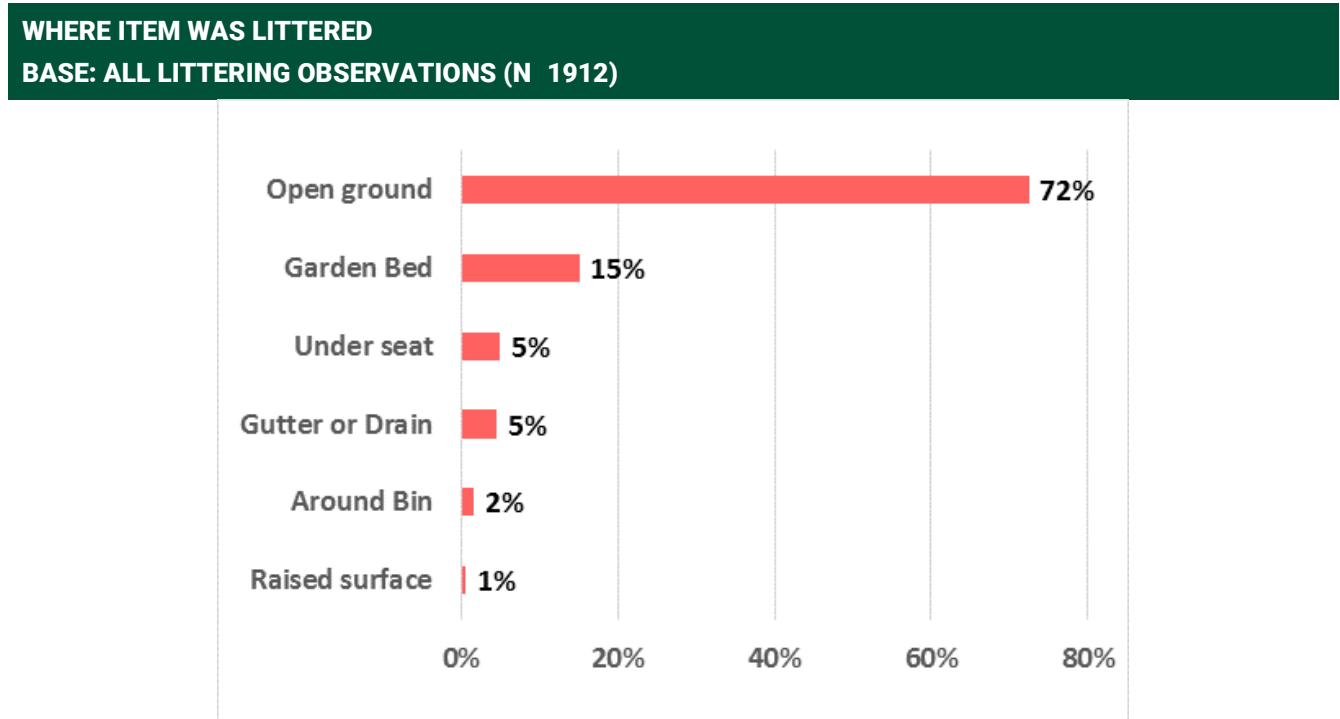


Among items littered, this was distributed equally between lit and extinguished cigarettes.



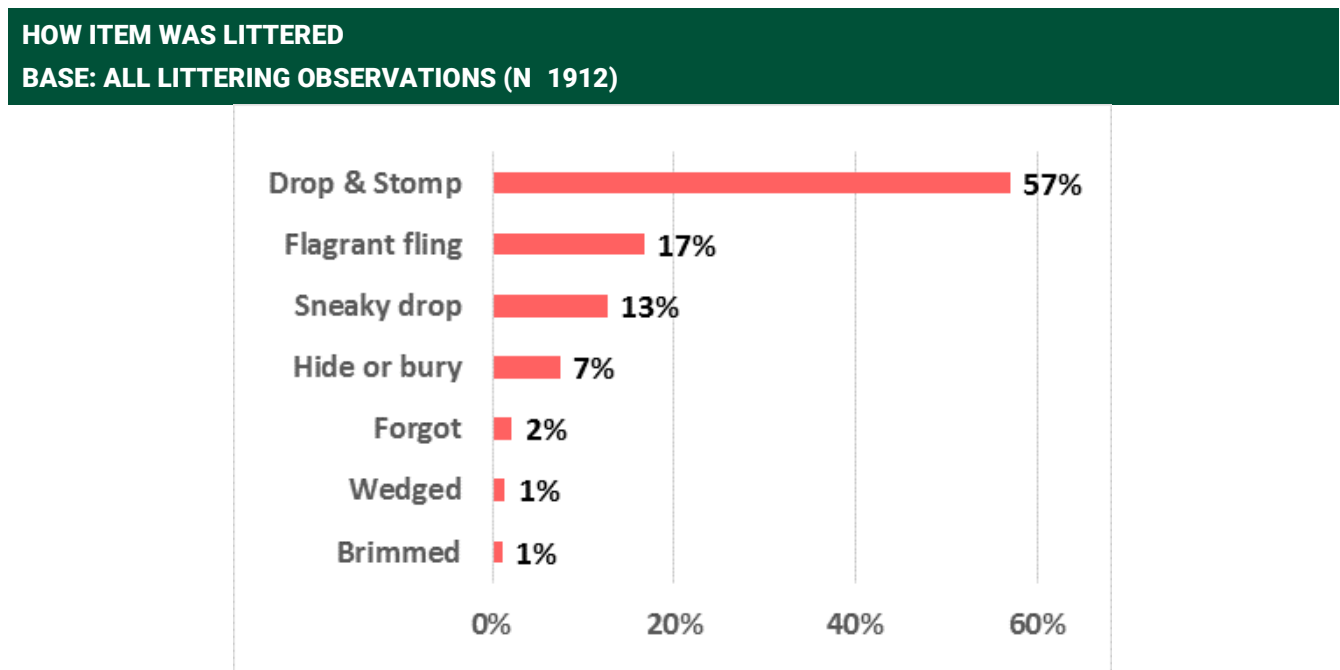
4. SURVEY RESULTS

Figure 4: Where item was littered



The majority of butts were littered on open ground – consistent across all bin distances. However flower beds were also a popular option for cigarette littering. (The difficulty in cleaning these sites may also explain why eight of the fourteen worst sites for butt litter contained flower beds¹⁰.)

Figure 5: How item was littered



¹⁰ See Section 5.4: Butt litter counts



4. SURVEY RESULTS

Women were more likely than men to “drop and stomp” their littered butts (at 63% and 55% respectively), while men were more likely to “flagrantly fling” their butts away (20%, against 11% of women). The flagrant fling was also more popular among groups of three or more smokers (24%), at transport sites (22%), and among people aged 50+ (23%).

The “sneaky drop” percentage was consistent by age, gender and group size.

“Sneaky drop” percentage also rose the closer the smoker was to the bin (being used 22% of the time when bin distance was just 0.5 metres, but just 12% when it was 11+ metres away). That suggests that smokers using this method have some awareness of the bin’s proximity, but that the impact of bin distance is making them more conscious to litter discretely.

Table 4: Method of littering disposal, by site type

Littering Disposal method	Location type			
	Transport	Shops	Office Block	Venue
Brimmed on bin	2%	1%	0%	1%
Drop/stomp	50%	62%	69%	48%
Forgot	2%	4%	0%	2%
Flagrant fling	22%	15%	10%	20%
Hide/bury	8%	6%	9%	8%
Sneaky drop	14%	11%	12%	18%
Wedged	2%	1%	0%	3%

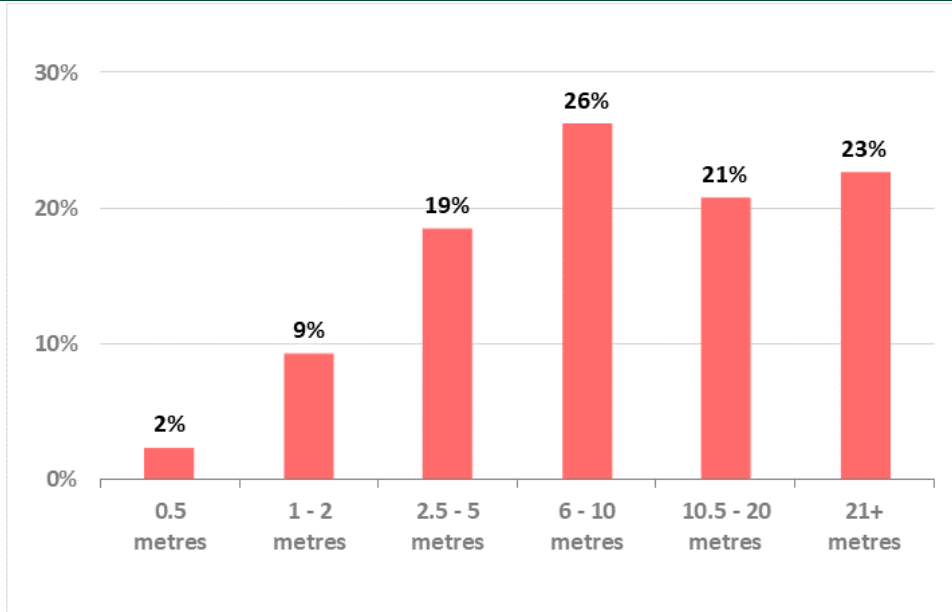
Table 4 shows that those littering butts in transport areas (and venues) were significantly more likely to use the “flagrant fling” than those outside office blocks, where “drop and stomp” was the most common littering method.



4. SURVEY RESULTS

Figure 6: Distance littered from nearest bin

DISTANCE FROM BIN
BASE: ALL LITTERING OBSERVATIONS (N 1912)



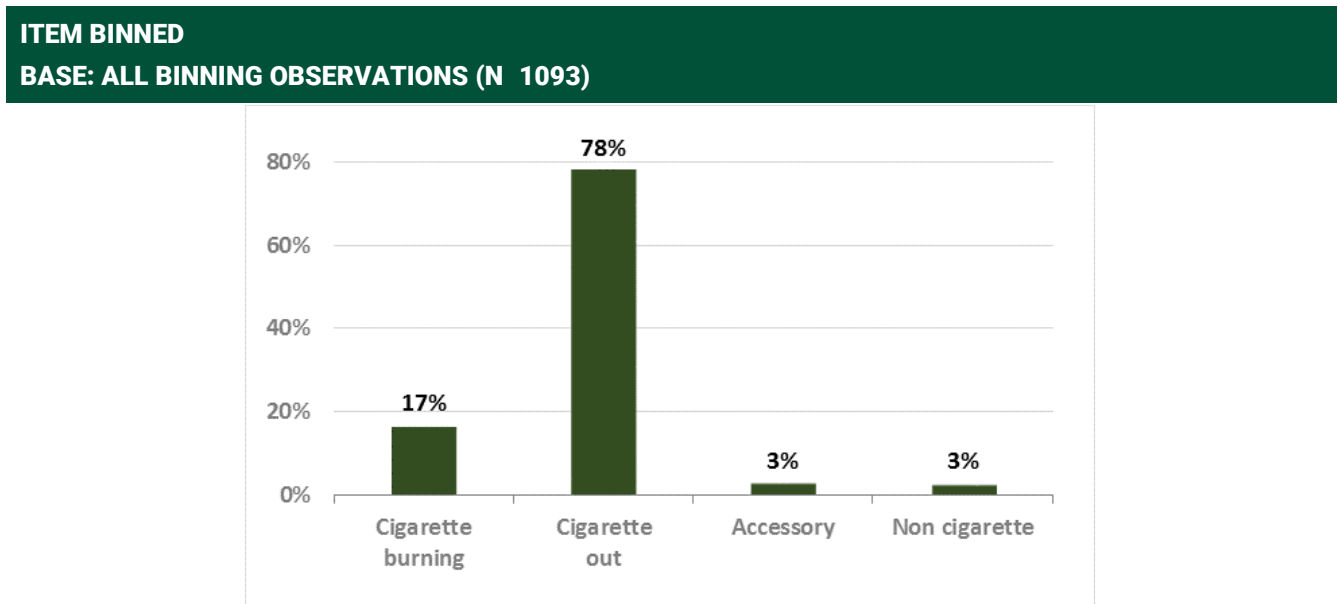
Predictably, there was less littering when bin distance was less than a metre from the smoker. However once bin distance exceeded 2 metres, there was no significant difference in the littering distance between smoker and bin – meaning that smokers were likely to litter where they stood rather than moving towards a bin first. (This should not be confused with *likelihood* of littering based on nearest bin distance. Table 3 on page 9 indicates that the further smokers are from a bin, the more likely they are to litter their butts. This graph, however, shows that when littering smokers stood or sat more than two metres away from their nearest bin, they were unlikely to move closer to the bin before littering - regardless of how far away they were.)

“We need butt bins away from the doors of the building. Area looks somewhat cared for but the gardens needs to be cleaned.” (Centrelink office, Gordon)



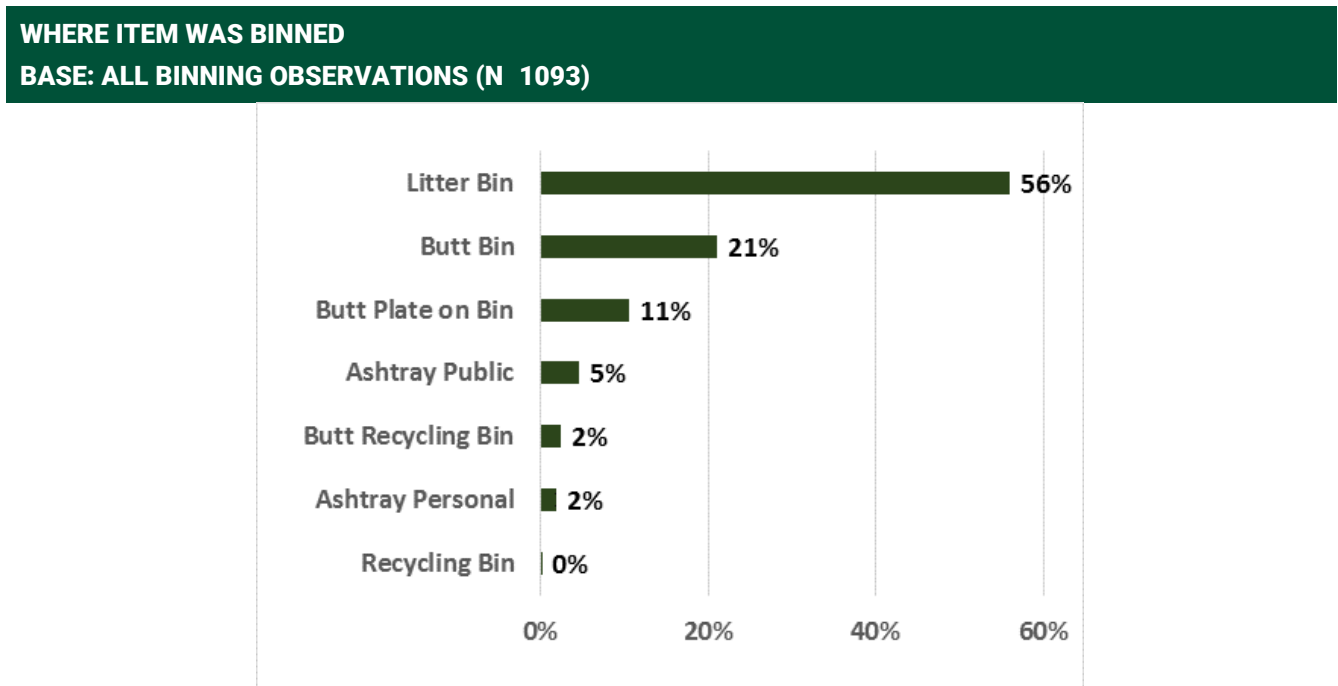
4. SURVEY RESULTS

Figure 7: Item binned



Of items binned, 78% were extinguished cigarettes – compared to just 17% of still-lit cigarettes. (This is significantly different to those littering, where the split was equal between burning and extinguished cigarettes.) It indicates that the majority of smokers binning their cigarettes are also taking care to extinguish them first.

Figure 8: Where item was binned



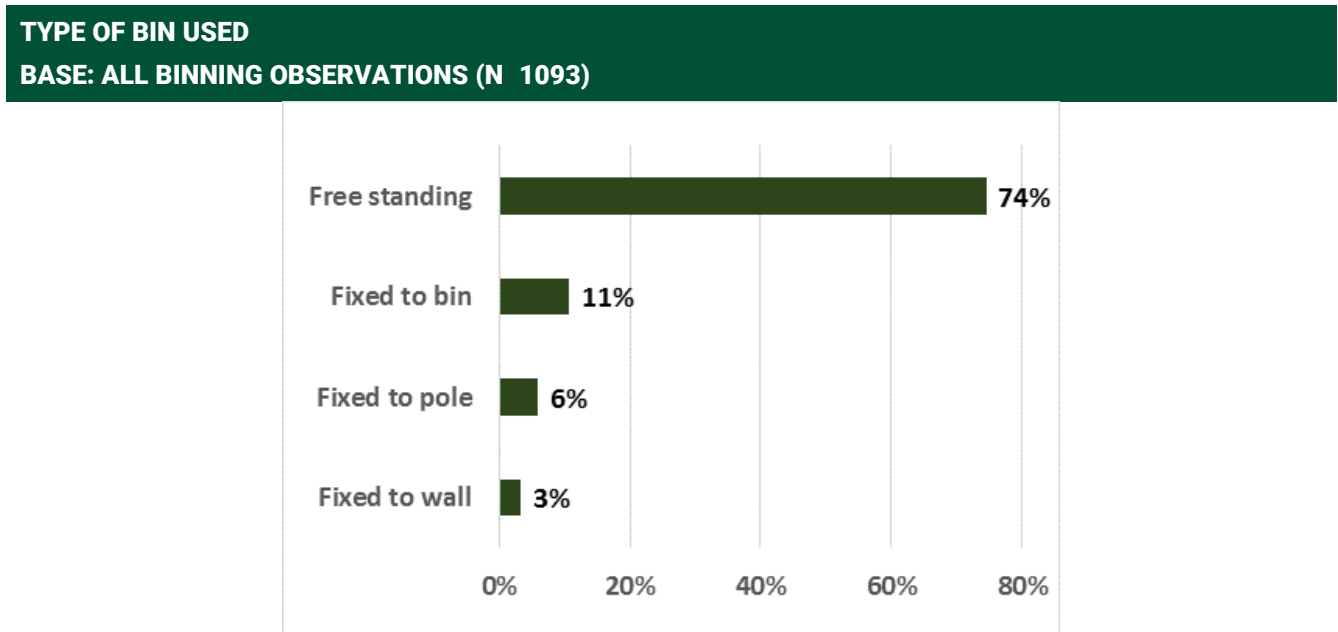
Over half the bins were littered in litter bins, against 21% in butt bins. However given that only 21% of sites had butt bins (see Figure 12, page 16), this suggests that butt bins are the preferred option for cigarette disposal when present.



4. SURVEY RESULTS

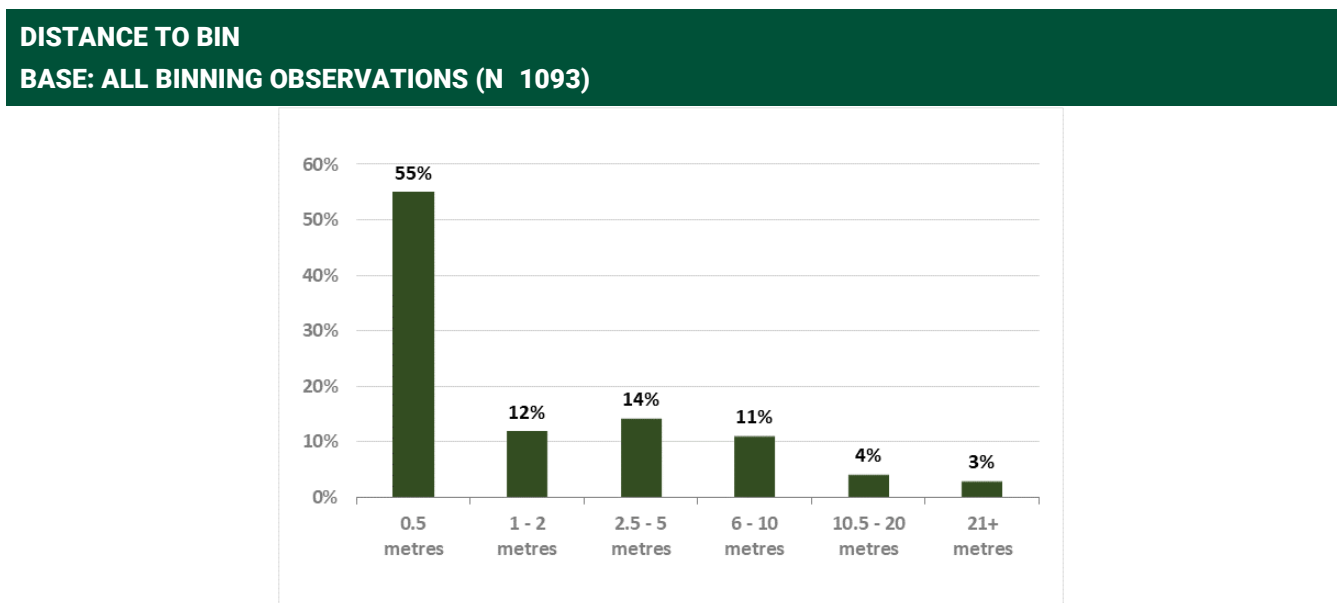
Binning rates were also significantly higher where butt bins were present, at 55% (against just 31% where they weren't.) This suggests the ongoing rollout of butt bins should have an important positive effect on butt binning rates.

Figure 9: Type of bin used



The majority of bins used were free-standing, with only 11% fixed to litter bins. One would expect this latter figure to increase in subsequent waves, as butt bins become more common.

Figure 10: Distance carried to bin



The majority of binned cigarettes were carried less than one metre, with distance carried falling progressively as distance increased. This indicates that the bins have in many cases sub-consciously become the “focal points” of the smoking areas. (This in turn suggests smoking messaging should also be in close proximity to the bins.)

4. SURVEY RESULTS



There also appears to be a relationship between the level of information supplied, and distance carried to bin. Where none of four Information statements from the Area Inspection (“Signs tell smokers what to do”, “Signs are easy to understand”, “Litter is from smokers ignoring signs” and “Butt litter and the problems it causes are easily seen”) were true, average distance to bin was 9 metres. However this fell to 5.3 metres where all four statements were true – suggesting that where signs exist, smokers tend to stand closer to bins. (This may be in anticipation of binning their butts.)



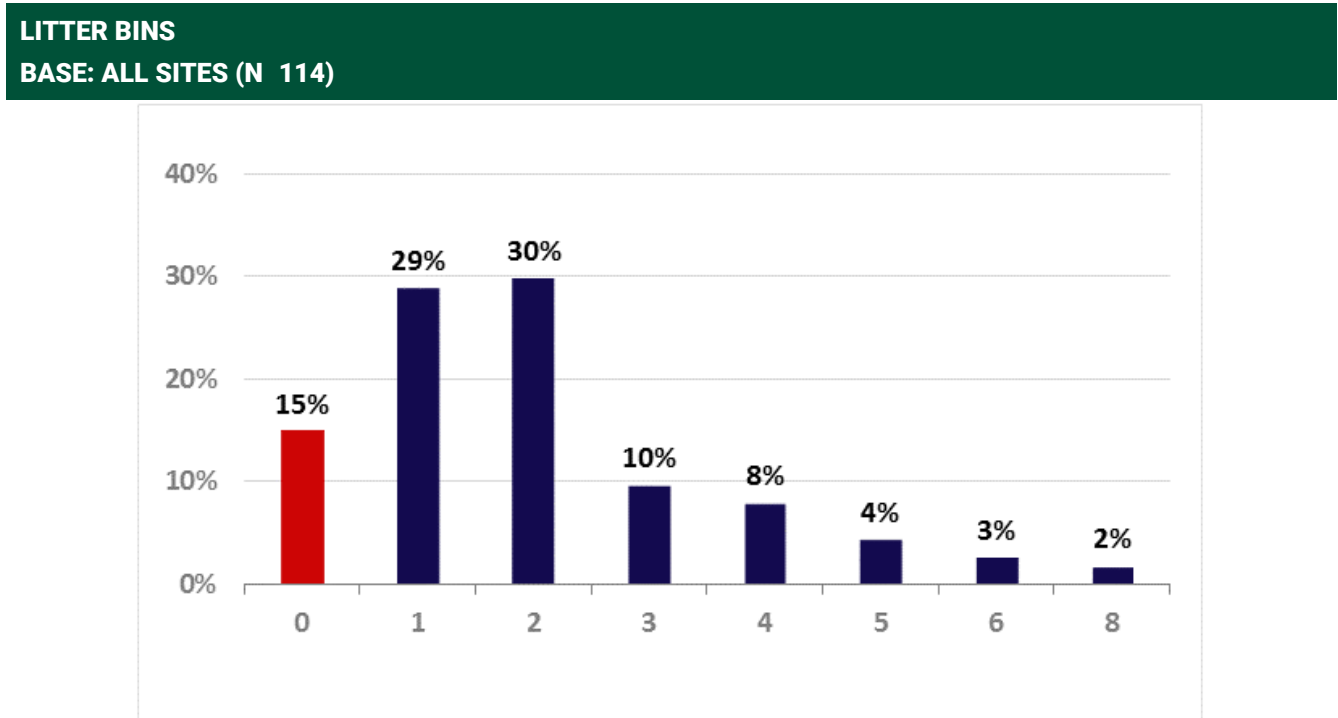
4. SURVEY RESULTS

4.2. SMOKING AREA INSPECTION SCORES

The Area Inspection (AI): rates the features of the smoking area to provide insights into the context for encouraging smokers to use bins. This includes specific attributes, and features that relate to known influences of littering behaviour, including presence of bins, site cleanliness amongst other factors. A location is scored against 20 statements that provide a total AI score out of 100 for those positively scored attributes in the area.

Comparing observed disposal behaviour (4.1) against the AI scores gives insight into which contextual factors may influence binning behaviour.

Figure 11: Number of litter bins



Of the 114 selected sites, 15% had no litter bins – with three exceptions, these were all in hotspots¹¹. Approximately three in ten sites had one litter bin, while some 56% of smoking areas had more than one.

¹¹ Of the three streamlined sites without litter bins, two had butt bins and one had an ashtray



4. SURVEY RESULTS

Figure 12: Frequency of bins, by bin type

FREQUENCY OF BINS, BY BIN TYPE
BASE: ALL SITES (N 114)

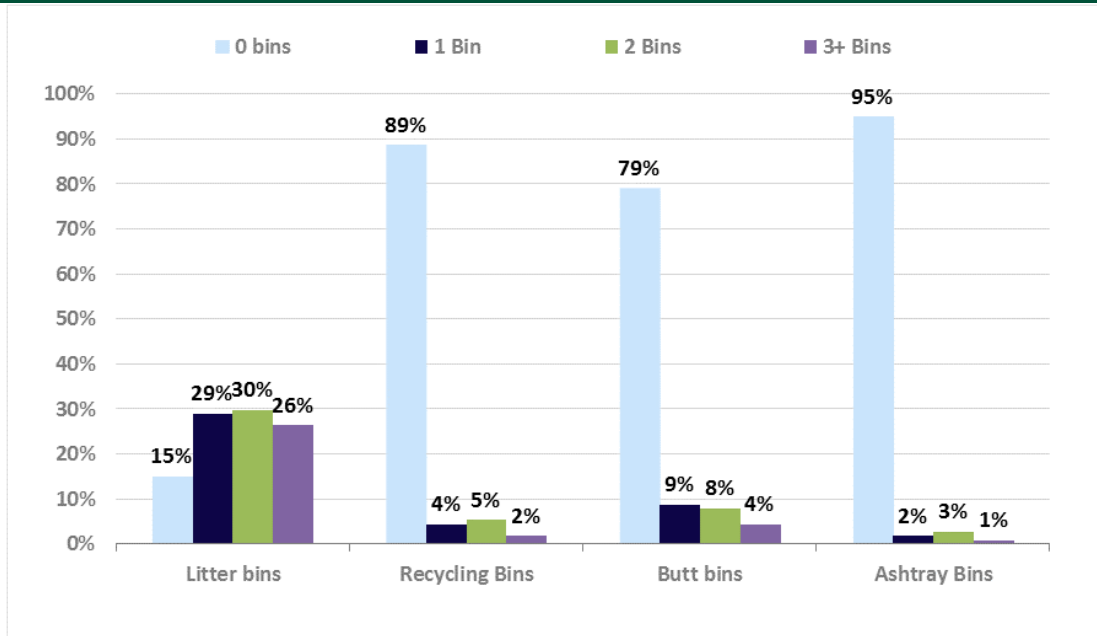


Figure 12 shows the distribution of bin types. It suggests that while most sites included litter bins, butt bins are still relatively uncommon (at only 21% of sites).

Of the 114 sites, 19% were described by researchers as “very busy” (in terms of people), with 48% moderately busy and 33% classed as quiet.

Eighty six per cent of sites contained litter (“some” 76% and “lots” 10%). While hotspots were more likely to contain litter (at 90%, against 76% of streamlined spots), the difference is not statistically significant. There was no difference in litter rates between metro and regional areas.

*“So many bins, (yet) still people litter. I suppose not environmentally aware, or just blasé.”
 (Hall St and Campbell Parade, Bondi Beach)*

The Smoking Area Inspection included a 20-question “True/False” scoring system for cleanliness (0-2 inclusive), butt bins and infrastructure (0-6), information (0-4), surveillance (0-4) and involvement (0-4).¹² In each case, the higher the score (i.e. the more statements marked as “True”), the more favourable.

Figures 13-17 show how binning/littering rates vary under each measure, while Figure 18 shows how littering rates relate to the total score:

¹² See Appendix 1 (pages 2-3) for true/false statements in each section

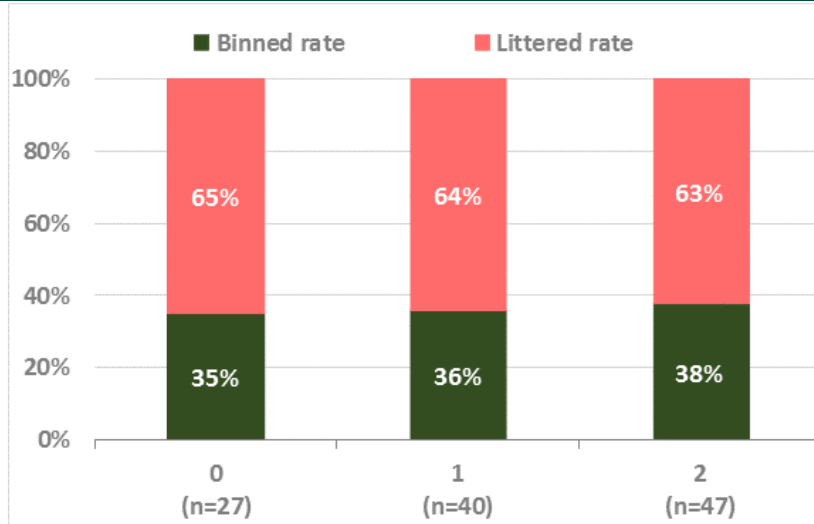


4. SURVEY RESULTS

Figure 13: Binning/littering by 'clean' score

BINNING AND LITTERING RATES BY CLEAN SCORE

BASE: ALL OBSERVATIONS (N 3005). (N AT BOTTOM OF EACH BAR REFERS TO NUMBER OF SITES)

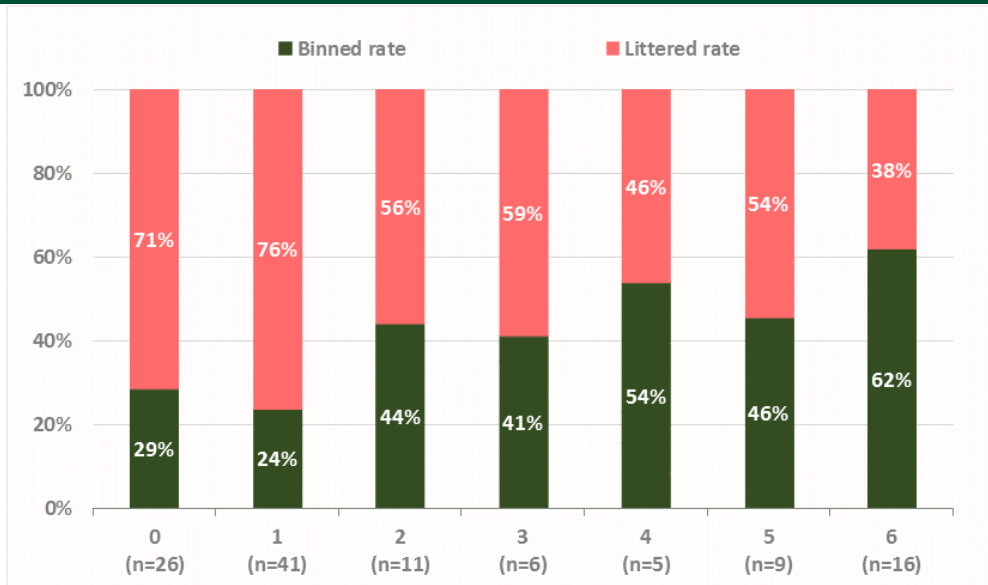


There was no difference in binning/littering rates based on cleanliness score. (However this appears to be based around the specific statements attributed to cleanliness, i.e. “Most butt litter seems to be new”, and “Cleaning up the butt litter would be easy to do”. When we instead look just at the statements “This area looks cared for” and “I am satisfied with how clean this area looks today” - from Butt Bins and Infrastructure” and “Involvement” respectively – we do in fact see a strong and direct correlation between agreement with these statements and high binning rates.)

Figure 14: Binning/littering by 'butt bins and infrastructure' score

BINNING AND LITTERING RATES BY BUTT BINS AND INFRASTRUCTURE SCORE

BASE: ALL OBSERVATIONS (N 3005). (N AT BOTTOM OF EACH BAR REFERS TO NUMBER OF SITES)



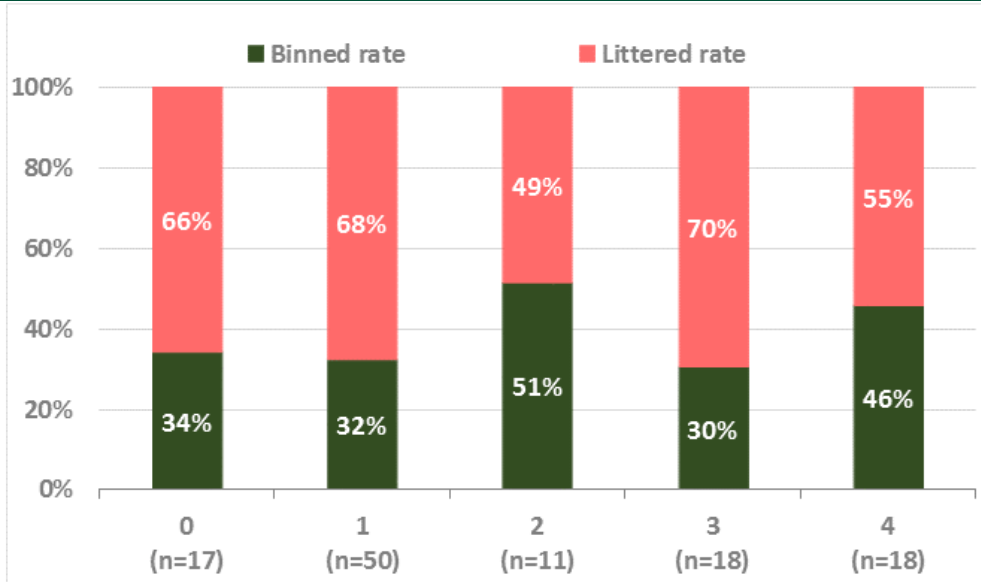
There was a significant difference in binning rates depending on the extent of butt bins and related infrastructure, varying from just 29% for zero scores, through to 62% where all six conditions were met.



4. SURVEY RESULTS

Figure 15: Binning/littering by 'information' score

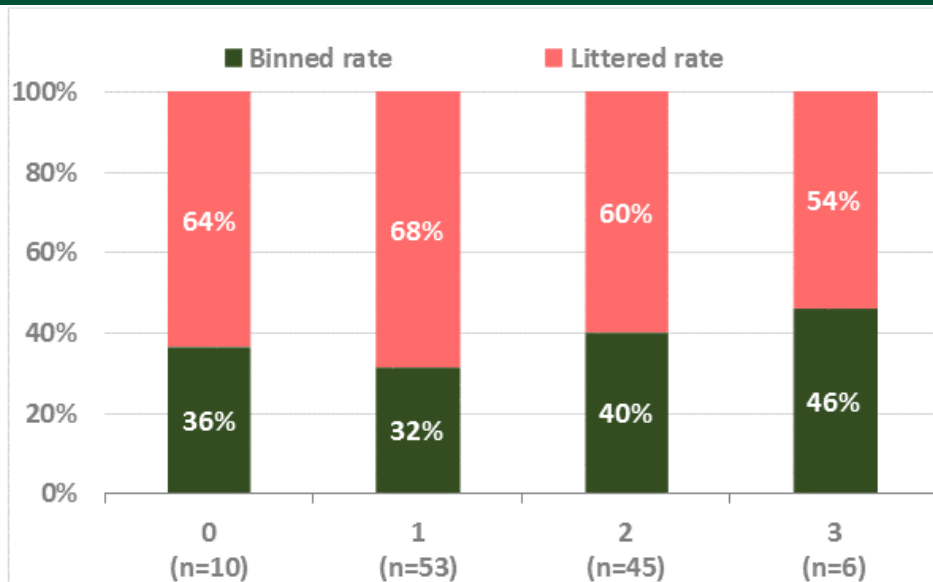
BINNING AND LITTERING RATES BY INFORMATION SCORE
 BASE: ALL OBSERVATIONS (N 3005). (N AT BOTTOM OF EACH BAR REFERS TO NUMBER OF SITES)



Information scores (relating mostly to signage) resulted in no significant differences in littering or binning rates.

Figure 16: Binning/littering by 'surveillance' score

BINNING AND LITTERING RATES BY SURVEILLANCE SCORE
 BASE: ALL OBSERVATIONS (N 3005). (N AT BOTTOM OF EACH BAR REFERS TO NUMBER OF SITES)



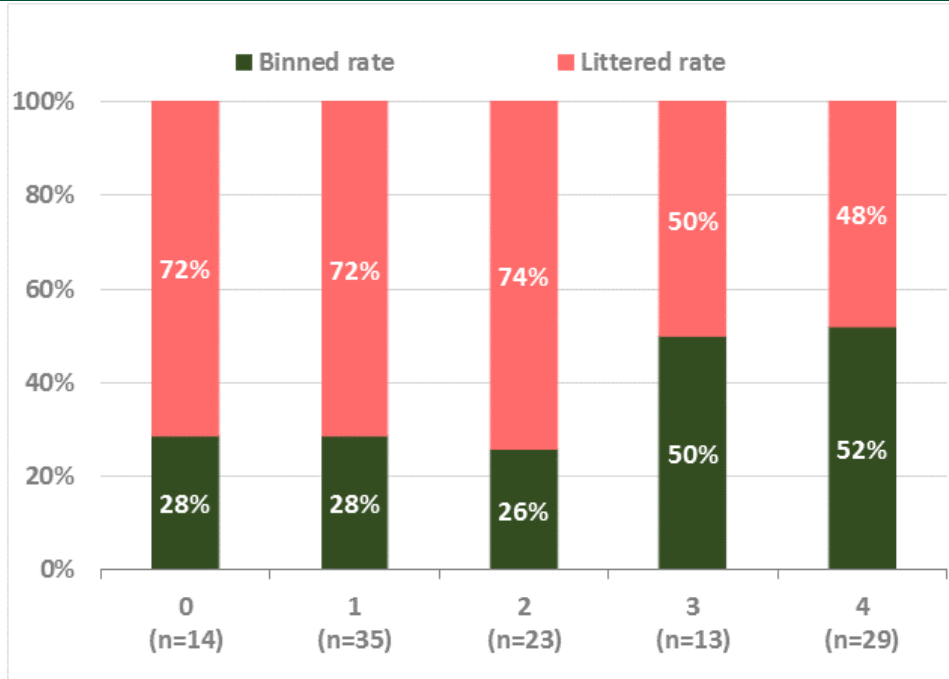
There were also no significant differences based on surveillance scores. (Note there were no sites where all four conditions were met.)



4. SURVEY RESULTS

Figure 17: Binning/littering by 'involvement' score

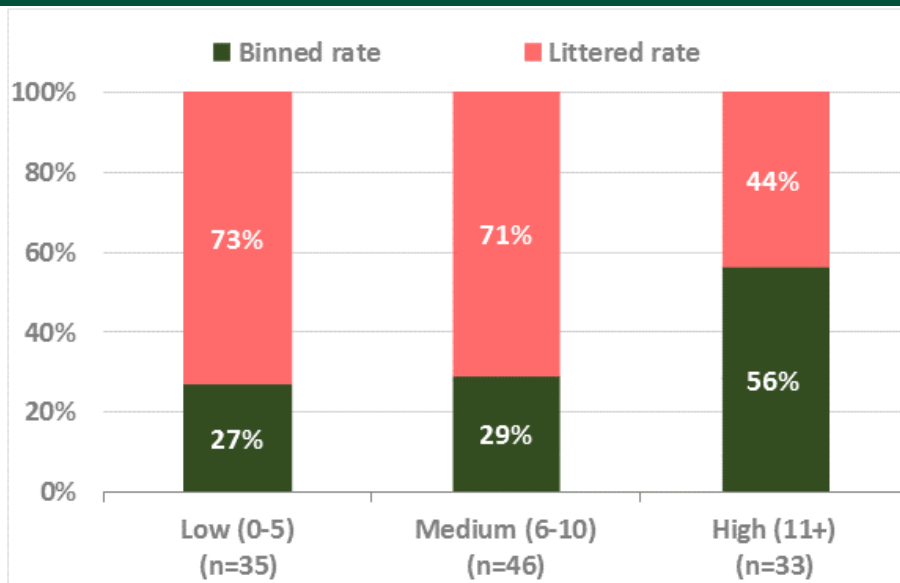
BINNING AND LITTERING RATES BY INVOLVEMENT SCORE
 BASE: ALL OBSERVATIONS (N 3005). (N AT BOTTOM OF EACH BAR REFERS TO NUMBER OF SITES)



However there was a significant difference in littering and binning rates depending on involvement (which related predominantly to smokers “looking after” the area). Where all four statements were deemed true, less than half of all observed butt disposals were littered.

Figure 18: Binning/littering rate by total score

BINNING AND LITTERING RATES BY TOTAL SCORE
 BASE: ALL OBSERVATIONS (N 3005). (N AT BOTTOM OF EACH BAR REFERS TO NUMBER OF SITES)





4. SURVEY RESULTS

When all 20 “True/False” scores were considered in total (Figure 18, previous page), we can see a strong and statistically significant difference in binning rates – from just 27% for areas where five or less statements were deemed “True”, to 56% where more than half were.

Table 5: AI scores by region, site type and streamlined/hotspot

Factor	Characteristic	AI score	Binning rate
Region	Coastal Regional	50.6	41%
	Inland Regional	39.2	39%
	Newcastle	27.9	21%
	Other Sydney	37.3	36%
	Sydney & East	45.3	46%
	Western Sydney	50.3	44%
	Wollongong	37.1	15%
Area	Streamlined	60.7	57%
	Hotspot	33.9	26%
Site Type	Transport	36.0	34%
	Shops	45.9	37%
	Office Block	51.5	43%
	Venue	32.4	29%
Total AI Score		42.6	36%

Area inspection total scores were highest in office block environments (mean score of 52) and lowest in venues and transport locations (32% and 36% respectively) – a statistically significant difference. This suggests that there is greater ownership of office sites than there is in other location types.

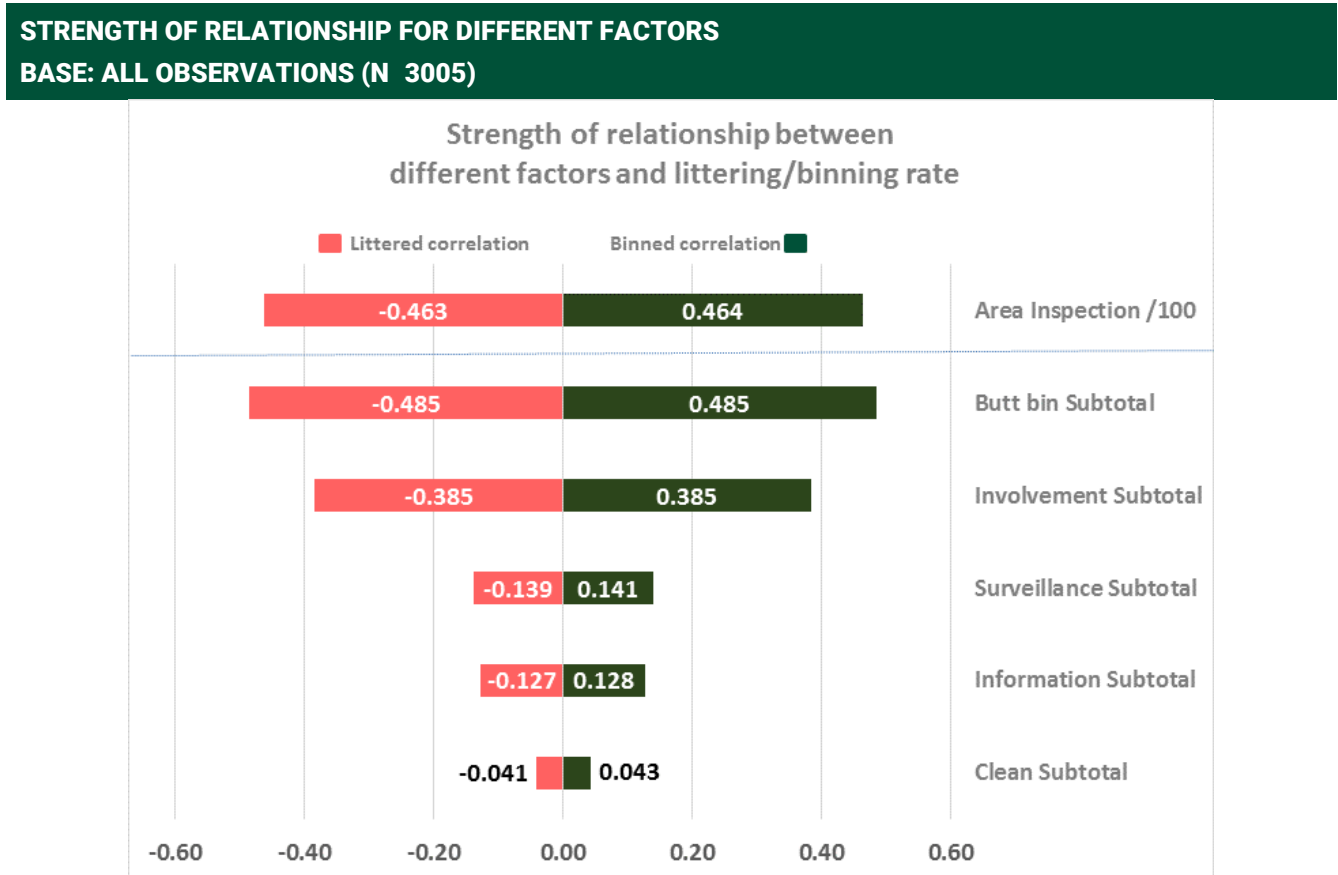
As one would expect, streamlined areas showed significantly higher AI scores than hotspots (at 61 and 34 respectively).

Figure 19, below, shows the main determinants of the binning or littering relationship:



4. SURVEY RESULTS

Figure 19: Strength of relationship between different factors and binning/littering rate



The presence of butt bins (and related infrastructure) and smoker involvement have far and away the major influences on littering rates. Or to put it another way: the more butt bins in sight, and the greater ownership smokers have of the area, the lower littering rates will be. (However even these relationships can only be classed as moderate.)

Surveillance, information and cleanliness do not appear to play as important a role as the butt bins and influence. However the Cleanliness score is measured via the two “Clean” statements on the BLC: “Most butt litter seems to be new (not here very long)” and “Cleaning up the butt litter would be easy to do”. If statements 8 and 20 are used instead – “This area looks cared for” and “I am satisfied with how clean this area is today” – then there is a strong correlation between these statements and high binning rates.)

This is also not to say that surveillance and information are unimportant, but rather than *on their own* they are unlikely to have a sizeable impact on butt littering rates.

“There is not a single butt bin. If they want us to do the right thing provide butt bins. We need butt bins and more bins in general. Mostly a tidy area, could do with some shade.”
 (ANZAC Memorial Park, Coffs Harbour)



4. SURVEY RESULTS

Table 6: Statement correlations to AI

Statement	Correlation to AI
Smokers seem to look after this area	0.68
Butt bins are easy to use	0.66
Butt bins are clean	0.66
Q8 + Q20: This area looks cared for + I am satisfied with how clean this area is today	0.64
Butt litter seems to be under control	0.63
There are enough butt bins in the area	0.63
This area is a good example of smokers doing the right thing	0.61
Butt cannot escape from butt bins	0.60
Butt bins can easily be seen in the area	0.60
This area looks cared for	0.56
Signs tell smokers what to do with butts	0.55
I am satisfied with how clean this area is today	0.55
Signs are easy to understand	0.49
Most butt litter seems to be new	0.46
Litter is from smokers ignoring signs	0.37
Finding graffiti or damage to things in the area requires considerable effort	0.37
I've seen rangers patrolling this area	0.34
Cleaning up the butt litter would be easy to do	0.24
Smokers are aware of potential fines for littering	0.10
Smokers littering butts will be easily seen	0.03
Butt litter and the problems it causes are easily seen	-0.18

When we look at individual statements, the highest correlation between individual statements and AI scores were for “Smokers seem to look after this area”, “Butt bins are easy to use” and “Butt bins are clean”. (In addition to the 20 BLC statements, we have also combined statements 8 and 20 to provide the best “proxy” score for overall site cleanliness perception. There was also a high correlation for the combined questions 8 and 20, which together provide a good proxy for perceptions of overall site cleanliness.)

The lower correlations related to statements such as “Butt litter and the problems it causes are easily seen” and “Smokers littering butts will be easily seen” and “Smokers are aware of potential fines for littering”. Collectively, this indicates that smokers are quite relaxed about the fear of prosecution for butt littering.

“I’d prefer to put it on concrete, bin looks dirty, until you’re close up you don’t know a bin has ashtray flap. Don’t want to go near it, looks dirty. Bit of a shithole, doesn’t feel pleasant, pigeon shit everywhere.” (Oxford St Mall, Bondi Junction)



4. SURVEY RESULTS

Table 7: Correlation between binning/littering rates and individual statements

Correlation	Litter Rate	Bin Rate
Smokers seem to look after this area	-0.48	0.48
Butt bins are clean	-0.46	0.46
Butt bins are easy to use	-0.44	0.44
There are enough butt bins in the area	-0.42	0.42
Butt bins can easily be seen in the area	-0.41	0.41
This area is a good example of smokers doing the right thing	-0.40	0.41
Butt cannot escape from butt bins	-0.35	0.35
Butt litter seems to be under control	-0.29	0.29
Signs tell smokers what to do with butts	-0.29	0.29
Q8 + Q20: This area looks cared for + I am satisfied with how clean this area is today	-0.23	0.23
I am satisfied with how clean this area is today	-0.20	0.20
This area looks cared for	-0.19	0.19
Signs are easy to understand	-0.12	0.12
I've seen rangers patrolling this area	-0.09	0.09
Finding graffiti or damage to things in the area requires considerable effort	-0.05	0.05
Litter is from smokers ignoring signs	-0.04	0.04
Cleaning up the butt litter would be easy to do	-0.04	0.04
Most butt litter seems to be new	-0.03	0.03
Butt litter and the problems it causes are easily seen	0.06	-0.06
Smokers littering butts will be easily seen	0.07	-0.07
Smokers are aware of potential fines for littering	0.14	-0.14

Those statements relating to positive perception of cleanliness and presence of butt bins appear to have the highest correlation with high binning rates. And as with Table 4, statements related to detection, potential shaming and enforcement have the lowest correlation – suggesting that this is not a major motivating factor for increased cigarette binning.

"If authorities want people to 'butt out correctly' provide the bins to use." (La Perouse Rd, Randwick)



4. SURVEY RESULTS

4.3. BUTT LITTER COUNTS

Researchers counted the number of cigarette butts within a 48 m² zone of each smoking area¹³. The results, with outliers removed, are shown in Table 4, below:

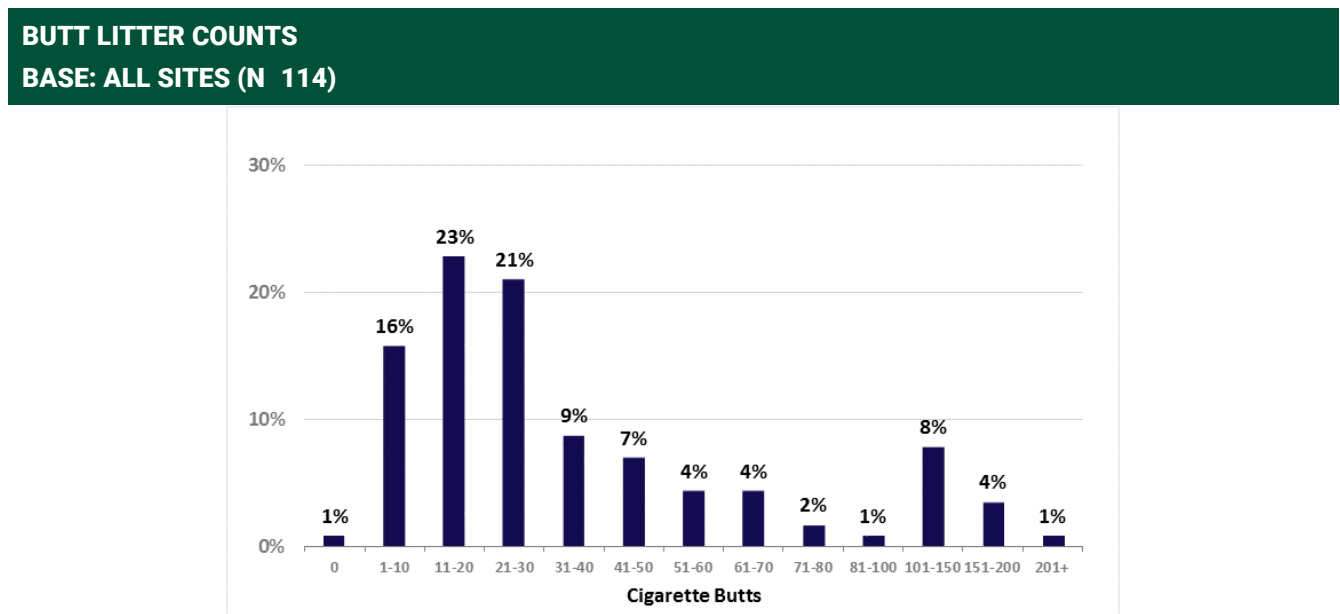
Table 8: Butt Litter statistics

		Statistic	Std. Error	
Cigarette Butts Total	Mean	42.11	4.690	
	95% Confidence Interval for Mean	Lower Bound	32.82	
		Upper Bound	51.41	
	5% Trimmed Mean	35.66		
	Median	25.00		
	Mode	25.00		
	Std. Deviation	50.075		
	Minimum	0		
	Maximum	326		
	Range	326		
	Skewness	2.680	.226	
	Kurtosis	9.449	.449	

This indicates that the trimmed mean (i.e. average) number of butts per site was 35.7, with a median number across all sites of 25. (Note mode was also 25).¹⁴ Perhaps surprisingly, the figure varied little by whether the inspection area was in a streamlined (mean=33.9) or hotspot (mean=37.2) zone.

The frequency distribution of butts littered is shown in Figure 19, below:

Figure 20: Butt litter counts



¹³ The Butt Litter Check Guidelines stipulate that “The 48-square metre butt litter count space should not be the most or least littered part of the smoking area. Ideally the amount of butt litter in the count space should be about the same as the rest of the area. If the area has seats, tables, litter bins and butt bins then try to include them in the count space.” It needs to be noted that figures will be largely dependent on site cleaning schedules.

¹⁴ The trimmed mean excludes top and bottom 5% of scores, classed as outliers. In this case, one site - measured to contain 326 butts - was considered an outlier. Including this site would have increased the mean to 42.1 butts littered.

4. SURVEY RESULTS



This indicates that 45% of sites have between 11 and 30 butts. However there is a long “tail” of sites with 41 littered butts or more.

As one would expect, the cleaner the site was perceived to be¹⁵, the less cigarette butts it contained. In this case, 63% of sites where neither cleanliness statement was true had 30 or more butts – against just 26% of sites where both statements were true.

Examining the researcher sketches of those 14 sites with 100 or more butts, the common landscape element (seen in eight of the 14) was flower beds in or immediately adjoining the inspection area.

In those sites where AI statements 8 and 20 (relating to site cleanliness) were both true, average number of bins was 26.2 – compared with 68.3 in those sites where both statements were false. This seems to further reinforce the link between (perceived cleanliness) of sites, and high binning rates.

*“They took the butt bins away from unofficial smoking area, so people throw butts on the ground.”
(Wallsend Village)*

“People put butts in plant boxes because more convenient than going to butt bin. It looks like other people put butts in garden bed then it seems ok to do it. But I feel guilty when I do that.” (Waverley St Mall, Bondi Junction)

¹⁵ Again as measured by questions 8 and 20 from the Area Inspection



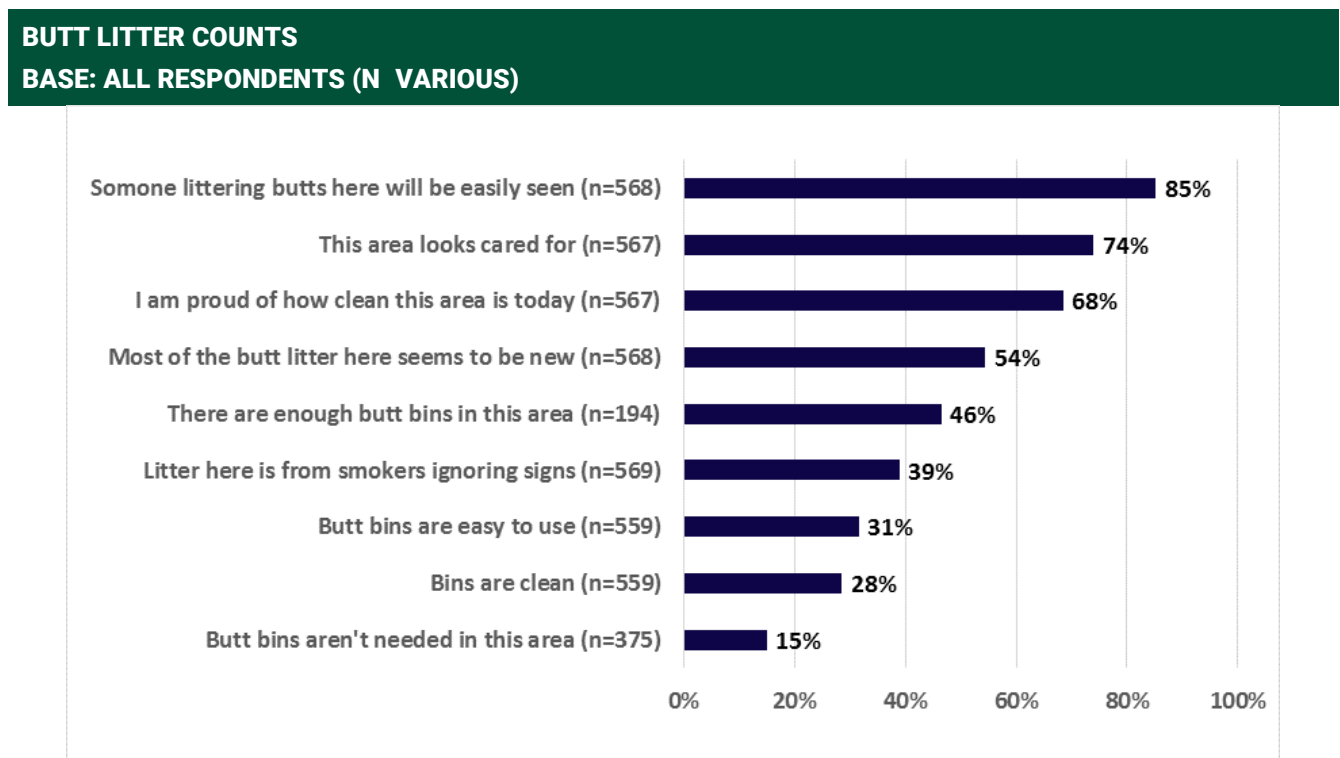
4. SURVEY RESULTS

4.4. SMOKER PERCEPTIONS

As part of the researcher inspection period, they interviewed a minimum of five smokers per site with a range of “True/False” questions about the site. These questions broadly correlate with the items listed in the Area Inspection.

Results for the 569 smoker interviews are shown in Figure 21:¹⁶

Figure 21: Smoker statements (% saying this was true)



There was strong agreement (85%) that “Someone littering butts here will be easily seen”. If this is true, however, then it appears to have done little to curb littering rates – suggesting that litterers are not fearful of personal consequences.

There was also strong agreement with the statements that “This area looks well cared for” (74%) and “I am proud of how clean this area is today” (68%). This second statement indicates that littered butts are either not visible to the smoker, not being consciously noticed, or not being acknowledged as “litter”.

At the other end of the scale, there was little agreement that “Butt bins are easy to use” (31%), “Bins are clean” (28%) or “Butt bins aren’t needed in this area” (15%). The last of these suggests that butt bins are either appreciated or expected in public smoking spaces.

Table 6, next page, shows the breakdown of statements between hotspot and streamlined smoking areas:

¹⁶ Depending on whether there were butt bins in the area, smokers were asked either of “There are enough butt bins in this area” or “Butt bins aren’t needed in this area.” The sample size (n=XXX) shown on each statement shows how many interviewees answered that question.



4. SURVEY RESULTS

Table 9: Smoker statements, by streamlined or hotspot

Column %	Total	Area	
		Streamlined	Hotspot
Most of the butt litter here seems to be new	54%	61%	53%
There are enough butt bins in this area	46%	51%	36%
Butt bins are easy to use	31%	66%	19%
Bins are clean	28%	56%	18%
This area looks cared for	74%	84%	69%
Litter here is from smokers ignoring signs	39%	43%	37%
Someone littering butts here will be easily seen	85%	79%	88%
I am proud of how clean this area is today	68%	78%	64%
Butt bins are not needed in this area	15%	44%	12%

As one would expect, those smokers interviewed in streamlined areas were significantly more likely to agree that “Butt bins are easy to use” (66%, against just 19% in hotspots), “Bins are clean” (56% vs. 18%) and “This area looks well cared for” (84% vs. 69%), “I am proud of how clean this area is today” (78% vs. 64%) and “butt bins are not needed in this area” (44% vs. 12%).

*“People will take ownership and listen if provided the opportunity, particularly in an area like this.”
(Haymarket)*

Table 10: Butt litter count by smoker statement

Interviewee statement	Butt litter count when TRUE	Butt litter count when FALSE
Most of the butt litter here seems to be new	39	47
There are enough butt bins in this area	37	45
Butt bins are easy to use	41	44
Bins are clean	36	46
This area looks cared for	39	52
Litter here is from smokers ignoring signs	38	45
Someone littering butts here will be easily seen	39	63
I am proud of how clean this area is today	37	52
Butt bins are not needed in this area	34	44



4. SURVEY RESULTS

Table 10 (previous page) shows the average bin litter count depending on whether smokers perceived specific statements to be true or false, with statistically significant differences marked in red and blue. It shows that butt litter counts were likely to be significantly lower when smokers believed:

- The bins were clean
- The area looked cared for
- People littering butts would be easily seen
- They were proud of how the area looked.

While it would seem self-evident that areas with low butt litter counts were perceived as clean, this may also be further evidence of the correlation between cleanliness and improved binning behaviour.

4.5. CORRELATION BETWEEN AREA INSPECTION AND SMOKER INTERVIEWS

Because the statements in the Area Inspection (AI) section of the butt litter check are broadly similar to those of the smoker interviews, we can gain an understanding of how closely impressions of researchers and smokers are aligned.

The correlation factor between the two sets of statements (on a scale of -1 to +1¹⁷) is 0.59. This suggests a moderate and positive correlation between the two sets of statements. However, given that a strong relationship requires a score of 0.7 or more, it also suggests that smokers and researchers are not seeing the sites in entirely the same way.

Likewise, there was only a small correlation (0.44) between the cleanliness statements (8 and 20) in the AI, and the comparable smoker interview question. This again suggest that smokers did not see the sites the same way that interviewers did.

In fact the average score for smoker interviews was 50.67, against 42.59 for interviewers – implying that smokers looked more favourably at “their” smoking area than did the dispassionate researchers.

Smokers were significantly more favourably disposed towards hotspot sites (average 44.1, against 33.9 for researchers), but opinion was more consistent in streamlined locations (average 64.3 and 60.7 respectively). Meanwhile average scores were broadly consistent across all four site types.

¹⁷ i.e. the Person Correlation Co-efficient, where -1 = a perfect negative correlation, and +1 = a perfect positive correlation

5. RECOMMENDATIONS FOR FUTURE STUDIES



Based on our experience with conducting the 2020 Butt Litter Check for the NSW EPA, we offer the following recommendations – in no particular order of priority - to potentially help improve data gathering practices and/or insights from subsequent waves of research:

Photos

While researchers used line drawings to good effect in the 2020 study, area inspections would be enhanced through the use of photographs to highlight specific features of interest. Photographs of both “good” and “bad” sites would also be useful additions to future reports.

Case studies

Where smokers are amenable, it would be useful to record additional insights from selected interviewees through the use of structured case studies. This might involve a slightly longer and more qualitative-style interview, perhaps incentivised. As well as providing additional and more nuanced insights, such case studies – perhaps accompanied by a photo - would add additional “colour and light” to future reporting.

Optimum number/range of sites

Subject to budget constraints, consideration should be given to adding additional sites in order to provide more robust datasets.

Training

While data quality in 2020 was generally acceptable, 7% of observations missed recording bin distance – considered a critical parameter in ascertaining likelihood to litter. The importance of recording bin distance on every observation should hence be highlighted in any future training. There should also be additional emphasis on the qualitative element of the smoker interviews.

6. APPENDIX 1 – SURVEY FORMS



6. APPENDIX 1 – SURVEY FORMS

Step 1: Smoking area inspection

Butt Litter Check

Organisation name _____

Contact name _____ Phone _____

Date		Time		Area name and description	
Streamlined		Hotspot			
Stage of butt litter prevention activities				Before	During
				After	Long after

<p>Site type (around area)¹</p> <p>_____</p> <p>Number of bins</p> <table border="1"> <tr> <td>Litter</td> <td>Recycling</td> <td></td> </tr> <tr> <td>Butt</td> <td>Ashtray</td> <td></td> </tr> </table> <p>Number of full bins? _____</p> <p>How busy is the area?</p> <p>Quiet _____ Moderate _____ Very _____</p> <p>How much litter is in this area?</p> <p>None _____ Some _____ Lots _____</p> <p>How much protection for weather is there?</p> <p>None _____ Some _____ Lots _____</p> <p>Butt litter cause</p> <table border="1"> <tr> <td>Littering</td> <td>Bin design</td> <td>Weather</td> </tr> <tr> <td>Brimming</td> <td>Scavengers</td> <td>Spills</td> </tr> </table> <p>How much graffiti is in the area?</p> <p>None _____ Some _____ Lots _____</p> <p>How damaged are things in the area?</p> <p>None _____ Some _____ Lots _____</p> <p>Photos? Yes _____ No _____</p> <p>Sketch the inspection area include corners, bins and features As you walk around make a mental note of distance between bins and smokers! indicate bin positions for LB, RB, BB, A and RBB. Show where the litter count space is located and the configurations - 1x48 m; 2x24; 3x16; 4x12; 6x8, etc.</p>	Litter	Recycling		Butt	Ashtray		Littering	Bin design	Weather	Brimming	Scavengers	Spills	<p style="text-align: center;">Sketch (aerial view)</p> <div style="border: 1px solid black; height: 400px;"></div>
Litter	Recycling												
Butt	Ashtray												
Littering	Bin design	Weather											
Brimming	Scavengers	Spills											

¹ transport; shops; office block; venue (pubs, clubs, outdoor eating); hospital; recreational parks; roadside stops or rest areas.



6. APPENDIX 1 – SURVEY FORMS

In this area, write down whether you think the statement is True or False

Only statements about features that are True for the area are counted.

		Area Inspection – True or False	T/F	Notes
Tips	Clean			
Walk around the area, record impressions about whether each statement is True or False.	1	Most butt litter seems to be new (not been here very long)		What is or isn't working well? e.g. the area is very clean. What isn't working? Note suggestions to improve clean features.
	2	Cleaning up the butt litter would be easy to do		
	Clean subtotal (add only True responses)		/2	

		Butt bins and Infrastructure	T/F	Notes
Tips	Butt bins and Infrastructure			
Q3. If no butt bins, but the area is free of butt litter, answer 'T'. Q. 4,5,6. If not butt bins answer 'F' if there is more than one butt bin in the area, if the statement is 'False' for one bin then answer 'F' for all.	3	There are enough butt bins in the area		Examples: Butt bins effectively capture and hold butts. Repair or improve bins and/or furniture. Area needs more bins.
	4	Butt bins can be easily seen in the area		
	5	Butt bins are easy to use		
	6	Butt bins are clean (free of dirt, graffiti, damage)		
	7	Butts cannot escape from butt bins		
If the answer is 'False' for any one amenity, e.g. furniture, answer 'F'	8	This area looks cared for (e.g. seats, garden, paths)		
	Butt bins and infrastructure subtotal (add only True responses)		/6	

		Information	T/F	Notes
Tips	Information			
Look at all signs, focusing on litter signs.	9	Signs tell smokers what to do with butts		Examples: There are butt litter prevention signs and the signs are undamaged and clear. There are no litter prevention signs.
	10	Signs are easy to understand		
	11	Litter is from smokers ignoring signs		
	12	Butt litter and the problems it causes are easily seen		
	Information subtotal (add only True responses)		/4	



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Tips		Surveillance (visibility of disposals)		Examples: Consider giving more warnings to smokers caught littering.
	13	Butt litter seems to be under control		
	14	Smokers littering butts will be easily seen		
	15	Smokers are aware of potential fines for littering		
	16	I've seen rangers patrolling this area		
	Surveillance subtotal (add only True responses)		/4	

Tips		Involvement		Examples: Smokers seem comfortable and proud of the area.
	17	The area is a good example of smokers doing the right thing		
If vandalism or damage is evident, answer 'F'	18	Finding graffiti or damage to things in the area requires considerable effort		
	19	Smokers seem to look after this area		
	20	I am satisfied with how clean this area is today		
	Involvement subtotal (add only True responses)		/4	

Add the totals for each subsection to get a total out of 20. Multiply this score by 5 for a score out of 100 and insert it in the box on far right.	Area inspection total (add all True responses)	/20	/100
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6. APPENDIX 1 – SURVEY FORMS

Step 2: Observation

Butt Litter Check

Organisation name _____

Contact name _____ Phone _____

Area name and description				Area			
Site type	office block? retail? car park? etc.			Date	Streamlined		Hotspot
				/ /			
Session #	Start time	Number of people in area	Number of people smoking	Tips: Note the start time for each session and record the number of people and number of smokers. In the data table below rule a line across the observations at the end of a session.			
1							
2							
3							
4							
5							
6							

Disposal act	Item disposed		Where		How	
Littered (L)	Cigarette burning	CB	Around bin	AB	Brimmed on bin	BM
	Cigarette out	CO	Garden bed	GB	Drop and stomp	DS
	Accessory (cigarette)	A	Gutter or drain	GD	Forgot	FG
	Non-cigarette	N	Open ground	OG	Flagrant fling	FL
			Raised surface	RS	Hide or bury	HB
			Under seat	US	Sneaky drop	SD
				Wedged	WD	

Disposal act	Item disposed		Bin type		Bin fixture	
Binned (B)	Cigarette burning	CB	Ashtray	AF	Free standing	FS
	Cigarette out	CO	Ashtray personal	AP	Fixed to bin	FB
	Accessory (cigarette)	A	Butt bin	BB	Fixed to pole	FP
	Non-cigarette	N	Butt recycling bin	BRB	Fixed to wall	FW
			Litter bin	LB		
			Butt plate on bin	BPB	Bin distance	
		Recycling bin	RB	How far from bin before disposal (metres)		

Disposal act	Item disposed		Demographics			
Carried away (CA)	Cigarette burning	CB	Sex	F / M	Group size	Number 1- 9
	Cigarette out	CO	Age	Years	Group type	All female FF All male MM Mixed MX
	Accessory (cigarette)	A	Tick <input checked="" type="checkbox"/> in the demographics column below if person was spoken to or surveyed i.e. a conversation			
	Non-cigarette	N				

Obs. #	Disposal act			Item disposed				Littered		Binned		Distance	Demographics					
	L	B	CA	CB	CO	A	N	Where	How	Type	Fixture	From bin	Sex	Age	Size	Type	Conv.	
1																		
2																		
3																		
4																		
5																		
6																		

6. APPENDIX 1 – SURVEY FORMS



Obs. #	Disposal act			Item disposed				Littered		Binned		Distance	Demographics					
	L	B	CA	CB	CO	A	N	Where	How	Type	Fixture	From bin	Sex	Age	Size	Type	✓ Conv.	
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		
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41																		

Summary of impressions (one sentence only)



6. APPENDIX 1 – SURVEY FORMS

Step 3: Cigarette butt litter count

Butt Litter Check

Organisation name _____

Contact name _____ Phone _____

Area type		Area name	Date
Streamlined	Hotspot		/ /

Item category	Small item tally: Cigarette butts <small>All cigarette butts are considered to be small items – up to a thumb size</small>	TOTAL
Cigarette butts	Butts (all small)	

Item category	Small item tally	Sum	Medium item tally	Sum	Large item	Sum	TOTAL
Cigarette accessories	Matches, foil, plastic wrap, lighters		Cigarette packet, cigarette pouch, match box		Cigarette carton		

Cigarette items TOTAL	Cigarette butts + Cigarette accessories						
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Item category	Small item tally	Sum	Medium item tally	Sum	Large item	Sum	TOTAL
Non-cigarette items <small>All other items</small>	Up to a thumb		Fist size		Bigger		

TOTAL: All items							
TOTAL: All items	Small items (includes butts)	Sum	Medium items	Sum	Large items	Sum	TOTAL
PERCENTAGE: All items	Small items %		Medium items %		Large items %		TOTAL = 100%



6. APPENDIX 1 – SURVEY FORMS

Step 4: Conversations with smokers

Butt Litter Check

Organisation name _____

Contact name _____ Phone _____

Date	Area type		Gender		Conversation #
	Streamlined	Hotspot	Male	Female	
/ /					

In the conversation with smokers ask if they think the statements below are true for the area.

The conversations are all about the smoking area where the survey is conducted. The colour coding is used as a prompt to make sure each aspect of the smoking area is covered in the conversation. **Write in T for TRUE or F for FALSE.**

	Clean	True/False	Comments
1	Most butt litter here seems to be new (not been here very long)		

	Bins and infrastructure	True/False	Comments
2	There are enough butt bins in this area		

If there are **no** bins in the area ask Q2A and if True then enter a T for Qs 2A, 3 and 4. If false insert F for Q2A, 3 and 4.

2A	Butt bins aren't needed in this area		
3	Butt bins are easy to use		
4	Bins are clean (free of dirt, graffiti, damage)		
5	This area looks cared for (e.g. seats, garden, paths, play areas)		

	Information	True/False	Comments
6	Litter here is from smokers ignoring signs		

	Surveillance (visibility of disposals)	True/False	Comments
7	Someone littering butts here will be easily seen		

	Involvement	True/False	Comments
8	I am proud of how clean this area is today		

Count all the True responses to give the total score <small>(add all True responses)</small>		/8	Multiply total out of 8 by 12.5 to give a score out of 100	/100
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Taverner Research

Level 2, 88 Foveaux Street, Surry Hills, NSW 2010, Australia
t +61 2 9212 2900

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