



CUPS PROJECT REPORT

2020



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gymru'n wales
daclus tidy



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Jones, H. April 2020.

Data collected by Roberts, R. (Cardiff Metropolitan University) and Jones, H. (Keep Wales Tidy).

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Headline Results

This project aims to reduce cup waste and boost recycling on-the-go at Cardiff Metropolitan University's Llandaf campus.

During Phase 1, as well as making it easy for people to recycle with cup bins located inside the campus' four coffee outlets, bespoke bilingual artwork encouraged people to switch to reusable cups. (A 10% discount is available on hot drinks sold at the three Cardiff Met managed sites when a reusable cup is presented.) For Phase 2, an additional four cup bins were installed in outside locations on the campus in areas of high footfall.

The key findings of this project are summarised below.

	Phase 1	Phase 2
Reusable cups presented as a percentage of total sales	12.9%	14.9%
- Weekly average	12.5%	15.6%
Percentage of single-use cups deposited in the cup bins	10.7%	13.4%
- Weekly average	11.4%	15.9%
Percentage of campus users who said they disposed of their cups in a cup bin	17.1%	32.4%
Percentage of campus users who said they were aware of one or both other the project's messages (on reuse and recycling)	51.0%	56.9%
Percentage of campus users who said they were aware of the cup bins	59.6%	83.3%

The above figures on both reusable cup use and single-cup recycling at Cardiff Met compare favourably with national data.

Other important findings include:

- During Phase 2, the level of cups collected in the inside cup bins was significantly higher than those collected in the outside cup bins. Of the total cups collected, 88.5% were disposed in the inside bins, compared with just 11.5% in the outside bins.
- During both Phases 1 and 2, one reusable cup was sold on campus for every 97 sales.
- The university introduced a 'crockery' (china) option with a 10% discount for 'drink in' hot drinks sold in The Gallery outlet during the year. From then onwards, china sales accounted for 36.9% of all sales at The Gallery.
- Comments from campus users include *'I own a reusable Starbucks mug to reduce plastic waste. I keep it in uni so I don't forget it at home'* and that the project's reuse message *'...helps me remember'* (the reusable cup). Not only are users trying to do the 'right thing' but the comments also show positive attitudes towards the university's drive to promote environmental causes and sustainability.



Background

The Problem

Drinking-on-the go has become increasingly popular over recent years. There are 20,000 coffee shops in the UK and 1 in 5 of us go to a coffee shop every day.¹ We use 7 million single-use cups every day which is equivalent to 2.5 billion a year in the UK.² This is expected to increase further with the continuing growth of the coffee shop sector.³

In 2017, a poll found that while half of the respondents thought their coffee cups were recycled all or most of the time, just 1 in 400 (less than 1%) were actually recycled, even if they're disposed of in a recycling bin.⁴ While single-use cups are made primarily of paper, in order to make them waterproof, they are lined with plastic (polyethylene) - which, along with the drink contaminating the waste, makes them difficult to recycle.⁵ Contamination and separation of coffee cup waste also cause difficulties.⁶ Most therefore end up in landfill, creating around 25,000 tonnes of waste every year.⁷

Public Attitudes and Behaviours

Recently, there has been a big shift in public opinion towards plastic. Research shows that Blue Planet II has been very influential, as 88% of those who saw the final episode have since changed their behaviour.⁸ It is reported that 60% of us are now more likely to use a refillable water bottle and that 66% of 18-24 years olds are now more likely to opt for a reusable coffee cup.⁹ However, only 1% of us currently use reusable coffee cups.¹⁰

Single-use cups present a huge waste problem and the public has concerns about the issue. In 2017, a poll¹¹ found that:

- 89% of people thought that coffee shops should stock recyclable paper cups.
- 92% of people said they thought it was important to be able to dispose of 'take away' cups within the normal recycling system.

This shows a strong public appetite for coffee cup recycling.

During June and July 2018, Keep Wales Tidy ran a public questionnaire on cups. There were over 100 respondents (although not everybody answered each question). The results found that:

- 42.2% bought drinks in non-reusable containers weekly, while 48% bought them less often.
- 57.8% normally bought their 'take away' hot drink at a national store such as Costa Coffee, Nero or Starbucks, with just 26.5% using local or independent retailers.
- 47.5% put their cups in street recycling bins and 43.6% put them in general litter bins.
- 75.3% owned a reusable cup. 44.6% used their reusable cups most of the time, while 30.1% only used them rarely. Only 8.4% said they used their reusable cups every time they bought a hot drink.
- 7.1% said that a store had refused to use a reusable cup for selling them a hot drink.
- As far as an effective incentive for them to use alternatives to single-use cups, 62.4% favoured a discount on the drink for using a reusable cup, while 26.7% favoured a charge on the drink if they had to use a single-use cup.

Disposal

Most people are keen to dispose of their single-use cups responsibly. Every year, we bin 2.5 billion paper cups in the UK.¹² Coffee cups account for 2.3% of litter bin waste in Wales, (this includes litter and recycling-on-the-go bins) but it accounts for a 'considerable volume'.¹³ This shows that there is confusion amongst the public as to the correct place to dispose of these items.

However, unfortunately, half a million coffee cups are littered in the UK every day.¹⁴ Keep Wales Tidy street cleanliness surveys shows that fast food cups (which includes coffee cups) were found on 5.0% of Wales' streets in 2018-19.¹⁵

The Solution

It is possible to separate the plastic on single-use cups from the paper, but this can only be done by specialist facilities, and there are currently just three of these in the UK.¹⁶ Recycling should be made as easy as possible to maximise uptake. In 2017, Hubbub ran a paper cup recycling project called The Square Mile Challenge in London. In nine months, they collected and recycled 4 million cups.¹⁷

Recycling however is only one part of the solution. Efforts also need to be made to prevent the problem in the first place. Sales of reusable coffee cups have recently seen a significant increase¹⁸ and efforts need to be made to encourage people to use these.

The Project - Phase 1

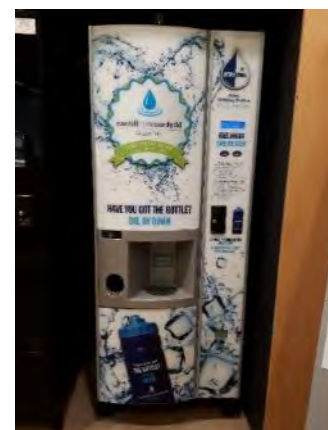
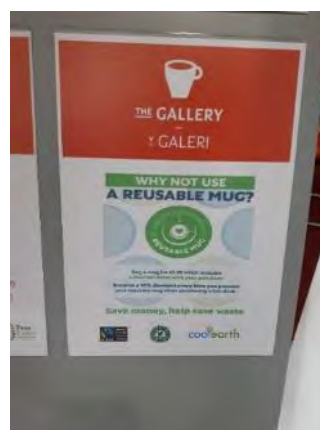
With the support of the Paper Cup Recycling and Recovery Group, Keep Wales Tidy is partnering with Cardiff Metropolitan University (Cardiff Met) to undertake a trial project which aims to reduce cup waste and boost recycling on-the-go at the university's Llandaf campus.

Context

While there are many litter bins around campus (both for general litter and recycling on-the-go), before the project started, no coffee cup recycling was in place, so all single-use cup waste went to landfill. Coffee is sold from 4 parts of the campus (including a Costa Coffee at The Atrium and a Starbucks at the Student Union). See map at [Appendix 1](#). People are confused as to where to best dispose of their cups and around a third of students are international, so cultural and language barriers are not insignificant.

Hot drinks on campus cost the same regardless of 'drink in' or 'take away'. They are either sold in single-use cups or in reusable cups, where - at the Cardiff Met managed outlets (Cardiff Met Sites) - there is a discount. People can buy a reusable cup at the coffee outlets (and receive a free hot drink with it) and then get a 10% discount from Cardiff Met Sites every time they present it (or any other reusable cup) to purchase a hot drink. The university also has a variety of reusables for sale at a discounted price.

The university is working hard to promote sustainability across all its activities. Costa Coffee is signed up to the Refill Campaign (which aims to prevent plastic pollution by making it easier for people to reuse and refill their bottles with water instead of buying a new one). Free cooled water vending is also available on campus and this forms part of the Cardiff Met app.



Left to right: Cardiff Met reusable cup (for hot and cold drinks), poster advertising the discount for using a reusable cup; free cool water dispenser machine.

The Project

For Phase 1 of the project, which was launched on Monday 14 January 2019 and lasted for three months, four cup bins were purchased to boost cup recycling. Cup-shaped recycling bins were chosen to overcome the cultural and language barriers, with one located inside each coffee outlet, as follows:

- One giant cup bin (at The Atrium - which is the most popular of all the coffee outlets on campus).
- Three deluxe cup recycling units (one of each at the other three outlets).

All cups discarded in these cup bins were collected, processed and transformed into new products by Simply Cups.

As well as making it easy for people to recycle, the project encouraged people to switch to reusable cups and make use of the university's extensive water refill facilities.

We also developed bespoke bilingual materials, which were informed by messages developed for a coffee cup project by Cardiff University's School of Psychology.¹⁹ These include bin wraps, posters (A3 and A4), web banners and cup stickers. They convey the following messages:



- Reuse: 'Keys, Wallet, Phone, Cup' - to encourage people to use reusable cups.
- Recycling: 'There's life in that old cup yet' - to encourage people to dispose of their single-use cups in the new cup bins.

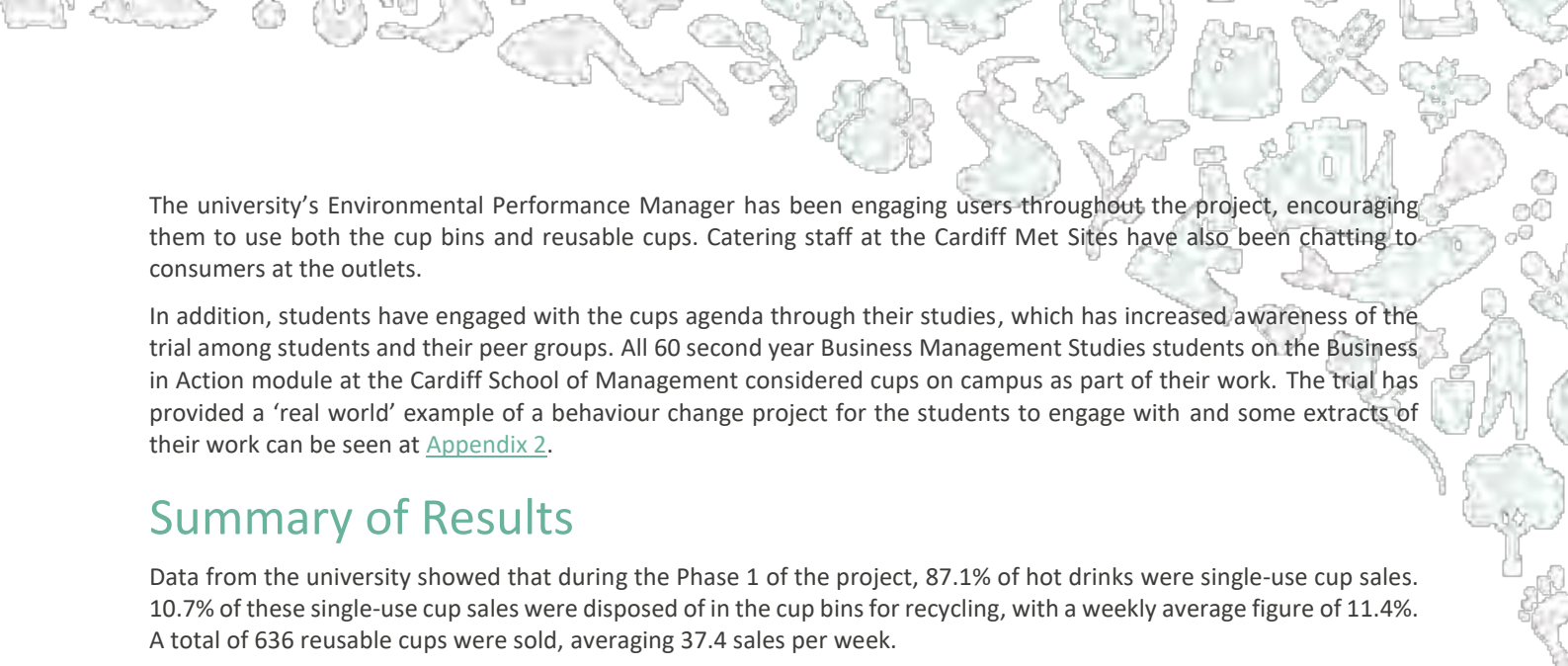
Both messages include the bilingual refill logo to encourage people to make use of the campus' extensive water refill facilities and #TidyCupsCymru.

From the launch date until the end of February 2019, Cardiff Met Sites increased the discount available on hot drinks to 20% for those presenting a reusable cup.

Engaging with Campus Users

The Llandaf campus runs monthly 'Community Days', which provide a perfect opportunity to engage with campus users. During the October 2018 day, Cardiff Met and Keep Wales Tidy were present to discuss the upcoming project (including the artwork and messaging) with students and staff, and this included the free distribution of reusable cups.

The web banner was shared by e-mail to all staff and students and posters were put on display throughout the campus. The university also created two videos to communicate the message, with one demonstrating how to use the cup bins and the other summarising the project. These were shown in the library and have been shared on [social media](#).



The university's Environmental Performance Manager has been engaging users throughout the project, encouraging them to use both the cup bins and reusable cups. Catering staff at the Cardiff Met Sites have also been chatting to consumers at the outlets.

In addition, students have engaged with the cups agenda through their studies, which has increased awareness of the trial among students and their peer groups. All 60 second year Business Management Studies students on the Business in Action module at the Cardiff School of Management considered cups on campus as part of their work. The trial has provided a 'real world' example of a behaviour change project for the students to engage with and some extracts of their work can be seen at [Appendix 2](#).

Summary of Results

Data from the university showed that during the Phase 1 of the project, 87.1% of hot drinks were single-use cup sales. 10.7% of these single-use cup sales were disposed of in the cup bins for recycling, with a weekly average figure of 11.4%. A total of 636 reusable cups were sold, averaging 37.4 sales per week.

Observed behaviour data from Keep Wales Tidy showed that more than 70% of single-use cups were leaving the premises i.e. were purchases to 'take away' rather than to 'drink in'. 3.1% of the single-use cups were deposited in the cup bins. Data from the campus user questionnaire showed that 51.0% of respondents had seen one or both of the messages and 59.6% of respondents had seen the new cup bins.

These results are encouraging and show that with the right messaging, infrastructure and user engagement, consumers can be encouraged to dispose of their single-use cups into cup bins, therefore diverting the waste from landfill.

The Project - Phase 2

Since the majority of single-use cups were leaving the outlets, Phase 1 of the project highlighted the need to have additional bins - located outside - in order to build on the success of the project. During summer 2019, the Paper Cup Recycling and Recovery Group therefore decided to extend the project to fund four more bins to allow 'take away' cups to be captured and to measure their impact.

Context

The university is continuing to improve sustainability and promote healthy living across all its activities. Recent developments include:

- Setting up [Repair Cafés](#) (including free bike MOTs) at both campuses during the monthly Community Days.
- Introducing beehives to the campus, which provide an engagement and learning opportunity for university users as well as the local community.
- Building two smoking shelters, a stepped approach in preparation for the smoking ban on campus.
- Creating a six-month Sustainability Projects Officer role to support the work of the university's Environmental Performance Manager.
- Becoming a Keep Wales Tidy [litter picking hub](#) to support clean-up activity in the local area.

In addition, the university has been boosting its efforts to reduce single-use cups, by introducing a 'crochery' (china) option for 'drink in' hot drinks sold in The Gallery (made possible by the dishwashing facilities there). There is a 10% discount offered for this option. This outlet has sofas which create a more relaxed atmosphere than the other outlets.

The Extended Project

Despite having a wide range of cup bins, only two of those in the Simply Cups catalogue are suitable for outside use, including the deluxe cup recycling units (three of which were purchased during Phase 1 of the project).

While planning for Phase 2, we were keen to learn lessons from other cup projects throughout the UK, in order to maximise the impact of the project. We were informed by our partners at Simply Cups that a recent trial in [Marylebone Station in London](#) using clear tube bins had a high compliance rate and low contamination levels. Therefore, instead of

purchasing four new cup bins suitable for outside use, we bought just one of these and moved the three existing deluxe cup recycling units outside. These were replaced with three new clear tube bins for the outlets. The giant cup bin remained in The Atrium. All new bins were branded using our bespoke bilingual messaging. Unfortunately, despite planning to run Phase 2 during three months of the autumn term (September to December 2019), there were delays in processing and delivering the new bins, with the clear tube bins arriving mid-October (and one was damaged on delivery). The deluxe cup recycling bin didn't arrive until mid-November. In order to get three months of data, Phase 2 was extended until 1 March 2020.

The locations of the outside bins were decided in partnership with Cardiff Met (based on footfall), and were as follows:

- At the front of the campus, by the bottom of the pedestrian footbridge. This is close to the Nextbike station and bus stop.
- At the front of the campus (outside the Student Union) and mid campus (in the quad area). These are both on the walkways to the campus' two smoking shelters, but far enough away to avoid smoking-related litter contamination.
- Outside the library, close to the main route through campus.

See map at [Appendix 1](#).



Left to right: outside cup bins at the front of campus, mid campus and outside the library.

Efforts have continued to engage campus users in the project as described above for Phase 1. These have been boosted by the new Sustainability Projects Officer role. Students have continued to be engaged with the cups agenda through their [studies](#) and two students who studied the topic during 2018-19 changed their module choices for 2019-20 (choosing more environmental options).

Measuring Success

The campus provides a relatively 'closed' space, where the impact of the project can be easily measured.

Results - Cardiff Metropolitan University Data

Following from Phase 1 of the project, the university continued to collect cups data throughout the year, providing a continuous record from Phase 1 to Phase 2 of the project and beyond. This report considers 60 weeks of data from Monday 7 January 2019 to Sunday 8 March 2020. Term dates during this period can be seen in Table 1, below. Freshers Week took place during week 36. The whole campus was closed during week 50 and the Student Union was also closed during week 51. Table 1 below, shows how term dates correspond to the data.

Table 1: How Term Dates Correspond to the Data

Term	Spring	Easter	Summer	Summer Break	Autumn	Christmas	Spring
Week Ending	20/01/2019						08/03/2020
Week	1-12	13-14	15-20	21-36	37-49	50-52	53-60

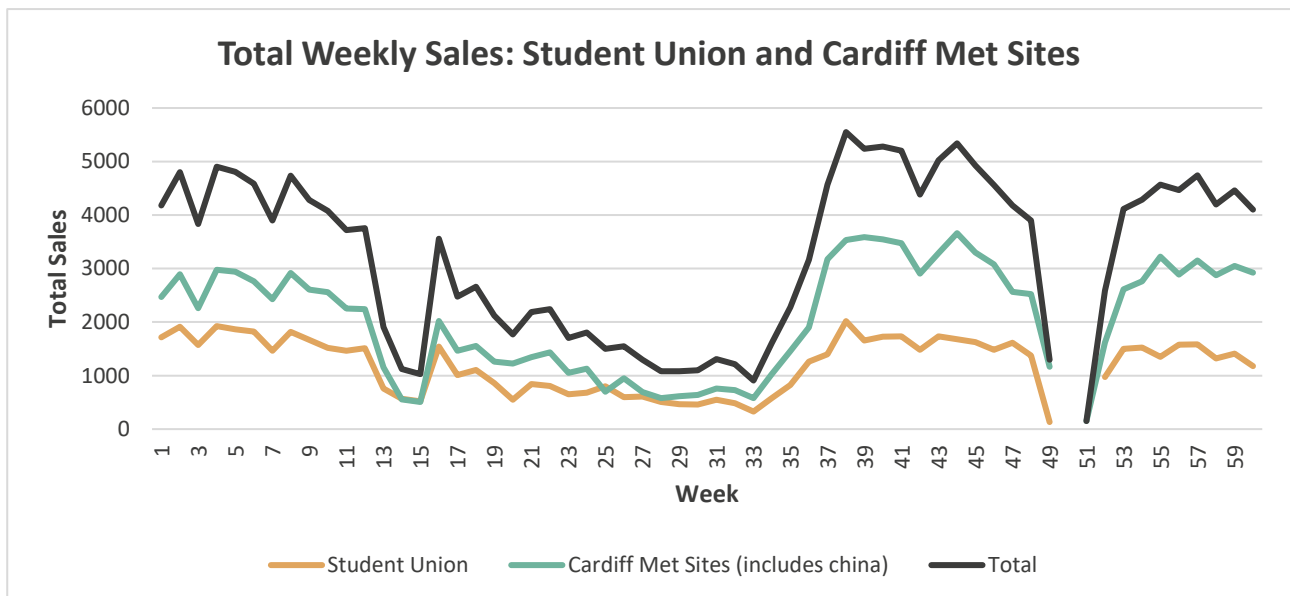
This report also compares data from Phase 1 (weeks 1-17) with that of Phase 2 of the project (from when all four outside bins were in place - Thursday of week 44 to week 60).

Sales Data

a) Total Sales

Over the 60-week period, there were 191,356 sales across all outlets, averaging 3,243.3 per week.

Figure 1: Weekly Sales Figures Across all Outlets



The graph shows a clear pattern, with the highest total weekly sales occurring during the busy autumn term (peaking at 5,550 at week 38). This is followed by slightly lower figures (generally more than 4,000) during the weeks represented by the spring terms (weeks 1-12 and 53-60). Total weekly sales were much lower - starting at 3,559 and seeing an overall decreasing trend - during the summer term (weeks 16-20), when the campus has a lower footfall.

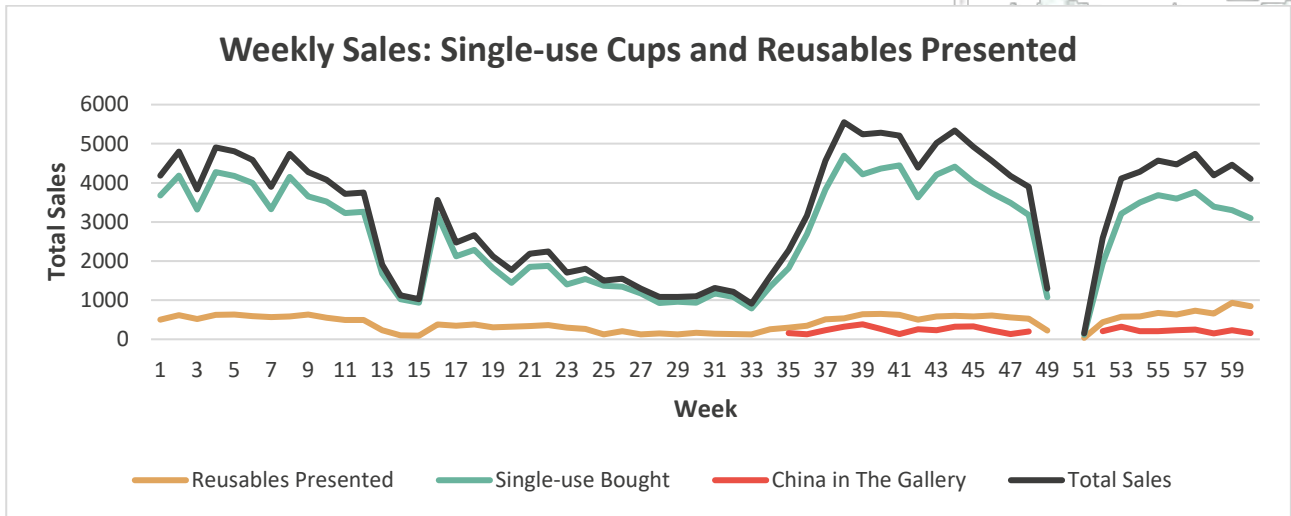
During most of term time, weekly sales were significantly higher across the Cardiff Met Sites (the most popular outlet being The Atrium) than the Student Union (where most hot drinks are bought from Starbucks). Over the 60 weeks, Cardiff Met Sites accounted for 63.6% of sales.

b) Sales by Cup Type

Of the 191,356 drinks sold, 160,404 (or 83.8%) were single-use cup purchases.

A total of 25,684 (13.4% of sales) presented reusable cups. 87.4% of these were presented across the Cardiff Met Sites, where consumers had a discount on their drink. This was where the project was being widely promoted by staff. The Student Union figure therefore acts as a useful control.

Figure 2: Weekly Sales - Breakdown by Cup Type



* Notes relating to Figures 2 and 3:

- The Gallery was closed during weeks 49 and 51.
- During week 58, Starbucks (part of the Student Union) introduced a 25p discount and added a button to the tills to allow for greater accuracy in the recording of customers presenting reusable cups. This coincided with significantly higher figures for the reusable cups presented at the Student Union from this week onwards. As there was no button on the tills before then, the university was relying on staff remembering to separately record reusables presented, so figures for prior weeks may be under-reported.

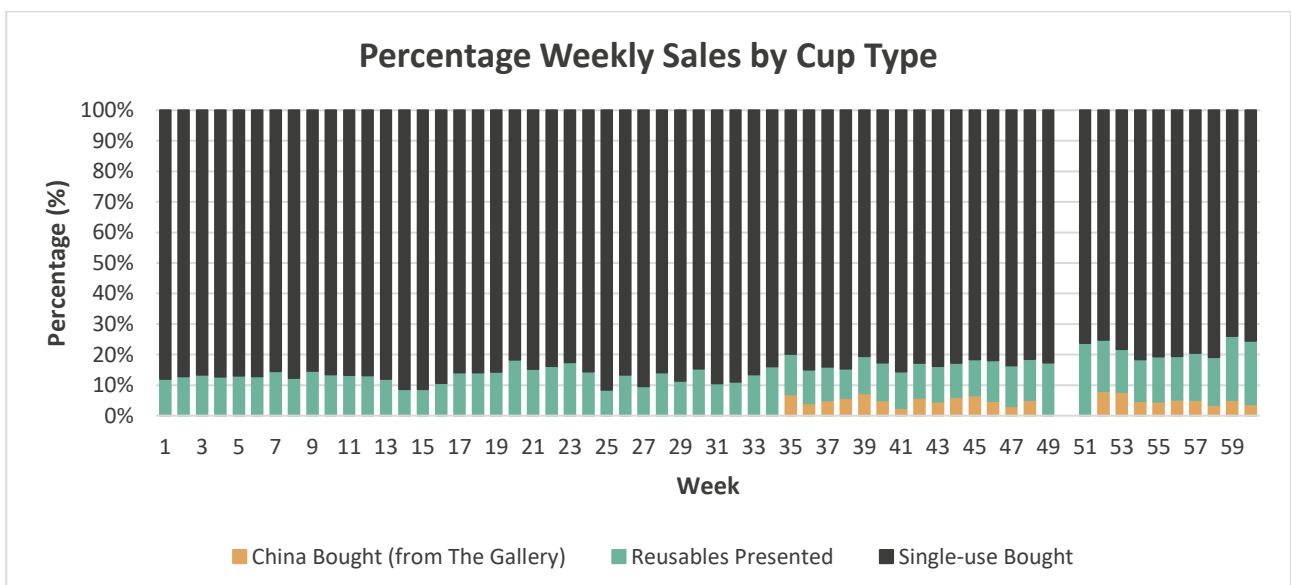
The average number of reusable cups presented was 435.3 per week. The average of Phase 1 (weeks 1-17) was 468.2 cups, with a maximum figure of 630 seen during week 5. However, the average for Phase 2 (weeks 44-60) was 574.9 cups with a maximum figure of 932 seen during week 59.

Across the campus, reusable cups presented accounted for 12.9% of total sales during Phase 1, increasing to 14.9% during Phase 2.

Reusable cups presented made up 18.5% of total sales in the Cardiff Met Sites, compared with just 4.6% at the Student Union.

A further 5,268 (2.8% of sales) were hot drinks sold in china cups with a 10% discount from The Gallery outlet (this was introduced during week 35). The sales reached a peak of 383 during week 39.

Figure 3: Percentage Weekly Sales - Breakdown by Cup Type



When we consider the percentage figures, reusables presented averaged 13.6% of total sales, peaking at 23.8% at week 51 (this was the beginning of January 2020 when the campus was only open for 2 days). Although only available at one outlet on campus, the opportunity to purchase a hot drink in china cups for a 10% discount at The Gallery has clearly had an impact on sustainable behaviour, reaching a peak of 8.1% of all sales during week 52.

From week 35, china sales accounted for more than a third (36.9%) of all sales at The Gallery and 5.1% of all sales across the campus.

The average weekly percentage of reusable cups presented for Phase 1 was 12.5%. This increased to 15.6% during Phase 2.

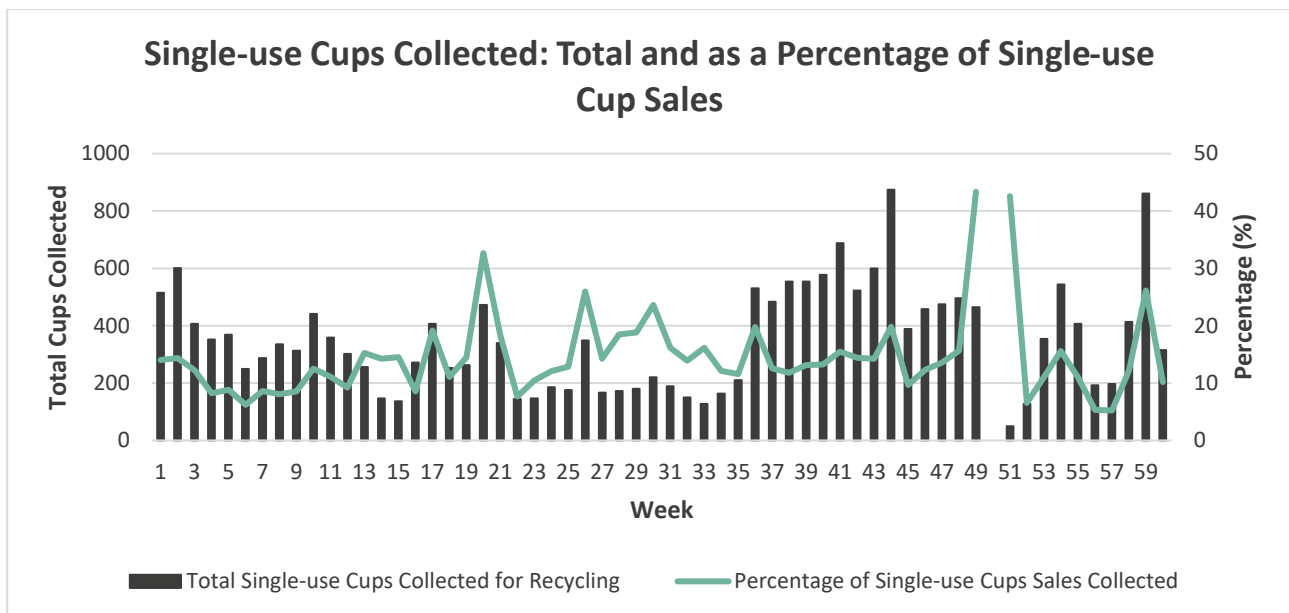
Single-use Cups Diverted from Landfill for Recycling

A total of 20,772 single-use cups (representing 12.9% of single-use cup sales) were disposed of in the cup bins and therefore diverted from landfill. The weekly average figure was 14.6%. If we look at these figures by phase, the results are as follows:

- Phase 1: 10.7% of single-use cups were recycled, with a weekly average figure of 11.4%.
- Phase 2: 13.4% of single-use cups were recycled, with a weekly average figure of 15.9%.

Only total figures are available, so it isn't possible to compare the Cardiff Met Sites with the Student Union. An average of 352.1 cups were collected in the cup bins each week.

Figure 4: Weekly Single-use Cups Diverted from Landfill for Recycling



The first two months of the 2019-20 academic term (weeks 36-44) saw the most cups collected in the cup bins, peaking at 874 during week 44, which was when the last new outside bin was installed. Although three of the outside bins were in place from Thursday of week 40, it's difficult to say how influential the new cup bins (whether new inside tube or outside ones) were in the figures. The reason for this is that the autumn term is highest in terms of sales and overall the total cups collected were higher in the autumn term - even before any additional cup bins were in place - than that seen during Phase 1.

From week 44 until the end of term (week 49) the figures were noticeably lower, although overall they remained above the figures seen during Phase 1. With the exception of the positive high figure of 861 at week 59 - a peak in inside collection figures for an unknown reason - the figures for the spring term (weeks 53 onwards) were lower still, more similar to the levels seen during Phase 1.

When we consider the percentage of single-use cups being collected in the cup bins, overall a similar pattern to that described above can be seen, with the peaks generally at levels around 20%. However, the figure rose to more than

40% either side of the Christmas holidays (during weeks 49 and 51). A similar peak of 32.6% was also seen during the last week of the summer term (week 20).

Comparing the percentage figures for Phases 1 and 2, overall the weeks before Christmas of Phase 2 are higher than those seen during Phase 1. However, some weeks later in Phase 2 compare unfavourably with Phase 1, particularly weeks 56 and 57 (which coincided with Storms Ciara and Dennis).

a) Phase 2 Cup Bin Use

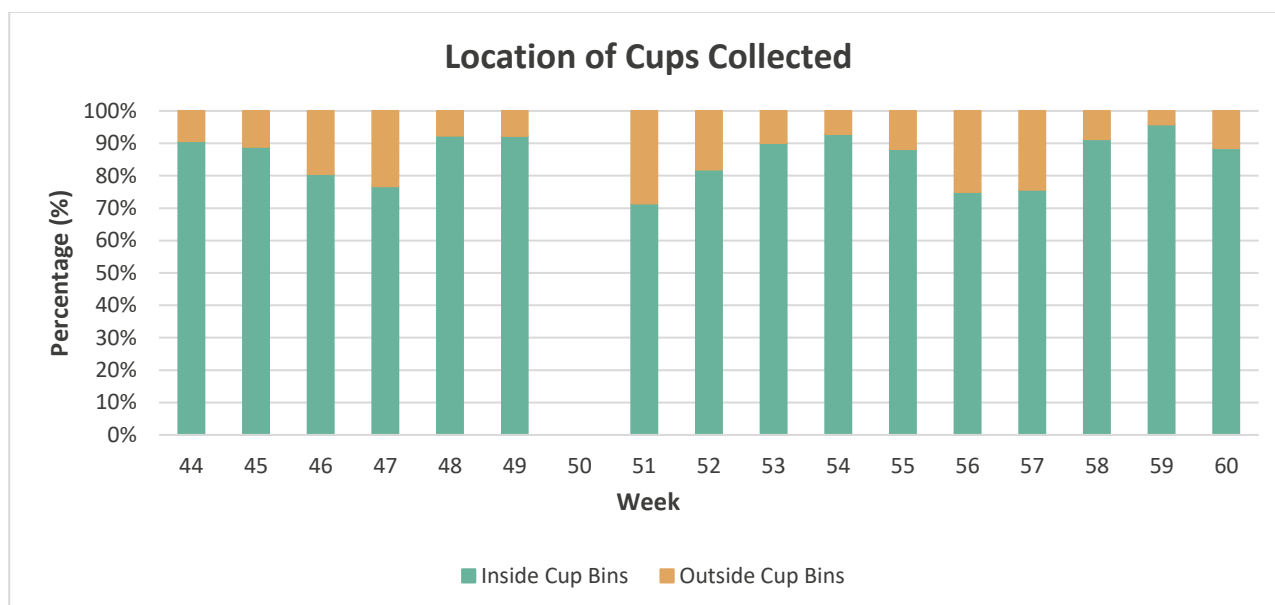
A total of 6,614 cups were collected during Phase 2, with a weekly average figure of 413.4. Yellow bags were used to collect the cups deposited in the outside bins so that this data could be recorded separately. However, the level of cups collected in the inside bins was significantly higher than those collected in the outside ones, see Table 2 below.

Table 2: Cup Bin Use - Inside and Outside Comparison (Phase 2)

Cups Collected	Inside	Outside
Total Number	5,854	760
Weekly Average	365.9	47.5*
Percentage of Single-use Cup Sales	11.8%	1.5%
Percentage of Total Cups Collected	88.5%	11.5%

* Please note that for 6 weeks during February and March 2020, the outside cups data was collected every 3 weeks due to the storms and flooding. This means that the weekly data for this period are average figures.

Figure 5: Percentage of Cups Collected by Location (Phase 2)



During most weeks, the percentage of cups collected being deposited in the outside bins was only around 10%. However, the figure rose above 20% on four occasions, during weeks 47, 51 (a 2-day week, when it reached its peak of 28.6%), 56 and 57.

Reusable Cup Sales

There is a variety of reusable cups on sale across the campus. A total of 1,925 reusable cups were sold over the 60-week period, averaging 32.6 sales per week. 1 reusable cup was sold on campus for every 99 sales.

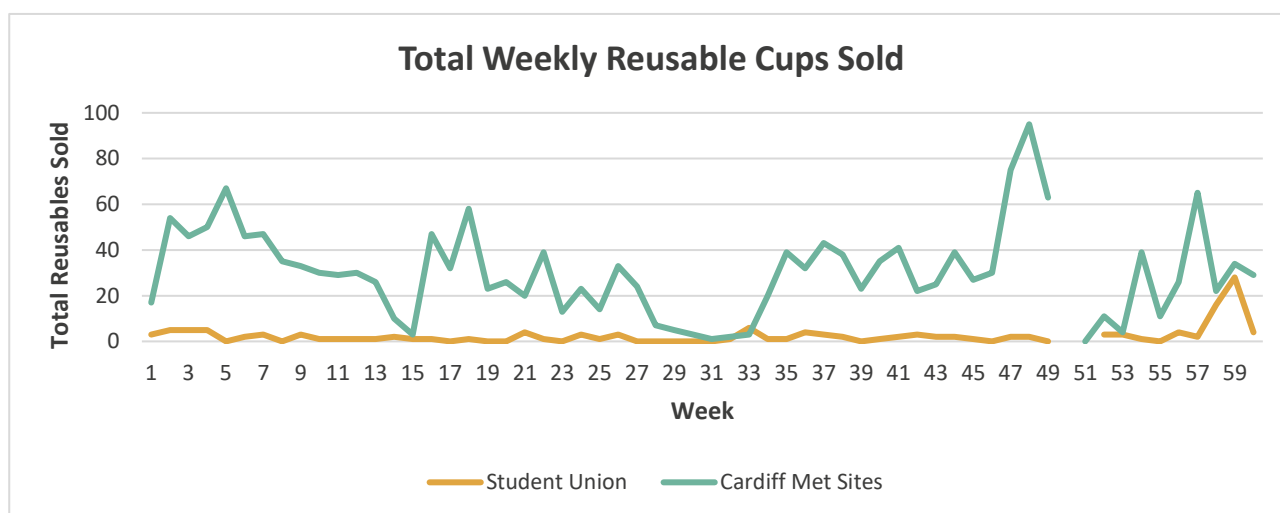
There is a considerable difference between the well engaged Cardiff Met Sites and the Student Union (where Starbucks has a £1 cup, which is a little sturdier than its single-use cup), see Table 3 below. This again means that the Student Union figures act as a useful control.

Table 3: Reusable Cups Sales - Student Union and Cardiff Met Sites Comparison

	Student Union	Cardiff Met Sites
Total Sales	141	1,784
Percentage of Total Reusables Sold Across the Campus	7.3%	92.7%
Weekly Average Sales	2.4	30.2

Cardiff Met Sites sell one reusable cup for every 68 sales. This is over 7 times more than the Student Union, which sells one reusable cup for every 494 sales.

Figure 6: Weekly Reusable Cups Sales



Reusable cup sales at both Cardiff Met Sites and the Student Union fluctuated frequently over the 60-week period. Although generally significantly higher at the Cardiff Met Sites, there are a few occasions (such as weeks 15, 31 and 53), where lower sales at Cardiff Met Sites mean that the figures for both areas are similar. On one occasion (week 33), the Student Union figure is higher than that seen at the Cardiff Met Sites. No reusable cup sales took place at the Student Union during 15 of the 60 weeks recorded.

A huge peak of 95 cups sales was seen at Cardiff Met Site during week 48, while the Student Union Peak of 28 sales occurred later, during week 59.

The total number of reusable cups sold during Phase 1 (436) is very similar to Phase 2 (638). During both Phases 1 and 2, one reusable cup was sold on campus for every 97 sales.

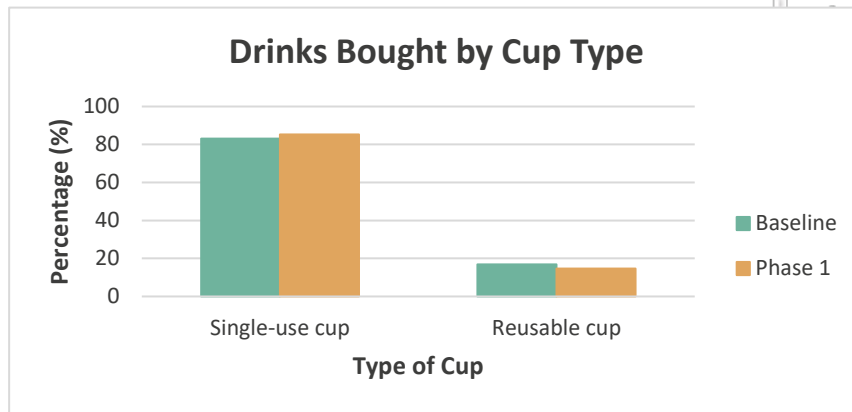
Results - Keep Wales Tidy Data

Observed Behaviour

a) Hot Drinks Bought

A total of 233 hot drinks were seen purchased during eight half hour periods on 12, 23 October 2018, 21 February and 26 March 2019. This observed behaviour was only undertaken to collect baseline information and during Phase 1.

Figure 7: Drinks Brought by Cup Type



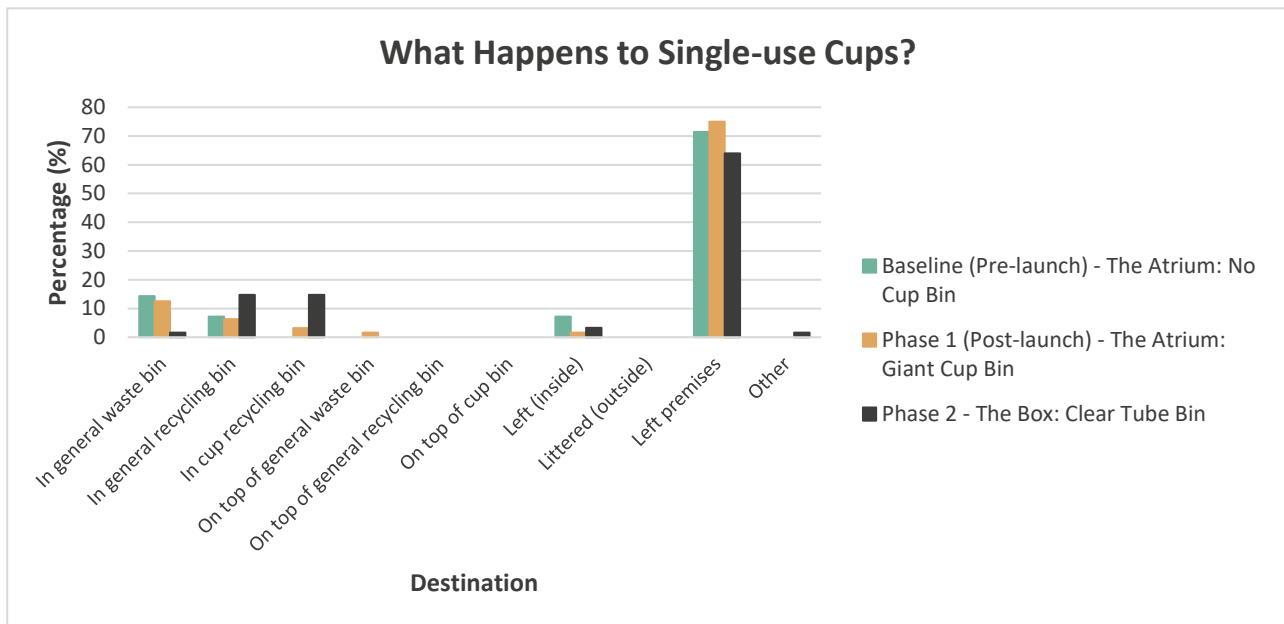
More than 80% of those observed bought their drinks in single-use cups (during the baseline and Phase 1). There is little difference in the figures, with 83.1% purchasing drinks in single-use cups before the launch, increasing slightly to 85.3% after the launch.

b) What Happens to Single-use Cups Inside?

We saw the destination of 195 single-use cups across seven hour-long periods, as follows:

- 70 on 12 and 25 October 2018 at The Atrium as a baseline before any cup bins were installed.
- 64 during Phase 1 (after the project launch) on 21 February and 26 March 2019 at The Atrium, where the giant cup bin was located.
- 61 during Phase 2 on 19 November 2019, 21 January and 25 February 2020 (these were all Community Days) at The Box, where one of the clear tube cup bins was located.

Figure 8: What Happens to Single-use Cups Inside?



The main finding of this observed behaviour exercise - as seen ever since the baseline data - is that most single-use cups were leaving the premises i.e. were purchases to 'take away' rather than to 'drink in'. This accounted for more than 70% of cups during the baseline and Phase 1 at The Atrium and 63.9% of cups during Phase 2 at The Box.

Of the single-use cups that stayed in the outlets, most were being deposited in the bins on the premises. During the baseline and Phase 1 at The Atrium, the general waste bins were most commonly used (accounting for more than 10%

of cups), followed by the general recycling bin (7.1% during the baseline and 6.3% during Phase 1). However, by Phase 2, the general recycling bin was the most popular of these bin types, with 14.8% of cups were being deposited there, compared with only 1.6% of cups being deposited in a general waste bin.

During Phase 1, only 3.1% of cups at The Atrium were deposited in the giant cup bin. By Phase 2, at 14.8%, the clear tube bin was as popular as the general recycling bin at The Box.

Placing the single-use cups on top of the bins was not a common behaviour observed, with just 1.6% of cups being put on top of a general waste bin during Phase 1. This behaviour was not observed at all during the baseline or Phase 2.

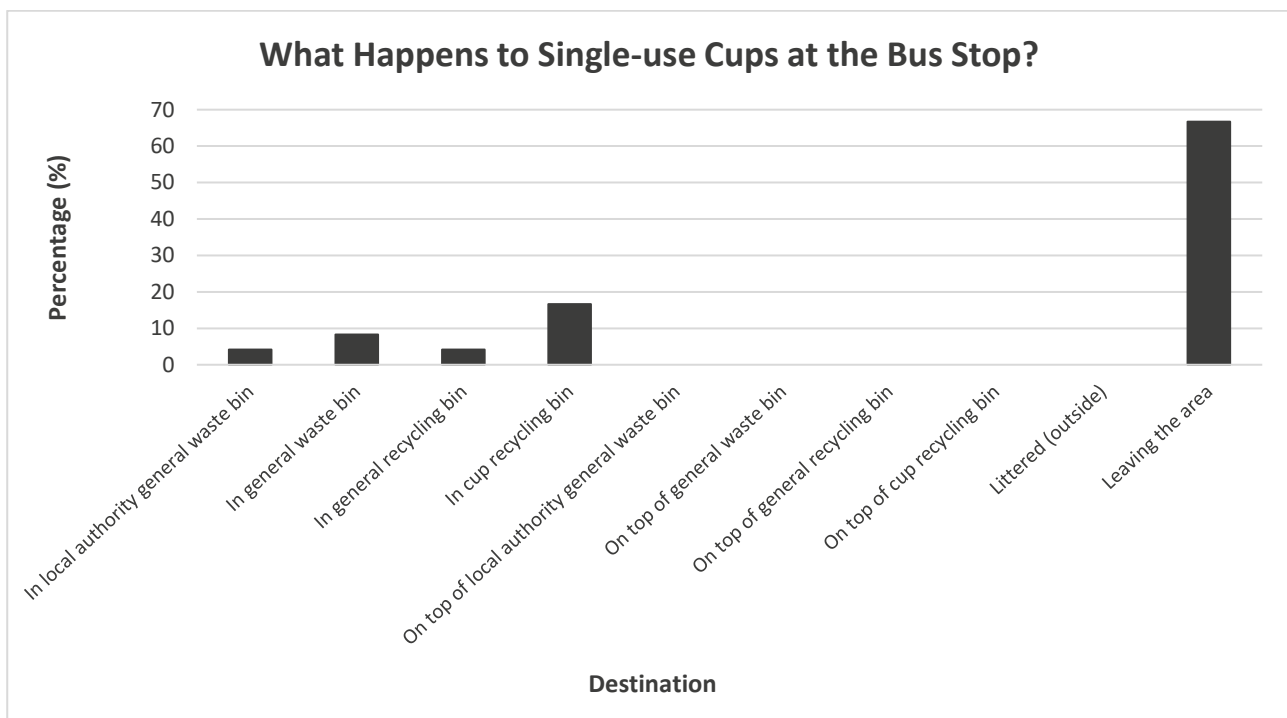
While 'drink in' customers usually left their tables clear, some left their single-use cups on the tables when they went from the outlets (with a maximum figure of 7.1% seen for this behaviour during the baseline). No single-use cups were seen being littered outside (and this wasn't measured during Phase 2 as no outside area could be seen from The Box).

During Phase 2, 1 cup (or 1.6%) was seen being deposited in the food waste bin (categorised as 'Other').

b) What Happens to Single-use Cups Outside?

Phase 2 of the project introduced more bins which were installed outside. Additional observation was done by the bin at the front of the campus, the one located by bottom of the pedestrian footbridge, close to the Nextbike station and bus stop (the main area where people arrive and leave the campus). Due to the cold autumn and winter weather, rather than doing three hour-long periods, this outside observation occurred over six half hour-long periods during which we saw the destination of 24 single-use cups.

Figure 9: What Happens to Single-use Cups Outside?



The main finding of this observed behaviour exercise is that most single-use cups left the area i.e. were entering or leaving the campus.

All remaining cups were being deposited in the bins, with cup bins being used most commonly (16.7%). The figures for the Cardiff Met's general waste bin and general recycling bin were 8.3% and 4.2%, respectively, while 4.2% of cups were deposited in the local authority general waste bin (located next to the bus stop).

No single-use cups were seen being deposited on top of any bin or littered.

Questionnaires

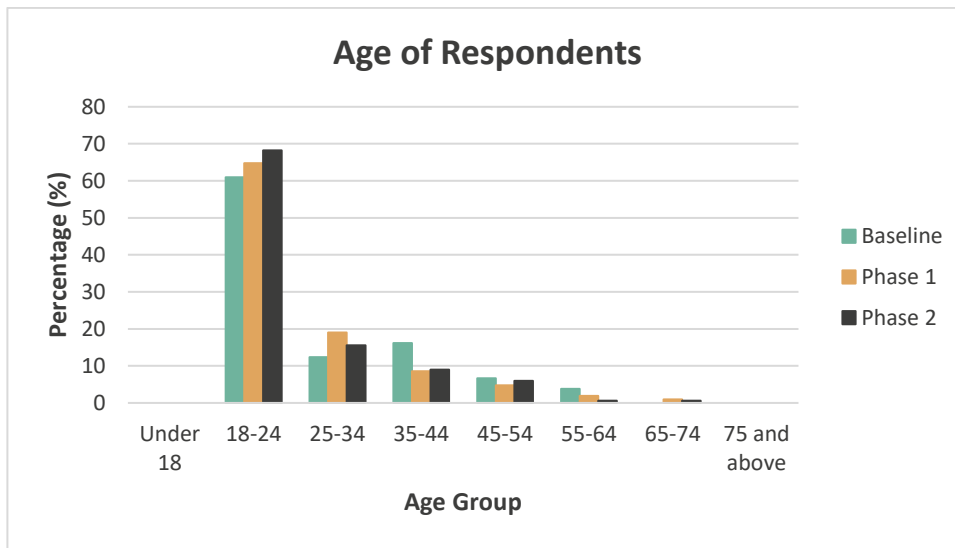
A total of 378 questionnaires were completed at The Atrium:

- 105 as a baseline before any cup bins were installed, (12, 23 and 25 October 2018).
- 105 during Phase 1 after the project launch (21 February and 26 March 2019).
- 378 during Phase 2 (19 November 2019, 21 January and 25 February 2020 - these were all Community Days).

A copy of the questionnaire can be found at [Appendix 3](#).

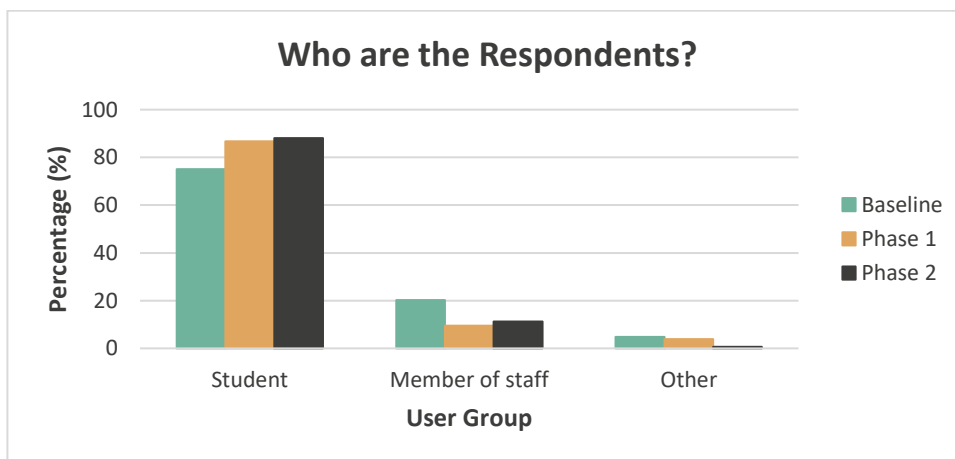
a) About the Respondents

Figure 10: Age of Respondents



As expected on a university campus, most respondents were aged 18-24, with numbers decreasing as the age group gets older. No respondents were in the youngest (under 18) or oldest (75 and above) age groups.

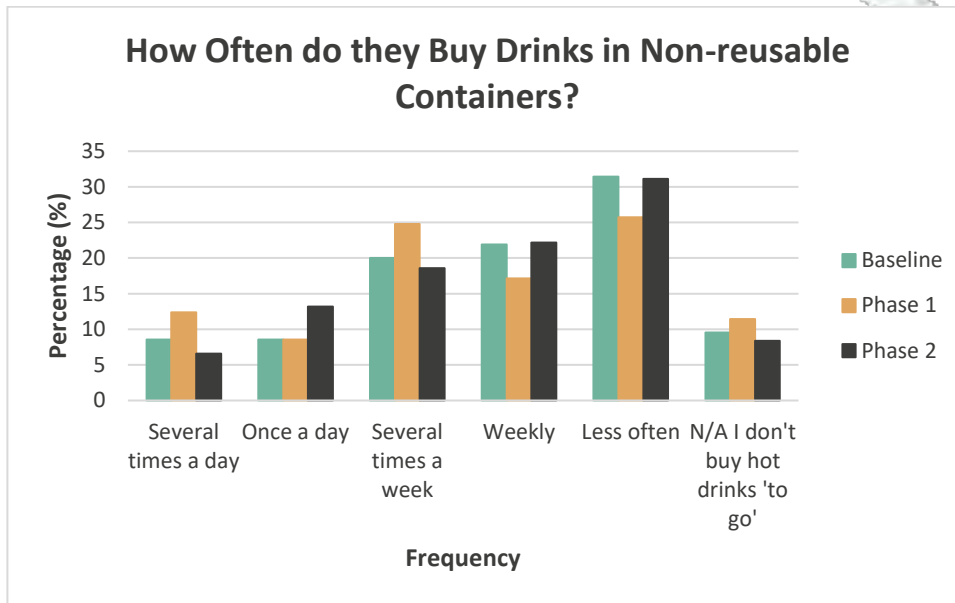
Figure 11: Who are the Respondents?



Most respondents were students, with lower numbers of staff. A small number of respondents identified as 'other', and these included stall holders (for the Community Day), Police, a retired member of staff, contractors, a visitor and a governor.

b) Frequency of Buying Drinks in Single-use Cups

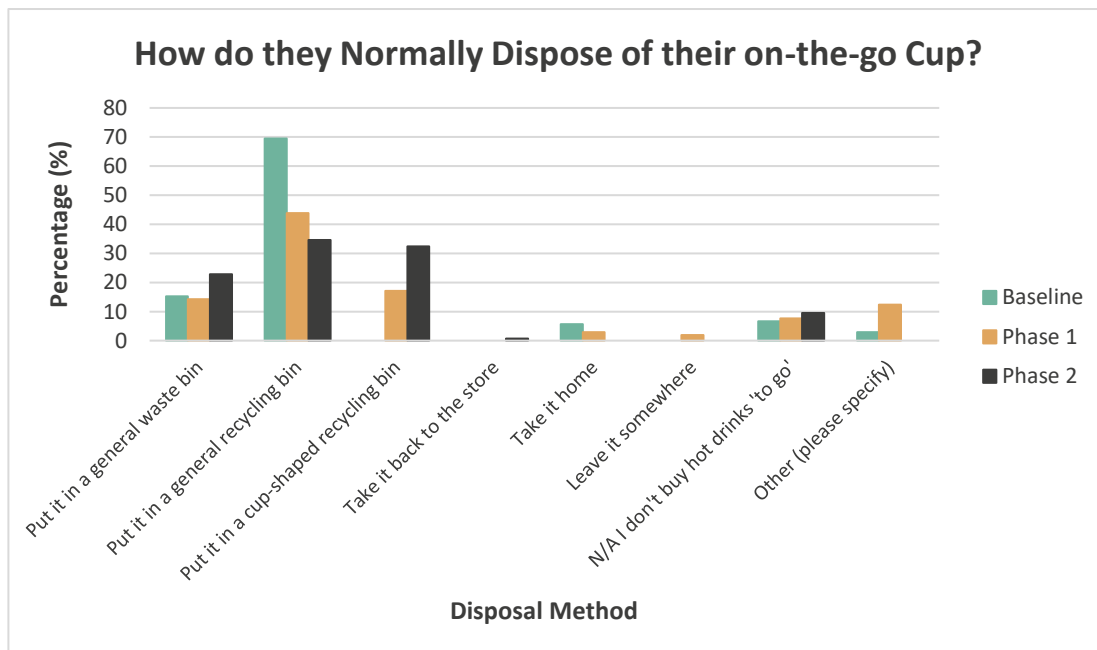
Figure 12: How Often do they Buy Drinks in Non-reusable Containers?



While most respondents bought drinks in single-use cups, the most common frequency is 'less often' (than weekly), noted by 31.4% of respondents during the baseline, 25.7% of respondents during Phase 1 and 31.1% during Phase 2. More than 40% of respondents bought drinks in single-use cups at least weekly, while around 20% bought them at least once a day. Approximately 10% of respondents didn't buy hot drinks 'to go'.

c) Normal Disposal Method for Single-use Cups

Figure 13: How do they Normally Dispose of their 'on the go' Cup?



* For Phase 2, this specifically mentioned 'on campus'.

Most respondents disposed of their cups in a bin, with a general recycling bin being the most commonly answered option (but this dropped from a baseline figure of 69.5%, to 43.8% during Phase 1 and further to 34.6% by Phase 2). During the baseline and Phase 1, around 15% of respondents normally disposed of their cups in a general waste bin, but

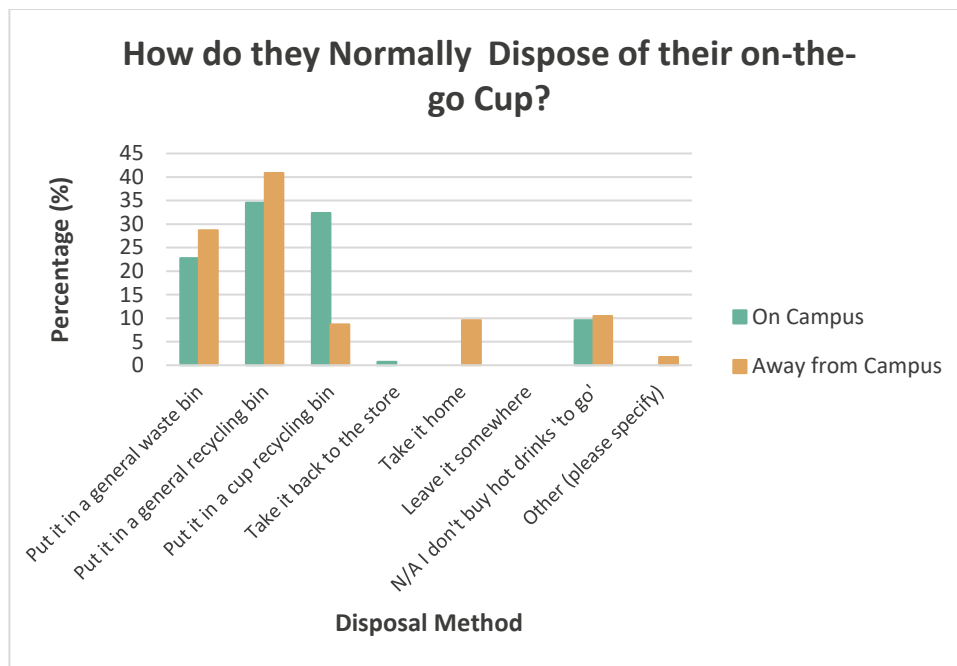
this increased to 22.8% by Phase 2. *Note that these questionnaire results for the baseline and Phase 1 figures are different from the findings of the behaviour we saw. During the observed behaviour for these stages, people were most commonly seen disposing of their single-use cups in the general waste bins.*

During Phase 1, 17.1% of respondents said they disposed of their cups in a cup bin. This increased to 32.4% in Phase 2.

A small number of respondents (5.7% during the baseline and 2.9% during Phase 1) said that they took their cups home. No respondents said this during Phase 2. During Phase 1, 1.9% admitted to leaving their cups somewhere, while during Phase 2, 0.7% said they took their cup back to the store.

All respondents who stated 'other' for this question mentioned bins, either ticking two types of bins or stating a bin-related comment such as 'any bin I would find that's suitable', 'general recycling if no cup-shaped bin' and 'the closest bin'. No respondents stated 'other' during Phase 2.

Figure 14: How do they Normally Dispose of their 'on the go' Cup? - On Campus and Away from Campus (Phase 2)



An additional question was added during Phase 2, asking respondents to say where they normally disposed their cup both on campus and away from campus. Use of general waste and general recycling bins were higher away from campus (28.7% and 40.9%, respectively) than on campus.

Behaviour differed by location primarily in the use of cup bins, used by 32.4% on campus but only 8.7% away from campus. 9.6% said they took their cup home away from campus, while none identified this behaviour on campus.

Other was mentioned away from campus by 1.7%. These were 'If recycling bin, I will use' and 'Bring on campus to recycle', a very encouraging action.

The above graph includes only the respondents who answered this question correctly. Many respondents ticked more than one option for this question (despite the fact that the questionnaires in January and February 2020 were amended for clarity and specifically requested respondents put one tick in the 'on campus' column and one tick in the 'away from campus' column).

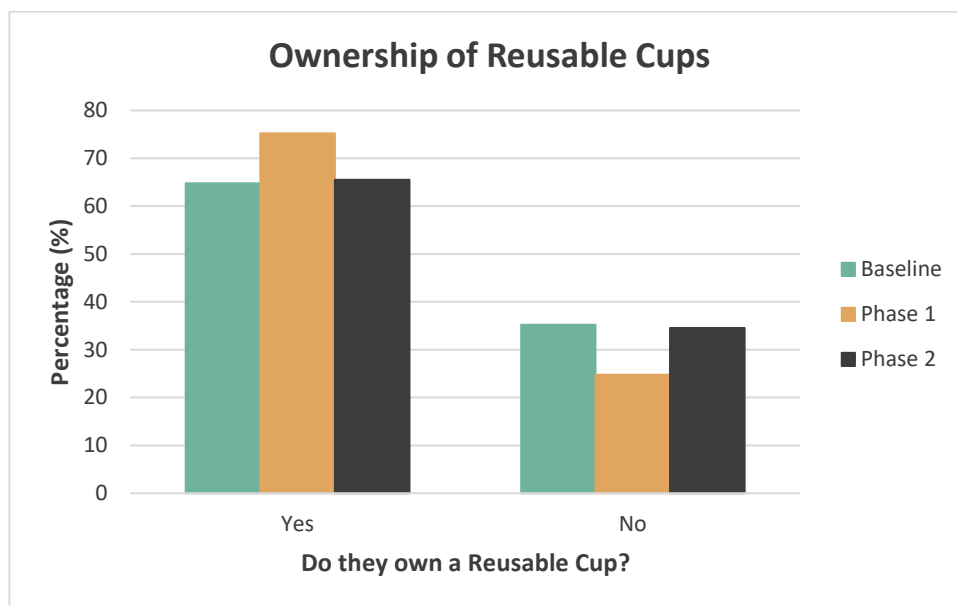
Table 4: How do they Normally Dispose of their 'on the go' Cup? - On Campus and Away from Campus (Phase 2):
Number of respondents who ticked each box where multiple options were chosen

	On Campus	Away from Campus
Put it in a general waste bin	10	5
Put it in a general recycling bin	25	12
Put it in a cup recycling bin	25	6
Take it back to the store	4	3
Take it home	1	7
Leave it somewhere	2	2
N/A – I don't buy hot drinks 'to go'		
Other (please specify)		

The general pattern seen here is similar to that of seen in the graph. Interestingly, two respondents admitted to leaving the cup somewhere on campus and two admitted to doing so away from campus.

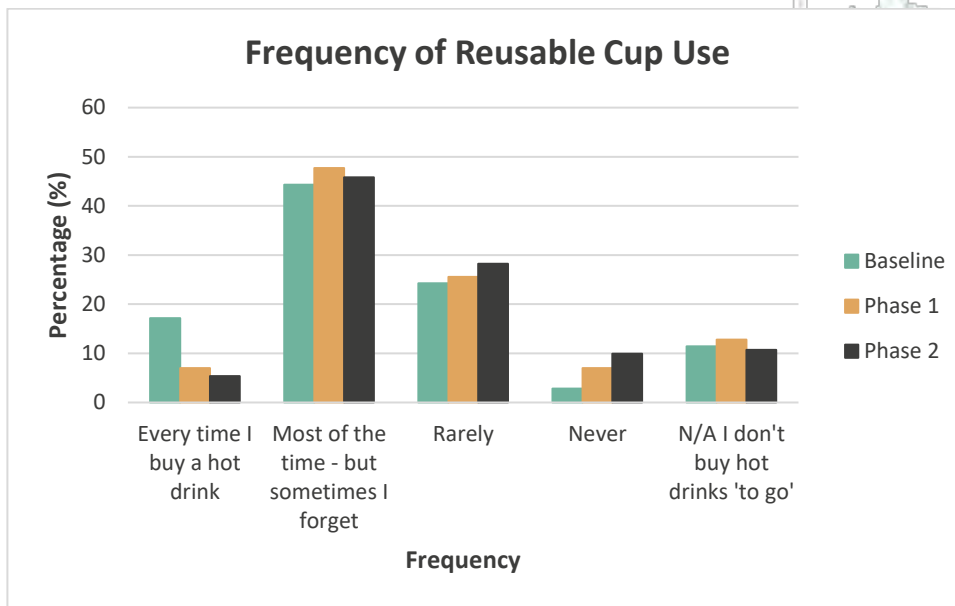
d) Reusable Cups

Figure 15: Ownership of Reusable Cups



Ownership of reusable cups was high (64.8%) during the baseline and increased to 75.2% during Phase 1. *The latter is very similar to the findings of Keep Wales Tidy's public questionnaire from the summer of 2018.* By Phase 2, it had fallen to a level similar to that seen during the baseline (65.5%).

Figure 16: Frequency of Reusable Cup Use

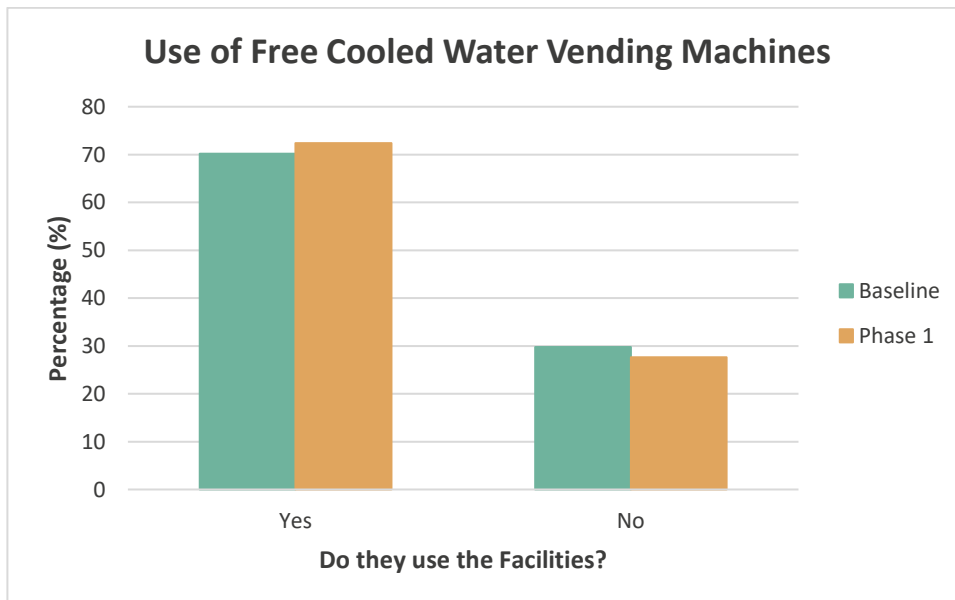


Most respondents (44.3% during the baseline, increasing to 47.7% during Phase 1 and dropping slightly to 45.8% by Phase 2) used their reusable cups most of the time. Respondents using their cups every time they buy hot drinks was at 17.1% during the baseline but decreased to 7.0% during Phase 1 and dropped slightly again to 5.3% by Phase 2. Around a quarter of respondents said they rarely used their reusable cups, while less than 10% never used them, although both of these responses saw small increases over time.

e) Free Cooled Water Vending Machines

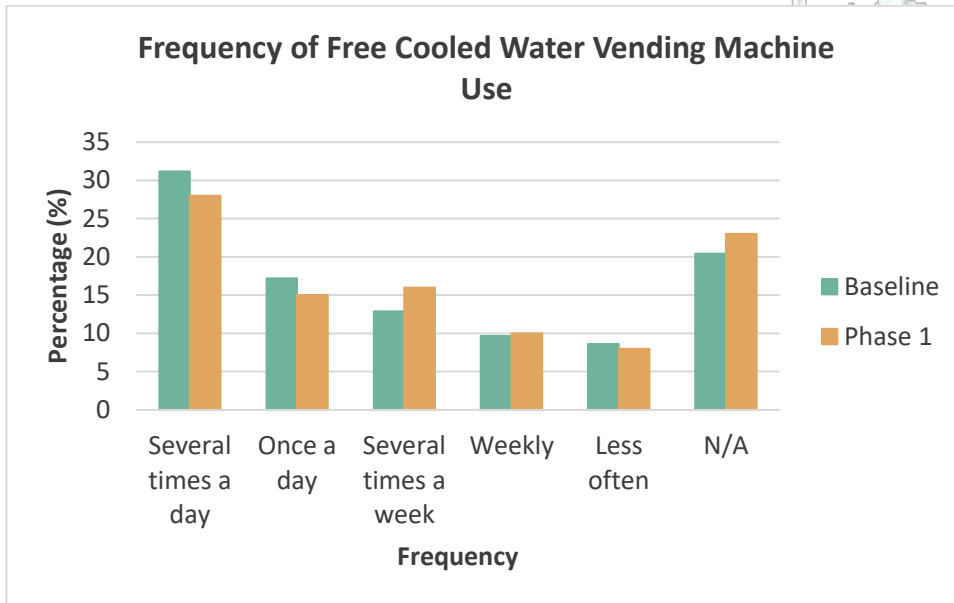
Information on the water vending machines was only collected during the baseline and Phase 1.

Figure 17: Use of Free Cooled Water Vending Machines



Most respondents used the free water facilities around the campus, with a figure of 70.2% during the baseline, increasing slightly to 72.4% during Phase 1.

Figure 18: Frequency of Free Cooled Water Vending Machine Use

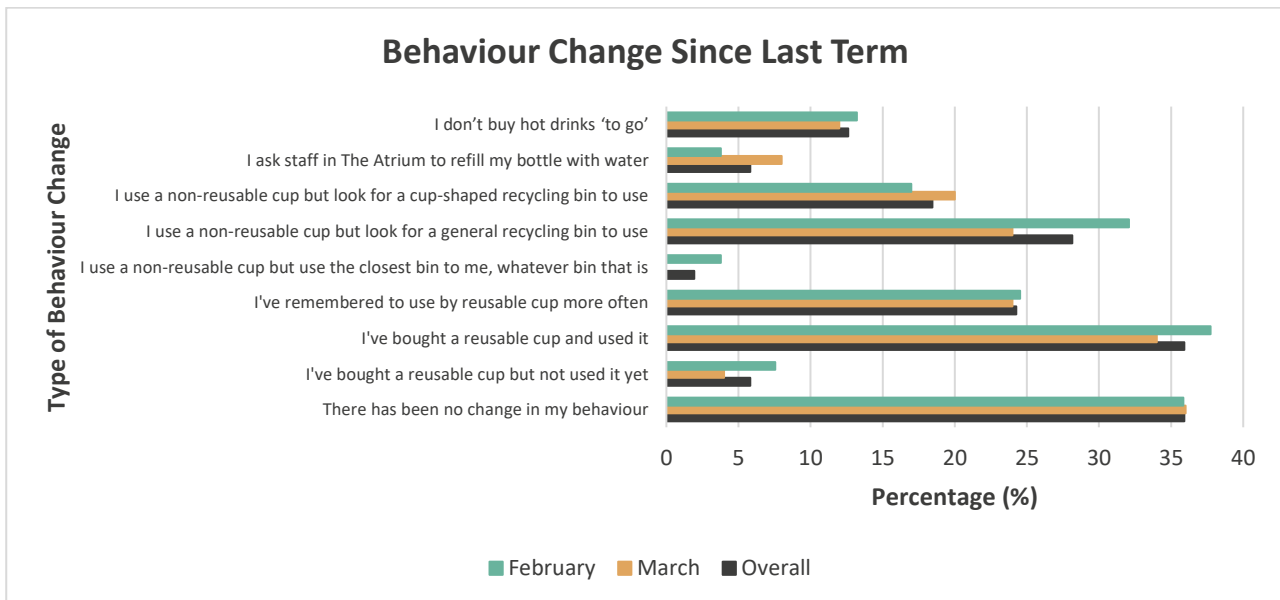


A high level of respondents used the free water facilities, with most of these (31.2% during the baseline and 28.0% during Phase 1) using them several times a day. Around a quarter use the facilities at least weekly, while less than 10% use them less often.

f) Behaviour Change

Information on behaviour change was only collected during Phase 1 (February and March 2019).

Figure 19: Behaviour Change Identified between the Autumn and Spring Terms



Respondents to this question could tick as many statements as applied to them. Overall, the most common statements ticked (both at 35.9%) were 'There has been no change in my behaviour' and 'I've bought a reusable cup and used it'.

With an overall figure of 28.2%, the number of respondents saying that 'I use a non-reusable cup but look for a general recycling bin to use' was also high (but decreased from 32.1% in February to 24.0% in March), while 24.3% said that 'I've remembered to use my reusable cup more often'.

It is positive that the number of respondents who said that *'I use a non-reusable cup but look for a cup-shaped recycling bin to use'* increased from 17.0% in February to 20.0% in March (with an overall figure of 18.4% recorded). There was also an increase over time (from 3.8% to 8.0%) in those who said, *'I ask staff at the Atrium to refill my bottle with water'*. The overall figure ticking this statement was 5.8%, which was the same as those who said, *'I've bought a reusable cup but not used it yet'*.

Those stating that *'I use a non-reusable cup but use the closest bin to me, whatever bin that is'* was low and was only identified by respondents in February, when the figure was 3.8%.

Overall, 12.6% of respondents said, *'I don't buy hot drinks 'to go''*.

g) Awareness of Discount

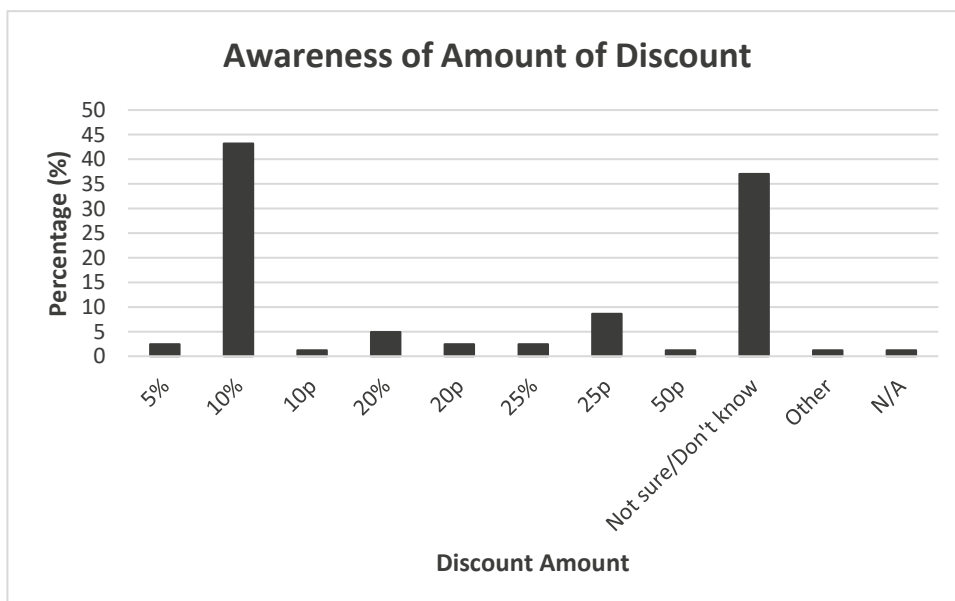
Questions on the discount offered for hot drinks on campus for those presenting their own cup was introduced during Phase 2.

Figure 20: Awareness of Discount



Around half of respondents (50.6%) knew that a discount was offered, with a further 42.9% saying that they didn't know. Only 6.5% said that no discount was offered.

Figure 21: How Much is the Discount?

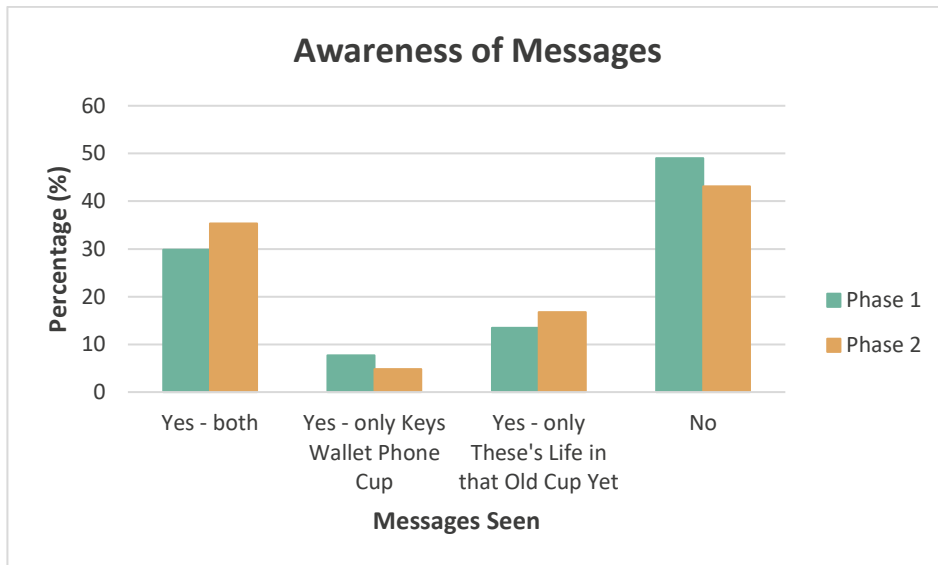


The questionnaire asked that only those answering 'Yes' to the last question should answer this open-ended question. A small number of respondents mentioned two possible amounts, and each suggestion is covered in the above graph. The correct answer of 10p - available at Cardiff Met Sites - was the most commonly answered amount, mentioned by 43.2%. Three respondents giving this answer specifically mentioned Costa. The second most common answer given was not sure/don't know, mentioned by 37.0%.

8.6% gave an answer of 25p, a discount offered by Starbucks (part of the Student Union) from 17 February 2020. All other answers were mentioned by less than 5% of respondents. The respondent categorised as 'Other' wrote 'Not a lot'.

h) Awareness of Messages

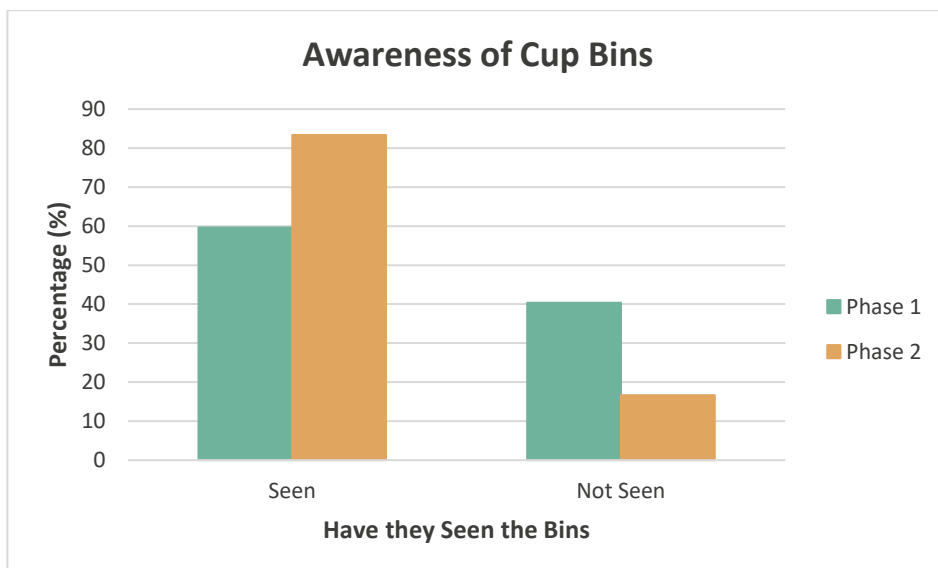
Figure 22: Awareness of Messages



Just over half of respondents (51.0%) had seen one or both of the messages during Phase 1, increasing to 56.9% by Phase 2. Most of these had seen both (29.8% during Phase 1 and 35.3% by Phase 2). During Phase 1, 13.5% said they'd only seen the recycling message with the figure increasing to 16.8% by Phase 2. However, 7.7% said they'd only seen the reuse message and this figure dropped to 4.8% by Phase 2.

i) Awareness of the Cup Bins

Figure 18: Awareness of Cup Bins



The respondents who had seen the cup bins increased from 59.6% during Phase 1 to 83.3% by Phase 2. It is positive that awareness of the cup bins increased with each month of the questionnaires throughout the project, starting at 47.2% during February 2019 and reaching 91.1% by February 2020.

j) Comments

A total of 49 respondents made comments on the questionnaire (19 during the baseline, 8 during Phase 1 and a further 22 during Phase 2). Most of these provided more insight into behaviour or provided feedback and suggestions on the project. The comments have been categorised and there are some examples in Table 5, below.

Table 5: Selection of Comments on the Questionnaire

Baseline	Phase 1	Phase 2
Behavioural Insights:		
<ul style="list-style-type: none"> - Brings own drink every day. - Owns a reusable cup at work. - Only buys drinks in non-reusable containers <i>'if I am out and nothing else available'</i>. - Never buys drinks in non-reusable containers - <i>'I own a reusable Starbucks mug to reduce plastic waste. I keep it in uni so I don't forget it at home'</i>. 	<ul style="list-style-type: none"> - If I did buy hot drinks I would try to dispose in the cup-shaped bins & consider buying a reusable cup. 	<ul style="list-style-type: none"> - Use a recycling or general waste bins if there's not a cup recycling bin nearby. - Because cups aren't clean, didn't know could be recycled in general.
Water (not included in questionnaire for Phase 2):		
<ul style="list-style-type: none"> - <i>'I reuse a water bottle - but do not own a reusable hot drink cup'</i>. - <i>'Availability of hot water taps is rare'</i>. - Owns a reusable bottle <i>'for water'</i>. - The reusable cup is a <i>'cold drink one'</i> which is used often. - Couldn't find them (the cooled water vending machines - as a reason for not using them). - Gets water from the office. 	<ul style="list-style-type: none"> - Uses the tap to fill water bottle. 	
Positive Feedback/Future Suggestions:		
<ul style="list-style-type: none"> - Had a free Cardiff Met cup which is positive. - Worthy cause. Already using a lot of alternative products - drink straws etc. Sustainable alternatives to cling film etc. need to be looked in to. - <i>'I have heard that recycling plants that can recycle coffee cups are available but there are not many of them in the country. Would Cardiff Council be looking at purchasing one?'</i> 	<ul style="list-style-type: none"> - I do love this recycle emphasis at uni. - I like what you're doing with this university. - Keep up the good work. - Put more pressure of hot drink vendors to make the cups recyclable. 	<ul style="list-style-type: none"> - a) The cup recycling bins are often full so I recycle them. b) The liquid section looks really unpleasant. - <i>'I like the keys, wallet, phone, cup one! That helps me remember :)'</i> - More cup recycling bins on campus. - All recycling bins should be more visible. - The cup recycling bins could be in a place more noticeable. - Discount price should be higher.

These comments reflect not only that campus users are trying to do the 'right thing', but that their responsible behaviour extends to cold as well as hot drinks. They also show positive attitudes towards the university's drive to promote environmental causes and sustainability.

Other Information

Cardiff Met has provided further evidence from staff and students. This not only gives us more insight into perceptions and behaviour of campus users, but also helps us to measure the impact of the project.

- Any clean (reusable or china) cup presented is accepted to allow customers to get a discount. We wanted to find out whether customers understood this. Catering staff say that some customers seem to think that only the Cardiff Met reusable cup or Chilly cups are accepted.
- The data for the cups collected in the cup bins isn't broken down by bin but we wanted to find out what cup bins were most well used. Anecdotal evidence from staff emptying the bins shows that the (giant cup) bin in The Atrium has the most cups of the inside bins, while the cup bin located outside the library is the most used of the outside bins.
- When asked how far they would travel with their single-use cups, students would typically answer that they would buy a coffee before leaving campus and dispose of the cup on their way home. This is consistent with the observed behaviour monitoring at the front of the campus, where many students were seen walking away from the campus or catching a bus with their hot drinks.
- When asked how they disposed of their single-use cups at home, students would typically answer that they would do so in the general waste.
- When asked about the cup bins, overall students:
 - Welcomed the new outside bins, but considering the large size of the campus, they were not so aware of them.
 - Thought that the general recycling bins was the correct disposal method for single-use cups. They were shocked to learn that the cups needed to be disposed of separately to be recycled. When they were made aware of this, they used the cup bins.

Communications

The news story announcing the project appeared on the [Keep Wales Tidy](#) and [Cardiff Metropolitan University](#) websites. On the Keep Wales Tidy website, the news story appeared as one of the main features on the homepage during January-March 2019.

A bilingual press release announcing the launch of the project was issued to national and regional media in January 2019. It was picked up in the national news site [Wales 247](#). A joint press release was issued in September 2019, reporting on the success of Phase 1. This was picked up in [Packaging News](#).



A dedicated hashtag was created for the project #tidycupscymru. Keep Wales Tidy social media activity alone (from the charity's Twitter, Instagram and Facebook accounts/pages) created more than 20,000 impressions.

Cardiff Met has created its own visual content, including infographics and GIFs, to engage student followers. This has been shared on the university's central, environment and catering social media channels. Cardiff Met and Keep Wales Tidy has been promoting the project to Cardiff Met staff and students as part of the university's 'Go Green' weeks.

Above: Cups project announcement on Keep Wales Tidy's Instagram account.

Details of the project have been highlighted to key stakeholders, including Welsh Government and members of the Wales Clean Seas Partnership. The project features in a report on support by the Higher Education Funding Council for Wales for [student well-being and health](#) (see pages 57-58).

Comparison with National Data

The project has taken place on a well-managed campus which provides a relatively 'closed' space. It was therefore always likely that the results would be more successful than similar projects in more 'open' public spaces (such as a town high street) or those undertaken on a much larger scale. The results of this project should not be downplayed however, as they have demonstrated some interesting behavioural insights amongst the target audience.

Similar initiatives have taken place throughout the UK, and while they are all different and not directly comparable, it is interesting to see the data side-by-side in order to evaluate this project in a broader context.

Table 6: How Reusable Cup Use During the Project Compares with Leading National Coffee Outlet Figures

Coffee Outlet and Location	Incentive (Discount Offered)	Percentage of All Hot Drinks Sold in Reusable Cups
Student Union (<i>Control</i>), Llandaf Campus	None*	4.6%
Cardiff Met Sites, Llandaf Campus	10%†	18.5%
Starbucks, Nationwide	25p	1.8%
Costa Coffee, Nationwide	25p	~1%

Source: <https://www.bbc.co.uk/news/science-environment-43739043>

Overall, 12.9% of single-use cups were recycled over the 60-week period (with a weekly average figure of 14.6%). This compares with a UK average figure of 4% in 2018.²⁰

These figures suggest that both reusable cup use and single-cup recycling have been successful during the project at Cardiff Met.

Developments

The success of this project has informed another cups project across mid and south Wales. Keep Wales Tidy partnered with Neath Port Talbot College Group across four campuses at the colleges in Neath, Afan (Port Talbot), Newtown and Brecon Beacons to [introduce reusable cups to reduce single-use litter and waste](#).

In addition, Cardiff Met is also hoping to roll out the project (using the same messaging and artwork) to the university's second campus in Cyncoed.

Feedback from the University

Staff at Cardiff Met have worked incredibly hard on this project to make it a success. The addition of outside bins installed during Phase 2 has increased the amount of co-ordination required as the inside cup bins are emptied by cleaners, but the outside ones are emptied by grounds maintenance staff. The following feedback has been received:

* Starbucks (part of the Student Union) offered a discount of 25p from 17 February (week 58).

† Cardiff Met Sites increased the discount to 20% between the launch date of 14 January and the end of February 2019.

Table 7: Feedback from the University

Phase 1	Phase 2
Contamination of cup bins and staff having to ‘uncontaminate’ the bins prior to collection.	
<p>With the inside cup bins, consumers were:</p> <ul style="list-style-type: none"> - Putting their tea bags into their cup prior to disposal (there is no dedicated place for tea bags in the cup bins). - Placing other waste in their cups before disposing of them (trying to do what they see as the ‘right thing’). - Binning their cups with their lids on (rather than separating both items) - usually when the cup still contains the hot drink. 	<p>With the outside cup bins:</p> <ul style="list-style-type: none"> - To begin with, consumers put ‘anything and everything’ in them (e.g. cans inside cups). Very soon, other (general waste and general recycling) bins were brought to each outside location to help with this (meaning consumers had a choice of bin). - Consumers disposed of their cups with the coffee still in them. This issue - along with rainwater - made things difficult (messy) when another cup was disposed in the bin. - The lining bags filled with rainwater. Staff put holes in the bottom of the bags to help alleviate the problem.
Comments from coffee outlet staff, including that the top of cup bins bins get dirty and require cleaning.	
<ul style="list-style-type: none"> - There are some problems with the design of the cup bins. Keep Wales Tidy will be discussing these further with the provider. - At The Box (a quieter outlet) there are opportunities to discuss the project with consumers. However, at The Atrium (the busiest outlet), the opportunity to talk with customers has gone stale. - Outlet staff understand and support the project. They have seen an increase in the number of customers presenting reusable mugs and are excited about the Chilly bottle sales. 	<ul style="list-style-type: none"> - In outlets which had the clear tube bins during Phase 2, staff liked their style and thought these bins were better. The clear tube makes the contents visible which they thought led to less contamination. - For this reason, the cleaner at The Atrium (where the giant cup bin is located) wanted a clear tube bin. - Some people didn’t like seeing the liquid. (Consumers who said this have been advised to dispose of the liquid in nearby sinks or bring a reusable cup.)
Other feedback.	
<ul style="list-style-type: none"> - People are creatures of habit and staff feel that many consumers are aware of the cup bins but are still not using them. It is felt that staff are worse than students in this respect. - The free distribution of reusable cups during ‘Community Days’ are useful, but this is most effective with consumers who are eager to accept them and enthusiastic about using them. It’s good to also have a variety of reusable cups for sale, so that consumers have a choice of cups to choose from. Making an investment in their cup of choice is likely to lead to more use of that cup. - Although signed up with the Refill Campaign, there have been issues with staff in Costa Coffee (at The Atrium) refusing to refill - instead sending customers upstairs to the free cooled water facilities (probably thinking that this would be preferable to the consumer). Staff have since been reminded that the outlet is a Refill station. 	<ul style="list-style-type: none"> - There has been disappointment with the low use of the outside cup bins. While the time of year and resulting weather (including severe winter storms) didn’t helped, the number of cups collected in the bins has been lower than what was hoped. - Storing collected cups ready for the courier has caused problem, as the cups make the boxes soggy. - There have been issues with animals (birds, rodents and squirrels) taking food from cup bins.



Conclusions

Drinking-on-the go has become increasingly popular over recent years, but the difficulty of recycling single-use cups means that the vast majority of these cups end up in landfill. This creates a significant waste issue, which the public is getting more aware of and concerned about.

However, single-use cup recycling is possible. This university project shows that with the right messaging, infrastructure and user engagement, consumers can be encouraged to dispose of their single-use cups into cup bins, therefore diverting this waste from landfill - and an increase was seen in recycling by Phase 2. While the majority of hot drink purchases on campus are to 'take away' (with the cups leaving the outlets), during this project, cup bin use was higher within the smaller and more closed spaces of the outlets than in the open outside environment. In addition, switching to clear-tube bins inside the outlets appears to have had a positive impact with lower levels of contamination reported by staff.

Moreover, switching to reusables negates the need for single-use cups in the first place. Although many people own reusable cups, their use is low compared with those buying drinks in single-use cups. During the project, consumers were encouraged to use reusable cups through a range of measures. This included the distribution of free reusables, the promotion of a variety of reusable cups for sale (at a discounted price), messaging and user engagement as well as (across Cardiff Met Sites and very recently at Starbucks) having a discount in place for presenting reusables. The increased level of reusable cup use by Phase 2 is positive as is the level of reusable cups sales during the project. The recent introduction of china (with a 10% discount) for 'drink in' sales at one of the outlets has had a further impact on sustainable behaviour on the campus.

Despite the low use of the outside cup bins, awareness of the project messaging and the cup bins on campus was high. The overall results of this cups project are encouraging, especially when they are put side by side with national data. The project has already been used to inform another cups project. With the support of the industry, we can build on the results by sharing the findings with others and continuing to learn from other similar projects. This will allow us to move forward in changing behaviour more widely for the benefit of the environment.

Recommendations

This section brings together what has been learnt from the project and makes suggestions for future improvements. The main lessons and recommendations are highlighted in **bold** print.

Observed behaviour findings show that during Phase 1, some consumers drinking their hot drinks at The Atrium continued to dispose of their single-use cups in general waste or general recycling bins (with the most common of these being general waste). The same behaviour was seen at The Box during Phase 2, although by then the most common of these was the general recycling bin. Information from students shows that they thought that the general recycling bins was the correct disposal method for single-use cups.

General waste and general recycling bins were also commonly identified as the usual disposal option for cups in the questionnaires, which suggests that **there is still confusion amongst users on the recyclability of single-use cups**. The questionnaire shows that these bin types are even more commonly used to dispose of cups away from campus (possibly as cup bins aren't yet widespread in on-street settings). Keep Wales Tidy recently joined a Hubbub partnership project on recycling-on-the go in Swansea called [#InTheLoop](#). Having separate cup bins in Swansea also caused confusion.²¹ **The more open nature of the outside environment clearly poses a greater challenge.**

Our experience in Swansea also showed that contamination was a problem in the recycling and cup bins.²² **Contamination of the cup bins** has also been reported as an issue by staff at Cardiff Met. This could partly be related to people trying to do the 'right thing' (for example when people place tea bags and other waste in their cups before disposing of them). It was positive that **issues of contamination improved with the introduction of the (inside) clear tube bins** so we are grateful to Simply Cups for sharing information with us about their experiences in London. However, contamination was a big issue when the outside bins were first installed on campus. This led to moving other - general waste and general recycling - bins to each outside cup bin location.

For any bin to be effective, it needs to be **emptied sufficiently and cleaned because full or dirty bins deter use**. One respondent to the questionnaire commented that the cup bins are often full and this was seen once during the monitoring period. However, overall staff were found to be very attentive to the bins. The cup bins (particularly the top of the deluxe cup ones outside) get dirty with use, as was commented on by staff and seen during the monitoring period. Regular emptying and cleaning is important in encouraging use.

The confusion surrounding which bin to use and various contamination issues has been a problem despite an increased awareness of the messages over time and awareness of the bins being very high by the end of the monitoring period (likely to be the result of increasing the number of bins and having four located outside). However, it is positive that the **higher numbers disposing of cups in cup bins on campus compared with away from campus shows that behaviour is adapting in response to cup bin availability**. Hopefully with the passing of more time - particularly when the weather improves and people spend more time outside - the use of the outside cup bins will increase. These persistent issues have highlighted the **need for continued education and engagement**. When students were made aware that only cups disposed of in the cup bins are recycled, they used the cup bins.

Extra messaging has been used by the cup bins located in The Atrium and the Student Union to encourage people to make the right choices.



Left to right: Additional signage located by the tube cups bin at the Student Union ('CUPS IN THIS BIN') and The Atrium ('THIS IS NOT A RUBBISH BIN CUPS ONLY').

Since students tend to think the general recycling bins is the correct disposal method for single-use cups, **introducing messaging on the general waste and general recycling bins could help further encourage users to dispose of their cups in the cup bins**. Examples include communicating that these bins don't accept cups, or that cups will only be recycled if they're placed in the cup bins. Resources produced as part of the project included cup stickers. It's important that these **stickers are used whenever possible as an additional prompt**.

When we look more closely at the findings, it becomes clear that choosing the wrong bin and contaminating the bins with other items are more complex behaviours than they may appear at first. Reasons given from questionnaire comments and staff feedback include people:

- Not knowing that cups can be recycled because they aren't clean.
- Not using the cup bins because of habit, despite knowing they're there.
- Disposing of their cups with the coffee still in them.
- Placing tea bags and other waste in their cups before disposing of them, thinking this is the 'right thing' to do.
- Binning their cups with their lids on (rather than separating both items) - usually when the cup still contains the hot drink.

Changing the behaviour of these people may require more work, such as targeted engagement and the introduction of additional sub-messaging.

The **low use of the outside cup bins** is disappointing. One respondent to the questionnaire said that the cup bins could be in a place more noticeable. This could refer to the inside and/or outside bins, but **the location of the cup bins could be amended slightly to see if that impacts their use.**

As previously mentioned, **there is very little choice of bins which are suitable for outside use.** Only the deluxe cup and eco cup bins from the Simply Cups catalogue can be used outside, and neither of these designs include the clear tube feature which helps with issues of contamination. Other comments and feedback suggest improving the design would encourage more use of the bins. Firstly, the outside cup bins are dwarfed by the larger general waste and general bins on campus. Having them available in larger sizes would make them stand out more. This would be in line with the comments received from a respondent to the questionnaire, who said that all recycling bins should be more visible. Secondly, having a more 'closed' design would help both with the issues experienced with rainwater and animals taking food from the cup bins.

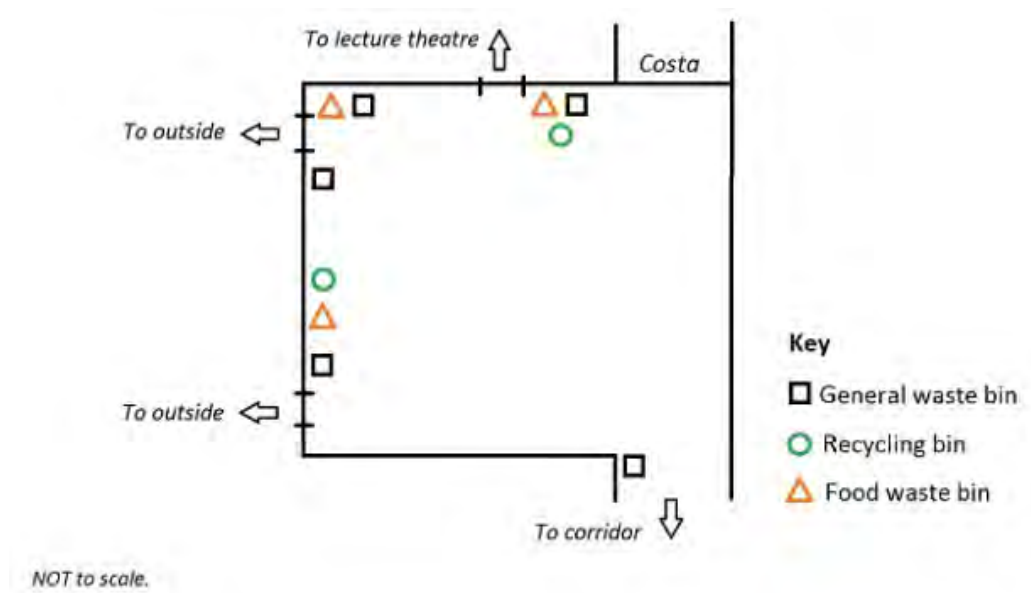
Although less of a problem, small coffee cups used to serve strong coffee can interfere with the stacking and capacity of cups in the cup bins.



Left to right: The cup bins are small compared with the general waste and general recycling bins outside and a small coffee cup interfering with stacking.

Each main outlet on campus has only one cup bin but tend to have a large number of other bins. For example, there are ten bins in The Atrium (five for general waste, two for general recycling and three for food waste), located near various exits from the premises (see Figure 19, below).

Figure 19: Bins at the Atrium (Friday 12 October 2018)



The more cup bins on campus, the less effort they require and therefore the easier they are to use. Our experience in Swansea shows that the main motivation to using recycling bins is that it's the 'right thing' to do, but that proximity to the bin is also a factor.²³ **Having a higher ratio of cup bins to other bins would be more convenient and would therefore likely lead to greater cup collection figures**, especially in the open nature of the outside environment (however, this may also lead to more contamination). Information from students shows that they were less aware of the outside bins and one respondent to the questionnaire commented that they would like to see more cup bins on campus. (In addition, many cups were leaving the campus, so cup bins are needed more widely in society too.)

While using the cup bins - which allows the cups to be recycled - is a positive step forward, more important still is encouraging consumers to switch to reusables. The level of reusable cup ownership is quite high but the **use of reusable cups is still low compared with those buying drinks in single-use cups**. However, it is positive to see an increase in the level of reusable cup use by Phase 2.

We saw two Christmas branded cups (including a Costa one). One of these included the text '100% compostable'. Not only do these promote the use of single-use cups (which goes against the reusable cup message of the project), but the text on the cup also suggests that only single-use plastic is harmful to the environment and therefore implies that it is an environmentally friendly option. The mixed messages introduced by the Christmas cups is very unhelpful and likely to have been damaging to the project. However, we understand that this issue is difficult to control. While difficult to achieve with the Student Union being managed separately, **the messages promoted and action taken across the university should be as consistent as possible**. This includes the discount available for presenting a reusable cup.



Above: Christmas branded cup sold at The Box.

Additional nudges could be introduced in future to further encourage consumers to change their behaviour. Cardiff Met has already had the idea of a 'go faster' queue for those presenting reusable cups. This could be communicated by means of floor stickers. This concept could also be used to encourage consumers to use the cup bins with a message like 'Beans to Bins'.

Like many other national chains,²⁴ the Cardiff Met Sites (and more recently Starbucks at the Student Union) offer discounts to consumers who present reusable cups to purchase their hot drinks. Around half of questionnaire respondents in during Phase 2 were aware of the discount, while those aware of its amount was lower. Although one respondent commented that the discount should be higher, **the current discount appears to be having some impact** (especially as it's being used alongside other measures, including the distribution of free reusables, reusables for sale and messaging). A study by Cardiff University to encourage the use of reusable coffee cups found that more behaviour change occurred when multiple measures were combined than when individual measures were used in isolation.²⁵ However, the study also found that 'People are far more sensitive to losses than to gains when making decisions - so if we really want to change a customer's behaviour then a charge on a disposable cup is more likely to be effective'.²⁶ Moreover, it is believed that '...a charge on disposable cups could reduce their use by up to 30%'.²⁷ Therefore, **introducing a charge could improve results significantly**, and the university hopes to do this in the future.

Disposable Packaging Inquiry

The above suggestions around messaging, recycling and reducing single-use cup waste are in line with the related recommendations put forward in the UK Parliament's inquiry into disposable coffee cups, summarised below.

- Messaging - to provide consistent messages which would allow consumers to make informed decisions, outlets with in-store recycling should have cups with 'recyclable in store' labels, while those without should have cups with 'not widely recycled' labels.
- Recycling - the government should set a target that all single-use cups disposed of in recycling bins should be recycled by 2023. If this is not achieved, disposable coffee cups should be banned.
- Reducing waste - the government should introduce a minimum 25p levy on disposable cups. This would be paid by the consumer on top of the price of the coffee. The revenue could be used to fund recycling infrastructure.

Source: <https://publications.parliament.uk/pa/cm201719/cmselect/cmenvaud/657/657.pdf>

The introduction of china (with a 10% discount) for 'drink in' sales at The Gallery is a very positive development which has clearly had an impact on sustainable behaviour. This should be rolled out to other outlets should dishwashing facilities become available to them in the future.

The large number of reusable cups which have been sold on campus during the project is very encouraging. As mentioned in feedback from the university, **it's good to have a variety of reusable cups for sale**, so that consumers have a choice of cups to choose from. Making an investment in their cup of choice is likely to lead to more use of that cup. These should be continued be available at a discounted price and efforts to promote these should continue.

The high and frequent level of use of the university's free cooled water vending machines was also positive to see. These should also continue to be promoted along with the Refill and Cardiff Met apps.

The questionnaire findings showed that awareness of the messaging was high. However, for those only aware of one message, more respondents recognised the recycling message than the reuse one. This may be because the recycling message is on every cup bin. There is perhaps **room to increase the visibility of the reuse message**, which would encourage more people to remember their reusable cup (or indeed to get one in the first place).

Despite improvements in reusable cups presented and sold at the Student Union during the last few weeks of the project, there is a stark difference between the data from the Student Union and the Cardiff Met Sites. This highlights the importance of having a dedicated project lead and engaged catering staff (who all regularly communicate with students and university staff using the outlets) and the difference this makes. These efforts have been boosted by the 6-month Sustainability Projects Officer role, which should be continued if possible. We are grateful to the Environmental Performance Manager for her tireless work on the project. We were so pleased when her efforts with this project and with promoting sustainability more widely across the University were recognised when she was [shortlisted for the Sustainability Champion category in the Sustainable Academy Awards in October 2019](#).

The **more people involved with promoting the project**, the easier it will become and more impact it can have. As part of the Neath Port Talbot College Group cups project, Keep Wales Tidy recommended that:²⁸

- A **more collaborative approach across the group**, involving more participation from marketing, teaching and front-of-house staff as well as the student body would unlock the enormous environmental, educational and public relations potential.
- Promotion of the project should be a **high profile and consistent marketing exercise**, not left largely to busy front-of-house catering staff.

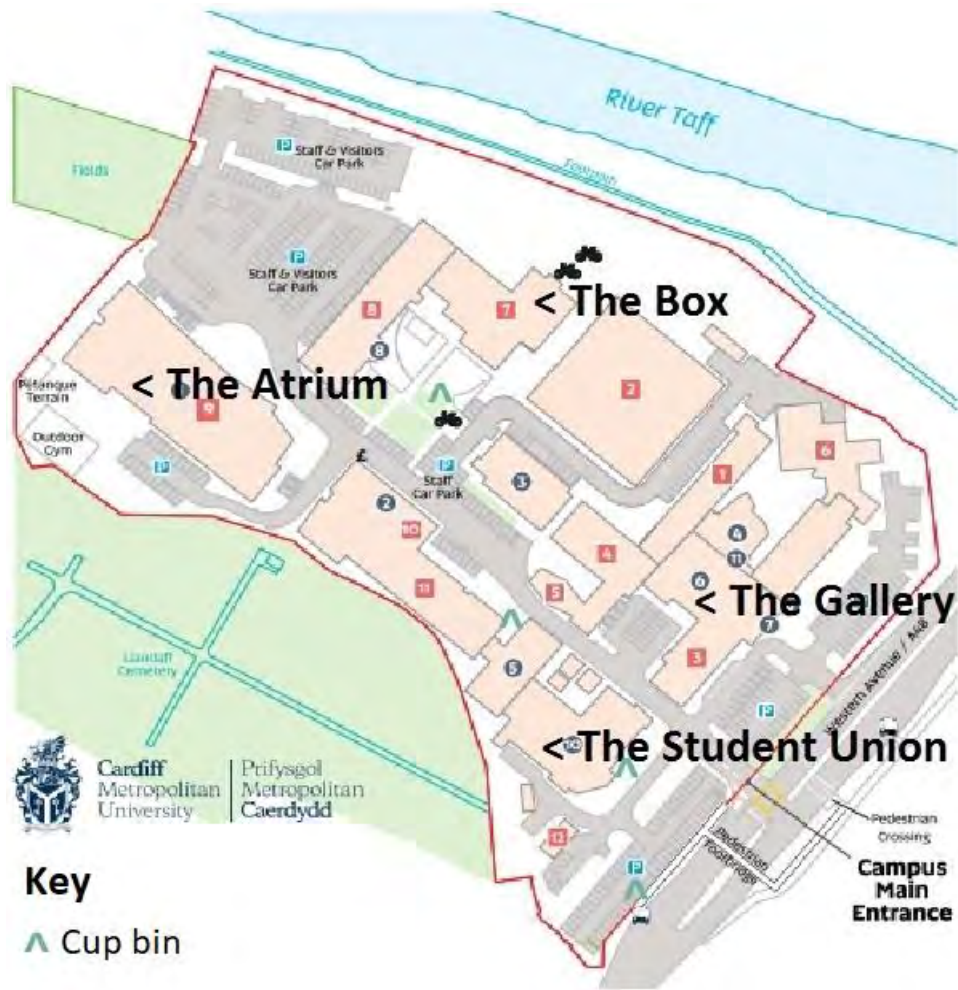
These recommendations could also benefit the project at Cardiff Met **to take pressure away from the small dedicated group of staff leading the project**. The positive engagement and promotion that has happened throughout the project needs to be intensified to further improve the results. It must also be continued because a third of the student audience changes each academic year.

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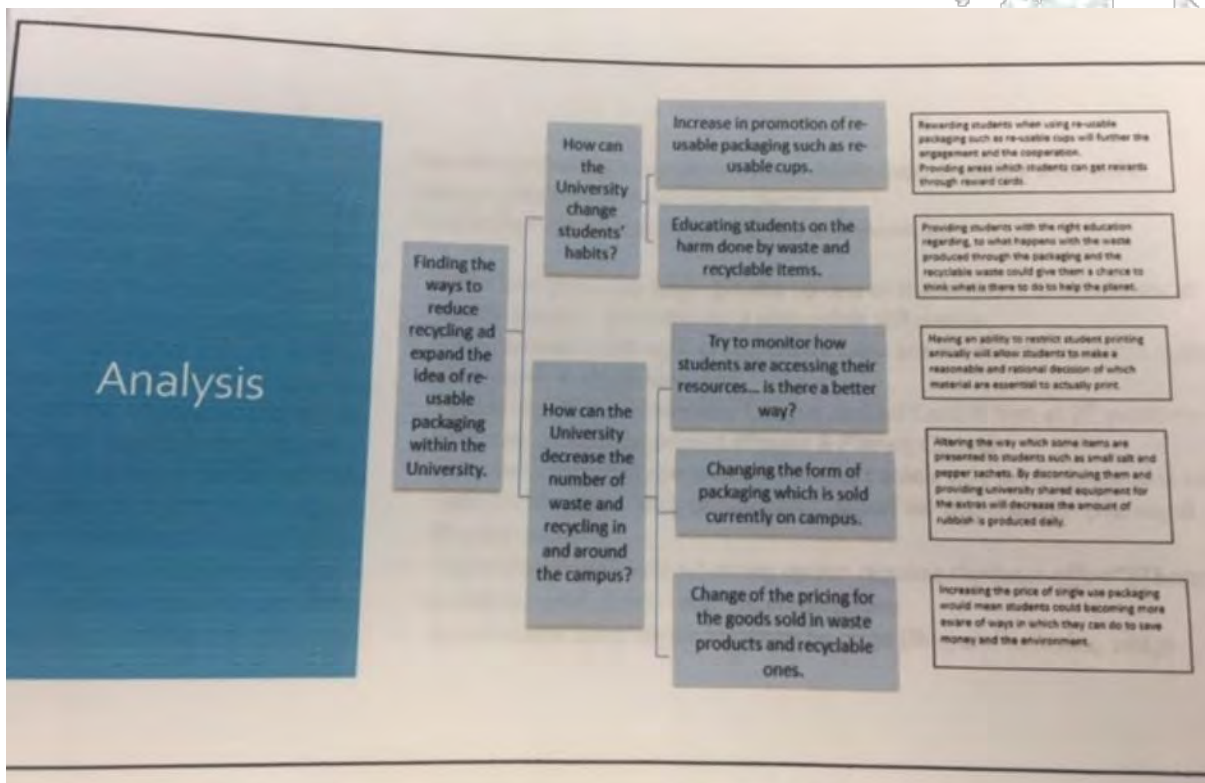
Appendices

Appendix 1: Map of Coffee Outlet and Outside Cup Bin Locations



Within the Student Union building, as well as Starbucks, hot drinks are also sold at The Zen and The Shop.

Appendix 2: Extracts of Student Work



Recommended Solution

Recommended solution; reusable hot drinks cups provided across the campus, paired with a rewards scheme.
We decided that this solution was most relevant as;

- Food and drinks packaging make up one of the largest contributions to waste output – potential for a noticeable difference.
- Only between 12%-15% of hot drinks sales are made into reusable cups, compared to single use cups.
- *People and Planet* University League ranked Cardiff Met at 8th position – with only 35% engagement (*People & Planet, C2019*)
- Solution is internally promoted – doesn't solely rely on engagement to lead the change – "lack of perceived payoff for the change" (*Harvey & Broyles, 2010*)
- "many people will take whatever option requires the least effort" (*Thaler & Sunstein, 2008, p.83*) – change architecture
- Government Zero Waste Strategy by 2050 (*RecycleForWales, 2019*)

1.9 - Our solution

After considering various solutions and evaluating the literature and results found from previous studies, we decided that our preferred solution is a hot drinks cup levy alongside a reward/penalize system with a strong advertising campaign. The hot drinks cup levy will be priced at 25p-30p. We decided that this will be enough to change people's behaviors but not too much to be unreasonable. Following the levy, if a customer purchases a hot drink using their reusable cup, they will not pay the levy and have the option of a free piece of fruit which is cost-friendly to the university.

To construct a strong advertising campaign, we will use more persuasive and emotional posters/banners in the café areas to increase the identification of the problem around the university and to inform people of the changes being made. We will also hold competitions each term for the new design that will appear on the reusable coffee cups each term. This gives all members of the university to be a part of the scheme and helps towards making the problem along with our solution known. We will create an environmental society which will continue to make students more aware of the need for change and will involve creating new schemes and projects to encourage people to reuse more than just coffee cups in the university.

In order to educate people from day one we will offer free reusable cups to all freshers. This will not only make people aware of our scheme from the start but also puts people half way there by providing them with a reusable cup in the first place. At Freshers fair we will have a stall where we will distribute the reusable mugs as well as spreading the word on the importance of re-use and promote the society to encourage people to join.

These extracts are all from Phase 1. The work undertaken by students during Phase 2 has not been handed in yet.

Appendix 3: Questionnaire

During the baseline, the questionnaire consisted of only questions 1-8 along with room for comments. For Phase 1, questions 9-11 were added. For Phase 2:

- 'On campus' and 'away from campus' categories were added to question 4.
- Questions 7-9 were removed.
- Questions 12 and 13 were added.

The wording of the questions were amended slightly over time to make them clearer and to reflect project developments.

1. What is your age?
 - Under 18
 - 18-24
 - 25-34
 - 35-44
 - 45-54
 - 55-64
 - 65-74
 - 75 and above
2. Are you a:
 - Student
 - Member of staff
 - Other (please specify): _____
3. How often do you buy drinks in non-reusable containers? E.g. coffee, tea etc.
 - Several times a day
 - Once a day
 - Several times a week
 - Weekly
 - Less often
 - N/A - I don't buy hot drinks 'to go'
4. When disposing of a cup 'on the go' would you normally:
 - Put it in a general waste bin
 - Put it in a general recycling bin
 - Put it in a cup recycling bin
 - Take it back to the store
 - Take it home
 - Leave it somewhere
 - Other (please specify):
 - N/A I don't buy hot drinks 'to go'
5. Do you own a re-usable cup?
 - Yes
 - No
6. If yes, how often do you use it?
 - Every time I buy a hot drink
 - Most of the time - but sometimes I forget
 - Rarely
 - Never
 - N/A - I don't buy hot drinks 'to go'
7. Do you use the free cooled water vending machines on campus?
 - Yes
 - No

8. If yes, how often do you use them?

- Several times a day
- Once a day
- Several times a week
- Weekly
- Less often
- N/A

9. Think about what you did last term and what you do now.

Please tick all statements below which apply to you.

- There has been no change in my behaviour
- I've bought a reusable cup but not used it yet
- I've bought a reusable cup and used it
- I've remembered to use my reusable cup more often
- I use a non-reusable cup but use the closest bin to me, whatever bin that is
- I use a non-reusable cup but look for a general recycling bin to use
- I use a non-reusable cup but look for a cup-shaped recycling bin to use
- I ask staff in The Atrium to refill my bottle with water
- I don't buy hot drinks 'to go'

10. Have you seen these messages?



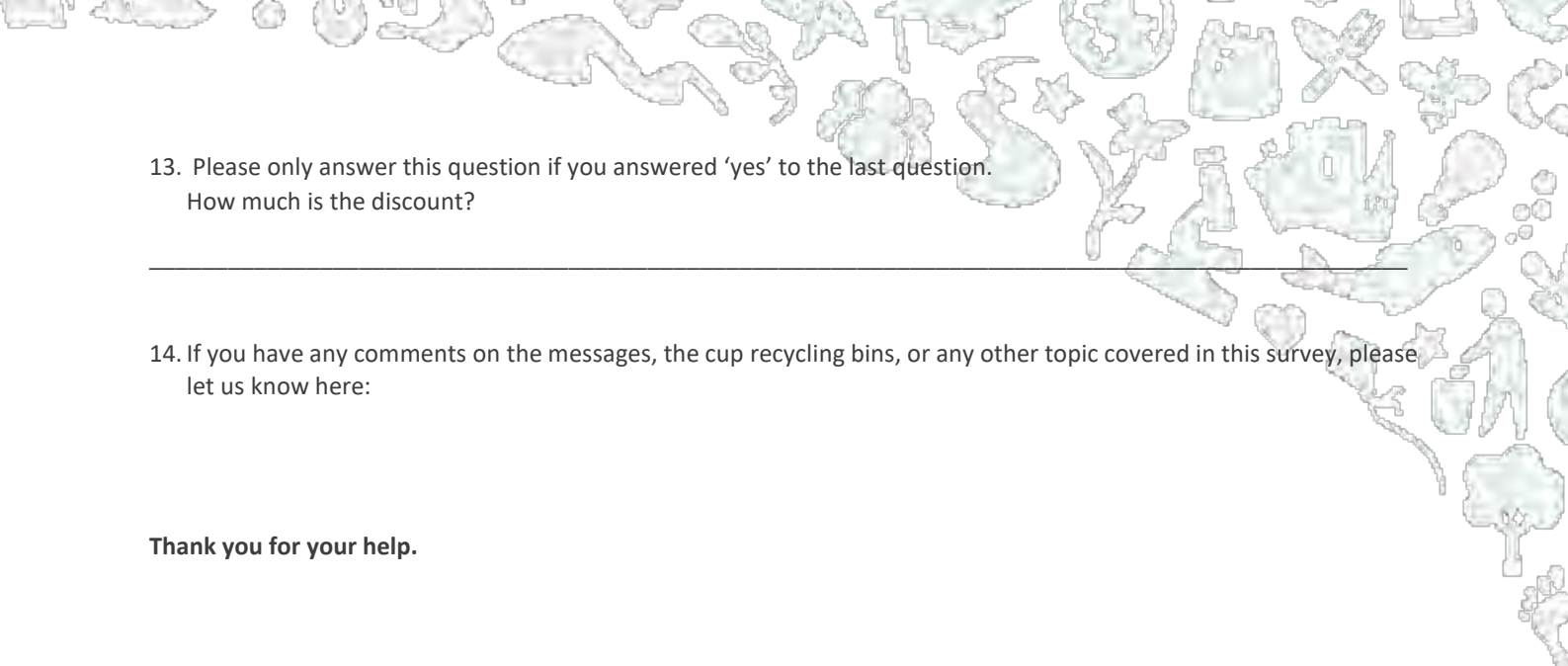
- Yes - both
- Yes - only the first
- Yes - only the second
- No

11. Have you seen the cup recycling bins on campus?

- Yes
- No

12. Is there a discount offered for hot drinks on campus if you present your own cup?

- Yes
- No
- I don't know



13. Please only answer this question if you answered 'yes' to the last question.
How much is the discount?

14. If you have any comments on the messages, the cup recycling bins, or any other topic covered in this survey, please let us know here:

Thank you for your help.

